

City of Dixon Water Shortage Contingency Plan

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LIST OF ACRONYMS AND ABBREVIATIONS

Ccf	Hundred Cubic Feet
MGD	Million Gallons Per Day
USGS	United States Geological Survey
WD	Water Division
WRE	Water Resources Engineering
WSM	Water System Manager
AB	Assembly Bill
AMI	Advanced Metering Infrastructure
AMR	Automated Meter Reading
Annual Assessment	Annual Water Supply and Demand Assessment
AWIA	America’s Water Infrastructure Act
Cal Water	California Water Service
CalWARN	California Water/Wastewater Agency Response Network
City	City of Dixon
County	Solano County
CWC	California Water Code
Director	Director of Utilities
DMC	Dixon Municipal Code
DMC	Dixon Municipal Code
DMC	Dixon Municipal Code
DOC	Department Operations Center
DWR	Department of Water Resources
EOC	Emergency Operations Center
ERP	Emergency Response Plan
FEMA	Federal Emergency Management Agency
Legislature	California State Legislature
MJHMP	Multi-Jurisdiction Hazard Mitigation Plan
PIO	Public Information Officer
RRA	Risk and Resilience Assessment
SB	Senate Bill

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SGMA	Sustainable Groundwater Management Act
State Water Board	State Water Resource Control Board
UM	Utilities Manager
UWMP	Urban Water Management Plan
WSCP	Water Shortage Contingency Plan

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Water Shortage Contingency Plan

This document presents the City of Dixon’s (City) Water Shortage Contingency Plan (WSCP), which describes the strategic plan for preparing and responding to water shortages, including the water shortage stages and associated actions.

Water shortages occur whenever the available water supply cannot meet the normally expected customer water use. This can be due to several reasons, such as climate change, drought, and catastrophic events. Drought, regulatory action constraints, and natural and manmade disasters may occur at any time. As part of the WSCP, the City’s legal authorities, communication protocols, compliance and enforcement, and monitoring and reporting protocols are described. Following the adoption of this WSCP, the City plans to update the City of Dixon Municipal Code (DMC) to support this WSCP.

In 2018, the California State Legislature (Legislature) enacted two policy bills, (Senate Bill (SB) 606 (Hertzberg) and Assembly Bill (AB) 1668 (Friedman)) (2018 Water Conservation Legislation), to establish a new foundation for long-term improvements in water conservation and drought planning to adapt to climate change and the resulting longer and more intense droughts in California. The 2018 Water Conservation Legislation set new requirements for water shortage contingency planning.

The City’s WSCP provides a guide for the City to proactively prevent catastrophic service disruptions and has been prepared to be consistent with the 2018 Water Conservation Legislation requirements. The City intends for this WSCP to be an adaptive management plan so that it may assess response action effectiveness and adapt to emergencies and catastrophic events. Refinement procedures to this WSCP are provided to allow the City to modify this WSCP outside of the Urban Water Management Plan (UWMP) process.

1.0 WATER SUPPLY RELIABILITY ANALYSIS

Chapters 6 and 7 of the City’s 2020 UWMP, present the City’s water supply sources and reliability, respectively. Findings show the City can reliably meet its projected demands through 2045 in normal and dry hydrologic conditions, including single dry years and five consecutive dry years.

A water shortage condition occurs when the available supply of potable water cannot meet ordinary water demands for human consumption, sanitation, fire protection, and other beneficial uses. In some cases, the City may foresee a water shortage, but the water shortage may also be caused by an unforeseen sudden or emergency event. In general, the City’s water supply conditions may be affected by the following:

- Climatic variability and drought conditions (i.e., Solano Project supply reliability, snowpack, and snowmelt runoff timing)
- Water quality
- Water supply facility failures (loss of treatment facilities, pumps, tanks, or transmission pipes)
- Legislative restrictions or policies (i.e., reductions through voluntary settlements or other mandated instream flow requirements and/or diversion restrictions)
- State drinking water quality regulatory updates
- Unforeseen Sustainable Groundwater Management Act (SGMA) requirements to available groundwater supply in the future



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In general, the City's water supply is from the Solano Subbasin. Groundwater level data presented in the North Central Solano County Groundwater Resources Report and additional data published by Department of Water Resources (DWR) show that the subbasin is in a state of equilibrium. In 1959, the United States Bureau of Reclamation completed the Solano Project to store surface water in Lake Berryessa for potable and non-potable uses primarily in Solano County (County). One of the primary reasons behind the Solano Project was to correct the overdraft of groundwater, which was occurring in agricultural areas. Since then, the Solano Project has halted the overdraft of groundwater, and the groundwater levels have rebounded in most areas of the Solano Subbasin. The groundwater levels are not permanently impacted by multiple dry years and data also shows slight variations in response to climatic conditions. Since the 1980s, the groundwater levels have been stable with low levels in the dry season and high levels in the wet season of each year. The City's water supply is resilient.

In future years, the City will conduct an annual water supply and demand assessment as described below in Section 2.0. The analysis associated with this WSCP was developed in the context of the City's water supply sources and reliability.

2.0 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

Beginning July 1, 2022, California Water Code (CWC) §10632.1 requires water suppliers to complete an Annual Water Supply and Demand Assessment (Annual Assessment) and submit an Annual Water Shortage Assessment Report to the DWR. This section provides the procedures for the City to conduct its Annual Assessment, which will inform the City's Annual Water Shortage Assessment Report and assist the City with planning for potential water supply shortages. The objective of the Annual Assessment is to determine actual forecasted near-term supply conditions so that the City can prepare logistically and financially for any anticipated water supply constraints, as well as enact appropriate shortage response actions in a timely manner.

The Annual Assessment procedures below describe the steps the City may take to declare a water shortage emergency and associated water shortage stage (see Section 3.0) and implement water shortage response actions (see Section 4.0).

At the time of preparation of this WSCP, DWR is preparing guidance for the preparation of the Annual Water Supply and Demand Assessment Guidance, and associated reporting tables and worksheets. The City will complete its Annual Assessment in accordance with DWR guidance and using the associated reporting tables and worksheets.

2.1 Decision-Making Process

The City will use the decision-making process described below to consistently determine its water supply reliability on an annual basis. The City may adjust and improve this process as needed.

The City's Water Operations Division is responsible for preparing the City's Annual Assessment and Annual Water Shortage Assessment Report and for submitting the report to DWR by July 1st of each year (starting in 2022). This team will gather key data inputs described in Section 2.2 and conduct the assessment in accordance with Section 2.3. In May of each year, the City will finalize the assessment by assessing projected water demand, previous groundwater data and SGMA protocols for implementing sustainable groundwater supply. The Department of Engineering and Utilities will present the Annual Assessment and Annual Water Shortage Assessment Report to the City Engineer/Director of Utilities, or designee, for



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review and approval. If the Annual Assessment finds that available water supply will be sufficient to meet expected demands for the current year and one subsequent dry year, no further action will be required. The final approved documents will be submitted to DWR by July 1st of each year.

The City will follow the schedule of activities shown in Table 1 for conducting the Annual Assessment. Due to variations in climate and hydrologic conditions, the start and end dates shown in the table are approximate and may be adjusted as needed. The intent of the schedule is to allow shortage response actions to effectively address anticipated water shortage conditions in a timely manner while complying with the State’s reporting requirements.

Table 1. Schedule of Annual Assessment Activities

Schedule	Activities	Responsible Party
February to March	Determine water supply sources for current year and one subsequent dry year. Describe sources and quantities considering factors affecting supply as described in Section 2.2.	Water Operations Supervisor
February to March	Determine water demands for current year and one subsequent dry year. Describe demand types and quantities considering factors affecting demand as described in Section 2.2.	Water Operations Supervisor
Early to Mid-April	Calculate the City’s water supply reliability for the current year and one subsequent dry year using the methodology described in Section 2.3.	Water Operations Supervisor
Early to Mid-April	Complete assessment based on groundwater monitoring data and SGMA protocols for implementing a sustainable groundwater supply.	Water Operations Supervisor
Late April	Based on determinations of Annual Assessment, prepare the Annual Water Shortage Assessment Report with recommendations on water shortage condition determination and response actions. Submit to Director of Utilities (Director) and Utilities Manager (UM), or designee(s), for review.	Water Operations Supervisor
Early May	Review Annual Assessment and Annual Water Shortage Assessment Report and provide comments as needed.	Water Operations Supervisor
Mid-May to Early June	Finalize and approve Annual Assessment and Annual Water Shortage Assessment Report.	City Engineer/ Director of Utilities
Before July 1	Submit Annual Assessment and finalized Annual Water Shortage Assessment Report to DWR.	Water Operations Supervisor

Should the Annual Assessment find that available supply will not meet expected demands, the City will coordinate interdepartmentally, with the region’s water service providers, and with the County for the possible proclamation of a local emergency. The Department of Engineering and Utilities will present the finalized assessment to the City Council, along with recommendations on water shortage condition determination and actions. Recommended actions may include declaration of a water shortage emergency, declaration of a water shortage stage, and water shortage actions.

Based on the findings of the Annual Assessment, the City Council will determine if a water shortage condition exists and, if needed, adopt a resolution declaring a water shortage emergency and an associated water shortage stage and authorizing water shortage actions. The Water Operations Division will then prepare the City’s Annual Water Shortage Assessment Report, incorporating City Council determinations and approved



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actions. The schedule of decision-making activities is provided in Table 2. The start and end dates and the activities shown in this table are approximate and may be adjusted as needed.

Table 2. Schedule of Decision-Making Activities if Water Shortage Condition Exists

Schedule	Activities	Responsible Party
Early May	Based on finalized determinations of Annual Assessment regarding water shortage condition and recommended actions, prepare recommendations on water shortage condition determination and actions.	Water Operations Supervisor and City Engineer/ Director of Utilities
Early May	Prepare resolutions approving determinations and actions.	Water Operations Supervisor
Mid-May	Coordinate interdepartmentally and with the County for the possible proclamation of a local emergency.	City Engineer/ Director of Utilities
Early May to Mid-May	Present finalized determinations and recommendations, along with resolutions approving determinations and actions.	City Engineer/ Director of Utilities
Late May to Early June	Receive presentation of finalized determinations and recommendations. Make determination of degree of emergency and act on resolutions that declare a water shortage emergency condition. Authorize water shortage response actions for implementation.	City Council
Mid-June	If a water shortage emergency condition is declared, implement the WSCP and the water shortage response actions as approved by City Council.	City Staff as Assigned
July 1	Finalize Annual Water Shortage Assessment Report (See Table 1) and submit to DWR.	Water Operations Supervisor

2.2 Key Data Inputs

The Annual Assessment requires evaluating supplies and demands for the current year and one subsequent dry year.

In reviewing planned water supplies, the Annual Assessment will consider the following key inputs:

- Hydrological conditions
- Regulatory conditions
- Water quality conditions
- Groundwater well production limitations (e.g., issues with physical assets or SGMA constraints)
- Infrastructure capacity constraints or changes
- Capital improvement project implementation

Planned water supply sources and quantities will be described and should be reasonably consistent with the supply projections in Chapter 6 of the City’s most recent UWMP. If the Annual Assessment and UWMP supply sources and projections differ significantly, the City will explain the difference.



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In reviewing planned unconstrained (i.e., without conservation) water demands, the Annual Assessment will consider the following key inputs:

- Weather conditions
- Water year type (e.g., dry year or wet year)
- Population changes (e.g., due to development projects)
- Anticipated new demands (e.g., changes to land use)
- Pending policy changes that may impact demands

Planned water demand types and quantities will be described and should be reasonably consistent with the demand projections in Chapter 4 of the City’s most recent UWMP. If the Annual Assessment and UWMP demand differ significantly, the City will explain the difference.

2.3 Assessment Methodology

In preparing the Annual Assessment, the City will use the following assessment methodology and evaluation criteria to evaluate water supply reliability for the current year and one subsequent dry year.

The City uses a spreadsheet tool to plan for current year and future year supply and demands. Planned supply and demand inputs described in Section 2.2 will be entered in the spreadsheet in annual increments, or closer time intervals as necessary during water shortage conditions.

Supply and demand will be compared to determine the reliability of the City’s water supply in the current year and one subsequent dry year. The City’s water supply for the current year and the subsequent dry year will be deemed reliable if projected water supply can meet projected water demands.

If the projected water supply cannot meet the projected water demands in the current year or the subsequent dry year, the extent of the water shortage condition will be determined, and the City will prepare response actions in accordance with this WSCP. The Annual Assessment findings will be presented to the City Council, along with recommendations for action for City Council consideration.

3.0 SIX STANDARD WATER SHORTAGE STAGES

To provide a consistent regional and statewide approach to conveying the relative severity of water supply shortage conditions, the 2018 Water Conservation Legislation mandates that water suppliers plan for six standard water shortage levels that correspond to progressive ranges of up to 10, 20, 30, 40, 50 percent, and greater than 50 percent shortages from the normal supply condition. Each shortage condition should correspond to additional actions water suppliers would implement to meet the severity of the impending shortages.

For each of the State’s standard shortage levels (also called “stages”), Table 3 summarizes the water shortage range (i.e., percent shortage from normal supplies) and a brief narrative description of the corresponding water shortage condition and shortage response actions. These water shortage stages apply to both foreseeable and unforeseeable water supply shortage conditions. Table 3 presents the City’s stages, which align with the State’s standard stages.



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**Table 3. Water Shortage Contingency Plan Levels
(DWR Table 8-1)**

Shortage Level	Percent Shortage Range	Shortage Response Actions (Narrative description)
1	Up to 10%	Shortage Response Actions listed in Table 4 (DWR Table 8-2) as Stage 1.
2	Up to 20%	Shortage Response Actions listed in Table 4 (DWR Table 8-2) as Stage 2.
3	Up to 30%	Shortage Response Actions listed in Table 4 (DWR Table 8-2) as Stage 3.
4	Up to 40%	Shortage Response Actions listed in Table 4 (DWR Table 8-2) as Stage 4.
5	Up to 50%	Shortage Response Actions listed in Table 4 (DWR Table 8-2) as Stage 5.
6	>50%	Shortage Response Actions listed in Table 4 (DWR Table 8-2) as Stage 6.

NOTES: The City anticipates updating the City of Dixon Municipal Code to incorporate the six shortage levels in the future. It should be noted that the actions at each stage are cumulative. For example, if Shortage Level 3 is declared, then the actions at Shortage Level 1 and 2 shall still be implemented.

As described in Section 2.0, the City will conduct an Annual Assessment to determine its water supply condition for the current year and a subsequent dry year. Preparing the Annual Assessment helps the City ascertain the need to declare a water shortage emergency and water shortage stage. In other cases, the City may need to declare a water shortage emergency due to unforeseen water supply interruptions. When the City anticipates or identifies that water supplies may not be adequate to meet the normal water supply needs of its customers, the City Council may determine that a water shortage exists and consider a resolution to declare a water shortage emergency and associated stage. The shortage stage provides direction on shortage response actions.



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4.0 SHORTAGE RESPONSE ACTIONS AND EFFECTIVENESS

CWC §10632 (a)(4) requires shortage response actions that align with the defined shortage levels. The City's shortage response actions consist of a combination of demand reduction, supply augmentation, and operational changes. The City's suite of response actions depends on the event that precipitates a water shortage stage, the time of the year the event occurs, the water supply sources available, and the condition of its water system infrastructure.

In general, the City plans to use a balanced approach, combining demand reduction, supply augmentation, and operational changes to respond to the event and the resulting water shortage stage. The City will adapt its response actions to close the gap between water supplies and water demand and meet the water use goals associated with the declared water shortage stage.

The City meters all of its water customers and is actively upgrading to automated meter reading (AMR). The ultimate goal for the City is to upgrade to advanced metering infrastructure (AMI) after the City has been fully upgraded to AMR. Systemwide water meters allow the City to compare water demands with demand reduction goals and adjust its shortage response actions accordingly. The City reads water meters monthly to track the extent of the effectiveness of the City's response actions. Once the City has upgraded to AMI in the future, the City will have the ability to monitor its water consumption in a timely manner.

Water production and water use can be compared to previous periods by customer sector or individual customer monthly due to the City's current metering technology. The City meters its water production sources, which allows the City to monitor how much groundwater it uses daily and estimate water consumption patterns. This continuous monitoring allows the City to assess water system demands and compare it with water demand reduction goals. The City may then adjust its shortage response actions as needed to balance demands with available water supplies. For example, the City may intensify its public outreach or more vigorously enforce compliance to water use prohibitions if needed water demand reduction goals are not met for any specific stage. Conversely, the City may reduce public outreach frequency or decrease compliance actions if demand reduction goals are exceeded.

The shortage response actions discussed below may be considered as tools that allow the City to respond to water shortage conditions. Shortage response actions are initiated at the shortage levels shown and continue to be implemented at higher shortage levels. Because the City may continuously monitor and adjust its response actions to reasonably balance demands with available supply, the extent to which implementation of each action reduces the gap between water supplies and water demand is difficult to accurately quantify and can only be estimated. For example, certain response actions, such as public outreach and enforcement, support the effectiveness of other response actions and do not have a quantifiable effect on their own.

4.1 Demand Reduction

During water shortage conditions, the City plans to reduce demand by implementing the actions shown in Table 4. Demand reduction actions are organized by the triggering water shortage level (i.e., stage), and each action includes an estimate of how much its implementation will reduce the shortage gap. For each demand reduction action, Table 4 also indicates if the City uses compliance actions such as penalties, charges, or other enforcement. Demand reduction actions are initiated at the shortage levels shown and will continue to be implemented at higher shortage levels.

**Table 4. Water Shortage Contingency Plan Demand Reduction Actions
(DWR) Table 8-2**

Shortage Level	Demand Reduction Actions <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? For Retail Suppliers Only Drop Down List
1	Expand Public Information Campaign	Studies have shown that a targeted public information campaign during a drought can reduce water use by 7 - 8%		No
1	Provide Rebates on Plumbing Fixtures and Devices	Up to 9,000 gallons/year/participating household depending on the number and type of fixtures being replaced		No
1	Provide Rebates for Landscape Irrigation Efficiency	Boosts other methods. No statistically significant effect on water use rates		No
1	Offer Water Use Surveys	Boosts the effectiveness of other methods - not readily quantifiable		No
1	Other	Boosts the effectiveness of other methods - not readily quantifiable	Water Bill Inserts	No
1	Reduce System Water Loss	Depends on extent and magnitude of current system losses, but could reduce system loss by up to 25 - 35%	City to maintain water repairs as a high priority	No
1	Decrease Line Flushing	Depends on extent and frequency of current flushing activities	Flushing to be performed as needed to maintain public health and safety	No
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Boosts the effectiveness of other methods - not readily quantifiable		Yes
1	Landscape - Restrict or prohibit runoff from landscape irrigation	Many suppliers already prohibit runoff at all times		Yes
1	Other - Prohibit use of potable water for washing hard surfaces	Boosts other methods - not readily quantifiable		Yes
1	Other - Require automatic shut of hoses	Many suppliers already prohibit unrestricted hose use		Yes
1	Other	N/A	Prohibit application of potable water to outdoor landscapes within 48 hours of measurable rainfall.	Yes
2	Landscape - Limit landscape irrigation to specific days	Every third day - 22% reduction; twice a week - 33% reduction; once a week - 56% reduction	Limit landscape irrigation to 1 - 3 days per week.	Yes
2	CII - Restaurants may only serve water upon request	50 gallons/day/commercial connection		Yes
2	CII - Lodging establishment must offer opt out of linen service	250-500 gallons/day/hotel		Yes
2	Water Features - Restrict water use for decorative water features, such as fountains	Boosts other methods as a public display of drought conservation, difficult to quantify	Potable water use for decorative features is prohibited unless the decorative feature recirculates water.	Yes
2	Landscape - Prohibit certain types of landscape irrigation	Boosts the effectiveness of other methods - not readily quantifiable	Prohibit irrigation of ornamental turf on public street medians with potable water (where those medians include trees, watering shall take place to maintain tree health).	Yes
2	Other	10%	Customers shall reduce water use by 10%	Yes
3	Other	Boosts the effectiveness of other methods - not readily quantifiable	Increase water compliance actions	No
4	Implement or Modify Drought Rate Structure or Surcharge	Generally, the cost of water does not significantly effect water use. The cost increase needs to be significant to result in water use reduction.		Yes
4	Other - Prohibit use of potable water for construction and dust control	3,000 gallons/acre/day for construction areas		Yes
4	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	100-200 gallons/year/residential connection		Yes
4	Other	20%	Customers shall reduce water use by 20%	Yes
5	Moratorium or Net Zero Demand Increase on New Connections	Current average water use per connection times the number of planned new connections that do not occur or are required to comply with net zero demand provisions	Only net zero demand increase on new connections	Yes
5	Pools and Spas - Require covers for pools and spas	Evapotranspiration of approximate surface area of pools		Yes
5	Pools - Allow filling of swimming pools only when an appropriate cover is in place.	Boosts other methods as a public display of drought conservation, difficult to quantify		Yes
6	Moratorium or Net Zero Demand Increase on New Connections	Current average water use per connection times the number of planned new connections that do not occur or are required to comply with net zero demand provisions	Moratorium on new connection	Yes
6	Landscape - Prohibit all landscape irrigation	Nearly eliminates irrigation demand		Yes

NOTES: It should be noted that the demand reduction actions and shortage gap reduction estimations at each stage are cumulative. For example, if Shortage Level 3 is declared, then the actions at Shortage Level 1 and 2 shall still be implemented. The exact amount that each demand reduction action will reduce the shortage gap. Either a quantitative or qualitative estimation has been provided.



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The City may request that its customers reduce their water demands in response to any water shortage stage through the DMC, including imposing additional mandatory restrictions as discussed in Section 4.2. After adoption of this WSCP, the City will be updating the DMC to support water shortage actions. The City will monitor water production, water consumption, and changing conditions to determine the intensity of its public outreach, the extent of its enforcement actions, and the need to adjust its water shortage stage declaration as discussed in Section 9.0.

4.2 Additional Mandatory Restrictions

In addition to the above discussed demand reduction response actions, the City may implement mandatory water use restrictions. Table 5 lists the mandatory restrictions for each shortage stage. These restrictions are in addition to State-mandated prohibitions and are cumulative, so restrictions associated with a given water shortage stage also include any restrictions from lower stages.

Table 5. City of Dixon Additional Mandatory Restrictions

Consumption Reduction Measures
Standard Shortage Level 1 (Up to 10 percent Shortage)
Car washing is permitted with use of a positive shutoff nozzle and is allowed all hours of the approved watering days as cited above.
Restaurants encouraged to serve water only upon request.
Lodging establishments are encouraged to offer opt out linen services.
Hosing concrete areas, building exteriors, etc. is prohibited except for health/safety concerns and only with use of a positive shutoff nozzle.
Water leaks, once identified by homeowner, must be repaired within 48 hours.
Standard Shortage Level 2 (Up to 20 percent Shortage)
Outdoor water use prohibited from 10:00 am to 7:00 pm. Odd-numbered addresses water on Wednesdays, Fridays, and Sundays. Even-numbered addresses water on Tuesdays, Thursdays, and Saturdays. No outdoor water use on Mondays.
Standard Shortage Level 3 (Up to 30 percent Shortage)
City to evaluate operations and make all possible conservation adjustments that does not affect public health.
Standard Shortage Level 4 (Up to 40 percent Shortage)
Car washing permitted at car wash facilities only (or with recycled/reclaimed water).
Standard Shortage Level 5 (Up to 50 percent Shortage)
Mandatory retrofit of toilets (in addition to low-flow showerheads) in homes when remodeling occurs.
Standard Shortage Level 6 (More than 50 percent Shortage)
Moratorium on all new landscaping. Only zero-scape allowed.
No outdoor water uses except for trees, and vegetation maintained through drip irrigation.
Building moratorium on all new connections and including new swimming pools.



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4.3 Supply Augmentation and Other Actions

The City's water supply portfolio consists of local groundwater, as described in Chapter 6 of the City's 2020 UWMP. At any water shortage stage and depending on the water shortage event, the City's may adjust its groundwater pumping rate.

Supply augmentation options available to the City include increased groundwater pumping and a temporary arrangement with the California Water Service Dixon District (Cal Water), the other water service provider in the City, for additional groundwater supply. Since the City's groundwater pumping is already considered for reliability and dry conditions, it is included in determining the gap between supply and customer water use and should not be counted again as a potential shortage response. In a temporary arrangement, the City may have the opportunity to operate one or more of its emergency interties with Cal Water in accordance with Appendix A to this WSCP. Since this arrangement was not included in the supply reliability analysis described in Chapter 7 of the City's 2020 UWMP, it is presented here as a supply augmentation option.

The City is a participant of the California Water/Wastewater Agency Response Network (CalWARN). The mission of CalWARN is to support and promote statewide emergency preparedness, disaster response, and mutual assistance processes for public and private water and wastewater utilities. In the event of an emergency, the City may request assistance from regional CalWARN partners.

Table 6 lists the supply augmentation method the City can utilize during each shortage level. Supply augmentation response action initiated at the shortage level shown will be implemented at higher shortage levels.

**Table 6. Water Shortage Contingency Plan Supply Augmentation and Other Actions
(DWR Table 8-3)**

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUedata online submittal tool</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>
6	Transfers	Up to the shortage gap	The City of Dixon will coordinate with Cal Water - Dixon for emergency supplies through the interties, if needed. The City has a formal agreement with Cal Water.
6	Other Actions (describe)	Up to the shortage gap	The City of Dixon will request assistance from regional CalWARN partners in case of an emergency.

NOTES: California Water/Wastewater Agency Response Network (CalWARN) mission is to support and promote statewide emergency preparedness, disaster response, and mutual assistance processes for public and private water and wastewater utilities.



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4.4 Operational Changes

Beginning in Stage 3, the City will adjust operations to minimize supply losses and more closely track customer water use. These adjustments may include decreasing line flushing, increasing meter reading, and increasing water waste patrols.

4.5 Emergency Response Plan

As stated in Section 3.0, the City's water shortage stages outlined in Table 3 apply to both foreseeable and unforeseeable water supply shortage conditions, including catastrophic water shortage conditions. Catastrophic water shortage conditions are addressed in the City's Emergency Response Plan (ERP). ERPs outline preparation, response, and recovery procedures associated with unforeseeable incidents such as water supply contamination, earthquake, infrastructure failure, and other events.

The City's 2021 ERP describes the equipment and resources available in an unforeseen water shortage, including backup generators (stationary and portable) and emergency water storage (i.e., groundwater and reservoirs). In the event of an emergency that impacts water delivery, if possible, the City will coordinate with Cal Water to organize and deliver alternate water supplies to their customers.¹

4.6 Seismic Risk Assessment and Mitigation Plan

CWC §10632.5(a) requires that UWMPs include a seismic risk assessment and mitigation plan to assess and mitigate a water system's seismic vulnerabilities. The Solano County Department of Resource Management and Office of Emergency Services prepared the 2012 Multi-Hazard Mitigation Plan, which recognized earthquake events as a significant concern countywide. The County is seismically active since it is situated on the boundary between two tectonic plates. The County is on the North American Plate. A number of active faults cross the County into the surrounding San Francisco Bay Area.¹

The County has since updated the 2012 Multi-Hazard Mitigation Plan and completed the 2021 Solano County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). At time of preparation of this UWMP, the 2021 MJHMP is pending approval by the Federal Emergency Management Agency (FEMA) pending jurisdictional adoption of the participating agencies. The City participated in the preparation of the 2021 MJHMP and developed a jurisdictional annex to address hazard mitigation planning elements specific to the City (Appendix B). Seismic risk assessment is included in Section 1.4 and mitigation strategy is provided in Section 1.5 of the City's jurisdictional annex. The 2021 Solano County MJHMP and the City's jurisdictional annex are available at https://www.solanocounty.com/depts/oes/emergency_plans.asp, and incorporated herein by reference.

The City has implemented efforts in addressing its facilities' seismic vulnerabilities. In accordance with America's Water Infrastructure Act (AWIA), the City completed a Risk and Resilience Assessment (RRA) of its water system in November 2021. The RRA systematically evaluated the City's assets, threats, and risks, as well as countermeasures that might be implemented to minimize overall risk to the system. To ensure the security of the City's water system, the RRA is retained by the City as a confidential document.

¹ Section 5.4, Solano County Multi-Hazard Mitigation Plan, March 2012. Accessed October 8, 2021, <https://www.solanocounty.com/documents/Depts/OES/SolanoCountyMHMP-March2012-FINAL.pdf>.



Water Shortage Contingency Plan

5.0 COMMUNICATION PROTOCOLS

In the event of a water shortage, the City must inform their customers, the general public and interested parties, the County, and local, regional, and state entities. Communication protocols for foreseeable and unforeseeable events are provided in this section. In any event, timely and effective communication must occur for appropriate response to the event. Cell phone numbers for City staff are shared internally, and City email accounts are available for internal and external communication. Office numbers, cell phone numbers, and email addresses for key City staff are provided on the City's website. The City also communicates with the public through social media accounts.

5.1 Communication for Foreseeable Events

Water shortage may be foreseeable when the City conducts its Annual Assessment as described in Section 2.0. When the City determines the potential of a water shortage event, the City Council may declare a water shortage emergency by resolution and authorize shortage response actions.

The City will follow the communication protocols and procedures detailed below. The City may trigger any of these protocols at any water shortage stage.

1. If a water shortage emergency is anticipated, the City will coordinate interdepartmentally, with the region's water service providers, and with the County for the possible proclamation of a local emergency.
2. The City will schedule a City Council meeting in which the Annual Assessment findings and recommendations for a water shortage emergency and shortage response actions are presented.
3. The City will communicate conditions to the general public using some or all of the following options, as needed at the various shortage levels: press releases, radio/television coverage, social media posts, bill inserts, newsletters, and postings on the City's website. Public entities, such as Solano County, State Water Board, and Cal Water, and officials are informed of water shortage information via email.

5.2 Communication for Unforeseeable Events

Water shortages may occur during unforeseeable events such as earthquakes, fires, infrastructure failures, civil unrest, and other catastrophic events. The City's ERP provides specific communication protocols and procedures to convey water shortage contingency planning actions during these events. The City may trigger any of these communication protocols at any water shortage stage, depending on the event.

In general, communications and notifications should proceed along the chain of command. As described in the City's ERP, events causing a water shortage are significant enough to activate the Department Operations Center (DOC) or the City's Emergency Operations Center (EOC), led by the Incident Commander. Notification decisions will be made under the direction of the Incident Commander, who must verify and approve all information before the Communications/Media Coordinator releases it to the media and the public. Internal and external communications will be managed by the Communications/Media Coordinator, a role typically assigned to the Public Information Officer (PIO).



Water Shortage Contingency Plan

All City staff are provided with their communication responsibilities. Depending on the event, the City may designate someone other than the Communications/Media Coordinator as a spokesperson to interact with the media. The ERP also provides a list of relevant contacts to notify at the local, regional, and state level.

6.0 COMPLIANCE AND ENFORCEMENT

When a water shortage is anticipated, City Council will adopt a resolution declaring a water shortage emergency condition and the regulations and restrictions that should be enforced in response to the declared water shortage level.

Customer water use can be quantified and compared to determine their extent of compliance to water reduction requirements. The City may also become aware of non-compliance through its water waste reporting outreach or through staff inspections. Non-compliance is deemed a code violation. Under DMC §14.02.905, violators of water use restrictions may receive an administrative citation, which may include penalties up to \$500 for each day in which the violation occurs.

Provisions for administrative citations are provided in Chapter 1.07 and Chapter 9.01 Article VI of the DMC. The City may issue a written warning with the first offense, which identifies the violation, correction required, and a date by which the violation can be reasonably corrected. City Council may adopt a schedule of fines for violations associated with a water shortage condition. If one has not been established, the City may impose fines up to \$100 for the first violation, up to \$200 for the second violation of the same code section, and up to \$500 for each violation of the same code within one year.

Water users or property owners can appeal the violation by submitting a request for hearing within 30 days from the date of issuance of administrative citation. The appeal hearing shall be held before the hearing officer, and the appellant may present witnesses and evidence as desired. The decision of the hearing officer is final.

7.0 LEGAL AUTHORITIES

The City will be updating the DMC to support its water shortage contingency actions. DMC Chapter 14.02 provides general provisions for the City's water service. The Director of Utilities and the City Manager are authorized to administer, implement, and enforce provisions of the chapter. DMC §14.02.905 addresses water conservation and irrigation restrictions. DMC §14.02.910, Chapter 1.07, and Chapter 9.01 Article VI includes provisions for compliance and enforcement of its water use regulations, restrictions, and prohibitions.

When a water shortage is determined, the City will coordinate interdepartmentally, with the region's water service providers (including Cal Water), and with Solano County for the possible proclamation of a local emergency in accordance under California Government Code, California Emergency Services Act (Article 2, Section 8558).

In a duly noticed meeting, the City Council will determine whether a water shortage emergency condition exists and, if so, the degree of the emergency and what regulations and restrictions should be enforced in response to the shortage. The City shall declare a water shortage emergency in accordance with CWC Chapter 3 of Division 1.



Water Shortage Contingency Plan

California Water Code Division 1, Section 350

...The governing body of a distributor of a public water supply...shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

The water shortage emergency declaration triggers communication protocols described in Section 5.0 and compliance and enforcement actions described in Section 6.0.

8.0 FINANCIAL CONSEQUENCES OF WSCP

The City's water operations are organized as an Enterprise Fund in which the costs of providing goods or services to the general public on a continuing basis are financed or recovered primarily through user charges. The City completed a multi-year water rate study in 2018 and adopted and implemented updated water rates starting Fiscal Year 2019. However, the updated water rates were repealed by general election on November 3, 2020. The repeal of these rates has created economic hardship for City water operations. The City is considering options for resolving the imbalance of revenues and expenditures. The City is currently conducting a water rate assessment. Results from the assessment show that the City is underfunded at a global level. Examples of how the City is underfunded is for actions such as providing public safety, providing clean water, mitigating the consequences of drought or fighting fires. The City's water rates consist of fixed charge and volumetric charge. The water rate structure for the volumetric charge consists of three tiers for single-family residential customers and uniform rates for all other customers. The financial stability of the City will be vulnerable with the implementation of the WSCP.

During times of drought when the City may implement its WSCP, water shortage actions may result in reduced water usage, and accordingly, reduced operating revenues. Operating expenses may be reduced due to lower customer water demands that result in decreased water production (i.e., pumping less groundwater). Implementation of Stage 4 or higher is expected to decrease operating revenues up to 50 percent.

Expenditure impacts, resulting from implementation of the WSCP, may include additional costs to provide increased outreach to customers about water conservation, purchase more expensive water supplies, and conduct compliance inspections and enforcement associated with water use restrictions. The City may consider implementing drought rates to maintain financial stability. The goal of the drought rates is to recover the temporary loss of revenue due to reduction of water sales during a period of drought and offset increased costs associated with enforcing compliance with water use restrictions. Drought rates also encourage water use conservation.

In addition to the rate adjustments, the City may need to defer projects from its capital improvement program to fund the water shortage actions in the WSCP. The City does not have a separate water shortage contingency fund in case a water shortage was declared.

9.0 MONITORING AND REPORTING

Meter readings are an important tool to help the City adjust public outreach, enforcement, and other water shortage response actions. The City has meters at its water sources (groundwater production wells)



Water Shortage Contingency Plan

and meters all its water customers. Although customers' water meters can be read at any time, the City has this meter reading scheduled monthly to track the extent of customers' compliance with the City's water use restrictions. Water production information may be read daily.

At the time of preparation of this WSCP, the State Water Resources Control Board is preparing regulations for monthly reporting of water production and other uses, along with associated enforcement metrics. The City regularly records its water meter readings ensuring that the City will be able to comply with upcoming reporting requirements.

10.0 WSCP REFINEMENT PROCEDURES

This WSCP is an adaptive management plan. It is subject to refinements as needed to ensure that the City's shortage response actions and mitigation strategies are effective and produce the desired results. Based on monitoring described in Section 9.0 and the need for compliance and enforcement actions described in Section 6.0, the City may adjust its response actions and modify its WSCP. The City may also modify its WSCP based on improvements identified through systematic monitoring or feedback from City staff and customers as discussed below. When a revised WSCP is proposed, the revised WSCP will undergo the process described in Section 12.0 for adoption by the City Council and distribution to Solano County, local water purveyors, the City's customers, and the general public.

10.1 Systematic Monitoring

The City will monitor meters at its water sources to evaluate the overall effectiveness of its response actions in meeting the declared water shortage stage. Should overall demands fall short of the goals of the declared water shortage stage, the City can increase the intensity of public outreach for water conservation and the extent of enforcement of water use restrictions. Conversely, should overall demands meet or exceed the goals of the declared water shortage stage, the City can decrease the intensity of public outreach for water conservation and the extent of enforcement of water use restrictions.

The City may implement operational changes in combination with enforcement of its water use restrictions and prohibitions to meet the objectives of the water shortage stage while maintaining overall public health and safety.

10.2 Feedback from City Staff and Customers

Feedback from City staff and the public is important in refining or incorporating new actions. The City seeks input from staff who interface with customers to gauge the effectiveness of its response actions and solicit response action ideas.

Customer water meter data may be evaluated for each customer sector or each individual customer. The City tracks water use violations and may evaluate their frequency to determine restrictions that customers may not be able to meet. This evaluation may also show water demand reduction actions that customers can implement effectively.

The City seeks input from its customers and the general public through its website, through public hearings, and through regularly scheduled City Council meetings.



Water Shortage Contingency Plan

11.0 SPECIAL WATER FEATURE DISTINCTION

The City distinguishes special water features, such as decorative fountains and ponds, differently from pools and spas. Special water features are regulated separately under DMC §14.02.905. The use of potable water for outdoor fountains or decorative water feature is prohibited, except where water is recirculated.

12.0 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

This WSCP is adopted concurrently with the City's 2020 UWMP, by separate resolution. Prior to adoption, a duly noticed public hearing was conducted. An electronic copy of this WSCP will be submitted to DWR within 30 days of adoption.

No later than 30 days after adoption, a copy of this WSCP will be available at the City's offices. A copy will also be provided to Solano County. An electronic copy of this WSCP will also be available for public review and download on the City's website, www.cityofdixon.us.

The City's WSCP is an adaptive management plan and is subject to refinements as needed to ensure that the City's shortage response actions and mitigation strategies are effective and produce the desired results. When a revised WSCP is proposed, the revised WSCP will undergo the process described above for adoption by City Council and distribution to Solano County, the City's customers, and the general public.

WSCP - Appendix A

Emergency Intertie Agreement with Cal Water

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COPY

**AGREEMENT FOR INTERCONNECTION
FOR EMERGENCY WATER SUPPLY**

THIS AGREEMENT entered into this 27th day of August 2014, by and between the **CITY OF DIXON**, a Municipal Corporation of the State of California, hereinafter referred to as "CITY", and **CALIFORNIA WATER SERVICE COMPANY**, a California Corporation, hereinafter referred to as "CWS", who, for valuable consideration, receipt of which is hereby acknowledged, do agree as follows:

WITNESSETH:

WHEREAS, both parties hereto are each engaged in the supply of water in the City of Dixon, County of Solano, State of California;

WHEREAS, CITY serves potable water to a portion of the City of Dixon, as said service area is shown on Exhibit "A", which is attached hereto and incorporated herein by reference;

WHEREAS, CWS serves potable water to a portion of the City of Dixon, as said service area is shown on said Exhibit "A";

WHEREAS, in anticipation of possible emergency or disaster situations, the parties believe it is a wise precaution to provide for interconnection of the water system of CITY with the water system of CWS, with the objective that water can be supplied by either party to the other party upon a limited and emergency basis;

WHEREAS, a similar agreement was originally entered into between Dixon-Solano Municipal Water Service and/or Dixon-Solano Water Authority in November 1994 with a second agreement in October 2004, a modification to the October 2004 agreement in May 2005 and a superseding modification in March 2006;

NOW, THEREFORE, the parties, for and in consideration of the mutual agreements and covenants contained in this Agreement, do agree as follows:

A. Term:

This Agreement shall become effective on the date above entered and shall

continue in full force and effect until terminated by either party with sixty (60) days written notice.

B. Duties and Obligations:

1. The water system of CITY shall be connected to the water system of CWS at the following three (3) locations:
 - a. The west side of North First Street, between Regency Parkway and Stratford Avenue, at the southeast corner of Assessor's Parcel Number 113-112-11, as shown on Exhibit "B", which is attached hereto and incorporated herein by reference.
 - b. The north side of Rehrmann Drive, east of Lynd Way at the southwest corner of Assessor's Parcel Number 113-260-12, as shown on Exhibit "C", which is attached hereto and incorporated herein by reference.
 - c. The east side of South First Street (AKA: Highway 113), approximately 690 feet south of Country Faire Drive at the southernmost service area boundary of CWS, as shown on attached drawing and incorporated herein as reference Exhibit "E".
2. CWS constructed said interconnections as per the details shown on Exhibits "B", "C" and "D", which is attached hereto and incorporated herein by reference. The intertie on South First Street, shown on Exhibit "E" was received via a main extension agreement with Pulte Homes.
3. All costs associated with the original installation of the interconnections were subject to the conditions established under a prior agreement between CWS and Dixon-Solano Municipal Water Service, a Joint Exercise of Powers Agreement between CITY and Solano Irrigation District.
4. CITY will own, operate, and maintain the connection from the CITY water main up to the point shown on Exhibit "D", and CWS will own, operate, and maintain the connection from the CWS water main up to the point shown on attached Exhibit "D" and Exhibit "E".

5. The parties shall maintain the interconnection located on South First Street, south of Country Faire Drive, in the closed position consistent with the terms of this Agreement. In the event either party shall require supplemental water for a limited period of time, due to emergency or disaster, failure of water supply, power failure for an extended period of time, mechanical failure of pumps and/or a major pipeline break, that party shall have the right to obtain water from the other party, on a two hour notification and, to the extent the supplying party is able to provide such water in view of its circumstances and demands at the time of the request. However, nothing shall prevent either party from activating the connection in less than two hours if the other party has been properly notified and has declared that it is ready to start delivery.
6. Nothing herein shall be deemed to constitute a dedication of the water supply of either party to service the territory of the other party or to constitute a commitment to supply water to the other party as a regular customer. The obligation to supply water hereunder is limited to surplus water above and beyond that required to service the needs of the supplying party's regular customers and to a reasonable period of time to permit the party being supplied to effect repairs to its own facilities.
7. To compensate the party supplying water hereunder for its costs of operation, any party receiving water shall pay to the supplying party for all water delivered, as registered on the bi-directional meter at each interconnection, in accordance with the supplying party's then effective regular tariff schedule. Charges are to be made only for months in which water is actually delivered. Payment for said usage is to be made within thirty (30) days after receipt of bill. In the event conditions do not permit water usage to be metered, the amount of water delivered shall be estimated by the supplier.

C. Unauthorized Water Use:

Any water usage, during a period in which the receiving party has not received the

prior authorization of the supplying party, shall be discontinued and the supplying party shall have the option of unilaterally terminating this Agreement. This option shall expire thirty (30) days after the supplying party discovers the unauthorized use.

D. Water Entitlements:

This Agreement shall not affect, alter, or modify the water entitlements of either party under any other agreement or arrangement now existing.

E. Indemnification:

1. It is agreed that CITY shall defend, hold harmless, and indemnify CWS, its officers, employees, agents and consultants from any and all claims for injuries or physical and financial damage to persons and/or property, which arise out of the terms and conditions of this Agreement and which result from the negligent acts or omissions of CITY, its officers, employees, agents and consultants.
2. It is agreed that CWS shall defend, hold harmless, and indemnify CITY, its officers, employees, agents and consultants from any and all claims for injuries or physical or financial damage to persons and/or property, which arise out of the terms and conditions of this Agreement and which result from the negligent acts or omissions of CWS, its officers, employees, agents and consultants.
3. In the event of concurrent negligence of CITY, its officers and/or employees, and CWS, its officers, and/or employees, the liability for any and all claims for injuries or damages to persons and/or property which arise out of such concurrent negligence shall be apportioned according to the California theory of comparative negligence.
4. It is agreed that since the pressures in each water system are sufficiently close to allow direct meter connection, pressure reducing or regulating equipment is not needed to protect each system from variations in pressure between and within the other system. Therefore it is agreed as follows:

- a. CITY shall defend, hold harmless, and indemnify CWS, its officers, employees, agents and consultants from any and all claims for injuries or damage to persons and/or property which arise out of the pressure of water served by CWS to CITY under the terms of this Agreement.
- b. CWS shall defend, hold harmless, and indemnify CITY, its officers, employees, agents and consultants from any and all claims for injuries or damage to persons and/or property which arise out of the pressure of water served by CITY to CWS under the terms of this Agreement.

F. Severability:

Should any part, term, or provision of this Agreement be decided by the courts to be illegal or in conflict with any law of the State of California, or otherwise rendered unenforceable or ineffectual, this Agreement shall be null and void.

G. Amendment of Agreement:

1. This Agreement may be amended by a written supplemental Agreement executed by both parties.
2. This agreement as to CWS, shall be subject to such changes or modifications as the Public Utilities Commission of the State of California may, from time to time direct, in the exercise of its jurisdiction. CWS shall notify CITY of such changes that are mandated by the California Public Utilities Commission. If CITY believes that such change unreasonably, adversely, or significantly affects its rights, duties and obligations under this Agreement, then CITY may terminate this Agreement upon ten (10) days written notice.

H. Successors and Assignment:

This Agreement shall be binding upon and shall inure to the benefit of the successors of each party. Either party may assign any right or obligation under this Agreement with the approval of the other party.

I. Time:

Time is of the essence in the performance of this Agreement and of every term and provision thereof.

J. Notification:

Any notice, which it is herein provided may or shall be given by either party to the other, shall be delivered to the party to whom such notice is given at the following respective addresses:

CITY:

City of Dixon
600 East A Street
Dixon, CA 95620
Attn: Jim Lindley, City Manager

Churchwell White, LLP
1204 K Street, Suite 710
Sacramento, CA 95814
Attn: Douglas White, Esq.

CWS:

California Water Service Company
1720 North First Street San Jose, CA 95112
Attn: _____

Either party may change the address or addressee to which notice shall thereafter be delivered, by notice given as provided herein.

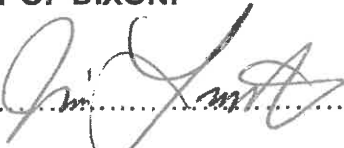
K. Entire Agreement:

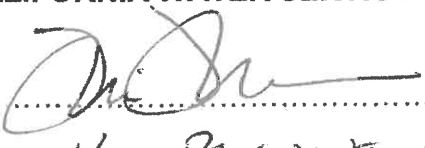
There are no other terms, conditions, promises, or warranties, either implied or explicit, or promises other than are contained within the written terms of this Agreement. This Agreement is whole and entire and may not be altered except by a writing executed by each party hereto.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the date above entered:

CITY OF DIXON:

CALIFORNIA WATER SERVICE COMPANY

By: 
Title: CITY MANAGER

By: 
Title: V. P. PRESIDENT OPERATIONS

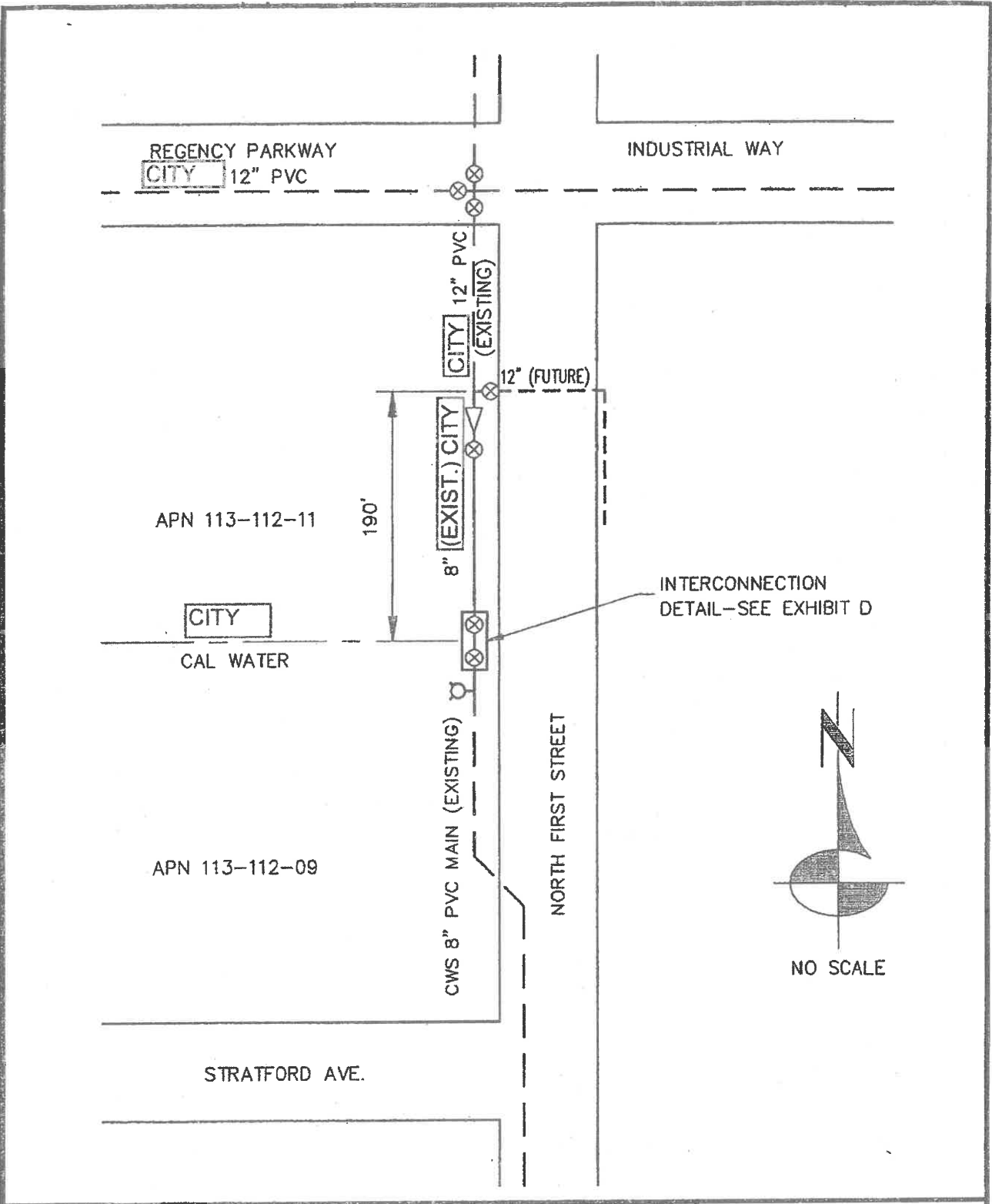


EXHIBIT B

EMERGENCY INTERCONNECTION OF CITY AND CWS WATER SYSTEMS IN NORTH FIRST STREET

DATE: 10-18-94
UPDATED: AUGUST 2014

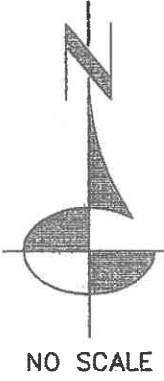
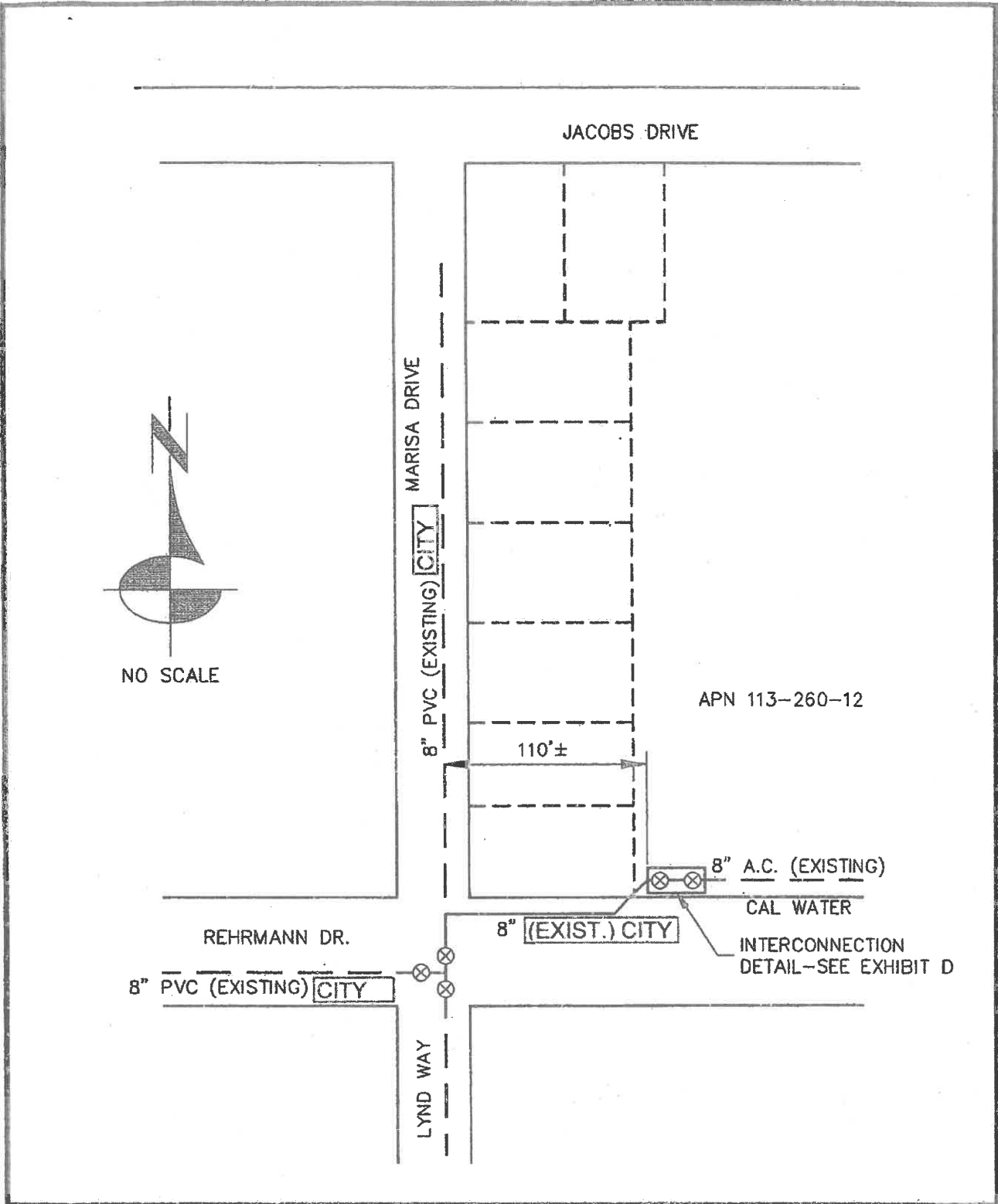
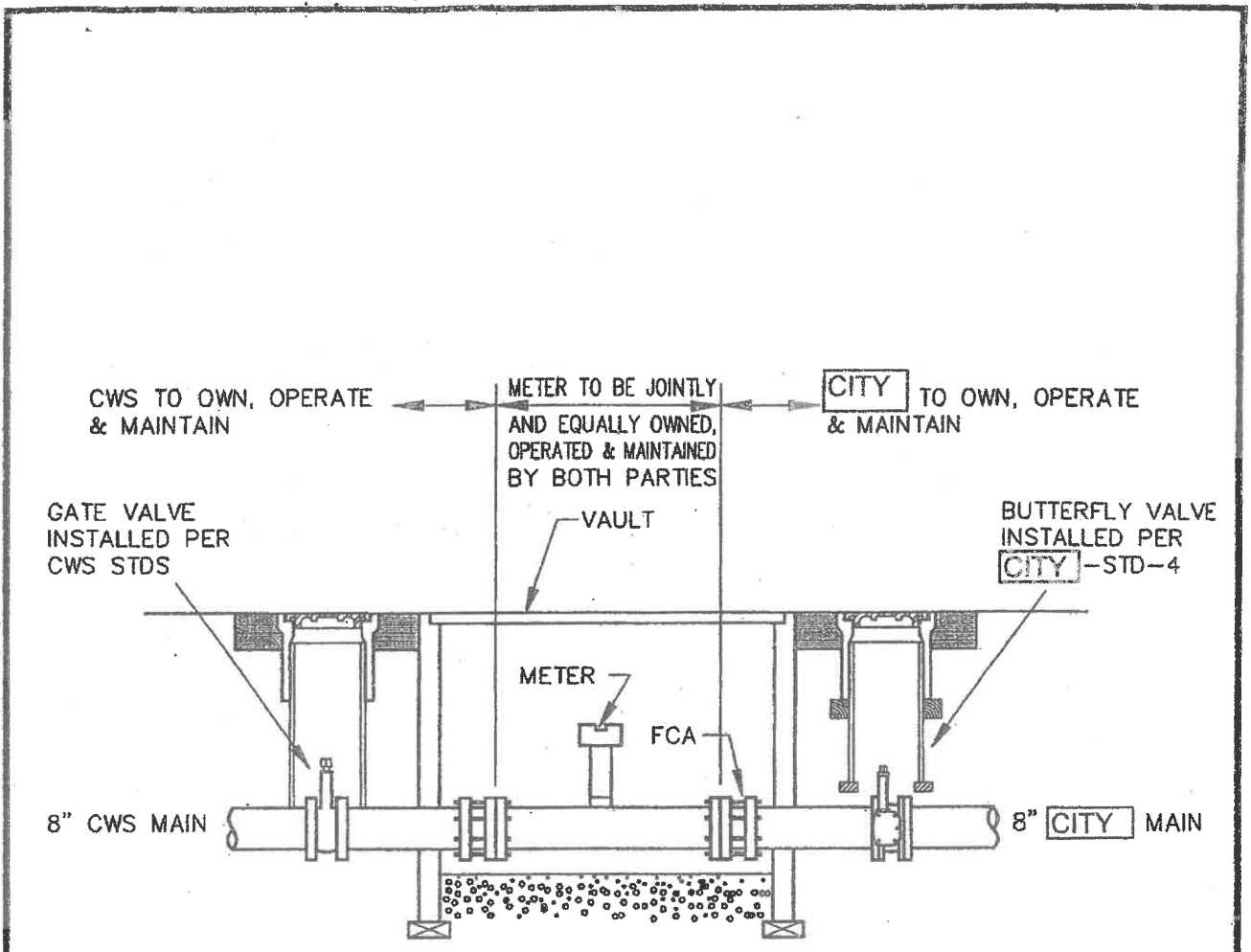


EXHIBIT C

EMERGENCY INTERCONNECTION OF CITY
 AND CWS WATER SYSTEMS
 IN REHRMANN DRIVE

DATE: 10-18-94
 UPDATED: AUGUST 2014



Extend mains to connect to new facilities.

Meter: Water Specialities Model ML-04 standard construction with CN-02 head extension, CN-04 flowrate indicator and totalizer. Use 6" meter at both locations.

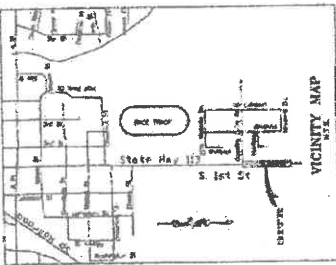
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AGREEMENT NO. 14-033

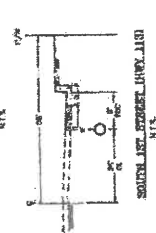


NOTES:

1. Installation of all materials and workmanship shall conform to the standards of the Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, 1994 Edition, as amended.
2. All materials and workmanship shall be subject to inspection and approval by the Engineer.
3. The Contractor shall be responsible for obtaining all necessary permits and licenses for the work.
4. The Contractor shall be responsible for obtaining all necessary easements and rights-of-way for the work.
5. The Contractor shall be responsible for obtaining all necessary utility information and for protecting all existing utilities.
6. The Contractor shall be responsible for obtaining all necessary traffic control and for maintaining access to all adjacent properties.
7. The Contractor shall be responsible for obtaining all necessary safety measures and for maintaining a safe work area.
8. The Contractor shall be responsible for obtaining all necessary environmental measures and for protecting the environment.
9. The Contractor shall be responsible for obtaining all necessary quality control measures and for maintaining the quality of the work.
10. The Contractor shall be responsible for obtaining all necessary record drawing measures and for maintaining the accuracy of the drawings.



TYPICAL STREET CROSS SECTION



SOUTH 1ST STREET CROSS SECTION



PIPELINE CROSSING INFORMATION



BILL OF MATERIALS

12" DIA. 12" WALL PRECAST CONCRETE PIPE (100' LENGTH)

18" THICK BEDDING (100' LENGTH)

12" THICK COMPACTED FILL (100' LENGTH)

12" THICK CURB (100' LENGTH)

12" THICK SIDEWALK (100' LENGTH)

12" THICK ASPHALT (100' LENGTH)

12" THICK GRAVEL (100' LENGTH)

12" THICK SAND (100' LENGTH)

12" THICK SOIL (100' LENGTH)

12" THICK VEGETATION (100' LENGTH)

12" THICK UTILITIES (100' LENGTH)

12" THICK STRUCTURES (100' LENGTH)

12" THICK SIGNAGE (100' LENGTH)

12" THICK LIGHTING (100' LENGTH)

12" THICK FURNITURE (100' LENGTH)

12" THICK LANDSCAPE (100' LENGTH)

12" THICK OTHER (100' LENGTH)

SUMMARY

8" DIA. 12" WALL PRECAST CONCRETE PIPE (100' LENGTH)

18" THICK BEDDING (100' LENGTH)

12" THICK COMPACTED FILL (100' LENGTH)

12" THICK CURB (100' LENGTH)

12" THICK SIDEWALK (100' LENGTH)

12" THICK ASPHALT (100' LENGTH)

12" THICK GRAVEL (100' LENGTH)

12" THICK SAND (100' LENGTH)

12" THICK SOIL (100' LENGTH)

12" THICK VEGETATION (100' LENGTH)

12" THICK UTILITIES (100' LENGTH)

12" THICK STRUCTURES (100' LENGTH)

12" THICK SIGNAGE (100' LENGTH)

12" THICK LIGHTING (100' LENGTH)

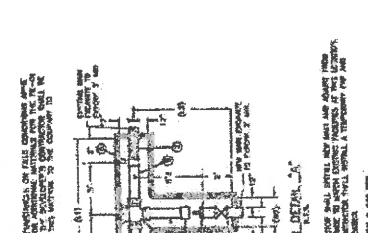
12" THICK FURNITURE (100' LENGTH)

12" THICK LANDSCAPE (100' LENGTH)

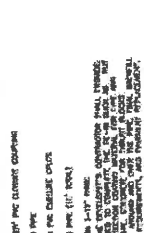
12" THICK OTHER (100' LENGTH)

UPDATED AUGUST 2014

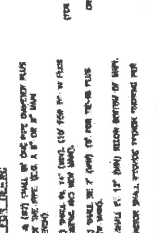
EXHIBIT E



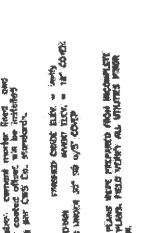
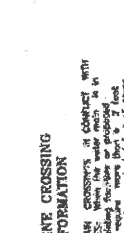
CAL WATER SERVICE AREA



TYPICAL MANHOLE DETAIL

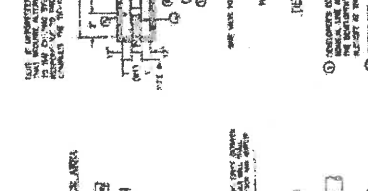


TYPICAL MANHOLE DETAIL

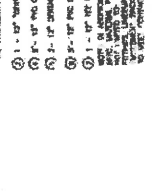


TYPICAL MANHOLE DETAIL

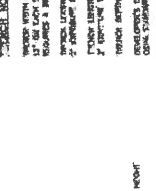
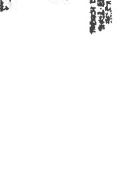
TYPICAL MANHOLE DETAIL



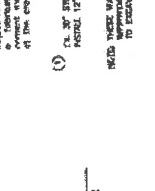
TYPICAL MANHOLE DETAIL



TYPICAL MANHOLE DETAIL

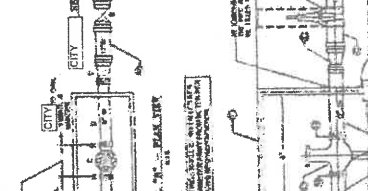


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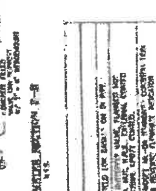


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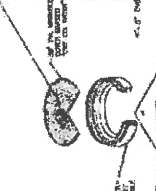
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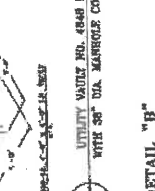
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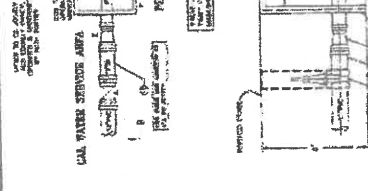


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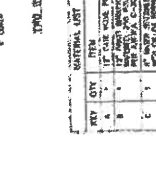


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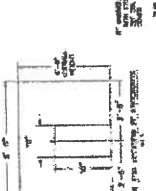
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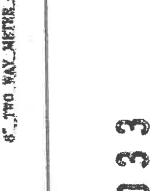
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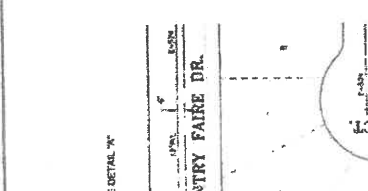


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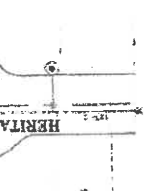


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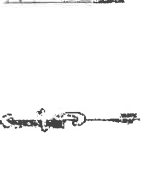
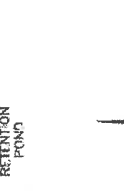
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TYPICAL MANHOLE DETAIL

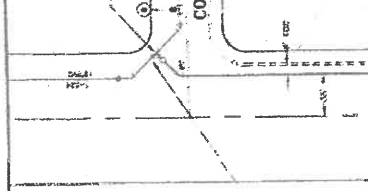


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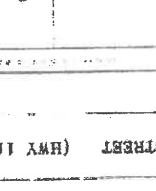


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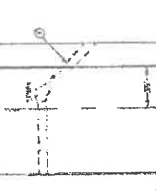
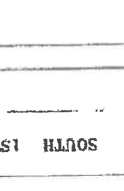
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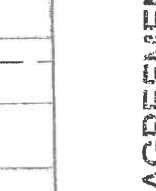
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TYPICAL MANHOLE DETAIL



TYPICAL MANHOLE DETAIL



TYPICAL MANHOLE DETAIL

TYPICAL MANHOLE DETAIL

AGREEMENT NO 14-033

8" DIA. MANHOLE WITH TUNNELER & FLOW RATE INDICATOR

DETAIL "B" WITH 36" DIA. MANHOLE COVER

SEE DETAIL "A" TWO WAY PETER EMERGENCY INTERCONNECT

LEGEND:

- 1. 12" DIA. 12" WALL PRECAST CONCRETE PIPE
- 2. 18" THICK BEDDING
- 3. 12" THICK COMPACTED FILL
- 4. 12" THICK CURB
- 5. 12" THICK SIDEWALK
- 6. 12" THICK ASPHALT
- 7. 12" THICK GRAVEL
- 8. 12" THICK SAND
- 9. 12" THICK SOIL
- 10. 12" THICK VEGETATION
- 11. 12" THICK UTILITIES
- 12. 12" THICK STRUCTURES
- 13. 12" THICK SIGNAGE
- 14. 12" THICK LIGHTING
- 15. 12" THICK FURNITURE
- 16. 12" THICK LANDSCAPE
- 17. 12" THICK OTHER

WSCP - Appendix B

Solano County MJHMP - Jurisdictional Annex:
City of Dixon

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SECTION 2

JURISDICTIONAL ANNEX:

City of Dixon



SOLANO COUNTY

MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN



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Solano County
Multi-Jurisdiction Hazard Mitigation Plan
CITY OF DIXON (DX.)
Municipal Annex

Adoption Resolution iv

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Adoption Resolution

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

ADOPTION RECORD TO BE INSERTED UPON COMPLETION.



Section 2. City of Dixon

2.1 Purpose

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

Hazard Mitigation Plan Points of Contact

Primary Point of Contact

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

Alternate Point of Contact

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

2.2 Planning Methodology

The City of Dixon followed the planning process detailed in Volume 1, Section 3, including participating in the County Hazard Mitigation Planning Committee (HMPC) and Steering Committee and formulating their own internal planning team to support the broader planning process. Internal planning participants, their positions, and how they participated in the planning process are shown in Table 2-1.

Table 2-1: Planning Committee Members

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

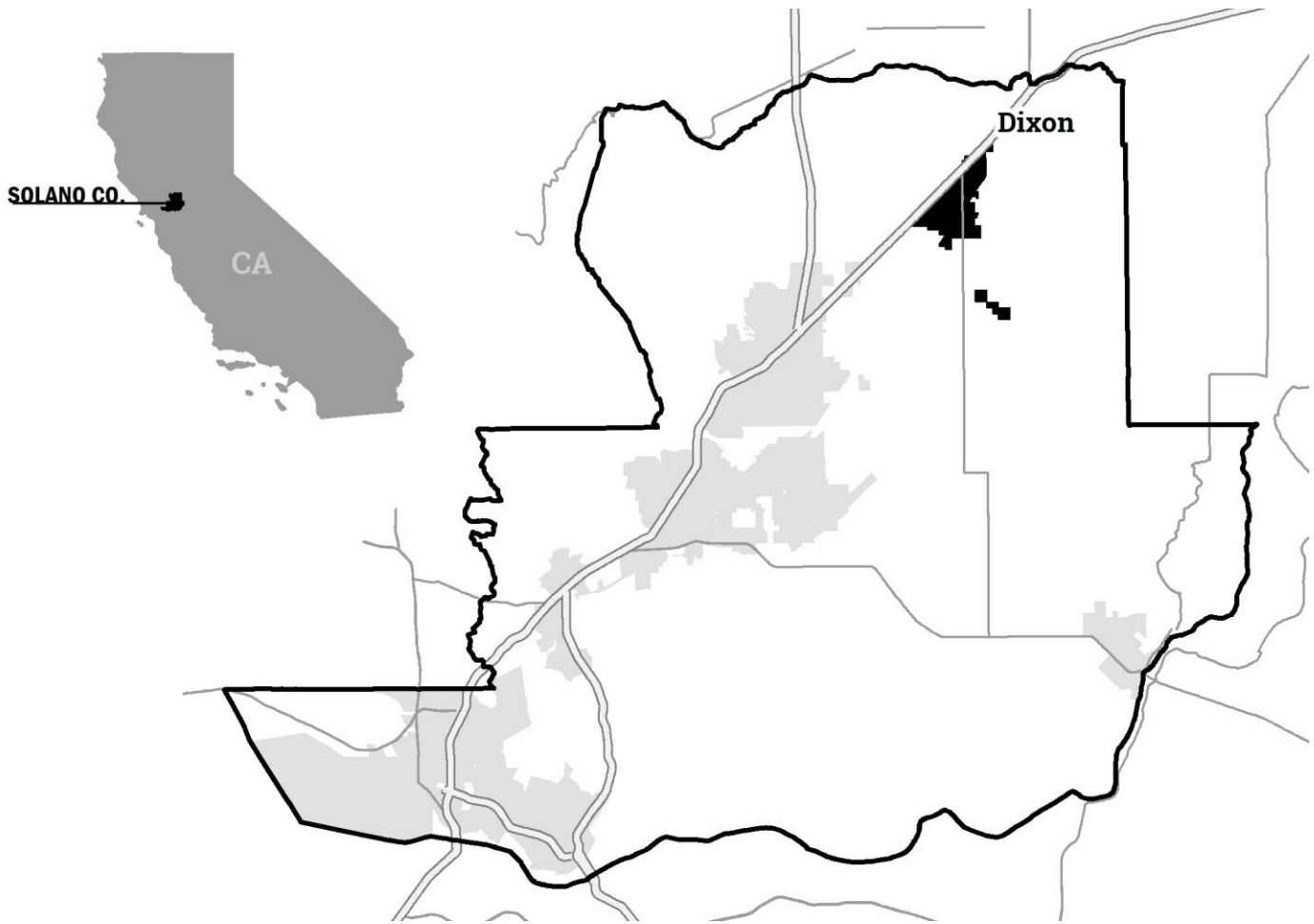


Figure 2-1: City of Dixon Location

2.3 What's New

The City of Dixon has not had a hazard mitigation plan since participating in the 2006 Association of Bay Area Governments MJHMP. Because the City's annex to the ABAG Plan is so old, the Planning Committee elected to not include any of the mitigation actions from the earlier plan in this MJHMP. Starting fresh will ensure that the City's mitigation strategy addresses its most pressing current vulnerabilities. The City's efforts to incorporate hazard mitigation into other planning mechanisms are documented in Section 2.5.1, the Capabilities Assessment.



2.3.1 Success Stories

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

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

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

2.4 Risk Assessment

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

2.4.1 Hazard Screening Criteria

Planning Team members from each participating jurisdiction collectively discussed which hazards should be profiled in the Plan and which should not. The results of that discussion can be found in Table 2-2. Detailed hazard profiles of the most significant County wide hazards are described in Section 4 of Volume 1. The Planning Team reviewed previously prepared hazard mitigation plans and other relevant documents to determine the realm of natural hazards that have the potential to affect the City of Dixon. Table 2-3 provides a crosswalk of hazards identified in Vol. 1 of this plan, the City of Dixon General Plan, and 2018 California State Hazard Mitigation Plan. The crosswalk was used to develop a preliminary hazards list, providing a framework for the Planning Team members to evaluate which hazards were truly relevant to the City of Dixon and which ones were not. Section 2.4.2 below describes the hazard risk ranking process that was performed by the planning team which prioritized hazards that are specifically relevant to the City of Dixon.



Table 2-2: County-Wide Hazard Prioritization

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



Table 2-3: City Document Review Crosswalk

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

2.4.2 Hazard Risk Ranking

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

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

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

2.4.3 Vulnerability Assessment

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



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

2.4.3.1 Risk Assessment

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

2.4.3.2 Exposure Maps and Damage Estimation Tables

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

- Figure 2-3: Dixon - FEMA Flood Risk Exposure
- Table 2-4: Dixon - Damage Estimate Summaries, 100 YR Flood
- Figure 2-4: Dixon - BAM 200-YR Flooding and Awareness Zones
- Figure 2-5: Dixon - Hayward Rodger's Creek EQ Scenario (M7.1)
- Table 2-5: Dixon - Hayward Roger's Creek Damage Estimation Summaries
- Figure 2-6: Dixon - Concord Green Valley EQ Scenario (M6.8)
- Table 2-6: Dixon - Concord Green Valley Damage Estimate Summaries
- Figure 2-7: Dixon – Areas with Potential for Liquefaction
- Figure 2-8: Dixon - 30-YR Normal Maximum Temperature for July
- Figure 2-9: Dixon - Average Annual Precipitation (1981-2010)
- Figure 2-10: Dixon - Average Annual Wind Speed (Power Class)
- Figure 2-11: Drought Severity Timeline - Suisun Bay
- Figure 2-12: Dixon - RCP Comparison



Risk Assessment Matrix Definitions

PROBABILITY RATING

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

PROBABILITY	Highly Likely	Highly likely - 100% annual probability. Or likely to occur every year in your lifetime.
	Likely	Likely - Between 10 and 100% annual probability. Or will occur several times in your lifetime.
	Possible	Possible - Between 1 and 10% annual probability. Or likely to occur some time in your lifetime.
	Unlikely	Unlikely - Less than 1% annual probability. Or unlikely but possible to occur in your lifetime.

IMPACT RATING

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

IMPACT			
Minor	Limited	Critical	Catastrophic
Minor - Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of critical facilities.	Limited - Minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.	Critical - Multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.	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.

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

Hazard definitions are included in Vol. 1 of this plan.

Hazard Information / Legend:



Climate Change is prioritized for all jurisdictions.

Sea-Level Rise is a subhazard of climate change for some jurisdictions (County, Vallejo, Benicia, Suisun City, Fairfield).



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



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

City Of Dixon Risk Matrix

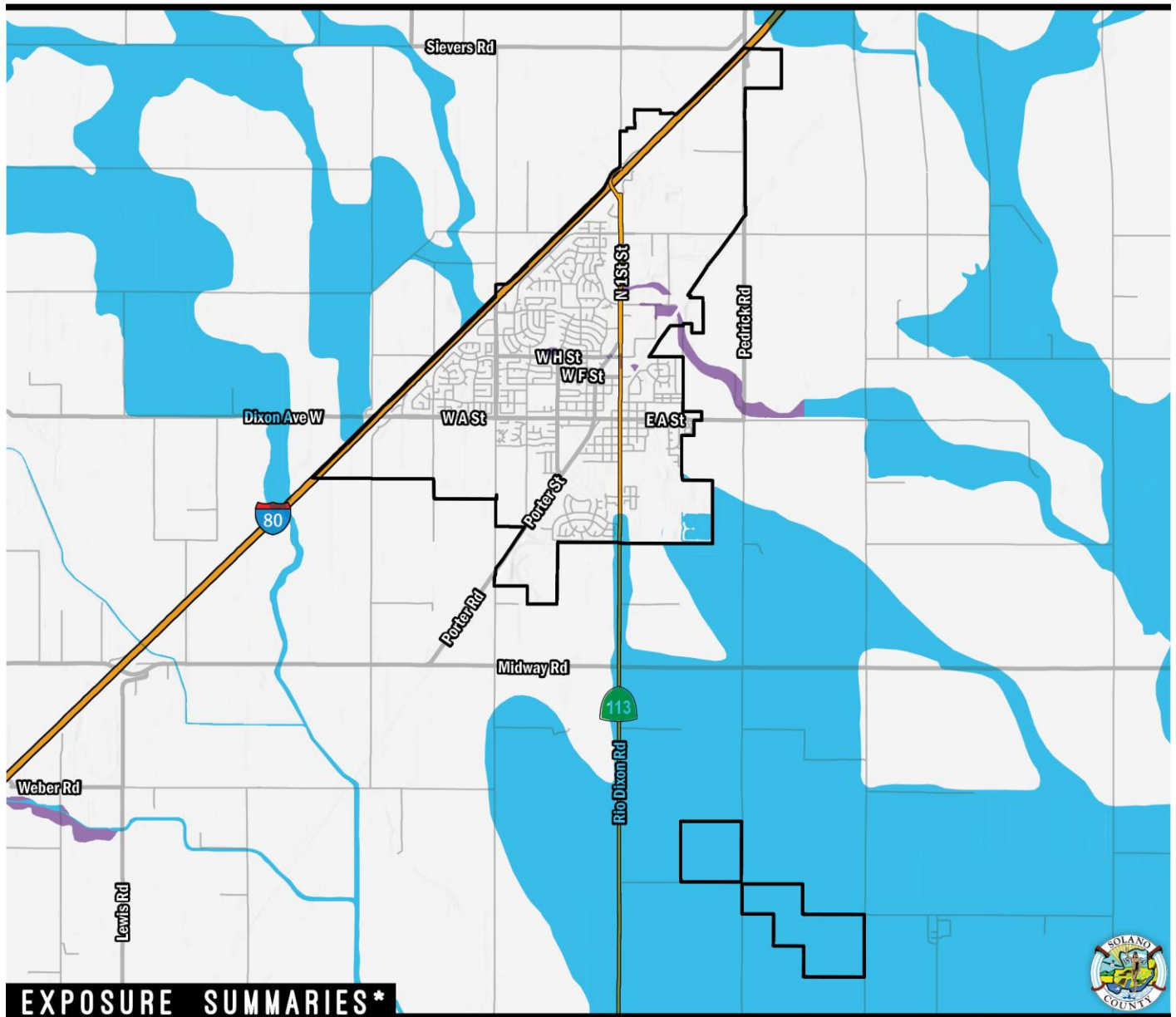
		IMPACT			
		Minor	Limited	Critical	Catastrophic
PROBABILITY	Highly Likely	Medium 	Extreme 	Extreme	Extreme
	Likely	Medium 	High 	High	Extreme
	Possible	Low 	Medium 	High 	High
	Unlikely	Low 	Low	Medium	Medium

Figure 2-2: City of Dixon Risk Assessment



FEMA FLOOD RISK EXPOSURE

DIXON



EXPOSURE SUMMARIES*

POPULATION COUNT
IN HAZARD AREA

Count	Exp. Rate**
199	1%
Count Includes:	100 + 500

PARCEL COUNT
IN HAZARD AREA

Count	Exp. Rate**
52	1%
Count Includes:	100 + 500

PARCEL VALUE
IN HAZARD AREA

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

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

CRITICAL INFRASTRUCTURE COUNTS
IN HAZARD AREA

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



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

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

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Figure 2-3: Dixon - FEMA Flood Risk Exposure



Table 2-4: Dixon - Damage Estimate Summaries, 100 YR Flood

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

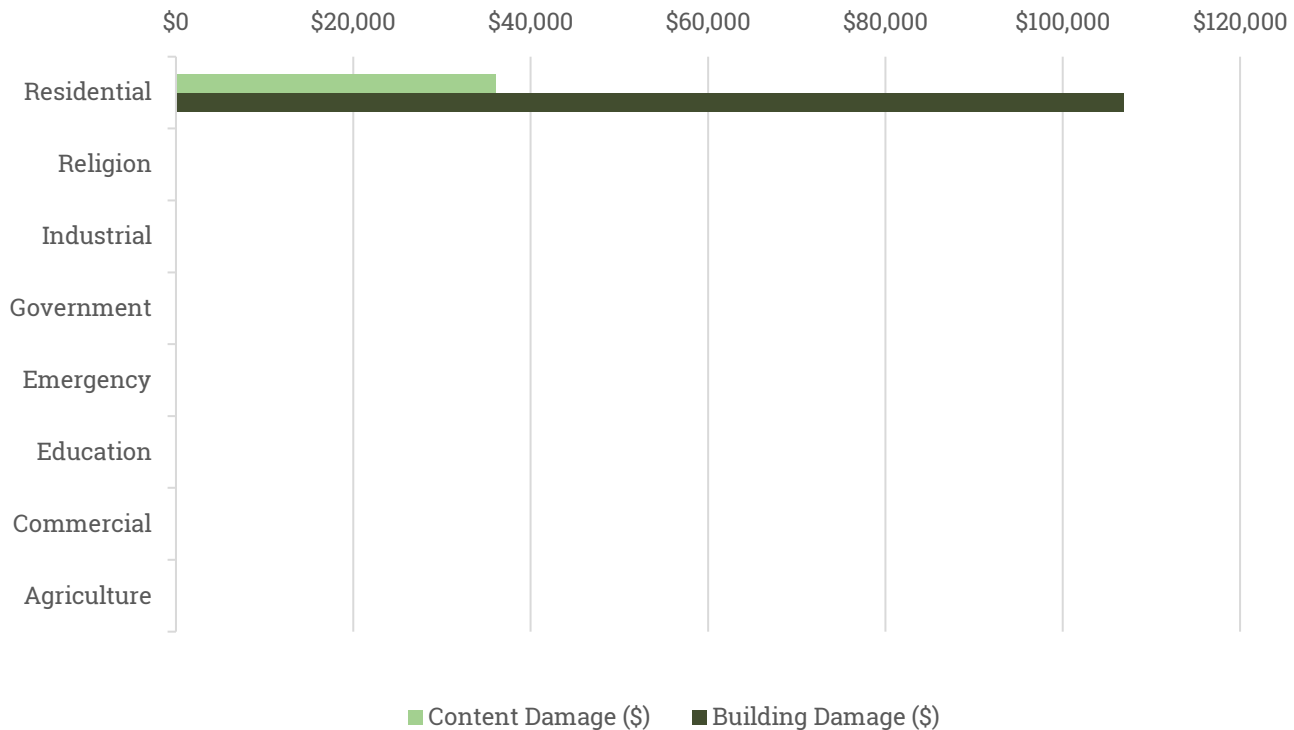
*School district asset information not available during time of Hazus analysis.

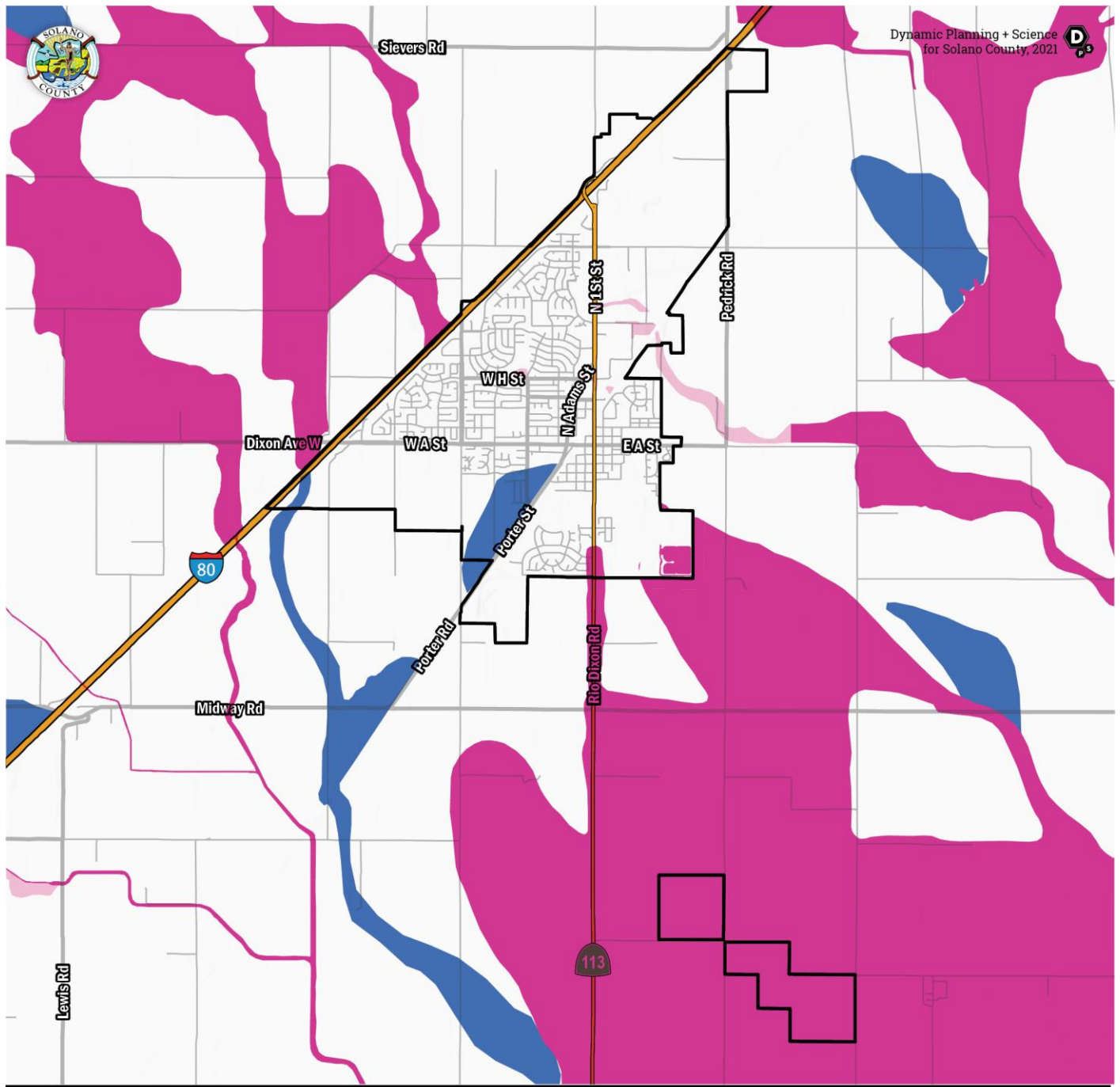
Note: Total Inventory Values

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

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

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





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BAM 200-YR FLOODING AND AWARENESS ZONES DIXON

*Data sources: DWR.

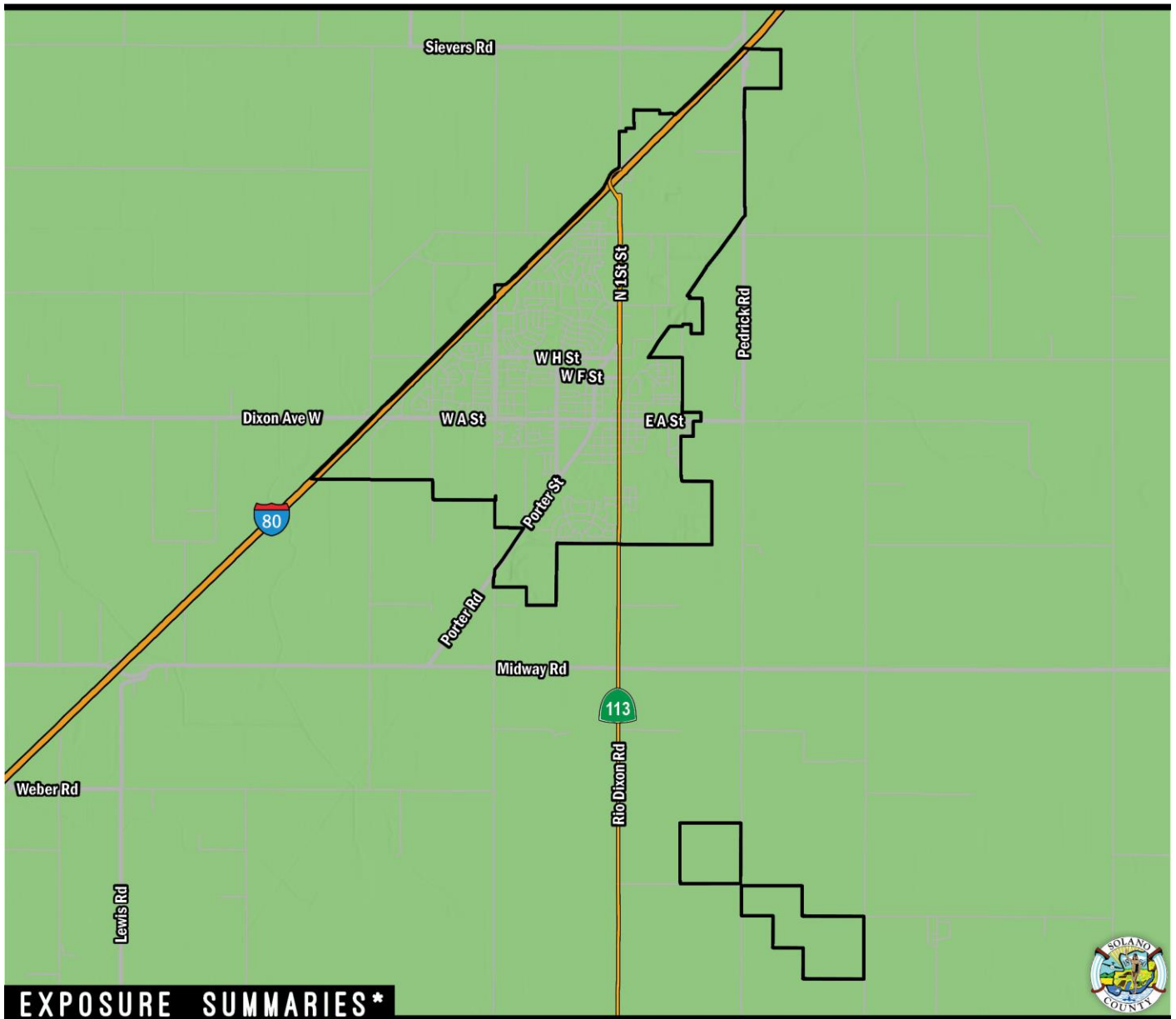
FEMA FLOOD ZONES		DWR AWARENESS ZONES	
100-YR (SFHA)	500-YR		
USACE SAC. SAN JOAQUIN R. COMPREHENSIVE STUDY			
100-YR	200-YR	500-YR	

Figure 2-4: Dixon - BAM 200-YR Flooding and Awareness Zones



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

DIXON



EXPOSURE SUMMARIES*

POPULATION COUNT
IN HAZARD AREA

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

PARCEL COUNT
IN HAZARD AREA

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

PARCEL VALUE
IN HAZARD AREA

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

CRITICAL INFRASTRUCTURE COUNTS
IN HAZARD AREA

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

Sum of Transportation & Lifeline Linear Mileage

MAP LEGEND



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

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

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Figure 2-5: Dixon - Hayward Rodger's Creek EQ Scenario (M7.1)



Table 2-5: Dixon - Hayward Roger's Creek Damage Estimation Summaries

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

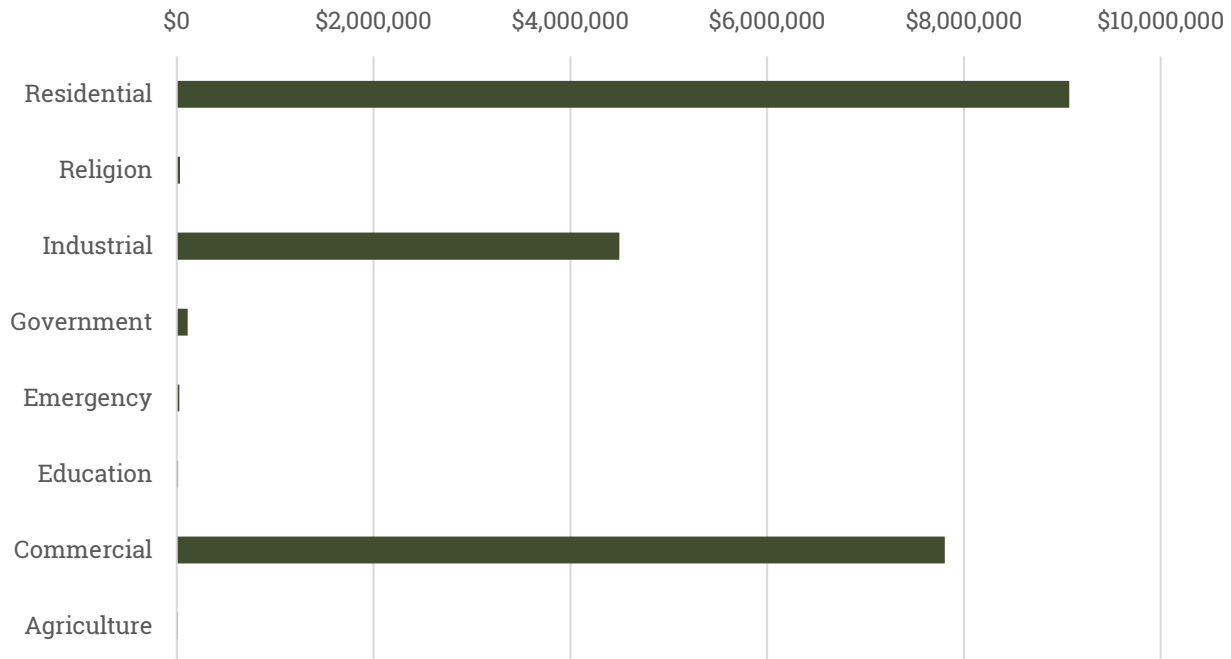
*School district asset information not available during time of Hazus analysis.

Note: Total Inventory Values

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

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

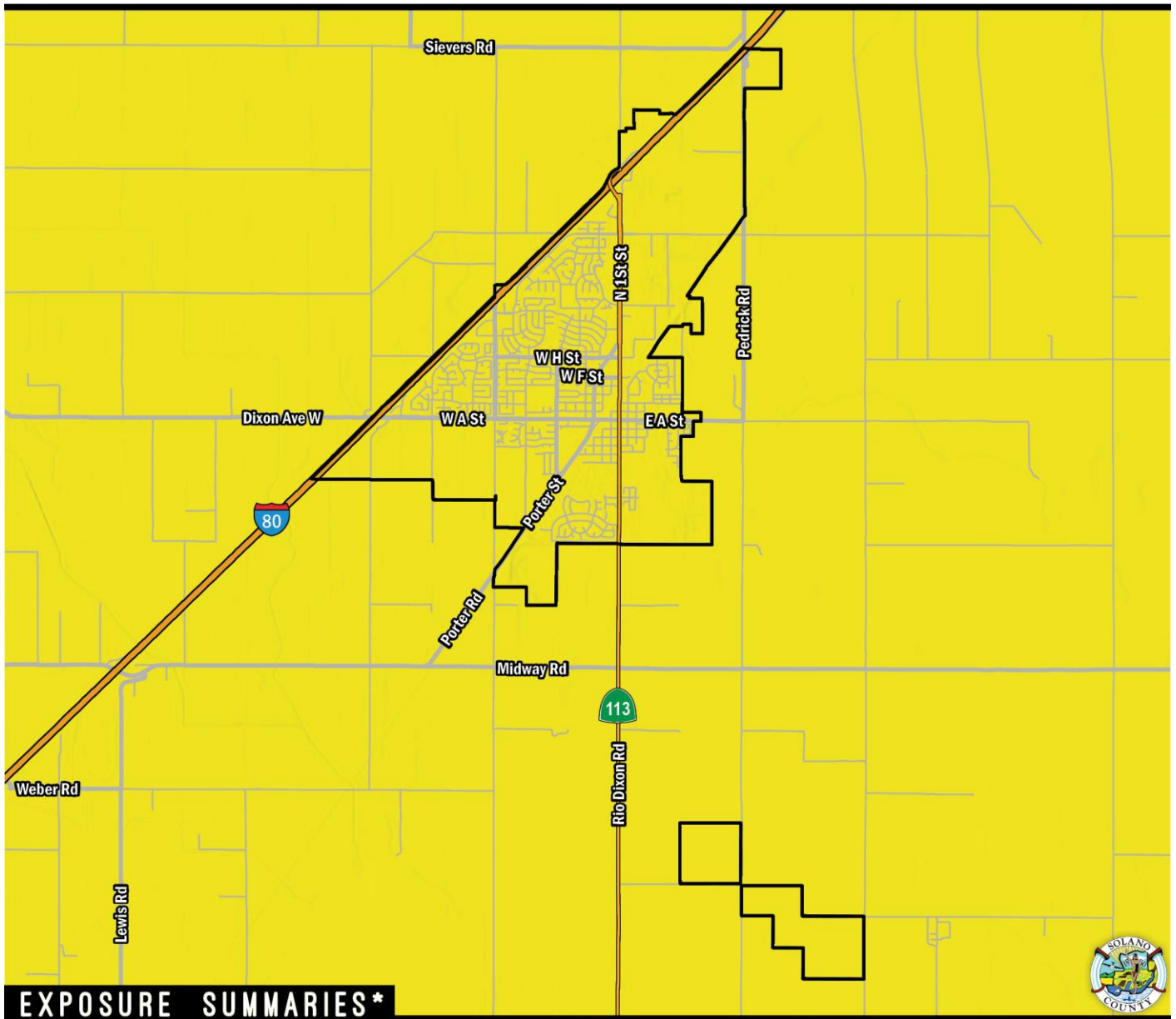
3 - Total Value = \$6,441,088,812





CONCORD-GREEN VALLEY EARTHQUAKE SCENARIO (M6.8)

DIXON



EXPOSURE SUMMARIES*

POPULATION COUNT IN HAZARD AREA	
Count	Exp. Rate**
19,759	100%
Count Includes: S+++E	

PARCEL COUNT IN HAZARD AREA	
Count	Exp. Rate**
5,610	100%
Count Includes: S+++E	

PARCEL VALUE IN HAZARD AREA	
Sum of Improvement Value	Exp. Rate**
\$3,436,676,008	100%
Sum of Content Value	
\$2,230,172,154	100%
Count Includes: S+++E	

CRITICAL INFRASTRUCTURE COUNTS IN HAZARD AREA			
Infrastructure Category	Count	Exp. Rate**	Count/Sum Includes:
Essential Facilities	2	100%	S+++E
High Potential Loss	206	100%	Sum of Transportation & Lifeline Linear Mileage
Transportation & Lifeline	9	100%	

MAP LEGEND

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

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

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

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Figure 2-6: Dixon - Concord Green Valley EQ Scenario (M6.8)



Table 2-6: Dixon - Concord Green Valley Damage Estimate Summaries

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

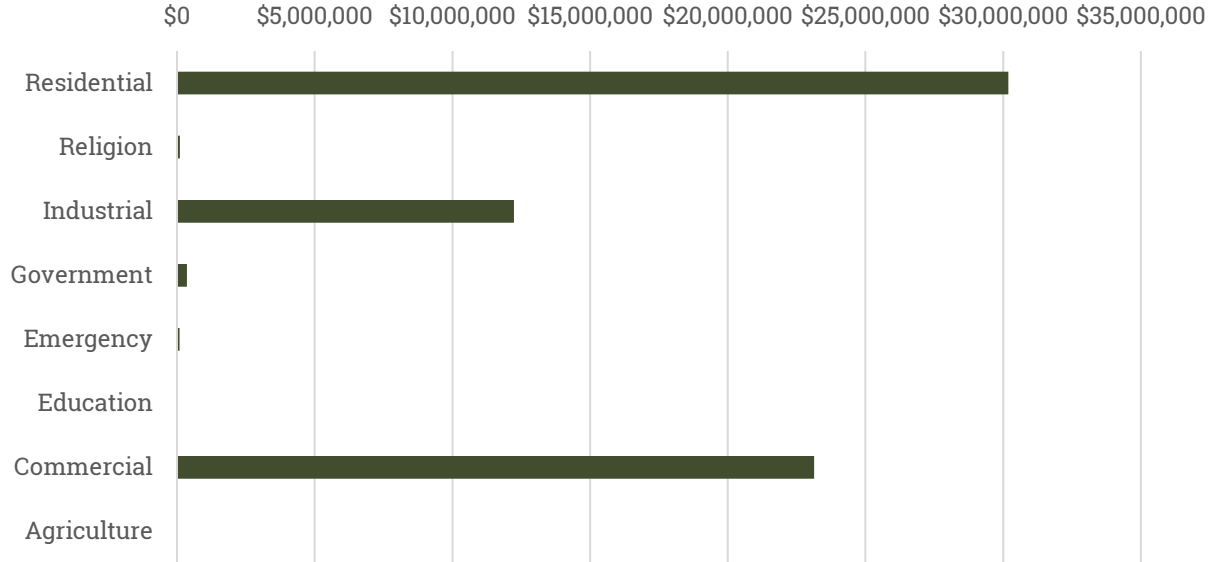
*School district asset information not available during time of Hazus analysis.

Note: Total Inventory Values

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

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

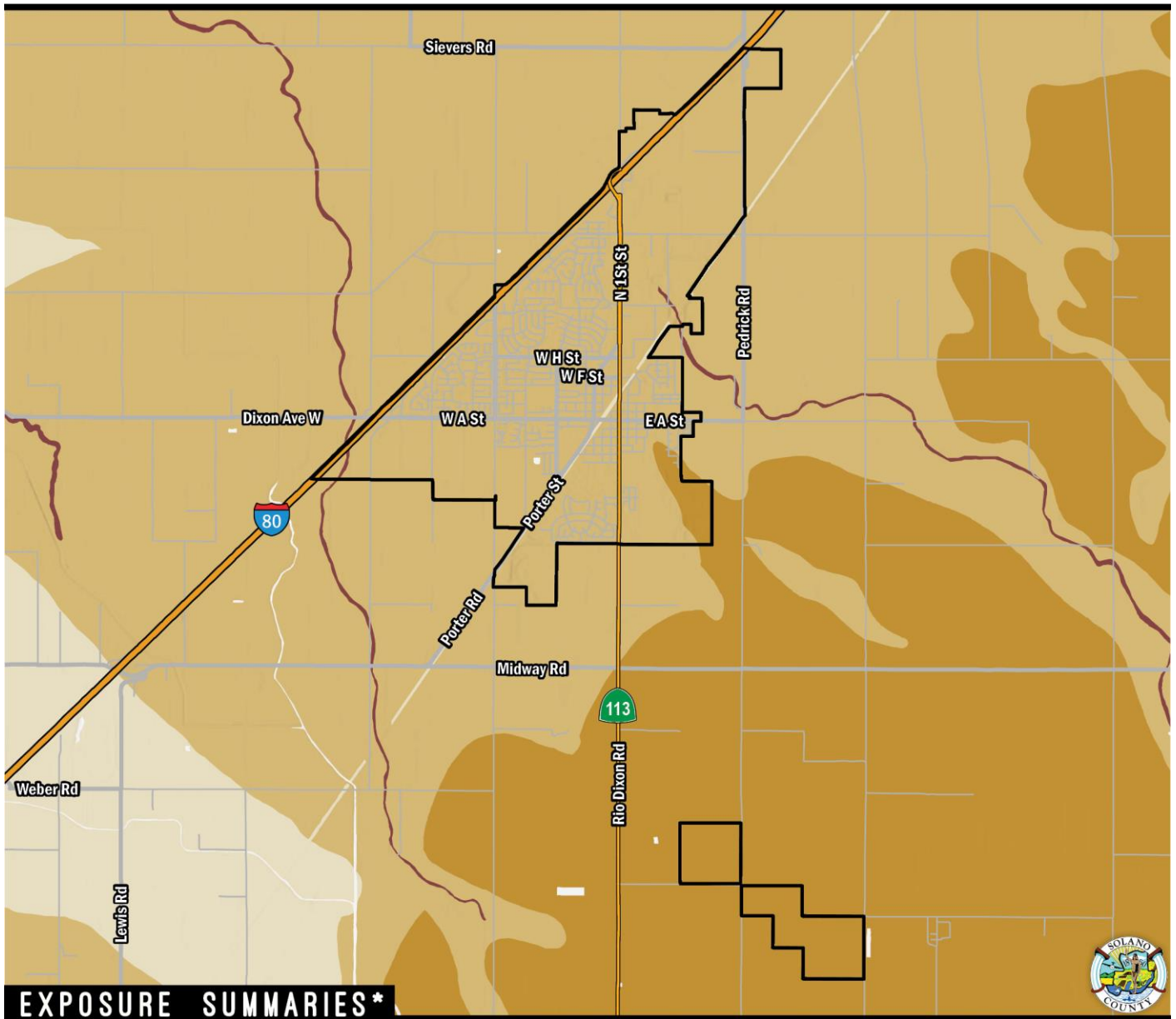
3 - Total Value = \$6,441,088,812





AREAS WITH POTENTIAL FOR LIQUEFACTION

DIXON



EXPOSURE SUMMARIES*

POPULATION COUNT IN HAZARD AREA		PARCEL COUNT IN HAZARD AREA		PARCEL VALUE IN HAZARD AREA		CRITICAL INFRASTRUCTURE COUNTS IN HAZARD AREA			
Count	Exp. Rate**	Count	Exp. Rate**	Sum of Improvement Value	Exp. Rate**	Infrastructure Category	Count	Exp. Rate**	Count/Sum Includes:
19,339	98%	5,609	100%	\$3,436,418,008	100%	Essential Facilities	2	100%	M H VH
Count Includes: M H VH		Count Includes: M H VH		Sum of Content Value		High Potential Loss	205	100%	Sum of Transportation & Lifeline Linear Mileage
				\$2,230,043,154	100%	Transportation & Lifeline	9	100%	106 87%
				Count Includes: M H VH					

MAP LEGEND

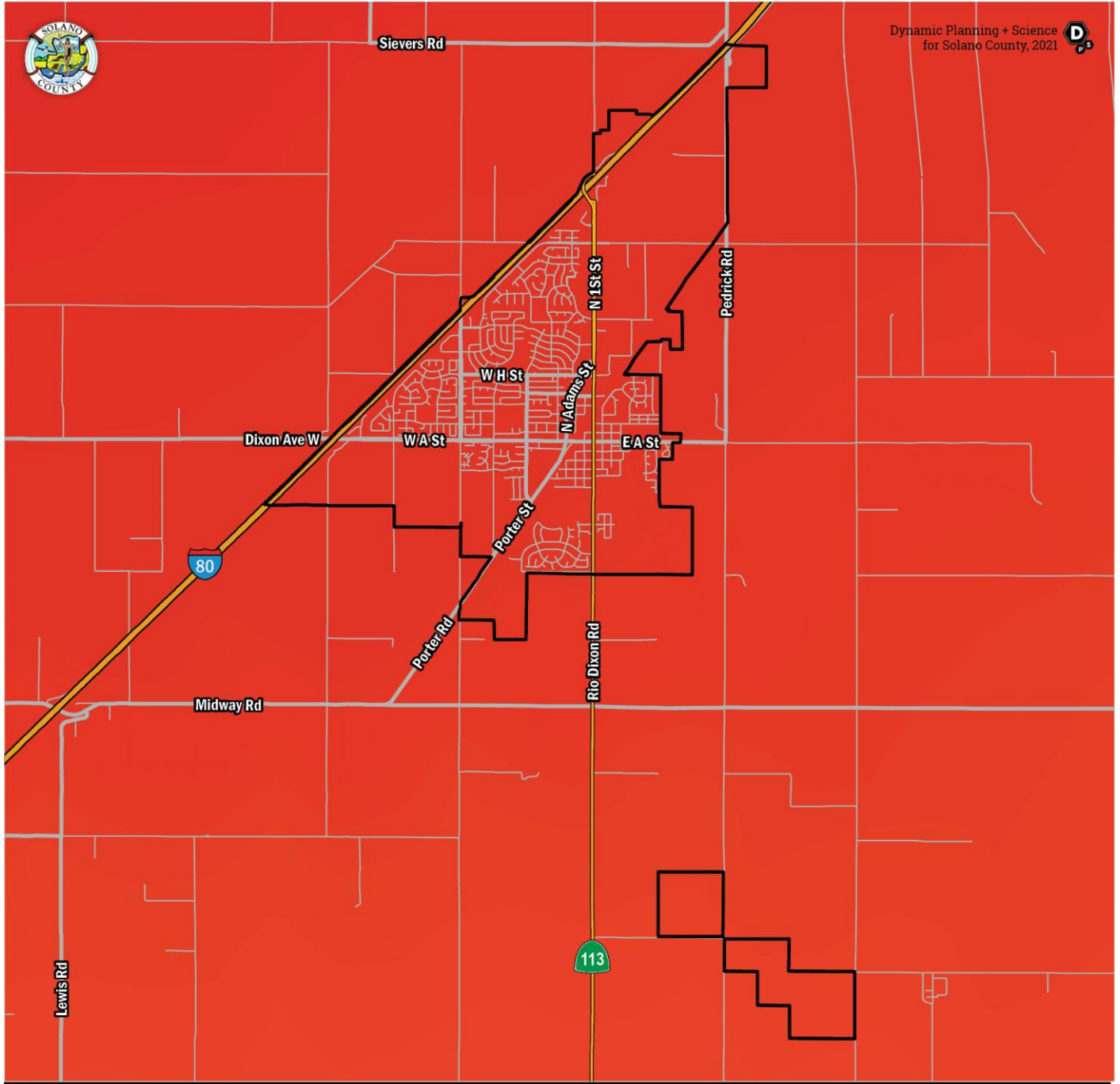
VL	L	M	H	VH
VERY LIGHT	LIGHT	MODERATE	HIGH	VERY HIGH

*Exposure summaries include medium, high, very high susceptibility. Hazard data source: USGS.

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

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Figure 2-7: Dixon – Areas with Potential for Liquefaction



30-YR NORMAL MAXIMUM TEMPERATURE FOR JULY DIXON

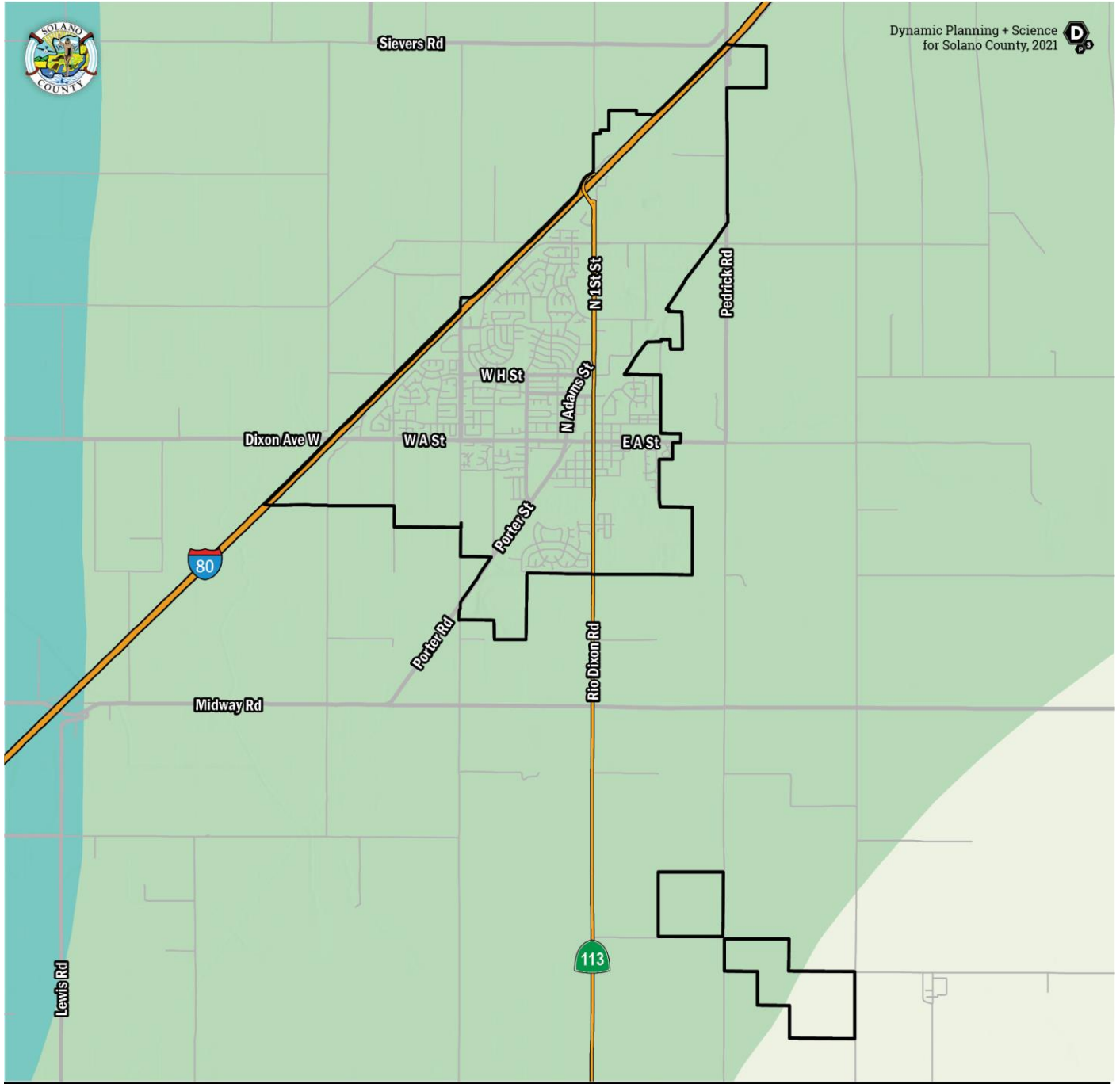
*Data sources: PRISM 800m Resolution 30-YR Normals.



Figure 2-8: Dixon - 30-YR Normal Maximum Temperature for July



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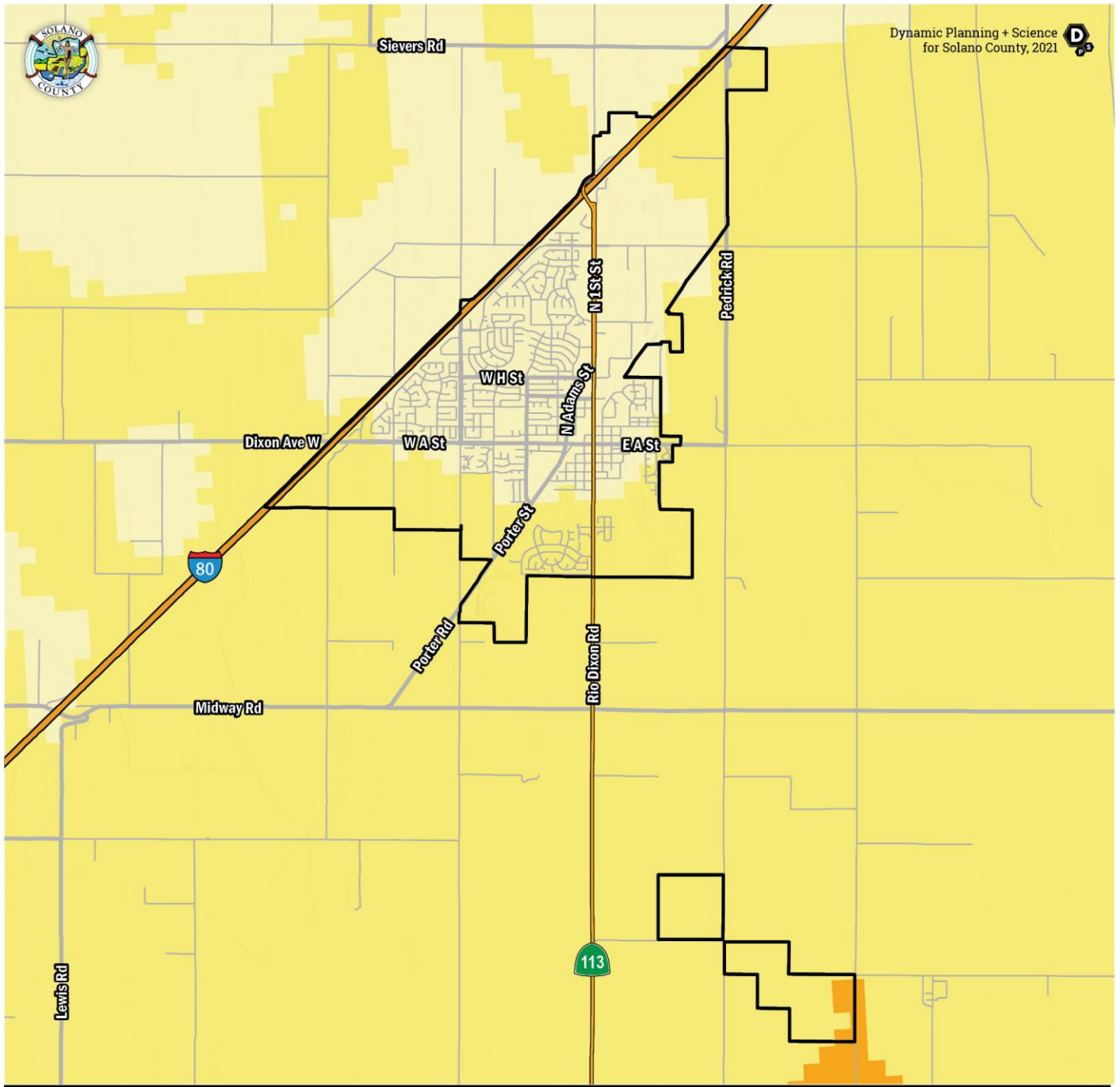


AVERAGE ANNUAL PRECIPITATION (1981-2010, INCHES) DIXON

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



Figure 2-9: Dixon - Average Annual Precipitation (1981-2010)



ANNUAL AVERAGE WIND SPEED (POWER CLASS) DIXON

*Data sources: NREL.



Figure 2-10: Dixon - Average Annual Wind Speed (Power Class)



Table 2-7: Dixon Drought Classifications and Impacts

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

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

Drought Severity Timeline

Suisun Bay

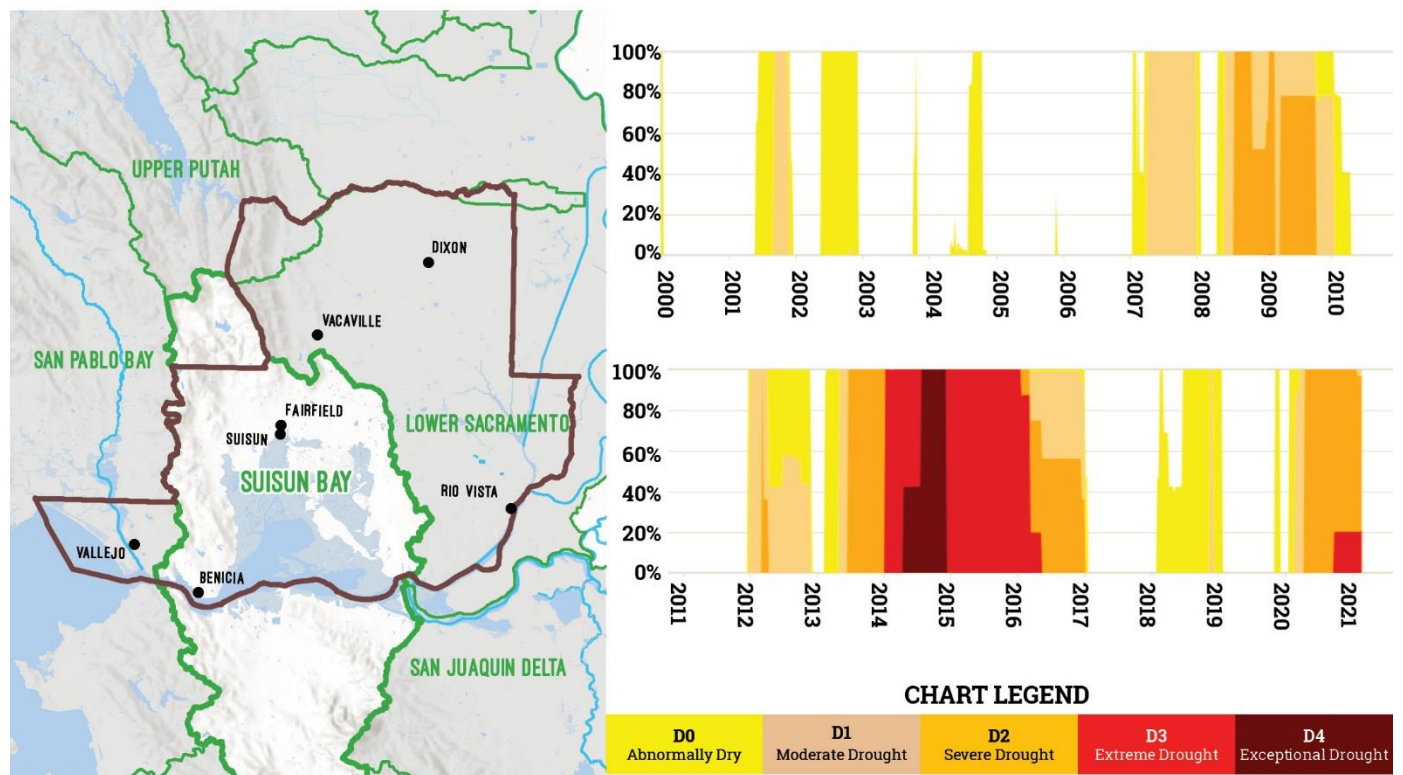


Figure 2-11: Drought Severity Timeline - Suisun Bay



DIXON

AVERAGE ANNUAL MAXIMUM TEMPERATURE

COMPARISON OF CURRENT OBSERVED TO RCP 4.5 AND RCP 8.5 SCENARIOS



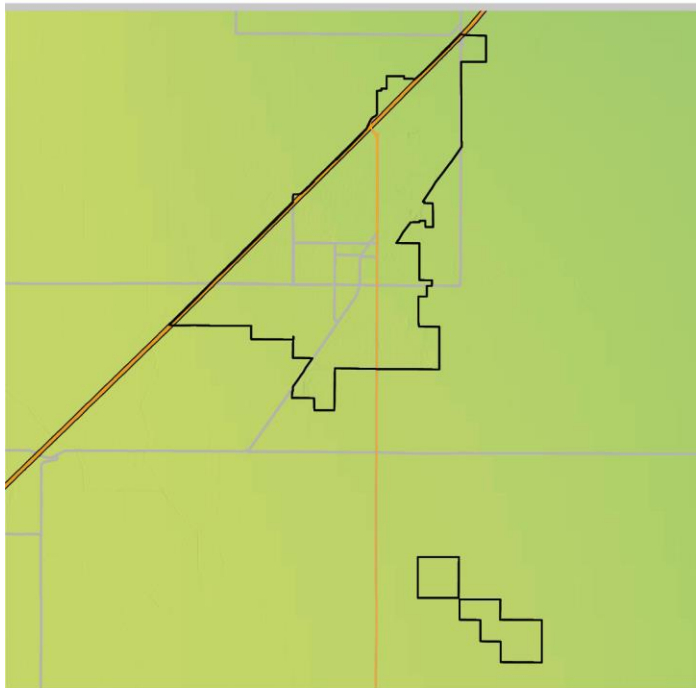
*Data sources: Cal-Adapt CanESM2 RCP 4.5 & 8.5, PRISM 30-YR Norms Annual Max Temp



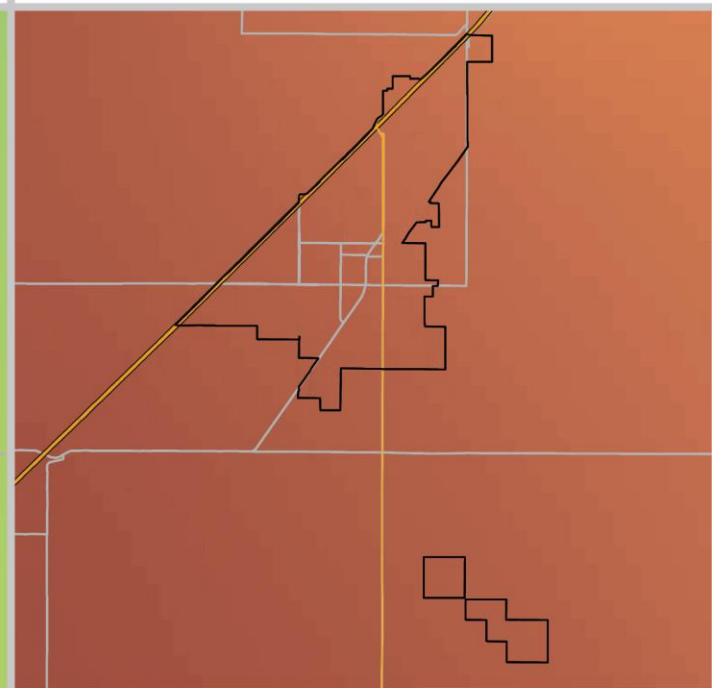
CURRENT 30-YR NORMAL



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RCP 4.5 YEAR 2100



RCP 8.5 YEAR 2100

Figure 2-12: Dixon - RCP Comparison



2.4.3.3 Past and Future Development

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

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

Development since Previous HMP

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

Future Development

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

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

City of Dixon reviewed its general plans under the capability assessments undertaken for this hazard mitigation plan. See Section 2.5.1. Deficiencies revealed by these reviews are identified as mitigation actions to decrease risks to move beyond past trends.



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

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

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

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

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

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



National Flood Insurance Program (NFIP)

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

The City of Dixon has participated in the NFIP since 1981. The City of Dixon is currently in good standing with the provisions of the NFIP. Compliance is monitored by FEMA regional staff and by the California Department of Water Resources under a contract with FEMA. Maintaining compliance under the NFIP is an important component of flood risk reduction. See Table 2-8 for more information on the City’s policies and historic flood insurance claims.

Table 2-8: NFIP Status Table

NFIP and CRS Status & Information	
City of Dixon	
NFIP Status	05/19/81
CRS Class	-
Policies in Force	20
Policies in SFHA	2
Policies in non-SFHA	18
Total Claims Paid	\$3,342
Paid Losses	7
Repetitive Loss Properties	1
Severe Repetitive Loss Properties	-
Repetitive Loss Payment by NFIP on Building	\$10,488
Repetitive Loss Payment by NFIP on Contents	\$0

Source: FEMA CIS 2021, OpenFEMA Data, FIMA RUL Solano County

Note: Policies and claims provided directly from FEMA Region IX CIS Report (8/2021). Repetitive loss tabulations by jurisdiction derived via GIS-based intersect of data available at OpenFEMA Data (<https://www.fema.gov/about/openfema/data-sets>). Countywide data reported for entire county area including municipalities. The Privacy Act of 1974 (5 U.S.C. 522a) restricts the release of certain types of data to the public. Flood insurance policy and claims data are included in the list of restricted information. FEMA can only release such data to state and local governments, and only if the data are used for floodplain management, mitigation, or research purposes. Therefore, this plan does not identify the repetitive loss properties or include claims data for any individual property.

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



2.4.3.4 Identify Hazard Problem Statements

As part of the mitigation action identification process, the Planning Committee for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis, utilizing the RAMP mapping and static snapshot maps. Problem statements focused on the impact, victim, or threat that the hazard could create in the jurisdiction, as described in Figure 2-13. Identifying common issues and weaknesses through these problem statements assisted the Planning Committee in understanding the realm of resources needed for mitigation. Jurisdiction problem statements are listed in Table 2-9.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 2-14 for a full list of mitigation actions and corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 2-9 and Table 2-14.

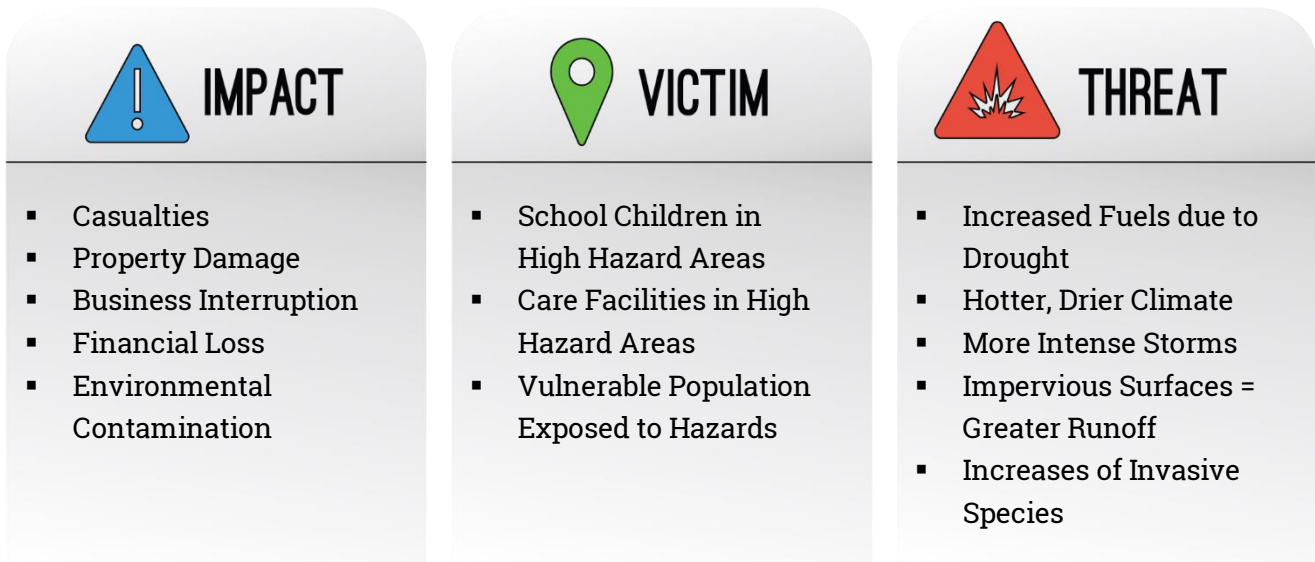


Figure 2-13: Guidance for Problem Statements



Table 2-9: Problem Statements

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



Problem No.	Hazard Type	Area of Concern	Mitigation Alternatives	Primary Agency	Problem Description	Related MA
ps-EW-DX-159	Extreme Weather	Impact	PE&A - Public Education & Awareness, ES - Emergency Services	City of Dixon	The city lacks a documentation system and additional resources to document recurring heavy rain events, causing flooding.	ma-EW-DX-179
ps-EW-DX-160	Extreme Weather	Impact	PE&A - Public Education & Awareness, ES - Emergency Services	City of Dixon	Need for more generators throughout the jurisdiction for cooling centers.	ma-EW-DX-125
ps-CC-DX-180	Climate Change	Impact	PRV - Prevention, PPRO - Property Protection, SP - Structural Projects	City of Dixon	Climate change is predicted to increase the intensity of storms, drought, flooding, and wildfire.	ma-FL-DX-126; ma-CC-DX-215

2.4.4 Mitigation Action Support Tool (MAST)

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

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



2.5 Mitigation Strategy

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

2.5.1 Capabilities & Adaptive Capacity Assessment

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

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

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

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

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

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



2.5.1.1 Planning and Regulatory Capabilities

Table 2-10: Planning and Regulatory Capabilities

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

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



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



2.5.1.2 Administrative and Technical Capabilities

Table 2-11: Administrative and Technical Capabilities

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

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



2.5.1.3 Financial Capabilities

Table 2-12: Financial Capabilities

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

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



2.5.1.4 Education and Outreach

Table 2-13: Education and Outreach Capabilities

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

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

2.5.1.5 Capability and Adaptive Capacity Opportunities

The City of Dixon identified many opportunities for strengthening community capabilities and adaptive capacity. The City considered this assessment in developing its Mitigation Strategy in Section 2.5.2. Volume 1, Section 5.3.5 includes an extensive list of federal and state funding opportunities to leverage to improve community capabilities. The City's General Plan is almost twenty years old and currently being updated. Like many small cities, Dixon could increase staffing capacity, especially with emergency response and grant writing assistance, and could look to increase fiscal capabilities to improve. This City could also review its inspection programs for stormwater and earthquake safety. The City also has good capacity under its current codes and current education and outreach capacity.



2.5.2 Mitigation Actions

Mitigation actions were developed based upon the jurisdiction’s priorities, risk assessment results, and mitigation alternatives. The mitigation action prioritization method used by all participating jurisdictions is described in Section 5.5.1 of Volume 1. Table 2-14 lists each priority mitigation action, responsible party, time frame, potential funding source, implementation steps, and resources need to implement based upon the Planning Committee consensus.

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

Table 2-14 lists each mitigation action for the City of Dixon. Each participating jurisdiction developed unique mitigation actions, targeted at their own unique priorities and vulnerabilities. Each mitigation action identifies the responsible party, time frame, potential funding source, implementation steps and resources needed to implement these priority mitigation actions. As a living document, hazard problem statements and mitigation activities will be updated through MAST. The detail in Table 2-14 meets the regulatory requirements of FEMA and DMA 2000.

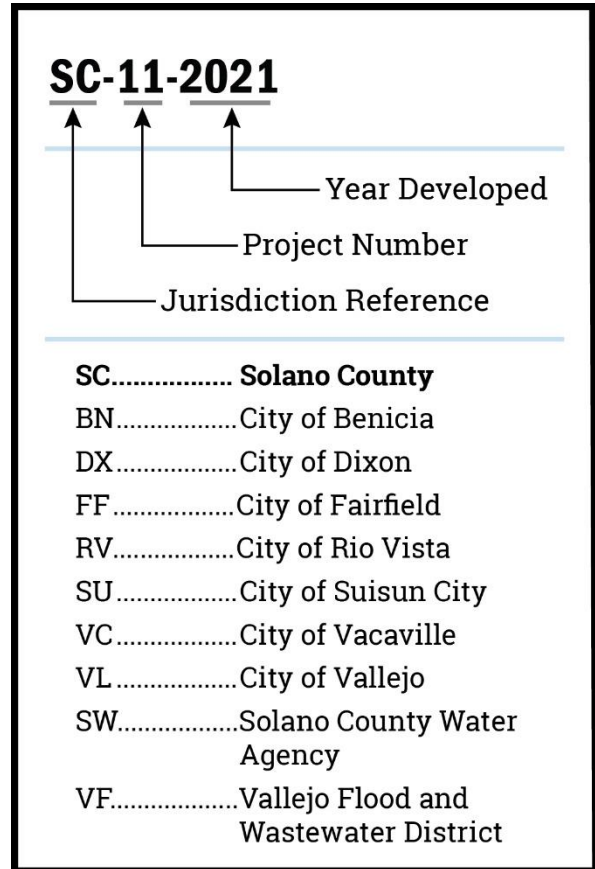


Figure 2-14: Mitigation Action Key



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Table 2-14: City of Dixon Mitigation Actions

Mitigation No.	Hazard Type	Mitigation Type	Status	Year	Primary Agency	Title/Description	Responsible Party	Estimated Cost	Estimated Benefit	Time Frame	HMA Activity Type	Potential Grant Source	Priority	Goal	Related Problem Statements
ma-AH-DX-116	All Hazard	ES - Emergency Services	Pending	2021	City of Dixon	Develop an assessment plan to determine railway points of vulnerability to more accurately predict areas of which would be impacted most during railway damage events. The plan can include preparedness plans to quickly initiate detours to maintain a secondary access point to the interstate and operations to activate.	City Public Works in coordination with the railroad entity.	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	Medium - Project will have a long-term impact on the reduction of risk exposure for life and property, or project will not provide an immediate reduction in the risk exposure for property.	3-5 Years	N/A	EMPG , Internal Funding	High	Goal 2: Infrastructure	ps-AH-DX-149
ma-AH-DX-117	All Hazard	ES - Emergency Services	Pending	2021	City of Dixon	Assess alert systems in Dixon. Include in the plan researched funding opportunities to procure the alert system and continued coordination with County.	Fire Department	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	Medium - Project will have a long-term impact on the reduction of risk exposure for life and property, or project will not provide an immediate reduction in the risk exposure for property.	1-3 Years	N/A	EMPG , Internal Funding	High	Goal 1: People , Goal 4: Resilience	ps-AH-DX-150
ma-CC-DX-215	Climate Change	PE&A - Public Education & Awareness	Ongoing	2021	City of Dixon	Participate in regional climate change vulnerability and adaptation efforts	Planning, all staff	Low - The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.	High - Project will provide an immediate reduction of risk exposure for life and property.	Ongoing	Planning	HMGP / BRIC , Internal Funding	Medium	Goal 3: Environment , Goal 4: Resilience	ps-CC-DX-180
ma-DR-DX-118	Drought	PE&A - Public Education & Awareness	Pending	2021	City of Dixon	Develop a public education campaign to encourage water conservation during drought. The intent is to avoid issuance of water restriction emergency declarations.	City Public Works; California Water Service	Low - The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.	Medium - Project will have a long-term impact on the reduction of risk exposure for life and property, or project will not provide an immediate reduction in the risk exposure for property.	1-3 Years	5%	HMGP / BRIC , Internal Funding	Medium	Goal 4: Resilience	ps-DR-DX-157
ma-EQ-DX-119	Earthquake	PRV - Prevention	Pending	2021	City of Dixon	Conduct public education campaign(s) on earthquake preparedness and liquefaction.	City of Dixon	Low - The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.	Medium - Project will have a long-term impact on the reduction of risk exposure for life and property, or project will not provide an immediate reduction in the risk exposure for property.	1-3 Years	5%	EMPG , Internal Funding	High	Goal 1: People , Goal 4: Resilience	ps-EQ-DX-151
ma-EQ-DX-120	Earthquake	SP - Structural Projects	Pending	2021	City of Dixon	Retrofit City-owned critical facilities and buildings.	City Public Works & Engineering	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Project	HMGP / BRIC	High	Goal 2: Infrastructure	ps-EQ-DX-152



Mitigation No.	Hazard Type	Mitigation Type	Status	Year	Primary Agency	Title/Description	Responsible Party	Estimated Cost	Estimated Benefit	Time Frame	HMA Activity Type	Potential Grant Source	Priority	Goal	Related Problem Statements
ma-EQ-DX-121	Earthquake	SP - Structural Projects	Pending	2021	City of Dixon	Reinforce the city's well systems including the well pumps to enhance the survivability of the systems during earthquake events, decreasing the chances of experiencing water supply issues or water loss.	City Public Works & Engineering	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Project	HMGP / BRIC , Internal Funding	High	Goal 2: Infrastructure , Goal 4: Resilience	ps-EQ-DX-153
ma-EQ-DX-122	Earthquake	ES - Emergency Services	Pending	2021	City of Dixon	Conduct public outreach to enhance awareness of PGE lines throughout the city and the associated hazards with gas leaks and/or line ruptures.	Fire Department	Low - The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.	Medium - Project will have a long-term impact on the reduction of risk exposure for life and property, or project will not provide an immediate reduction in the risk exposure for property.	1-3 Years	5%	EMPG , Internal Funding	High	Goal 1: People , Goal 4: Resilience	ps-EQ-DX-154
ma-EQ-DX-123	Earthquake	SP - Structural Projects	Pending	2021	City of Dixon	Seismic Retrofit of vitrified clay pipes for sewer lines throughout the municipality, to enhance the sewer line's ability to withstand seismic shaking. Enhancements may include complete replacement dependent upon the clay pipe condition.	City Public Works & Engineering	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Project	HMGP / BRIC , Internal Funding	High	Goal 2: Infrastructure	ps-EQ-DX-155
ma-EW-DX-124	Extreme Weather	PRV - Prevention	Pending	2021	City of Dixon	Clear right-of-way for utilities that provide power and communication to critical facilities and are at-risk to fire susceptibility.	Fire Department	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	1-3 Years	N/A	FP&S , Internal Funding	High	Goal 2: Infrastructure	ps-EW-DX-158
ma-EW-DX-125	Extreme Weather	ES - Emergency Services	Pending	2021	City of Dixon	Install backup power generators to support operation of critical facilities during loss of power, such as from heavy rain and high wind events, including water and wastewater systems, emergency services, and cooling and heating centers	Fire Department	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	Medium - Project will have a long-term impact on the reduction of risk exposure for life and property, or project will not provide an immediate reduction in the risk exposure for property.	1-3 Years	Project	HMGP / BRIC , EMPG , Internal Funding	High	Goal 1: People , Goal 4: Resilience	ps-EW-DX-160
ma-EW-DX-179	Extreme Weather	PRV - Prevention	Pending	2021	City of Dixon	Develop an annual drainage maintenance plan including assessing high water marks to assess water depth and settling locations. Including in the plan the clearing of inlets annually (or more often as necessary) prior to the monsoon season.	City Public Works & Engineering	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	Medium - Project will have a long-term impact on the reduction of risk exposure for life and property, or project will not provide an immediate reduction in the risk exposure for property.	1-3 Years	N/A	Internal Funding	High	Goal 2: Infrastructure , Goal 4: Resilience	ps-EW-DX-159

Mitigation No.	Hazard Type	Mitigation Type	Status	Year	Primary Agency	Title/Description	Responsible Party	Estimated Cost	Estimated Benefit	Time Frame	HMA Activity Type	Potential Grant Source	Priority	Goal	Related Problem Statements
ma-FL-DX-126	Flood	PE&A - Public Education & Awareness	Pending	2021	City of Dixon	Develop a public outreach program that informs property owners located in areas of concern for flood about voluntary flood insurance and preparation tools to help with mitigation of flood events.	Fire Department	Low - The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.	Medium - Project will have a long-term impact on the reduction of risk exposure for life and property, or project will not provide an immediate reduction in the risk exposure for property.	1-3 Years	5%	EMPG , Internal Funding	Medium	Goal 4: Resilience	ps-FL-DX-156, ps-CC-DX-180
ma-FL-DX-186	Flood	PRV - Prevention , PPRO - Property Protection	Pending	2021	City of Dixon	Assess areas subject to repeated flooding and increased flooding due to climate change; implement elevations and retrofits for bridges and culverts to allow proper storm water / 100-YR flows.	City Public Works & Engineering	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Planning	HMGP / BRIC , FMA	High	Goal 2: Infrastructure , Goal 4: Resilience	ps-FL-DX-156, ps-CC-DX-180



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FEMA

December 16, 2021

Don Ryan
Director
Solano County Office of Emergency Services
530 Clay St.
Fairfield, CA 94533

Dear Mr. Ryan:

The Federal Emergency Management Agency (FEMA) has completed its review of the *Solano County 2021 Multi-Jurisdictional Hazard Mitigation Plan* and has determined that this plan is eligible for final approval pending its adoption by Solano County and all participating jurisdictions. Please see the enclosed list of approvable pending adoption jurisdictions.

Formal adoption documentation must be submitted to FEMA Region 9 by at least one participating jurisdiction within one calendar year of the date of this letter, or the entire plan must be updated and resubmitted for review. FEMA will approve the plan upon receipt of the documentation of formal adoption.

Once the plan is approved, each participating jurisdiction must adopt the plan within five calendar years of the date of the approval. The adoption of the plan by each jurisdiction ensures that jurisdiction's continued eligibility for funding under FEMA's Hazard Mitigation Assistance (HMA) programs. All requests for funding, however, will be evaluated individually according to the specific eligibility, and other requirements of the particular program under which applications are submitted.

If you have any questions regarding the planning or review processes, please contact the FEMA Region 9 Hazard Mitigation Planning Team at fema-r9-mitigation-planning@fema.dhs.gov.

Sincerely,

for Alison Kearns
Risk Analysis Branch Chief
Mitigation Division
FEMA Region 9

Enclosure (2)

Solano County Plan Review Tool, dated December 16, 2021
Status of Participating Jurisdictions, dated December 16, 2021

cc: Mark Shugart, Acting Risk Analysis Branch Chief, FEMA
Victoria LaMar-Haas, Hazard Mitigation Planning Chief, California Governor's Office of
Emergency Services
Jennifer Hogan, State Hazard Mitigation Officer, California Governor's Office of Emergency
Services

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