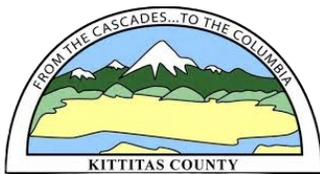


KITTITAS COUNTY

HAZARD MITIGATION PLAN

Kittitas Public Utility District Annex



Kittitas County
Public Works Department





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1. INTRODUCTION

This Annex details the hazard mitigation elements specific to the Kittitas County Public Utility District, a participating jurisdiction to the 2025 Kittitas County Hazard Mitigation Plan update. This Annex is not intended to be a standalone document but supplements the information contained in **Volume 1 (Countywide Planning Elements)**. Therefore, all sections of **Volume 1** including the planning process, hazard identification and risk assessment, mitigation strategy (includes mitigation goals and objectives), and plan maintenance apply to and were met by the Kittitas County Public Utility District. This Annex provides additional information specific to the District, with a focus on providing additional details on the hazard risk assessment and mitigation strategy (i.e., mitigation actions) for this community.

2. LOCAL PLANNING TEAM

The Kittitas Public Utility District Local Planning Team was comprised of the members listed below on **Table 1**.

Table 1. Kittitas Public Utility District Local Planning Team Members

Name	Title	Department
Matt Boast	General Manager	Administration

3. JURISDICTION PROFILE

The Kittitas Public Utility District is a special purpose district classified as a political subdivision of the State under Title 54 of the Revised Code of Washington. The District primarily serves the unincorporated portion of Kittitas County and a small portion of Yakima County.

As a statutory preference customer of the Bonneville Power Administration, the District currently purchases approximately 90% of its power from Bonneville. The rest of the District's power supplied by the Priest Rapids Hydroelectric Project. The Kittitas Public Utility District owns 15.49 acres of land and serves 359 square miles

3.1. Population

The Kittitas Public Utility District had a population of 4,953 as of July 1, 2022. Between 2010 and 2020, the population increased by approximately 2.7%; and a population increase of 5.4% occurred between 2020 and 2022. **Table 2** shows the District's population distribution between 2010 and 2022.

Table 2. Population Estimates

Jurisdiction	2010	2020	2022	Population Change (2010 – 2022)
Kittitas Public Utility District	4,575	4,698	4,953	8.3%

3.1.1. Underserved Population

FEMA defines underserved populations as groups that have limited or no access to resources or that are otherwise disenfranchised. These groups may include, but are not limited to, people who are socioeconomically disadvantaged, people with limited English proficiency, geographically isolated or educationally disenfranchised people, people of color as well as those of ethnic and national origin



minorities, women and children, individuals with disabilities and others with access and functional needs, and seniors.¹

The CDC’s SVI is considered an appropriate and authoritative dataset to identify areas where efforts can be prioritized to ensure equitable outcomes from mitigation planning and actions. Social vulnerability refers to a community’s capacity to prepare for and respond to the stress of natural, human-caused, and technological disasters. CDC’s SVI combines 16 census-derived social factors, within four (4) themes (i.e., socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation) that summarizes the extent to which an area is socially vulnerable to disasters. The overall SVI combines all variables to provide a comprehensive assessment, and the possible scores range from zero (0) (lowest vulnerability) to one (1) (highest vulnerability).²

The overall SVI score for Kittitas County is 0.3366 which indicates a low to medium level vulnerability. **Table 3** outlines the SVI information for each social factor for the Kittitas County Public Utility District.³

Note: ArcGIS mapping analysis was performed utilizing Census Tract data by overlaying Census Tracts with the District planning area boundary. The information outlined in this section includes data from the entire Census Tracts that intersect the jurisdiction.

Table 3. Social Vulnerability Index (2022)

Theme	Social Factors	Percent
Socioeconomic Status	People below 150% poverty estimate	22.1%
	Unemployed (Civilian 16 years old and older)	3.1%
	Housing Cost Burden	12.9%
	No High School Diploma	4.4%
	No Health Insurance	5.3%
Household Characteristics	65 years old and older	16.8%
	17 years and younger	17.4%
	Civilian with a Disability	12.9%
	Single-Parent Household	1.9%
	English Language Proficiency	0.4%
Racial and Ethnic Minority Status	<ul style="list-style-type: none"> • Hispanic or Latino (of any race) • Black or African American • Asian • American Indian or Alaska Native • Native Hawaiian or Pacific Islander • Two or More Races • Other Races 	19.4%

¹ Federal Emergency Management Agency. (n.d.). Glossary: Underserved Population/Communities. Retrieved from <https://www.fema.gov/about/glossary>.

² Centers for Disease Control and Prevention. (2024). CDC/ATSDR SVI 2020 Documentation. Retrieved from <https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/pdf/SVI-2022-Documentation-H.pdf>.

³ Centers for Disease Control and Prevention. (2022). CDC/ATSDR Social Vulnerability Index (SVI). Retrieved from https://www.atsdr.cdc.gov/placeandhealth/svi/interactive_map.html.



Theme	Social Factors	Percent
Housing Type and Transportation	Multi-Unit Structures	5.6%
	Mobile Homes	3.6%
	Crowding	0.9%
	No Vehicle	1.5%
	Group Quarters	4.8%

3.2. Brief History

In the 1930s, electricity was available in cities throughout the State of Washington, but not in rural areas. The was due to private utilities’ unwillingness to extend services into areas that lacked enough potential customers willing to pay for transmission lines which were needed to reach rural communities. An organization of farmers and other advocates pushed for a way that counties could have their own electric systems. As a result, in 1930, a statewide public power law allowed a majority of county voters to create a public utility district.

Kittitas County voted to create the Kittitas Public Utility District in 1936 under Chapter 1 of the 1931 laws of the State of Washington, for the purpose of engaging in the generation, transmission, distribution, and sale of electric energy. In 1937, the Bonneville Power Administration was created with a plan to build lines between the new dams on the Columbia River and population centers, which would provide access points for the connection of rural utilities. Federal funding was allocated in 1938 to begun transmission lines linking the Bonneville Dam to Vancouver, The Dalles, Eugene, Aberdeen, and eventually to Grand Coulee Dam.

The District began operations on January 15, 1939. Initially, the Pacific Power and Light Company were supplying power. However, once the Ellensburg substation was completed in 1941, like the City of Ellensburg municipal system, the Kittitas Public Utility District became a Bonneville Power Administration customer. The possible expansion of electrification to other parts of the County, including Naneum and Manastash canyons, Cle Elum, Blewett Pass, and the Teanaway River Valley, was made possible with the 115,000 volt line from Rock Island Dam to Midway. Approximately 97% of the farms in the Bonneville Power Administration service area had electricity by 1952.

3.3. Governing Body Format

The Kittitas Public Utility District is administered by a Board of Commissioners consisting of three (3) local citizens elected on a non-partisan basis. Each commissioner represents a specific area in the County. Terms are staggered so that one (1) commissioner is elected every two (2) years in the November general election to serve a six (6) year term.

Under the guidance of the Board of Commissioners, the District delivers affordable, dependable electricity to rural and urban areas. The Board of Commissioners establishes policy, approves plans, budgets and expenditures, and reviews the District’s operations. The legal responsibilities and powers of the District, including the establishment of rates and charges for services rendered, are exercised through the Commission. Additionally, the Commissioners appoint a General Manager to administer District policies and conduct District business. The General Manager is supported by 17 full and part time employees.



4. DEVELOPMENT TRENDS

The Kittitas Public Utility District 2021 Electric Cost of Service Study utilized historical data with anticipated customer base increases to forecast the expected energy sales through the end of 2022. The Study highlighted an increase in customer loads by 13.7% from 2017 to 2021. The Kittitas Public Utility District peak load occurs in the winter at a level of 27.4 megawatts with a summer peak of 22.1 megawatts. Residential customers make up 81% of the customer base, but only 57% of the energy sales. Commercial customers make up another 33% of energy while irrigation customers make up 8%. The remaining 2% of energy is related to security lighting and net energy metering customers, which are mostly residential roof top solar power generators. The number of homes in remote areas prone to hazards has increased in the past five (5) years making the District more vulnerable to some of the hazards identified in this Plan.

Additionally, climate change legislation coupled with a demand for electric vehicle adoption is a growing concern for Kittitas Public Utility District. The District is anticipating the 2022 electrical demand to increase 20% by 2030 and 40% by 2035.

4.1. Changes in Priority

In 2023, the District adopted a Wildfire Mitigation Plan and an Avian Protection Plan. These plans aim to reduce risk exposures, improve system resilience, and demonstrate a commitment to protect the public from utility sources of fire ignition and protection of the raptors (e.g., eagles, hawks, osprey, etc.) in the County. These plans, along with the Hazard Mitigation Plan, help the District prioritize capital investments and improvements. Additionally, mitigation actions from the previous Plan were updated, and a more concerted effort on achieving equitable outcomes for all communities, including underserved communities and socially vulnerable populations, has been implemented.

5. CAPABILITY ASSESSMENT

Federal regulations require hazard mitigation plans to identify goals for reducing long-term vulnerabilities to the identified hazards in the planning area (Section 201.6(c)(3)(i)). A critical step in the development of specific hazard mitigation actions and projects is assessing existing authorities, policies, programs, and resources and capabilities to use or modify local tools to reduce losses and vulnerability from profiled hazards.

A capability assessment was conducted for the Kittitas Public Utility District and participating jurisdictions' authorities, policies, programs, and resources. Goals and mitigation actions were developed using input from this assessment. Information regarding the District's implementation of and continued participation in the National Flood Insurance Program (NFIP) can be found in Section 8 of this Annex.

The Local Planning Team assessed the District's capabilities that can contribute to the reduction of long-term vulnerabilities to hazards. The capabilities include the following categories:

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

Additionally, ways to expand on and improve these existing policies and programs to integrate hazard mitigation into the day-to-day activities and programs of the District were considered.



5.1. Planning and Regulatory Capabilities

These include local ordinances, policies, and laws to manage growth and development (e.g., land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes, and zoning ordinances). The Kittitas County Public Utility District relies on Kittitas County to maintain a strong framework of codes, ordinances, and requirements to help mitigate the impacts of the hazards identified in this Plan. **Table 4** contains a list of legal and regulatory capabilities that affect the District.

Table 4. Planning and Regulatory Capabilities

Capability Category	Local Authority	Other Authority	State Mandated	Comments
Codes, Ordinances, and Requirements				
Public Utility Districts	Yes	No	Yes	Title 54 of the Revised Code of Washington (RCW) Authorize the establishment of public utility districts to conserve the water and power resources of the State of Washington, including water and electricity for all uses.
Building Code	Yes	No	Yes	Chapter 19.27 RCW includes provisions for electrical safety and standards that must be adhered to for new construction and major renovations. Chapter 4 of the Washington State Energy Code (part of the State Building Code) includes specific provisions for energy efficiency in new buildings and major renovations. Title 14 of the Kittitas County Code (KCC) contains building codes and standards, including electrical codes that align with state building codes
Energy Independence Act	No	No	Yes	Chapter 19.285 RCW includes requirements for new energy resources. The Act requires utilities with 25,000 customer or more to obtain 15% of their electricity from new renewable resources (e.g., solar and wind) by 2020 and undertake cost-effective energy conservation. Kittitas PUD serves just over 5,000 customers and is not subject to this Act at this time. Chapter 194-37 WAC implements the requirements of the Energy Independence Act, outlined in Chapter 19.285 RCW.
Washington Clean Energy Transformation Act	No	No	Yes	Chapter 19.405 RCW mandates utilities to transition to 100% clean electricity by 2045, with interim targets along the way.



Capability Category	Local Authority	Other Authority	State Mandated	Comments
Electric Companies	No	No	Yes	Chapter 480-100 of the Washington Administrative Code (WAC) includes regulations from the Washington Utilities and Transportation Commission (WUTC) governing the operations, safety standards, and service requirements for electric utilities.
Roads and Bridges Code	Yes	No	No	Title 12.22.100 of the KCC includes regulations on the placement of utility infrastructure within public rights of way.
Zoning Code	Yes	No	No	Title 17 of the KCC includes zoning regulations that impact where electrical infrastructure can be placed, including land use designations and permitting requirement.
Electrical Infrastructure Review	Yes	No	No	
Capability Category	Local Authority	Other Authority	State Mandated	Comments
Planning Documents				
Comprehensive Plan	Yes	No	No	Cities in Washington State must update their Comprehensive Plan every eight (8) years. Washington State's Growth Management Act (GMA) and RCW.36.70A
Kittitas County Capital Improvement Plan	Yes	No	No	The 2011 Capital Facilities Plan, is adopted as part of the 2016 Comprehensive Plan.
Wildfire Mitigation Plan	Yes	No	No	The Plan was adopted in March 2023.
Avian Protection Plan	Yes	No	No	Avian Protection Plans (APPs) are meant to mitigate the impacts of electrical infrastructure on bird populations. The APP was last adopted in January 2023.

5.2. Administrative and Technical Capabilities

The administrative and technical capabilities include community (i.e., public and private) staff and their skills and tools, which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Small communities may rely on other government entities, such as counties or special districts, for resources. These capabilities may be used to support mitigation activities. **Table 5** lists administrative and technical capabilities.

Table 5. Administrative and Technical Capabilities

Staff/Personnel Resources	Available	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	No	N/A
Engineers or professionals trained in building or infrastructure construction practices	No	N/A
Planners or engineers with an understanding of natural hazards	No	N/A



Staff/Personnel Resources	Available	Department/Agency/Position
Staff with training in benefit/cost analysis	Yes	Finance Manager and Engineering Manager, Kittitas Public Utility District
Floodplain Manager/Administrator	No	N/A
Surveyors	No	N/A
Personnel skilled or trained in GIS applications	Yes	GIS Analyst and Staking Engineer, Kittitas Public Utility District
Staff familiar with natural hazards in local area	Yes	Operations Manager, Kittitas Public Utility District
Emergency Manager	No	N/A
Grant writers	Yes	Energy Northwest, Kittitas Public Utility District

5.3. Financial Resources

Table 6 contains a list of financial capabilities available to the District. These financial resources may be used to support mitigation activities based on procedures for each resource.

Table 6. Financial Resources

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG)	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	No
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes, if selecting KPUD to serve

5.4. Education and Outreach Capabilities

Table 7 lists the District's financial and public outreach capabilities. These capabilities include fire safety programs, hazard awareness campaigns, public information, and communications offices. Education and outreach capabilities can be used to inform the public about current and potential mitigation activities.

Table 7. Education and Outreach Resources

Resource	Available	Department/Agency/Position/Description
Public Information Officer	Yes	Administration, Kittitas Public Utility District
Personnel skilled or trained in website development	Yes	Contractor, Kittitas Public Utility District
Hazard mitigation information available on your website	Yes	<i>Website includes a copy of the Kittitas County Hazard Mitigation Plan with Kittitas Public Utility District Annex.</i>



Resource	Available	Department/Agency/Position/Description
Utilize social media for hazard mitigation education and outreach	No	<i>Plan to add this information in future outreach.</i>
Citizen boards or commissions that address issues related to hazard mitigation	No	N/A
Other programs already in place that could be used to communicate hazard-related information	No	N/A
An established warning systems for hazard events	Yes	Kittitas County Sheriff's Office, Emergency Management Office

5.5. Needs to Expand/Improve Capabilities

The Kittitas County Public Utility District identified existing authorities, policies, programs, funding, and/or resources that need to be expanded and/or improved in order to support the implementation of the hazard mitigation initiatives identified in this Plan (e.g., mitigation actions).

- The District needs to continue to harden the distribution electrical system through a variety of capital investments. This can be accomplished by relocating inaccessible facilities out of vulnerable areas, undergrounding of overhead lines exposed to trees/forest, increased vegetation management and expanded right of way, redundant or networked feeders for load shifting capabilities, increased insulation and cover of bare wires, enhanced monitoring/data acquisition/communications (SCADA and AMI).

6. HAZARD MITIGATION PLAN INTEGRATION

The Kittitas Public Utility District reviews and updates the 10-year capital plan and 6-year financial forecast are reviewed annually during the District Budgeting process. The Management team integrates the recommended plans from the Hazard Mitigation Plan, the 20-year System Study, the Wildfire Mitigation Plan, Incident and Outage Reports, the Avian Protection Plan, as well as other recommended projects and initiatives from the Management team. The information on hazards, risk, vulnerability, and mitigation contained in this Hazard Mitigation Plan is based on the best available data at the time of the Plan update. The plan integration is achieved through the involvement of key staff and community officials in collaborative hazard mitigation planning.

6.1. Existing Plan Integration

In the performance period since the adoption of the previous Hazard Mitigation Plan, Kittitas Public Utility District made progress on integrating components of the hazard mitigation strategy (e.g., goals, objectives, and actions) into the planning initiatives listed in **Table 8**.

Table 8. Existing Plan Integration

Planning Initiative	Description
Feeder Upgrades	<p>Hazard mitigation actions identified in previous Hazard Mitigation Plan updates have been completed or are in progress.</p> <ul style="list-style-type: none"> Completed the Beverly Bridge feeder (V1) power source rebuild for redundancy to the networked Auvil feeder (A1). Completed the Smithson feeder (S3) tie project for redundancy to the networked Jenkins feeder (J1). Completed the Bettas Substation and feeder (B1) tie project for redundancy to the networked Teanaway feeder (T1).



Planning Initiative	Description
Vegetation Management Program	Completed system wide tree trimming and vegetation management over a 3-year cycle 2020-2022 and started another 3-year cycle 2023-2025. This was a hazard mitigation action identified in previous Hazard Mitigation Plan updates, and it has been identified as an ongoing action in this Plan.
Wildfire Mitigation Plan	This Hazard Mitigation Plan was integrated with the District’s Wildfire Mitigation Plan reduce wildfire risk exposures and improve system resilience.

6.2. Potential Future Integration

As the Hazard Mitigation Plan is implemented, Kittitas Public Utility District will use information from the Plan as the best available science and data on hazards. The capability assessment presented in Section 5 of this Annex identifies codes, plans, and programs that provide opportunities for integration. The Districtwide and local action plans developed for this Hazard Mitigation Plan are related to plan integration. The capability assessment identified plans and programs, listed in **Table 9**, that do not currently integrate goals and recommendations of this Plan but provide opportunities to do so in the future.

Table 9. Potential Future Integration

Planning Initiative	Description
Hazard Communication Plan	The District intends to develop a Hazard Communication Plan, and the Plan will include information from this Hazard Mitigation Plan to continue a comprehensive approach to hazard mitigation and response.
Emergency Action Plan	The District intends to develop an Emergency Action Plan, and the Plan will include information from this Hazard Mitigation Plan to continue a comprehensive approach to hazard mitigation and response.
Capital Improvement Plan	The District will ensure consistency between this Hazard Mitigation Plan and future updates of the CIP. The Hazard Mitigation Plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.

The District’s Local Planning Team will identify all relevant planning initiatives that are scheduled to be updated in the next year and during the annual update process of the Hazard Mitigation Plan. Additionally, opportunities to integrate key elements of the Hazard Mitigation Plan, specifically any relevant strategies, into the planning initiatives will be identified by the Local Planning Team. Mitigation actions were identified to promote plan integration in future revisions of this Plan.

7. SIGNIFICANT HAZARD PAST EVENTS

A complete risk assessment, including past incidents, for each identified hazard of concern can be found in **Volume 1** of this Plan. **Table 10** provides information on significant hazard events that uniquely impacted Kittitas County Public Utility District.



Table 10. Significant Past Events

Date	Event Type	Description
August 2022	Wildfire	The Vantage Highway fire started on August 1, 2022, during a Red Flag Warning. Conditions were very conducive for extreme fire behavior – high temperatures, very low humidity, and strong winds. The wildfire was originally reported five (5) miles west of Vantage. The wildfire burned approximately 30,659 acres and damaged two (2) to three (3) miles of lines and 58 poles. ⁴
June 2021	Wildfire	The Clerf Road fire started on June 26, 2021, near Clerf Road and Parke Creek Road. The wildfire damaged over one (1) mile of lines and 22 poles. ⁵
July 2018	Wildfire	The Huntzinger Road wildfire started on July 12, 2018, on the north side of Interstate 90 threatening the community of Vantage. ⁶

8. NATIONAL FLOOD INSURANCE PROGRAM

As a special district, the Kittitas Public Utility District is not eligible to participate in FEMA’s National Flood Insurance Program (NFIP). Further information on Kittitas County’s NFIP and Community Rating System (CRS) participation is available on **Volume 1** of this Plan.

9. HAZARD VULNERABILITY AND IMPACT ASSESSMENT

Exposure and vulnerability to certain hazards affect the entire County and others are geographically defined. Although the entire County may be vulnerable to these hazards, their impacts may vary based on existing community conditions (e.g., underserved, or functional access needs populations may be more susceptible based on certain conditions, vulnerabilities, or needs).

Table 11 outlines the *unique vulnerabilities and impacts* for the Kittitas Public Utility District and only addresses the hazards that are relevant and unique to the jurisdiction. A complete risk assessment for each identified hazard of concern is in **Volume 1** of this Plan. Hazard mapping can be found in **Appendix A** of this Annex.

Table 11. Hazard Vulnerability and Impact Assessment

Hazards	Vulnerabilities and Impacts
Avalanche	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to avalanches.
Dam and Levee Failure	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to dam and levee failure.
Drought	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to droughts.

⁴ InciWeb. (2022). Vantage Highway. Retrieved from <https://inciweb.wildfire.gov/incident-information/wases-vantage-highway>.

⁵ Belcher, J. (2021). Fire Crews Battle, Contain Clerf Road Fire. Retrieved from https://www.dailyrecordnews.com/all_access/fire-crews-battle-contain-clerf-road-fire/article_fb92732b-7005-5289-9aca-f4147651e37c.html.

⁶ Bonar, K. (2018). Thursday Update: Vantage Wildfire Contained. Retrieved from https://www.yakimaherald.com/news/local/thursday-update-vantage-wildfire-contained/article_146798c4-65c5-5983-9c64-633b65b6db0c.html.



Hazards	Vulnerabilities and Impacts
Earthquake	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to earthquakes.
Flood	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to flooding.
Landslide	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to landslides.
Severe Weather <i>(thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures)</i>	Severe weather can leave portions of the District’s customers vulnerable and isolated due to power outages in remote areas. Extreme heat events, which are occurring more frequently, require special processes to protect the vulnerable populations (e.g., elderly). Power utilities may be required to shut off during Red Flag Warning days leaving portions of the population isolated and without power during extreme temperatures.
Volcanic Activity	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to volcanic activity.
Wildfire <i>(wildfire smoke)</i>	There are areas of the District’s system and power lines that run across or near areas subject to repeated wildfires (i.e., tall dry grass/sagebrush and tall stands of trees/forest).
Winter Weather <i>(ice storms, heavy snow, and blizzards)</i>	Winter weather can leave portions of the District’s customers vulnerable and isolated due to power outages in remote areas.
Communicable Diseases/Pandemic	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to communicable diseases/pandemics.

The District evaluated whether vulnerability and impact in hazard-prone areas had increased, decreased, or remained the same for each natural hazard identified in this Hazard Mitigation Plan. Climate change, changes in population, infrastructure expansion, and economic shifts that can affect vulnerability were considered. For example, if planned development is in an identified hazard areas or is not built to the updated building codes, it may increase the community’s vulnerability to future hazards and disasters. On the other hand, if development occurred with mitigation practices in place, the vulnerability may have remained the same or decreased. Additionally, shifting demographics (e.g., underserved population) were taken into consideration.

Table 12 outlines if climate change has increased or decreased the District’s vulnerability (i.e., exposure) and impact to each natural hazard over the past five (5) years, and the effect of climate change in the future probability of occurrence and impacts from each natural hazard.

Table 12. Climate Change Current and Future Vulnerability and Impact

Hazard	Vulnerability and Impact
<i>Current Vulnerability and Impact</i>	
Avalanche	Remained the Same
Communicable Diseases/Pandemic	Remained the Same
Dam and Levee Failure	Remained the Same
Drought	Remained the Same
Earthquake	Remained the Same
Flood	Increased
Landslide	Remained the Same



Hazard	Vulnerability and Impact
Severe Weather (<i>thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures</i>)	Increased
Volcanic Activity	Remained the Same
Winter Weather (<i>ice storms, heavy snow, blizzards</i>)	Increased
Wildfire (<i>Wildfire Smoke</i>)	Increased
Future Vulnerability and Impact	
Avalanche	No Change Anticipated
Communicable Diseases/Pandemic	No Change Anticipated
Dam and Levee Failure	No Change Anticipated
Drought	No Change Anticipated
Earthquake	No Change Anticipated
Flood	Increase
Landslide	No Change Anticipated
Severe Weather (<i>thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures</i>)	Increase
Volcanic Activity	No Change Anticipated
Winter Weather (<i>ice storms, heavy snow, blizzards</i>)	Increase
Wildfire (<i>Wildfire Smoke</i>)	Increase

Table 13 outlines if changes in population within the District over the past five (5) years have increased or decreased the vulnerability (i.e., exposure) and impact to these natural hazards, and the anticipated effects changes in population may have on the future probability of occurrence and impacts from these natural hazards.

Table 13. Changes in Population Current and Future Vulnerability and Impact

Hazard	Vulnerability and Impact
Current Vulnerability and Impact	
Avalanche	Remained the Same
Communicable Diseases/Pandemic	Remained the Same
Dam and Levee Failure	Remained the Same
Drought	Increased
Earthquake	Increased
Flood	Remained the Same
Landslide	Remained the Same
Severe Weather (<i>thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures</i>)	Increased
Volcanic Activity	Remained the Same
Winter Weather (<i>ice storms, heavy snow, blizzards</i>)	Increased



Hazard	Vulnerability and Impact
Wildfire (<i>Wildfire Smoke</i>)	Increased
<i>Future Vulnerability and Impact</i>	
Avalanche	No Change is Anticipated
Communicable Diseases/Pandemic	No Change is Anticipated
Dam and Levee Failure	No Change is Anticipated
Drought	Increase
Earthquake	Increase
Flood	No Change is Anticipated
Landslide	No Change is Anticipated
Severe Weather (<i>thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures</i>)	Increase
Volcanic Activity	No Change is Anticipated
Winter Weather (<i>ice storms, heavy snow, blizzards</i>)	Increase
Wildfire (<i>Wildfire Smoke</i>)	Increase

Table 14 outlines if development over the past five (5) years has increased or decreased the jurisdiction’s vulnerability (i.e., exposure) and impact to these natural hazards, and the anticipated effects changes in development may have on the future probability of occurrence and impacts from these natural hazards.

Table 14. Changes in Development Current and Future Vulnerability and Impact

Hazard	Vulnerability and Impact
<i>Current Vulnerability and Impact</i>	
Avalanche	Remained the Same
Communicable Diseases/Pandemic	Remained the Same
Dam and Levee Failure	Remained the Same
Drought	Remained the Same
Earthquake	Remained the Same
Flood	Decreased
Landslide	Remained the Same
Severe Weather (<i>thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures</i>)	Remained the Same
Volcanic Activity	Remained the Same
Winter Weather (<i>ice storms, heavy snow, blizzards</i>)	Remained the Same
Wildfire (<i>Wildfire Smoke</i>)	Decreased
<i>Future Vulnerability and Impact</i>	
Avalanche	Increase
Communicable Diseases/Pandemic	No Change Anticipated



Hazard	Vulnerability and Impact
Dam and Levee Failure	No Change Anticipated
Drought	No Change Anticipated
Earthquake	No Change Anticipated
Flood	Decreased
Landslide	Increase
Severe Weather (<i>thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures</i>)	Increase
Volcanic Activity	No Change Anticipated
Winter Weather (<i>ice storms, heavy snow, blizzards</i>)	Increase
Wildfire (<i>Wildfire Smoke</i>)	Increase

The District does not anticipate future major assets to be exposed or vulnerable to any of the hazards identified in this Plan. However, any new assets (e.g., new construction in hazard prone areas) will be constructed to adhere to the latest building codes and standards, and mitigation to protect them from identified and anticipated hazards, especially those that are expected to increase due to climate change.

10. HAZARD RISK RANKING

Table 15 presents the local hazard ranking for Kittitas Public Utility District of all hazards of concern listed in **Volume 1** of this Plan. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in **Volume 1**, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy.

It is important to note that the sub hazards for severe weather (i.e., strong wind/damaging winds, thunderstorms, cold wave/extreme cold, heat wave/extreme heat, hail and tornado) and wildfire (i.e., wildfire smoke) were individually ranked in the hazard risk ranking; however, severe weather and wildfire are each considered as the main hazard throughout this Annex and **Volume 1**.

Table 15. Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Extent Factors	Sum of Weighted Vulnerability Factors	Sum of Weighted Impact Factors	Consequence Score	Total Risk Score (Probability x Consequence)
Winter Weather (Blizzard/Heavy Snow, Ice Storm)	3	15	16	24	55	77
Earthquake	2	12	16	33	61	59
Flood	2	18	11	31	60	59
Strong Wind / Damaging Winds (Severe Weather)	3	9	16	15	40	59
Wildfire Smoke (Wildfire)	3	9	10	20	39	57
Wildfire	2	15	11	27	53	53



Hazard Event	Probability Factor	Sum of Weighted Extent Factors	Sum of Weighted Vulnerability Factors	Sum of Weighted Impact Factors	Consequence Score	Total Risk Score (Probability x Consequence)
Thunderstorms (Severe Weather)	2	6	16	26	48	48
Communicable Diseases / Pandemic	2	18	10	20	48	48
Cold Wave / Extreme Cold (Severe Weather)	2	12	12	20	44	45
Avalanche	3	9	6	13	28	43
Heat Wave / Extreme Heat (Severe Weather)	2	12	12	17	41	42
Landslide	2	12	12	13	37	39
Drought	2	9	6	16	31	33
Hail (Severe Weather)	1	6	16	16	38	22
Tornado (Severe Weather)	1	6	16	16	38	22
Dam and Levee Failure	1	9	11	16	36	21
Volcanic Activity	1	12	6	15	33	20

Consequence: Sum of all weighted factors.
Extent: Sum of the weighted Extent factors.
Vulnerability: Sum of the weighted Vulnerability factors.

Impact: Sum of the weighted Impact factors.
Total Risk Score* = Probability x Consequence
 * Normalized to 100

Total Risk Score Legend

Classification	Probability Factor	Extent	Vulnerability	Impact	Consequence Score	Total Risk Score
Low (L)	1	0 – 6	0 – 6	0 – 12	0 – 24	0 – 24
Medium (M)	2	7 – 12	7 – 12	13 – 26	25 – 50	25 – 52
High (H)	3	13 – 18	13 – 18	27 – 39	51 – 75	53 and above

The **legend**—specifically the assignment of low, medium, and high—provides an additional means to qualitatively assess the probability factor, sum of weighted factors, and the total risk scores for each hazard. The **Consequence Score** represents the sum of the Extent, Vulnerability, and Impact Factors. The **Total Risk Score** is a measure of Probability and Consequence.



11. MITIGATION ACTIONS

This section includes the mitigation actions that were developed to address identified risks and vulnerabilities to hazards identified in this Plan. This Plan serves only to recommend mitigation measures based on the potential for risk reduction and available funding. Implementation of mitigation actions is dependent on risk reduction priorities, feasibility, and available funding. It is also dependent on the cooperation and support of the jurisdiction and/or department responsible for each action item.

Kittitas Public Utility District agreed upon **eight (8)** mitigation actions that apply to the jurisdiction’s properties where they have jurisdictional responsibility and authority. A summary of the District’s mitigation actions status is listed in **Table 16**.

Table 16. Kittitas Public Utility District Mitigation Actions Summary

Status		Mitigation Action Total	
Ongoing		4	
In Progress/In Work		1	
Not Started		1	
Delayed/Deferred		2	
New		0	
TOTAL		8	
Completed		0	
Deleted/No Longer Needed		0	
Mitigation Actions per Hazard			
Avalanche	6	Landslide	6
Dam and Levee Failure	5	Severe Weather	8
Drought	4	Volcanic Activity	4
Earthquake	5	Wildfire	7
Flood	7	Winter Weather	4

These shared actions, some of which address all hazards, help to meet the following requirements:

- Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?
- Does the Plan include one (1) or more action(s) per jurisdiction for each hazard identified within the risk assessment?

A detailed explanation of the Mitigation Strategy can be found in Chapter 5 of **Volume 1**.



Mitigation Action	Retrofit the District's critical infrastructure with a secondary power source (i.e., mobile generator) to increase power system resilience and mitigate the impacts of natural hazards while increasing the resilience of critical functions.				
Action Number	KPUD-1	Year Initiated / Anticipated Year of Initiation	2019	Prioritization Score	29/40
Goal(s) Addressed		1	Hazard(s) Mitigated	Avalanche, Dam and Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Volcanic Activity, Wildfire, Winter Weather	
Project Status		Not Started	<i>If Deleted/No Longer Needed, provide reason.</i>	n/a	
Benefits (Loss Avoided)	High				
Lead Agency / Organization	Kittitas County Public Utility District (Management Division)		Supporting Agency / Organization (If applicable)	n/a	
Additional Participating Jurisdictions (If applicable)	n/a				
Project Duration	Short Term		Estimated Cost	Low	
Potential Funding Source	Local Budgeted Funds, HMGP		<i>If Other, you must identify a funding source.</i>	n/a	
			Please provide further detail on Potential Funding Source.	District General Fund (Staff Time), Capital Improvement Fund	
Implementation Priority	Medium	Changes in Priority (If applicable)	Currently, this project is not in the 10-year Capital Improvement Plan. Wildfire mitigation projects represent a higher District priority than the mobile generator		



Mitigation Action	Identify right of way and relocate distribution structures and facilities out of areas subject to repetitive loss or damage. These include, but are not limited to, all feeders on Parke, Ellensburg, Teanaway, Smithson, and Jenkins circuits.				
Action Number	KPUD-2	Year Initiated / Anticipated Year of Initiation	2019	Prioritization Score	34/40
Goal(s) Addressed	1, 2, 3, 5		Hazard(s) Mitigated	Avalanche, Flood, Landslide, Severe Weather, Wildfire	
Project Status	Ongoing	If Deleted/No Longer Needed, provide reason.		n/a	
Benefits (Loss Avoided)	High				
Lead Agency / Organization	Kittitas County Public Utility District (Management Division)	Supporting Agency / Organization (If applicable)	n/a		
Additional Participating Jurisdictions (If applicable)	n/a				
Project Duration	Short Term	Estimated Cost	High		
Potential Funding Source	Local Budgeted Funds, HMGP	If Other, you must identify a funding source.		n/a	
		Please provide further detail on Potential Funding Source.	District General Fund (Staff Time)		
Implementation Priority	High	Changes in Priority (If applicable)	District funds are authorized and prioritized annually during the budget process.		



Mitigation Action	Implement a contingency plans to establish a more hazard resilient electrical system by networking isolated distribution circuits including, but not limited to, feeder ties S2 to T1, P3 to V1, R1 alternate source, and Beverly Bridge.				
Action Number	KPUD-3	Year Initiated / Anticipated Year of Initiation	2019	Prioritization Score	35/40
Goal(s) Addressed	1, 2, 3, 5		Hazard(s) Mitigated	Avalanche, Flood, Landslide, Severe Weather, Wildfire	
Project Status	In Progress/In Work	If Deleted/No Longer Needed, provide reason.		n/a	
Benefits (Loss Avoided)	High				
Lead Agency / Organization	Kittitas County Public Utility District (Management Division)	Supporting Agency / Organization (If applicable)	n/a		
Additional Participating Jurisdictions (If applicable)	n/a				
Project Duration	Short Term		Estimated Cost	Medium	
Potential Funding Source	Local Budgeted Funds, HMGP		If Other, you must identify a funding source.	n/a	
			Please provide further detail on Potential Funding Source.	District General Fund (Staff Time)	
Implementation Priority	High	Changes in Priority (If applicable)	District funds are authorized and prioritized annually during the budget process.		



Mitigation Action	Implement a vegetation management program to manage all rights of way on a three (3) year cycle.				
Action Number	KPUD-4	Year Initiated / Anticipated Year of Initiation	2019	Prioritization Score	30/40
Goal(s) Addressed		1	Hazard(s) Mitigated	Severe Weather, Wildfire	
Project Status	Ongoing		<i>If Deleted/No Longer Needed, provide reason.</i>	n/a	
Benefits (Loss Avoided)	High				
Lead Agency / Organization	Kittitas County Public Utility District (Operations Division)		Supporting Agency / Organization (If applicable)	n/a	
Additional Participating Jurisdictions (If applicable)	n/a				
Project Duration	Ongoing		Estimated Cost	Low	
Potential Funding Source	Local Budgeted Funds, HMGP		<i>If Other, you must identify a funding source.</i>	n/a	
			Please provide further detail on Potential Funding Source.	District Funds are authorized annually during the budget process.	
Implementation Priority	High	Changes in Priority (If applicable)	District funds are authorized and prioritized annually during the budget process.		



Mitigation Action	Elevate substations in floodplain to include, but not limited to the Ellensburg substation and Teanaway substation.				
Action Number	KPUD-5	Year Initiated / Anticipated Year of Initiation	2025	Prioritization Score	29/40
Goal(s) Addressed	1, 3, 5		Hazard(s) Mitigated	Dam and Levee Failure, Earthquake, Flood, Severe Weather	
Project Status	In Progress/In Work		<i>If Deleted/No Longer Needed, provide reason.</i>	n/a	
Benefits (Loss Avoided)	High				
Lead Agency / Organization	Kittitas County Public Utility District (Management Division)		Supporting Agency / Organization (If applicable)	n/a	
Additional Participating Jurisdictions (If applicable)	n/a				
Project Duration	Long Term		Estimated Cost	High	
Potential Funding Source	Local Budgeted Funds, HMGP		<i>If Other, you must identify a funding source.</i>	n/a	
			Please provide further detail on Potential Funding Source.	District General Fund (Staff Time)	
Implementation Priority	Medium	Changes in Priority (If applicable)	District funds are authorized and prioritized annually during the budget process.		



Mitigation Action	Continue to support countywide initiatives related to hazard mitigation efforts identified in Volume 1 of the Kittitas County Hazard Mitigation Plan.				
Action Number	KPUD-6	Year Initiated / Anticipated Year of Initiation	2019	Prioritization Score	39/40
Goal(s) Addressed	1, 2, 3, 4, 5		Hazard(s) Mitigated	Avalanche, Dam and Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Volcanic Activity, Wildfire, Winter Weather	
Project Status	Ongoing	If Deleted/No Longer Needed, provide reason.		n/a	
Benefits (Loss Avoided)	Low				
Lead Agency / Organization	Kittitas County Public Utility District (Management Division)		Supporting Agency / Organization (If applicable)	n/a	
Additional Participating Jurisdictions (If applicable)	n/a				
Project Duration	Short Term		Estimated Cost	Low	
Potential Funding Source	Local Budgeted Funds		If Other, you must identify a funding source.	n/a	
			Please provide further detail on Potential Funding Source.	District General Fund (Staff Time)	
Implementation Priority	High	Changes in Priority (If applicable)			



Mitigation Action	Actively support and participate in the implementation, monitoring, maintenance, and updating of the Kittitas County Hazard Mitigation Plan, as outlined and defined in Volume 1.				
Action Number	KPUD-7	Year Initiated / Anticipated Year of Initiation	2019	Prioritization Score	39/40
Goal(s) Addressed	1, 2, 3, 4, 5		Hazard(s) Mitigated	Avalanche, Dam and Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Volcanic Activity, Wildfire, Winter Weather	
Project Status	Ongoing	If Deleted/No Longer Needed, provide reason.		n/a	
Benefits (Loss Avoided)	Low				
Lead Agency / Organization	Kittitas County Public Utility District (Management Division)	Supporting Agency / Organization (If applicable)	n/a		
Additional Participating Jurisdictions (If applicable)	n/a				
Project Duration	Ongoing	Estimated Cost	Low		
Potential Funding Source	Local Budgeted Funds	If Other, you must identify a funding source.		n/a	
		Please provide further detail on Potential Funding Source.		District General Fund (Staff Time)	
Implementation Priority	High	Changes in Priority (If applicable)			



Mitigation Action	Develop a curtailment and operations plan that describes maintaining operations following disasters and required service outages.				
Action Number	KPUD-8	Year Initiated / Anticipated Year of Initiation	2019	Prioritization Score	25/40
Goal(s) Addressed	1		Hazard(s) Mitigated	Avalanche, Dam and Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Volcanic Activity, Wildfire, Winter Weather	
Project Status	Delayed/Deferred		<i>If Deleted/No Longer Needed, provide reason.</i>	n/a	
Benefits (Loss Avoided)	Medium				
Lead Agency / Organization	Kittitas County Public Utility District (Operations Division)		Supporting Agency / Organization (If applicable)	n/a	
Additional Participating Jurisdictions (If applicable)	n/a				
Project Duration	Long Term		Estimated Cost	Low	
Potential Funding Source	Local Budgeted Funds, BRIC, HMGP		<i>If Other, you must identify a funding source.</i>	n/a	
			Please provide further detail on Potential Funding Source.	District General Fund (Staff Time)	
Implementation Priority	Medium	Changes in Priority (If applicable)			



APPENDIX A. HAZARD MAPS

Figure 1	Kittitas Public Utility District Planning Area
Figure 2	Liquefaction Susceptibility (Earthquake) <i>Helps assess potential damage from earthquakes in the District.</i>
Figure 3	Special Flood Hazard Area (SFHA) <i>Includes each Flood Zone, and the 500-year floodplain. Flood Insurance Rate Maps (FIRMs) show the flood zones, floodplain boundaries, and Base Floor Elevation (BFE) and are used for floodplain management, flood insurance ratings, and to determine flood insurance requirements. FIRMs show areas with a 1% chance of flooding each year, commonly known as the 100-year floodplains, and are illustrated as the SFHA. The 500-year floodplains show areas with a 0.2% chance of flooding each year.</i>
Figure 4	Cle Elum Dam Inundation Area Map
Figure 5	Easton Dam Inundation Area Map
Figure 6	Keechelus and Kachees Dam Inundation Area Map
Figure 7	Wildfire Likelihood Map <i>Wildfire likelihood is the annual probability of wildfire burning in a specific location.</i>
Figure 8	Wildfire Risk to Homes Map <i>Wildfire risk to homes measures the relative consequence of wildfire to residential structures everywhere on the landscape, whether a home actually exists there or not.</i>



Figure 1. Kittitas Public Utility District Planning Area

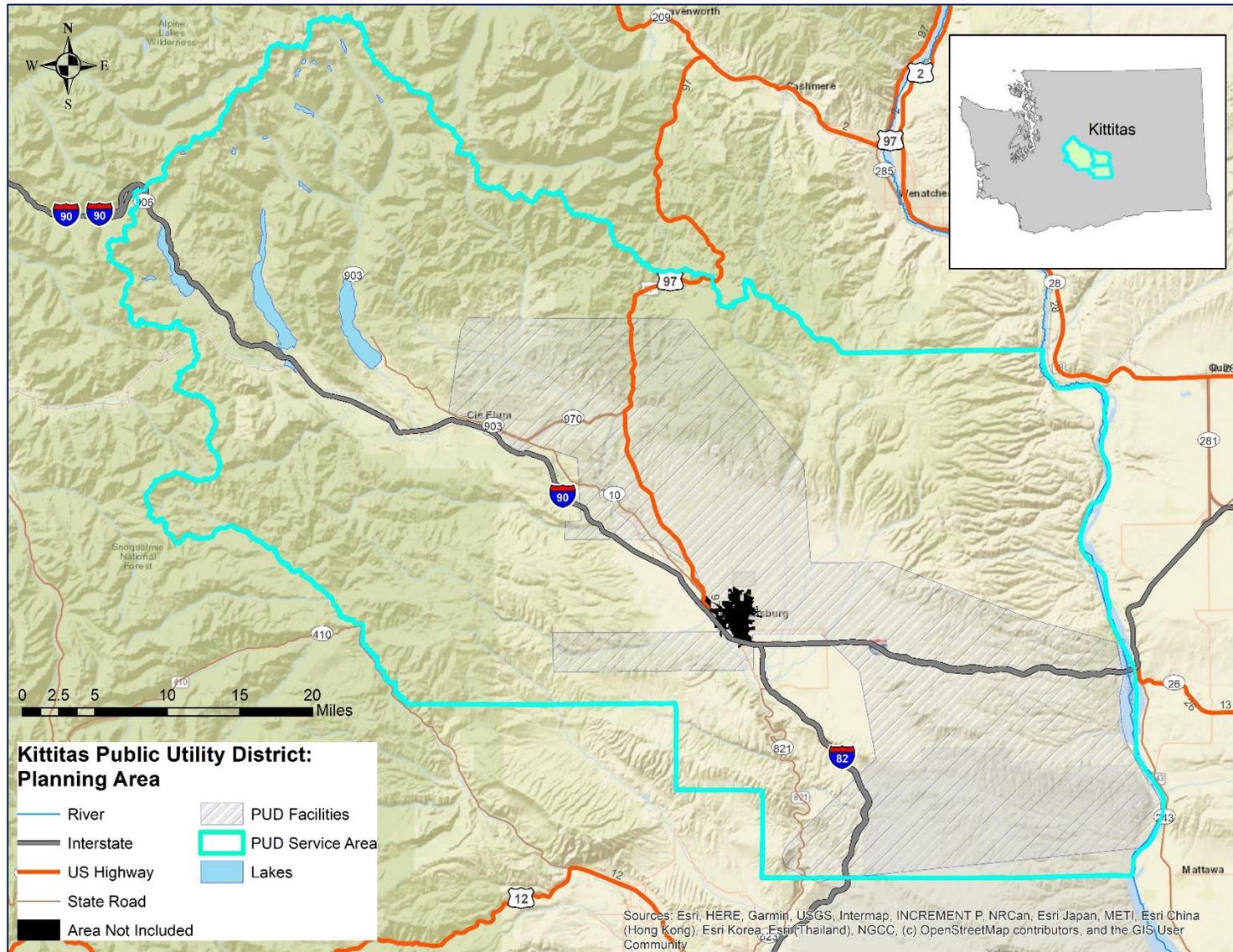




Figure 2. Liquefaction Susceptibility (Earthquake)

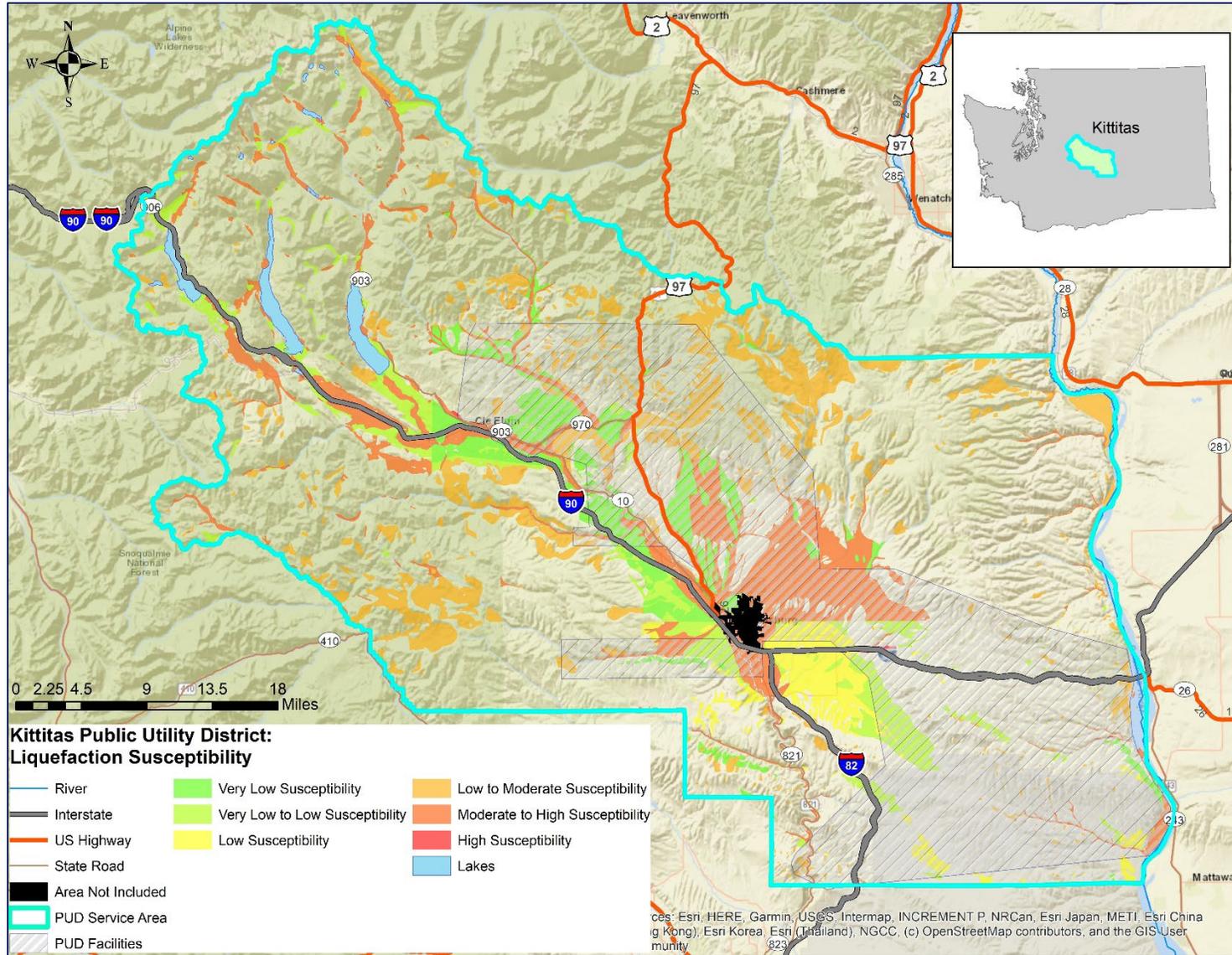




Figure 3. Special Flood Hazard Area

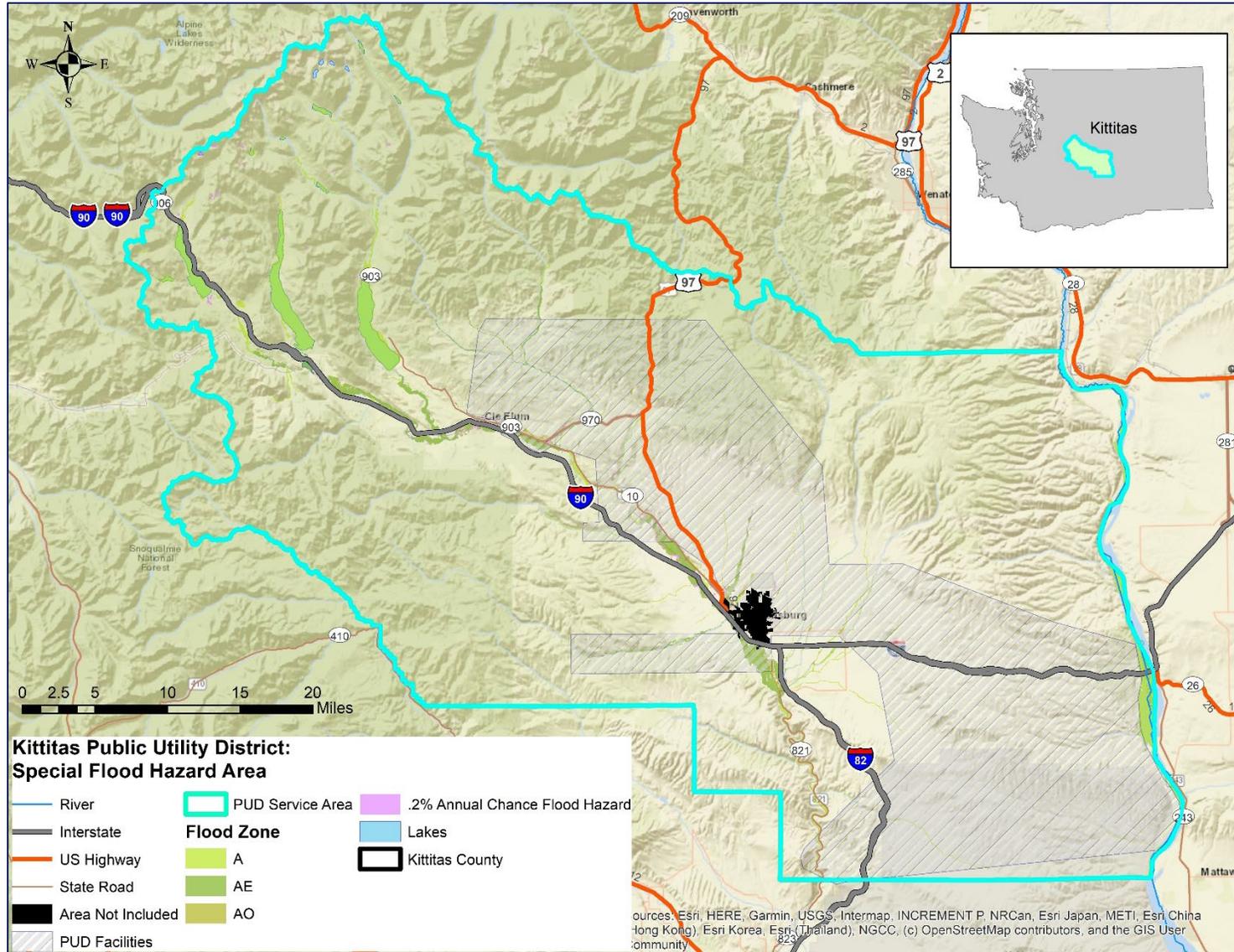




Figure 4. Cle Elum Dam Inundation Area Map

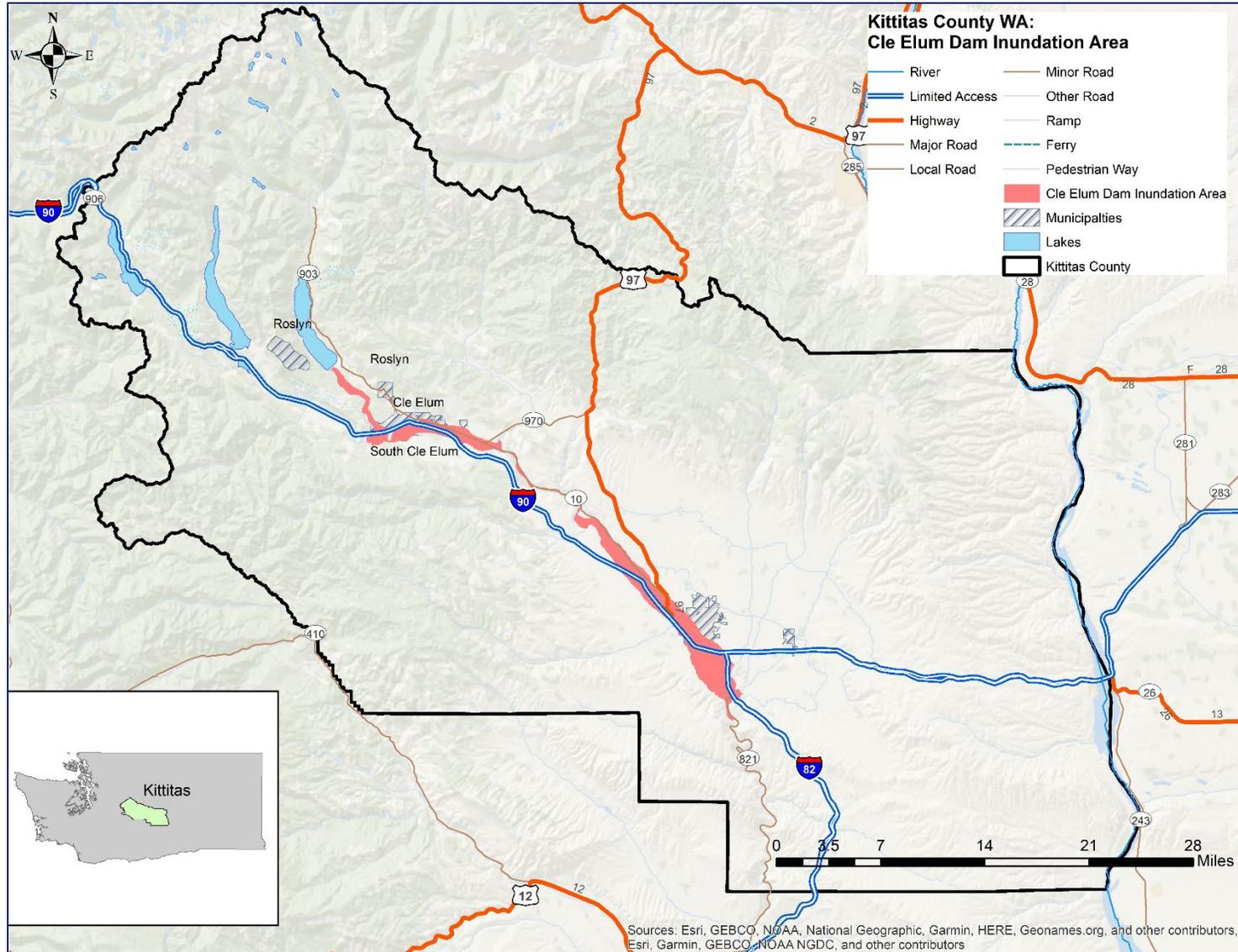




Figure 5. Easton Dam Inundation Area Map

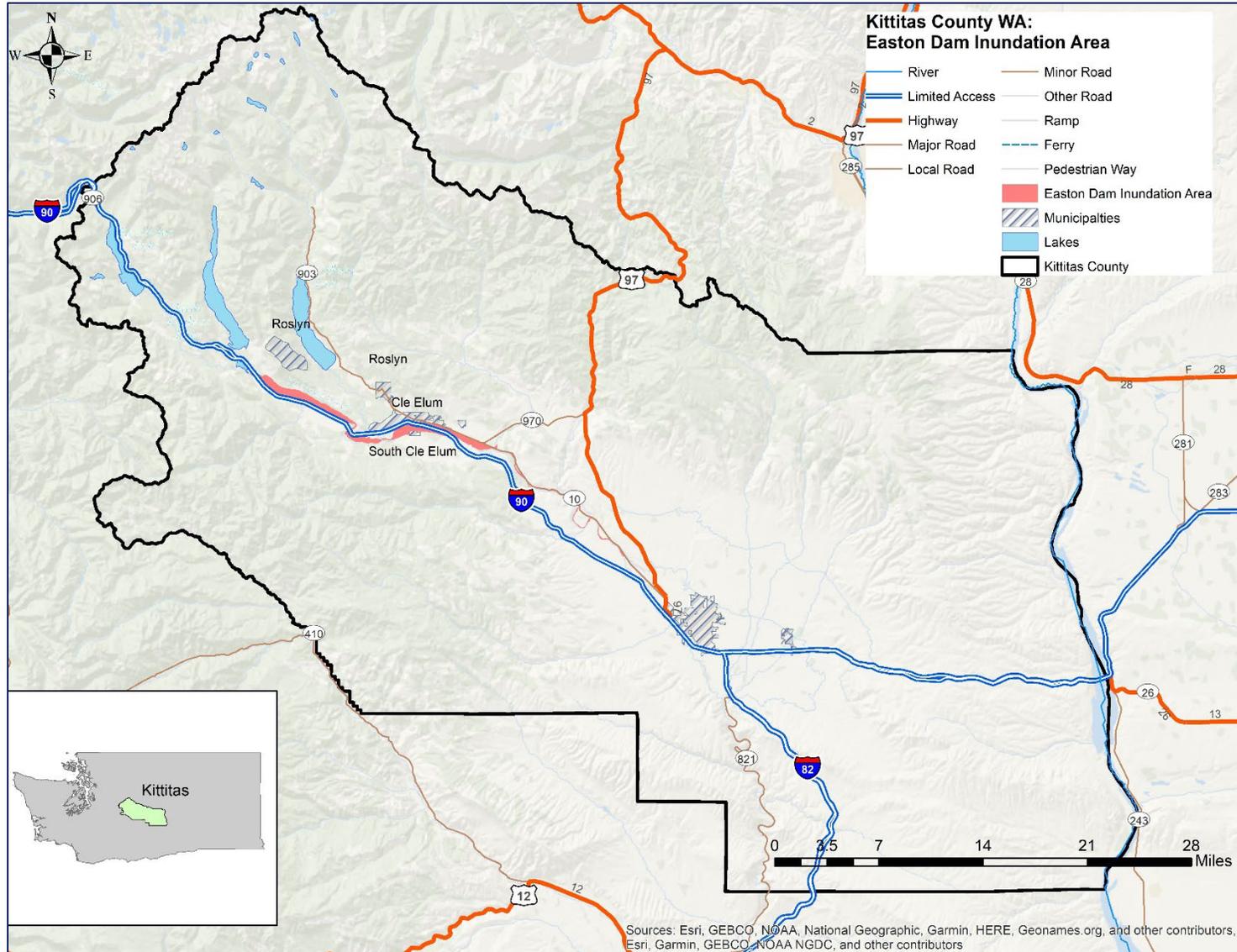




Figure 6. Keechelus and Kachees Dam Inundation Area Map

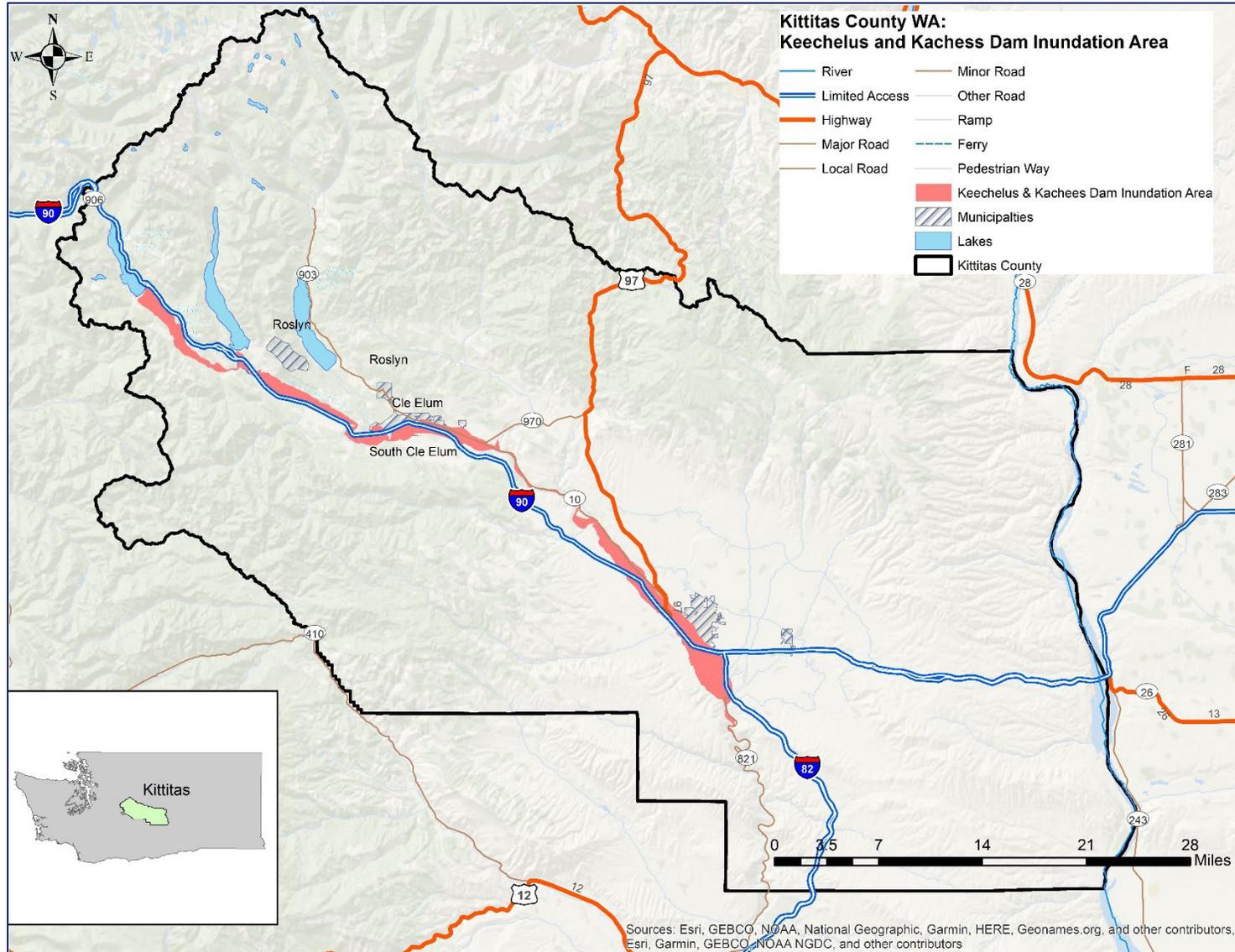




Figure 7. Wildfire Likelihood

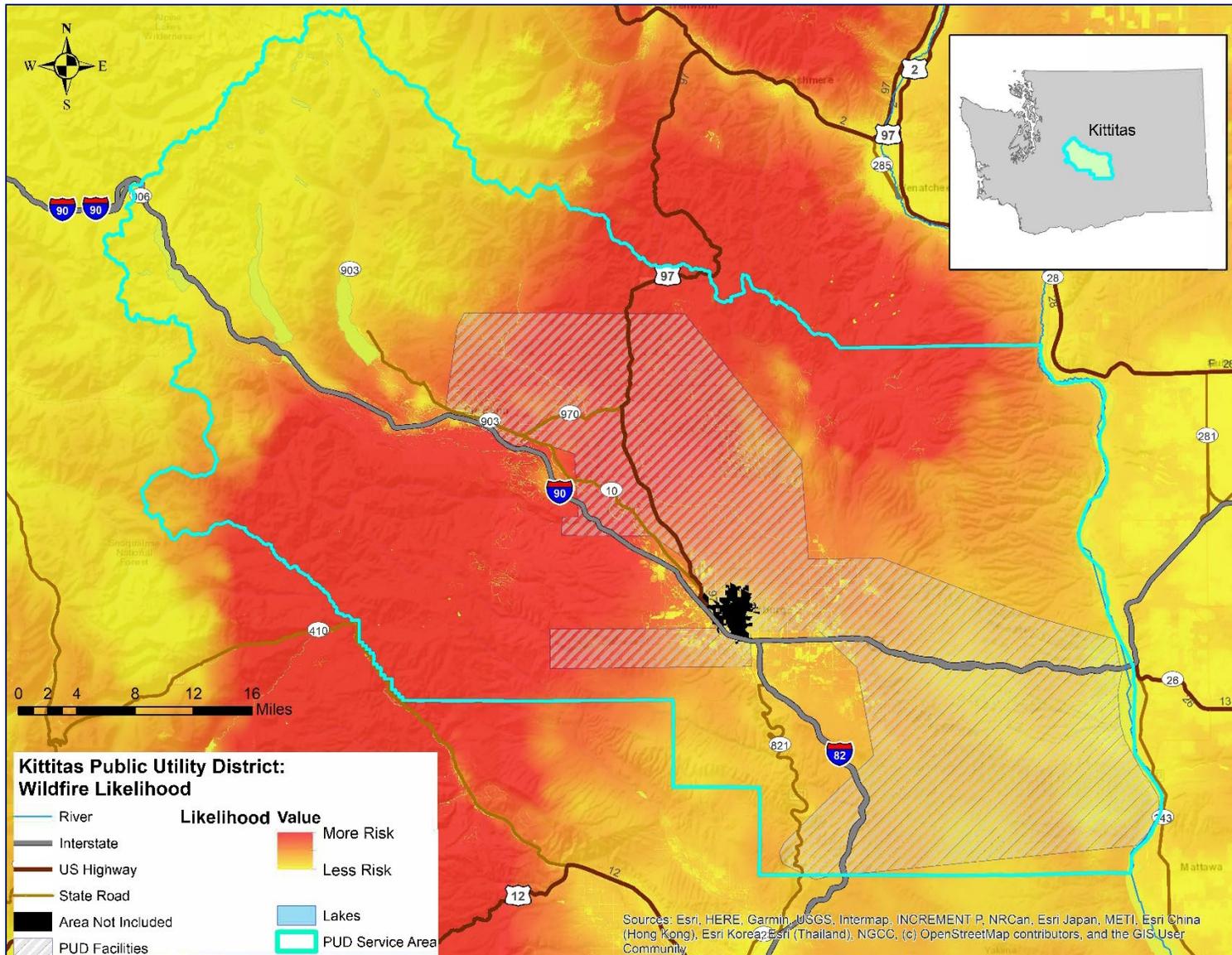
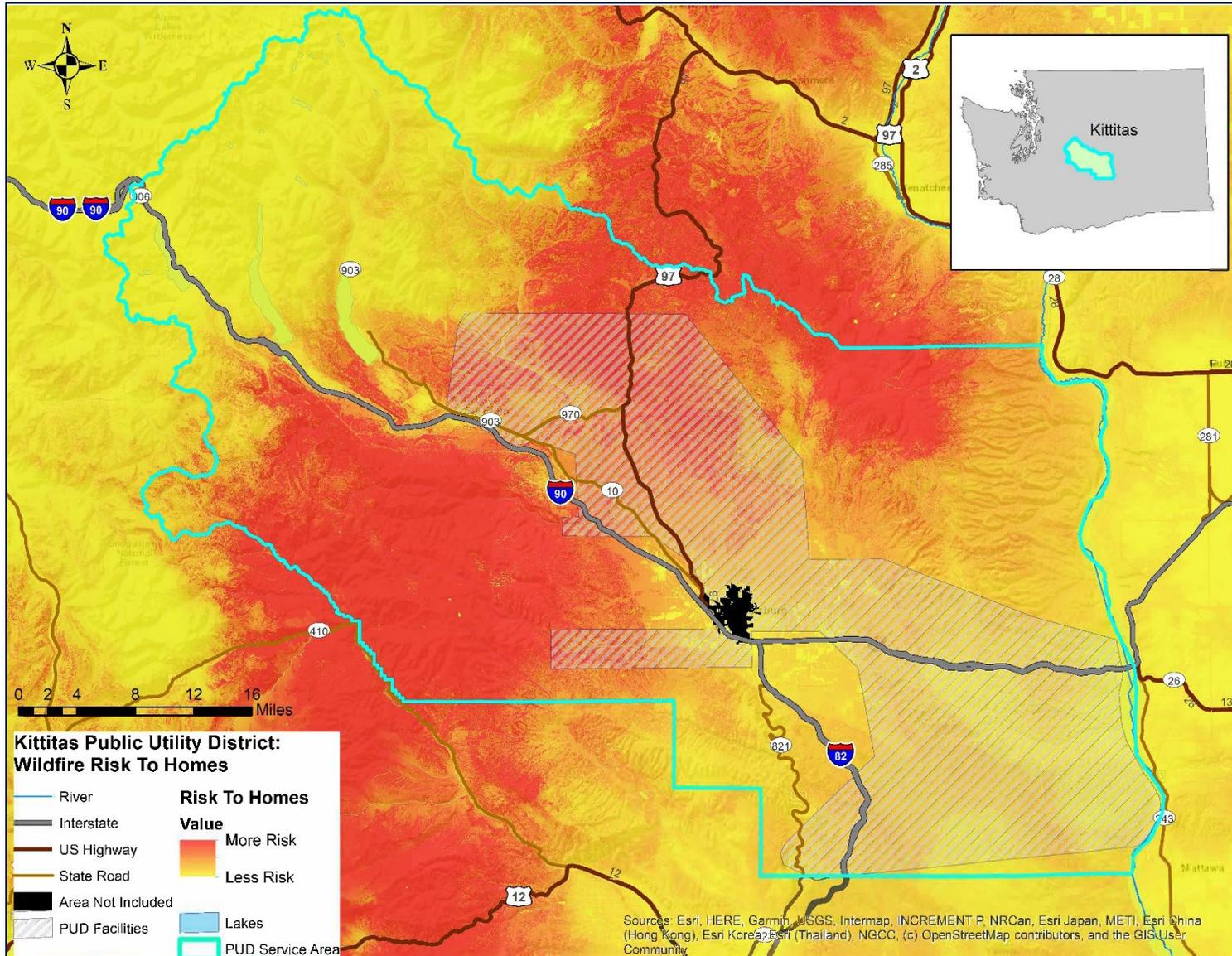




Figure 8. Wildfire Risk to Homes





APPENDIX B. PLAN ADOPTION

[Placeholder for adoption documentation after State and FEMA Approval]