Introduction

This Annex of the Rowland Water District Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) details the hazard mitigation planning elements specific to the Kinneloa Irrigation District (KID). This Annex is not intended to be a standalone document but appends to and supplements the information contained in the Rowland Water District Base Plan document.

The MJHMP consists of two parts: 1) Rowland Water District Base Plan, including the planning process, risk assessment and other FEMA mandated information, and 2) Annexes for each of the other agencies participating in the MJHMP planning process.

This Annex provides additional information specific to KID including the planning process, district profile, risk assessment, vulnerability and impacts assessment, and mitigation strategy.

Planning Process

In coordination with the MJHMP Planning Team discussed in Chapter 1: Planning Process of the RWD Base Plan, the agency representative shared the planning process with the District's Planning Team. In addition to providing representation on the MJHMP Planning Team, the agency representative shared hazard information and draft plans within the agency. The table below indicates the steps in the planning process and the representative's involvement.

Q&A | ELEMENT A: PLANNING PROCESS | A1-a.

Q: Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan's development, as well as who was involved? (Requirement 44 CFR § 201.6(c)(1))
A: See **Table 1** below.

Table 1: District Planning Team Participation

	Tom Majich, General Manager	Martin Aragon, Office Manager	Chris Burt, Senior Facilities Operator	Michele Ferrell, Acting Senior Facilities Operator
Research and Writing of Plan	X	X	X	X
MJHMP Planning Team Meeting 1: 9/14/2022		X	X	
MJHMP Planning Team Meeting 2: 9/28/2022		X		
One-on-One Mentoring Session: 11/2-12/2022		X	X	X
MJHMP Collaborative Meeting: 12/6/2023		X		X
MJHMP Planning Team Meeting 3: 1/19/2023		X		
One-on-One Mentoring Session: 2-5/2023	X			
MJHMP Planning Team Meeting 4: June 28, 2023	X			
District Planning Team Comment on Initial Draft Plan	X			
Distribute First Draft RWD Base Plan and KID Annex to Customers and Stakeholders	X			
Present Final Draft RWD Base Plan and KID Annex to Board of Directors for Adoption				

Q&A | ELEMENT A: PLANNING PROCESS | A3-a.
Q: Does the plan document how the public was given the opportunity to be involved in the planning process and how their feedback was included in the plan? (Requirement 44 CFR § 201.6(b)(1)) **A:** See **Community Outreach - Customers** below.
Q&A | ELEMENT A: PLANNING PROCESS | A2-a.
Q: Does the plan identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity? (Requirement 44 CFR § 201.6(b)(2)) **A:** See **Community Outreach – Stakeholders, Table 2** below.

Community Outreach

Customers

The RWD Base Plan - Planning Process provides details on the community outreach campaign conducted during the plan writing phase. In January 2024 each planning participant distributed information to their customers and stakeholders about the planning process and the availability of the draft plan. KID utilized social media, flyers, public forums, and newsletter to inform the customers of the planning process and plan's availability. The stakeholders were informed via email. See **Attachments** for input received from the outreach activities mentioned above.

Table 2 is the list of stakeholders identified for this project. In compliance with FEMA requirements, the stakeholders were categorized by:

- ✓ Local and Regional Agencies Involved in Hazard Mitigation Activities
- ✓ Agencies with Authority to Regulate Development
- ✓ Neighboring Communities
- ✓ Business Organizations, Academia, and Community Lifelines
- ✓ Nonprofit Organizations and Community-Based Organizations working with Vulnerable Populations

Table 2: Stakeholder List by Category

Local and Regional Agencies Involved in Hazard Mitigation Activities	Agencies with Authority to Regulate Development	Neighboring Communities	Business Organizations, Academia, and other Private Interests	Nonprofit and Community-Based Organizations	Other	Agency Represented, Name, Position Title
						Kinneloa Irrigation District Planning Team
X						Kinneloa Irrigation District, Tom Majich, General Manager
X						Kinneloa Irrigation District, Martin Aragon, Office Manager
X						Kinneloa Irrigation District, Chris Burt, Water Operator
X						Kinneloa Irrigation District, Michele Ferrell, Water Operator
						Kinneloa Irrigation District Board of Directors
	X					Gerrie Kilburn, Board Member
	X					Stephen Brown, Board Member
	X					Gordon John, Board Member
	X					Timothy Eldridge, Board Member
	n/a					Vacant, Board Member
						Neighboring Communities
		X				Pasadena Water and Power, Stacie N. Takeguchi, Assistant General Manager, Water
X						Los Angeles County Fire Department, Maria Grycan, Division 3, Community Services Liaison
		X				Foothill Municipal Water District, Nina Jazmadarian, General Manager
		X				Raymond Basin Management Board, Kelly Gardner, Executive Officer
						Business, Academia, and Private Interests
			X			Los Angeles County Sheriff's Department, Arthur Balyan, Altadena Station, Community Services
			X			Los Angeles County, Department of Parks and Recreation, Lorraine Lazarus, Eaton Canyon Natural Area, Superintendent
			X			Los Angeles County Public Works, Mark Pestrella, Director of Public Works
			X			Los Angeles County Public Works, Cung Nguyen, Emergency Management Group
						Other
					X	County of Los Angeles, 5th District Supervisor, Sussy Nemer, Field Deputy
					X	City of Pasadena, Council District 4, Noreen Sullivan, City Council District Liaison

Local and Regional Agencies Involved in Hazard Mitigation Activities	Agencies with Authority to Regulate Development	Neighboring Communities	Business Organizations, Academia, and other Private Interests	Nonprofit and Community-Based Organizations	Other	Agency Represented, Name, Position Title
				X		See MJHMP for PWAG Stakeholder List

Q&A | ELEMENT C: MITIGATION STRATEGY | C2-a.

Q: Does the plan contain a narrative description or a table/list of their participation activities? (Requirement 44 CFR § 201.6(c)(3)(ii))
A: See **NFIP Participation** below.

NFIP Participation

The Kinneloa Irrigation District is exempt from implementing or purchasing flood insurance through NFIP.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-c.

Q: Does the Plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii))
A: See **Repetitive and Severe Repetitive Loss Properties** below.

Repetitive Loss and Severe Repetitive Loss Properties

Repetitive Loss Properties (RLPs) and Severe Repetitive Loss Properties (SRLPs) are most susceptible to flood damage and therefore have been the focus of flood hazard mitigation programs. Unlike a countywide program, a Floodplain Management Plan (FMP) for repetitive loss properties involves highly diversified property profiles, drainage issues, and property owner's interest. It also requires public involvement processes unique to each RLP and SRLP area. The objective of an FMP is to provide specific potential mitigation measures and activities to best address the problems and needs of communities with repetitive loss properties. According to FEMA resources, none of the Repetitive Loss Properties or Severe Repetitive Loss Properties are located in the Annex project area.

Q&A | ELEMENT C. MITIGATION STRATEGY | C1-a.

Q: Does the plan describe how the existing capabilities of each participant are available to support the mitigation strategy? Does this include a discussion of the existing building codes and land use and development ordinances or regulations? (Requirement 44 CFR § 201.6(c)(3))
A: See **Capability Assessment, Table 3** below.

Capability Assessment

The KID will incorporate mitigation planning as an integral component of daily operations. This will be accomplished through the leadership of the agency's Planning Team representative in coordination with agency departments involved in integrating mitigation strategies into their planning documents and operational guidelines. FEMA identifies four types of capabilities (see Rowland Water District Base Plan for definitions of the capability types):

- ✓ Planning and Regulatory
- ✓ Administrative and Technical
- ✓ Financial
- ✓ Education and Outreach

Table 3 below includes a broad range of capabilities within the agency to successfully accomplish mitigation.

Table 3: Capability Assessment for Kinneloa Irrigation District
Source: District Planning Team

Type of Capability				Name of Capability	Capability Description and Ability to Support Mitigation
Planning and Regulatory	Administrative and Technical	Financial	Education and Outreach		
Kinneloa Irrigation District					
X	X	X	X	Executive	The General Manager, under the policy guidance of the Board of Directors, is responsible for directing and supervising the administrative functions and operations of the Kinneloa Irrigation District. These responsibilities include leading and supervising all departments to achieve goals within available resources while providing leadership and direction in the development and execution of short- and long-range plans. The General Manager also monitors and takes action to protect the District's interests involving new legislation, including developing and maintaining relationships with legislators and other local governing bodies. The General Manager is appointed by the Board to oversee the daily operations of the District. The General Manager will be instrumental in supporting the development, maintenance, and implementation of the Hazard Mitigation Plan, including the mitigation actions. Support will include providing funding and staff.
X	X			Engineering	The General Manager & Facilities Supervisor shall oversee the management of capital improvement projects, water resource management, the District's Master Plans for water, and water supplies, and all engineering and planning work. The General manager &

Type of Capability				Name of Capability	Capability Description and Ability to Support Mitigation
Planning and Regulatory	Administrative and Technical	Financial	Education and Outreach		
					Facilities Supervisor actively participate in regional water planning committees. A third party source is used to review major plans for development throughout the District and design plans for the District's major projects.
X	X			Operations	The General Manager and Operations Manager maintain Water Treatment responsibilities which include District-wide water quality monitoring, state and federal drinking water regulatory compliance, and the operation and maintenance of the wells, booster stations, reservoirs and tanks. These responsibilities include the maintenance, repair, and general upkeep of the District's buildings and building equipment. The Operations team is also responsible for the maintenance repair of the District vehicles, portable generators and all other equipment and tools. The Operations team responsibilities include the maintenance and repair of the District's water system infrastructure which includes mains, hydrants, valves, services, and implementation of preventative maintenance programs.
Allied Partner					
X	X	X	X	Public Water Agencies Group	The PWAG Emergency Management Coordinator provides emergency management services to all of the 20 PWAG members. Services include development and maintenance of agency-specific Emergency Response Plans, updates to AWIA reports, training and exercises, and support throughout the development of the Rowland Water District MJHMP.
Plans and Policies					
			X	Hazard Mitigation Planning Team	The Hazard Mitigation Planning Team is made up of representatives from various departments that are assigned mitigation action items in the Hazard Mitigation Plan. In addition to responsibility to prepare each of the 5-year plan updates as required by FEMA, the Planning Team is responsible for implementing, monitoring, and evaluating the plan during its quarterly meetings. The Planning Team is assigned several mitigation action items and plays a pivotal role in implementing and funding the overall Hazard Mitigation Plan.
	X		X	Emergency Response Plan	Emergency Response Plan is a reference and guidebook to operations during a major emergency impacting the District. The Plan includes a discussion on a wide range of hazards, organization and staffing of the Emergency Operations Center, and connectivity with field responders and external agencies.

Type of Capability				Name of Capability	Capability Description and Ability to Support Mitigation
Planning and Regulatory	Administrative and Technical	Financial	Education and Outreach		
X	X			Building Code	Kinneloa Irrigation District is a special district. Special districts and mutual water companies are subject to different requirements when it comes to permitting for buildings and facilities. Special districts are only subject to the local permitting authority (city, county, or state) when constructing publicly accessible buildings within a local jurisdiction's boundaries. Special districts are not subject to the local permitting authority of a local agency when constructing or repairing water-related facilities, such as water storage, treatment, and distribution infrastructure. For such water-related facilities, special districts are subject to California Code of Regulations, Title 22 Division 4, Chapter 16 California Waterworks Standards that apply when constructing public water system sources, materials, disinfection, and operations. Mutual water companies are subject to the permitting authority of a local agency having jurisdiction (city, county, or state) and the codes adopted by that agency will apply. For mutual water companies this includes publicly accessible buildings, as well as water-related facilities such as water storage/production facilities, treatment facilities, and distribution infrastructure.
X	X	X	X	Water Master Plan (Development Guidance)	The District completed a long-term Water Master Plan during FY 2020. This plan assesses the District's current and future ability to provide domestic water and fire flows and identify necessary improvements to the system.

Q&A | ELEMENT C. MITIGATION STRATEGY | C1-b.

Q: Does the plan describe each participant's ability to expand and improve the identified capabilities to achieve mitigation? (Requirement 44 CFR § 201.6(c)(3))
A: See **Expanding and Improving District Capabilities** below.

Expanding and Improving District Capabilities

Planning and Regulatory Capabilities – The Kinneloa Irrigation District oversees the management of capital improvement projects, water resource management, the district's Master Plans for water, and water supplies as well as all engineering and planning work. The District will adopt future amendments to the California Building Code. See **Mitigation Actions Matrix**.

Administrative and Technical - The District has existing capabilities that are typical of public water agencies. The General Manager leads strategic planning and overall management of day-to-day activities. Third party consultants manage information technology, engineering, engineering design, and Geographic Information Systems. The district also has a mix of staff and third-party consultants to manage inspections, water treatment operations, facilities operations, and fleet maintenance. Additionally, the district maintains an Emergency Response Plan to reference and guide operations during a major emergency impacting the district. See **Mitigation Actions Matrix**.

Finance - The District needs a 10-year financial master plan. This plan identifies key infrastructure upgrades and allocated budgets. Additionally, the Master Plan outlines water infrastructure needs. Other funding sources should be kept in mind for future mitigation activities. See **Mitigation Actions Matrix**.

Education and Outreach – The District has a team that oversees strategic community outreach, water conservation outreach, special events, and other education programs. The team utilizes a number of different communication methods to disseminate information. Mitigation actions related to the private construction of new structures or retrofits or improvements to existing structures may be supported with public education and other efforts of the Communications & Outreach Division. See **Mitigation Actions Matrix**.

Plan Implementation

As identified in the RWD Base Plan, the MJHMP Planning Team has agreed to reconvene on a bi-annual basis to review the Base Plan and Annexes. In addition to those meetings, the district representative will gather a Planning Team together on a quarterly basis to discuss the Agency's Mitigation Actions Matrix. The members of the District's Planning Team will represent the departments/positions with responsibilities identified in the Mitigation Actions Matrix. See RWD Base Plan – Mitigation Strategies section for a description of the categories portrayed in the Matrix.

Integration with Existing Programs

The Mitigation Plan provides a series of recommendations - many of which are closely related to the goals and objectives of existing planning programs. The District's Local Mitigation Officer will be responsible for implementing recommended mitigation action items through existing programs and procedures.

Some of the goals and action items in the MJHMP will be achieved through activities recommended in the agency's policy, capital, and funding documents. The MJHMP will be reviewed on a bi-annual basis during a gathering of the various MJHMP Local Mitigation Officers. Upon the bi-annual review, the District's Local Mitigation Officer will work with other agency departments or positions to identify areas where the Mitigation Actions Matrix items are consistent with the policy, capital, and funding documents to ensure the Plan goals and action items are implemented in a timely fashion.

Upon FEMA approval, the MJHMP Planning Team will begin the process of incorporating risk information and mitigation action items into existing planning mechanisms. The bi-annual meetings of the Team will provide an opportunity for Team members to report back on the

progress made on the integration of mitigation planning elements into the planning documents and procedures of the various jurisdictions. Specifically, the District's Local Mitigation Officer will utilize the following sections of the Plan to make revisions to other documents within the Agency:

- ✓ Risk Assessment Section (Rowland Water District Base Plan), Agency Profile, Planning Process (stakeholders) – Emergency Response Plan, Facilities Maintenance Plans, Urban Water Management Plan, Risk and Resilience Assessment, etc.
- ✓ Mitigation Actions Matrix – Capital Projects, Grants, Bonds

Kinneloa Irrigation District Profile

The profile includes an overview of the district, population, geography, and climate.

The Kinneloa Irrigation District was formed in October 1953 by Resolution of the Los Angeles County Board of Supervisors. It operates under the rules and regulations of Division 11 of the State of California Water Code and is not under the jurisdiction of the Public Utilities Commission. A five member publicly elected Board of Directors serves as the governing body. The Kinneloa Irrigation District started serving customers on December 15, 1955, when it acquired the assets of the Kinneloa Irrigation District. Additional water services have been added over the years including the following:

- Between 1956 and 1973, 75 additional homes were built in the Kinneloa Canyon and Kinneloa Estates developments.
- In 1974, the Kinneloa Irrigation District acquired the assets of the Mira Loma, Canyon Mutual and Osborn Water Companies and 225 additional services were added to the District. The Kinneloa Irrigation District formed an improvement district to upgrade and replace infrastructure in those areas.
- In 1978, 24 new homes were built on Villa Highlands and Villa Knolls roads.
- In 1983, 27 homes were built in an undeveloped area of the District known as Hastings Heights.
- In 1990, 48 townhomes were built at a site near New York Drive and Altadena Drive.
- In 2003, 21 building sites were completed in the Kinneloa Canyon area known as Kinneloa Ridge and homes were constructed on 20 of the lots over a two-year period.
- Water service to additional individual building lots and common landscape irrigation sites over the years account for the current 587 services.
- Approximately 25 vacant lots remain in the District.

The customers of the Kinneloa Irrigation District offer a varied profile. Most of our 588 metered customers live in single-family homes in hillside or canyon settings adjacent to the Angeles National Forest. The homes vary widely in age from newly built to more than 100 years ago. The average household numbers 3.3 persons and the homes vary in size from small cottages to large ranch-style or multi-story mansions. Some of the properties are zoned for horses. Some of our customers live in a 48-unit townhouse complex that was built in 1990. One hundred homes were rebuilt after the 1993 Kinneloa-Altadena wildfire.

In addition, Kinneloa Irrigation District serves a few commercial customers that include a church, a school, a nursery, the Los Angeles County Flood Control District, Los Angeles County Fire Station 66 and the Eaton Canyon Equestrian Center. The KID also supplies water for fire protection throughout its service area.

The Kinneloa Irrigation District is divided into two geographic areas which are generally divided by the Wilcox Canyon watercourse. These areas are connected by pipelines between the East and West reservoirs, the Holly and the Vosburg reservoirs and the Eucalyptus and Wilcox reservoirs. There are several pressure zones within each area which contain additional reservoirs, a distribution piping network and booster pump stations that receive water from the Kinneloa Irrigation District 's wells and horizontal water tunnels.

Water Sources

The Kinneloa Irrigation District owns and operates two water wells which are the primary source of water for the District. The Wilcox and K-3 Wells supply the Wilcox and Eucalyptus Reservoirs. Both wells pump from the Raymond Basin aquifer from which the District has 516 acre-feet adjudicated pumping allowance. Both wells are equipped with vertical turbine pumps. The Kinneloa Irrigation District also owns and operates nine water supply tunnels which were originally constructed by hand in the 1800's to serve the ranches in the area. Currently, five of these tunnels supply water directly to the Kinneloa Irrigation District system and four tunnels release water in the local spreading basins. Tunnel flow rates vary according to the time of year and the annual rainfall and are capable of supplying anywhere from a few gallons per minute up to a hundred gallons per minute or more.

Interconnections and Emergency Equipment

The Kinneloa Irrigation District currently maintains and operates six emergency interconnections with the City of Pasadena which can deliver water to the Vosburg, Wilcox and Eucalyptus Reservoirs. The Kinneloa Irrigation District also has six trailer-mounted diesel-powered portable generators for emergency operations at District facilities in the event of a power failure. Redundant pumps are in place at most facilities in case of pump failures.

Reservoirs

The Kinneloa Irrigation District operates and maintains ten water storage reservoirs at elevations ranging from 940 feet to 1,637 feet with a total capacity of approximately 4 million gallons.

Booster Pumping Facilities

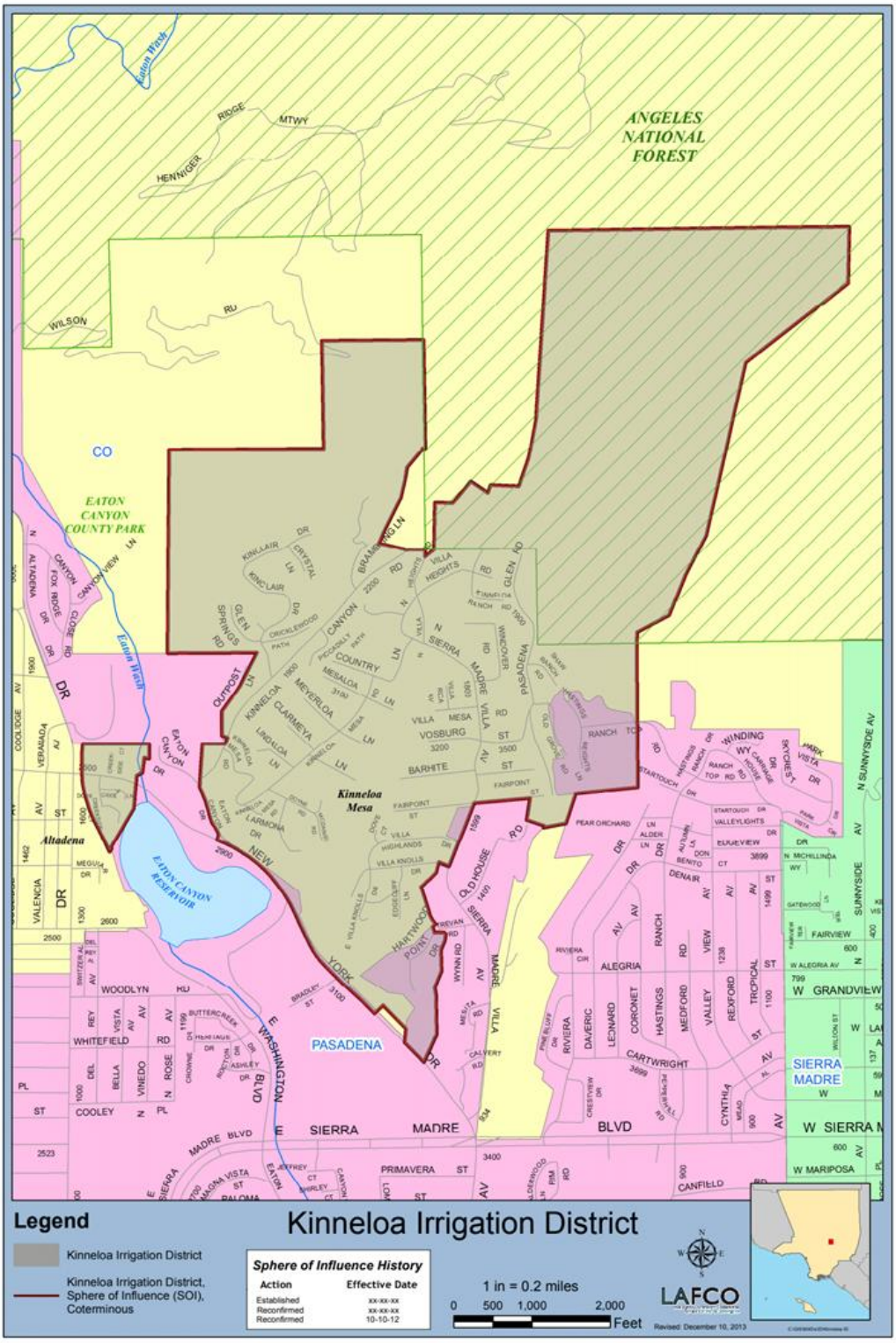
The Kinneloa Irrigation District operates and maintains five booster pumping facilities to move water into the six pressure zones in the system. They are the Eucalyptus, Sage, Vosburg, Glen and Wilcox facilities. The horsepower of the pumps range from 20 to 75 HP depending on location and purpose. Redundant pumps are in place at most facilities in case of pump failures.

Pipelines

There are approximately 75,000 feet of transmission and distribution mains in the Kinneloa Irrigation District service area. Piping materials include galvanized steel, AC, PVC and ductile

iron and range in size from 2½" to 16" in diameter. There are 110 fire hydrants providing flows of between 750-3500 gpm with a 20 psi minimum residual pressure.

Map 1: Kinneloa Irrigation District Service Area
Source: LAFCO, 2023



The Kinneloa Irrigation District office is located at 1999 Kinclair Drive, Pasadena, CA 91107. The district serves unincorporated areas in Los Angeles County and some residents of the City of Pasadena.

Table 4: District Assets
Source: District Planning Team

Facility Name and Type	# Occupants	# Buildings	$ Structure Value (millions)	$ Contents Value (millions)	$ Total Value (millions)
District Office	5	1	$0.5	$0.15	$0.65
K-3 Well Pump Station	0	1	$2.0	$0.5	$2.5
Wilcox Well Pump Station	0	1	$1.5	$0.5	$2.0
Wilcox Reservoir and Booster Station	0	1	$2.5	$0.5	$3.0
Eucalyptus Reservoir and Booster Station	0	2	$1.0	$0.5	$1.5
Sage Tank Reservoir and Booster Station	0	2	$1.0	$0.25	$1.25
West Tank Reservoir	0	1	$1.5	$0.1	$1.6
East Tank Reservoir	0	1	$0.5	$0.0	$0.5
Brown Reservoir	0	1	$1.5	$0	$1.5
Glen Reservoir and Booster Station	0	2	$2.0	$0.25	$2.25
Vosburg Reservoir and Booster Station	0	2	$2.5	$0.5	$3.0
Holly Tanks Reservoir	0	2	$0.5	$0.2	$0.7
Totals	**55**	**17**	**$ 17.0 million**	**$3.45 million**	**$20.45 million**

Geography and Climate

According to the 2020 County of Los Angeles All-Hazards Mitigation Plan, the 2018 Our County: Landscapes and Ecosystems the 2018 City of Pasadena Local Hazard Mitigation Plan, and the 2015 Land Use Element of Revised General Plan the following information identifies the geography and climate of the project area.

Geography

The Kinneloa Irrigation District office is located in Pasadena however the majority of the service area is in unincorporated portions of Los Angeles County. Pasadena is located in the San Gabriel Valley, at the base of the San Gabriel Mountains. The area was part of Rancho El Rincon de San Pasqual, a northeast section of the San Gabriel Mission (1771). The city was founded in 1874 by Thomas B. Elliott as Indiana Colony; the name Pasadena, a Chippewa word meaning “crown of the valley,” was adopted in1875.

The city's growth as a winter resort and citrus center was stimulated by the Santa Fe Railway, and subsequent freeway construction brought it within easy commuting distance to Los Angeles, which lies 12 miles southwest. Pasadena is the home to many recognized businesses including Pasadena City College, Pacific Oaks College, Art Center College of Design, California Institute of Technology, Pasadena Playhouse, and Norton Simon Museum of Art. The city is perhaps most famous for its New Year's Day Tournament of Roses, first held in 1890, which features a televised parade attended by several hundred thousand people along with the Rose Bowl Game, a contest between two major college football teams.

The city is served by the California 210-Foothill Freeway, the California 110-Pasadena Freeway (Arroyo Seco Parkway), the California 134-Ventura Freeway, and the California Interstate 710-Long Beach Freeway. The major arterial highways are Fair Oaks Avenue, Lake Avenue, and Los Robles Avenue, running north to south. Colorado Boulevard Walnut Street, Del Mar Boulevard, and Green Street running east to west.

Pasadena has a residential population of 141,510. Pasadena consists of 23 square miles and is approximately 58% residential, 9% commercial, 2% industrial and 31% open space, parks, institutional or vacant land.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement 44 CFR § 201.6(c)(2)(ii))
A: See **Climate** below.

Climate

Los Angeles County has a Mediterranean-type climate, characterized by cool wet winters and warm dry summers. With a population of over 10 million residents, the county is the most populated in California, and one of the largest counties in size in the nation. Los Angeles County boasts a diversity of landscapes, and species and is made up of a vast unincorporated area and 88 cities that span mountains, deserts, beaches, and islands. The County is also biologically diverse. Southern California is home to the largest set of threatened and endangered plants and animals in the continental United States, making it the most urbanized area to be designated one of Conservation International's global Biodiversity Hotspots.

Urban ecosystems are dynamic combinations of natural, social, and constructed features. The County's ecosystems span natural and urban landscapes and can be thought of as an interconnected system of biological communities with organisms interacting with a range of physical environments. This diverse ecosystem not only serves as important habitat for the region's biodiversity, but provides extraordinary value to residents through recreational and educational opportunities, agricultural and other extractive land uses, aesthetic enjoyment, and a variety of other ecosystem services such as shading, air purification, water filtration, and flood control. (https://ourcountyla.lacounty.gov)

According to "California's Fourth Climate Change Assessment" developed by the State of California, continued climate change will have a severe impact on California. Increased temperatures, drought, wildfires, and sea level rise are several of the main concerns related to climate change in the Southwest. Other impacts anticipated from climate change include food insecurity, increases in vector-borne diseases, degradation of air quality, reduced ability to enjoy outdoors, and potential economic impacts due to uncertainty and changing conditions.

Climate change disproportionately affects those with existing disadvantages. Low-income communities and communities of color often live in areas with conditions that expose them to more severe hazards, such as higher temperatures and worse air quality. These communities also have fewer financial resources to adapt to these hazards. For instance, low-income populations may reduce air conditioning usage out of concerns about cost. Outdoor workers, individuals with mobility constraints, and sensitive populations such as the very young, elderly, and poor, as well as those with chronic health conditions, are particularly at risk from climate change hazards.

To understand how climate change might affect the Kinneloa Irrigation District, the Cal-Adapt tool was used to analyze data. Cal-Adapt provides a way to explore peer-revied data that portrays how climate change might affect California at the state and local level (cal-adapt.com). Cal-Adapt can provide a climate snapshot for an address, county, city, census tract, or watershed. Kinneloa Irrigation Water District provides services to an incorporated area of Los Angeles County. For the purpose of the analysis using Cal-Adapt the census tract 6037460000 was used as the boundary of the analysis. This census tract includes the entire service area of Kinneloa Irrigation Water District which was used to create the summary of the data below.

Increased Temperature: Annual average maximum temperatures in the census tract are expected to rise steadily through the end of the century. The census tract's historical average maximum temperature is based on data from 1961-1990, is 74.6°F. Under the medium emissions scenario, the average annual maximum temperature is projected to increase to 79.3°F. Between 2070 and 2099 the annual average maximum temperature under the high-emission scenario is projected to increase to 83.6°F.

More Extreme Heat Days: Extreme Heat Days occur when the maximum temperature is above 100.5°F. Historically the census tract has experienced an average of 5 extreme heat days per year. By mid-century, 2025-2064, the annual number of extreme heat days is expected to rise to 33 under medium emission scenarios and 26 under high emission scenarios. By the end of the centuries, 2070 and 2099, the number of extreme heat days is expected to rise to 27 under medium emission scenarios and 49 under high emission scenarios.

Static Annual Precipitation: Historically, the census tract has experienced an annual average of 27.3 inches of precipitation. Annual precipitation is expected to remain static during the mid-century. Under the medium emission scenario, it is expected that the annual precipitation will remain steady at 26.3 inches. Under the high emission scenario, it is expected that the annual precipitation will be 26.5 inches. By the end of the century annual precipitation is expected to increase to 27.0 inches under the medium emission scenario and 26.5 inches under the high emission scenario.

Longer and More Extreme Droughts: The census tract can expect to see a 13.2% Increase in average temperature and a 32.7% decrease in precipitation during drought conditions. This will lead to longer, more extreme drought conditions in the late century.

Steady Wildfire Threat: Wildfire data is analyzed at the county level. The Kinneloa Irrigation District is within the County of Los Angeles. Based on historical data from 1961–1990, Los Angeles County experiences a decadal average loss of 4,436.1 hectares to wildfire. The probability that a wildfire will occur in any one year over a10-year period, known as the decadal probability, is projected to remain constant through 2099 under both high-emissions and Low emissions scenarios. Under the low-emissions scenario, the decadal average loss to wildfire is

expected to increase to 5,719.2 hectares by mid-century and 5662.9 hectares by 2099. Under the high-emissions scenario, the decadal average loss to wildfire is projected to rise to 5,579.7 hectares by 2065 and 5,275.4 hectares by the end of the century.

Land Use

The District reviewed the current and projected land uses within its service area during the preparation of this 2020 Plan. Information regarding current and projected land use is included in the Los Angeles County 2035 General Plan. The existing land uses within the District's service area include residential (single-family and multi-family), commercial, and open space. Based on the Los Angeles County 2035 General Plan, the projected land uses within the District's service area are expected to remain similar to the existing land uses. According to the KID Water System Evaluation and Capital Improvement Plan, it is not expected that there will be any significant number of accounts from new developments.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.

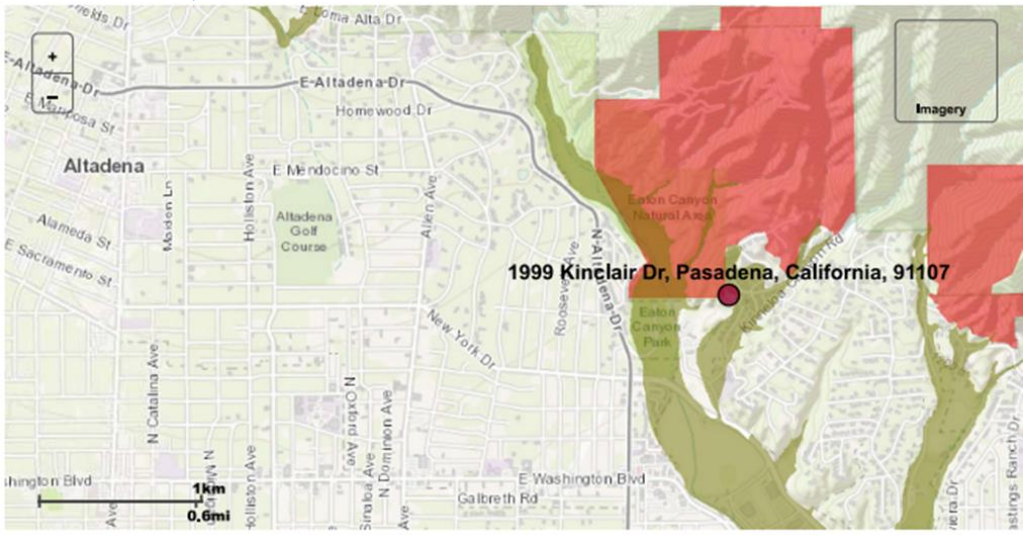
Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i))
A: See **Hazard Identification and Profile** below.

Hazard Identification and Profile

Utilizing California's "MyHazards" online hazard mapping resource, the following map identifies earthquake, flooding, liquefaction, and wildfire threats. MyHazards was designed by the State of California as a tool for the general public to discover hazards in their area (earthquake, flood, fire, and tsunami) and learn steps to reduce personal risk. Using the MyHazards tool, users may enter an address, city, zip code, or may select a location from a map. The map targets the location and allows users to zoom and scroll to their desired view. The screen then presents information on the risks identified within the search radius, and recommended actions. Hazard Data is approximate and data layer visibility are subject to the extent of the Map. To access MyHazards to create a map of your own, follow the link to MyHazards (https://myhazards.caloes.ca.gov/).

Map 2 is the MyHazards map prepared for the Kinneloa Irrigation District.

Map 2: MyHazards for Kinneloa Irrigation District
Source: Cal OES, 2024



State Responsibility Areas (2007), Severity

- SRA, Very High
- SRA, High
- SRA, Moderate

Earthquake Fault Zone of Required Investigation

Liquefaction Zone of Required Investigation

- Liquefaction Zone Area

California_Tsunami_Hazard_Areas

100-Year Floodplains

- FEMA/DWR Awareness/Regional Studies /USACE Comprehensive Study

The State Responsibility Area (SRA) is the area of the state where the State of California is financially responsible for the prevention and suppression of wildfires. SRA does not include lands within city boundaries or in federal ownership. FEMA's Flood Map Service Center (https://msc.fema.gov/portal/)

The MJHMP Planning Team identified hazards posing a significant threat to the entire project area. That determination was based on reviewing the State Hazard Mitigation Plan and the 2020 County of Los Angeles All-Hazards Mitigation Plan. The MJHMP Planning Team chose to analyze all of the hazards included in the County of Los Angeles AHMP which included: earthquake, flood, landslide, wildfire, tsunami, dam failure, climate change, and drought.

Next, the MJHMP Planning Team utilized a hazard ranking tool known as the Calculated Priority Risk Index. The MJHMP Planning Team completed a CPRI for the project area. The Base Plan also includes a risk assessment and hazard profiles for each of the prioritized hazards including hazard identification, previous occurrences, local conditions, impacts, and vulnerabilities.

Then, each of the participating agencies worked off of the Project Area CPRI to rank the hazards for their particular agency. Each agency was provided with a list of the Project Area hazards, a

copy of the project area CPRI, instructions, and index key to complete an agency-specific CPRI with the assistance of district staff. The results were used to prioritize hazard rankings (high, medium, and low) which drove development of the agency's Mitigation Actions Matrix (located at the end of the Annex). The following is the Kinneloa Irrigation District CPRI and the CPRI Index Key which explains the rating system:

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.
Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Table 5, Table 6** below.
Q&A | ELEMENT B: RISK ASSESSMENT | B1-f.
Q: For participating jurisdictions in a multi-jurisdictional plan, does the plan describe any hazards that are unique to and/or vary from those affecting the overall planning area? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Table 5** below.
Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.
Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii)) **A:** See **Table 5** below.

Table 5: Kinneloa Irrigation District CPRI
Source: District Planning Team, Emergency Planning Consultants, 2023

Hazard	Probability	*Weighted 45% (x.45)*	Magnitude Severity	*Weighted 30% (x.3)*	Warning Time	*Weighted 15% (x.15)*	Duration	*Weighted 10% (x.1)*	CPRI Total	Hazard Priority Ranking* (H-High, M-Medium, L-Low)
Dam Failure	1	0.45	1	0.30	1	0.15	1	0.10	1.00	**N/A**
Drought	3	1.35	2	0.60	4	0.60	2	0.20	2.75	**M**
Earthquake	3	1.35	4	1.20	4	0.60	1	0.10	3.25	**H**
Flood	3	1.35	2	0.60	1	0.15	2	0.20	2.30	**M**
Power Outage	4	1.80	2	0.60	4	0.60	3	0.30	3.30	**H**
Wildfire	3	1.35	4	1.20	4	0.60	3	0.30	3.45	**H**
Windstorm	3	1.35	2	0.60	2	0.30	3	0.30	2.40	**M**

**** Hazard Priority Ranking:***
High = CPRI score for probability + magnitude/severity (impact) = 6 or higher
Medium = CPRI score for probability + magnitude/severity (impact) = 5
Low = CPRI score for probability + magnitude/severity (impact) = 3 or 4
N/A = CPRI score for probability + magnitude/severity (impact) = 2

Table 6: Calculated Priority Risk Index Key
Source: FEMA Emergency Management Institute

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
Probability	Unlikely	Extremely rare with no documented history of occurrences or events. Annual probability of less than 1 in 1,000 years.	1	45%
	Possibly	Rare occurrences. Annual probability of between 1 in 100 years and 1 in 1,000 years.	2	
	Likely	Occasional occurrences with at least 2 or more documented historic events. Annual probability of between 1 in 10 years and 1 in 100 years.	3	
	Highly Likely	Frequent events with a well-documented history of occurrence. Annual probability of greater than 1 every year.	4	
Magnitude/ Severity	Negligible	Negligible property damage (less than 5% of agency-owned critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible loss of quality of life. Shutdown of critical public facilities for less than 24 hours.	1	30%
	Limited	Slight property damage (greater than 5% and less than 25% of agency-owned critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability, and there are no deaths. Moderate loss of quality of life. Shutdown of critical public facilities for more than 1 day and less than 1 week.	2	
	Critical	Moderate property damage (greater than 25% and less than 50% of agency-owned critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least 1 death. Shutdown of critical public facilities for more than 1 week and less than 1 month.	3	
	Catastrophic	Severe property damage (greater than 50% of agency-owned critical and non-critical facilities and infrastructure). Injuries and illnesses result in permanent disability and multiple deaths. Shutdown of critical public facilities for more than 1 month.	4	
Warning Time	> 24 hours	Population will receive greater than 24 hours of warning.	1	15%
	12–24 hours	Population will receive between 12-24 hours of warning.	2	
	6-12 hours	Population will receive between 6-12 hours of warning.	3	
	< 6 hours	Population will receive less than 6 hours of warning.	4	
Duration	< 6 hours	Disaster event will last less than 6 hours	1	10%
	< 24 hours	Disaster event will last less than 6-24 hours	2	
	< 1 week	Disaster event will last between 24 hours and 1 week.	3	
	> 1 week	Disaster event will last more than 1 week	4	

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.

Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i))
A: See **Table 7** below.

Table 7 includes hazards identified as "medium" or "high" in the CPRI - Hazard Priority Rankings.

Table 7: Hazard Profile of Location, Extent, Probability, and Recent Significant Occurrence for the District
Source: District Planning Team, Emergency Planning Consultants, 2025

Hazard	Location (Where)	Extent (How Big an Event)	Probability (How Often) *	Most Recent Significant Occurrence
Drought	Entire District	Droughts in urban areas vary considerably in scope and intensity. Likely emergency water shortage regulations would restrict such activities as watering of landscape, washing of cars, and other non-safety related activities.	Likely	Level 2 Water Conservation practices in place. Water providers following Governor Newsom's Executive Order N-7-22 on March 22, 2022, calling on urban water suppliers to implement actions to reduce water usage by 20-30 percent, depending on local conditions.
Earthquake	Entire District	The Southern California Earthquake Center (SCEC) in 2007 concluded that there is a 99.7 % probability that an earthquake of M6.7 or greater will hit California within 30 years.[1]	Likely	The most recent damaging earthquake was the M6.7 Northridge Earthquake in 1994.
Flood	Western Portion of District – adjacent to Eaton Wash	Heavy rains and runoff can overrun channel leading to damaged road and pipeline near the streamed.	Likely	2023
Power Outage	Entire District	Especially with an extended outage, Public Safety Power Shutoffs pose significant threats to water providers and customers.	Highly Likely	PSPS impacted WVWD in January 2025 wildfires.

Hazard	Location (Where)	Extent (How Big an Event)	Probability (How Often) *	Most Recent Significant Occurrence
Wildfire	Northern Portion of District	State/Local Responsibility Area designated as Very High Fire Hazard Severity Zone.	Likely	2025 Eaton Fires resulted in 17 deaths and damage to 9,000 structures. KID experienced extensive damage.
Windstorm	Entire District	Windstorm leads to electrical utility grid shutdown and downed trees block roads for days making travel in the District and ability to transport equipment and fuel for generators hazardous.	Likely	January 2025 Windstorms
* Probability is defined as: Unlikely = 1:1,000 years, Possibly = 1:100-1:1,000 years, Likely = 1:10-1:100 years, Highly Likely = 1:1 year				
[1] Uniform California Earthquake Rupture Forecast				

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.

Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i))
A: See **Table 8** below.

Table 8 outlines the hazards that were reviewed for the Kinneloa Irrigation District and their status of omission and inclusion.

Table 8: KID Hazard Source Review and Status of Omission/Inclusion
Source: District Planning Team (PT); California State Hazard Mitigation Plan (SHMP); Los Angeles County All-Hazards Mitigation Plan, (AHMP); National Risk Index (NRI))

Hazard	Source				Profiled in Annex	Status of Omission/Inclusion
Drought	NRI	SHMP	AHMP	PT	Y	The Planning Team ranked drought as a “medium” threat and is included as a profiled hazard.
Earthquake	NRI	SHMP	AHMP	PT	Y	The Planning Team ranked earthquake as a “high” threat and is included as a profiled hazard.
Power Outage				PT	Y	The Planning Team ranked power outage as a “high” threat and is included as a profiled hazard.
Riverine Flooding	NRI	SHMP	AHMP	PT	Y	The Planning Team ranked flood as a “medium” threat and is included as a profiled hazard.
Strong Wind	NRI	SHMP		PT	Y	The Planning Team ranked strong wind as a “medium” threat and is included as a profiled hazard.

Wildfire	NRI	SHMP	AHMP	PT	Y	The Planning Team ranked wildfire as a "high" threat and is included as a profiled hazard.
Avalanche	NRI	SHMP			N	The Planning Team determined that this hazard poses no threat to the service area.
Climate Change			AHMP	PT	N	The Planning Team determined that this hazard does pose a threat to the service area. As per FEMA guidance, impacts of climate change have been integrated into each of the profiled hazards.
Coastal Flooding	NRI				N	The Planning Team determined that this hazard poses no threat to the service area.
Cold Wave	NRI	SHMP			N	The Planning Team determined that this hazard poses no threat to the service area.
Dam Failure		SHMP	AHMP		N	The Planning Team determined that this hazard poses no threat to the service area.
Hail	NRI				N	The Planning Team determined that this hazard poses no threat to the service area
Heat Wave	NRI	SHMP			N	The Planning Team determined that this hazard poses no threat to the service area.
Hurricane	NRI				N	The Planning Team determined that this hazard poses no threat to the service area.
Ice Storm	NRI				N	The Planning Team determined that this hazard poses no threat to the service area.
Landslide	NRI	SHMP	AHMP		N	The Planning Team determined that this hazard poses no threat to the service area.
Levee Failure		SHMP			N	The Planning Team determined that this hazard poses no threat to the service area.
Lighting	NRI				N	The Planning Team determined that this hazard poses no threat to the service area.
Subsidence		SHMP			N	The Planning Team determined that this hazard poses no threat to the service area.
Tornado	NRI				N	The Planning Team determined that this hazard poses no threat to the service area.
Tsunami	NRI	SHMP	AHMP		N	The Planning Team determined that this hazard poses no threat to the service area.
Volcanic Activity	NRI	SHMP			N	The Planning Team determined that this hazard poses no threat to the service area.
Winter Weather	NRI				N	The Planning Team determined that this hazard poses no threat to the service area.

Earthquake

Description

For a detailed description of earthquakes please see the RWD Base Plan.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.

Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i))
A: See **Local Conditions** below.

Local Conditions

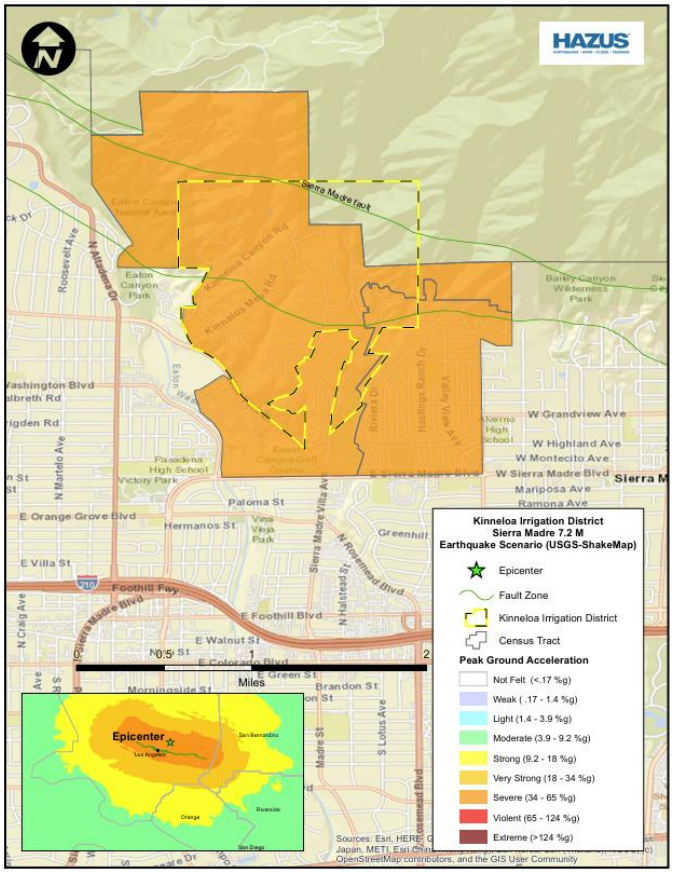
According to the UWMP, the California Geological Survey has published the locations of numerous faults which have been mapped in the Southern California region. Although the San Andreas Fault is the most recognized and is capable of producing an earthquake with a magnitude greater than 8 on the Richter Scale, some of the lesser-known faults have the potential to cause significant damage. The locations of these earthquake faults in the vicinity of the District's water service area are provided in the figure below. The faults that are located in close proximity to and could potentially cause significant shaking in the District's water service area include the Sierra Madre Fault.

Sierra Madre Fault

The Sierra Madre Fault is a major reverse fault in Southern California, running along the base of the San Gabriel Mountains. It is part of the Transverse Ranges Fault System and plays a key role in uplifting the region. The fault extends about 50 miles through Los Angeles County, near cities like Pasadena and Sierra Madre. It is capable of generating earthquakes over magnitude 7.0, posing a significant seismic hazard to nearby communities. Although its last rupture occurred around 10,000 years ago, geologists consider it active and a potential source of future earthquakes, making it a critical concern for earthquake preparedness in the region.

Map 3 depicts the shaking intensity for a 7.2M Earthquake scenario along the Sierra Madre Fault. The entire water district could experience severe shaking intensities ranging from 34%g to 65%g.

Map 3: HAZUS – Sierra Madre 7.2M
Source: Emergency Planning Consultants, 2023



Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Climate Change Considerations, Population Change Considerations,** and **Land Use Development Considerations** below.

Climate Change Considerations

To learn more about the impact climate change has on earthquakes, please see the Rowland Water District Base Plan.

There is no clear relationship between climate change and earthquakes. Given this, Kinneloa Irrigation District's impacts from earthquakes remain unchanged.

Population Change Considerations

According to the Kinneloa Irrigation District 2024 Water Rate Study, the district does not expect to see a change in customer or water demand in the next five years". Given this, the impacts of earthquakes on the water district remain unchanged.

Land Use Development Considerations

As discussed earlier in the Kinneloa Irrigation District Profile, the land uses in the service area are primarily comprised of single-family residential, multi-family residential, and commercial. Changes in land use development is projected to be minimal. As such, the district can expect to see no significant increase in vulnerability in the service area.

With no significant alterations to the development pattern for the Kinneloa Irrigation District, the vulnerability and impact of earthquakes is unchanged.

Drought

Description

For a detailed description of drought please see the Rowland Water District Base Plan.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.

Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i))

A: See **Local Conditions** below.

Local Conditions

According to the County of Los Angeles All-Hazard Mitigation Plan (2020), the Kinneloa Irrigation District service area, like the entire greater Los Angeles basin, is semi-arid, with relatively limited annual rainfall. Early settlers drew local groundwater resources for agricultural and domestic water needs. As the region grew, increasingly more wells tapped into groundwater basins. In many areas, groundwater levels have declined as water use continues to exceed natural recharge through rainfall and stream flow. Much of Southern California now relies upon imported water to

greatly supplement local resources, both to meet volume demands and to ensure water quality meets state and federal drinking water standards.

The service area's location in arid Southern California underscores the importance of continued education regarding wise water use and water conservation technologies. The area remains committed to water conservation strategies that ensure a healthy, clean, and reliable supply of water remains available for residents. The District actively encourages the use of simple water conservation measures in homes and in the workplace.

Water resources are limited to the groundwater basins that provide a local source of water to the region. The San Gabriel Basin is the groundwater basin drained by the San Gabriel River and the Rio Hondo. The groundwater basin is bounded by the San Gabriel Mountains to the north, San Jose Hills to the east, Puente Hills to the south, and Raymond Fault to the west. Local groundwater accounts for a major portion of the area's water supply.

Due to past San Gabriel Valley industrial practices, the basin has been contaminated with a variety of pollutants ranging from pesticides to industrial chemicals and solvents. According to the Environmental Protection Agency (EPA), over 30 square miles of San Gabriel Valley groundwater may be contaminated. The contaminated sites underlie several San Gabriel Valley communities. The District participates in Los Angeles County's NPDES program to reduce the amount of water polluted by pesticides, engine oil, and household chemicals that run into the storm drain system and pollute groundwater. As part of this effort, the District must comply with the County's Stormwater Quality Management Program and implement Best Management Practices (BMPs) in several areas including public outreach, planning and construction, public agency activities, business inspections, and illicit connection and flow.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))
A: See **Climate Change Considerations, Population Change Considerations,** and **Land Use Development Considerations** below.

Climate Change Considerations

Please see RWD Base Plan to learn more about the impact climate change has on droughts.

Since climate change can increase the severity and duration of droughts, Kinneloa Irrigation District can expect to see more severe impacts from droughts in the region.

Population Change Considerations

According to the Kinneloa Irrigation District 2024 Water Rate Study, the district does not expect to see a change in customer or water demand in the next five years". Given this, the impacts of drought on the water district remain unchanged.

Land Use Development Considerations

As discussed earlier in the Kinneloa Irrigation District Profile, the land uses in the service area are primarily comprised of single-family residential, multi-family residential, and commercial. Changes in land use development is projected to be minimal. As such, the district can expect to see no significant increase in vulnerability in the service area.

With no significant alterations to the development pattern for the Kinneloa Irrigation District, the vulnerability and impact of drought is unchanged.

Power Outage Hazards

Description

For a detailed description of power outage hazards please see the RWD Base Plan.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.
Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Local Conditions** below.

Local Conditions

The Kinneloa Irrigation District operates within areas primarily served by Southern California Edison (SCE) for electricity. SCE provides electrical services to much of Los Angeles County, including the communities within KID's service area – unincorporated areas within Los Angeles County and some residential areas in the City of Pasadena. While most power outages are usually localized and only last a short period of time, SCE will issue Public Safety Power Shutoff (PSPS) to prevent wildfires. SCE typically provides advance warnings for PSPS events, but outages can last several hours to days, depending on weather conditions and damage assessments.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.
Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii)) **A:** See **Climate Change Considerations, Population Change Considerations,** and **Land Use Development Considerations** below.

Climate Change Considerations

Please see the Rowland Water District Base Plan to learn more about climate change and its impact on power outage related hazards.

Since climate change is increasing the size and severity of power outage related hazards, Kinneloa Irrigation District should be prepared for more frequent events.

Population Change Considerations

According to the Kinneloa Irrigation District 2024 Water Rate Study, the district does not expect to see a change in customer or water demand in the next five years. Given this, the impacts of power outages on the water district will remain unchanged.

Land Use Development Considerations

As discussed earlier in the District Profile, the land uses in the service area are primarily comprised of single-family residential, multi-family residential, and commercial. Changes in land use development is projected to be minimal. As such, the district can expect to see no significant increase in vulnerability in the service area.

With no significant alterations to the development pattern for the Kinneloa Irrigation District, the vulnerability and impact of power outages is unchanged.

Flood

Description

For a detailed description of power outage hazards please see the Rowland Water District Base Plan.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.
Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i)) **A:** See **Local Conditions** below.

Local Conditions

The Kinneloa Irrigation District serves approximately 600 customers in a portion of unincorporated Los Angeles County adjacent to Pasadena. Due to its location near the San Gabriel Mountains, the district is susceptible to flooding, especially during heavy rainfall. The steep terrain can lead to rapid runoff, increasing the risk of flash floods and mudslides. Recent events, such as the Eaton Fire, have exacerbated these risks by removing vegetation that stabilizes the soil, making the area more prone to erosion and debris flow. In response, KID has implemented water conservation measures and infrastructure improvements to mitigate flood impacts and ensure a reliable water supply for its customers.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.
Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii)) **A:** See **Climate Change Considerations, Population Change Considerations,** and **Land Use Development Considerations** below.

Climate Change Considerations

Please see the Rowland Water District Base Plan to learn more about climate change and its impact on power outage related hazards.

Since climate change is increasing the size and severity of floods, Kinneloa Irrigation District should be prepared for more frequent events.

Population Change Considerations

According to the Kinneloa Irrigation District 2024 Water Rate Study, the district does not expect to see a change in customer or water demand in the next five years. Given this, the impacts of flood on the water district remain unchanged.

Land Use Development Considerations

As discussed earlier in the District Profile, the land uses in the service area are primarily comprised of single-family residential, multi-family residential, and commercial. Changes in land use development is projected to be minimal. As such, the district can expect to see no significant increase in vulnerability in the service area.

With no significant alterations to the development pattern for the Kinneloa Irrigation District, the vulnerability and impact of flood is unchanged.

Wildfire

Description

For a detailed description of power outage hazards please see the RWD Base Plan.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.

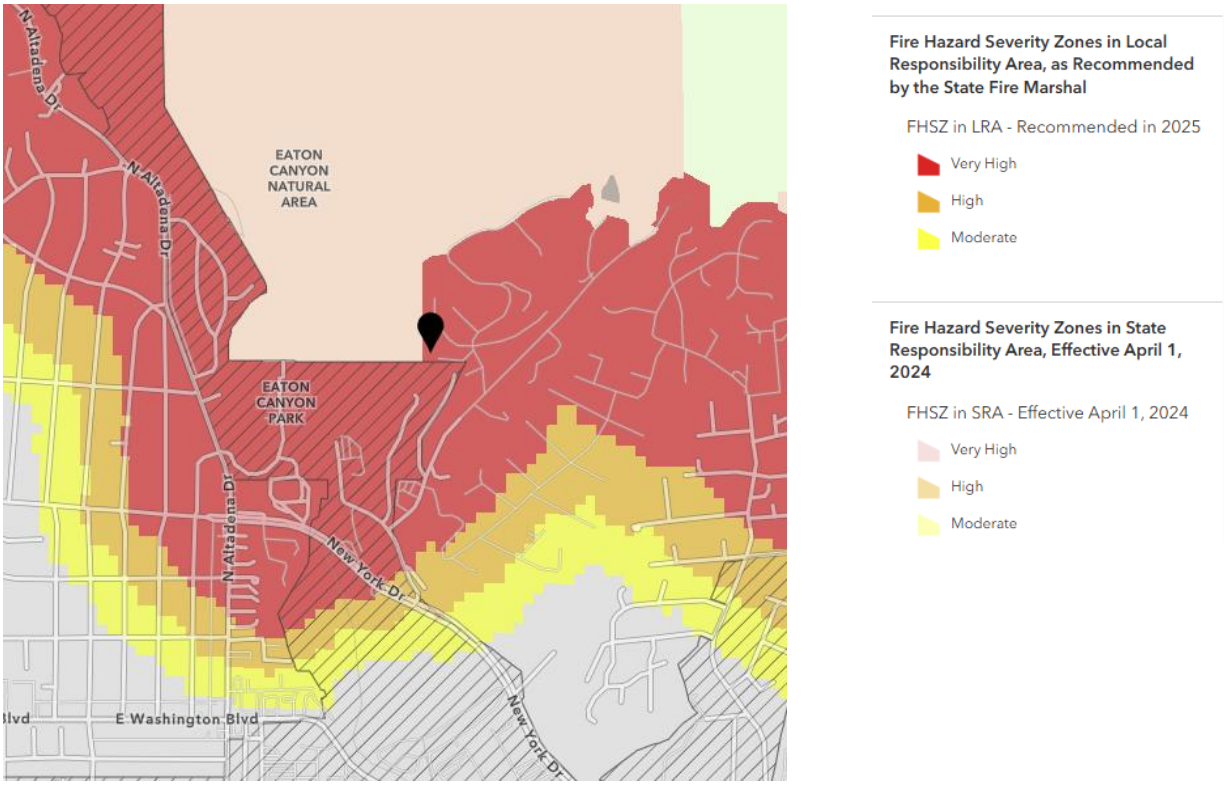
Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i))
A: See **Local Conditions** below.

Local Conditions

The District, located in the foothills of the San Gabriel Mountains, is highly susceptible to wildfires due to its steep terrain and dense vegetation. Historically, the area has experienced significant wildfire events, such as the devastating Kinneloa Fire in 1993, which led to extensive property damage and long-term environmental impacts.

In early January 2025, multiple wildfires, including the Palisades and Eaton fires, ravaged parts of Los Angeles County, directly impacting the KID service area. These fires, driven by hurricane-force winds, destroyed over 9,000 structures and compromised local water systems. As a result, KID issued an "Unsafe Water Alert" on January 8, 2025, advising residents not to drink or boil tap water due to potential contamination from fire-related pollutants, including volatile organic compounds like benzene.

Map 9: Fire Hazard Severity Zone Map
(Source: CAL FIRE, 2025)



Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.
Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii)) **A:** See **Climate Change Considerations, Population Change Considerations,** and **Land Use Development Considerations** below.

Climate Change Considerations

Please see the Rowland Water District Base Plan to learn more about climate change and its impact on power outage related hazards.

Since climate change is increasing the frequency and severity of wildfires, Kinneloa Irrigation District should be prepared for more frequent events.

Population Change Considerations

According to the Kinneloa Irrigation District 2024 Water Rate Study, the district does not expect to see a change in customer or water demand in the next five years. Given this, the impacts of wildfire on the water district will remain unchanged.

Land Use Development Considerations

As discussed earlier in the District Profile, the land uses in the service area are primarily comprised of single-family residential, multi-family residential, and commercial. Changes in land use development is projected to be minimal. As such, the district can expect to see no significant increase in vulnerability in the service area.

With no significant alterations to the development pattern for the Kinneloa Irrigation District, the vulnerability and impact of wildfire is unchanged.

Windstorm

Description

For a detailed description of windstorm hazards please see the Rowland Water District Base Plan.

Q&A | ELEMENT B: RISK ASSESSMENT | B1-a.

Q: Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area? (Requirement 44 CFR § 201.6(c)(2)(i))
A: See **Local Conditions** below.

Local Conditions

The District, located in the foothills of the San Gabriel Mountains near Pasadena, California, is susceptible to windstorms, particularly during the Santa Ana wind season. These strong, dry winds can exacerbate wildfire risks and cause infrastructure damage. In January 2025, hurricane-force winds contributed to multiple wildfires in Los Angeles County, directly impacting the KID service area. These events led to significant property damage and compromised local water systems, resulting in advisories against using tap water due to potential contamination. In response, KID has implemented measures such as maintaining emergency interconnections with neighboring water systems and deploying portable pumps to ensure water supply reliability during such events.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))
A: See **Climate Change Considerations, Population Change Considerations,** and **Land Use Development Considerations** below.

Climate Change Considerations

Please see the RWD Base Plan to learn more about climate change and its impact on power outage related hazards.

Since climate change is increasing the frequency and severity of windstorms, Kinneloa Irrigation District should be prepared for more frequent events.

Population Change Considerations

According to the Kinneloa Irrigation District 2024 Water Rate Study, the district does not expect to see a change in customer or water demand in the next five years. Given this, the impact of windstorms on KID will remain unchanged.

Land Use Development Considerations

As discussed earlier in the District Profile, the land uses in the service area are primarily comprised of single-family residential, multi-family residential, and commercial. Changes in land use development is projected to be minimal. As such, the district can expect to see no significant increase in vulnerability in the service area.

With no significant alterations to the development pattern for the Kinneloa Irrigation District, the vulnerability and impact of windstorm is unchanged.

Vulnerability and Impacts

The RWD Base Plan goes into more detail on the specifics of the vulnerability and impacts assessment process. This annex focuses specifically on the vulnerability and impacts for Kinneloa Irrigation District.

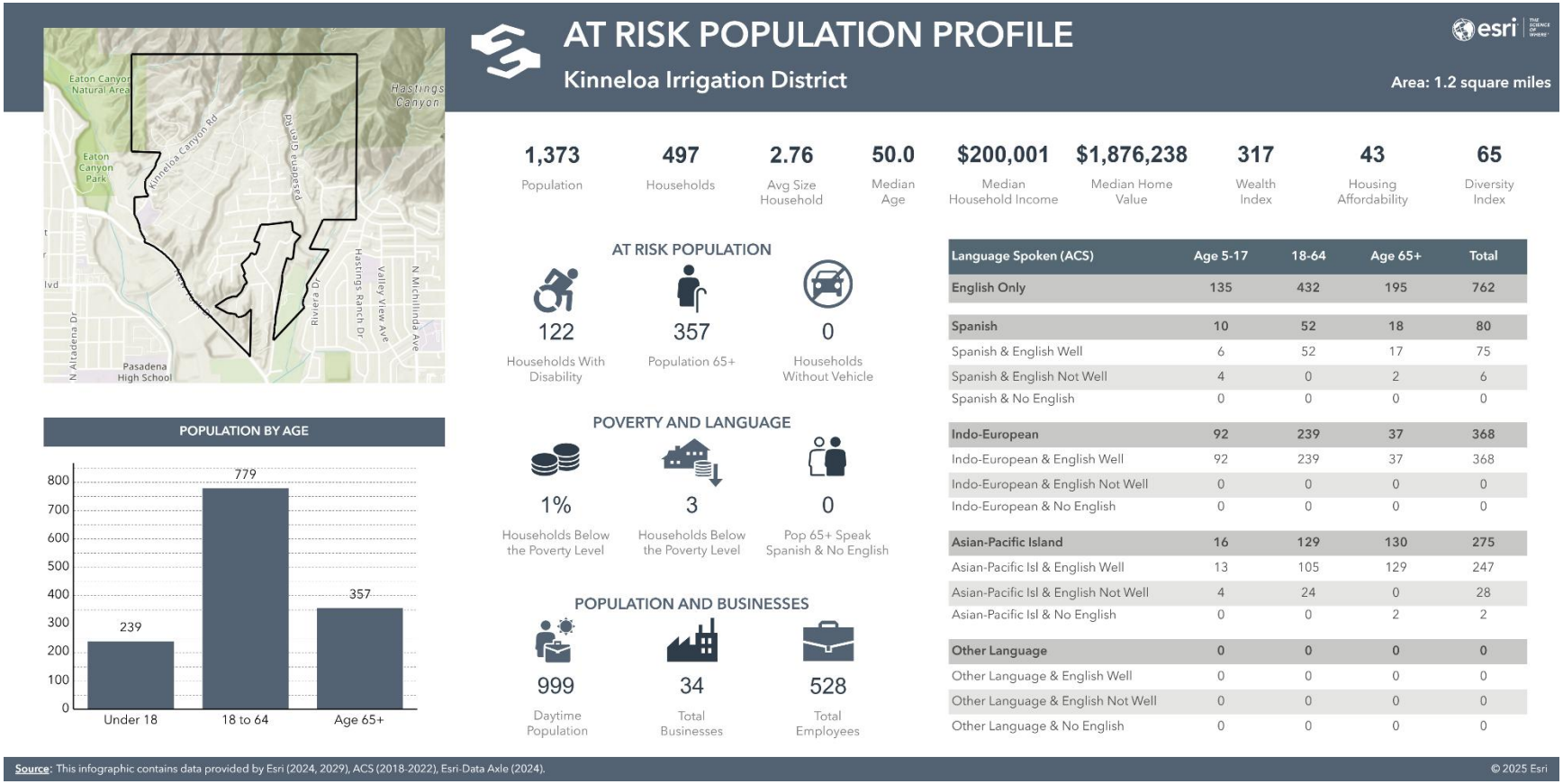
People

Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.
Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii)) **A:** See **Vulnerability of People, Graphics 1 & 2** below.

Vulnerability of People

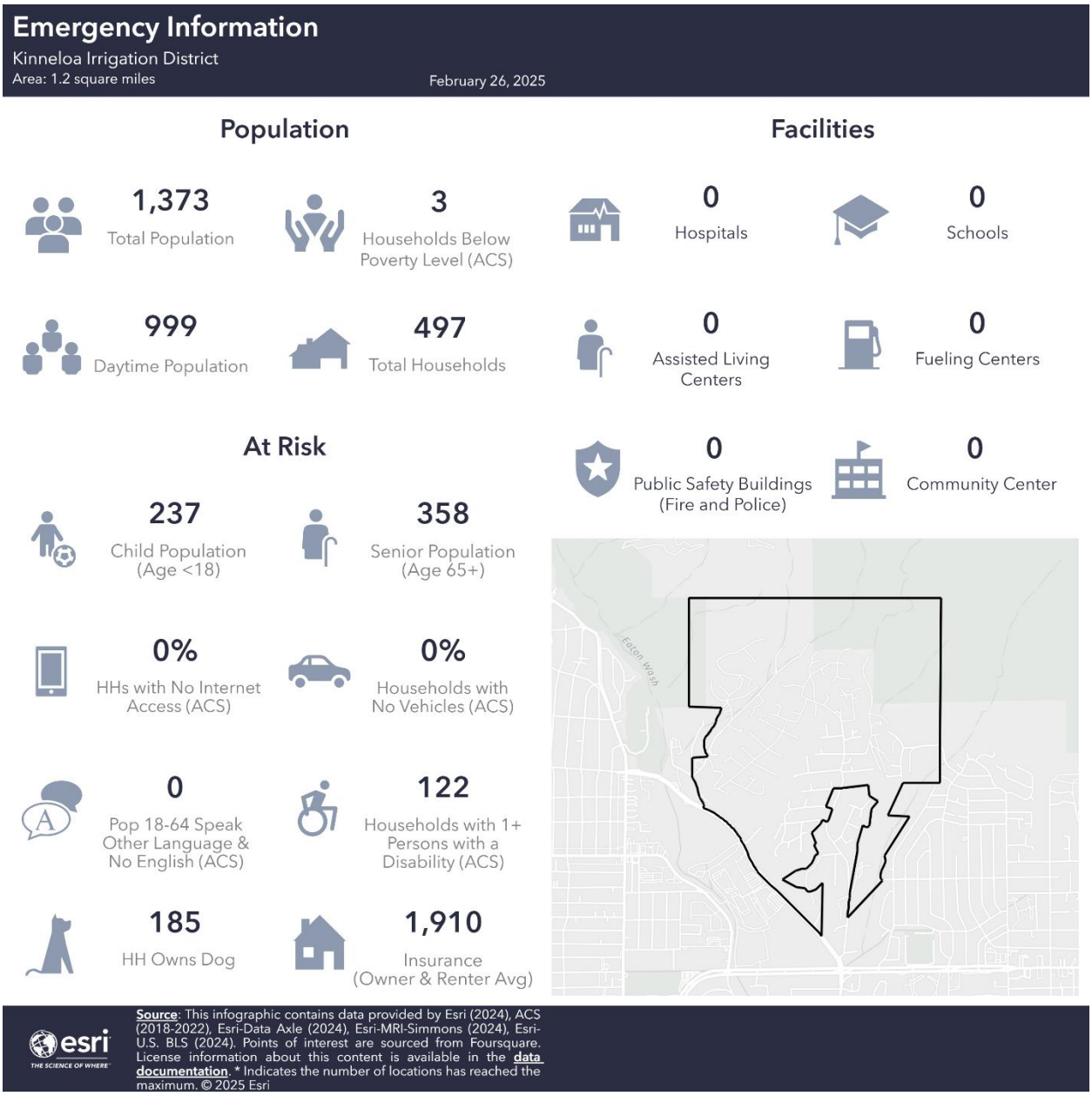
People are the service area's most important asset. People include individuals who live and/or work within the District's service area. The following graphics from Esri Business Analyst provide an overview of the District's population.

Graphic 1: At Risk Population Profile – Kinneloa Irrigation District
Source: Esri Business Analyst, 2025



Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	135	432	195	762
Spanish	10	52	18	80
Spanish & English Well	6	52	17	75
Spanish & English Not Well	4	0	2	6
Spanish & No English	0	0	0	0
Indo-European	92	239	37	368
Indo-European & English Well	92	239	37	368
Indo-European & English Not Well	0	0	0	0
Indo-European & No English	0	0	0	0
Asian-Pacific Island	16	129	130	275
Asian-Pacific Isl & English Well	13	105	129	247
Asian-Pacific Isl & English Not Well	4	24	0	28
Asian-Pacific Isl & No English	0	0	2	2
Other Language	0	0	0	0
Other Language & English Well	0	0	0	0
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

Graphic 2: Emergency Information – Kinneloa Irrigation District
Source: Esri Business Analyst, 2025



The two infographics provide an overview of the at-risk population and emergency preparedness for the Kinneloa Irrigation District, a small area with a population of 1,373 spread across 497 households. The district has a median household income of $200,001 and a median home value of approximately $1.88 million. The demographic breakdown highlights a significant senior population (357-358 individuals aged 65+) and a moderate number of children under 18 (237-239 individuals). Additionally, 122 households include persons with disabilities. However, there are no households without a vehicle or without internet access.

The language distribution indicates that the majority of residents speak English, with some Spanish and Indo-European language speakers. Notably, only a small fraction (3 households)

falls below the poverty level, and no seniors solely speak Spanish without English proficiency. Despite this, emergency preparedness is a concern, as the district lacks essential facilities such as hospitals, schools, public safety buildings, and assisted living centers. Furthermore, the community has no fueling centers or community centers, which could pose challenges during emergencies.

The daytime population is notably lower than the total population at 999, suggesting that many residents commute elsewhere for work or other activities. Additionally, there are 528 employees across 34 businesses, indicating a limited local economy. While many households own pets (185 households with dogs), the availability of emergency services remains a major gap in the district's infrastructure. These factors highlight the importance of external support and strategic planning in the event of a crisis or natural disaster.

The old and young are particularly vulnerable during disasters. Age can contribute to cognitive development, physical ability and mobility, socioeconomic stats, and access to resources that can help the individual prepare for, respond to and recover from disasters and other hazard events. For example, individuals 65 and older can have mobility challenges and other ailments that can prevent them from properly preparing for a disaster. At the same time, children are reliant on their parents or guardians to provide for them. Their ability to withstand a disaster is highly dependent on their parents or guardians. Children are more vulnerable to disasters when they are separated from their parents while at school or daycare.

Individuals with disabilities are disproportionately affected by disasters. Individuals with disabilities have a higher rate of fatality, and exclusion during disasters. They also have greater challenges during recovery. Understanding the disability demographics of a community gives the community the opportunity to identify and plan for the access and functional needs their communities' members might need during a disaster.

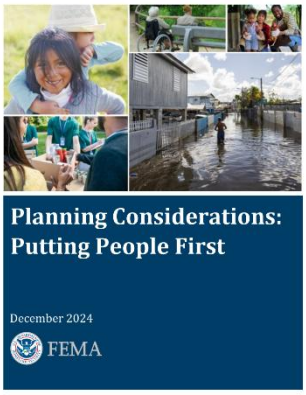
The ability for an individual to prepare for, mitigate against, respond to, and recover from disasters often depends on the availability of key resources. It is logical to assume that individuals with a higher socioeconomic status are in a better position to acquire key resources than individuals with a lower socioeconomic status. Factors that contribute to socioeconomic status include income, education, occupation, and housing. According to **Planning for an Emergency: Strategies for Identifying and Engaging At-Risk Group**, people with lower socioeconomic status more likely lack resources needed to follow emergency preparedness instructions. They might be unable to stockpile food, for example. They might be unwilling or unable to stay home from work and lose a day's pay or evacuate and leave their home during an emergency. By identifying at-risk groups ahead of time, you can plan more efficient evacuations and specifically target people who need transportation or special assistance (e.g., those without a vehicle).

Population - Underserved Communities, Disadvantaged Communities, and Socially Vulnerable Populations

It's important to note that the mapping tools discussed below conclude the KID service area includes no "underserved communities" or high indicators of "socially vulnerable populations". However, the reality is that individuals live, work, play, attend school, and worship throughout the entire service area. In that regard, the Community Outreach Strategy was designed to share messaging with people who have access to public forums and internet while also taking messaging to locations frequented by underserved, disadvantaged, and socially vulnerable individuals including social service agencies, schools, and places of worship.

Underserved Communities

FEMA's 2024 Planning Considerations: Putting People First provides excellent insights into the importance of truly engaging the whole community. It emphasizes that meeting the needs of the whole community requires emergency managers to focus on people by incorporating equity, inclusion, and accessibility in each step of the planning process. Putting people first means taking a whole-community approach to emergency management planning. It means using the lenses of equity, accessibility, and inclusion to identify the needs of populations who may not have had their needs met during previous emergencies due to past policy decisions or gaps in planning assumptions and considerations.



Putting people first also means including underserved populations in the planning process, since they are the experts on their needs, unique risks, and vulnerabilities. Emergency managers can learn about a community by conducting research or speaking directly to members of underserved populations to hear their insights and perspectives and build relationships and trust. Using the lens of accessibility means not only finding ways to enable people to be part of the planning process but also making information accessible to everyone, including people with disabilities and other access and functional needs. The process of weaving equity, inclusion, and accessibility throughout emergency management plans, policy, and guidance is not a single effort or action.

Being truly inclusive is an ongoing process that involves the following:

- Listening to and empowering people from all parts of the community, particularly those from underserved communities, enables them to participate in the planning process.
- Revising plans, policies, and other guidance to reflect the priorities and needs of the whole community.
- Ensuring ongoing awareness and evaluation as communities' characteristics and needs change over time.

The concepts of accessibility, equity, and inclusion are particularly important in emergency management because the firsthand experience of underserved communities and research about the distribution of disaster impacts have consistently shown that disasters affect those communities disproportionately. Disaster literature provides many examples of how factors such as race, income, age, disability, and gender run in parallel to outcomes in disaster preparedness, mitigation, response, and recovery.

Examples include the following:

Older adults are often at higher risk of death or injury during disasters because they are more likely to have health problems, reduced mobility, and a fixed income.

People living in rural areas can be at greater risk of poor health outcomes caused by limited access to local doctors and healthcare facilities, among other factors. This, in turn, puts them at greater risk during disasters.

Low-income populations and communities of color are more likely to suffer property damage, injury, and death during disasters, in part because they are more likely to live in older, denser, more disaster-prone neighborhoods with lower-quality housing and inadequate services.

Individuals with disabilities and other access and functional needs, such as literacy challenges and limited English comprehension are also at greater risk. Access and functional needs can make adapting to extreme circumstances particularly challenging and stressful, especially when preparedness efforts have not accounted for these needs. If information is presented only in English, those with limited English proficiency are at a disadvantage.

Federal Government Executive Order 13985 On Advancing Racial Equity and Support for Underserved Communities Through the Federal Government defines underserved communities as "populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life."

At the time of this plan's preparation, federal mapping resources relating to underserved communities were not available to the public. As such, it was not possible to determine whether or not the KID service area included any underserved communities.

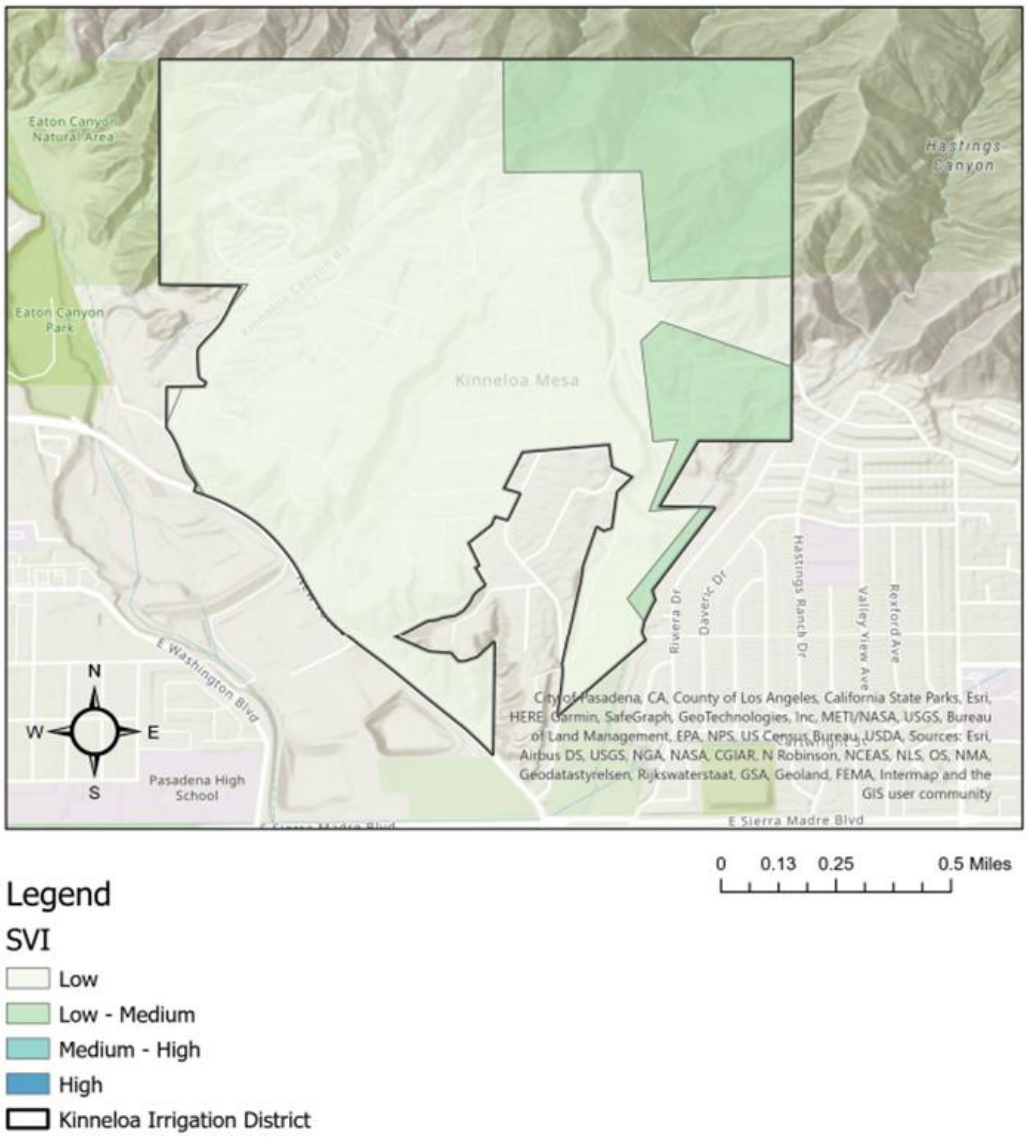
Socially Vulnerable Populations

Social vulnerability considerations were included in this plan to identify populations across the service area that might be more vulnerable to hazards. Social Vulnerability refers to a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters such as tornadoes or disease outbreaks, to human caused threats such as toxic chemical spills (CDC/ATSDR, 2020). To better assist emergency planners, the CDC Agency for Toxic Substances and Disease Registry (CDC/ATSDR) developed the Social Vulnerability Index (SVI) as a way to depict the social vulnerability of communities, as the census tract level within a specified county. Tracts with a higher SVI will likely need support before, during and after a hazardous event. The SVI can help public health officials and local planners better prepare for and respond to emergency events by displaying what areas of the jurisdiction have a high vulnerability ranking to low vulnerability ranking.

For information on the Social Vulnerability Index, please see the RWD Base Plan.

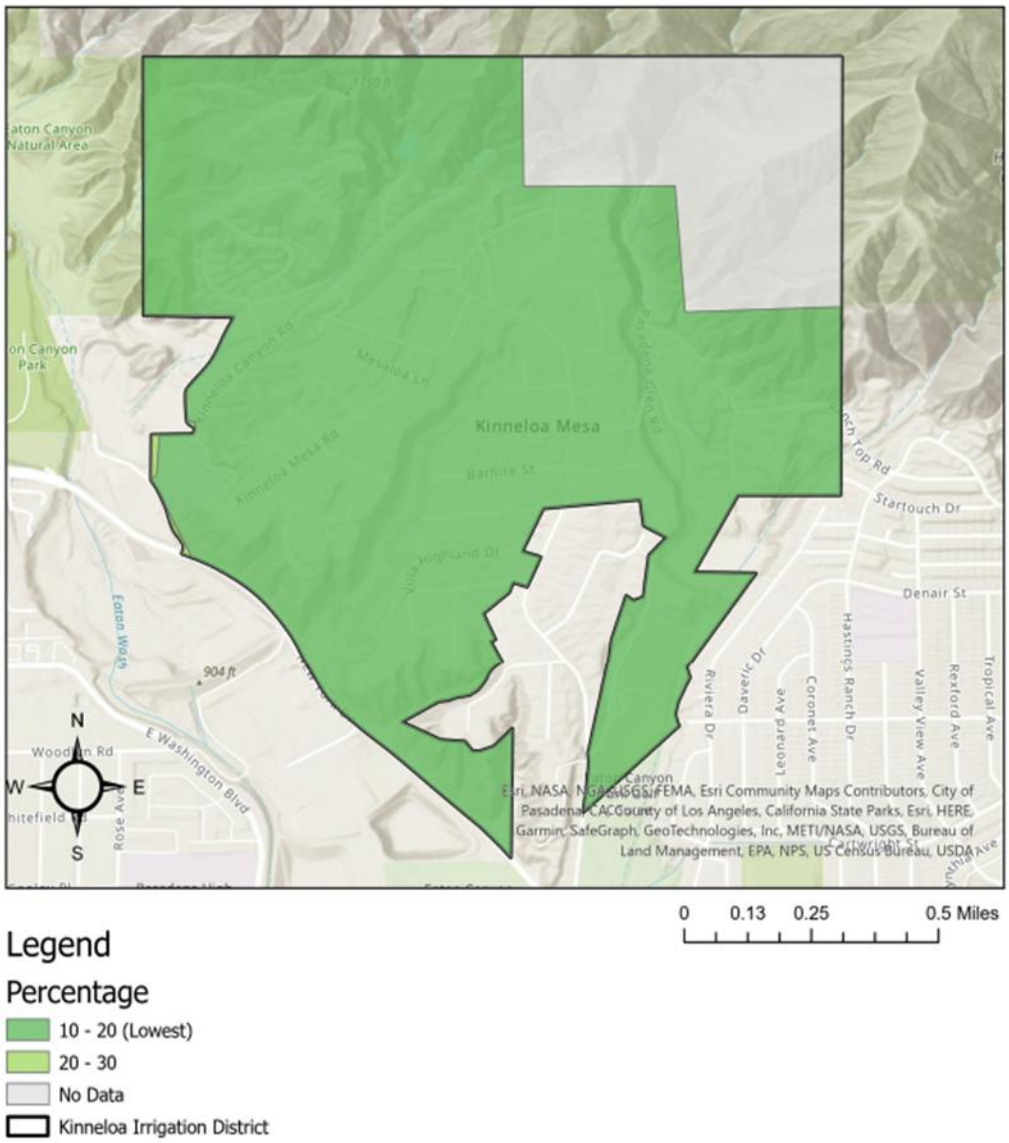
The map below depicts the overall social vulnerability for the Kinneloa Irrigation District. All the census tracts in KID have a low or low-medium SVI rating.

Map 10: Kinneloa Irrigation District Social Vulnerability Index
Source: CDC/ATSDR Social Vulnerability Index, 2023



The census tracts depicted in the SVI maps correspond to the California Office of Environmental Health Hazard Assessment (OEHHA) CalEnviroScreen 4.0 mapping tool and census tract datasets. CalEnviroScreen 4.0 is a mapping tool that helps identify California communities that are most affected by many sources of pollution, where people are often especially vulnerable to pollution's effects. CalEnviroScreen ranks census tracts in California based on potential exposures to pollutants, adverse environmental conditions, socioeconomic factors and the prevalence of certain health conditions. Those census tracts with a higher overall percentile score have a higher pollution burdens and population sensitives. These tracts are depicted in the darker red colors on the map. Census tracts with lower overall percentile scores have a lower pollution burdens and population sensitivities. These tracts are depicted in a darker green color on the map. The majority of the KID is between the 10 and 20 overall percentile range.

Map 11: Kinneloa Irrigation District CalEnviroScreen 4.0 Results
Source: CalEnviroScreen, 2023



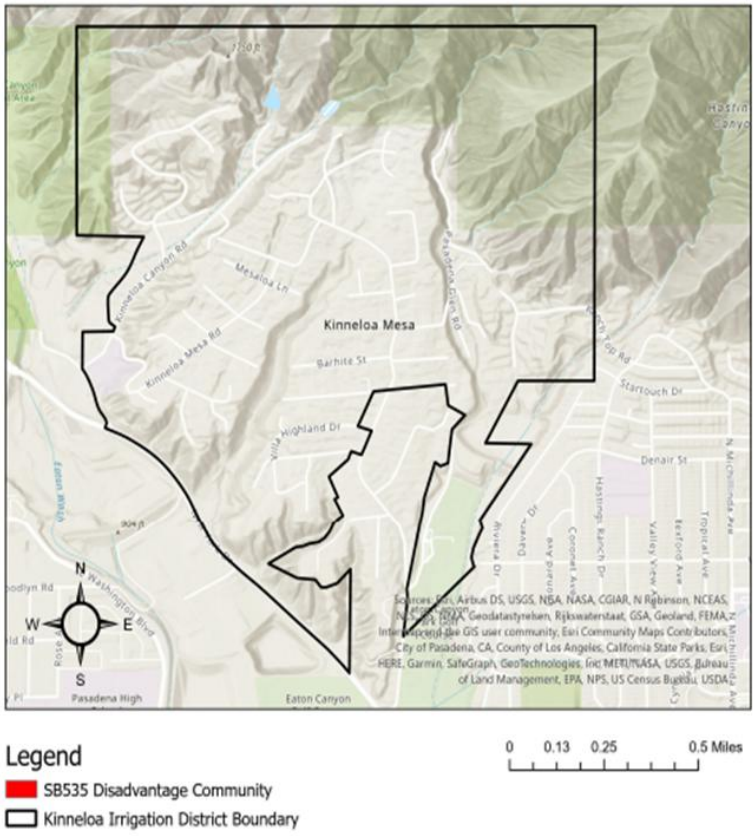
Disadvantaged Communities

SB 1000 defines "disadvantaged communities" as areas identified by the California Environmental Protection Agency pursuant to Section 39711 of the Health and Safety Code or as an area that is low-income that is disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation. To assist in identifying disadvantaged communities, the State has provided a mapping tool called "CalEnviroScreen." CalEnviroScreen uses several factors, called "indicators" that have been shown to determine whether a community is disadvantaged and disproportionately affected by pollution. Pollution burden indicators measure different types of pollution that residents may be exposed to, and the proximity of environmental hazards to a community. Population characteristics represent characteristics of the community that can make them more susceptible to environmental hazards.

CalEnviroScreen provides an overall percentile score determined by combining weighted individual scores for all the individual indicators analyzed. SB 1000 considers a 75 percent or

higher score in this category to be a qualifier for consideration as a disadvantaged community. The overall scores are represented in a statewide map, with red representing the highest percentile range and green representing the lowest. Areas with higher scores generally experience higher pollution burdens and fare poorer on a range of health and socioeconomic indicators than areas with low scores. There are no census tracts within the Kinneloa Irrigation District service area that is considered a disadvantaged community.

Map 12: Kinneloa Irrigation District SB 535 Disadvantaged Communities
Source: CALEPA SB535 Disadvantaged Communities, 2023



Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.
Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))
A: See **Impact Profile of People** below.

Impact Profile of People

Earthquake

An earthquake in the Kinneloa Irrigation District could have significant impacts on the local population, particularly due to its demographic vulnerabilities and lack of critical facilities. Given that 358 residents (26%) are seniors (65+) and 122 households have at least one person with a disability, these groups would face heightened risks during and after the disaster. Mobility impairments, medical needs, and potential reliance on caregivers could make evacuation and recovery challenging for them.

Another major concern is the district's lack of essential infrastructure. The area has no hospitals, assisted living centers, public safety buildings (fire and police), or community centers, meaning emergency response would rely entirely on external aid from nearby jurisdictions. The absence of fueling centers could further hinder evacuations and supply distribution. Additionally, there are no schools, which eliminates one potential site for emergency shelters.

While the median household income is high ($200,001) and there are no reported households without internet or vehicles, economic privilege does not necessarily equate to disaster resilience. The district's hilly terrain and relatively isolated layout could make road access difficult, increasing the risk of landslides, road blockages, and delayed emergency response. Homes with a median value of $1.88 million may be well-built, but structural damage from ground shaking, broken water lines, and gas leaks could still pose significant hazards.

Language barriers appear to be a minor concern, as the majority of residents speak English well. However, 3 households live below the poverty level, and lower-income residents often have fewer resources for emergency preparedness, home retrofitting, and post-disaster recovery.

In summary, an earthquake could severely impact the Kinneloa Irrigation District due to its aging population, lack of local emergency services, and potential accessibility challenges. While residents may have financial resources and transportation, the absence of critical infrastructure and the district's geographic isolation could delay response efforts and exacerbate vulnerabilities among seniors and those with disabilities. Strategic preparedness, including mutual aid agreements and personal emergency plans, would be essential to mitigating these risks.

Drought

A drought in the Kinneloa Irrigation District could significantly impact residents due to water shortages, increased costs, and heightened wildfire risks. As an irrigation district, water management is a core function, meaning prolonged drought conditions could lead to mandatory conservation measures, restricted household and landscaping use, and potential price surcharges. Given the area's affluent population and large properties, reduced water availability could significantly alter daily life and property maintenance.

Vulnerable populations, particularly the 358 seniors (26% of the population) and 122 households with disabilities, may face health risks from extreme heat and reduced access to clean water. Businesses in the district could also experience disruptions, especially those that rely on water for operations, such as landscaping or food services. Additionally, property values might decline if drought conditions persist and landscapes deteriorate, impacting the district's economic stability.

One of the most critical concerns is the increased wildfire risk. With the district's hilly terrain and proximity to natural areas, dry conditions and water shortages could make firefighting efforts more challenging, putting homes and infrastructure at greater risk. Residents may also need to rely more on regional or state water sources, which could be uncertain during a statewide drought. To mitigate these risks, proactive drought management strategies—such as water-efficient infrastructure, emergency reserves, and fire prevention measures—will be essential for maintaining community resilience.

Power Outage

Power outages in the Kinneloa Irrigation District could have severe consequences, particularly for the district's 358 seniors (26% of the population) and 122 households with disabilities, many of whom may rely on electricity for medical devices, heating, cooling, and communication. Given

the area's affluent nature, many homes may have backup generators, but those without alternative power sources could experience significant disruptions.

A prolonged outage would also affect water supply and sanitation, as water distribution systems often depend on electrically powered pumps. Residents may experience reduced access to running water, affecting hygiene and increasing the risk of dehydration, especially during extreme heat events. The lack of hospitals, public safety buildings, and community centers in the district further exacerbates the issue, as there are no local emergency shelters or services to provide aid.

Businesses in the district could face operational challenges, particularly those reliant on refrigeration, communication, or electronic payment systems. Additionally, the increased wildfire risk during dry conditions means that a power outage could leave residents without access to emergency alerts or the ability to evacuate safely.

In summary, power outages in the District could disrupt essential services, pose health risks to vulnerable populations, and increase fire hazards. While many residents may have the financial means to invest in alternative power sources, the lack of local emergency infrastructure makes the district highly dependent on external support for disaster response and recovery.

Flood

Flooding in the Kinneloa Irrigation District could have significant consequences due to the area's hilly terrain, reliance on local infrastructure, and vulnerable populations. Heavy rainfall or flash flooding could lead to mudslides, road washouts, and property damage, making it difficult for residents to evacuate or receive emergency aid. Given that the district lacks public safety buildings, hospitals, and community centers, response efforts would depend on external assistance, potentially delaying rescues and medical aid.

The district's 358 seniors (26% of the population) and 122 households with disabilities would be particularly at risk, as flooding could make mobility difficult and limit access to essential services. Power outages and disrupted water supply due to infrastructure damage could further worsen conditions, particularly for those reliant on medical equipment or clean drinking water. Flood waters could also introduce contamination risks, affecting sanitation and increasing the likelihood of waterborne illnesses.

Businesses and transportation could also suffer, with flooded roads cutting off access for the 34 businesses and 528 employees in the area. The potential for landslides in steep areas could make certain homes uninhabitable, leading to displacement and costly repairs. Additionally, with no public shelters in the district, residents affected by severe flooding would need to rely on nearby communities for temporary housing and support.

In summary, flooding in the District could disrupt transportation, damage homes, and endanger vulnerable populations. The lack of local emergency facilities makes the community highly dependent on outside aid, emphasizing the need for preparedness measures such as flood-resistant infrastructure, emergency evacuation plans, and improved drainage systems to mitigate risks.

Wildfire

A wildfire in the District could have severe and immediate consequences due to the area's hilly terrain, dry vegetation, and lack of local emergency facilities. With no fire stations, hospitals, or public safety buildings in the district, emergency response would depend entirely on external agencies, potentially delaying firefighting efforts and evacuations. Given the district's affluent

nature and high home values ($1.88 million median home value), property losses could be significant, and recovery costs would be high.

The district's 358 seniors (26% of the population) and 122 households with disabilities are particularly vulnerable, as many may have mobility issues that make rapid evacuation difficult. Additionally, households with pets (185 dog-owning households) may face extra challenges in evacuation planning. If power and water supplies are disrupted, those reliant on medical devices or air conditioning could experience serious health risks, especially during extreme heat events.

Smoke and air quality deterioration would affect all residents, particularly those with respiratory conditions. Businesses could also suffer economic losses due to evacuation orders, road closures, and infrastructure damage. With no community centers or shelters in the district, displaced residents would have to seek refuge in nearby areas, which could strain local resources.

In summary, a wildfire in the District could cause widespread destruction, health risks, and emergency response delays, disproportionately affecting vulnerable populations. To mitigate these risks, residents and local authorities should focus on fire-resistant landscaping, emergency evacuation plans, defensible space around homes, and community-wide preparedness efforts to improve resilience.

Windstorm

A windstorm in the District could pose significant risks to residents by causing power outages, property damage, and increased wildfire hazards. Given the area's hilly terrain and reliance on local infrastructure, strong winds could topple trees, damage power lines, and block roadways, making evacuation or emergency response more difficult. Since the district has no public safety buildings, hospitals, or community centers, residents would need to rely on external emergency services, potentially delaying aid.

Vulnerable populations, including 358 seniors (26% of the population) and 122 households with disabilities, would face additional challenges, particularly if power outages disrupt medical equipment or communication. Homes with pets (185 dog-owning households) might also struggle with evacuation if severe conditions persist. Given that 0% of households report lacking internet access, digital communication disruptions could cut off emergency alerts and access to critical information.

Additionally, strong winds could exacerbate wildfire risks by spreading flames rapidly if a fire starts. Dry conditions combined with high winds can create firestorms, making firefighting efforts more challenging. Businesses in the district could also suffer losses due to property damage, supply chain disruptions, or prolonged power outages.

In summary, a windstorm in the District could cause infrastructure failures, communication disruptions, and increased fire danger, particularly affecting vulnerable residents. To mitigate risks, the community should focus on tree maintenance, power line reinforcement, emergency preparedness plans, and wildfire prevention strategies to improve resilience against extreme wind events.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))
A: See **Climate Change, Changes in Population, and Land Use Development** below.

Climate Change

Climate change impacts people in the District in various ways, including through extreme heat events, changes in air quality, increased risk of wildfires, and potential impacts on water supply and infrastructure. These effects can lead to health issues, such as heat-related illnesses and respiratory problems, as well as challenges related to water availability and infrastructure resilience, highlighting the importance of adaptation and mitigation strategies to protect the well-being of the community.

Changes in Population

Changes in population in the District can significantly impact residents by influencing the demand for services, housing affordability, cultural diversity, traffic congestion, economic opportunities, and community services. A growing population may strain existing infrastructure and services, leading to longer wait times and crowded facilities. Additionally, population changes can affect the availability of affordable housing and create challenges related to cultural integration and inclusivity. However, population growth can also bring new job opportunities and enrich the cultural fabric of the community. Effective urban planning and community development strategies are crucial to address these impacts and ensure the well-being of residents in the District.

Land Use Development

Land use development in the District can impact residents by affecting housing availability and affordability, access to services such as healthcare and education, quality of life factors like access to green spaces and community amenities, economic opportunities through job creation and local business growth, and environmental considerations such as traffic congestion and pollution. Thoughtful planning and community engagement are crucial to ensure that development meets the needs of residents and enhances the overall quality of life in the district.

Structures

Critical and Essential Facilities List

The Critical and Essential Facilities List was prepared for each of the water district offices and facilities within the service area. Hazard maps from the 2020 County of Los Angeles All-Hazards Mitigation Plan were used as a basis for determining whether or not a facility was located in or near a hazard. See additional language below on vulnerability to the identified hazards.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.
Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii)) **A:** See **Table 9** below.

Table 9: Hazard Proximity to Critical and Essential Facilities
(Source: Emergency Planning Consultants)
Y – Yes, area is within hazard zone

District Facilities	Earthquake	Drought	Power Outage	Flood	Wildfire	Windstorm
District Office	X	X	X	X	X	X
K-3 Well Pump Station	X	X	X	X	X	X
Wilcox Well Pump Station	X	X	X	X	X	X
Wilcox Reservoir and Booster Station	X	X	X	X	X	X
Eucalyptus Reservoir and Booster Station	X	X	X	X	X	X
Sage Tank Reservoir and Booster Station	X	X	X	X	X	X
West Tank Reservoir	X	X	X	X	X	X
East Tank Reservoir	X	X	X	X	X	X
Brown Reservoir	X	X	X	X	X	X
Glen Reservoir and Booster Station	X	X	X	X	X	X
Vosburg Reservoir and Booster Station	X	X	X	X	X	X
Holly Tanks Reservoir	X	X	X	X	X	X

* See RWD Base Plan for information regarding NFIP regulations.

Based on available data provided by the water district, there is a minimum of $20,450,000 worth of district owned property.

The possibility that all facilities will be completely damaged simultaneously is extremely rare. Most of the impacts of the hazards that were analyzed are anticipated to be isolated to certain locations. To better understand the magnitude of impacts, this plan identifies representative percentages of potential impact based on the total valuation of district assets. For planning purposes, we identified different tiers of impact that could occur. It is reasonable to assume that impacts would not exceed 50% of the total asset value district-wide during a single event. The following are parameters to help in understanding how much a proposed investment/improvement compares to the existing assets within the district:

- 1% Impact – $204,500
- 5% Impact – $1,022,500
- 10% Impact – $2,045,000
- 20% Impact – $4,090,000
- 50% Impact – $10,225,000

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))
A: See **Impact Profile of Structures** below.

Impact Profile of Structures

Earthquake

Structures include physical buildings, lifelines, and critical infrastructure in a community. All properties and occupants in Kinneloa Irrigation District can be either directly impacted or affected by earthquakes. Building stock that was built prior to 1975, when seismic provisions became uniformly applied through building code applications. These buildings are at a higher risk of damage from earthquakes. Due to limitations in current modeling abilities, the risk to critical facilities in the planning area from the earthquake hazard is likely understated. A more thorough review of the age of critical facilities, codes they were built to, and location on liquefiable soils should be conducted. Damage to transportation systems in the planning area after an earthquake has the potential to significantly disrupt response and recovery efforts and lead to isolation of populations. Additionally, seismic events can damage communication systems, complicating efforts to coordinate response to the event. Many structures may need seismic retrofits in order to withstand a moderate earthquake. Residential retrofit programs, such as Earthquake Brace+Bolt, may be able to assist in the costs of these efforts.

All of the district-owned critical facilities are vulnerable to earthquakes. Property and contents valued at $20.45 million based on estimates in 2023. The severe ground shaking and soil liquefaction will result in significant damage or total destruction of these facilities and can be catastrophic for the Kinneloa Irrigation District.

Drought

The most immediate impact of a drought is on the water supply. Kinneloa Irrigation District relies on both surface and groundwater sources, which can become depleted during prolonged droughts. This could lead to water rationing, affecting residential, institutional, commercial, and industrial users. Reduced water availability could strain the district's ability to provide adequate water for drinking, sanitation, and fire suppression, compromising public health and safety. All properties in Kinneloa Irrigation District could be directly impacted or affected by drought. Most of the impact will be from the related hazards such as competition for water supply and disruption of public infrastructure. Reduced water supply could leave property vulnerable to fires. Dried vegetation around properties could also increase the vulnerability to fires.

Prolonged drought conditions could weaken soil stability, leading to ground subsidence. This can cause damage to roads, bridges, and pipelines, increasing maintenance costs and potentially leading to hazardous conditions. Water mains and sewage systems could be impacted by a loss of water or pressure. Also, those systems could be affected by soil movement, leading to leaks and breaks that further strain the city's water resources. Public parks and recreational areas may face restrictions on water use for irrigation, leading to degraded landscapes and reduced green spaces.

All of the district-owned critical facilities are vulnerable to drought. Property and contents valued at $20.45 million based on estimates in 2023.

Power Outage

A power outage can have significant impacts on a water district, affecting both its operations and the communities it serves. If the water supply or treatment facilities are disrupted, residents and businesses may face immediate shortages of clean water, compromising public health and sanitation. Loss of electricity can halt water pumping, treatment processes, and distribution systems, leading to service outages. Infrastructure damage, such as broken pipes or compromised water reservoirs, could further exacerbate water shortages or contamination risks. In addition, there may be challenges in restoring service due to transportation disruptions, difficulties accessing repair sites, or a lack of necessary resources or personnel. The economic and social consequences could be severe, especially if the district struggles to maintain operations or provide clean water for an extended period.

All of the district-owned critical facilities are vulnerable to power outages. Property and contents valued at $20.45 million based on estimates in 2023. Any utility related hazard can result in significant challenges to operations; specifically, being able to provide customers with clean water.

Flood

A flood in the Kinneloa Irrigation District could cause damage to district-owned structures, infrastructure, and essential services, potentially disrupting water management and emergency response. As an irrigation district, its primary infrastructure likely includes water pipelines, reservoirs, pumping stations, and drainage systems, all of which could be severely affected by floodwater, sediment buildup, and erosion. Damage to these facilities could disrupt water supply and quality, making it difficult for residents to access clean drinking water and irrigation resources.

If stormwater drainage systems become overwhelmed, roads, bridges, and access routes to critical infrastructure could be washed out or blocked by debris, delaying repair efforts and increasing maintenance costs. Mudslides and erosion in the district's hilly terrain could further threaten structures, causing foundation instability or equipment failure. If electrical systems within district-owned facilities are damaged, water pumps and treatment plants could be rendered inoperable, compounding the problem.

All of the district-owned critical facilities are vulnerable to impacts from floods. Property and contents valued at $20.45 million based on estimates in 2023.

Wildfire

A wildfire in the Kinneloa Irrigation District could severely impact district-owned structures and infrastructure, particularly facilities related to water supply, irrigation, and drainage systems. Given the area's hilly terrain and dry vegetation, wildfire damage could compromise pumping stations, pipelines, and water storage facilities, potentially leading to service disruptions for residents who rely on district-managed water resources. Burned vegetation could also increase soil erosion, leading to sediment buildup in reservoirs and drainage channels, which may require extensive post-fire cleanup and maintenance.

If power lines supplying electricity to pumping stations and water treatment facilities are damaged, it could halt water distribution and reduce firefighting capabilities, making it more difficult to contain future fires. The destruction of above-ground infrastructure, such as pipes, meters, and irrigation equipment, could result in significant repair costs and delays in restoring service.

Windstorm

A windstorm in the Kinneloa Irrigation District could cause significant damage to district-owned structures and infrastructure, particularly water supply facilities, pipelines, and power-dependent pumping stations. Strong winds could topple trees, damage above-ground pipelines, and knock out power lines, disrupting water distribution and irrigation systems. Given the district's reliance on electrically powered pumps, an extended power outage could interrupt water supply services, affecting both residents and emergency response efforts.

Additionally, flying debris and falling branches could damage storage tanks, drainage systems, and maintenance facilities, leading to costly repairs and operational downtime. If high winds cause structural damage to pumping stations or water treatment equipment, restoration efforts could be delayed, especially since the district lacks public safety buildings or emergency response centers to coordinate disaster recovery.

Erosion and infrastructure instability may also become concerns, as windstorms often exacerbate soil displacement, particularly in hilly terrain. If the district experiences power failures combined with blocked roadways from fallen trees or debris, maintenance crews could face challenges in quickly assessing and repairing critical infrastructure.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))

A: See **Climate Change, Changes in Population, and Land Use Development** below.

Climate Change

Climate change impacts critical facilities and structures in the Kinneloa Irrigation District by increasing the frequency and severity of heatwaves, flooding, wildfires, and poor air quality. These events strain energy and water resources, damage infrastructure, and heighten health risks, particularly for hospitals, emergency services, and community centers. To mitigate these effects, the water district needs to upgrade infrastructure, improve energy efficiency, and enhance emergency response plans. These measures will help ensure that critical facilities remain operational and continue to serve the community effectively amidst the challenges posed by climate change. *See Mitigation Actions Matrix in Chapter 5 (Table 5.1) for actions relating to climate change.*

Changes in Population

Changes in population in the Kinneloa Irrigation District, can significantly impact critical facilities and structures by influencing demand for services, infrastructure, and resources. Population growth leads to increased pressure on existing facilities, such as schools and healthcare services, requiring upgrades and expansions. Demographic shifts, such as an aging population or increased cultural diversity, can also impact the types of services needed. Urban development driven by population changes requires careful planning to ensure infrastructure can support the growing community. Effective planning and management are crucial to adapting critical facilities to meet the evolving needs of the population and ensure the continued resilience of the community.

Land Use Development

Changes in land use development in the Kinneloa Irrigation District can impact structures and critical facilities by influencing accessibility, infrastructure needs, environmental considerations,

community services, economic development, and require effective planning and management to ensure the continued functionality and resilience of critical facilities.

Economy

Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.

Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii))
A: See **Vulnerability to Economy** and **Table 10** below.

Vulnerability to Economy

Kinneloa Irrigation District serves mostly residential customers; however, there are a few commercial customers included a church, school, and Eaton Canyon Golf Course. These economic assets play a vital role in the community.

Table 10: Hazard Vulnerability to Economic Assets
(Source: District Planning Team, Emergency Planning Consultants)
(Note: "X" indicates affirmative)

Economic Assets	Earthquake	Drought	Power Outage	Flood	Wildfire	Windstorm
Pasadena Church of Christ - Kinneloa	X	X	X	X	X	X
High Point Academy	X	X	X	X	X	X
Eaton Canyon Golf Course	X	X	X	X	X	X

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))
A: See **Impact Profile of Economy** below.

Impact Profile of Economy

Pasadena Church of Christ - Kinneloa

Earthquake: Churches often serve as community gathering spaces and sometimes as emergency shelters. An earthquake could cause structural damage to the building, particularly if it is an older structure that has not been retrofitted for seismic activity. Cracked walls, collapsed ceilings, and damaged foundations could render the facility unsafe. Additionally, falling debris and broken glass could pose immediate hazards to congregants, especially during a service or event. If the church has a daycare or community center, those inside could face additional risks from structural instability and falling objects.

Power Outage: A power outage could interrupt church services, community gatherings, and outreach programs, especially if it occurs during a Sunday service or special event. Lighting, sound systems, and HVAC systems would be affected, making it difficult to hold services or provide a comfortable environment. If the church serves as a community aid center or shelter

during emergencies, its ability to assist people in need could be compromised. Prolonged outages may also affect security systems, refrigeration (if food is stored on-site), and communication methods, making coordination with congregants and emergency responders more difficult.

Drought: The church itself may not have high water consumption, but a drought could still impact its landscaping, sanitation, and community outreach efforts. Restrictions on outdoor water use may lead to dry or dying landscaping, affecting the church's appearance and requiring drought-resistant landscaping solutions. If the church provides community support services (such as food distribution or outreach programs), increased water costs could strain resources. Additionally, if the church serves as an emergency shelter during extreme heat events, access to cooling systems and sufficient water for attendees may become a concern.

Flood: A flood could damage the church building, electrical systems, and flooring, making it unsafe for worship services and community events. If floodwaters enter the sanctuary, furniture, equipment, and important documents could be destroyed. Additionally, standing water could lead to mold growth and long-term structural issues, requiring costly repairs. If the church serves as a community shelter or aid center, flood damage could disrupt its ability to provide assistance, leaving local residents without a key resource in times of need.

Wildfire: If a wildfire spreads to the church property, it could destroy or severely damage the building, including the sanctuary, offices, and community spaces. Smoke and ash could infiltrate the interior, making it unsafe for congregation gatherings even if flames do not directly reach the structure. If the church is used as an emergency shelter or aid center, fire damage or evacuation orders could disrupt these services. Additionally, road closures and hazardous air quality may prevent congregants from attending services, affecting church operations and outreach efforts.

Windstorm: Strong winds could damage the church's roof, windows, and exterior structures, making the building unsafe for services and gatherings. Falling trees or debris could block entrances or cause injuries, while power outages might disrupt lighting, heating, and sound systems, limiting church activities. If the church serves as a community aid center, these disruptions could affect its ability to provide support to residents during and after the storm.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))
A: See **Climate Change, Changes in Population, Land Use Development** below.

Climate Change: Increasing temperatures and more frequent heatwaves could make the church uncomfortable for congregants, especially if cooling systems are inadequate or energy costs rise. Extreme weather events, such as heavy storms or wildfires, could damage the church building, roof, and surrounding landscape, leading to costly repairs. If the church provides community aid or shelter services, it may experience greater demand for support during climate-related emergencies, requiring additional resources.

Changes in Population: A growing population in the area could lead to higher attendance, requiring the church to expand its services, seating capacity, and community outreach programs. This could bring increased donations and volunteer support but also put pressure on facilities and resources. Conversely, a declining population could result in fewer congregants, reduced

financial contributions, and challenges in maintaining church operations, potentially leading to budget constraints or program cutbacks.

Land Use Development: New residential or commercial developments nearby could increase church attendance as more people move into the area. However, if land use changes result in higher property values or zoning restrictions, the church could face higher operational costs or limitations on expansion. Increased development could also lead to traffic congestion and reduced parking availability, making it harder for congregants to attend services.

High Point Academy

Earthquake: Schools are particularly vulnerable to earthquakes due to the potential for structural damage, injuries to students and staff, and disruption of educational activities. If the academy's buildings are not up to seismic codes, classrooms, hallways, and administrative offices could suffer ceiling collapses, wall cracks, and broken windows, posing serious risks to occupants. The school may need to suspend operations for weeks or months if significant repairs are required. Additionally, blocked evacuation routes, gas leaks, and power outages could make emergency response difficult, requiring external aid for rescue and recovery efforts.

Power Outage: For the school, a power outage would be highly disruptive, affecting classroom instruction, communication, and campus safety. Computers, smart boards, internet access, and security systems would be disabled, making it harder to conduct lessons or contact parents. HVAC systems may also shut down, creating uncomfortable conditions in extreme weather. If the outage occurs during school hours, it could cause confusion and anxiety among students, particularly younger children. Emergency lighting and backup power for essential systems would be critical in ensuring student safety and maintaining order.

Drought: A drought could create challenges for the school by reducing water availability for restrooms, drinking fountains, and outdoor spaces. If local water restrictions limit irrigation, school fields, playgrounds, and landscaping may dry out, impacting outdoor activities and student comfort. Higher water costs may also put pressure on the school's budget, potentially affecting other resources. Additionally, heat waves associated with droughts could make classrooms uncomfortably hot, particularly if cooling systems are affected or restricted due to energy conservation measures.

Flood: Schools are highly vulnerable to flooding due to the potential for damage to classrooms, libraries, and playgrounds. Floodwater could destroy books, computers, and educational materials, delaying learning and requiring expensive replacements. If roads leading to the school become impassable, students and staff may be unable to reach the campus, forcing temporary closures. Contaminated floodwater could pose health risks, making cleanup and sanitation a priority before reopening. Additionally, flooding could cause long-term issues like mold growth, foundation weakening, and electrical hazards, making school operations difficult if extensive repairs are needed.

Wildfire: A wildfire near the school could threaten student safety and disrupt operations, with key concerns including evacuation challenges, structural damage, poor air quality, and utility losses. Rapidly spreading flames may complicate evacuation efforts, while direct fire damage could destroy classrooms, offices, and playgrounds, leading to long-term closures and costly rebuilding. Even if the fire does not reach the school, smoke and poor air quality could make the environment unsafe, forcing temporary shutdowns. Additionally, power outages and water infrastructure damage could render the school unusable until repairs are completed, further delaying its reopening.

Windstorm: A windstorm could pose serious safety risks to students and staff, particularly from falling trees, damaged roofing, and shattered windows. If the winds are strong enough, portable classrooms, playground equipment, and outdoor signage could be displaced or destroyed. Power outages might impact classroom instruction, heating or cooling systems, and communication, making it difficult for parents and staff to coordinate safety measures. Additionally, road closures or hazardous conditions could lead to school closures and transportation disruptions.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))
A: See **Climate Change, Changes in Population, Land Use Development** below.

Climate Change: Climate change poses risks to student safety and learning environments due to rising temperatures, poor air quality from wildfires, and extreme weather. Prolonged heatwaves could make classrooms unbearably hot, especially if cooling systems are inefficient, impacting students' ability to focus. Increased wildfire activity could lead to smoke-related school closures, while flooding or severe storms could damage infrastructure and disrupt education. Additionally, climate-driven water shortages may limit landscaping and outdoor activities, reducing students' access to recreational spaces.

Changes in Population: If the local population increases, student enrollment may rise, necessitating more classrooms, teachers, and resources. This could put strain on existing facilities and staff, potentially requiring infrastructure expansion. On the other hand, if the population declines, lower enrollment numbers could lead to reduced funding, staff cuts, or even program reductions, impacting the quality of education and extracurricular activities.

Land Use Development: New development around the school could lead to population growth, resulting in higher student enrollment and the need for expanded classrooms and facilities. However, increased construction near the school could also create safety hazards, noise pollution, and traffic congestion, disrupting the learning environment. If commercial or industrial zoning replaces residential areas, it could lead to declining enrollment, affecting funding and resources for the school.

Eaton Canyon Golf Course

Earthquake: The golf course itself may experience ground ruptures, soil liquefaction, and landslides, especially in areas with uneven terrain. Clubhouse facilities, maintenance buildings, and other structures could suffer roof collapses or foundation cracks, affecting operations and safety. Water features, irrigation systems, and underground pipelines may also be damaged, disrupting drainage and increasing the risk of flooding or sinkholes. Access roads leading to the course could become blocked by debris or damaged by landslides, limiting emergency response and customer access.

Power Outage: A power outage at the golf course could affect operations, customer service, and facility maintenance. The clubhouse, pro shop, and restaurant may be unable to process payments, operate refrigeration systems, or provide lighting, forcing the facility to close temporarily. If the irrigation system relies on electricity, prolonged outages could affect course maintenance, leading to dry and damaged greens. Additionally, security systems and electronic golf carts may be impacted, potentially leading to safety and operational concerns.

Drought: The golf course would be the most severely affected by a drought, as it relies heavily on irrigation to maintain green, playable conditions. Water restrictions or supply shortages could lead to dry, brown, or damaged fairways and greens, reducing the quality of the course and potentially hurting business if golfers seek better-maintained alternatives. If the course relies on groundwater or district-managed irrigation water, reduced availability could lead to higher maintenance costs and the need for water-saving measures, such as drought-resistant grasses or recycled water irrigation systems.

Flood: Flooding at the golf course could cause severe damage to fairways, greens, and irrigation systems, leading to costly repairs and extended course closures. Heavy rainfall could result in soil erosion, waterlogged turf, and landslides, particularly in areas with uneven terrain. Clubhouse facilities, cart paths, and bridges could become damaged or inaccessible, reducing revenue if the course is forced to shut down. Drainage system failures could make recovery even more difficult, requiring upgrades to prevent future flood damage.

Wildfire: Eaton Canyon Golf Course is highly vulnerable to wildfires due to its open landscape, vegetation, and proximity to natural areas. A wildfire could destroy grass, trees, and fairways, rendering the course unplayable for an extended period, while also damaging clubhouse facilities, maintenance buildings, and irrigation systems, leading to expensive repairs. Additionally, post-fire conditions could increase soil erosion and landslide risks, further complicating recovery efforts. Business operations would suffer from temporary closures, reduced visitor turnout, and financial losses, making it critical to implement fire mitigation strategies to protect the course.

Windstorm: Windstorms could cause significant damage to trees, fairways, and clubhouse facilities, making the golf course temporarily unplayable. Falling branches and debris may block pathways, while high winds could damage roofs, signage, and irrigation systems. If power lines are downed, clubhouse operations, electronic payment systems, and maintenance equipment may be affected, reducing business operations. Additionally, prolonged exposure to strong winds could lead to soil erosion and damage to sand traps and greens, requiring extensive repairs.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))
A: See **Climate Change, Changes in Population, Land Use Development** below.

Climate Change: As a large outdoor facility, Eaton Canyon Golf Course is highly susceptible to climate change. Rising temperatures and prolonged droughts could lead to higher water costs and deteriorating turf conditions, making it harder to maintain the greens. Wildfires and smoke pollution could reduce visitor turnout, while flooding from intense storms could damage fairways and drainage systems. Increased windstorms and extreme weather events may also weaken trees, damage infrastructure, and require costly maintenance, affecting overall operations and revenue.

Changes in Population: A growing local population could bring more visitors and memberships, boosting revenue and business stability. However, it could also lead to increased wear and tear on the course, higher maintenance costs, and overcrowding issues. If the population declines, the golf course may struggle to attract enough customers, leading to financial strain and the potential downsizing operations.

Land Use Development: Land use changes around the golf course could have a direct impact on its business and environmental sustainability. If the nearby land is developed into residential or commercial properties, it could increase customer traffic and revenue. However, urban expansion could also lead to higher water usage restrictions, environmental degradation, and habitat loss, affecting the natural appeal of the course. Additionally, if zoning changes favor commercial development, the golf course could face pressures to redevelop or relocate.

Natural, Historic, and Cultural Resources

Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.

Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii))
A: See **Vulnerability of Natural, Historic, and Cultural Resources** below.

Vulnerability of Natural, Historic, and Cultural Resources

The Kinneloa Irrigation District is home to significant natural, historic, and cultural resources that contribute to its environmental and community value. Its natural resources include local water supplies, native vegetation, and diverse wildlife, all of which support the region's ecosystem and human activities. The area's chaparral landscapes, oak woodlands, and groundwater sources play a crucial role in air quality, flood control, and soil stability, making conservation efforts essential.

Historically, the district has been shaped by early water infrastructure and agricultural development, with remnants of old irrigation systems, trails, and settlements reflecting its past. The district also holds cultural significance, as it may contain Indigenous heritage sites from the Tongva people, alongside recreational areas like hiking trails and scenic open spaces. Nearby landmarks, including Eaton Canyon, enhance the district's value for outdoor enthusiasts. Protecting these natural, historic, and cultural assets is key to preserving Kinneloa's identity and ensuring its sustainability for future generations.

Table 11: Kinneloa Irrigation District Natural, Historic, and Cultural Resources
Source: Emergency Planning Consultants, 2025

	Earthquake	Drought	Power Outage	Flood	Wildfire	Windstorm
Natural Resources	X	X	X	X	X	X
Historic Resources	X	X	X	X	X	X
Cultural Resources	X	X	X	X	X	X

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))
A: See **Impact Profile of Natural, Historic, and Cultural Resources** below.

Impact Profile of Natural, Historic, and Cultural Resources

Earthquake:
A major earthquake could damage KID's water infrastructure, including pipelines, reservoirs, and wells, disrupting water distribution and impacting local ecosystems. Ground shaking may also destabilize historic structures, causing irreversible damage. Trails, open spaces, and recreational areas could become unsafe due to landslides, fallen trees, and structural collapses, limiting access and endangering visitors.

Power Outage:
A prolonged power outage could disrupt water pumping stations and treatment facilities, affecting the irrigation district's ability to provide clean and reliable water. This could lead to decreased water pressure for residents, businesses, and fire suppression efforts. Facilities preserving historical documents or artifacts may also be at risk if temperature control systems fail.

Drought:
Extended drought conditions could severely impact water availability, leading to stress on native vegetation, increased wildfire risk, and loss of biodiversity. The reduced water supply could also harm historic irrigation systems, leading to cracks and degradation. Additionally, cultural and recreational sites may experience declining visitor numbers as landscapes dry up, reducing their aesthetic and functional appeal.

Flood: Heavy rainfall and flooding could erode soil, damage trails, and disrupt natural habitats, leading to long-term ecological consequences. Historic water structures, bridges, and pathways may suffer structural weakening or complete failure. Floodwaters can also deposit debris and pollutants, affecting both natural and cultural sites within KID.

Wildfire: Wildfires pose a severe threat to KID's natural landscapes, historic sites, and water infrastructure. Flames can destroy vegetation, wildlife habitats, and historic trails, leading to habitat loss and increased erosion risks. Smoke and ash could contaminate water supplies, while extreme heat may weaken irrigation pipes and storage facilities. Recreational areas could suffer damage, discouraging visitors and harming the district's cultural significance.

Windstorm: Strong winds can uproot trees, damage historic buildings, and scatter debris, creating hazards for both people and infrastructure. Windstorms can also knock down power lines, exacerbating power outages and affecting water distribution systems. Natural landscapes may experience increased erosion and falling branches, altering the ecosystem's stability.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))
A: See **Climate Change, Changes in Population, Land Use Development** below.

Climate Change
Climate change poses a severe threat to KID's water resources, ecosystems, and historic sites. Rising temperatures and prolonged droughts could reduce groundwater levels, stress native vegetation, and increase wildfire risks, leading to habitat loss and soil erosion. More frequent extreme weather events, such as intense storms and heatwaves, could damage irrigation infrastructure, historic buildings, and recreational areas. Wildfires fueled by drier conditions could

destroy cultural landmarks and alter the natural landscape, reducing the district's ecological and historical value.

Changes in Population
A growing population in the KID area would increase water demand, potentially straining existing groundwater supplies and irrigation systems. More development could result in habitat destruction, increased pollution, and higher risks of wildfires or flooding. Conversely, if the population declines, there may be less funding and resources available for maintaining historic sites, preserving cultural landmarks, and managing open spaces, leading to neglect or deterioration.

Land Use Development
Urban expansion and changes in land use could impact KID's natural landscapes, water systems, and historical sites. Increased residential or commercial development could lead to higher water consumption, deforestation, and loss of native plant and animal species. Construction activities may disturb archaeological or historic sites, diminishing their cultural significance. Additionally, paved surfaces and altered drainage patterns could increase runoff and erosion, negatively affecting both the natural environment and historic irrigation infrastructure.

Activities Bringing Value to the Community

Q&A | ELEMENT B: RISK ASSESSMENT | B2-a.
Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? (Requirement 44 CFR § 201.6(c)(2)(ii)) **A:** See **Vulnerability of Activities Bringing Value to the Community** below.

Vulnerability Of Activities Bringing Value to the Community

The KID actively engages its community through various events and educational programs. While specific upcoming events are not listed in the provided sources, KID has a history of organizing and promoting activities focused on water conservation, landscaping, and emergency preparedness. For instance, KID has previously promoted online classes on firescaping, sponsored by the Foothill Municipal Water District, to educate residents on creating fire-resistant landscapes - a crucial initiative given California's susceptibility to wildfires. Additionally, KID maintains an active presence on social media platforms like Facebook, where they share information about relevant events and initiatives.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.
Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii)) **A:** See **Impact Profile of Activities Bringing Value to the Community** below.

Impact Profile of Activities Bringing Value to the Community

Earthquake: An earthquake could damage event venues, disrupt transportation, and cause safety concerns, leading to cancellations or rescheduling of planned activities. Water and power infrastructure damage may further impact events focused on water conservation and emergency preparedness, delaying educational outreach efforts.

Power Outage: If a power outage occurs, virtual events, presentations, and workshops that rely on technology could be canceled or postponed. Outdoor events may also be affected if lighting, sound systems, or other electrical equipment become unusable. Community gatherings may experience lower attendance due to safety concerns.

Drought: A prolonged drought may shift the focus of community events toward water conservation education and emergency planning. Water shortages could affect outdoor venues, making it difficult to host gatherings in parks or green spaces. Additionally, restrictions on water use might limit demonstrations or workshops related to landscaping and irrigation.

Flood: Heavy rainfall and flooding could wash out roads, damage venues, and pose safety risks, leading to event cancellations or low attendance. Water contamination or infrastructure failures might also hinder educational events related to water management. Flooding could limit access to community gathering spots and outdoor recreation areas.

Wildfire: Wildfires pose a severe risk to community events, especially outdoor ones, by reducing air quality, forcing evacuations, and destroying event locations. If wildfires threaten the district, events may need to be repurposed for disaster response efforts, such as emergency planning or recovery assistance. Additionally, concerns over fire risk may limit activities like barbecues or open flames at community gatherings.

Windstorm: High winds could cause structural damage to event locations, knock down trees, and create flying debris hazards, making it unsafe for gatherings. Outdoor events would be particularly vulnerable, with tents, booths, and banners at risk of being blown over. A strong windstorm might also disrupt power lines, further affecting virtual and indoor events.

Q&A | ELEMENT B: RISK ASSESSMENT | B2-b.

Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction? (Requirement §201.6(c)(2)(ii))
A: See **Climate Change, Changes in Population, Land Use Development** below.

Climate Change

Climate change can lead to more frequent extreme weather events, such as heatwaves, wildfires, and droughts, which may disrupt outdoor events, reduce attendance, or require additional safety precautions. Rising temperatures could make it more difficult to hold gatherings in open spaces, while poor air quality from wildfires could force cancellations or shifts to virtual formats. Climate change may also increase the need for events focused on water conservation, disaster preparedness, and sustainable landscaping to educate residents on mitigating its impacts.

Changes in Population

An increasing population in the district could boost community engagement, leading to larger events and a greater demand for educational programs on water use, conservation, and emergency preparedness. However, a higher population may also strain local water resources, prompting more events focused on sustainable water management. Conversely, if the population declines, event participation could decrease, and funding for community programs might become more limited.

Land Use Development

New development in the KID service area may increase demand for water resources, affecting the district's ability to maintain green spaces and recreational areas where community events are

held. Urban expansion could lead to the loss of natural gathering spaces, requiring event organizers to adapt by using different venues or relying more on indoor and virtual events. Additionally, land development may shift the focus of community meetings and educational programs toward water sustainability, infrastructure improvements, and environmental protection to address concerns related to increased urbanization.

Q&A | ELEMENT C: MITIGATION STRATEGY | C4-b.
Q: Does the plan include one or more action(s) per jurisdiction for each of the hazards as identified within the plan's risk assessment? (Requirement 44 CFR § 201.6(c)(3)(ii)) **A:** See **Table 12** below.
Q&A | ELEMENT C: MITIGATION STRATEGY | C5-b.
Q: Does the plan identify the position, office, department, or agency responsible for implementing/administering the identified mitigation actions, as well as potential funding sources and expected time frame? (Requirement 44 CFR § 201.6(c)(3)(iii))) **A:** See **Table 12** below.

Table 12: Kinneloa Irrigation District Mitigation Actions Matrix
Source: District Planning Team, 2024

Mitigation Actions Matrix

Mitigation Action Item	Lead Department	Timeline	**Expanding & Improving Capabilities:** P-Planning & Regulatory, A-Administrative & Technical, F-Finance, E-Education & Outreach	**Goal**: Protect Life and Property	**Goal**: Public Awareness	**Goal**: Natural Systems	**Goal**: Emergency Services	**Goal:** Partnerships and Implementation	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Funding Source:** GF-General Fund, HMGP, CIP	**Planning Mechanism:** CIP, GF-General Fund, HMGP	**Benefit:** L-Low, M-Medium, H-High	**Cost:** L-Low, M-Medium, H-High	**Priority:** L-Low, M-Medium, H-High	**Comments:** Completed, New, Cost estimates from Engineering, source documents
Multi-Hazard Mitigation Action Items															
MH-1 Design and purchase generator for production sites (wells). Ensure 24/7 operation of well sites, administration, and operations facilities.	Engineering, Operations	1-3 years	P, A	X			X		Y	HMGP	GF	H	H	H	$250k
MH-2 Glen Reservoir and Booster Station Replacement – Replace/enlarge 100 year old concrete reservoir susceptible to earthquake, landslide and fire damage.	Engineering	5-10 years	P, A	X	X		X		Y	HMGP	CIP	H	H	M	$1.5m
MH-3 Proposed Booster Pump Improvement. *Wilcox Reservoir Booster Station: Replace the existing oil lubricated pump with a water Lubricated Pump. Existing Capacity (650 GPM); Calculated Required Future Capacity (1067 GPM)*	Engineering	5-10 years	P, A	X	X	X	X		Y	HMGP	CIP	H	M	M	$125k
MH-4 Pipeline: House Tunnel – replace existing aerial pipeline with HDPE on	Operations	3-5 years	P, A	X		X	X		Y	HMGP	CIP	H	L	M	$250k

Mitigation Action Item	**Lead Department**	**Timeline**	**Expanding & Improving Capabilities:** P-Planning & Regulatory, A-Administrative & Technical, F-Finance, E-Education & Outreach	**Goal**: Protect Life and Property	**Goal**: Public Awareness	**Goal**: Natural Systems	**Goal**: Emergency Services	**Goal:** Partnerships and Implementation	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Funding Source:** GF-General Fund, HMGP, CIP	**Planning Mechanism:** CIP, GF-General Fund, HMGP	**Benefit:** L-Low, M-Medium, H-High	**Cost:** L-Low, M-Medium, H-High	**Priority:** L-Low, M-Medium, H-High	**Comments:** Completed, New, Cost estimates from Engineering, source documents
surface bottom. Protection from landslide and wildfire destruction.															
MH-5 Pipeline: Hi-Lo Tunnel – replace existing aerial cable mounted pipeline with HDPE on surface at canyon bottom. Replace existing surface mounted PVC line on hillside with HDPE. Protection from landslide and wildfire destruction.	Operations	3-5 years	P, A	X		X	X		Y	HMGP	CIP	H	M	M	$450k
MH-6 Holly Tank Site: Erosion Control of area where Holly reservoir tanks are positioned.	Operations	3-5 years	P, A	X		X	X		Y	HMGP	GR	H	H	H	$150k
MH-7 Security Gates and Cameras at all Facilities.	Operations	1-3 years	P, A	X	X				Y	CIP	GF	H	M	L	$100k
MH-8 Purchase 2 Units and subscribe to annual service for each, Starlink Roam, satellite based high-speed, low-latency internet. For system communications during extended power outages.	Executive	Annual	P, A	X	X		X		Y	CIP	CIP	M	L	L	$5k
Wildfire Mitigation Action Items															
WF-1 Water Main Replacements to meet 450 ft distance from Fire Hydrant	Engineering	5-10yrs	P, A	X	X		X		Y	HMGP	GF	M	M	L	$500k

Mitigation Action Item	Lead Department	Timeline	Expanding & Improving Capabilities: P-Planning & Regulatory, A-Administrative & Technical, F-Finance, E-Education & Outreach	Goal: Protect Life and Property	Goal: Public Awareness	Goal: Natural Systems	Goal: Emergency Services	Goal: Partnerships and Implementation	Buildings & Infrastructure: Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	Funding Source: GF-General Fund, HMGP, CIP	Planning Mechanism: CIP, GF-General Fund, HMGP	Benefit: L-Low, M-Medium, H-High	Cost: L-Low, M-Medium, H-High	Priority: L-Low, M-Medium, H-High	Comments: Completed, New, Cost estimates from Engineering, source documents
for Properties Served from Private Shared Drives															
WF-2 Water Main Replacements to meet 1250 GPM Fire Flow and 450 Ft. Vehicular Distance. The "Brown-Glen Pipeline" Project.	Engineering	3-5 years	P, A	X	X		X		Y	HMGP	GF	H	H	H	$2.0m
WF-3 Water Main Replacements to meet 1250 GPM Fire Flow and 450 Ft. Vehicular Distance. *Intersection of Vosburg St. and Lower Pasadena Glen Rd. to 1658 Pasadena Glen Rd.*	Engineering	1-3 years	P, A	X	X		X		Y	HMGP	GF	H	H	H	$175k
WF-4 Retrofit with fire-resistant roofs for Wood Framed Reservoirs	Engineering, Operations	3-5 years	P, A	X			X		Y	HMGP	GR	M	M	L	$350k
Drought Mitigation Action Items															
DR-1 Design and build Fluoride removal system treating House and Hi-Lo Tunnel Sources before filling Holly Tanks.	Engineering	3-5 years	P, A	X	X		X		Y	HMGP	GR	H	H	M	$750k
DR-2 Rehabilitate Wilcox Well due to decline groundwater basin levels	Engineering	5-7 years	P, A	X	X		X		Y	HMGP	GR	H	H	M	$2.5m
DR-3 Construct MWD Interconnect for Imported Water Connection	Engineering	5-7 years	P, A	X	X		X		Y	HMGP	GR	H	H	M	$1.5m
Flood Mitigation Action Items															

Mitigation Action Item	**Lead Department**	**Timeline**	**Expanding & Improving Capabilities:** P-Planning & Regulatory, A-Administrative & Technical, F-Finance, E-Education & Outreach	**Goal**: Protect Life and Property	**Goal**: Public Awareness	**Goal**: Natural Systems	**Goal**: Emergency Services	**Goal:** Partnerships and Implementation	**Buildings & Infrastructure:** Does the Action item involve New and/or Existing Buildings and/or Infrastructure? Yes (Y)	**Funding Source:** GF-General Fund, HMGP, CIP	**Planning Mechanism:** CIP, GF-General Fund, HMGP	**Benefit:** L-Low, M-Medium, H-High	**Cost:** L-Low, M-Medium, H-High	**Priority:** L-Low, M-Medium, H-High	**Comments:** Completed, New, Cost estimates from Engineering, source documents
FLD-1 Design and install new water service to Los Angeles County Parks Dept. property so that the at-risk pipeline crossing Eaton Wash can be removed.	Engineering	1-3 years	P, A	X	X	X		X	Y	HMGP	GR	H	H	M	$250k
Windstorm Mitigation Action Items															
WND-1 Purchase and install generators and large capacity fuel storage for emergency power generators at production sites and booster stations. Ensure 24/7 operation of pumping facilities for up to 5 days.	Engineering	1-3 years	P, A	X			X		Y	HMGP	GF	H	H	H	$750k
Earthquake Mitigation Action Items															
EQ-1 Conduct inventory of facilities to determine any need for earthquake retrofitting.	Engineering	1-3 years	P, A	X			X		Y	GF, HMGP	GF	H	H	H	
Power Outage Mitigation Action Items															
PO-1 Conduct inventory of facilities to determine any need for backup generators.	Engineering	1-3 years	P, A	X			X		Y	GF, HMGP	GF	H	H	H	

Attachments

Processing of Input Gathered During Community Outreach - 2/3/2024

Input Gathered	How Information was Utilized
Received from Mala Arthur (customer)	
Very thoughtful and thorough! The document ends rather unexpectedly on page 27, with a "keep pumps working 24/7 for 5 days", and no entries in that row of the spreadsheet, and after that no summary.	Correction made to page 27.
Two comments about what I did see — 1) I was happy to see that quake damage is expected (high probability) despite the "My Hazard" map not showing any faults. We all know that there are multiple faults throughout the area, especially in Pasadena Glen and in Eaton Canyon. 2) no communication plan — please please make a plan for notifying customers (directly or via representatives from each area in the District) about what is happening. If power and/or cell service are out, the One Call Now/ On Solve notifications will not work. Alternate plans — GMRS radios or walking/biking/driving around to tell representatives, for example — should be utilized. This would be especially critical if there has been a large quake or other major event, and there is no water service. The Glen has a stream, and it could get really ugly if people assume they must fend for themselves and start coming in to get water for their families, but people in the Glen feel invaded and fights ensue. (Note — one resident who has since moved actually had a plan for barricading the Glen and having 24/7 armed guards at the 3 normal entrances. No one else has expressed these types of plans to me but I would bet that at least two families have thought about that scenario. I would not like us to go there!) Finally, in all disasters, damage may be spotty or uneven. There will likely be locations where a home is habitable but local damage is bad enough that there is no water or power. KID would be able to mitigate some of the stress and agony by planning ahead of time for potential locations and procedures for water distribution to customers via portable containers. For example, setting up at High Point Academy, or the Eaton Canyon Golf Course or possibly both. If people know that you've planned this ahead of time, they won't be so afraid or stressed, which benefits all of us. In the meantime, continuing to highlight plans and resources to complete disaster prep always helps. For example, my family of 3, no pets, has 2 - 55 gal barrels	1) Yes, there are numerous faults in the vicinity however MyHazards and the HAZUS maps show only major faults. 2) This plan is limited to mitigating against hazards. However, KID does maintain an emergency response plan which includes a communication plan. Especially since the Eaton Fire, KID is working to improve its ability to communicate as quickly and effectively as possible. Your suggestions will be integrated into those efforts. 3) Again, this is a mitigation plan but your recommendations will be shared with those responsible for the emergency response plan which includes staging of emergency resources.

full of water (we drain, clean and refill every couple years) plus rain barrels. Most people do not have anything like this. More prep would be good. Thanks for your efforts! Mala Arthur	