FRANKLIN COUNTY

WASHINGTON

MULTI - HAZARD MITIGATION PLAN

2026

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Part I: Planning Process

CHAPTER 1: INTRODUCTION

1.1 Introduction

Franklin County, Washington and the incorporated communities that lie within the county boundaries are vulnerable to natural, technological, and manmade hazards that have the possibility of causing serious threats to the health, welfare, and security of its residents. The cost of response to and recovery from the potential disasters, in terms of potential loss of life or property, can be lessened when attention is turned to mitigating their impacts and effects before they occur or reoccur.

This Multi-Jurisdictional All Hazard Mitigation Plan seeks to identify the county's and individual communities' hazards and understand their impact on vulnerable populations and infrastructure. With that understanding, the plan sets forth solutions that, if implemented, have the potential to significantly reduce threat to life and property. The plan is based on the premise that hazard mitigation works. With increased attention to managing natural, technological, and manmade hazards, communities can reduce the threats to citizens and through proper land use and emergency planning can avoid creating new problems in the future. Many solutions can be implemented at minimal cost and social impact.

This is not an emergency response or management plan. Certainly, the plan can be used to identify weaknesses and refocus emergency response planning. Enhanced emergency response planning is an important mitigation strategy. However, the focus of this plan is to support better decision-making directed toward avoidance of future risk and the implementation of activities or projects that will eliminate or reduce the risk for those that may already have exposure to a hazard threat.
The Franklin County Multi-Jurisdictional All Hazard Mitigation Plan was created with the goal of substantially and permanently reducing the county's vulnerability to hazards through sound public policy. By increasing public awareness of potential harm, documenting resources for risk reduction and loss prevention, and identifying activities to guide the development of the creation of less vulnerable and more sustainable communities, this plan aims to protect citizens, critical facilities, infrastructure, private property, and the natural environment.

1.2 Plan Organization

Part I of the plan provides a general overview of the plan and its planning process and identifies who was involved in revisions of the plan and the process used to develop this particular revision.
Part II contains a community profile of the county.
Part III provides a brief definition for each natural and manmade hazard. All hazards identified as affecting the county are analyzed at the county and incorporated county levels and then summarized in a hazard profile.
Part IV outlines the Mitigation Strategy and identifies the goals, objectives, and mitigation projects.
Part V details the plan maintenance process and provides a tentative timeline for updating the plan in the future.

The **Appendix** contains contact information for the planning team, meeting minutes, meeting invites, worksheets, agendas, public participation social media advertisements, website

screenshots, disadvantaged community tables, plan adoption and endorsement forms, and references.

1.3 Purpose

This plan exists to identify natural and manmade hazard threats to the community, prepare mitigation management strategies to address those threats, develop short-term and long-term goals and objectives for mitigation planning, and to fulfill federal, state, and local hazard mitigation planning obligations. This plan does not address technological hazards. The intention of this plan is to enhance awareness of and provide mitigation strategies for elected officials, staff, agencies, and the public and develop actions which will minimize negative outcomes to Franklin County's citizens, the economy, and the environment due to potential natural and manmade hazard threats. The well-being of the county and local communities rests on reducing risks to life and property from a hazard, emergency or disaster.

1.4 Hazard Mitigation and Hazards

Hazard mitigation is defined as cost-effective actions that have the effect of reducing, limiting, or preventing the vulnerability of people, culture, property, and the environment to potentially damaging, harmful, or costly hazards. Hazard mitigation measures, which can be used to eliminate or minimize the risk to life, culture, and property, fall into three categories:

1. Those that keep the hazard away from people, property, and structures;
2. Those that keep people, property, or structures away from the hazard; and
3. Those that reduce the impact of the hazard on people, property, and structures.

Actions, such as mitigation measures, taken to limit the vulnerability of people, property and structures are most effective when they are practical, cost effective, and culturally, environmentally, and politically acceptable.

Hazard mitigation planning must be based on vulnerabilities and its primary focus must be on the point where capital investment and land use decisions are made. The placement of capital investments, whether for homes, roads, public utilities, pipelines, or public works, determine to a large extent the nature and degree of a community's hazard vulnerability. Once a capital facility is in place, there is little opportunity to reduce hazard vulnerability through correction of errors in location or construction. It is for this reason that often the most effective mitigation tools are zoning and other ordinances that manage development in low, moderate and high vulnerability areas and building codes that ensure new buildings are constructed to withstand the damaging forces of anticipated hazards.

Because disaster events are generally infrequent, the nature and magnitude of the threat is often ignored or poorly understood. Thus, the priority to implement mitigation measures is low and implementation is slowed. Mitigation success can be achieved, however, if accurate information is portrayed through complete hazard identification and impact studies, followed by effective mitigation management.

The hazards analyzed in this plan include the following:

Natural and Geological Hazards

- Drought
- Earthquake
- Flood
  - Riverine Flooding
  - Flash/Urban Flooding
- High-Hazard Dams & Levees
- Landslide
- Severe Summer Weather
  - Air Quality Incidents
  - Dust Storm
  - Extreme Heat
  - Strong Wind
- Severe Winter Weather
  - Blizzard
  - Ice Storm
  - Extreme Cold
  - Heavy Snow
- Space Weather
- Tornado
- Volcano
- Wildfire

Other Hazards of Concern

Although non-natural hazards are not required by FEMA for inclusion in a hazard mitigation plan, Franklin County wishes to rank and mitigate against a comprehensive list of hazard events that could impact the county. Due to both the nature of non-natural hazards and the discretionary status regarding their inclusion, the following hazards of interest have been briefly and qualitatively assessed for the sake of public education and informing their inclusion within the hazard ranking and mitigation process.

Natural Hazards

- Invasive Species

Technological (Manmade) Hazards

- Air Quality Incidents
- Structural Fire

Biological Hazards

- *Public Health Emergency*
- Per FEMA's mandate to address all natural hazards, the following natural hazards were not included because these hazards do not directly impact Franklin County or the City of Pasco due to geographic location:
- Avalanche

- Hurricane
- Sea Level Rise
- Storm Surge
- Tsunami
- Volcanic Eruption

1.5 Scope

The plan provides comprehensive hazard identification, risk assessment, vulnerability and impact analyses, mitigation actions, and an implementation schedule.

1.6 Plan Goals and Objectives

The goals of the Franklin County Multi-Hazard Mitigation Plan include coordinating with local governments to develop Franklin County's plans and processes that meet the planning components identified in the FEMA Region X Crosswalk document, as well as Washington Emergency Management Division planning expectations and public input from the local community. The overall objective is risk reduction from natural hazards in the state of Washington through implementing and updating county, regional, and the state of Washington mitigation plans.

1.7 Authorities

1.7.1 Federal

Public Law 93-288, as amended, established the basis for federal hazard mitigation activity in 1974. A section of this Act requires—as prerequisite for state receipt of future disaster assistance outlays—the identification, evaluation, and mitigation of hazards. Since 1974, many additional programs, regulations, and laws have expanded on the original legislation to establish hazard mitigation as a priority at all levels of government.

Several additional provisions were also included when PL 93-288 was amended by the Stafford Act that provide for the availability of significant mitigation measures in the aftermath of a presidentially declared disaster. Civil Preparedness Guide 1-3, Chapter 6—Hazard Mitigation Assistance Programs places emphasis on hazard mitigation planning directed toward hazards with a high impact and threat potential.

The Disaster Mitigation Act of 2000 (DMA 2000) was signed into Law on October 30, 2000, by President Bill Clinton. Section 322 defines mitigation planning requirements for state, local, and tribal governments. Under Section 322, if states submit a mitigation plan (a summary of local/regional mitigation plans) identifying natural hazards, risks, vulnerabilities, and proposed actions to reduce those risks and vulnerabilities, the state is eligible for an increase in the federal share of hazard mitigation.

1.7.2 State

The Governor's Emergency Operation Directive, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, amendments to Public Law 93-288, as amended, Title 44, CFR, Federal Emergency Management Agency Regulations, as amended, State Emergency

Management Act of 1981, Washington State Code 38.52 RCW, Disaster Response Recovery Act, 63-5A, Executive Order of the Governor, Executive Order 11, Emergency Interim Succession Act, 63-5B.

1.7.3 Local

Effective natural hazard mitigation is dependent upon local governments assuming a vital role. As such, each local government will review all present or potential damages, losses, and related impacts associated with natural hazards to determine what is required for mitigation action and planning. It is critical that local governments be prepared to participate in the post-disaster Hazard Mitigation Team process, as well as the pre-mitigation planning outlined in the Multi- Hazard Mitigation Plan.

CHAPTER 2: PLANNING PROCESS

2.1 PLANNING PROCESS

The 2025 Franklin County Multi-Hazard Mitigation Plan was completed through the collaborative efforts of the Washington Emergency Management Division, Franklin County Emergency Management Director, Fire Departments, Sheriff's Office, Police Department, Washington State Fire Marshal Office, Franklin County EMS, Public Works Department, Planning and Zoning Commission, Building Department, Assessor's Offices, City, County, and State GIS Departments, Elected Officials, Public Employees, National Weather Service - Pendleton, Washington Division of Forestry, Fire and State Lands, Bureau of Land Management, Washington Department of Ecology, and citizens within Franklin County. Feedback was solicited through the Franklin County Local Emergency Planning Committee (LEPC). During the plan development, the draft plan was posted on Franklin County's website on the Office of Emergency Management page for public comments. Public participation was encouraged through public meetings and review of the 2024 plan on the Franklin County website. All comments, questions, and discussions resulting from these activities were given thoughtful consideration as the plan was developed.

2.2 PLANNING AREA

This plan covers Franklin County, Washington including the cities of Pasco, Connell, Mesa and Kahlotus.

2.3 FRANKLIN COUNTY LOCAL HAZARD MITIGATION PLANNING TEAM

The planning team consisted of a core Steering Committee of key county and city representatives, supported by a broad network of stakeholders from various sectors. Descriptions of the planning meetings follow in the next section below as well as with the meeting minutes in Appendix B.

Table 2.1 Participating Jurisdictions Involvement

Jurisdiction	Representatives	Attended at Least One Meeting	Represented at Mitigation Workshop	Met with Core Planning Team	Submitted New Mitigation Action	Reviewed Past Mitigation Actions
Franklin County	Commissioners Clint Didier & Rocky Mullen Emergency Manager Director and assistant director Sean Davis and Jordan Hanes	Yes	Yes	Yes	Yes	Yes

Jurisdiction	Representatives	Attended at Least One Meeting	Represented at Mitigation Workshop	Met with Core Planning Team	Submitted New Mitigation Action	Reviewed Past Mitigation Actions
City of Pasco	Fire Chief Kevin Crowley & City Council Memewber Charles Grimm	Yes	Yes	Yes	Yes	Yes
City of Connell	Fire Chief Ken Woofenden	Yes	Yes	Yes	Yes	Yes
City of Mesa	Public Works Case Scott	Yes	Yes	Yes	Yes	Yes
City of Kahlotus	Mayor Michael Robitaile	Yes	Yes	Yes	Yes	Yes

2.4 LOCAL HAZARD MITIGATION PLANNING SCHEDULE, MEETINGS, AND MITIGATION WORKSHOPS

The mitigation plan update process commenced on May 1, 2024. The Hazard Identification and Risk Assessment was updated during the months of June, July, and August. Also, during this time a public survey was created and released. To the public. The plan update was then put on pause to accommodate the County. The Mitigation Strategy section was updated during the spring of 2025; Mitigation actions were reviewed and created over the summer and fall of 2025. And the Final document approval was completed in the months of November and December. The plan was completed and submitted to the Washington Division of Emergency Management on December 8, 2025. The Steering Committee guided the process through hazard identification, strategy development, and feedback integration[1], detailed in 2.4.1.

2.4.1 Meeting Details & Minutes

Franklin County Hazard Mitigation Plan Update Kickoff Meeting—07/11/2024

1011 E. Ainsworth St., Pasco, 11:00 AM–1:00 PM (hybrid)[2].
- Key Components: FEMA requirements review, goal finalization, committee role discussion, public involvement planning[2].
- Public Engagement: Survey on FCEM website, Franklin County Graphic ads, October 1–2 meetings[11].

Meeting #2: Workshop – 08/22/2024
11:00 AM–1:00 PM[3].
- Key Activities: Risk assessment review, initial risk validation, local expertise integration, hazard ranking[3].

- Preliminary Assessment: Wildfire, flooding, air quality prioritized (survey: 35.6%, 22.8%,

Survey Distribution and Outreach: The County implemented an extensive outreach campaign to ensure broad community participation. The survey was:

- Featured prominently on the County of Franklin's official website
- Promoted through all county social media channels
- Published in local newspapers
- Distributed to key stakeholders with requests to share with their constituents
- Made available to all attendees at public meetings, with staff assistance provided for completion

This multi-faceted approach ensured the survey reached a diverse cross-section of the community, including residents, business owners, community organizations, and other stakeholders with interests in Franklin County's resilience and safety. Importantly, the survey results reflect participation from individuals who self-identified as belonging to populations with access and functional needs (AFN)**,** as well as from **minority populations**. By documenting this inclusive engagement, the County demonstrates compliance with both FEMA's and the State of Washington's hazard mitigation planning guidelines, ensuring that the perspectives of socially vulnerable groups are incorporated into resilience and safety planning.

2.5.3 Stakeholder Participation

In addition to the Steering Committee, the plan was guided by a wide range of subject matter experts and key stakeholders representing all the participating jurisdictions.

Table 2.3 Local Hazard Mitigation Stakeholders

Representative	Agency	Position
Alexis Spencer	Benton & Franklin Conservation Districts	Research & Monitoring Program Coordinator
Boys and Girls Club of Benton and Franklin Counties		
Brian Terbush	WA EMD	Earthquake/Volcano Program Coordinator
Bryan Thornhill	Franklin County Fire District #5	Fire Chief
Chris Lee	City of Connell	Police Chief
Chris Mortensen	City of Pasco	Fire Deputy Chief
Craig Erdman	Franklin County Public Works Department	Director
Craig Raymond	City of Pasco	Community & Economic Development Deputy Director
Elizabeth Garcia	Benton Franklin Council of Governments	Assistant Regional Planner
Eric Mauseth	Franklin County Fire District #1	Fire Chief

Representative	Agency	Position
Erin Braich	Benton Franklin Council of Governments	Deputy Director
Erin Coyle	Washington State Department of Agriculture	Emergency Manager
Franklin County Local Emergency Planning Committee		
Hallie Tuck	City of Connell	Public Works Director
Jason Langston	Franklin County Fire District #3	Captain
Jim House	WA Department of Social and Health Services	Disability/AFN Integration Manager on Inclusive Emergency Planning
John Christensen	Franklin County Public Works Department	Surveyor
John Rosenau	Franklin County Assessor's Office	County Assessor
Kara Kaelber	Franklin County Conservation District	District Manager
Kathleen Neuman	Franklin County Public Works	Engineer
Katy Branham	National Weather Service – Pendleton	Warning Coordination Meteorologist
McCue	City of Pasco	Public Works Operations Manager
Lee Barrow	City of Connell	Mayor
Lucas Van Holenbeke	Franklin County Fire Protection District #2	Fire Chief
Maria Serra	City of Pasco	Public Works Director
Matt Truman	Housing Authority of the City of Pasco and Franklin County	Executive Director
Michael Morgan	Franklin County	Geographic Information Systems Manager
Michelle Callighan	Housing Authority of the City of Pasco and Franklin County	Finance Director
Michelle Holt	Benton Franklin Council of Governments	Director
Mike Harris	Franklin County Fire District #3	Fire Chief
Mike Troidl	Franklin County	Building Official
Sierra Knutson	Northwest Healthcare Response Network	Eastside District Coordinator
Steve Cooper	Franklin County Fire Protection District #4	Fire Chief
Suzanne Henderson	Bureau of Reclamation	Regional Emergency Management Program Coordinator
Tim Harkins	City of Pasco	Deputy Fire Chief
Tim Waters	Washington State University	Professor – Agriculture and Natural Resources Unit

Representative	Agency	Position
Tricia Sears	Washington Department of Natural Resources	Geologic Planning Liaison
Wesley McCart	Franklin County Planning and Building	Director
Zach Ratkai	Benton Franklin Council of Governments	Local Government Programs Director
Erin Hockaday	Benton Franklin Health District	Senior Manager of Surveillance & Investigation

2.5.3 Overview of Stakeholder Participation

- *Emergency Services and Law Enforcement* (3): FCEM, Law Enforcement, Washington EMD, fire districts, provided response expertise.
- *Healthcare and Social Services* (1): Benton-Franklin Health District focused on health impacts.
- *Education and Youth Services* (1): WSU Extension connected rural communities, Boys and Girls Club of Benton and Franklin Counties.
- *Utilities and Infrastructure* (1): Public Works addressed infrastructure resilience.
- *Community Organizations* (2): Conservation District and Housing Authority enhanced local perspectives.
- *Regional Partners* (5): Adjacent counties (Benton, Walla Walla, etc.) ensured coordination.

2.5.4 Stakeholder Engagement Process

Stakeholders were engaged throughout:

- Invited to meetings and phases.
- Provided surveys and draft reviews.
- Shared data (e.g., DNR hazard maps, health district vulnerability assessments).
- Contributed to mitigation strategies (e.g., evacuation protocols, infrastructure upgrades).

Stakeholders were invited and given copies of surveys, drafts and data primarily via email. All Stakeholders were invited to Zoom meetings and the in person public engagement events.

2.6 Equity Considerations for Underserved Communities and Socially Vulnerable Populations

Some disasters occur on larger scales, are more impacted by built environments, and are most likely to continually impact those at risk because of existing health conditions, lack of resources, being underserved by past mitigation planning work, facing historical disinvestment in their communities, or other factors. In this case, people in widely different locations can be harmed most by repeating disaster cycles. Therefore, mitigation strategies should be crafted to break cycles of

loss caused by social and economic disparities. Hazard mitigation strategies can reduce existing risk by, for example, relocating a building out of an area that frequently floods. In each case, an attempt has been made to lessen the harm of a future flood before the event happens. Strategies may also seek to make future development less vulnerable to hazards at the time it is built. Examples would be requiring new structures to be elevated above predicted flood levels or building structures to withstand future hazards better. Hazard mitigation plans are designed to involve the input of stakeholders from different perspectives to ensure plans use the best available data, are aligned with the needs of the entire community, and align with other plans, such as comprehensive plans, capital improvement plans, and climate action plans.

This Franklin County Multi-Hazard Mitigation Plan recognizes that not all community members are impacted similarly by natural disasters. Some are at more risk. A mitigation strategy that uses a “one size fits all” approach and does not recognize different levels of risk will not adequately or efficiently support historically underserved populations and can worsen inequalities after a disaster.

Equitable mitigation success should be measured by assessing who was most impacted by loss of life or financial harm by past and future disasters, quantifiable reductions of vulnerability to those most at risk, and increasing engagement with historically underserved populations and community organizations to better understand how plans and processes and natural hazard events are affecting different communities.

The county and participating jurisdictions are responsible for ensuring equitable outcomes in implementing this plan and taking action to reduce vulnerabilities to disasters experienced disproportionately by marginalized populations.

The Climate & Economic Screening Tool, provided by the U.S. Council on Environmental Quality, analyzes the QUANTITY 2010 census tracts in Franklin County for disadvantaged communities. Appendix C identifies and describes the burdens experienced in each census tract.

Franklin County also invited and coordinated with stakeholders representing several local organizations serving disadvantaged populations, including the following organizations:

- Boys and Girls Club of Benton and Franklin Counties
- Washington State Department of Health and Social Services
- Benton Franklin Health District
- Washington State Emergency Management Division – Access and Functional Needs Program Manager

Additionally, the public survey specifically included questions to determine how the county could better support the functional and access needs of populations and underserved groups. Questions include but are not limited to: During times of emergency, information is provided in a format I can understand; I can quickly obtain emergency information in times of crisis; Please indicate how Franklin County can better assist you in preparing for emergencies and disasters; What might prevent you from leaving your place of residence if there was an evacuation order?
The results of the survey are included in Appendix C.

2.7 Existing Plans, Studies, and Reports Reviewed for the Development of the Plan

Chapter 5: Capabilities Assessment reviews critical studies, plans, laws, and ordinances in effect within the planning area that can affect hazard mitigation actions. All these documents were reviewed and incorporated into this plan as part of the update process.

[1] FEMA. (2024). Hazard Mitigation Planning Guidelines. https://www.fema.gov/hazard-mitigation-planning
[2] Franklin County Emergency Management (FCEM). (2023). Hazard Mitigation Plan. https://www.co.franklin.wa.us/emergency_management
[3] Washington State EMD. (2024). HMP Review Process. https://mil.wa.gov/emergency-management-division

-City Herald. (2024). Public Meeting Notices. https://www.tri-cityherald.com
-Franklin Health District. (2024). Community Health Assessment. https://www.bfhd.wa.gov
-maps

Part II: Community Profile

CHAPTER 3 COMMUNITY PROFILE

3.1 Location and Setting

Franklin County is located in south-central Washington State, within the Columbia Basin, between the Snake and Columbia Rivers[1]. It spans 1,242.4 square miles, ranking 27th in size among Washington's 39 counties[1]. The county is bordered by Benton County to the southwest, Grant and Adams counties to the north, Whitman and Columbia counties to the east, and Walla Walla County to the southeast, with the Columbia River marking its western and southwestern edge and the Snake River its southeastern boundary[1]. Key drainages, like Esquatzel Coulee and smaller canyons, intersect the landscape[1]. Elevations range from 423 feet at the lowest point to 1,824 feet on the North Columbia Plateau[1].

Figure 3.1 Franklin County, Washington

Incorporated cities and towns include Pasco (the county seat), Connell, Kahlotus, and Mesa, while unincorporated communities, like Eltopia, Harder, Basin City, and West Pasco, dot the rural, agriculture-dominated landscape[2]. Pasco, near the confluence of the Columbia and Snake Rivers, forms part of the Tri-Cities with Richland and Kennewick in Benton County[2]. Mesa and Connell lie along U.S. Route 395, Kahlotus along State Route 260, Basin City along Road 170, and West Pasco is enveloped by Pasco's urban sprawl[2].

Historically, the Columbia River supported Native American tribes, such as the Umatilla, Wanapum, and Yakama, who used its lowlands as wintering grounds[3]. Settlement surged in the

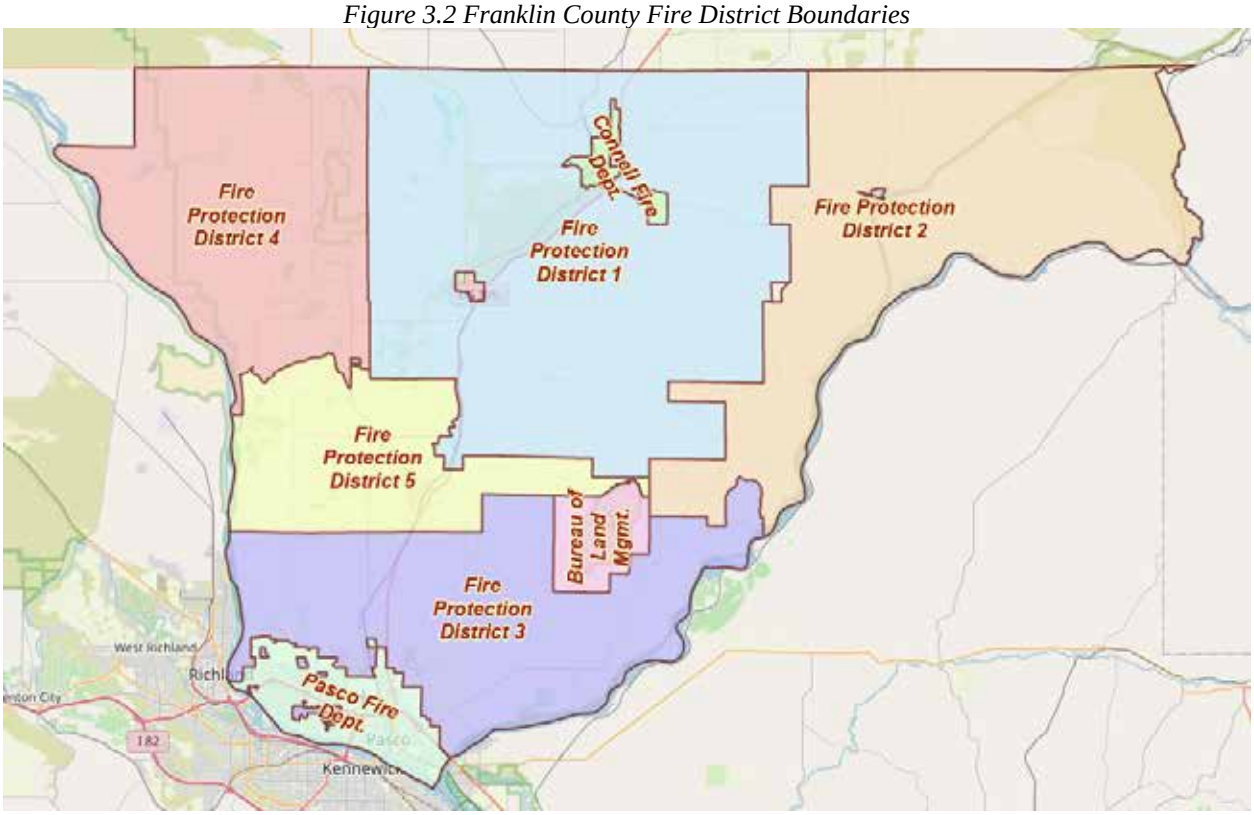
1890s with irrigation infrastructure, transforming arid shrub-steppe into farmland[3]. The Dalles-Celilo Canal (1915), Hanford Nuclear Site (1940s), and the Columbia Basin Irrigation Project (1950s) cemented Franklin County's agricultural and economic significance[3].

The proximity of the Hanford Nuclear Site, which was a key facility for the development of nuclear weapons during World War II, and the construction of three Washington Public Power Supply System (WWPPSS) nuclear plants at Hanford in the 1970s also had significant impacts on the economic development of the region. In the 1950s, two major developments fueled regional growth—the Columbia Basin Irrigation Project and McNary Dam. These developments underscored the rich agricultural potential of the region. With the advent of irrigation not only did agricultural production both boom and diversify, but the related food processing industry also flourished. The area has become one of the nation's leading agricultural production regions.

For wildfire planning, Franklin County falls within the Southeast Washington Fire Region,

(Connell), #2 (Kahlotus), #3 (Pasco), #4 (Mesa), and #5 (Basin City), covering both urban and rural wildland-

Figure 3.2 Franklin County Fire District Boundaries



Source: Franklin County Emergency Management

3.1.1 Participating Jurisdictions

This Multi-Jurisdictional Hazard Mitigation Plan was developed collaboratively by five participating jurisdictions in Franklin County, Washington. Each jurisdiction participated in the planning process, contributed data and expertise, identified mitigation actions, and has committed to adopting this plan in accordance with local laws and procedures.

The five participating jurisdictions are:

Franklin County (Unincorporated Areas)

- Role: Lead planning jurisdiction, county-wide services
- Service Area: Unincorporated areas plus contracted services to Mesa and Kahlotus

City of Pasco

- Role: County seat, largest municipality
- Characteristics: Urban center, significant commercial/industrial development

City of Connell

- Role: Independent municipality with own services
- Characteristics: Agriculture-based community along U.S. Route 395

City of Mesa

- Role: Small rural municipality
- Characteristics: Contracts with Franklin County for building/planning services

City of Kahlotus

- Role: Smallest jurisdiction in planning area
- Characteristics: Rural community, contracts with Franklin County for technical services

This plan addresses hazards, risks, capabilities, and mitigation strategies for all five participating jurisdictions. Jurisdiction-specific information is provided throughout this chapter and in individual annexes where appropriate. The planning process ensured meaningful participation from all jurisdictions regardless of size, recognizing that smaller communities like Mesa and Kahlotus face unique challenges and rely on regional partnerships to enhance their hazard mitigation capabilities.

3.2 Topography

Franklin County's topography, within the Columbia Basin and Columbia Plateau, features flat to
-covered
Palouse Hills in the east support agriculture, while the arid west hosts sagebrush steppe—a prime

The topographic relief in the county is relatively low, with the most prominent features being river valleys and gently sloping hills. The geological composition includes basalt from ancient lava flows, sedimentary deposits from ancient lakes and rivers, and loess, a fine silt deposited by wind.

3.3 Geology and Soils

formations include Grande Ronde Basalt (15.6–17 million years old), Wanapum Basalt (13.5–14 million years old), and Saddle Mountain Basalt (6–13 million years old), with sedimentary

sculpted the Channeled Scablands north of the county, leaving sandy loam and loess soils—highly
Pasco, exemplify wind-deposited sands, a

3.4 Natural Resources

key natural resources:

Table 3.3 Franklin County Natural Resources:

Resource Type	Details
Agricultural Crops	Potatoes, wheat, apples thrive on irrigated lands from the Columbia Basin
Water Resources	Columbia and Snake Rivers, plus groundwater, support irrigation but face
Vegetation/Fuels	Shrub-steppe (sagebrush, bunchgrass) and dry forests increase wildfire risk, especially near WUI zones[11]

Franklin County has identified and designated critical areas as required under the Growth Management Act.

3.5 Climate

This portion of Washington State is part of the large inland basin between the Cascade and Rocky Mountain ranges. East of the Cascades, summers are warmer, winters are colder, and precipitation is less than in western Washington.

Franklin County's semi-arid climate, with 7–15 inches of annual precipitation, features hot, dry summers (90s°F) and cold winters (15–40°F), ideal for wildfire ignition[12]. July–August dryness, paired with 50–85% sunshine and southwest winds (4–24 mph, gusts to 80 mph), amplifies fire spread[13].

Central Basin Climate

To describe the climate in more detail, Eastern Washington has been divided into five sections, one of which is the Central Basin, in which Franklin County lies. Figure 3.4 shows average monthly precipitation for Franklin County from 2000 to 2025 while Figure 3.6 shows the graphed drought levels for Franklin County from 2000 to 2025.

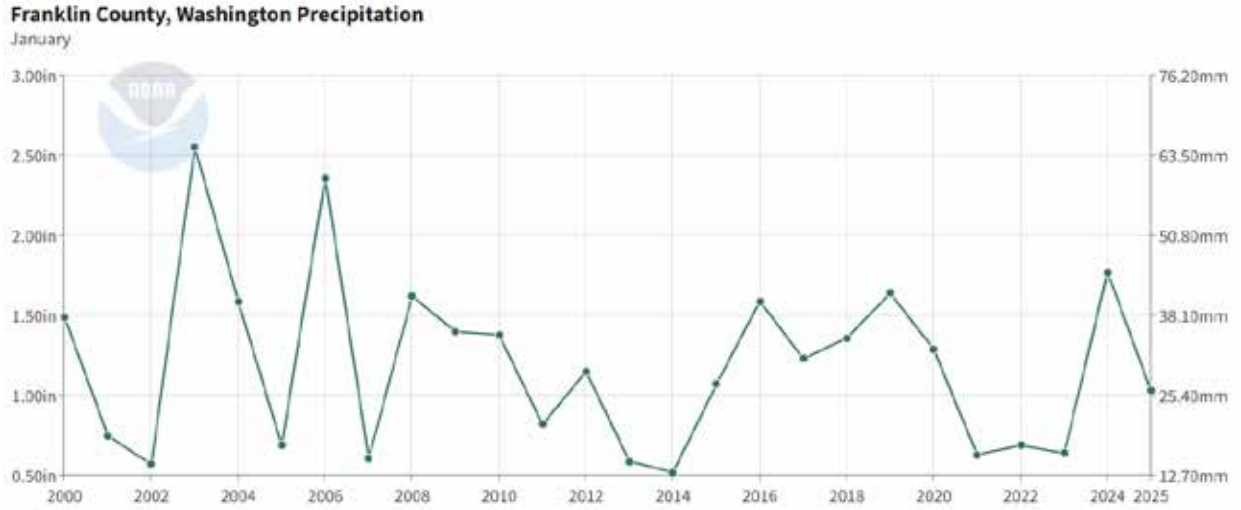
The Central Basin includes the Ellensburg valley, the central plains area in the Columbia basin south from the Waterville Plateau to the Oregon border and east to near the Palouse River. This is the lowest and driest section in eastern Washington. Annual precipitation ranges from seven inches in the drier localities along the southern slopes of the Saddle Mountains, Frenchman Hills and east of Rattlesnake Mountains, to 15 inches near the Blue Mountains. Summer precipitation is usually associated with thunderstorms. During July and August, it is not unusual for four to six weeks to pass without measurable rainfall.

Snow can be expected after the first of December and to remain on the ground for periods varying from a few days to two months between mid-December and the last of February. Other than in the Ellensburg valley, snow depths seldom exceed eight to 15 inches. The Central Basin is subject to "chinook" winds which produce a rapid rise in temperature. A few damaging hailstorms are reported in the agricultural areas each summer.

The average January maximum temperature is near 30° F in the colder localities in the Columbia Basin and 40° F in the lower Yakima valley, and minimum temperatures are between 15° to 25° F. Minimum temperatures between 0° to -10° F are recorded almost every winter and temperatures from -15° F to -30° F have been recorded.

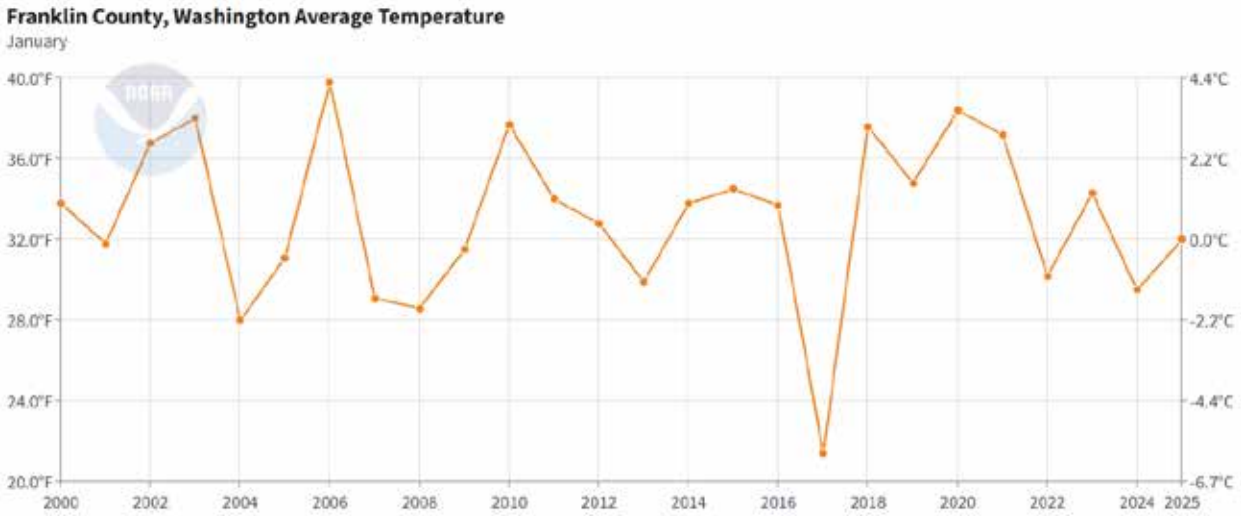
In summer, maximum temperatures reach 100° to 105° on a few afternoons of the season.. The first freezing temperature in the fall is usually recorded between mid-September and mid-October.

Figure 3.4 Average Precipitation for Franklin County, WA from 2000-2025:



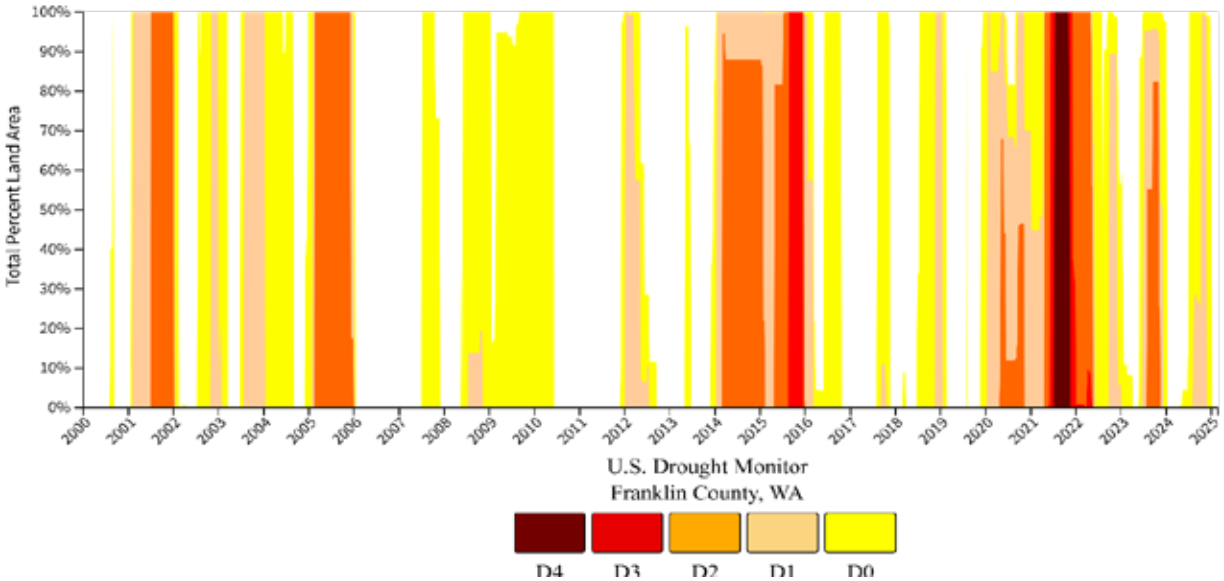
Source: NOAA Centers for Environmental Information

Figure 3.5 Average Temperature in Franklin County, Washington from 2000-2025:



Source: NOAA Centers for Environmental Information

Figure 3.6 U.S. Drought Monitor for Franklin County, Washington from 2000-2025:



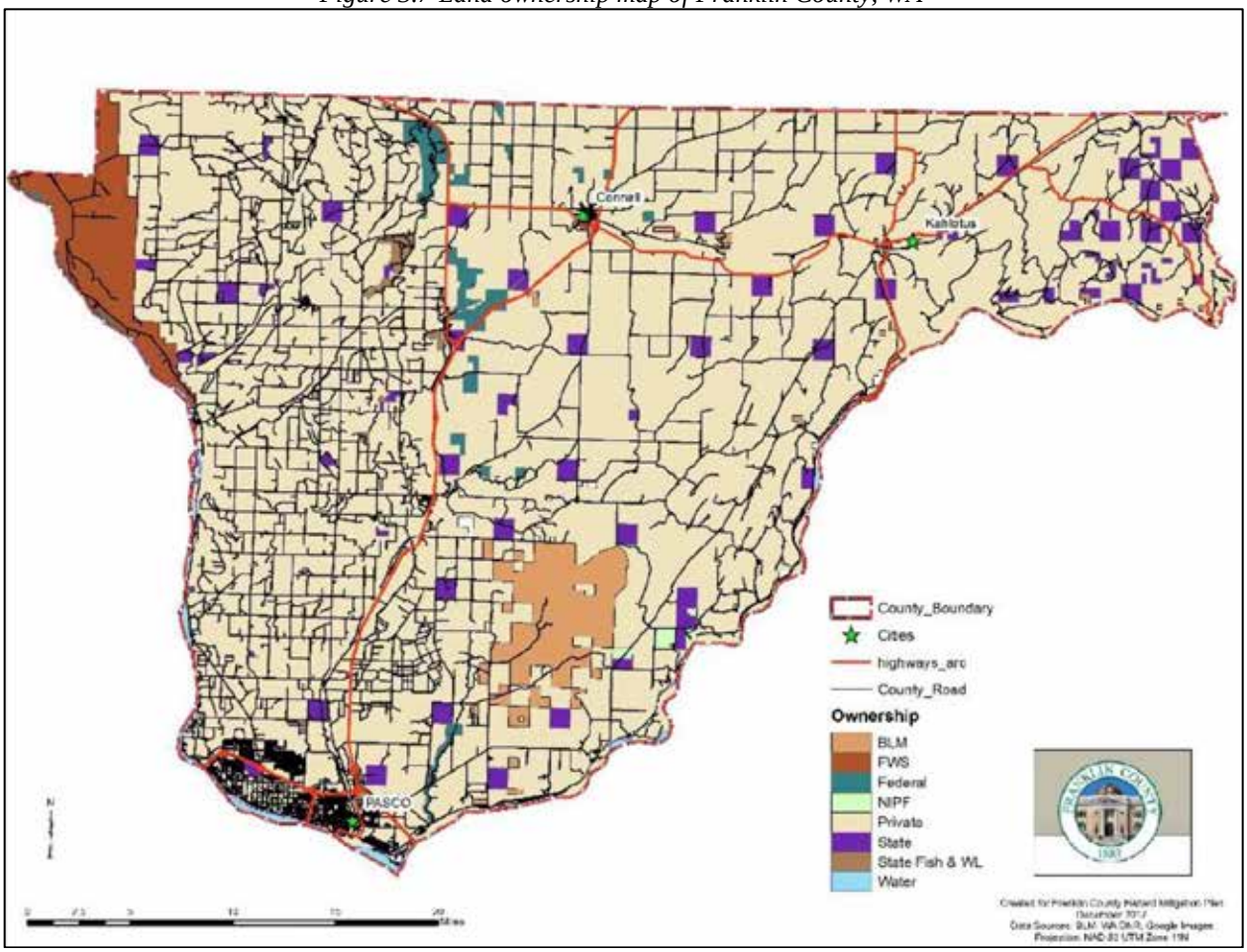
Source: NOAA National Integrated Drought Information System

3.6 Land Ownership, Land Cover, Land Use and Management

Franklin County is in the southeastern part of Washington. It consists of privately owned land; land that is managed by the U.S. Department of the Interior, Bureau of Reclamation, Washington State Department of Fish and Wildlife and Bureau of Land Management; and land that is managed by the Office of Legacy Management for the U.S. Department of Energy (Figure 2). The county is about1,242 square miles, or about 809,600 acres. Of Franklin County's 809,600 acres, 230,000 are irrigated cropland, 220,000 non-irrigated cropland, 195,000 rangeland, and 165,000 urban or

(Washington DNR and WDFW) -steppe are wildfire-

Figure 3.7 Land ownership map of Franklin County, WA



Source: Franklin County, Washington

3.6.1 Jurisdiction Comparison Summary

Jurisdiction		Approximate Land Area	Primary Land Use	Key Characteristics
Franklin County (Unincorporated)	~14,839 (unincorporated only)	~1,200 sq mi	Agriculture, Rangeland	Vast rural area; provides services to Mesa and Kahlotus
City of Pasco	~77,108	~35 sq mi	Urban/Residential, Commercial	County seat; largest city; part of the Tri-Cities region
City of Connell	~5,802	~3.5 sq mi	Agriculture, Residential	Independent municipality; operates its own services; agricultural hub
City of Mesa	~392	~0.5 sq mi	Rural Residential	Very small community; relies on county services
City of Kahlotus	~145	~0.3 sq mi	Rural Residential	Smallest jurisdiction; strong county partnership essential

3.7 History

Franklin County, established in 1883, grew with the Northern Pacific Railway and irrigation, evolving into an agricultural hub[3]. The Hanford Site (1940s) and Columbia Basin Project (1950s) spurred growth[3]. Wildfire history includes the 2017 Juniper Dunes F

Pasco, the county seat, emerged as a significant railway hub in the late 19th century. Its strategic location at the confluence of the Snake and Columbia Rivers further bolstered its status as a key transportation and trade center. Over the years, the county has diversified its economy, incorporating sectors such as food processing, manufacturing, and logistics, while agriculture remains a cornerstone.

Franklin County's history is marked by its role in supporting World War II efforts through the Hanford Site, part of the Manhattan Project, located nearby. This period brought an influx of workers and led to substantial population growth and infrastructural development. Today, Franklin County continues to evolve, balancing its agricultural heritage with modern advancements and economic diversification

3.8 Development Trends

Agriculture drives 70% of the land use, but residential and commercial growth is rising (22% population increase, 2011–2021)[2]. The Franklin County Comprehensive Plan (2018–2038) guides sustainable development, emphasizing Wildland-Urban Interface (WUI) fire safety[2].

One of the other development trends in Franklin County is the expansion of residential housing to accommodate the growing population. This trend is supported by ongoing residential developments and infrastructure improvements.

Economic development is another trend, with efforts on diversifying beyond the county's traditional agricultural base. Franklin County is seeing growth in sectors such as food processing, manufacturing, and logistics, which are attracting new businesses and creating job opportunities.

The Franklin County Comprehensive Plan (2018-2038) and other long-range planning initiatives are guiding these developments to ensure sustainable growth and balanced land use.

The Franklin County Comprehensive Plan (2018-2038) is intended to manage urban development across the county in an efficient and sustainable manner. The following General County Goals are identified within the plan:

- Goal 1. Urban Growth: Encourage development in urban areas where adequate public facilities exist or can be provided in a cost-efficient manner.
- Goal 2. Avoid Sprawl: The inappropriate conversion of undeveloped land must be avoided. Urban development will be confined to appropriate areas within urban growth boundaries.
- Goal 3. Property Rights: Private property rights will not be taken for public use without just compensation having been made. The property rights of landowners will be protected from arbitrary and discriminatory actions.
- Goal 4. Natural Resource Industries: Maintain and enhance natural resource-based industries including productive agriculture (cultivation and grazing), fisheries, and mineral

industries. Encourage the improvement of productive agricultural lands and discourage incompatible uses.

The plan also identifies areas allocated for urban development across the county. These Urban Growth Areas (UGA) include the incorporated cities and towns and most of the population in Franklin County. Each municipality has a designated Urban Growth Area. Growth in these areas consists of commercial and industrial activity and a wide range of residential densities.

Each UGA also includes unincorporated areas characterized by urban growth and/or adjacent areas within which urban infrastructure and services are provided or planned to be provided during the 20-year planning period covered in the Franklin County Comprehensive Plan. UGAs are currently designated for the cities of Pasco, Connell, Mesa, and Kahlotus.

3.9 Future Development

Based on recent development trends and annexations in and around Pasco, future development in Franklin County is anticipated to primarily concentrate within and adjacent to the city of Pasco. Infill development for residential purposes is expected to continue within Pasco's existing boundaries, with potential for higher-density housing like duplexes and apartments in some areas. The urban growth area surrounding Pasco remains susceptible to future annexation and subsequent residential and commercial development, exemplified by the ongoing Columbia Shores townhouse project and the extensive Broadmoor Development Area. Residential expansion is also projected to continue north and west of Burns and Dent Roads. The significant 2022 annexation north of Pasco, with initial development focused on a new school, suggests substantial future residential growth in this area. Furthermore, annexations in the north Pasco industrial area to accommodate food processing facilities indicate continued industrial expansion. While the majority of development is focused around Pasco, the gradual addition of new homes in Connell represents the limited development activity in other parts of Franklin County. This pattern of concentrated growth around Pasco should be a key consideration in future emergency planning for the county.

3.9.1 Jurisdiction-Specific Development Patterns and Projections

While the majority of future development in Franklin County is concentrated around the City of Pasco, each participating jurisdiction has unique development patterns and projections that inform hazard mitigation planning:

Franklin County (Unincorporated Areas):
Future development in unincorporated Franklin County is anticipated to be primarily agricultural intensification and expansion, with limited residential development outside Urban Growth Areas (UGAs). Key considerations include:
• Continued irrigation expansion in previously dryland farming areas
• Potential for rural residential development along major highways (U.S. 395, SR 17)
• Industrial development near transportation corridors (BNSF Railway, I-182)
• Wildfire risk in Wildland-Urban Interface (WUI) areas, particularly near Basin City and rural areas east of Pasco

City of Pasco:

As the county's primary growth center, Pasco's future development includes:
• Infill development within existing city limits (residential, commercial, mixed-use)
• Urban Growth Area (UGA) annexation and development, particularly north and west
• Broadmoor Development Area - extensive residential expansion
• Columbia Shores townhouse project and similar higher-density residential
• Continued industrial expansion in north Pasco food processing corridor
• Infrastructure improvements to support population growth (schools, utilities, transportation)

City of Connell:
Connell's development pattern is characterized by steady, gradual growth:
• Limited residential development (primarily single-family homes)
• Agriculture-related commercial and industrial development
• Infrastructure maintenance and upgrade priorities
• Minimal expansion of city limits anticipated during the 20-year planning period

City of Mesa:
Mesa's future development is expected to remain minimal due to its very small size and limited resources:
• Minimal to no new residential development anticipated
• Existing housing stock maintenance and occasional replacement
• No significant commercial or industrial development expected
• Focus on infrastructure maintenance rather than expansion
• Continued reliance on Franklin County for all planning and building services

City of Kahlotus:
As the smallest jurisdiction, Kahlotus faces unique development constraints:
• Very limited development capacity due to population size (~145) and resources
• Aging infrastructure requires maintenance investment
• Geographic constraints (Washtucna Coulee) limit expansion options
• No significant residential, commercial, or industrial development anticipated
• Possible minor infill development on existing vacant lots
• Primary focus on hazard mitigation and infrastructure resilience rather than growth

These jurisdiction-specific development patterns directly influence hazard exposure and inform the mitigation strategies identified in Chapter 6. Rapidly growing areas (Pasco UGAs) require proactive hazard mitigation measures integrated into new development, while smaller communities (Mesa, Kahlotus) focus on protecting existing assets and infrastructure.

3.10 Population, Education, and Demographics

The following table summarizes population, education, and demographic data:

Table 3.7 Franklin County Population, Education, and Demographics:

Category	Details
Population Growth	23.78% increase (78,163 to 96,749) from 2010–
High School Graduates	

Category	Details
Bachelor’s Degrees	
Hispanic/Latino	

Table 3.1 Franklin County Demographics 2023

3.11 Housing

The following table outlines housing data:

Table 3.8 Franklin County Housing Statistics:

Category	Details
Housing Units (2023)	
Owner-Occupied Rate	
Median Value	
Building Permits (2023)	

3.12 Economy

The following table outlines economic data:

Table 3.9 Franklin County Economy:

Category	Details
Top Employment Sector	
Second Sector	
Third Sector	
Wildfire Impact	

3.13 Transportation

Franklin County is served by various air, highway, and rail infrastructure including the following major thoroughfares:

- **US Route 395**: This highway runs north-south through Franklin County, providing a critical connection between the Tri-Cities area and Spokane, WA. It is a vital route for both commercial and passenger traffic.
- **State Route 17**: Serving as an important north-south route, SR 17 connects U.S. Route 395 near Mesa to U.S. Route 97 near Brewster. It plays a significant role in agricultural transportation.
- **State Route 260**: This east-west route connects the towns of Connell and Kahlotus, linking to State Route 17, State Route 26 and U.S. Route 395, facilitating local travel and commerce.
- **BNSF Railway**: The Burlington Northern Santa Fe Railway operates freight services through Franklin County, supporting the transportation of agricultural products, industrial goods, and other commodities.
- **Port of Pasco**: The Port of Pasco is a major transportation and logistics hub in Franklin County, featuring facilities for rail, truck, and barge traffic. It includes the Big Pasco Industrial Center and the Tri-Cities Airport, supporting regional and international trade.
- **Tri-Cities Airport (PSC)**: Located in Pasco, this airport offers commercial flights and is a key asset for passenger travel and cargo transport in the region.

U.S. Route 395, State Routes 17 and 260, BNSF Railway, Port of Pasco, and Tri-Cities Airport

evacuations.

3.14 Water Resources

Franklin County’s water resources are critical for its agriculture, industry, and residential needs. The Columbia River, one of North America's largest rivers, forms the western boundary of the county and serves as a primary water source for irrigation, recreation, and hydroelectric power generation. The Snake River, another major waterway, converges with the Columbia River near the Tri-Cities area, providing additional water for irrigation and supporting local ecosystems. Numerous irrigation canals and ditches crisscross the county, distributing water from these rivers to vast agricultural lands, enabling the cultivation of various crops. Groundwater resources, accessed through wells, also play an essential role in supplying water for agricultural, industrial, and residential use.

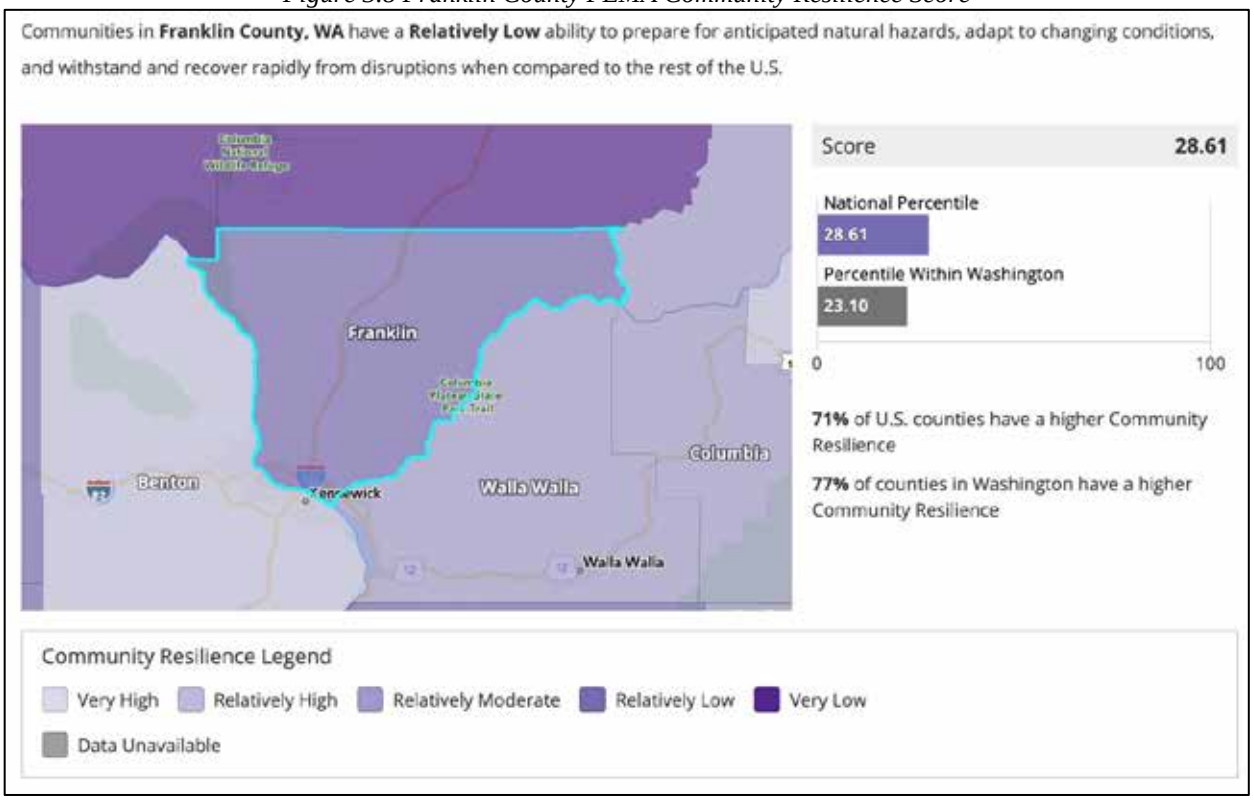
3.15 Critical Wildlife and Habitat Types

Franklin County has a variety of critical wildlife and habitat types that are essential for conservation efforts and face threat from natural hazards, especially wildfire. The county includes significant areas of shrub-steppe habitat, which is crucial for species such as the sagebrush sparrow and sage thrasher. The shrub-steppe ecosystem is characterized by sagebrush and native grasses, providing habitat for numerous bird species and other wildlife.

Additionally, the Columbia River and Snake River corridors within Franklin County are vital habitats for several fish species, including the threatened bull trout and various salmonids. These waterways support aquatic ecosystems and provide critical spawning and rearing grounds for fish populations. Wetlands and riparian zones along these rivers also offer essential habitats for amphibians, birds, and other wildlife.

3.16 FEMA Community Risk Index

Figure 3.8 Franklin County FEMA Community Resilience Score



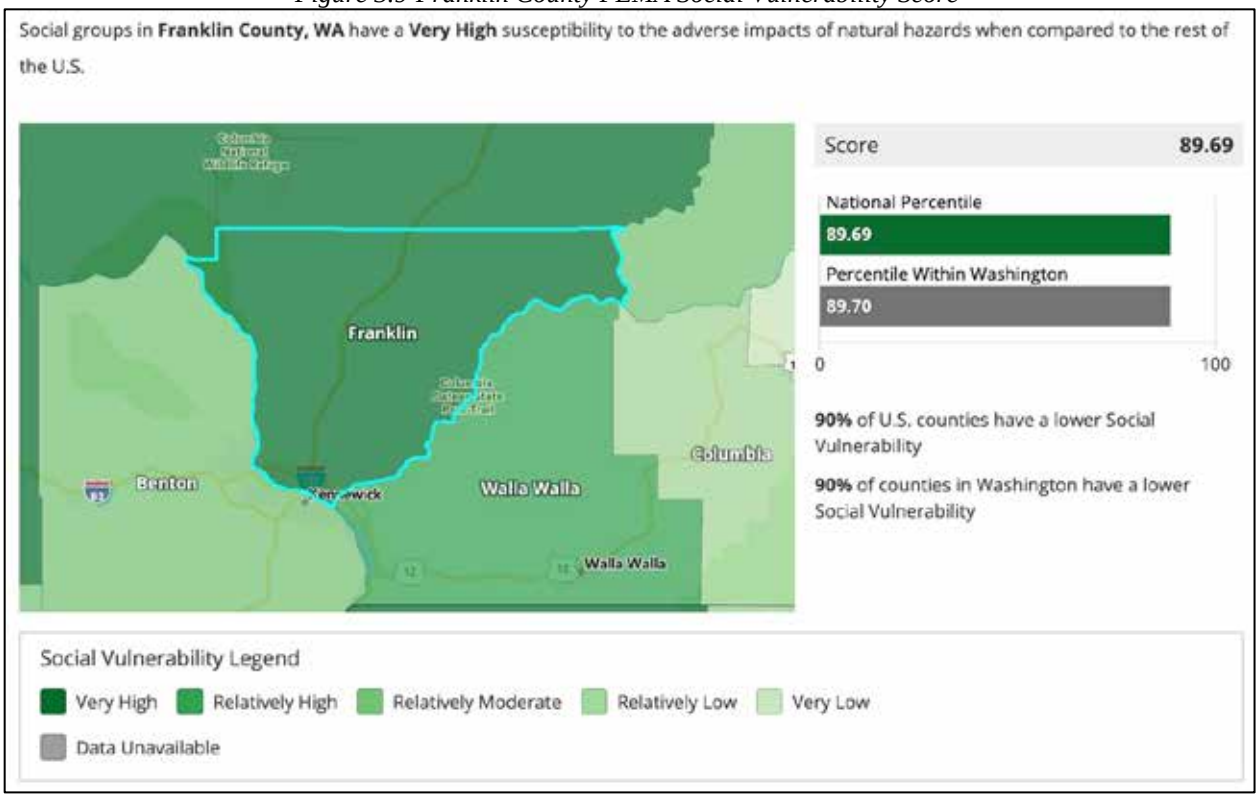
3.17 Social Vulnerability and Underserved Communities

Social vulnerability is defined as the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood.

The "Social Vulnerability Score" and "Rating" represent the relative level of a community's social vulnerability compared to all other communities at the same level. A community's Social Vulnerability Score is also proportional to a community's risk. A higher Social Vulnerability Score results in a higher Risk Index Score.

Social vulnerability is also one of five components included in the formulation of the "National Risk Index Score" in addition to Community Resilience, Estimated Annual Loss (EAL) based on Exposure, Annualized Frequency, and Historic Loss Ratio (HLR) factors.

Figure 3.9 Franklin County FEMA Social Vulnerability Score

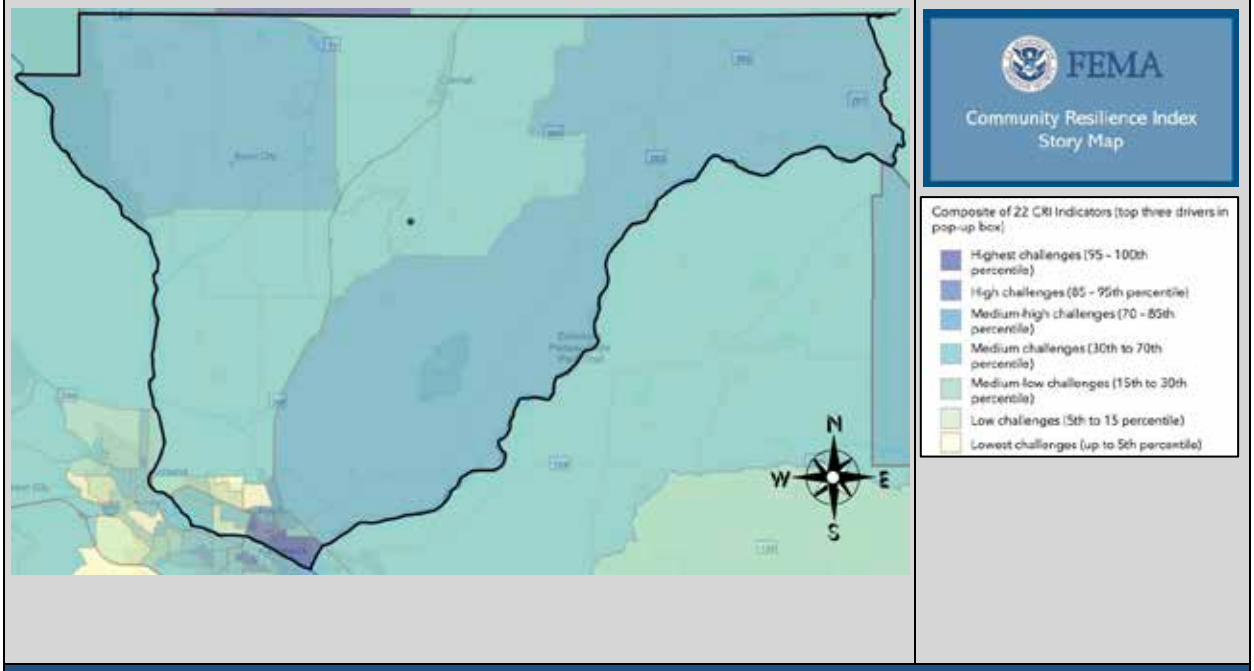


The figure below illustrates the Franklin County Community Resilience Index Story Map. This map utilizes density mapping to illustrate community areas that can be overburdened by 22 challenges identified by the FEMA Community Resilience Challenges Index.

Figure 3.11 Franklin County - FEMA Community Resilience Index Story Map

FRANKLIN COUNTY, WA

FEMA COMMUNITY RESILIENCE INDEX STORY MAP



22 CHALLENGE VARIABLES

Population, Household, Housing Characteristics	Economic	Healthcare	Connection to Community
Population without a High School Diploma Population 65 and Older Population with a Disability Households without a Vehicle Households with Limited English Single-parent Households Households without a Smartphone Mobile Homes as Percentage of Housing Owner-Occupied Housing	Population Below Poverty Level Median Household Income Unemployed Labor Force Unemployed Women Labor Force Income Inequality Workforce in Predominant Sector	Number of Hospitals Medical Professional Capacity Population without Health Insurance	Presence of Civic and Social Organizations Population without Religious Affiliation Percent of Inactive Voters Population Change

Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024

3.18 Critical Infrastructure and Key Resources

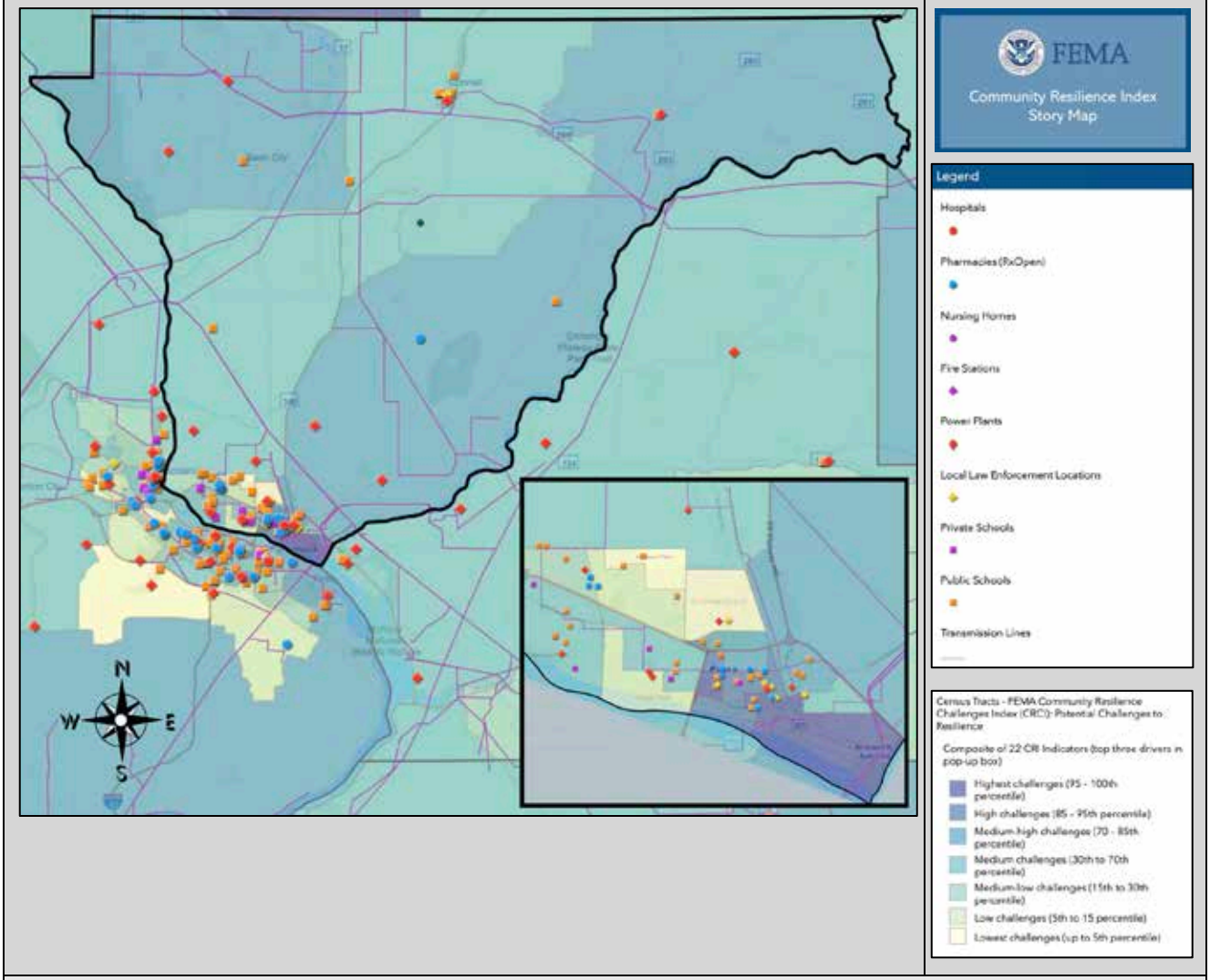
Critical facilities are commonly considered to be police stations, fire and rescue facilities, hospitals, shelters, schools, nursing homes, water supply and waste treatment facilities, and other structures the community identifies as essential to the health and welfare of the population and that are especially important following a disaster.

The following figure illustrates the locations of critical facilities within Franklin County.

Figure 3.12 Franklin County - FEMA Critical Infrastructure Map

FRANKLIN COUNTY CRITICAL INFRASTRUCTURE AND KEY RESOURCES

FEMA CRITICAL INFRASTRUCTURE MAP



Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024

3.19 National Flood Insurance (NFIP) Participation and Repetitive Loss Properties

3.19.1 NFIP Community Participation

All five participating jurisdictions are active participants in the National Flood Insurance Program (NFIP), which enables property owners to purchase flood insurance and requires

communities to adopt and enforce floodplain management regulations. The following table summarizes NFIP participation for each jurisdiction:

Table 3.11 NFIP Participation Status

Jurisdiction	NFIP Community ID (CID)	Floodplain Administrator	CRS Participation
Franklin County	530057	Franklin County Planning & Building	No
City of Pasco	530058	City of Pasco Community Development	No
City of Connell	530184	City of Connell Public Works	No
City of Mesa	530183	Franklin County (by contract)	No
City of Kahlotus	530185	Franklin County (by contract)	No

3.19 Hazard Mitigation-related Laws, Ordinances, Programs, Studies, and Plans

3.19.1 Local Historical Records and Relevant Technical Studies

- Quad Cities Agal Bloom Management Plan
- Franklin County Strategic Plan
- Franklin County Capital Improvement Plan
- Franklin County 4 Year CIP Budget
- Franklin County Community Plans - Land Use
- Franklin County Community Wildfire Protection Plan

3.19.2 Floodplain Management Regulations

Each participating jurisdiction has adopted and enforces floodplain management regulations that meet or exceed the minimum requirements of the NFIP (44 CFR §60.3):

• Franklin County: Franklin County Code Chapter 15.08 - Flood Damage Prevention (Ordinance 02-2022), which applies to unincorporated areas and serves as the regulatory framework for Mesa and Kahlotus through interlocal agreements[21].

• City of Pasco: Pasco Municipal Code Title 24 - Floodplain Management Ordinance [Ordinance 4469A of 2020)[22].

• City of Connell: Utilizes Franklin County Code Chapter 15.08 through interlocal agreement; Franklin County serves as floodplain administrator [23].

• City of Mesa: Utilizes Franklin County Code Chapter 15.08 through interlocal agreement; Franklin County serves as floodplain administrator[21].

• City of Kahlotus: Utilizes Franklin County Code Chapter 15.08 through interlocal agreement; Franklin County serves as floodplain administrator[21].

All jurisdictions enforce substantial improvement and substantial damage provisions that require structures to be brought into compliance with current floodplain management standards when improvements or repairs exceed 50% of the structure's market value.

3.19.3 Flood Insurance Policies in Force

According to the most recent NFIP data available (as of [DATE - to be updated with current data]), Franklin County planning area has the following flood insurance coverage:

3.19.4 Repetitive Loss and Severe Repetitive Loss Properties

Repetitive Loss Property Definition: An NFIP-insured structure that has had at least two paid flood losses of more than $1,000 each in any 10-

Severe Repetitive Loss Property Definition: An NFIP-insured structure that has had either:
• Four or more separate claim payments over $5,000 each, OR
• Two or more separate claim payments where the total exceeds the current value of the

As of the most recent data available in September 2022, Franklin County has no RL/SRL structures within the County.

Table 3.13. Repetitive Loss and Severe Repetitive Loss Properties

Jurisdiction	Repetitive Loss Properties	Severe Repetitive Loss Properties	Total Claims Paid
Franklin County	0	0	$0
City of Pasco	0	0	$0
City of Connell	0	0	$0
City of Mesa	0	0	$0
City of Kahlotus	0	0	$0
TOTAL	0	0	$0

Note: Exact repetitive loss property information is protected under NFIP privacy requirements. Data is aggregated and shown at the jurisdictional level.

Franklin County planning area has experienced minimal repetitive flood losses, with no properties meeting the FEMA repetitive loss criteria. This low number of repetitive losses reflects the effectiveness of existing floodplain management regulations and the relatively low development density in mapped floodplains. The jurisdictions will continue to monitor flood claims data and update this information during the annual plan review process.

3.19.5 Community Rating System (CRS) Considerations

None of the five participating jurisdictions currently participate in FEMA's Community Rating System (CRS), a voluntary program that recognizes communities whose floodplain management practices exceed minimum NFIP requirements and provides flood insurance premium discounts to policyholders.

As documented in Chapter 5 (Capability Assessment), Section 5.7, Franklin County and the City of Pasco have identified CRS participation as a potential capability enhancement strategy. CRS participation could provide the following benefits:

- Premium discounts for NFIP policyholders (5% to 45% depending on CRS class)
- Recognition of existing floodplain management activities
- Framework for continuous improvement
- Additional resources and technical assistance from FEMA

The jurisdictions will evaluate CRS participation during future plan updates and as resources allow. Priority will be given to activities that provide both CRS credit and direct flood risk reduction benefits.

3.19.6 NFIP Compliance and Enforcement

All five participating jurisdictions are in good standing with the NFIP and have no outstanding compliance issues. Each jurisdiction conducts the following activities to ensure ongoing NFIP compliance:

- Review and approval of all development in Special Flood Hazard Areas (SFHA)
- Issuance of floodplain development permits
- Site inspections during construction
- Elevation certificate review and verification
- Substantial improvement/substantial damage determinations
- Maintenance of floodplain management records

For Mesa and Kahlotus, these functions are performed by Franklin County Planning & Building Department under interlocal agreements, ensuring consistent application of floodplain management standards across the planning area.

3.19.7 Flood Insurance Claims History

Major flood events that generated NFIP claims in Franklin County include
0 claims and $0 in major damage claim amounts. This claims history informs the flood hazard vulnerability assessment in Chapter 4 (Risk Assessment) and the mitigation strategy priorities in Chapter 6.

[1] Washington DNR. (2023). Geology of Franklin County. https://www.dnr.wa.gov/geology
[2] Franklin County. (2023). Comprehensive Plan 2018–2038. https://www.co.franklin.wa.us/planning
[3] HistoryLink. (2022). Franklin County History. https://www.historylink.org

-maps

USDA Forest Service. (2023). Columbia Basin Fuels Assessment. https://www.fs.usda.gov
Washington Geological Survey. (2023). Columbia Basin Geology. https://www.dnr.wa.gov/geology
Franklin County Emergency Management (FCEM). (2023). Hazard Mitigation Plan. https://www.co.franklin.wa.us/emergency_management
USDA NRCS. (2023). Franklin County Soil Survey. https://www.nrcs.usda.gov
Washington Department of Ecology. (2024). Water Resources Inventory. https://ecology.wa.gov

[11] WRCC. (2024). Eastern Washington Climate Data. https://wrcc.dri.edu
[12] Washington DNR. (2024c). Climate and Fire Risk. https://www.dnr.wa.gov/climate
[13] Washington DNR. (2024d). Land Ownership Data. https://www.dnr.wa.gov/maps
-City Herald. (2017). Juniper Dunes Fire 2017. https://www.tri-cityherald.com

-county-wa

(2024). Habitat Conservation Plan. https://wdfw.wa.gov

[21] Franklin County. (2022). Franklin County Code Chapter 15.08 - Flood Damage Prevention, Ordinance 02-2022. https://www.franklincountywa.gov/building
[22] City of Pasco. [Year]. Pasco Municipal Code Chapter [XX.XX] - Floodplain Management. [To be verified with city]
[23] City of Connell. [Year]. Connell Municipal Code Chapter [XX.XX] - Flood Hazard Areas. https://www.codepublishing.com/WA/Connell/

Part III: Risk Assessment

CHAPTER 4 HAZARD RISK SUMMARY

Risk assessment is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards. It allows emergency management personnel to establish early response priorities by identifying potential hazards and vulnerable assets. The process focuses on the following elements:

- Hazard identification—Use all available information to determine what types of disasters may affect a jurisdiction, how often they can occur, and their potential severity.
- Vulnerability identification—Determine the impact of natural hazard events on the people, property, environment, economy, and lands of the region.
- Cost evaluation—Estimate the cost of potential damage and expenses. Mitigation can help costs be minimized or avoided.

The risk assessment for this hazard mitigation plan update evaluates the risk of natural hazards prevalent in the planning area and meets the requirements of the DMA (44 CFR, Section 201.6(c)(2)).

4.1 Identified Hazards

There are countless hazards that pose a threat to human life, health, and well-being. Those that are addressed in disaster planning are generally categorized as “natural” or “technological” (sometimes “manmade”). As of April 24, 2025, the FEMA website contains a thorough discussion and list of hazards in the “National Risk Index for Natural Hazards” section. Some hazards threaten all geographic areas, while other hazards are more limited in their extent, such as flooding. Studies were conducted to determine which hazards are of concern in Franklin County or the City of Pasco.

The Franklin County hazards were identified, and their frequency of occurrence was evaluated using several resources, including:

- 2023 Washington State Hazard Mitigation Plan
- 2018 Franklin County Hazard Mitigation Plan
- Hazard planning documents developed by state, federal, and private agencies
- NOAA weather data from the past 72 years
- Data from the United States Geological Survey (USGS)

Hazards identified as significant in this county and that will be considered in this plan are listed below.

Natural and Geological Hazards

- Drought
- Earthquake
- Flood
    - River Flooding
    - Flash/Urban Flooding
- High-Hazard Dams & Levees
- Landslide
- Severe Summer Weather
    - Dust Storm
    - Extreme Heat

    - Straight-line Wind
- Severe Winter Weather
    - Blizzard
    - Heavy Snow
    - Extreme Cold
- Space Weather
- Volcano
- Wildfire

Other Hazards of Concern

Natural Hazards

- Invasive Species

Technological (Manmade) Hazards

- Air Quality Incidents
- Structural Fire

Biological Hazards

- *Public Health Emergency*

Per FEMA's mandate to address all natural hazards, the following natural hazards **were not included** because these hazards do not directly impact Franklin County due to geographic location:

- Hurricane
- Sea Level Rise
- Storm Surge
- Tsunami
- Volcanic Eruption

4.2 Hazard Profile

The risk assessments in the following chapters describe the risks associated with each identified hazard of concern. The following sections were used to describe each hazard and communicate each respective level of risk:

- **Hazard Description**—Each hazard profile contains a description of the general definition and causes of the hazard. It may also include background information for understanding the context of the hazard within Franklin County.
- **Location**—The location or region in Franklin County where each hazard may occur is described.
- **Historical Frequency & Probability of Future Occurrence**—This section identifies past hazard events of note that have occurred in the Franklin County. It also includes the likelihood of each hazard occurring again if available.
- **Extent**—The strength or magnitude of each hazard is defined, usually through a form of measurement, such as a formula, scale, chart, or graph.
- **Impacts & Loss Estimates**—The potential impacts of each hazard on the county are discussed. This section also outlines the potential economic/monetary loss from a hazard/event and the loss of property, structures, facilities, systems, livestock, and life.

- **FEMA NRI Score**—The hazard-specific FEMA National Risk Index scores for each natural hazard are included.
- **Related Hazards**—The hazard profiles that fall under a greater hazard category can be found within this section.

4.3 Risk Assessment Methodology

Each hazard included in this plan was assessed and ranked based on a pre-defined hazard risk methodology consistent with FEMA's mitigation plan requirements. Information from the hazard profiles and input from subject matter experts were used to inform the hazard risk assessment process. The following is a description of the key factors.

4.3.1 Probability/Likelihood of Occurrence

The probability of occurrence of a hazard is indicated by a probability factor based on the likelihood of annual occurrence:

- **High**—Significant hazard event is likely to occur annually (Probability Factor = 3)
- **Medium**—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)
- **Low**—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)
- **Unlikely**—There is little to no probability of significant occurrence, or the recurrence interval is greater than every 100 years (Probability Factor = 0)

The assessment of hazard frequency is generally based on past hazard events in the area. The past hazard events are events that are documented through data sources like state and federal disaster declarations, personal stories, city and county public works road and infrastructure repair data, and other sources that provide insight on the varied hazard history of Franklin County.

4.3.2 Extent

Extent was assessed in two categories: extent/intensity and catastrophic potential of the hazard. Numerical impact factors were assigned as follows:

Extent/Intensity—Extent is defined as the range of anticipated intensities of the identified hazards. Extent is most commonly expressed using ~~various~~ scientific scales, such as the Enhanced Fujita scale.

- **High**—Historical and/or probabilistic models/studies for this hazard indicate the possibility of a high-intensity incident (Extent Factor = 3).
- **Medium**—Historical and/or probabilistic models/studies for this hazard indicate the possibility of a medium-intensity incident (Extent Factor = 2)
- **Low**—Historical and/or probabilistic models/studies for this hazard indicate the possibility of a low-intensity incident (Extent Factor = 1)
- **Unlikely**—Historical and/or probabilistic models/studies for this hazard indicate the possibility of little to no intensity (Extent Factor = 0)

Catastrophic—The potential that an occurrence of this hazard could be disastrous.

- **High**—High potential that this hazard could be catastrophic (Extent Factor = 3)
- **Medium**—Medium potential that this hazard could be catastrophic (Extent Factor = 2)
- **Low**—Low potential that this hazard could be catastrophic (Extent Factor = 1)

- **Unlikely**—Virtually no potential that this hazard could be catastrophic (Extent Factor = 0)

Each category was assigned a weighting factor to reflect its significance, consistent with those typically used for measuring the benefits of hazard mitigation actions: a weighting factor of 3 was assigned for *Extent/Intensity* and its potential to be *Catastrophic*.

4.3.3 Vulnerability

Vulnerabilities were assessed in three categories: population exposure, property exposure, and exposure based on changes in development. Numerical impact factors were assigned as follows:

People—Values were assigned based on the percentage of the total population exposed to the hazard event.

- **High**—30% or more of the population is exposed to this hazard (Vulnerability Factor = 3)
- **Medium**—15% to 29% of the population is exposed to this hazard (Vulnerability Factor = 2)
- **Low**—14% or less of the population is exposed to this hazard (Vulnerability Factor = 1)
- **No Vulnerability**—None of the population is exposed to this hazard (Vulnerability Factor = 0)

Property Exposed—Values were assigned based on the percentage of the total property value exposed to the hazard event.

- **High**—25% or more of the total assessed property value is exposed to the hazard (Vulnerability Factor = 3)
- **Medium**—10% to 24% of the total assessed property value is exposed to the hazard (Vulnerability Factor = 2)
- **Low**—9% or less of the total assessed property value is exposed to the hazard (Vulnerability Factor = 1)
- **No Vulnerability**—None of the total assessed property value is exposed to the hazard (Vulnerability Factor = 0)

Changes in Development—Changes in development since the previous plan was approved have increased or decreased the community's vulnerability/exposure to this hazard.

- **High**—Changes in development have significantly increased the vulnerability/exposure of the community to this hazard (Vulnerability Factor = 3)
- **Medium**—Changes in development have increased the vulnerability/exposure of the community to this hazard, but not significantly (Vulnerability Factor = 2)
- **Low**—Changes in development have minimally increased the vulnerability/exposure of the community to this hazard (Vulnerability Factor = 1)
- **No Vulnerability**—Changes in development have had no effect and/or have decreased the vulnerability/exposure of the community to this hazard (Vulnerability Factor = 0)

Each category was assigned a weighting factor to reflect its significance, consistent with those typically used for measuring the benefits of hazard mitigation actions: a weighting factor of 3 was assigned for *People*, and a weighting factor of 1 was assigned for *Property Exposed* and *Changes in Development*.

4.3.4 Impact

Hazard impacts were assessed in eight categories: population and life/safety, underserved/equity, property damages, economic, environmental, essential operations, future development, and climate change. Numerical impact factors were assigned as follows:

Population and Life/Safety: Values were assigned based on (1) best available historical and probabilistic data for individuals who are vulnerable to the hazard event and (2) the likelihood to experience adverse impacts in the event of its occurrence.

- **High**: Populations exposed to this hazard are likely to experience significant adverse impacts (Impact Factor = 3)
- **Medium**: Populations exposed to this hazard are likely to experience some adverse impacts (Impact Factor = 2)
- **Low**: Populations exposed to this hazard are likely to experience minimal adverse impacts (Impact Factor = 1)
- **No impact**: Populations exposed to this hazard are not likely to experience significant adverse impacts (Impact Factor = 0)

Underserved/Equity—Values were (1) assigned based on the best available data for underserved populations vulnerable to the hazard event and (2) are likely to experience adverse/disproportionate impacts from the hazard incident, resulting in greater disparity in equity.

- **High**—Underserved populations exposed to this hazard are likely to experience significant adverse/disproportionate impacts (Impact Factor = 3)
- **Medium**—Underserved populations exposed to this hazard are likely to experience some adverse/disproportionate impacts (Impact Factor = 2)
- **Low**—Underserved populations exposed to this hazard are likely to experience minimal adverse/disproportionate impacts (Impact Factor = 1)
- **No impact**—Underserved populations exposed to this hazard are not likely to experience significant adverse/disproportionate impacts (Impact Factor = 0)

Property Damages—Values were assigned based on the expected total property damages incurred from a hazard incident. It is important to note that values represent estimates of the loss from a major incident based on historical data or probabilistic models/studies.

- **High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
- **Medium**—More than $500,000 but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to be more than 5% but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
- **Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
- **No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

Economic—An estimation of the impact, expressed in dollars, on the local economy is based on a loss of business revenue, crops, worker wages, and local tax revenues or the impact on the local gross domestic product (GDP).

- **High**—Total economic impact is likely to be greater than $10,000,000 (Impact Factor = 3)
- **Medium**—Total economic impact is likely to be greater than $100,000 but less than or equal to $10,000,000 (Impact Factor = 2)
- **Low**—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
- **No Impact**—Virtually no significant economic impact (Impact Factor = 0)

Environmental Factor: Environmental impact from a major hazard event requiring outside resources and support and/or repair, clean-up, restoration, and/or preservation work.

- **High**: Environmental impact from a single major hazard event is likely to be significant, requiring extensive outside resources and support and/or repair, clean-up, restoration, and/or preservation work (Impact Factor = 3)
- **Medium**: Environmental impact from a single major hazard event is likely to be localized, requiring some outside resources and support and/or repair, clean-up, restoration, or preservation work (Impact Factor = 2)
- **Low**: Environmental impact from a single major hazard event is likely to be minimal, requiring little to no outside resources and support, and/or minimal repair, clean-up, restoration, or preservation work (Impact Factor = 1)
- **No impact**: No environmental impacts from a single major hazard event is likely (Impact Factor = 0)

Essential Operations Factor: Impact on the ability of the jurisdiction to meet the essential day-to-day operational demands and needs of the community from a single major hazard event.

- **High**: Significant impact on the ability of the jurisdiction to meet the essential day-to-day operational demands and needs of the community from a single major hazard event (Impact Factor = 3)
- **Medium**: Some impact on the ability of the jurisdiction to meet the essential day-to-day operational demands and needs of the community from a single major hazard event (Impact Factor = 2)
- **Low**: Minimal impact on the ability of the jurisdiction to meet the essential day-to-day operational demands and needs of the community from a single major hazard event (Impact Factor = 1)
- **No Impact**: No impact on the ability of the jurisdiction to meet the essential day-to-day operational demands and needs of the community from a single major hazard event (Impact Factor = 0)

Future Development—The potential that future development will have on increasing or decreasing the impact/consequence of this hazard.

- **High**—Future development trends will significantly increase the impact/consequence of this hazard (Impact Factor = 3)
- **Medium**—Future development trends will increase the impact/consequence of this hazard, but not significantly (Impact Factor = 2)
- **Low**—Future development trends will minimally increase the impact/consequence of this hazard (Impact Factor = 1)

- **No Impact**—Future development trends will not increase the impact/consequence of this hazard and/or may even decrease the impact/consequence of this hazard (Impact Factor = 0)

Climate Change—The potential that climate change will increase the risk of this hazard (e.g., type, location, and range of anticipated intensities of the identified hazard and impacts).

- **High**—Climate change trends will significantly increase the risk of this hazard and its impacts (Impact Factor = 3)
- **Medium**—Climate change trends will increase the risk of this hazard and its impacts, but not significantly (Impact Factor = 2)
- **Low**—Climate change trends will minimally increase the risk of this hazard and its impacts (Impact Factor = 1)
- **No Impact**—Climate change trends will not increase the risk of this hazard and its impacts (Impact Factor = 0)

Each category was assigned a weighting factor to reflect its significance, consistent with those typically used for measuring the benefits of hazard mitigation actions: a weighting factor of 3 was assigned for *Population and Life Safety* and *Underserved/Equity*, and a weighting factor of 2 was assigned for *Property Damages.* In addition, a weighting factor of 1 was assigned for *Economic, Environmental, Essential Operations, Future Development,* and *Climate Change.*

4.4 FEMA NRI Risk Scores

The National Risk Index (NRI) is a dataset and online tool to help illustrate the United States communities most at risk for 18 natural hazards: Avalanche, Coastal Flooding, Cold Wave, Drought, Earthquake, Hail, Heat Wave, Hurricane, Ice Storm, Landslide, Lightning, Riverine Flooding, Strong Wind, Tornado, Tsunami, Volcanic Activity, Wildfire, and Winter Weather. Because not all hazards apply to Franklin County, only those with a defined risk to the county are included.

The National Risk Index leverages available source data for Expected Annual Loss due to these 18 hazard types, Social Vulnerability and Community Resilience, to develop a baseline relative risk measurement for each United States county and census tract. These measurements are calculated using average past conditions but cannot be used to predict future outcomes for a community. The National Risk Index is intended to fill gaps in available data and analyses to better inform federal, state, local, tribal, and territorial decision-makers as they develop risk reduction strategies.

4.4.1 Social Vulnerability

Social Vulnerability measures the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood.

Table 4.2 Franklin County – FEMA NRI Social Vulnerability Score and Rating

FEMA NRI Score	FEMA NRI Rating
89.69	Very High
Social Vulnerability is measured using the Social Vulnerability Index (SoVI) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI). Source: National Risk Index, 2023e; 2023f	

4.4.2 Community Resilience

Community Resilience measures a community's ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.

Table 4.3 Franklin County – FEMA NRI Community Resilience Score and Rating

FEMA NRI Score	FEMA NRI Rating
28.61	Relatively Low
Community Resilience is measured using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI). Source: National Risk Index, 2023b; 2023e	

4.4.3 Expected Annual Loss

The table below shows the overall expected annual loss score for the entire county based on all natural hazards. Hazard-specific scores are included in each hazard chapter under Impacts & Loss Estimates.

Table 4.4 Franklin County – FEMA NRI Expected Annual Loss Score and Rating

FEMA NRI Score	FEMA NRI Rating
62.06	Relatively Low
Expected Annual Loss scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: National Risk Index, 2023d; 2023e	

4.4.4 Overall NRI Score

The table below shows the overall FEMA National Risk Index Score for the entire county based on all natural hazards. Hazard-specific scores are included in each hazard chapter under the FEMA NRI Score.

Table 4.5 Franklin County – FEMA Overall NRI Score and Rating

FEMA Overall NRI Score	Expected Annual Loss Rating
68.47	Relatively Low
Risk Index scores are calculated using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability, and Community Resilience (Expected Annual Loss x Social Vulnerability / Community Resilience = Risk Index). Source: National Risk Index, 2023c; 2023e	

4.5 Overall Risk Scores

The following table represents the new overall risk scores for Franklin County based on the described methodology. Following a data-driven quantitative assessment, the planning team utilized subject matter knowledge and expertise and further refined the scores.

4.5.1 Franklin County

Table 4.6. Hazard Risk Scores for Franklin County

Hazard Event	Probability	Consequence				Total Risk Score (Probability x Consequence)
	Probability Factor	Sum of Weighted Extent Factors	Sum of Weighted Vulnerability Factors	Sum of Weighted Impact Factors	Consequence Score	
Drought	3	12	9	21	42	126
Flooding: Riverine	1	18	13	33	64	64
Flooding: Flash/Urban	1	18	13	33	64	64
High-Hazard Dams & Levees	1	18	11	30	59	59
Severe Summer Storms: Dust Storms	3	9	7	23	39	117
Severe Summer Storms: Extreme Heat	3	18	12	30	60	180
Severe Summer Storms: Strong Wind	2	12	13	30	55	110
Severe Winter Weather: Blizzard	2	12	9	24	45	90
Severe Winter Weather: Extreme Cold	1	12	9	24	45	45
Severe Winter Weather: Heavy Snow	1	12	9	24	45	45
Volcano	1	3	5	8	8	8
Wildfire	3	18	13	34	65	195
Earthquake	1	18	13	33	64	64
Landslide	1	15	11	30	56	56
Invasive Species	2	12	9	24	45	90
Structural Fire	2	18	15	33	66	132
Air Quality Incidents	2	18	14	32	64	128
Public Health Emergency	1	12	14	26	52	52

4.6 Drought

4.6.1 Hazard Description

Drought is a natural part of the climate in nearly every region, including Washington. While there are formal definitions, most experts agree that pinpointing exactly when a drought begins and ends is difficult due to the many contributing factors and their gradual impact. The National Drought Mitigation Center defines drought as a prolonged lack of precipitation, usually lasting a season or more, that leads to water shortages for various activities, groups, or the environment. Essentially, a "drought" in any location means there's a significant drop in the usual water supply for that area.

4.6.1.1 Drought Types

- Meteorological Drought – Defined as below-normal precipitation over a set period. Often, this type of drought is region-specific based on regional climatology. This drought type is often what is thought of as ‘drought’.
- Agricultural Drought – This type of drought occurs when a reduction in soil moisture results in unmet demand for crops. This drought type is region-, crop-, and time-specific and usually occurs after meteorological droughts. Agricultural drought can cause significant crop losses and economic disruption for agriculture-dependent communities.
- Hydrological Drought – This type of drought is driven by a deficiency of surface and subsurface water resources, often indicated by reduced streamflow, lake or reservoir water levels, and groundwater table heights. Due to the complex hydrological network that feeds surface and subsurface water resources, hydrological drought occurs after meteorological drought.
- Socioeconomic Drought – This type of drought occurs when physical water shortages impact individuals or communities. Socioeconomic drought impacts can vary according to an individual’s or community’s ability to adapt or mitigate.

4.6.2 Hazard Location

Drought could occur anywhere in Franklin County, likely affecting the entire county.

4.6.3 Hazard Extent/Intensity

The figure below displays the precipitation conditions for the United States using the Palmer Drought Severity Index (PDSI), taken from the National Weather Service (NWS). The PDSI quantifies drought in terms of prolonged and abnormal moisture deficiency or excess. This index indicates general conditions and not local variations caused by isolated rain. The PDSI is an important climatological tool for evaluating the scope, severity, and frequency of prolonged periods of abnormally dry or wet weather. In addition, it can help delineate disaster areas and indicate the availability of irrigation water supplies, reservoir levels, range conditions, amount of stock water, and potential intensity of forest fires (NCAR, 2024).

The PDSI compares moisture deficiency and excess on a numerical scale that usually ranges from positive five to negative five. Positive values reflect excess moisture supplies, while negative values indicate moisture demands in excess of supplies.

Figure 4.1 Palmer Drought Severity Index (PDSI)

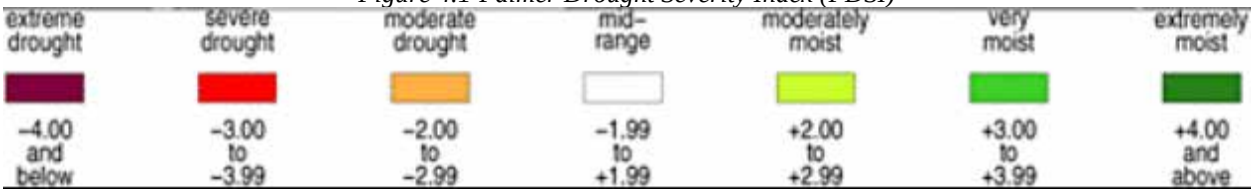
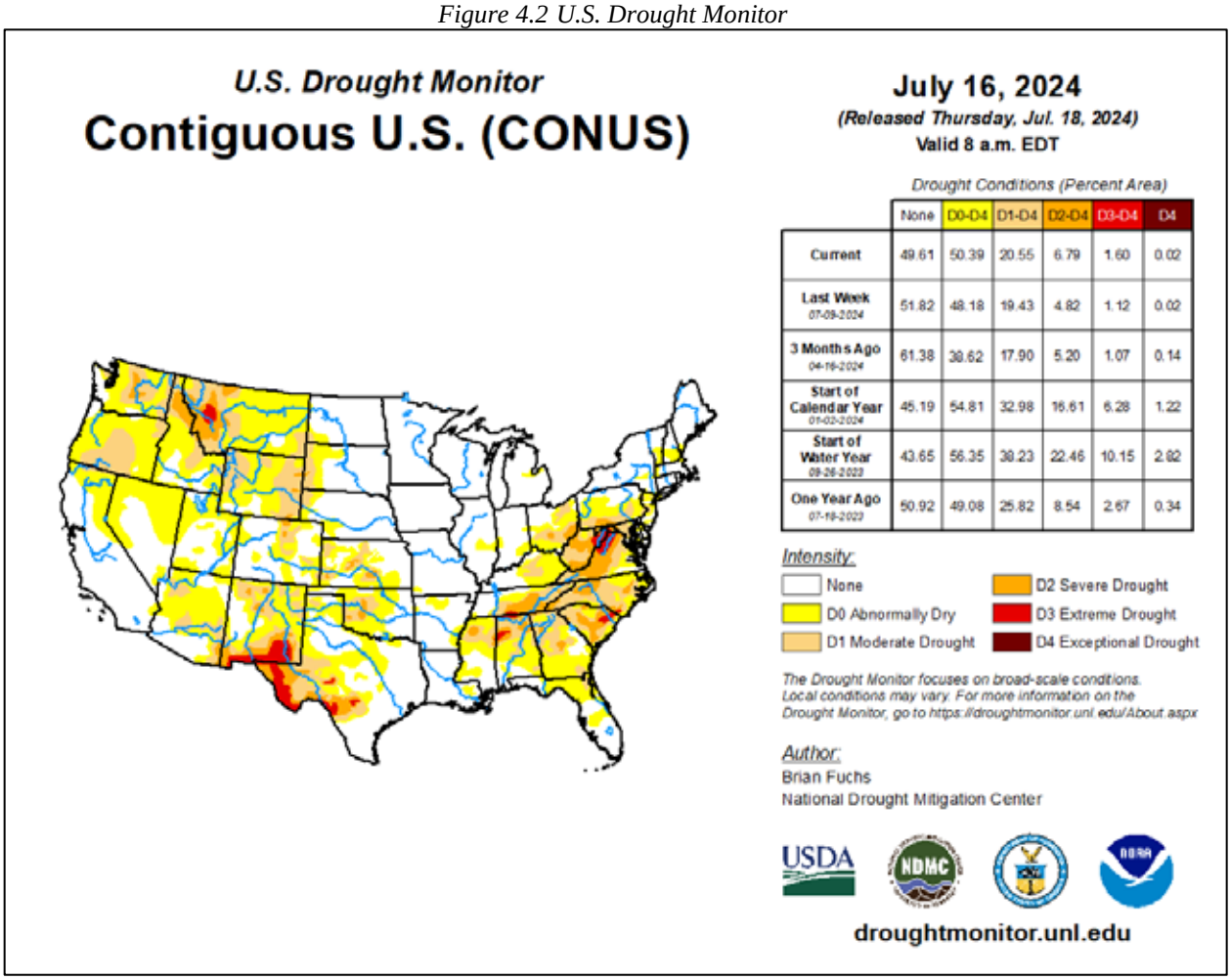


Figure 4.2 U.S. Drought Monitor



4.6.4 Probability and Frequency

According to NOAA, the probability of drought is determined using precipitation, temperature, soil moisture, and streamflow data, among others. Key methods and tools used to assess and predict drought conditions include:

1. **Palmer Drought Severity Index (PDSI)**: This index assesses the severity of a drought based on precipitation, temperature, and soil moisture. It helps identify the onset and end of drought conditions.
2. **Standardized Precipitation Index (SPI)**: This index measures the amount of precipitation over various timescales and is used to monitor both short-term and long-term drought conditions.

3. **Soil Moisture Analysis**: Soil moisture data, particularly from NASA's GRACE satellite, provides insights into the wetness or dryness of soil at various depths, indicating drought conditions.
4. **U.S. Drought Monitor**: This tool integrates data from multiple indicators to provide a weekly map that shows the location and intensity of droughts across the U.S.

Figure 4.3 US Drought Monitor – Washington April 2025

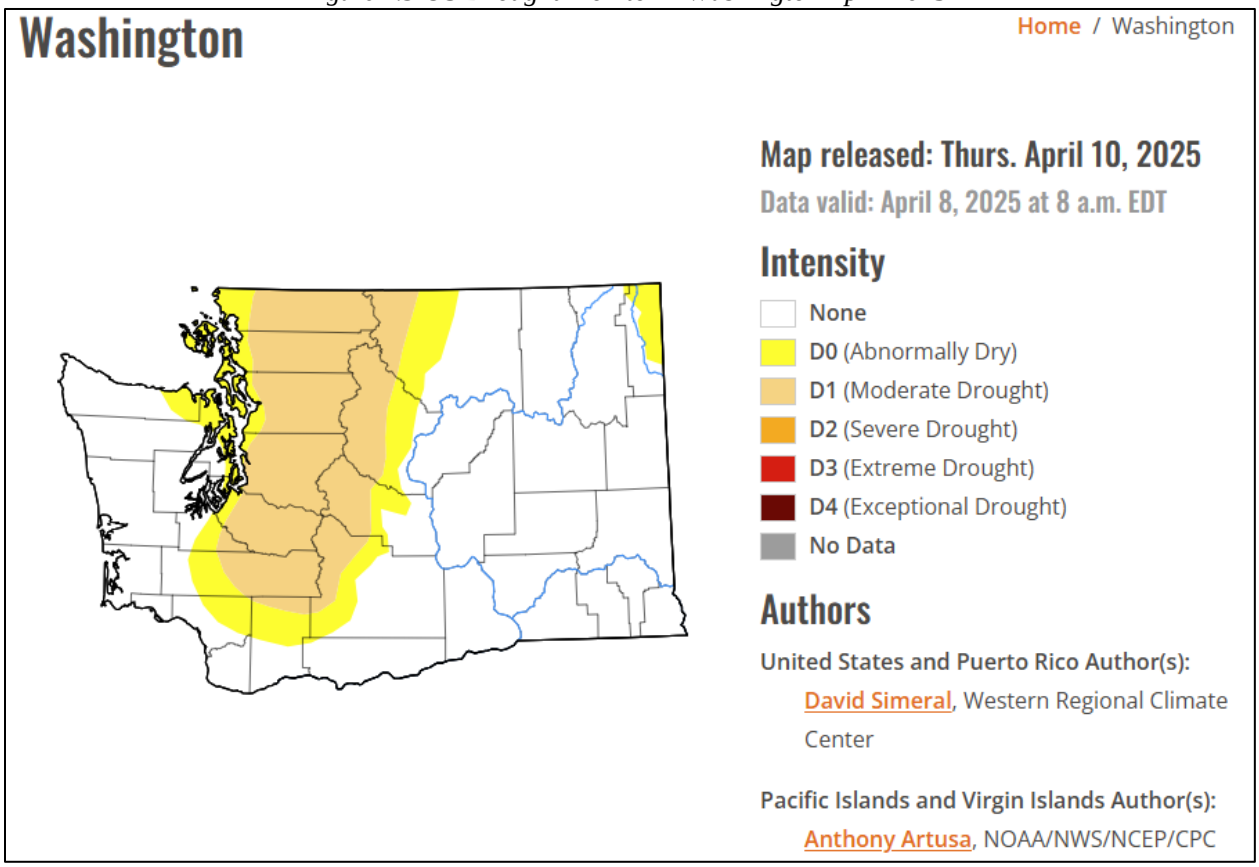


Figure 4.4 12-Month CMORPH Global SPI – Washington April 2025

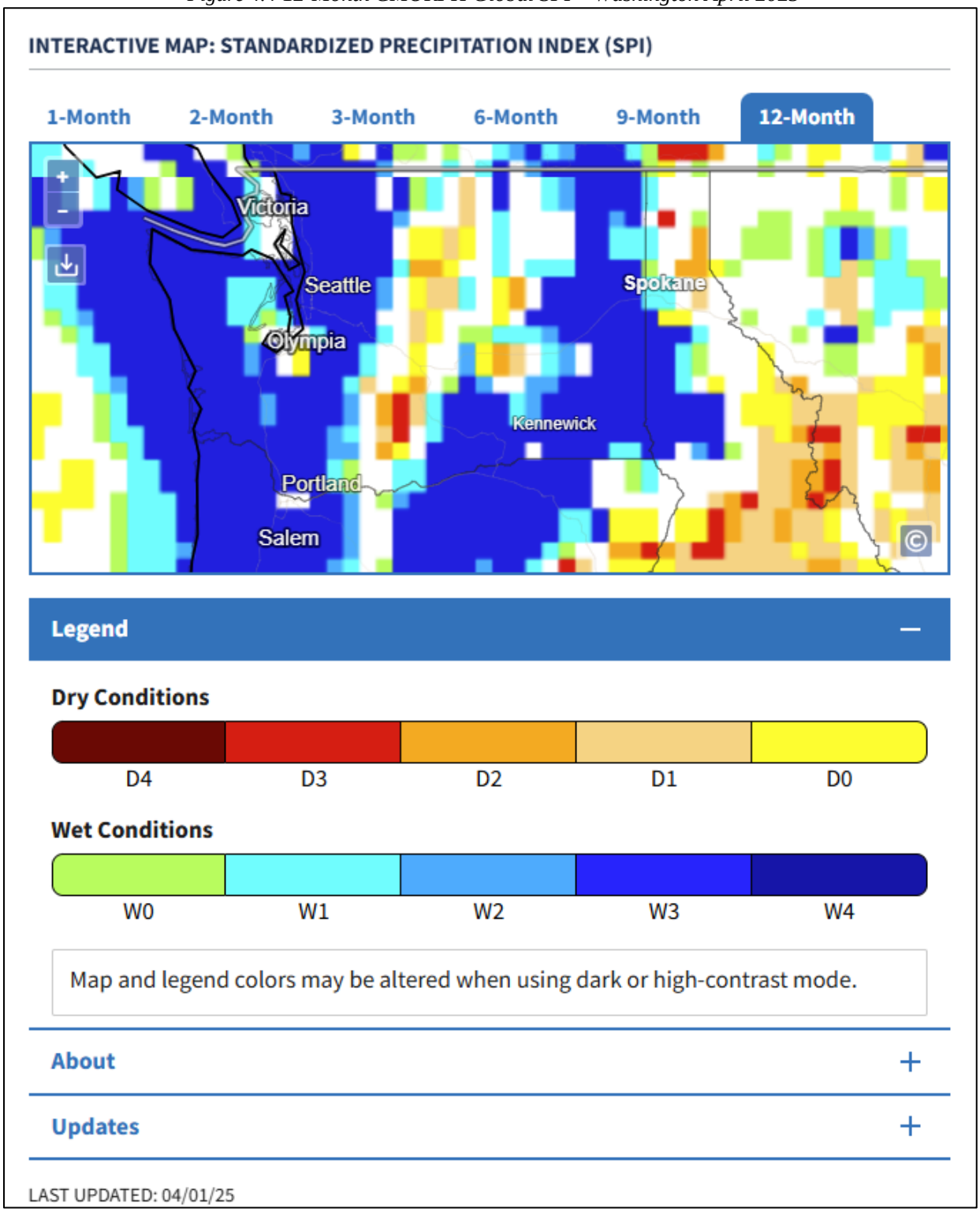
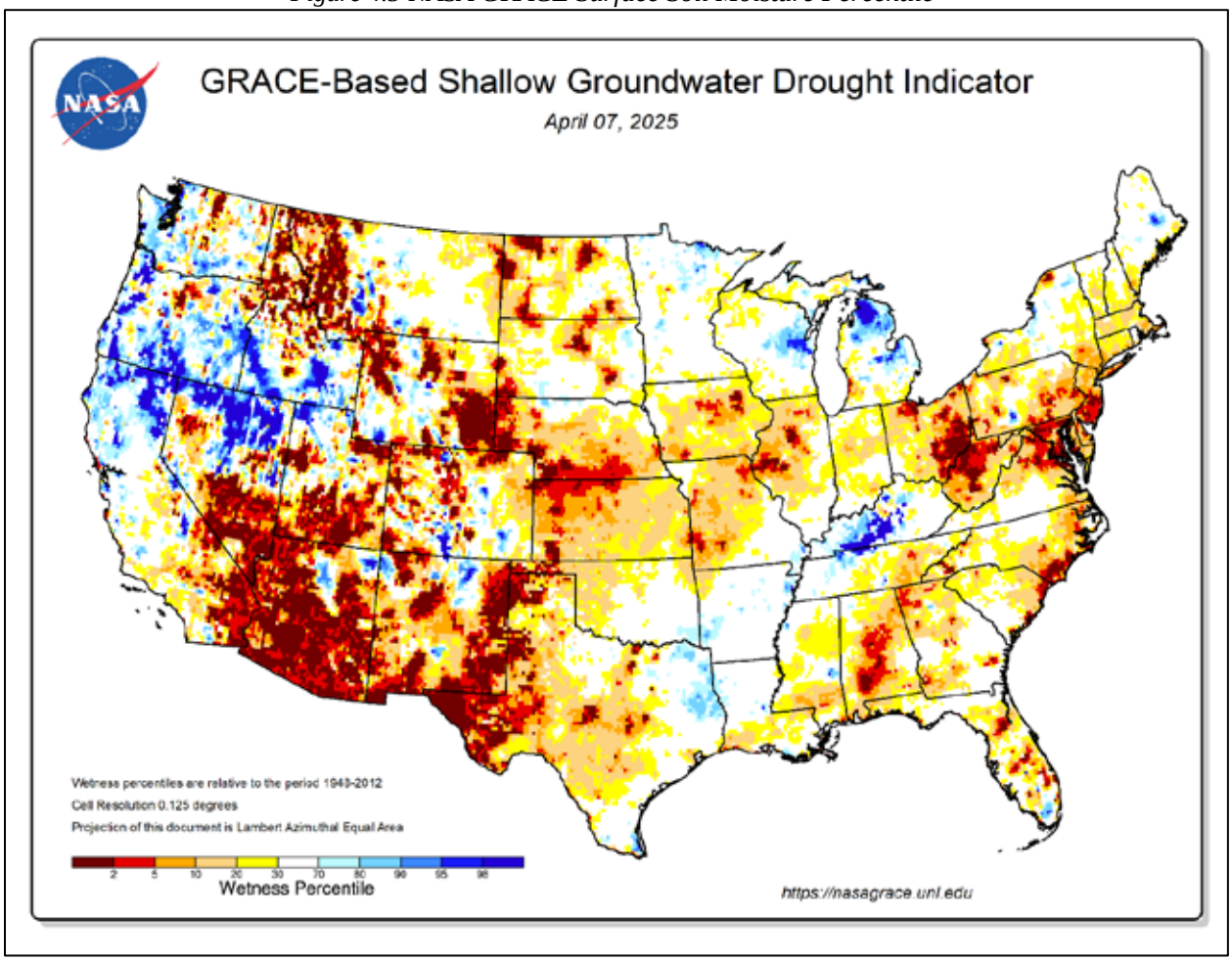


Figure 4.5 NASA GRACE Surface Soil Moisture Percentile



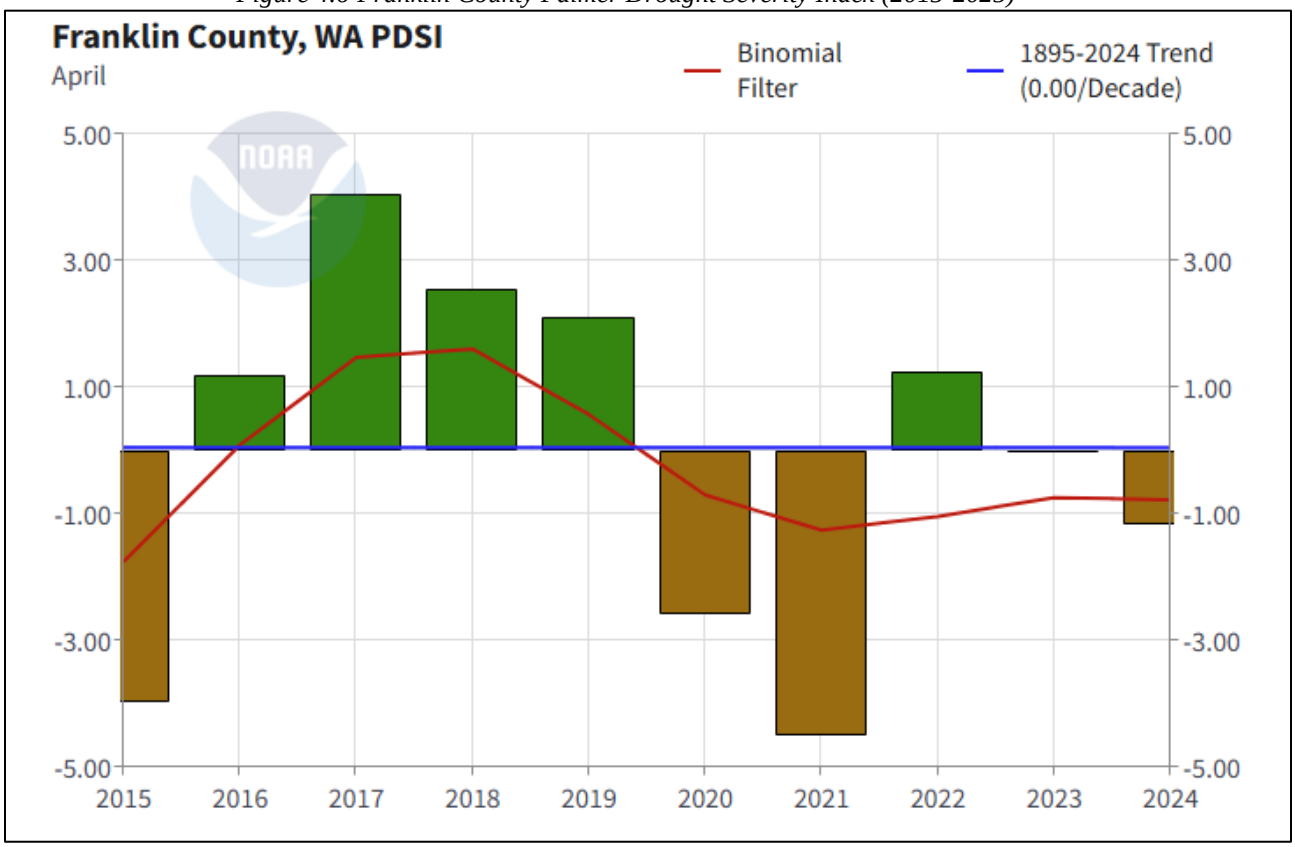
4.6.5 Past Events

According to NOAA, between 01/01/19 and 12/31/24 there have been no documented drought events in Franklin County.

The United States Department of Agriculture's Farm Service Agency has listed Franklin County as a primary county with Disaster Designations affected by drought 4 times between 01/01/19 and 12/31/24.

The figure below represents the PDSI for Franklin County between 2014 and 2023.

Figure 4.6 Franklin County Palmer Drought Severity Index (2015-2025)



4.6.6 Vulnerability and Impacts

Life Safety and Health: Droughts affect life safety and public health in several ways. Health problems can arise from poor water quality, poor food quality, and increased dust in the air. In addition, droughts make fires more likely, spread more quickly, and make them more challenging. In addition, poor air quality and a lack of water may reduce residents' engagement in recreational activities, reducing overall mental and physical well-being.

Property Damage and Critical Infrastructure: Drought has a negligible impact on buildings. Possible losses/impacts to critical facilities include the loss of essential functions due to low water supplies. Severe droughts can negatively affect drinking water supplies. Should a public water system be involved, the losses could total millions if outside water is shipped. Possible losses to infrastructure include the loss of potable water.

Economy: Although no data demonstrates the economic impact of past drought events on Franklin County, the most significant financial effect of drought is on agriculture.

Changes in Development and Impact of Future Development: No data exists demonstrating the impact of drought on future development in Franklin County. However, excessive drought can result in water shortages and increased competition for limited water resources, which can limit the ability of developers to expand projects within the city.

Effects of Climate Change on Severity of Impacts: According to the University Corporation for Atmospheric Research (UCAR), climate change is causing more extreme weather events, including severe drought. UCAR explains that warmer temperatures cause more evaporation, turning water into vapor in the air and causing drought in some areas of the world. Places prone to drought are expected to become even drier over the following century.

Providing projections of future climate change for a specific region is challenging. Shorter-term projections are more closely tied to existing trends, making longer-term projections even more challenging. The further a prediction reaches, the more subject it becomes to changing dynamics. Climate change is already impacting water resources, and resource managers have observed the following:

- Historical hydrologic patterns can no longer be solely relied upon to forecast the water's future
- Precipitation and runoff patterns are changing, increasing the uncertainty for water supply and quality, flood management, and ecosystem functions
- Extreme climatic events will become more frequent, necessitating improvement in flood protection, drought preparedness, and emergency response

Climate Change Impact on Drought: According to NOAA, climate change can lead to increased frequency and severity of drought. Warmer temperatures accelerate evaporation rates and reduce soil moisture, intensifying drought conditions. This is particularly problematic for regions already prone to droughts, which are now experiencing longer and more intense drought periods. Drought can also impact riparian shrubsteppe vegetation and habitat restoration. Climate change also heightens the likelihood of compound extreme events, such as concurrent heatwaves and droughts. These combined events can overwhelm adaptive capacities and significantly increase damage to ecosystems, agriculture, and infrastructure.

Furthermore, climate change contributes to increased water stress by altering precipitation patterns and elevating temperatures, which affect both water availability and quality. This stress impacts agriculture, energy production, and urban water supplies. Ecologically, intensified droughts pose significant threats to ecosystems and wildlife. For example, reduced stream-flows and higher water temperatures can negatively affect fish populations and other aquatic life. Economically, droughts exacerbated by climate change lead to substantial costs, including losses in crop yields, increased wildfire risks, and strains on municipal and industrial water supplies. Drought can also impact riparian and shrubsteppe vegetation and habitat restoration.

Table 4.7. 25-Year Climate Projections for Franklin County

25-YEAR CLIMATE PROJECTIONS FOR FRANKLIN COUNTY, WA
HIGHER EMISSIONS (RCP8.5)
Franklin County is expected to experience a **51% increase** in extremely hot days within 25 years.
By 2049, Franklin County is expected to have a **2°F increase** (from 55°F to 57°F) in average annual temperatures.
LOWER EMISSIONS (RCP4.5)
Franklin County is expected to experience a **31% increase** in extremely hot days within 25 years.

By 2049, Franklin County is expected to have a **2°F increase** (from 54°F to 56°F) in average annual temperatures.
Source: Neighborhoods at Risk (2024)

Table 4.8. Future Climate Indicators for Franklin County

FUTURE CLIMATE INDICATORS FOR FRANKLIN COUNTY, WA							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	**Higher Emissions**	**Lower Emissions**	**Higher Emissions**	**Lower Emissions**	**Higher Emissions**
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation							
Average Annual Total Precipitation	**9”**	**9”**	**9”**	**10”**	**10”**	**10”**	**10”**
	8-9	8-11	9-10	9-11	9-11	9-11	9-11
Days Per Year With Precipitation	**108 days**	**108 days**	**108 days**	**107 days**	**109 days**	**107 days**	**106 days**
	104-111	102-116	102-120	102-116	98-127	98-114	97-118
Days Per Year With No Precipitation	**257 days**	**257 days**	**257 days**	**258 days**	**257 days**	**258 days**	**259 days**
	254-261	249-264	245-263	249-263	238-267	251-267	247-269
Maximum Number Of Consecutive Dry Days	**38 day**	**40 days**	**40 days**	**41 days**	**42 days**	**43 days**	**46 days**
	31-47	30-55	29-55	30-59	31-64	31-61	32-61
Temperature Thresholds							
Annual days with Maximum temperature > 90°	**34 days**	**52 days**	**54 days**	**60 days**	**66 days**	**69 days**	**91 days**
	34-41	42-65	42-63	47-77	49-83	50-90	61-112
Annual days with Maximum temperature > 100°	**5 days**	**11 days**	**12 days**	**15 days**	**20 days**	**21 days**	**43 days**
	3-6	6-15	5-19	8-24	9-34	9-24	18-70
Source: Climate Mapping for Resilience and Adaptation (2024)							

4.6.8 FEMA NRI Expected Annual Loss Estimates

Table 4.9. Franklin County Expected Annual Loss Table

FRANKLIN COUNTY, WA FEMA NRI EXPECTED ANNUAL LOSS TABLE - DROUGHT							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total Value**	**Expected Annual Loss Score**	**Expected Annual Loss Rating**
14.6 events per year	N/A	N/A	N/A	$89,729	$89,729	66.9	Relatively Low
Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.* ***Expected Annual Loss*** *scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*							
Source: FEMA National Risk Index (2024)							

4.6.9 FEMA Hazard-Specific Risk Index Table

Table 4.10. Franklin County FEMA Hazard Specific Risk Index Table

FRANKLIN COUNTY, WA FEMA HAZARD SPECIFIC RATINGS - DROUGHT		
Risk Index Score	**Social Vulnerability Rating**	**Community Resilience Rating**
69.6	Very High	Relatively Low

Risk Index Scores: *are a quantitative rating calculated using data for only a single hazard type. Risk Index Scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value.*

Social Vulnerability Ratings: *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the Centers for Disease Control and Prevention (CDC).*

Community Resilience Ratings: *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Community Resilience is measured using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).*

Source: FEMA National Risk Index (2024)

4.6.10 FEMA NRI Exposure Value Table

Table 4.11. Franklin County FEMA NRI Exposure Value Table

FRANKLIN COUNTY, WA FEMA EXPOSURE VALUE TABLE - DROUGHT					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Drought	$505,719,223	N/A	N/A	N/A	$505,719,223

Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in Hazus 6.0, which provides 2022 valuations of the 2020 Census.*

Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in Hazus 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 million of economic loss (2022 dollars).*

Agriculture: *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*

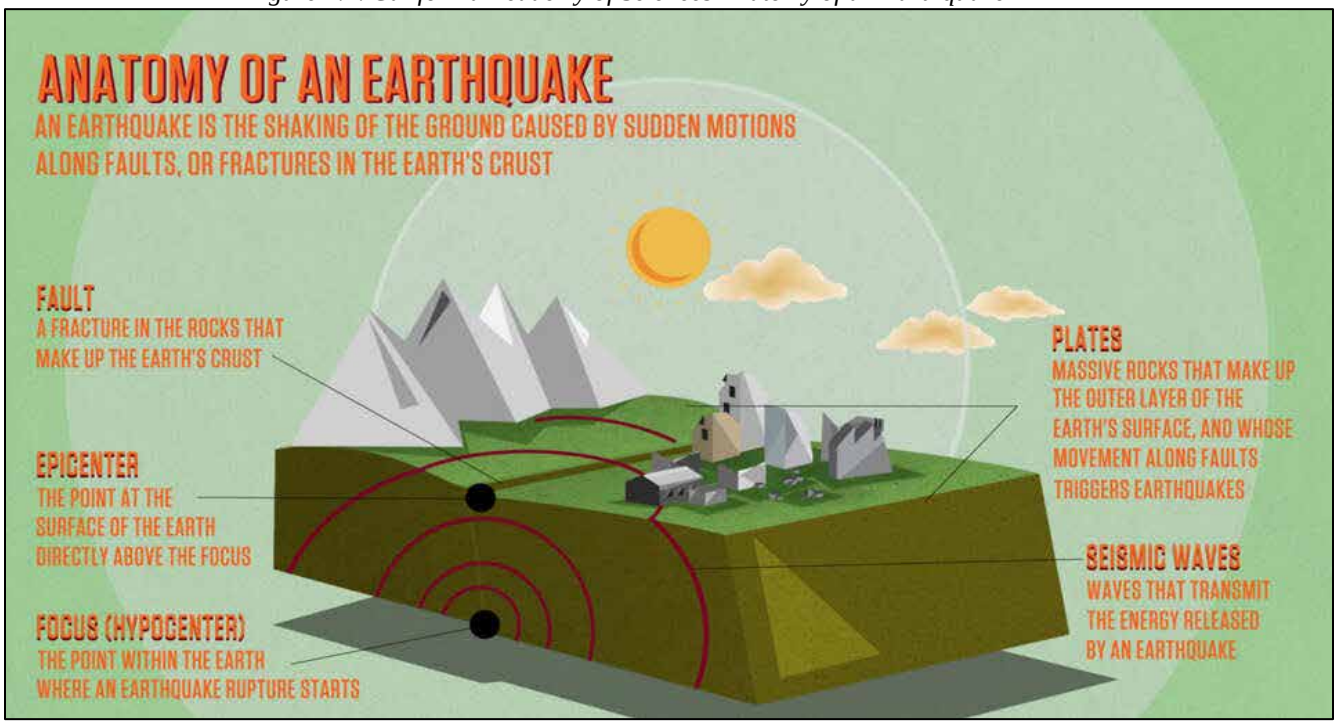
Source: FEMA National Risk Index (2024)

4.7 Earthquake

4.7.1 Hazard Description

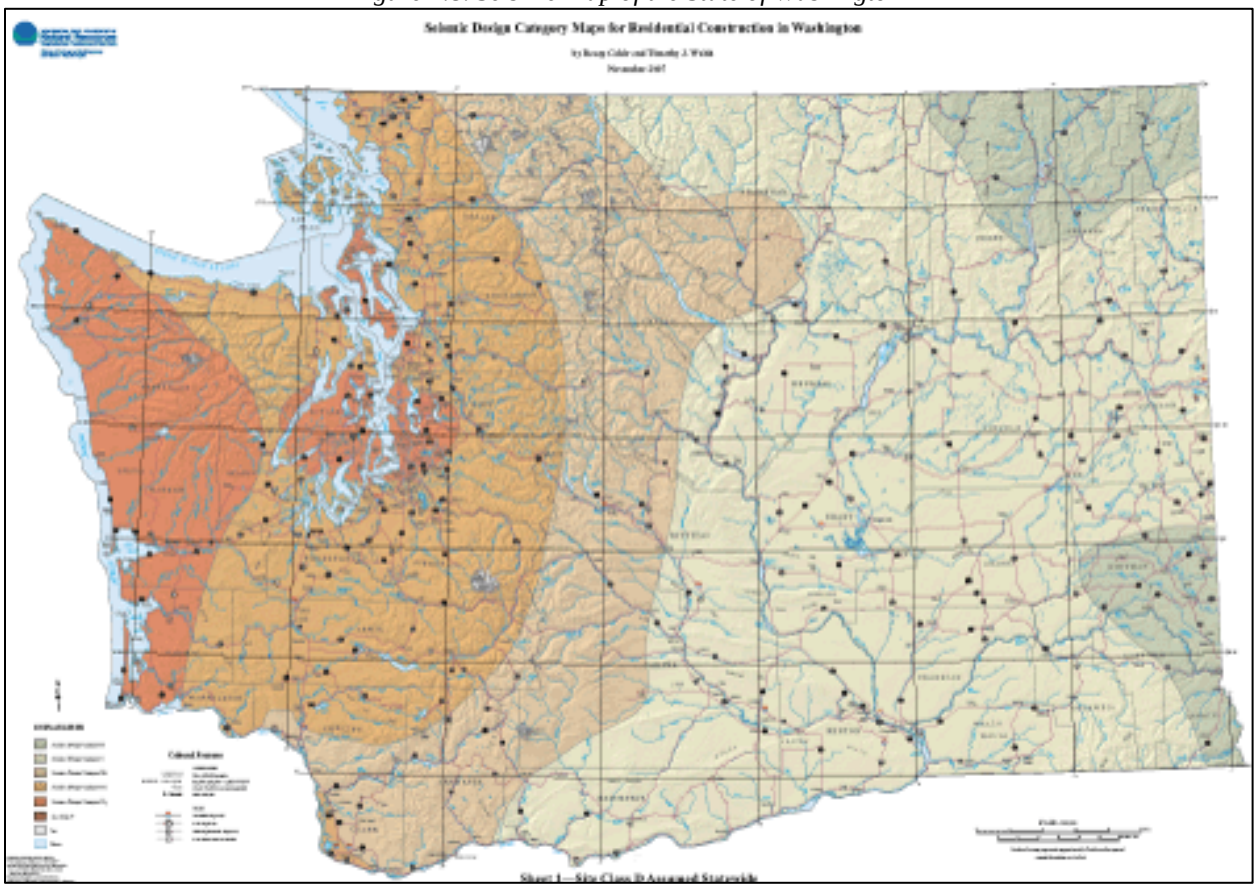
An earthquake is the shaking through the ground, caused when two parts of Earth's crust suddenly slip past each other along a surface called a "fault." Earth's crust is under pressure from the forces of tectonic plates slowly moving around on the surface. While it seems solid, this crust has broken numerous times throughout the planet's history, along surfaces called faults. Faults spend most of their time held together by the force of friction. However, pressure builds up over time, and when it becomes strong enough to overcome the force of friction, the fault slips. The Magnitude, or size, or the earthquake is related to how far the fault moves at one time. The series of waves, or reverberations through the ground of this slip are called an earthquake, and are stronger with higher magnitudes. Earthquakes may also have aftershocks, or additional, earthquakes along the fault as the ground adjusts to its new location. Note

Figure 4.7. California Academy of Sciences Anatomy of an Earthquake



4.7.2 Hazard Location

Figure 4.8. Seismic Map of the State of Washington



4.7.3 Hazard Extent/Intensity

The severity of an earthquake can be expressed in terms of both *intensity* and *magnitude*. However, the two terms are quite different, and they are often confused. Each Earthquake has one Magnitude, but many intensities, depending on location. Intensity is expressed using the Modified Mercalli Intensity Scale and describes the observed effects of ground shaking on people, buildings, and natural features. It varies from place to place within the disturbed region depending on the location of the observer with respect to the earthquake epicenter, the type of soil beneath them, and expresses how different building types may be impacted. Intensity can also be expressed as "peak ground acceleration," which is measured by instruments on the ground. Magnitude is related to the amount of seismic energy released at the hypocenter of the earthquake.

Earthquake strength is measured using a Moment Magnitude, which is a number that describes the amount of energy released by the earthquake. Each earthquake has one Magnitude, which is calculated based on how large of an area of the fault ruptured to cause the ground shaking. Each whole-number increase in magnitude represents a tenfold increase in measured amplitude; as an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

It is important to note that Magnitude is not used to express damage – damage should be expressed through intensity.

The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and finally - total destruction. The Modified Mercalli (MM) Intensity Scale is the common intensity scale used in the United States. This scale is composed of 10 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction. It does not have a mathematical basis; instead, it is an arbitrary ranking based on observed effects. The Modified Mercalli Intensity value assigned to a specific site after an earthquake has a more meaningful measure of severity to the non-scientist than the magnitude because intensity refers to the effects actually experienced at that place.

The table below illustrates abbreviated descriptions of the =10 levels of Modified Mercalli Intensity Scale.

Table 4.13. Modified Mercalli Intensity Scale

MODIFIED MERCALLI INTENSITY SCALE	
Level of Intensity	**Observed Earthquake Effects**
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Earthquakes can trigger other types of ground failures which could contribute to the damage. These include landslides, dam failures, and liquefaction. In the last situation, shaking can mix groundwater and soil, liquefying and weakening the ground that supports buildings and severing utility lines. This is a special problem in floodplains where the water table is relatively high, and the soils are more susceptible to liquefaction.

4.7.4 Probability and Frequency

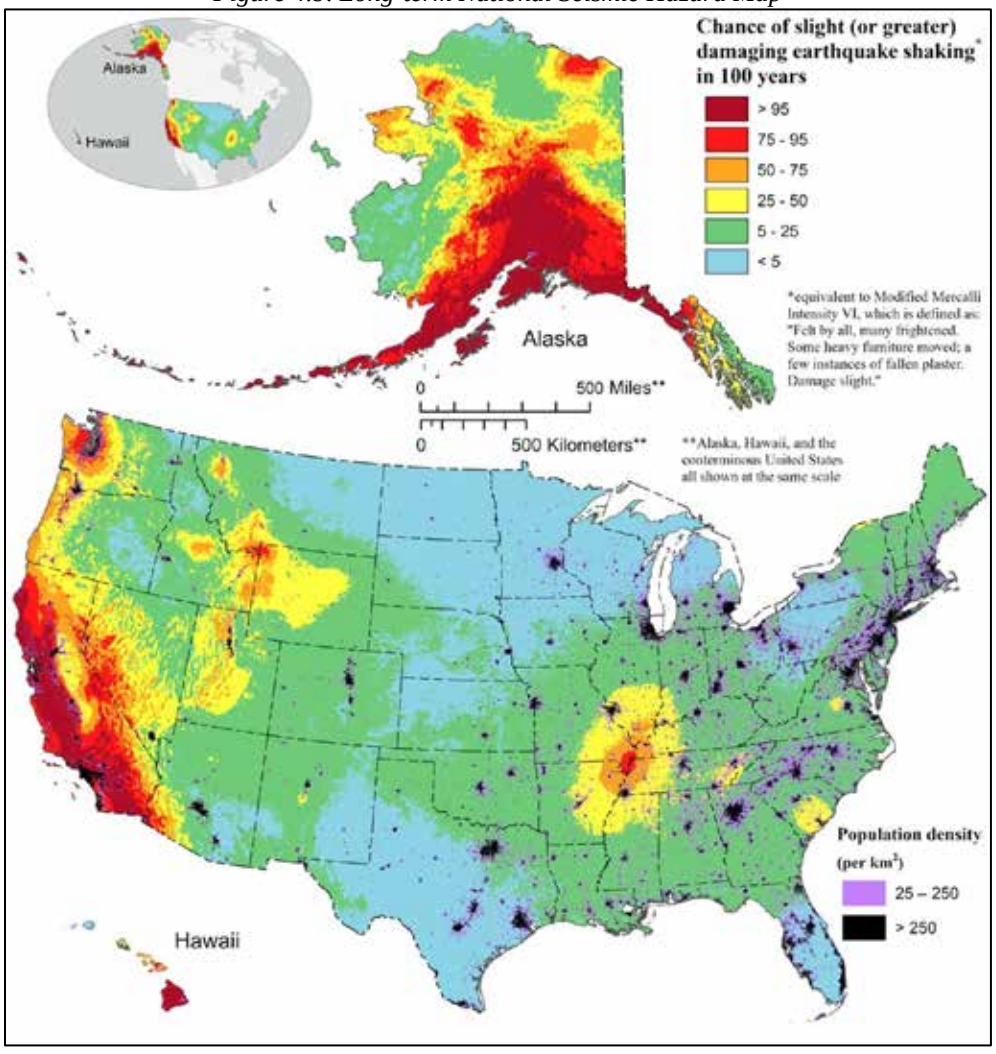
Probability: The United States Geological Survey (USGS) determines the probability of earthquake events through a combination of historical earthquake data, geological and seismological research, and advanced modeling techniques. This process involves analyzing past earthquakes to understand patterns of occurrence, fault line activities, and the distribution of seismic activity across different regions. By studying the behavior of tectonic plates, including their movement and the stress accumulation along faults, scientists can assess where earthquakes are more likely to occur. The USGS also utilizes seismic hazard maps that depict the likelihood of various levels of earthquake shaking in different areas over specific time frames. These maps are based on models that incorporate the rates at which earthquakes occur in different areas and the expected ground shaking from those earthquakes.

In addition, the USGS employs probabilistic seismic hazard analysis (PSHA), a method that quantifies the likelihood of exceeding various levels of earthquake shaking in a given time period, considering the uncertainties inherent in forecasting earthquake behavior. PSHA takes into account

the location, rate, and magnitude of potential earthquakes, as well as how seismic waves will propagate through the Earth to affect particular locations. The analysis also incorporates the potential for soil amplification and other local effects that can influence ground shaking intensity.

The figure below illustrates peak ground accelerations having a 2% probability of being exceeded in 50 years, for a firm rock site. The long-term national seismic hazard map is based on the most recent USGS models for the conterminous U.S. (2023), Hawaii (2023), and Alaska (2023). These models are based on seismicity and fault-slip rates and consider the frequency of earthquakes of various magnitudes. In California, the hazard may be greater than shown, because site geology may amplify ground motions.

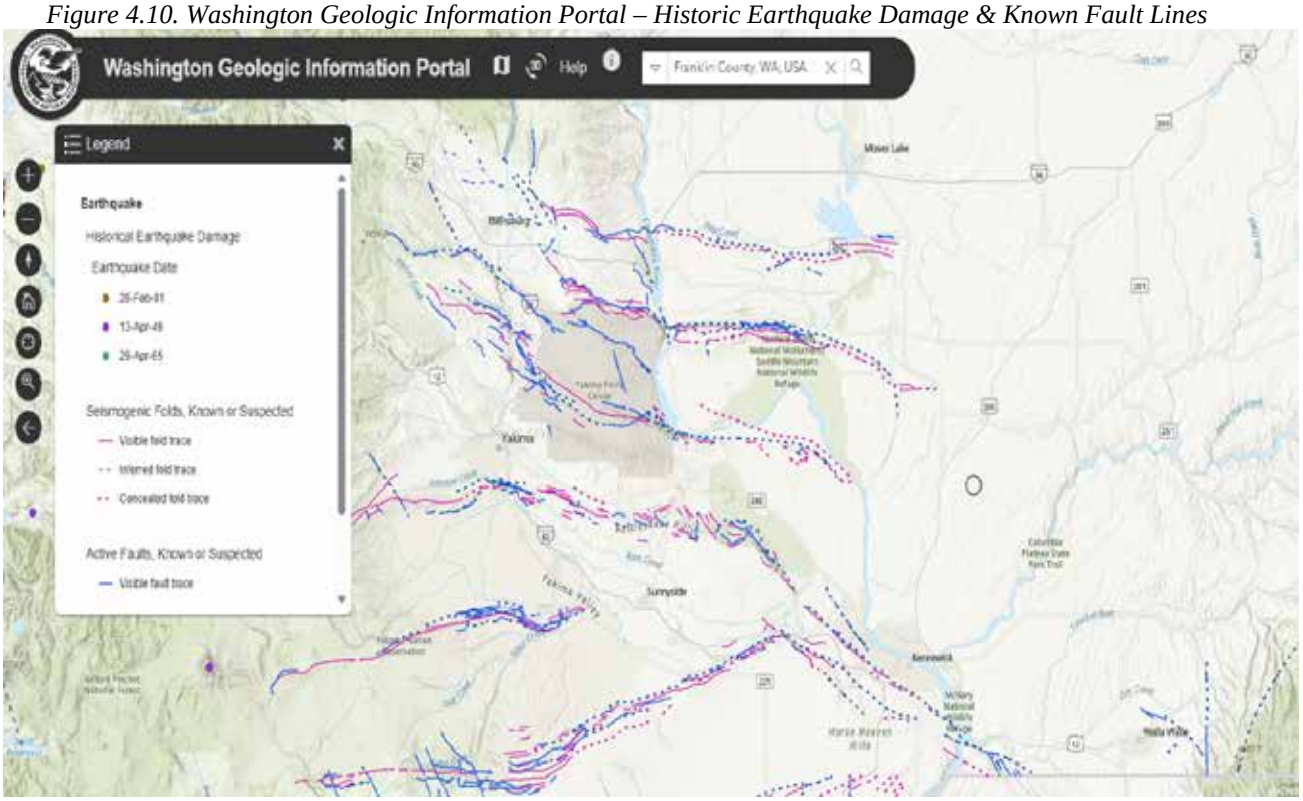
Figure 4.9. Long-term National Seismic Hazard Map



4.7.5 Past Events

Over the past 20 years, available data from the U.S. Geological Survey and regional seismic monitoring programs indicate that Franklin County, Washington has not experienced any major or damaging earthquake events within its jurisdiction. Instead, seismic activity in and around the county has been characterized by low-magnitude, infrequent earthquakes, typically below magnitude 3.0 and often too small to be felt. Recorded events in the broader region including central and eastern Washington, are generally minor, and occur at significant distances from the county or at shallow depths with limited impact. Regional datasets show that while thousands of microearthquakes occur within a 150 km radius over time, the overwhelming majority are very small (magnitude 0–2) and pose minimal hazard.

Figure 4.10. Washington Geologic Information Portal – Historic Earthquake Damage & Known Fault Lines



4.7.6 Vulnerability and Impacts

Public Health and Life Safety: According to FEMA, earthquakes can impact life safety and public health in different ways. Some of the most common impacts are as follows:

- Injuries and Loss of Life: The violent shaking and structural damage caused by earthquakes can result in injuries and, in severe cases, loss of life. Falling debris, structural collapses, and ground ruptures can pose immediate risks to individuals in affected areas.
- Structural Damage: Earthquakes can cause extensive damage to buildings, homes, and infrastructure, making them unsafe for occupancy. This can lead to injuries, homelessness, critical infrastructure outages, and the need for temporary shelter.
- Displacement: Earthquake-affected individuals may be forced to evacuate their homes due to damage or the threat of aftershocks. This displacement can lead to overcrowding in emergency shelters and increased stress for affected individuals and families.

- Mental Health Impact: Earthquakes and their aftershocks can have long-lasting psychological effects, including trauma, anxiety, and post-traumatic stress disorder (PTSD), which may require mental health support and counseling.
- Strain on Healthcare Systems: Earthquakes can overwhelm healthcare systems with an influx of injured individuals in need of medical attention, in addition to damage to healthcare facilities or their infrastructure. Hospitals and medical facilities may face challenges in providing care and resources.
- Infrastructure Disruption: Critical infrastructure, including roads, bridges, utilities, and communication networks, can be damaged, affecting emergency response capabilities and access to essential services.
- Water Supply Contamination: Ground shaking can damage water supply systems, leading to contamination of drinking water sources. This poses health risks and requires water treatment and distribution efforts.
- Fire Hazards: Earthquakes can cause gas leaks and damage to electrical systems, increasing the risk of fires. Fire outbreaks can lead to additional injuries, property damage, and air quality issues.
- Aftershocks: Aftershocks following the initial earthquake can further damage weakened structures, hinder response efforts, and prolong the risks to life safety and public health.

Property Damage and Critical Infrastructure: Generally, wood frame buildings and structures on solid ground fare best during an earthquake. Wood frame buildings are flexible enough to withstand ground shaking and swaying. Evaluations of recent earthquakes found that damage was primarily caused to:

- Unreinforced masonry structures.
- Older buildings with some degree of deterioration.
- Buildings without foundation ties.
- Multi-story structures with open or “soft” first floors.

Most building codes have standards related to the first three concerns. This means that the most threatened buildings are older ones (built before current codes), masonry ones, and taller ones with open first floors.

In addition to the building type, damage is related to the underlying soils. Buildings on solid ground fare better, while those on loose or sandy soils will suffer more from shaking. These can be found in floodplains. If there is enough water present, the shaking can liquefy the underlying soils, which removes the support under the foundation.

Figure 3-8 in the Community Profile illustrates the locations of critical facilities within Franklin County.

A HAZUS analysis was conducted to examine the life safety and health impact to people during an earthquake incident. In this analysis, HAZUS estimates the number of people that could be injured or killed by an earthquake in Franklin County.

The casualties are broken down into four (4) severity levels that describe the extent of the injuries and are described as follows:

- Severity Level 1: Injuries will require medical attention, but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

The following table provides a summary of the casualties estimated by HAZUS for an earthquake.

Table 4.14. HAZUS Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0.01	0.00	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.01	0.00	0.00	0.00
	Other-Residential	0.81	0.07	0.00	0.00
	Single Family	0.20	0.01	0.00	0.00
	Total	**1**	**0**	**0**	**0**
2 PM	Commercial	0.82	0.08	0.00	0.01
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.48	0.04	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.06	0.00	0.00	0.00
	Other-Residential	0.26	0.02	0.00	0.00
	Single Family	0.06	0.00	0.00	0.00
	Total	**2**	**0**	**0**	**0**
5 PM	Commercial	0.56	0.05	0.00	0.00
	Commuting	0.00	0.00	0.00	0.00
	Educational	0.13	0.01	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	0.04	0.00	0.00	0.00
	Other-Residential	0.30	0.03	0.00	0.00
	Single Family	0.07	0.00	0.00	0.00
	Total	**1**	**0**	**0**	**0**

Economy: According to FEMA, earthquake events can have profound and multifaceted economic impacts, affecting communities, businesses, and governments at all levels. Initially, earthquakes inflict direct damage to infrastructure, including buildings, roads, and bridges, leading to substantial repair and reconstruction costs. These costs not only strain public budgets but also divert resources from other vital community needs. Businesses experience significant disruptions, with some forced to cease operations temporarily or permanently, resulting in lost income, employment, and productivity. The ripple effects extend to the wider economy, as supply chains are disrupted, and consumer spending patterns shift in the aftermath of the disaster.

According to FEMA, earthquakes can undermine investor confidence and lead to declines in property values, especially in areas deemed at high risk for future seismic events. The insurance sector faces increased claims, which can impact the availability and cost of coverage for businesses and homeowners. Efforts to rebuild and recover from an earthquake often require substantial investment, which can stimulate economic activity in construction and related sectors but also highlight the need for improved resilience and preparedness strategies.

Changes in Development and Impact of Future Development: According to FEMA, earthquake events significantly influence changes in development and future planning strategies, primarily through the lens of enhancing resilience and safety in earthquake-prone areas. In the aftermath of significant seismic activity, there is often a reassessment of building codes and construction practices to reduce the vulnerability of structures to future earthquakes. This includes the adoption of more stringent engineering standards, the use of earthquake-resistant materials, and the incorporation of innovative design techniques that allow buildings and infrastructure to withstand seismic forces. Such measures are crucial in minimizing physical damage and ensuring the safety of occupants during subsequent earthquakes. Lastly, urban planning and zoning regulations may be revised to limit development in high-risk areas, such as fault zones and areas susceptible to soil liquefaction, further mitigating potential damage and loss of life.

According to FEMA, earthquake events also impact long-term planning of communities, through higher building code standards and retrofitting existing structures to improve their earthquake resilience. Efforts to enhance public awareness and preparedness, including earthquake drills and the development of emergency response plans, become integral components of community planning.

Effects of Climate Change on Severity of Impacts: According to NOAA, the relationship between climate change and the severity of earthquake events is not direct, as earthquakes are primarily caused by geophysical processes related to the movement of tectonic plates beneath the Earth's surface. According to NOAA, earthquakes result from the buildup and release of energy along faults or by volcanic activity, processes that are generally considered to be independent of atmospheric conditions influenced by climate change.

4.7.7 FEMA NRI Expected Annual Loss Estimates

Table 4.15. Franklin County Expected Annual Loss Table

FRANKLIN COUNTY, WA FEMA NRI EXPECTED ANNUAL LOSS TABLE – EARTHQUAKE							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total Value**	**Expected Annual Loss Score**	**Expected Annual Loss Rating**
0.165% chance per year	0.05	$534,394	$1,762,969	N/A	$2,297,363	87.1	Relatively Low
Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.* ***Expected Annual Loss*** *scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*							
Source: FEMA National Risk Index (2024)							

4.7.8 FEMA Hazard-Specific Risk Index Table

Table 4.16. Franklin County FEMA Hazard Specific Risk Index Table

FRANKLIN COUNTY, WA FEMA HAZARD SPECIFIC RATINGS – EARTHQUAKE		
Risk Index Score	**Social Vulnerability Rating**	**Community Resilience Rating**
90.1	Very High	Relatively Low
Risk Index Scores: *are a quantitative rating calculated using data for only a single hazard type. Risk Index Scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value.* ***Social Vulnerability Ratings:*** *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the Centers for Disease Control and Prevention (CDC).* ***Community Resilience Ratings:*** *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Community Resilience is measured using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).*		
Source: FEMA National Risk Index (2024)		

4.7.9 FEMA NRI Exposure Value Table

Table 4.17. Franklin County FEMA NRI Exposure Value Table

FRANKLIN COUNTY, WA FEMA EXPOSURE VALUE TABLE – EARTHQUAKE					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Earthquake	$1,136,316,911,000	$14,028,511,000	$1,122,288,400,000	96,749.00	N/A

Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in Hazus 6.0, which provides 2022 valuations of the 2020 Census.*

Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in Hazus 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 million of economic loss (2022 dollars).*

Agriculture: *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*

Source: FEMA National Risk Index (2024)

4.8 Flooding

4.8.1 Hazard Description

Flooding is defined by the National Weather Service (NWS) as “the inundation of normally dry areas as a result of increased water levels in an established water course.” River flooding, the condition where the river rises to overflow its natural banks, may occur due to a number of causes, including prolonged, general rainfall, locally intense thunderstorms, snowmelt, and ice jams. In addition to these natural events, there are a number of factors controlled by human activity that may cause or contribute to flooding. These include dam failure (discussed below) and activities that increase the rate and amount of runoff, such as paving, reducing ground cover, and clearing forested areas. Flooding is a periodic event along most rivers, with the frequency depending on local conditions and controls, such as dams and levees. The land along rivers that is identified as being susceptible to flooding is called the floodplain.

Flooding can also threaten life, safety, and health and often results in substantial damage to infrastructure, homes, and other property. The extent of damage caused by a flood depends on the topography, soils, and vegetation in an area, and the depth and duration of flooding, velocity of flow, rate of rise, and the amount and type of development in the floodplain.

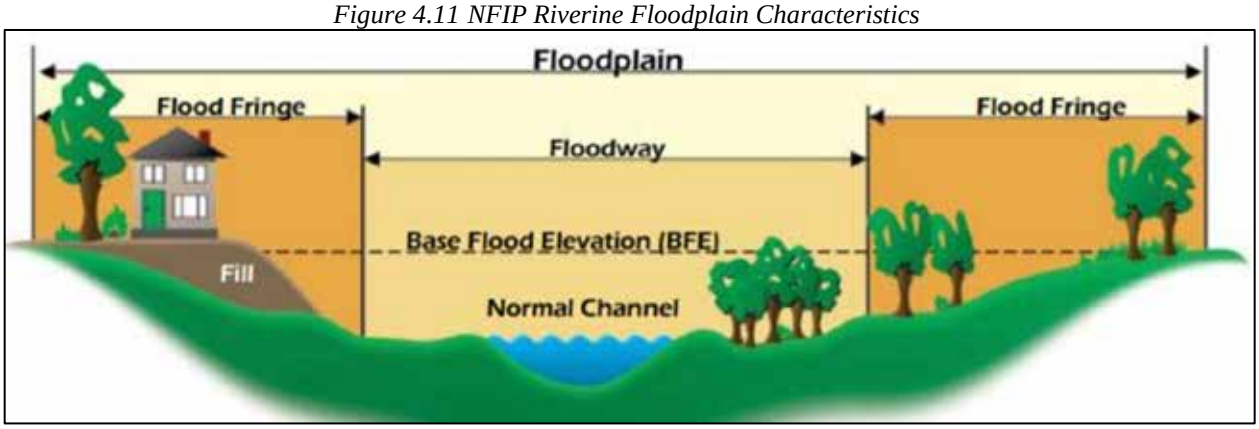
Flooding can occur in a number of ways, and many instances are not independent of each other and can occur simultaneously during a flood event. The types of flooding considered for this plan include:

- Heavy rainfall
- Urban stormwater overflow
- Rapid snowmelt

- Rising groundwater (generally in conjunction with heavy prolonged rainfall and saturated conditions)
- River ice jams
- Flash floods
- Alluvial fan flooding
- Flooding from dam failure

Riverine Flooding: Riverine flooding originates from a body of water, typically a river, creek, or stream, as water levels rise onto normally dry land. Water from snowmelt, rainfall, freezing streams, ice flows, or a combination thereof, causes the river or stream to overflow its banks onto adjacent floodplains. Winter flooding usually occurs when ice in the rivers creates dams or streams freeze from the bottom up during extreme cold spells. Spring flooding is usually the direct result of melting winter snowpacks, heavy spring rains, or a combination of the two.

Figure 4.11 NFIP Riverine Floodplain Characteristics



Urban/Flash Flooding: Urban (or "Flash") flooding, as defined in the Urban Flooding Awareness Act, is "the inundation of property in a built environment, particularly in more densely populated areas, caused by rainfall overwhelming the capacity of drainage systems, such as storm sewers. 'Urban flooding' does not include flooding in undeveloped or agricultural areas. 'Urban flooding' includes (i) situations in which stormwater enters buildings through windows, doors, or other openings, (ii) water backup through sewer pipes, showers, toilets, sinks, and floor drains, (iii) seepage through walls and floors, and (iv) the accumulation of water on property or public rights-of-way. Urban flooding is characterized by its repetitive, costly, and systemic impacts on communities, regardless of whether or not these communities are located within formally designated floodplains or near any body of water. These impacts include damage to buildings and infrastructure, economic disruption, and negative effects on health and safety.

A watershed is the land area that drains to a particular waterbody, such as a river, lake, or ocean. It is a geographic region that collects and channels precipitation and surface water to a common outlet, a stream, river, or other waterbody. Watersheds can vary in size, from a small drainage basin encompassing only a few acres to a large river basin spanning thousands of square miles. The health and quality of a watershed are critical for the sustainability of the ecosystem and the organisms that depend on it, including humans.

A healthy watershed is one in which natural land cover supports:

- Dynamic hydrologic and geomorphologic processes within their natural range of variation
- Habitat of sufficient size and connectivity to support native aquatic and riparian species
- Physical and chemical water quality conditions can support healthy biological communities.

Natural vegetative cover in the landscape, including the riparian zone, helps maintain the natural flow regime and fluctuations in water levels in lakes and wetlands. This, in turn, helps maintain natural geomorphic processes, such as sediment storage and deposition, that form the basis of aquatic habitats. The connectivity of aquatic and riparian habitats in the longitudinal, lateral, vertical, and temporal dimensions helps ensure the flow of chemical and physical materials and the movement of biota among habitats.

A healthy watershed has the structure and function in place to support healthy aquatic ecosystems. Key components of a healthy watershed include:

- Intact and functioning headwater streams, floodplains, riparian. corridors, biotic refugia, instream habitat, and biotic communities.
- Natural vegetation in the landscape; and
- Hydrology, sediment transport, fluvial geomorphology, and disturbance regimes are expected for its location.

A stream's flow regime refers to its characteristic pattern of flow magnitude, timing, frequency, duration, and rate of change. The flow regime plays a central role in shaping aquatic ecosystems and the health of biological communities. Alteration of natural flow regimes (e.g., more frequent floods) can reduce the quantity and quality of aquatic habitat, degrade aquatic life, and result in the loss of ecosystem services.

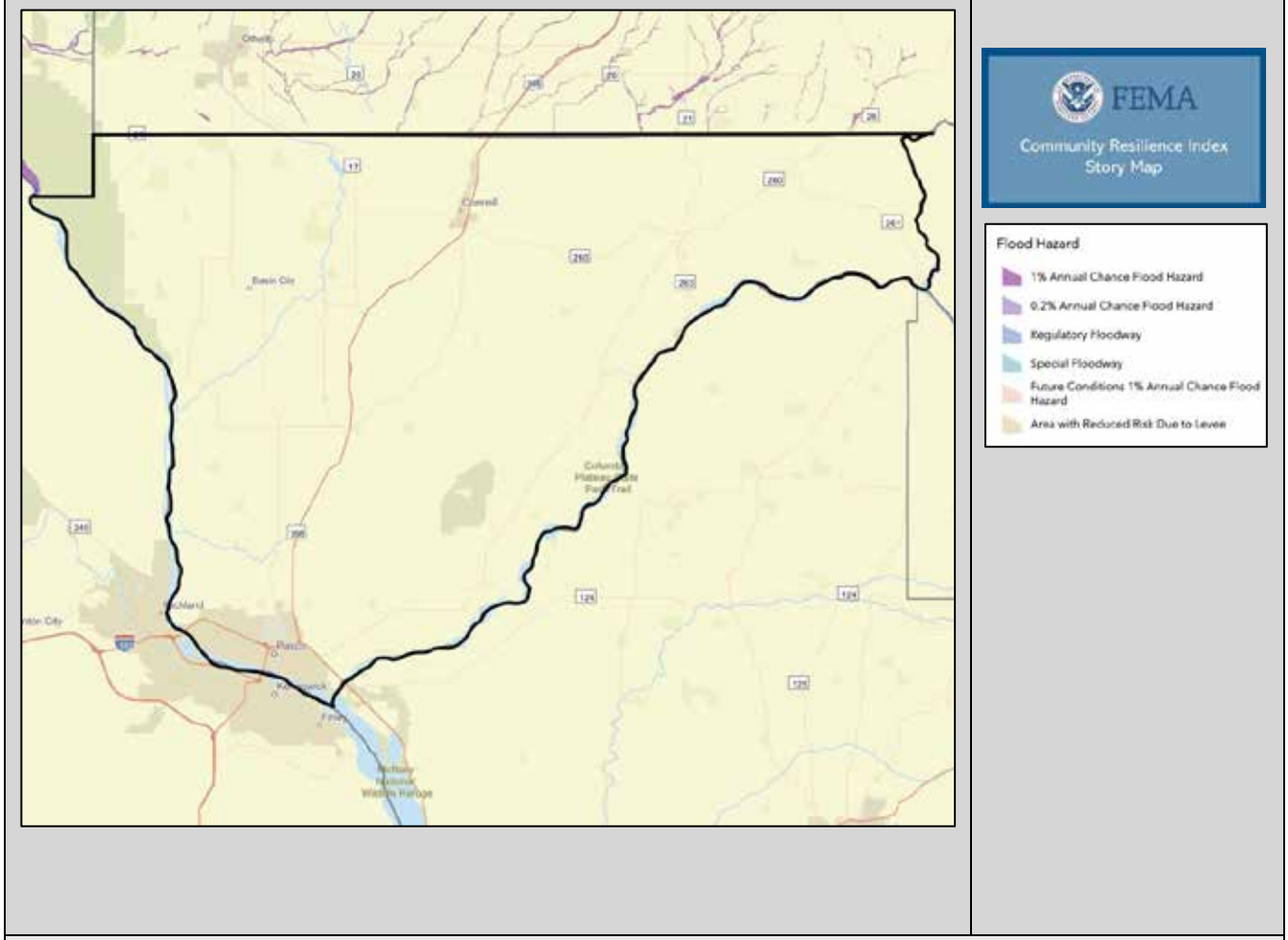
Most flooding occurs along natural streams or river channels. The land along a stream or river identified as susceptible to flooding is called the floodplain. Floods vary greatly in frequency and magnitude. Small flood events occur much more frequently than large, devastating events. A FEMA RAPT map illustrating flood risk to Franklin County is below.

4.8.2 Hazard Location

Figure 4.12 FEMA RAPT Tool Flood Hazard Map for Franklin County

FRANKLIN COUNTY, WA

FEMA COMMUNITY RESILIENCE INDEX STORY MAP



Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024

Table 4.20. Pond Locations in Franklin County

FRANKLIN COUNTY POND LOCATIONS			
Pond Name/Location	**Type**	**Size/Description**	**Notes**
Columbia Basin Project Ponds	Irrigation/Retention	Varies significantly, generally small to medium-sized	Part of a broader network supporting irrigation in the region, part of South Columbia Basin Irrigation District
Pasco Municipal Retention Pond	Retention	~10 acres	Used for stormwater management in Pasco
Franklin County Irrigation District Ponds	Irrigation/Retention	Sizes vary, generally small to medium	Part of the district's irrigation network.

4.8.3 Hazard Extent/Intensity

The NFIP classifies floods through the use of recurrence intervals as seen in the NFIP Flood Recurrence Intervals table below.

Figure 4.13 NFIP Flood Recurrence Intervals

Flood Recurrence Interval	Chance of occurrence during any given year
5 year	20%
10 year	10%
50 year	2%
100 year	1%
500 year	0.20%

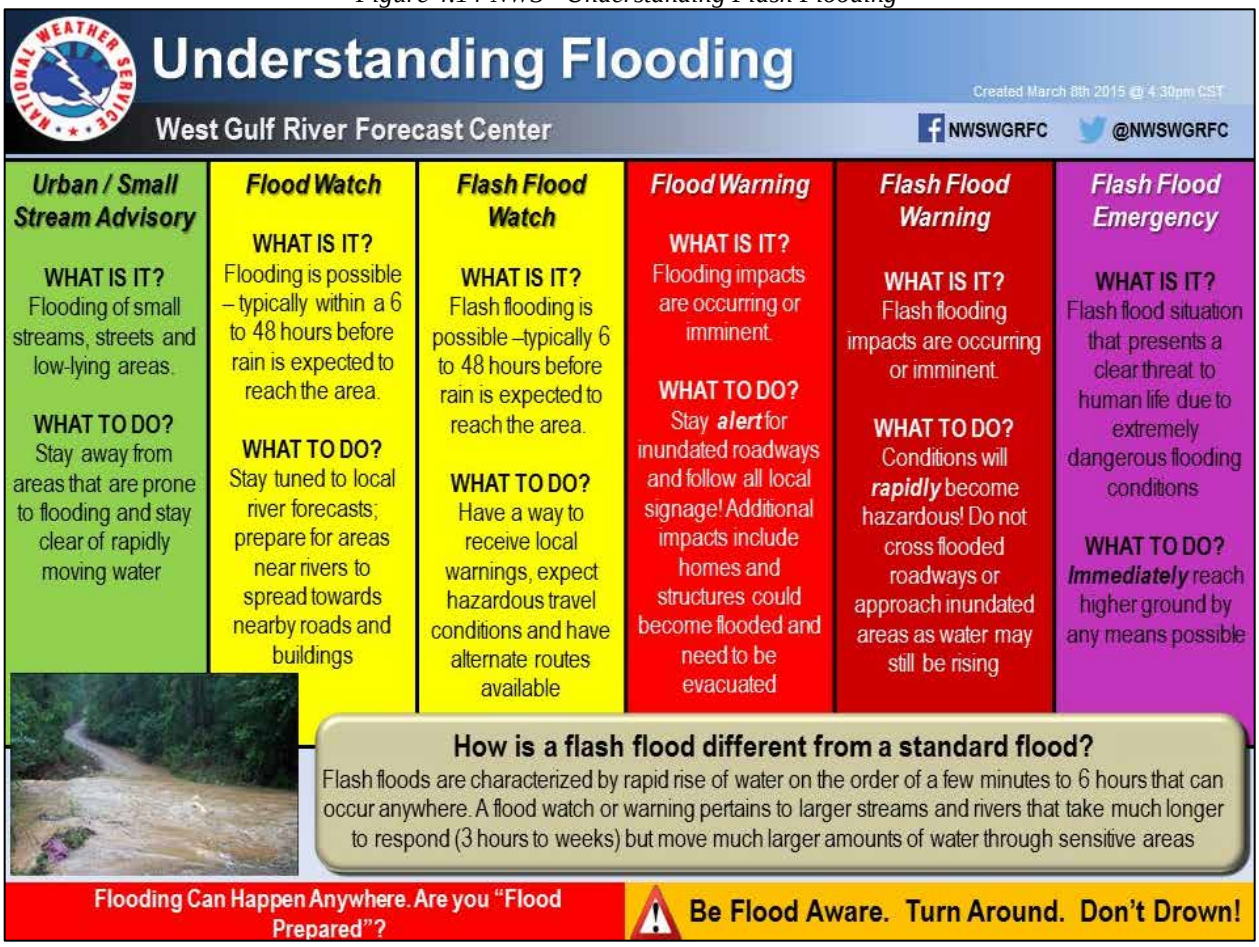
The federal standard for floodplain management under the National Flood Insurance Plan (NFIP) is the 100-year floodplain. This area is chosen using historical data such that in any given year there is a 1% chance of a “base flood (also known as 100-year flood or regulatory flood). A base flood is one that covers or exceeds the 100-year floodplain. A 500-year floodplain is an area with at least a .2% chance of flood occurrence in any given year.

When surface water runoff introduced into streams and rivers exceeds the capacity of the natural or constructed channels to accommodate the flow, water overflows the stream banks, spilling out into adjacent low-lying areas. Riverine flooding occurs as a consequence.

Riverine flooding can cause two types of floods: overbank flooding and flash floods. Overbank flooding is the “increase in volume of water within a river channel and the overflow of water from the channel onto the adjacent floodplain.

Flash flooding can occur suddenly within six hours of intense rainfall from a thunderstorm or several thunderstorms. Flash floods are common near canyons, cliffs, and creek beds, making these areas especially hazardous during rainfall.

Figure 4.14 NWS - Understanding Flash Flooding



4.9.4 Probability and Frequency

Franklin County has experienced 13 FEMA declarations associated with floods of all types between 1966-2023, which is an average of about 0.96 flood declarations every 4 years.

Riverine Flooding: According to NOAA, 49 riverine flooding incidents were recorded in Franklin County between 2019-2023 (1,826 days). This frequency averages to 0.02683 incidents daily during this timeframe and would indicate a similar trend moving forward.

Urban/Flash Flooding: According to NOAA, 187 flash flooding incidents were recorded in Franklin County between 2019-2023 (1,826 days). This frequency averages to 0.10240 incidents daily during this timeframe and would indicate a similar trend moving forward.

Urban areas (such as the City of Pasco) are typically connected to municipal sewer systems (stormwater and/or sanitary sewer). That said, it is more probable that flash flooding will occur within this area. Additionally, as development continues within Franklin County, an increase in flash flooding may occur.

4.9.5 National Flood Insurance Program (NFIP) Participation

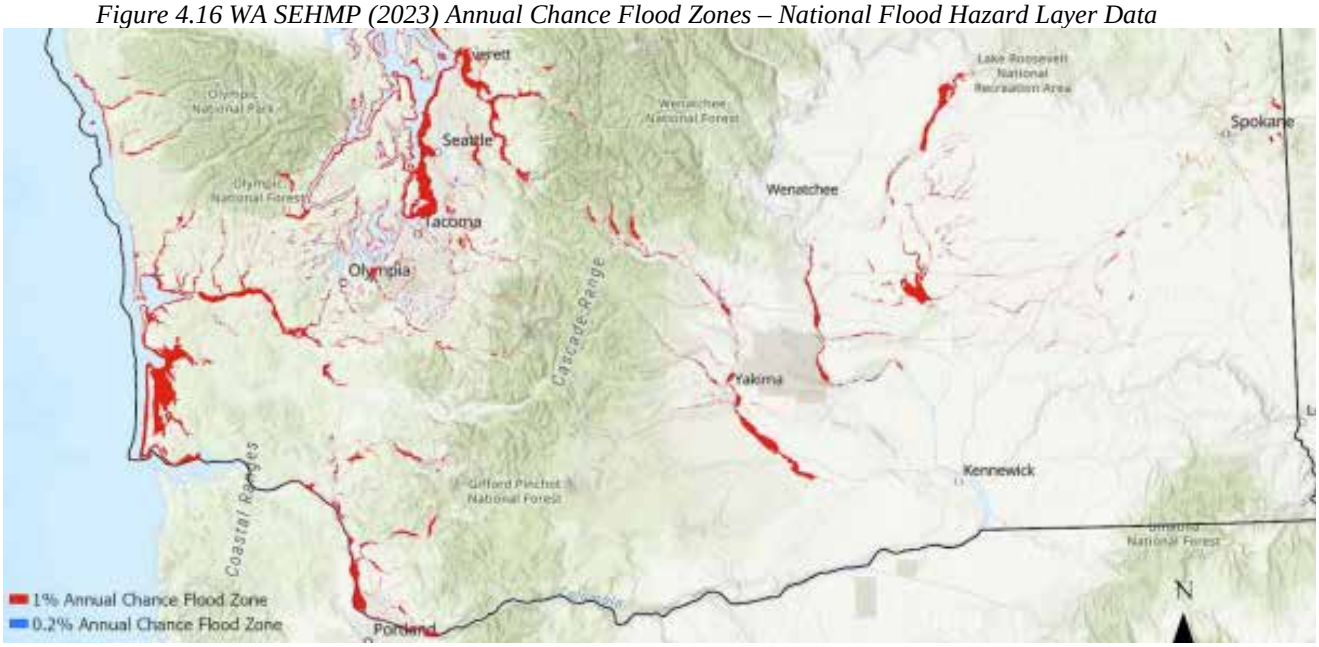
Franklin County participates in the National Flood Insurance Program. Persons buying homes in the floodway and/or the 100-year flood plain are almost always required to purchase flood insurance as a condition of financing; however, there is no requirement that all residential structures purchase flood insurance if not required by a lending institution. According to figures provided by the Washington State Floodplain Manager, there have been only a handful of flood insurance policies issued in Franklin County.

Figure 4.15 Franklin County CEMP – FEMA NFIP Insurance Report Washington (10/2021)

Jurisdiction	Policies	Total Coverage
Pasco	1	$350,000
Connell	3	$315,000
Mesa	0	-
Kahlotus	0	-
Unincorporated Franklin County	26	$6,988,600
Total	30	$7,653,600

Warning and evacuation of flood-prone areas has improved significantly in the past 25 years. River flow gauging systems operated by the United Stated Geological Survey provide the National Weather Service, the River Forecast Center, and Franklin County Government with up-to-date river levels greatly increasing the ability to predict flood events on the Columbia River. The timeliness of these predictions, as well as the familiarity of local agencies as to their roles and responsibilities, significantly improves the county's preparedness level for flood events. During a flood event, every attempt is made to ensure that flood warning information is disseminated as widely as possible. In addition, 24-hour flood information is available via telephone and the Internet to aid citizen access to flood information. This information includes river-level gauge readings that are updated on a regular basis during flood emergencies.

Figure 4.16 WA SEHMP (2023) Annual Chance Flood Zones – National Flood Hazard Layer Data



4.9.6 Past Flood Events

On February 20, 2017 a county-wide declaration of emergency (Resolution 2017-48) was made in Franklin County due to severe winter storms and related flooding (rapid snowmelt). On April 5, 2017 a Presidential Declaration was filed by the Governor of Washington for the same flooding event caused by the severe winter storms. As of April 21, 2021 the Presidential Declaration of a major disaster was made for 13 counties within Washington State, including Franklin, for January 30 – February 22, 2017 under Major DR-4309-WA and federal assistance was provided. There haven't been any flood events in Franklin County since 2021. ???

According to NOAA, no flash/urban flooding events were reported between 01/01/2019 and 12/31/2023.

4.9.7 Vulnerability and Impacts

Life Safety and Public Health: Safety and health concerns during a flood range greatly. One of the primary issues communities experience, especially during flash floods, is vehicles getting stuck and/or swept away by rapidly moving waters. These scenarios also present danger to first responders and bystanders attempting to rescue vehicle occupants.

According to FEMA:

- Six inches of water will reach the bottom of most passenger cars, causing loss of control and potential stalling.
- A foot of water will float many vehicles.
- Two feet of rushing water will carry away most vehicles, including SUVs and pickups.

According to the CDC, vehicles are recommended to stay away from standing and/or moving flood waters, the same is recommended for individuals. Flood waters can be both unsanitary and dangerous. When individuals do get stuck within flood waters, some experience heart attacks and other medical conditions while trying to free themselves from the water. Contact with flood waters can increase the possibility of contracting a communicable disease (and other medical issues due to pollutants, chemicals, waste, and an increased number of insects).

Flood waters can also saturate the ground, leading to infiltration into sanitary sewer lines. When wastewater treatment facilities are flooded, there is often nowhere for the treated sewage to be discharged or inflowing sewage to be stored. Infiltration and lack of treatment lead to overloaded sewer lines, which back up into low-lying areas and some homes. Even though diluted by flood waters, raw sewage can be a breeding ground for bacteria, such as E. coli, and other disease-causing agents. Because of this threat, tetanus shots are given to people affected by a flood.

Stagnant water is often a perfect breeding ground for insects, specifically mosquitoes, known to carry and distribute various types of diseases. Standing water also creates mold, which can be a health issue for everyone but is an extreme hazard to those with breathing issues, children, and the elderly. If forced-air systems are affected by floods and are not subsequently cleaned properly, individuals may inadvertently breathe in pollutants. If the water system loses pressure, a boil order may be issued to protect people and animals from contaminated water.

Force of flood waters can damage gas lines, which creates the potential for secondary hazards such as gas leaks and fires. This force, along with standing water, can also damage the structural integrity of buildings, which can cause injuries if issues go unnoticed or unrepaired. While fires have not resulted from flooding within Franklin County, history shows that floods can prevent fire departments and protection agencies from successfully combating and sometimes even accessing a fire, allowing it to spread.

According to FEMA, flooding can also disproportionately impact disadvantaged or challenged communities in the following ways:

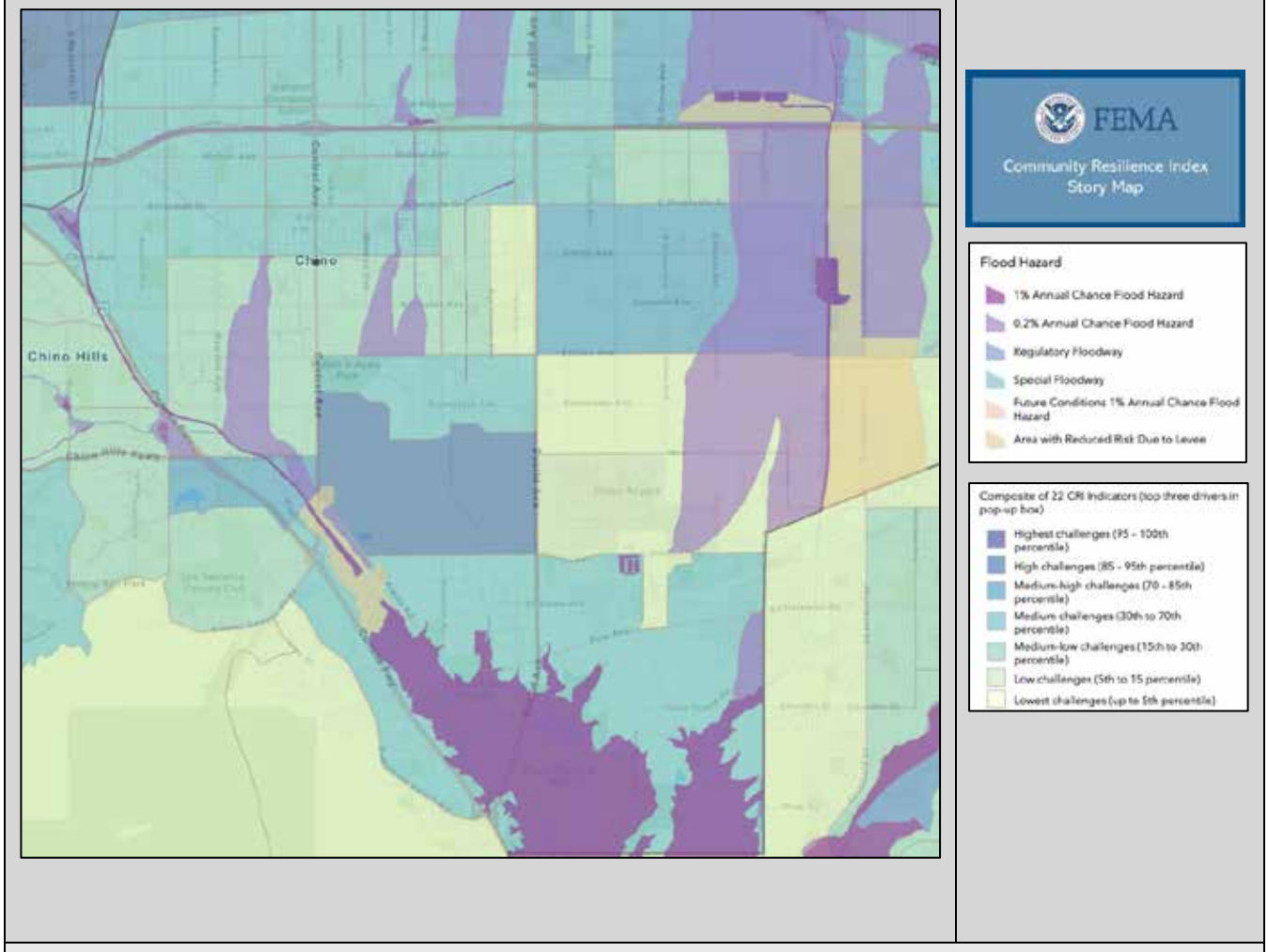
- Lack of Resilience Infrastructure: Disadvantaged communities often lack the infrastructure necessary to mitigate flood impacts, such as well-maintained levees, flood barriers, and stormwater management systems. The absence of these protective measures can make these areas more susceptible to flooding and its consequences.
- Inadequate Housing: Residents of disadvantaged communities may be more likely to live in substandard or low-lying areas prone to flooding. Such housing may lack flood-resistant construction and provide inadequate protection during floods.
- Limited Financial Resources: These communities often have fewer financial resources to prepare for, respond to, and recover from flooding. This can lead to difficulty purchasing flood insurance, repairing flood-damaged homes, or accessing emergency resources.
- Health Vulnerabilities: Residents of disadvantaged communities may have higher rates of pre-existing health conditions or limited access to healthcare services. Flooding can exacerbate these health vulnerabilities, especially if contaminated floodwater spreads diseases or disrupts medical care.
- Transportation Challenges: Limited access to reliable transportation can hinder evacuation efforts during flooding events, placing residents in these areas at greater risk. Public transportation options may be insufficient or inaccessible, leaving residents stranded.
- Information Access: Disadvantaged communities may have limited access to timely, accurate information about flood risks and preparedness measures. This lack of information can lead to delayed or inadequate responses to flood warnings.
- Environmental Justice Concerns: Flooding can lead to the release of hazardous materials, contaminating soil and water. Disadvantaged communities are likelier to be located near industrial sites or toxic facilities, exacerbating environmental justice concerns.
- Community Disruption: Flooding can displace residents from their homes, disrupting communities and increasing social and economic hardships. The recovery and rebuilding process may take longer in these areas due to limited resources.

The FEMA Community Resilience Challenges Index (CRCI) provides a relative assessment of a community's potential resilience and gives insights into population and community characteristics from which to build emergency operations plans and targeted outreach strategies. The following figure illustrates the impact of flooding on Franklin County.

Figure 4.16 Flooding Impacts to Franklin County

FRANKLIN COUNTY, WA

FEMA COMMUNITY RESILIENCE INDEX STORY MAP



Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024

Property Damage and Critical Infrastructure: A HAZUS analysis was conducted for a 100-year and 500-year flood to examine the exposure and damages of buildings to flooding.

100-year Flood Analysis:
HAZUS estimates that about 176 buildings will be at least moderately damaged. This is over 63% of the total number of buildings in the scenario. There are an estimated 25 buildings that will be completely destroyed.

Table 4.21. HAZUS 100-year Expected Building Damage by Occupancy

Expected Building Damage by Occupancy												
Damage Level	**1-10**		**11-20**		**21-30**		**31-40**		**41-50**		**>50**	
Occupancy	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	12	39	10	32	4	13	2	6	0	0	3	10
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	2	100	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	47	23	81	40	27	13	16	8	9	4	22	11
Total	**59**		**91**		**33**		**18**		**9**		**25**	

Table 4.22. HAZUS 100-year Expected Damage to Essential Facilities

Expected Damage to # of Essential Facilities				
	Total	**At Least Moderate**	**At Least Substantial**	**Loss of Use**
Emergency Operations Centers	2	0	0	0
Fire Stations	13	0	1	1
Hospitals	1	0	0	0
Police Stations	7	1	0	1
Schools	42	1	0	1

Table 4.23. HAZUS 100-year Building-Related Economic Loss Estimates

Building-Related Economic Loss Estimates (Millions of Dollars)						
	Area	**Residential**	**Commercial**	**Industrial**	**Others**	**Total**
Building Loss	Building	44.36	19.28	12.14	6.06	81.83
	Content	28.52	50.95	41.07	23.52	144.06
	Inventory	0.00	8.11	10.18	0.91	19.20
	Subtotal	**72.88**	**78.33**	**63.39**	**30.49**	**245.09**
Business Interruption	Income	0.75	50.25	1.61	13.87	66.48
	Relocation	10.35	15.92	1.76	10.67	38.69
	Rental Income	6.36	11.42	0.45	2.25	20.49
	Wage	1.76	48.37	2.28	123.83	176.24
	Subtotal	**19.22**	**125.96**	**6.10**	**150.62**	**301.89**
All	**Total**	**92.10**	**204.29**	**69.49**	**181.10**	**546.98**

The total economic loss estimated for the flood is $546.98 million, representing 23.50% of the total replacement value of the scenario buildings.

The total building-related losses were $245.09 million. 55% of the estimated losses were related to business interruption in the region. The residential occupancies made up 16.84% of the total loss.

HAZUS estimates the number of households expected to be displaced due to the flood and the associated potential evacuation. HAZUS also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates that 774 households (2,323

people) will be displaced due to the flood. Displacement includes households evacuated from within or very near the inundated area. Of these, 150 people are expected to seek temporary shelter in public shelters.

500-year Flood Analysis:
HAZUS estimates that about 310 buildings will be at least moderately damaged. This is over 55% of the total number of buildings in the scenario.

Table 4.24. HAZUS 500-year Expected Building Damage by Occupancy

Expected Building Damage by Occupancy												
Damage Level	**1-10**		**11-20**		**21-30**		**31-40**		**41-50**		**50>**	
Occupancy	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
Agriculture	0	0	0	0	0	0	0	0	1	50	1	50
Commercial	12	29	14	34	7	17	3	7	1	2	4	10
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	2	67	0	0	1	33
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	79	22	140	39	43	12	33	9	20	6	40	11
Total	**91**		**154**		**50**		**38**		**22**		**46**	

Table 4.25. HAZUS 500-year Expected Damage to Essential Facilities

Expected Damage to # of Essential Facilities				
	Total	**At Least Moderate**	**At Least Substantial**	**Loss of Use**
Emergency Operations Centers	2	0	0	0
Fire Stations	13	0	1	1
Hospitals	1	0	0	0
Police Stations	7	1	0	1
Schools	42	2	0	2

Table 4.26. HAZUS 500-year Building-Related Economic Loss Estimates

Building-Related Economic Loss Estimates (Millions of Dollars)						
	Area	**Residential**	**Commercial**	**Industrial**	**Others**	**Total**
Building Loss	Building	66.78	29.64	15.45	8.77	120.64
	Content	42.12	75.32	51.93	38.34	207.71
	Inventory	0.00	13.40	12.56	1.23	27.19
	Subtotal	**108.90**	**118.36**	**79.94**	**48.35**	**355.54**
Business Interruption	Income	0.81	70.45	1.84	16.26	89.36
	Relocation	17.06	22.97	2.02	12.14	54.18
	Rental Income	10.19	16.60	0.52	2.45	29.77
	Wage	1.92	68.38	2.66	138.77	211.73
	Subtotal	**29.99**	**178.40**	**7.03**	**169.62**	**385.04**
All	**Total**	**138.88**	**296.75**	**86.97**	**217.97**	**740.58**

The total economic loss estimated for the flood is $740.58 million, representing 31.81% of the full replacement value of the scenario buildings.

The total building-related losses were $355.54 million. 52% of the estimated losses were related to business interruption in the region. The residential occupancies made up 18.75% of the total loss.

HAZUS estimates the number of households expected to be displaced due to a flood and the associated potential evacuation. HAZUS also estimates the number of people requiring accommodations in temporary public shelters. The model estimates that 1,222 households (3,666 people) will be displaced due to a flood. Displacement includes households evacuated from within or very near the inundated area. Of these, 245 people are expected to seek temporary shelter in public shelters.

Repetitive Loss Properties*:* There are several different definitions of a "repetitive loss property." The current FEMA definition of a repetitive loss property is: needs to be filled in! There were xx in Franklin County in xx time period.

Repetitive Loss Structure: An NFIP-insured structure that has had at least two paid flood losses of more than $1,000 each in any 10-year period since 1978. There were xx in Franklin County in xx time period.

Additionally, the definitions of a severe repetitive loss building, and severe repetitive loss property are:

Severe Repetitive Loss Building: Any building that:

1. Is covered under a Standard Flood Insurance Policy made available under this title.
2. Has incurred flood damage for which:

a. Four or more separate claim payments have been made under a Standard Flood Insurance Policy issued pursuant to this title, with the amount of each such claim exceeding $5,000 and with the cumulative amount of such claims payments exceeding $20,000; or
b. At least two separate claims payments have been made under a Standard Flood Insurance Policy, with the cumulative amount of such claim payments exceeding the fair market value of the insured building on the day before each loss.

Severe Repetitive Loss Property: Either a severe repetitive loss building or the contents within a severe repetitive loss building, or both. There were xx in Franklin County in x time period.

FEMA encourages the mitigation of severe repetitive loss and repetitive loss properties through the distribution of mitigation grants, the NFIP's Increased Cost of the Compliance program, and the Community Rating System (CRS) program. Depending on the number of repetitive loss properties within a CRS community, the community may be required to develop a specific plan to determine the causes of the repetitive claims and ways to mitigate the causes of the repetitive claims. At a minimum, each CRS community must conduct an annual outreach project to these properties advising the owners of their location in the regulatory floodplain, property protection measures, and any funding options for property protection and flood insurance.

FEMA offers several programs to support communities in identifying and addressing the root causes of their repetitive losses.

4.9.8 Property Damage and Critical Infrastructure

Flooding can also disproportionately damage property and critical infrastructure within disadvantaged or challenged communities. Here are some of the ways in which flooding can affect these communities more severely:

- Housing Vulnerability: Disadvantaged communities often have a higher percentage of residents living in substandard or poorly constructed housing. These homes are more susceptible to flood damage, leading to significant property losses and displacement of residents.
- Limited Insurance Coverage: Residents in disadvantaged communities may be less likely to have flood insurance, either due to affordability issues or lack of awareness. This leaves property owners financially vulnerable when flooding occurs, resulting in a heavier burden of property damage.
- Inadequate Infrastructure: Critical infrastructure, such as roads, bridges, sewage systems, and utilities, may be subpar or outdated in disadvantaged areas. Flooding can damage or disrupt these systems, impeding emergency response efforts and hindering recovery.
- Healthcare Facilities: These communities may have limited access to healthcare facilities and services. Flooding can damage or inundate healthcare facilities, making it challenging for residents to access medical care during and after a flood event.
- Schools and Education: Flood damage to schools can disrupt education for children in these communities. It may take longer for schools to reopen, affecting students' academic progress and overall well-being.
- Economic Impact: Flooding can devastate local economies, including small businesses, which are often the backbone of disadvantaged communities. Loss of income and job displacement can have long-lasting economic consequences.
- Transportation Disruptions: Inadequate transportation infrastructure can be overwhelmed by floodwaters, making it difficult for residents to evacuate or access emergency services. This can also impede the delivery of essential supplies and aid.
- Environmental Justice: Disadvantaged communities may be more likely to be located near industrial or hazardous sites, which can release pollutants during flooding events, further exacerbating environmental justice concerns.

The following figure illustrates flooding impact to critical infrastructure in Franklin County.

Figure 4.17. Flooding Impacts to Critical Infrastructure in Franklin County

FRANKLIN COUNTY, WA

FEMA COMMUNITY RESILIENCE INDEX STORY MAP

Source: FEMA Resilience Analysis and Planning Tool (RAPT) 2024

4.9.9 Economy

Flooding can have several different impacts on the Franklin County economy. One potential impact is damage to university businesses and infrastructure. Flooding can damage or destroy buildings, equipment, and inventory, disrupting operations and resulting in significant financial losses for businesses. Infrastructure such as roads, bridges, and utilities can also be damaged, which can impede transportation and communication networks and further disrupt the operations of businesses and other economic activity.

Another potential economic impact includes local area property values and insurance rates. Properties located in flood-prone areas may decline in value, and insurance rates may increase as the risk of flooding increases. This can make it more difficult for homeowners and businesses to secure loans and other forms of financing.

4.9.10 Changes in Development and Impact of Future Development

The risks associated with flooding are directly related to the population and infrastructure located within the boundaries of the riverine floodplains. Development should be limited in these potential impact areas. Infrastructure improvements should also consider potential impacts. Existing floodplain and construction regulations are in place to help reduce the impacts of flooding. Stormwater infrastructure should also be looked at to determine the impact of flash flooding. This infrastructure does not always take into effect the growth of a community. Increasing impervious surfaces (e.g., concrete parking lots) may cause increased stormwater runoff during short rain events.

4.9.11 Effects of Climate Change on Severity of Impacts

According to NOAA, climate change is impacting the severity and frequency of flooding events, including higher temperatures, which lead to more intense and frequent heavy rainfall, and rising sea levels, which exacerbate coastal flooding. Warmer temperatures also increase the atmosphere's capacity to hold moisture, resulting in more substantial and intense rainfall events.

This increase in heavy precipitation can overwhelm drainage systems and lead to flash flooding. Additionally, the increase in sea levels, driven by the melting of ice caps and thermal expansion of seawater, means that coastal areas are more prone to flooding during storms and high tide events. This combination of factors creates a greater risk of severe flooding, both inland and along the coasts.

Table 4.27. 25-Year Precipitation Projections for Franklin County

25-YEAR PRECIPITATION PROJECTIONS FOR FRANKLIN COUNTY, WA
HIGHER EMISSIONS (RCP8.5)
Franklin County is expected to experience a **32% increase** in heavy precipitation within 25 years.
By 2049, Franklin County is expected to have a **increase** (from precipitation.
LOWER EMISSIONS (RCP4.5)
Franklin County is expected to experience a 13**% increase** in heavy precipitation within 25 years.
By 2049, Franklin County is expected to have a **increase** (from precipitation.
Source: Neighborhoods at Risk (2024)

Table 4.28. Future Climate Indicators for Franklin County

FUTURE CLIMATE INDICATORS FOR FRANKLIN COUNTY, WA							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation:							
Annual Average Total Precipitation	**9”**	**9”**	**9”**	**10”**	**10”**	**10”**	**10”**
	8-9	8-11	9-10	9-11	9-11	9-11	9-11
Days Per Year With Precipitation (Wet Days)	**108 days**	**108 days**	**108 days**	**107 days**	**109 days**	**107 days**	**106 days**
	104-111	102-116	102-120	102-116	98-127	98-114	97-118
Maximum Period of Consecutive Wet Days	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**
	8-11	7-10	8-10	7-10	8-11	7-10	8-11
Annual Days With:							
Annual Days With Total Precipitation > 1 inch	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 2 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 3 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days That Exceed 99th Percentile Precipitation	**1 day**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**
	1-2	1-2	1-2	2-2	2-2	2-2	2-3
*Days With Maximum Temperature Below 32*F*	**17 days**	**13 days**	**11 days**	**10 days**	**9 days**	**8 days**	**5 days**
	14-20	8-17	6-15	5-16	4-12	3-12	2-10
Source: Climate Mapping for Resilience and Adaptation (2024)							

4.9.12 FEMA NRI Expected Annual Loss Estimates

Table 4.29. Franklin County Expected Annual Loss Table

FRANKLIN COUNTY, WA FEMA NRI EXPECTED ANNUAL LOSS TABLE – RIVERINE FLOODING							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total Value**	**Expected Annual Loss Score**	**Expected Annual Loss Rating**
0.2 events per year	0.00	$6,511	$59,666	$2,571	$68,748	21.2	Very Low

Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.*
Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.*
Expected Annual Loss *scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*

Source: FEMA National Risk Index (2024)

4.9.13 FEMA Hazard-Specific Risk Index Table

Table 4.30. Franklin County FEMA Hazard Specific Risk Index Table

FRANKLIN COUNTY, WA FEMA HAZARD SPECIFIC RATINGS - RIVERINE FLOODING		
Risk Index Score	**Social Vulnerability Rating**	**Community Resilience Rating**
22.2	Very High	Relatively Low

Risk Index Scores: *are a quantitative rating calculated using data for only a single hazard type. Risk Index Scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value.*
Social Vulnerability Ratings: *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the Centers for Disease Control and Prevention (CDC).*
Community Resilience Ratings: *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Community Resilience is measured using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).*

Source: FEMA National Risk Index (2024)

4.9.14 FEMA NRI Exposure Value Table

Table 4.31. Franklin County FEMA NRI Exposure Value Table

FRANKLIN COUNTY, WA FEMA EXPOSURE VALUE TABLE - RIVERINE FLOODING					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Riverine Flooding	$4,730,080,857	$151,519,310	$4,568,446,796	393.83	$10,114,751
Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in Hazus 6.0, which provides 2022 valuations of the 2020 Census.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in Hazus 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 millions of economic loss (2022 dollars).* ***Agriculture:*** *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*					
Source: FEMA National Risk Index (2024)					

4.10 High Hazard Dams/Levees and Canals

4.10.1 Hazard Description

Dam: A barrier constructed across a watercourse for storage, control, or diversion of water. Dams typically are constructed of earth, rock, concrete, or mine tailings.

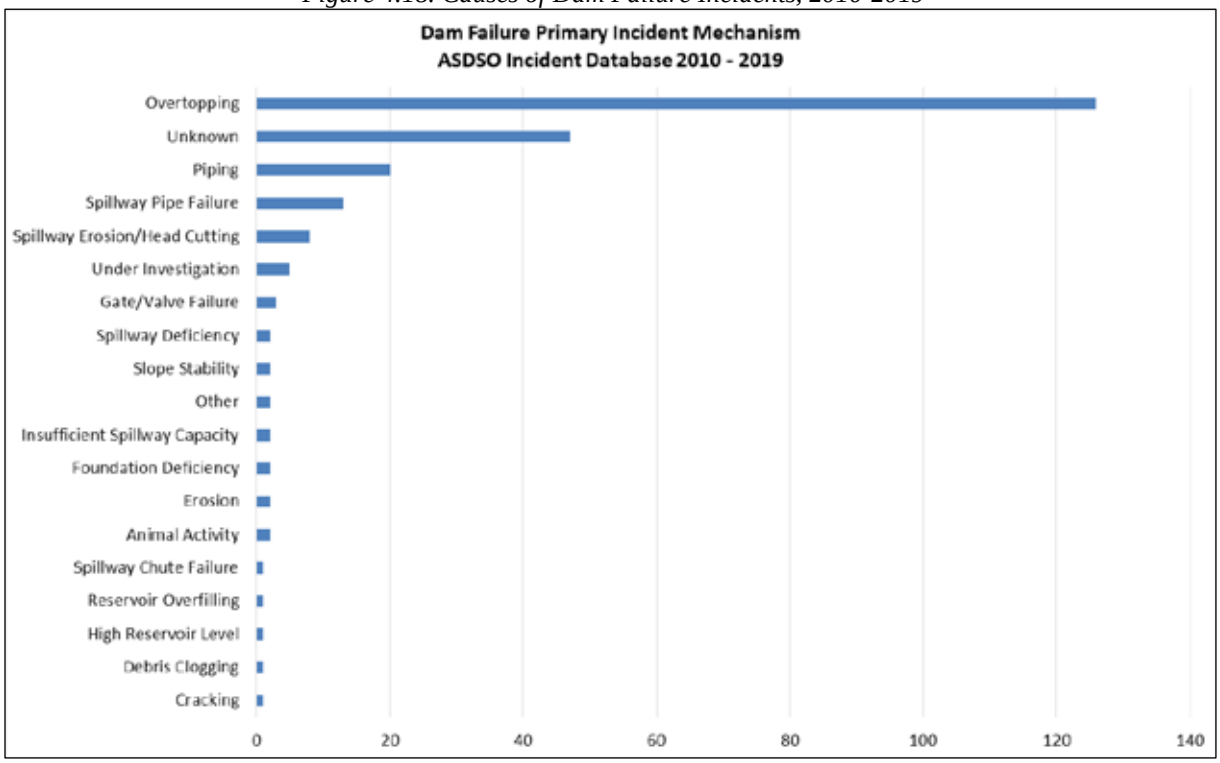
Dam Failure: Failure characterized by the sudden rapid and uncontrolled release of impounded water or liquid-borne solids. It is recognized that there are lesser degrees of failure and that any malfunction or abnormality outside the design assumptions and parameters that adversely affect a dam's primary function of impounding water could be considered a failure.

The Causes of Dam Failure: Dam failures are most likely to happen for one of five reasons:

1. Overtopping caused by water spilling over the top of a dam. Overtopping of a dam is often a precursor of dam failure. National statistics show that overtopping due to inadequate spillway design, debris blockage of spillways, or settlement of the dam crest account for approximately 34% of all U.S. dam failures.
2. Foundation defects, including settlement and slope instability, cause about 30% of all dam failures.
3. Cracking caused by movements like the natural settling of a dam.
4. Inadequate maintenance and upkeep.
5. Piping is when seepage through a dam is not properly filtered, and soil particles continue to progress, and form sink holes in the dam. Another 20% of U.S. dam failures have been caused by piping (internal erosion caused by seepage). Seepage often occurs around hydraulic structures, such as pipes and spillways; through animal burrows; around roots of

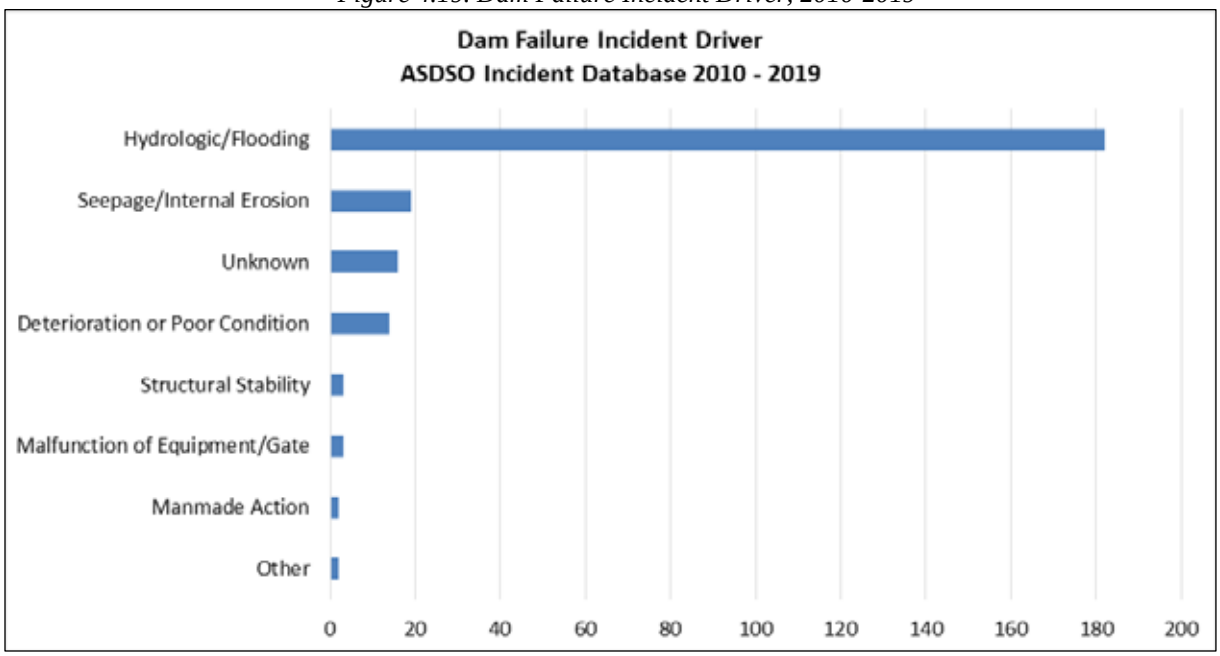
woody vegetation; and through cracks in dams, dam appurtenances, and dam foundations.

*Figure 4.18. Causes of Dam Failure Incidents, 2010-2019***



*** From the ASDSO Dam Incident Database, dam failure incidents for the years 2010 through 2019. Incident data mostly obtained from the state dam safety programs and/or media reports. The incident data is not inclusive of all dam safety incidents.*

Figure 4.19. Dam Failure Incident Driver, 2010-2019



Levees: A man-made structure, typically an earthen embankment, designed and constructed according to sound engineering practices to contain, control, or divert the flow of water in order to provide protection from temporary flooding. Levees are often built alongside rivers and are used to prevent high water levels from flooding adjacent land. The primary function of a levee is to provide flood risk reduction; however, they may also serve other purposes such as water conservation, irrigation, or to support a roadway or railway.

Levees can vary in size and complexity, from simple mounds of earth to large-scale systems incorporating elements such as floodwalls, gates, and pumps. The effectiveness of a levee can be influenced by its design, construction, and maintenance, as well as by natural factors like river flow and sedimentation.

Causes of Levee Failure: The definition of a "levee failure" according to the National Levee Database (NLD) generally encompasses the following:

1. **Breach:** The most severe form of failure, a breach occurs when a levee fails completely, resulting in an opening that allows water to flow through uncontrolled. This can lead to significant flooding and damage to areas that the levee was intended to protect.
2. **Overtopping:** Occurs when water levels rise above the height of the levee, leading to spillover on the protected side. While technically an overtopping may not be a structural failure of the levee itself, it represents a failure to contain the water as designed.
3. **Structural Damage:** This includes any form of damage that compromises the integrity of the levee, such as erosion, seepage, or structural weakening. These issues may not immediately lead to a breach or overtopping but indicate that the levee is at risk of failing.
4. **Inadequate Performance:** This refers to situations where the levee does not perform as designed, even if there's no visible structural damage. This could be due to design flaws or unforeseen environmental conditions.

Canal Breach: According to NOAA, a canal breach is defined as a failure in the structure of a canal, which leads to an uncontrolled release of water from the canal. This failure can be caused by structural weaknesses, overtopping, or other factors that compromise the integrity of the canal's walls or embankments, resulting in potential flooding and damage to surrounding areas.

4.10.2 Hazard Location

4.10.2.1 High Hazard Dams

The following image and table illustrate the locations and details of all significant and high-hazard dams located within Franklin County, according to the National Inventory of Dams. There have been no recorded high-hazard dam failures or damaging dam break events impacting Franklin County, Washington within the past 20 years.

Figure 4.20. High-Hazard Dams in Franklin County

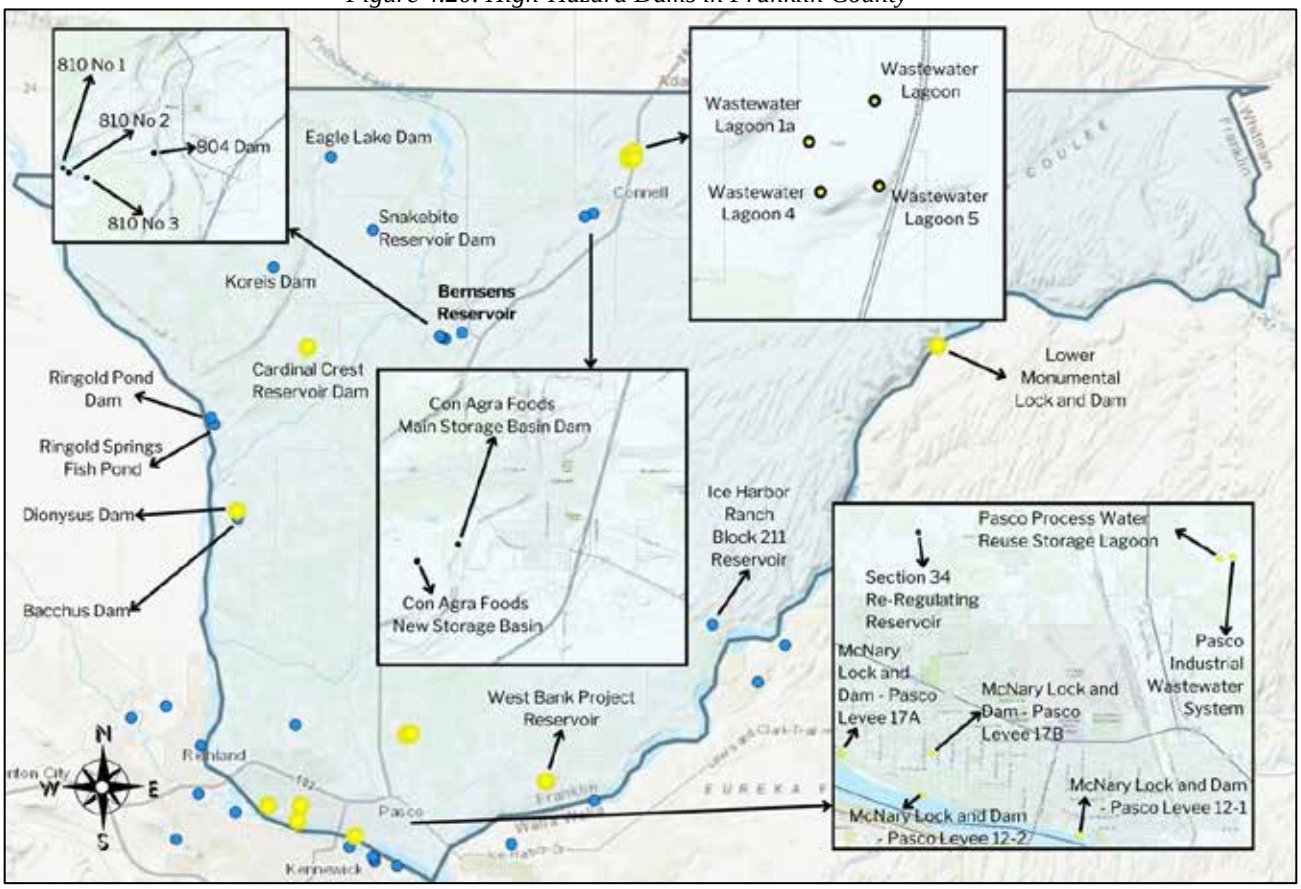


Table 4.32. List of Dams in Franklin County, Washington

Name	National ID#	Location	Owner	Year Built	Primary Purpose	Height (feet)	Storage Capacity (acre-feet)	Max Discharge (cubic feet/sec)
Eagle Lake Dam	WA00537	Franklin, Washington	Black Dog Lakes Ranch LLC	1955	Irrigation	8	7,933	60
Snakebite Reservoir Dam	WA00389	Franklin, Washington	Sugar Ranch, LLC	1976	Irrigation, Recreation	56	56	7
Koreis Dam	WA00484	Franklin, Washington	Dennis Koreis	1982	Irrigation	8	82	2
Cardinal Crest Reservoir Dam	WA01946	Franklin, Washington	Cardinal Crest Farms LLC	1990	Irrigation	14	18	-
Ringold Pond Dam	WA00219	Franklin, Washington	WA DFW	1962	Fish and Wildlife Pond	10	60	-
Ringold Springs Fishpond	WA00252	Franklin, Washington	WA DFW	1961	Fish and Wildlife Pond	12	55	-
Dionysus Dam	WA01985	Franklin, Washington	North Columbia River Road Pasco WA, LLC	1973	Irrigation	17.7	53	-
Bacchus Dam	WA01986	Franklin, Washington	North Columbia River Road Pasco WA, LLC	1973	Irrigation	22	80	-
Section 34 Re Regulating Reservoir	WA01896	Franklin, Washington	Columbia Water Farms LLC	2005	Irrigation	17	50	30
Pasco Process Water Reuse Storage Lagoon	WA00661	Franklin, Washington	Pasco City Public Works Dept	1997	Other	18	352	18
Pasco Industrial Wastewater System	WA00627	Franklin, Washington	Pasco City	1995	Irrigation, Other	15	168	12
West Bank Project Reservoir	WA00684	Franklin, Washington	Borton Fruit Co.	2003	Irrigation	34.2	171	215

Ice Harbor Ranch Block 211 Reservoir	WA00737	Franklin, Washington	Stemilt Holdings, LLC	2013	Water Supply	24.5	103	-
Lower Monumental Lock and Dam	WA00270	Franklin, Washington	USACE - Walla Walla District	1969	Navigation, Fish and Wildlife Pond, Recreation, Hydroelectric	226	432,000	850,000
Con Agra Foods Main Storage Basin Dam	WA00023	Franklin, Washington	Lamb Weston Inc	1970	Other	23	123	160
Con Agra Foods New Storage Basin	WA00699	Franklin, Washington	Lamb Weston Inc	2006	Other	13	150	15
Connell Wastewater Lagoon	WA01821	Franklin, Washington	Connell City	2000	Other	20.2	322	-
Connell Wastewater Lagoon 1a	WA01913	Franklin, Washington	Connell City	2009	Other	22.5	17	-
Connell Wastewater Lagoon 4	WA00710	Franklin, Washington	Connell City	2009	Other	10	107	-
Connell Wastewater Lagoon 5	WA00711	Franklin, Washington	Connell City	2009	Other	8	141	-
Source: National Inventory of Dams (2024)								

4.10.2.2 Levees

Table 4.33. List of Levees in Franklin County, Washington

Name	National ID#	Location	Owner	Year Built	Primary Purpose	Avg Height (feet)	Levee Length
Esquatzel Coulee – Main (Left Bank)	6005000540	Connell, Franklin County, Washington	USACE - Walla Walla District	1966	Flood Risk Reduction	-	2.272 miles
Esquatzel Coulee – Main (RB Lower)	6005000547	Connell, Franklin County, Washington	USACE - Walla Walla District	1966	Flood Risk Reduction	-	0.775 miles
Esquatzel Coulee – Main (Right Bank)	6005000555	Connell, Franklin County, Washington	USACE - Walla Walla District	1966	Flood Risk Reduction	-	0.43 miles
McNary Lock and Dam - Pasco Levee 17A	OR00616S009	Franklin, Oregon	USACE - Walla Walla District	1952	Flood Risk Reduction	-	0.164 miles
McNary Lock and Dam - Pasco Levee 17B	OR00616S005	Franklin, Oregon	USACE - Walla Walla District	1952	Flood Risk Reduction	-	0.396 miles
McNary Lock and Dam - Pasco Levee 12-2	OR00616S008	Franklin, Oregon	USACE - Walla Walla District	1952	Flood Risk Reduction	-	1.403 miles
McNary Lock and Dam - Pasco Levee 12-1	OR00616S007	Franklin, Oregon	USACE - Walla Walla District	1952	Flood Risk Reduction	-	2.702 miles

Source: National Inventory of Dams (2024)

Esquatzel Coulee – Main (Left Bank): According to the National Levee Database, the Esquatzel Coulee 1 (Left Bank) Levee segment was constructed in 1965 to provide flood risk reduction to the City of Connell, in Franklin County, Washington. It extends from 1.3 miles upstream of the City, to within 400 feet of State Route 260, for a total length of approximately 2.4 miles. The levee embankment is constructed of local silty fine sand and is 0 to 4 feet in height with 2H:1V slideslopes and a crown width of approximately 12 feet. Only portions of the alignment were re-vetted with 1.5 ft thick riprap armor stone. Past channel maintenance activities have buried significant portions of the revetment.

Esquatzel Coulee – Main (RB Lower): According to the National Levee Database, the Esquatzel Coulee 1 (Right Bank, Lower) Levee segment was constructed in 1965 to provide flood risk reduction to the City of Connell, in Franklin County, Washington. Levee extends downstream from the Clark Street Bridge, approximately 3,400 feet, to a return that ties into high ground that is about 1,000 feet upstream of State Route 260. Many areas along the landside of the levee appear to have been backfilled since construction, which leaves the appearance of bank protection. The levee embankment was constructed of local silty fine sand and is 0 to 3 feet in height with 2H:1V

slideslopes and a crown width of approximately 12 feet. The alignment was revetted with 1.5 ft thick riprap armor stone.

Esquatzel Coulee – Main (Right Bank): According to the National Levee Database, the Esquatzel Coulee Side Drainage Levee segment was constructed in 1965 to provide flood risk reduction to the City of Connell, in Franklin County, Washington. The levee begins where it ties to high ground approximately 425 feet north of Nordheim Road and 300 feet east of State Route 395. It extends south, ties into the Road, and continues south approximately 1,610 feet to an access road. It is on the right bank of an excavated channel that does not have a left bank embankment. Flow in the channel drain south under Nordheim Road and the access road through triplet culverts constructed without headwalls. The levee was designed to divert water from the area to the east downslope to the south, where it can infiltrate. The embankment was constructed of local silty fine sand and is 0 to 5 feet in height with 2H:1V side slopes and a crown width of at least 12 feet. The levee was not riveted.

Table 4.34. National Levee Database Information Table

NATIONAL LEVEE DATABASE INFORMATION TABLE								
Name	**People**	**Buildings**	**Property Value**	**Acres of Farmland**	**Endangered Species**	**Critical Structures**	**Communities**	**Tribal Area? (Y/N)**
The Esquatzel Coulee 1 (Left Bank)	289	88	$40 Million	2.4 acres	None	1	2	No
The Esquatzel Coulee 1 (Right Bank, Lower)	9	3	$200 Thousand	2.2 acres	None	0	1	No
The Esquatzel Coulee Side Drainage Levee	18	0	$380 Thousand	None	None	None	2	Non
Source: National Levee Database (2024)								

4.10.3 Hazard Extent/Intensity

Dams: Existing dam classification systems are numerous and vary within and between both federal and state agencies. Although differences in classification systems exist, they share a common thread: each system attempts to classify dams according to the potential impacts from a dam failure or mis-operation, should it occur. The hazard potential classification does not reflect in any way on the current condition of the dam (e.g., safety, structural integrity, flood routing capacity).

State and private classifications are the two primary dam hazard potential classification systems utilized in Franklin County. Washington dam classifications are defined under Chapter 173-175 of the Washington Administrative Code (WAC), and used to permit construction, operation, and maintenance of dams by the Washington State Department of Ecology's Dam Safety Office (DSO). Federal dam safety hazard classifications can be found in FEMA's *Federal Guidelines for Dam Safety Hazard Potential Classification System for Dams* publication.

The State of Washington uses FEMA's categorization of dams and FEMA categorizes dams "according to the degree of adverse incremental consequences of a failure or mis-operation of a dam. The National Inventory of Dams uses the federal classification system. Dams are federally categorized into Low, Significant and High Hazard Potential based on the probable loss of human life and the impacts on economic, environmental, and lifeline interests. Improbable loss of life exists where persons are only temporarily in the potential inundation area.

1. **Low Hazard Potential**: dams where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.
2. **Significant Hazard Potential:** dams where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns.
3. **High Hazard Potential**: dams where failure or mis-operation will probably cause loss of human life.

Levees: The Levee Safety Action Classification (LSAC) is one of the many tools used to better inform stakeholders and residents of the residual risk in their communities.

The LSAC is neither a levee rating or grade, it is a classification system designed to take into account the probability of the levees being loaded (Hazard), existing condition of the levee, the current and future maintenance of the levee (Performance), and the Consequences if a levee were to fail or be overwhelmed. The following table illustrates the Levee Safety Action Classification Table.

Figure 4.21. Levee Safety Classification

USACE LEVEE SAFETY ACTION CLASSIFICATION TABLE*

RISK	ACTIONS FOR LEVEE SYSTEMS AND LEVEED AREAS IN THIS CLASS (ADAPT ACTIONS TO SPECIFIC LEVEE SYSTEM CONDITIONS.)	RISK CHARACTERISTICS OF THIS CLASS
VERY HIGH (1)	Based on risk drivers, take immediate action to implement interim risk reduction measures. Increase frequency of levee monitoring, communicate risk characteristics to the community within an expedited timeframe; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning systems and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions as very high priority.	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in very high risk.
HIGH (2)	Based on risk drivers, implement interim risk reduction measures. Increase frequency of levee monitoring; communicate risk characteristics to the community within an expedited timeframe; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions as high priority.	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in high risk.
MODERATE (3)	Based on risk drivers, implement interim risk reduction measures as appropriate. Verify risk information is current and implement routine monitoring program; assure O&M is up to date; communicate risk characteristics to the community in a timely manner; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions as a priority.	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in moderate risk.
LOW (4)	Verify risk information is current and implement routine monitoring program; assure O&M is up to date; communicate risk characteristics to the community as appropriate; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions to further reduce risk to as low as practicable.	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in low risk.
VERY LOW (5)	Continue to implement routine levee monitoring program, including operation and maintenance, inspections, and monitoring of risk. Communicate risk characteristics to the community as appropriate; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and recommend purchase of flood insurance.	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in very low risk.
NO VERDICT	Not enough information is available to assign an LSAC.	

*LEVEE RISK IS THE RISK THAT EXISTS DUE TO THE PRESENCE OF THE LEVEE SYSTEM, AND THIS IS THE RISK USED TO INFORM THE DECISION ON THE LSAC ASSIGNMENT. THE INFORMATION PRESENTED IN THIS TABLE DOES NOT REFLECT THE OVERTOPPING WITHOUT BREACH RISK ASSOCIATED WITH THE PRESENCE OR OPERATION OF THE LEVEE SYSTEM.

4.10.4 Probability and Frequency

Dams: A dam can fail at any time, given the right circumstances. As a dam ages, the likelihood of failure increases as undesirable woody vegetation on the embankment, deteriorated concrete, inoperable gates, and corroded outlet pipes become problems. Since dam failures are often exacerbated by flooding, the probability of dam failures can be associated with projected flood frequencies. The probability of future dam failure for regulated dams can be reduced by proactive preventative actions in compliance with existing dam safety programs.

Levees: Determining levee failure probability depends on the condition and level of protection that levees provide. FEMA and the U.S. Army Corps of Engineers are working together to make sure that flood hazard maps clearly reflect the flood protection capabilities of levees, and that the maps accurately represent the flood risks posed to areas situated behind them. Levee owners—usually states, communities, or in some cases private individuals or organizations—are responsible for ensuring that the levees they own are maintained according to their design.

Canals: the probability and frequency of canal breaches are influenced by several factors, including the age and condition of the canal infrastructure, maintenance practices, and the surrounding environmental conditions. Older canals or those with insufficient maintenance are more prone to breaches due to structural deterioration. Additionally, extreme weather events, such as heavy rainfall or rapid snowmelt, can increase water pressure on canal walls, raising the likelihood of breaches. Changes in land use or nearby construction activities can also contribute to structural vulnerabilities, further affecting the probability and frequency of canal breaches.

4.10.5 Vulnerability and Impacts

According to FEMA, the public health and life safety impacts of dam/levee failure or canal breaches can be significant and wide-ranging. The primary concerns include:

- Loss of Life: This is the most serious impact. A sudden dam/levee failure or canal breach can lead to fast-moving floods, potentially resulting in loss of life, especially in areas immediately downstream of a dam or in the protected area behind a levee.
- Injuries: The force and unpredictability of floodwaters can result in physical injuries to people in the affected areas.
- Displacement of Populations: Dam/levee failure or canal breaches can lead to the displacement of people from their homes, either temporarily or permanently, due to flood damage. This displacement can have long-term impacts on mental health and community stability.
- Contamination of Water Supplies: Floodwaters can contaminate drinking water sources, leading to waterborne diseases and health complications. This is a particular concern in urban areas or where industrial and agricultural chemicals may be present.
- Sanitation and Hygiene Issues: Flooding can disrupt sewage systems and overwhelm sanitation services, leading to increased risks of diseases, particularly in densely populated areas.
- Disruption of Healthcare Services: Flooding can damage healthcare facilities and disrupt services, making it difficult for injured or ill individuals to receive necessary medical care.
- Mental Health Impacts: The trauma and stress associated with flooding, displacement, loss of property, and potential loss of life can have long-lasting effects on mental health.

- Strain on Emergency Services: Dam/levee failure or canal breaches require significant emergency response efforts, which can strain local resources, especially in smaller or rural communities.

4.10.6 Property Damage and Critical Infrastructure

According to FEMA, dam/levee failure or canal breaches can have severe impacts on property and critical infrastructure. These impacts include:

- Extensive Property Damage: The sudden release of water from a dam/levee failure or canal breaches can lead to widespread flooding, resulting in significant damage to residential, commercial, and industrial properties. This includes damage to buildings, homes, and vehicles.
- Critical Infrastructure Damage: Flooding from dam/levee failure or canal breaches can severely impact critical infrastructure such as bridges, roads, railways, and utilities (water and sewage systems, electrical grids, gas lines). This not only causes immediate disruption but can also lead to long-term economic impacts due to the time and cost associated with repairs and reconstruction.
- Agricultural Losses: In rural areas, flooding can inundate farmland, leading to crop destruction, soil erosion, and loss of livestock, which can have a profound impact on local and regional agricultural economies.
- Environmental Contamination: Floodwaters can carry and spread pollutants and hazardous materials from industrial sites, sewage systems, and other sources, leading to environmental contamination of water, soil, and ecosystems.
- Disruption of Services: Essential services such as healthcare, education, emergency services, and transportation can be disrupted, affecting the wellbeing and daily life of the community.
- Economic Impact: The combined effect on property, infrastructure, and services can lead to significant economic losses, both direct and indirect. The cost of repairs, loss of business operations, and decrease in property values can have a lasting impact on affected communities.
- Recovery and Mitigation Costs: The financial burden of recovery and rebuilding can be substantial. In addition to immediate repair costs, there is often a need for investing in mitigation measures to prevent future incidents.

4.10.7 Economy

No data exists demonstrating the economic impact of past dam/levee failure or canal breach events within Franklin County. However, past events have shown to impact water supply, and could lead to costly repairs.

4.10.8 Changes in Development and Impact of Future Development

According to FEMA, dam/levee failure or canal breaches can significantly impact current and future development in several ways:

- Reassessment of Land Use: After a dam/levee failure or canal breach, there may be a need to reassess land use in affected areas. This can lead to changes in zoning laws and development regulations, especially in areas deemed high-risk for future flooding.

- Impact on Real Estate Values: The perceived risk of flooding due to potential dam/levee failure or canal breach can affect real estate values. Properties in areas identified as high risk may see a decrease in value, which can impact both current and future development decisions.
- Changes in Insurance and Financing: The risk of flooding may lead to higher insurance premiums for properties in the affected areas. In some cases, insurance may become difficult to obtain. This can influence development decisions, as the cost and availability of insurance are important factors in real estate development and investment.
- Infrastructure Redesign and Reinforcement: Existing and future infrastructure projects may need to be redesigned to withstand potential flood events. This can include strengthening or raising buildings, bridges, and roads, as well as improving drainage systems.
- Mitigation and Resilience Planning: There may be an increased focus on mitigation and resilience in future development to reduce the impact of potential flood events. This can include creating more green spaces, implementing better water management practices, and using flood-resistant building materials and techniques.
- Shift in Development Focus: In some cases, there might be a shift away from developing in high-risk areas. Development might be directed towards safer areas, potentially leading to changes in urban and regional planning strategies.
- Emergency Preparedness and Response Planning: Future development may need to incorporate improved emergency preparedness and response plans, including evacuation routes, emergency shelters, and communication systems.

4.10.9 Effects of Climate Change on Severity of Impacts

According to NOAA, as global temperatures rise, the frequency and intensity of extreme weather events, such as heavy rainfall and storms, increase. This leads to higher water levels and greater stress on these infrastructures. Additionally, sea level rise contributes to the heightened risk of overtopping and structural breaches. The combination of these factors results in a greater likelihood of catastrophic failures, leading to more severe flooding, extensive property damage, displacement of communities, and potential loss of life. Consequently, the adaptive capacity and resilience of dam and levee systems must be enhanced to mitigate the amplified risks posed by a changing climate.

Heavy precipitation also leads to both riverine flooding and flash floods as the ground fails to absorb the high volume of precipitation that falls in a short period. Increasing annual precipitation contributes to sustained flooding.

Table 4.35. 25-Year Precipitation Projections for Franklin County

25-YEAR PRECIPITATION PROJECTIONS FOR FRANKLIN COUNTY, WA
HIGHER EMISSIONS (RCP8.5)
Franklin County is expected to experience a **32% increase** in heavy precipitation within 25 years.
By 2049, Franklin County is expected to have a **increase** (from precipitation.
LOWER EMISSIONS (RCP4.5)
Franklin County is expected to experience a 13**% increase** in heavy precipitation within 25 years.
By 2049, Franklin County is expected to have a **increase** (from precipitation.
Source: Neighborhoods at Risk (2024)

Table 4.36. Future Climate Indicators for Franklin County

FUTURE CLIMATE INDICATORS FOR FRANKLIN COUNTY, WA							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation:							
Annual Average Total Precipitation	**9”**	**9”**	**9”**	**10”**	**10”**	**10”**	**10”**
	8-9	8-11	9-10	9-11	9-11	9-11	9-11
Days Per Year With Precipitation (Wet Days)	**108 days**	**108 days**	**108 days**	**107 days**	**109 days**	**107 days**	**106 days**
	104-111	102-116	102-120	102-116	98-127	98-114	97-118
Maximum Period of Consecutive Wet Days	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**
	8-11	7-10	8-10	7-10	8-11	7-10	8-11
Annual Days With:							
Annual Days With Total Precipitation > 1 inch	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 2 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 3 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days That Exceed 99th Percentile Precipitation	**1 day**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**
	1-2	1-2	1-2	2-2	2-2	2-2	2-3
*Days With Maximum Temperature Below 32*F*	**17 days**	**13 days**	**11 days**	**10 days**	**9 days**	**8 days**	**5 days**
	14-20	8-17	6-15	5-16	4-12	3-12	2-10
Source: Climate Mapping for Resilience and Adaptation (2024)							

4.11 Landslide

4.11.1 Hazard Description

According to the USGS, a landslide is defined as the movement of a mass of rock, debris, or earth down a slope. Landslides are a type of "mass wasting," which denotes any down-slope movement of soil and rock under the direct influence of gravity. The term "landslide" encompasses five modes of slope movement: falls, topples, slides, spreads, and flows. Each of these modes can further be subdivided based on the type of geologic material involved, such as bedrock, debris, or earth. Common examples of landslides include debris flows, also known as mudflows or mudslides, and rockfalls.

Landslides are triggered by various factors that increase the forces acting down-slope or reduce the strength of the materials composing the slope. These factors include heavy rainfall, snowmelt, changes in water level, stream erosion, changes in groundwater, earthquakes, volcanic activity, and disturbances from human activities. Submarine landslides, which occur underwater, can also be triggered by similar factors and may cause tsunamis that affect coastal areas.

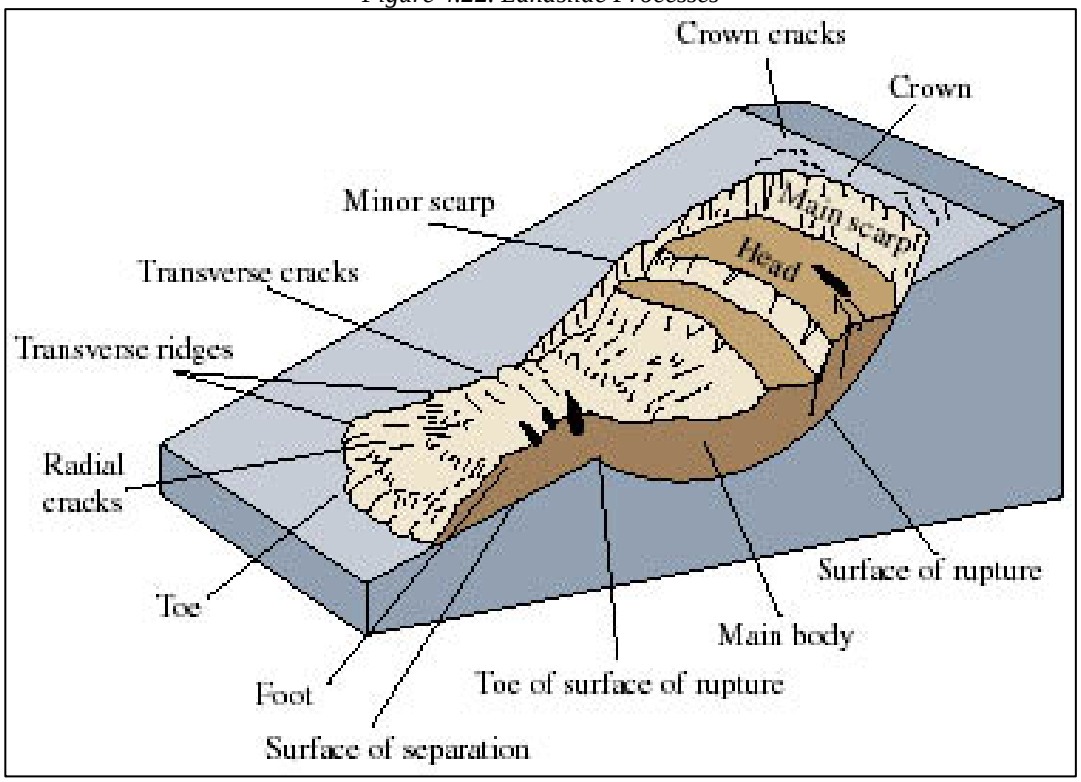
4.11.1.1 Type of Landslides

According to USGS there are different types of landslides, each classified based on the type of movement and the type of material involved. The table below illustrates the main types of landslides.

Table 4.37. USGS Types of Landslides

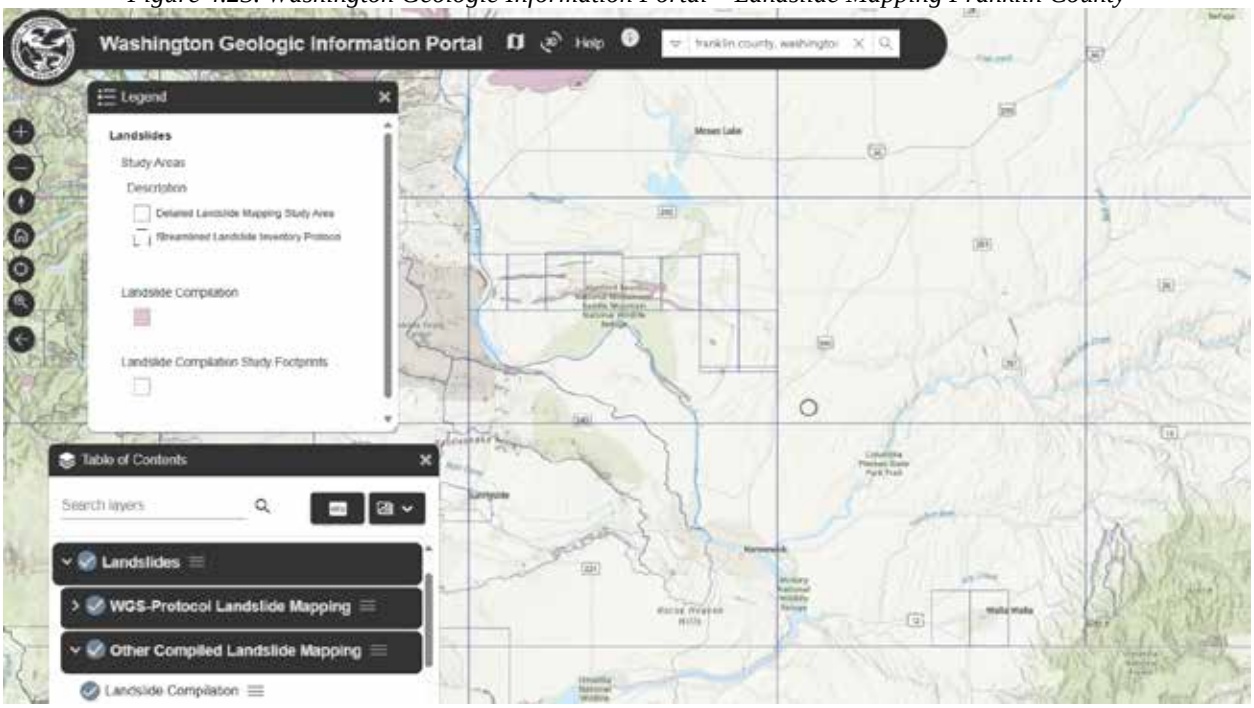
USGS TYPES OF LANDSLIDES		
Type	**Movement**	**Characteristics**
Falls	Sudden movements of rock or debris detaching from steep slopes or cliffs.	Free-fall or bounce of material down a slope; includes rockfalls.
Topples	Forward rotation of rock, debris, or earth out of a slope.	Material tilts or rotates forward before falling or rolling down.
Slides	Downslope movements along a defined surface.	Includes rotational slides and translational slides.
Rotational Slides	Curved concave surface of rupture with rotational movement.	Material moves along a curved surface with backward tilting.
Translational Slides	Movement along a roughly planar surface with little rotation.	Material moves along a flat surface without rotation.
Spreads	Lateral extension and fracturing of coherent material.	Caused by liquefaction or flowage of underlying material.
Flows	Movement where material behaves like a fluid.	Includes debris flows, earthflows, mudflows, and lahars.
Debris Flows	Rapid movements of loose, water-saturated debris.	Fast-moving with high water content.
Earthflows	Slow to rapid movements of fine-grained materials.	Can vary in speed and involve fine sediments.
Mudflows	Flows of water and fine sediment.	Can travel long distances; high water content.
Lahars	Volcanic mudflows or debris flows.	Associated with volcanic activity; can be extremely destructive.
Source: USGS Landslide Hazard Program (2024)		

Figure 4.22. Landslide Processes



4.11.2 Hazard Location

Figure 4.23. Washington Geologic Information Portal – Landslide Mapping Franklin County



4.11.3 Hazard Extent/Intensity

The USGS measures the extent and intensity of landslide events using a combination of field assessments, aerial photography, satellite imagery, and remote sensing technology. Field assessments involve on-the-ground observations by experts who analyze the physical characteristics of the landslide, such as its size, depth, and the type of materials involved. These assessments provide critical information on the landslide's impact on the terrain and any structural damage caused. Aerial photography and satellite imagery offer a broader view of the affected area, allowing scientists to assess the landslide's overall scope and the changes it has made to the landscape. This imagery is particularly useful for identifying the boundaries of the event and for tracking changes over time.

In addition to these methods, the USGS utilizes remote sensing technologies, including Light Detection and Ranging (LiDAR), to create detailed topographic maps and 3D models of the landslide area. LiDAR data can reveal subtle changes in the terrain that may not be visible from aerial photographs alone, providing precise measurements of the landslide's volume and the extent of earth movement.

4.11.4 Probability and Frequency

Probability: The USGS determines the probability of landslide events through a multifaceted approach that incorporates historical landslide data, terrain and geological analysis, rainfall patterns, and predictive modeling. This process begins with the identification and mapping of areas that have experienced landslides in the past, as historical occurrences are strong indicators of potential future events. The USGS also analyzes the physical characteristics of the landscape, including slope steepness, soil composition, rock type, and the presence of fault lines, which can all contribute to landslide susceptibility. Rainfall is another critical factor, especially in regions

where landslides are often triggered by heavy or prolonged precipitation. By examining historical weather patterns and current meteorological data, the USGS can assess how changes in rainfall might influence landslide risk.

In addition to these factors, the USGS employs advanced geographic information systems (GIS) and remote sensing technology to create detailed maps and models of landslide-prone areas. These tools allow scientists to visualize and analyze the complex interactions between various risk factors, including human activities such as deforestation, urban development, and mining, which can exacerbate landslide vulnerability. Predictive models are then developed to estimate the probability of landslide occurrences under different scenarios, taking into account the likelihood of triggering events like earthquakes or storms.

Other factors that influence landslides include soil type and slope steepness. Soil type is a key indicator for landslide potential and is used by geologists and geotechnical engineers to determine soil stability for construction standards. Soil Types known to cause slope instability are listed in the following table.

Table 4.38. Geologic Types Known to Cause Slope Instability

Type	Description
Kg	Granodiorite and two-mica granite (Cretaceous)—Granodiorite and granite containing biotite, commonly with muscovite.
Qs	Fluvial and lake sediment (Quaternary)—Largely fine-grained sediment, in part playa deposits of evaporative lakes.
Qg	Glacial deposits (Pleistocene)—Till and outwash consisting of gravel, sand, silt, and clay. Formed by valley glaciers at higher elevations and by the Cordilleran ice sheet.
Tes	Sedimentary rocks (Eocene)—Fluvial, lacustrine, and air-fall deposits of conglomerate, volcanic sandstone, mudstone, and tuff.
Tcr	Columbia River Basalt Group (Miocene)—Large-volume lava flows of tholeiitic basalt, basaltic andesite, and subordinate andesite.
Qls	Landslide deposits (Quaternary)—Unsorted gravel, sand, and clay of landslide origin; includes rotational and translational blocks and earth flows.
Tcv	Volcanic Group (Eocene)—Dacite, andesite, and rhyolite tuffs and flows and subordinate basalt and latite flows.
Kpro	Metasedimentary and metavolcanic schist, gneiss, amphibolite, and marble, all of uncertain age, typically hornblende-rich.
QTb	Basalt (Pleistocene and Pliocene)—Flows and cinder cones of olivine tholeiite basalt. Largely Pleistocene (<2.6 Ma) but includes flows as old as 3 Ma. Covered with 1-3 m (3-10 ft) of loess.
Source: Physical Geology (2024)	

4.11.5 Past Events

Two notable landslides that have occurred historically in Franklin County illustrate the localized nature of slope instability within the county. One event took place during the irrigation season in May 2006, when elevated soil moisture conditions contributed to slope failure that resulted in debris covering portions of State Route 170, temporarily impacting transportation and requiring roadway clearance and response actions. A second event occurred in August 2008 along the White Bluffs adjacent to the Columbia River, an area known for its geologically unstable, highly erodible sediments. This landslide was associated with ongoing bluff erosion processes influenced by river dynamics and groundwater conditions. Neither event resulted in extensive damage.

4.11.6 Vulnerability and Impacts

Life Safety and Public Health: According to USGS, landslides present a direct threat to human lives, potentially causing injuries and fatalities due to the rapid movement of debris and soil. Furthermore, landslides can inflict damage on homes, infrastructure, and transportation systems, resulting in both physical harm and substantial economic losses for individuals and communities. Displacement and evacuation may be necessary, with affected residents requiring emergency shelter and support services. Additionally, landslides can disrupt or contaminate water sources, posing health risks associated with tainted drinking water. The blockage of transportation routes can hinder access to affected areas and emergency response efforts, impacting public safety and the delivery of essential services. Moreover, the long-term effects of landslides, including mental

health concerns stemming from displacement, property loss, and community upheaval, are also a consideration. Finally, landslides can strain emergency response resources and infrastructure, potentially compromising the capacity to provide timely assistance during and after a landslide event.

Property Damage and Critical Infrastructure: Landslides can cause extensive structural damage, resulting in the destruction or impairment of residential and commercial properties, as well as vital infrastructure elements like roads, bridges, and utility systems. This disruption extends to transportation networks, including railways, roads, and airports, creating logistical challenges and hindering the flow of goods and services. Landslides can also compromise utility services by damaging or burying utility lines such as those for water, gas, and electricity, thereby affecting the essential functions of communities. Telecommunication networks may also be at risk, hampering the efficiency of emergency communication systems. Additionally, landslides can have detrimental environmental consequences, releasing hazardous materials and pollutants into the environment, causing harm to ecosystems, wildlife, and contaminating soil and water sources. This necessitates extensive and costly cleanup and restoration efforts. The economic fallout is significant, encompassing financial losses for businesses and the considerable cost of reconstruction. Landslides can also result in enduring disruptions, including community displacement, prolonged infrastructure disturbances, and ongoing economic challenges in affected regions.

Economy: Economic impacts from landslides encompass property damage, resulting in the destruction or impairment of residential and commercial structures, incurring considerable financial costs for individuals and communities. Landslides may also disrupt and damage critical infrastructure like roads, bridges, utilities, and communication networks, necessitating significant investments for repair and replacement. Such disruptions can lead to reduced productivity for businesses, entailing increased expenses due to delays and the need to seek alternative routes. The costs of responding to landslide events, including search and rescue operations, temporary housing for displaced individuals, and emergency services, can strain public resources and contribute to heightened government expenditures. Landslides can also release hazardous materials and contaminants into the environment, prompting the need for costly cleanup and environmental restoration efforts. The overall economic stability of regions affected by landslides can be jeopardized, with economic disruption impacting local businesses, employment, and the broader economic landscape. These economic consequences may extend well beyond the initial landslide event, resulting in long-term challenges related to recovery, rebuilding, and the restoration of economic activities.

Changes in Development and Impact of Future Development: According to USGS, landslides can impact future development strategies through several mechanisms, including alterations in land-use planning and zoning regulations in landslide-prone areas. Communities may introduce stricter building codes, zoning constraints, and construction guidelines to mitigate the risks associated with landslides for upcoming development initiatives. Additionally, the aftermath of landslide events may necessitate redevelopment and reconstruction efforts, leading to changes in urban landscapes and construction practices. Mitigation measures, like the installation of retaining walls and stabilization techniques, can influence the design and location of future development projects. The protection of critical infrastructure may drive enhancements and structural

modifications that affect the positioning of infrastructure initiatives. Heightened community awareness about landslide risks can also sway public perceptions and behaviors, subsequently impacting future development decisions. Furthermore, developments may be relocated to safer areas in response to high landslide risk, ensuring sustainable and secure development. Lastly, geological assessments are conducted in landslide-prone regions to enhance understanding and inform future development choices, collectively shaping development strategies in these areas.

Effects of Climate Change on Severity of Impacts: Climate change can impact on the severity of landslides in several ways. First, climate-induced alterations in precipitation patterns, characterized by more intense and prolonged rainfall events, can saturate the soil, rendering it more susceptible to landslides and elevating their severity. Additionally, rising temperatures linked to climate change can lead to the thawing of permafrost, instigating ground instability and an increased likelihood of landslides, especially in permafrost regions. Glacial retreat due to warming temperatures can expose previously glaciated slopes, making them more vulnerable to landslides. Changes in vegetation patterns, caused by climate change, can also affect slope stability, as shifts in plant cover and root systems can render slopes more precarious. The heightened risk of wildfires prompted by climate change can strip areas of vegetation and alter soil properties, amplifying landslide susceptibility. Furthermore, the increased occurrence of severe weather events associated with climate change can trigger landslides through rapid water infiltration and slope destabilization. A lengthened thaw season in mountainous and high-latitude regions, driven by warmer temperatures, may intensify freeze-thaw cycles, potentially weakening slopes and contributing to landslides.

Table 4.39. 25-Year Precipitation Projections for Franklin County

25-YEAR PRECIPITATION PROJECTIONS FOR FRANKLIN COUNTY, WA
HIGHER EMISSIONS (RCP8.5)
Franklin County is expected to experience a **32% increase** in heavy precipitation within 25 years.
By 2049, Franklin County is expected to have a **increase** (from precipitation.
LOWER EMISSIONS (RCP4.5)
Franklin County is expected to experience a 13**% increase** in heavy precipitation within 25 years.
By 2049, Franklin County is expected to have a **increase** (from precipitation.
Source: Neighborhoods at Risk (2024)

Table 4.40. 25-Year Climate Projections for Franklin County

25-YEAR CLIMATE PROJECTIONS FOR FRANKLIN COUNTY, WA
HIGHER EMISSIONS (RCP8.5)
Franklin County is expected to experience a **51%% increase** in extremely hot days within 25 years.
By 2049, Franklin County is expected to have a **2°F increase** (from 55°F to 57°F) in average annual temperatures.
LOWER EMISSIONS (RCP4.5)
Franklin County is expected to experience a **31%% increase** in extremely hot days within 25 years.

By 2049, Franklin County is expected to have a **2°F increase** (from 54°F to 56°F) in average annual temperatures.
Source: Neighborhoods at Risk (2024)

Table 4.41. Future Climate Temperature Indicators for Franklin County

FUTURE CLIMATE INDICATORS FOR FRANKLIN COUNTY, WA							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Temperature Thresholds							
Annual Days With Maximum Temperature >90	**34 days**	**52 days**	**54 days**	**60 days**	**66 days**	**69 days**	**91 days**
	34-41	42-65	42-63	47-77	49-83	50-90	61-112
Annual Days With Maximum Temperature >95	**17 days**	**28 days**	**29 days**	**34 days**	**41 days**	**44 days**	**67 days**
	15-20	19-36	19-36	24-50	24-55	25-64	37-91
Annual Days With Maximum Temperature >100	**5 days**	**11 days**	**12 days**	**15 days**	**20 days**	**21 days**	**43 days**
	3-6	6-15	5-19	8-24	9-34	9-24	18-70
Annual Days With Maximum Temperature >105	**0 days**	**2 days**	**3 days**	**4 days**	**7 days**	**8 days**	**22 days**
	0-1	1-4	1-6	1-9	2-17	2-18	5-46
Annual Temperature							
Annual Single Highest Temperature °F	**103°F**	**106°F**	**106°F**	**107°F**	**108°F**	**109°F**	**114°F**
	102-104	104-108	103-109	105-110	105-113	105-114	108-120
Annual Highest Maximum Temperature Averaged Over a 5-Day Period	**98°F**	**101°F**	**102°F**	**103°F**	**104°F**	**105°F**	**109°F**
	97-100	98-103	99-105	100-106	100-109	101-110	104-117
Cooling Degree Days (CDD)	**695 degree days**	**951 degree days**	**986 degree days**	**1,098 degree days**	**1,243 degree days**	**1,293 degree days**	**1,873 degree days**
	626-785	787-1,183	807-1,181	846-1,421	937-1,596	948-1,671	1,223-2,576
Source: Climate Mapping for Resilience and Adaptation (2024)							

Table 4.42. Future Climate Indicators for Franklin County

FUTURE CLIMATE INDICATORS FOR FRANKLIN COUNTY, WA							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation:							
Annual Average Total Precipitation	**9”**	**9”**	**9”**	**10”**	**10”**	**10”**	**10”**
	8-9	8-11	9-10	9-11	9-11	9-11	9-11
Days Per Year With Precipitation (Wet Days)	**108 days**	**108 days**	**108 days**	**107 days**	**109 days**	**107 days**	**106 days**
	104-111	102-116	102-120	102-116	98-127	98-114	97-118
Maximum Period of Consecutive Wet Days	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**
	8-11	7-10	8-10	7-10	8-11	7-10	8-11
Annual Days With:							
Annual Days With Total Precipitation > 1 inch	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 2 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 3 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days That Exceed 99th Percentile Precipitation	**1 day**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**
	1-2	1-2	1-2	2-2	2-2	2-2	2-3
*Days With Maximum Temperature Below 32*F*	**17 days**	**13 days**	**11 days**	**10 days**	**9 days**	**8 days**	**5 days**
	14-20	8-17	6-15	5-16	4-12	3-12	2-10
Source: Climate Mapping for Resilience and Adaptation (2024)							

4.11.7 FEMA NRI Expected Annual Loss Estimates

Table 4.43. Franklin County Expected Annual Loss Table

FRANKLIN COUNTY, WA FEMA NRI EXPECTED ANNUAL LOSS TABLE – LANDSLIDE							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total Value**	**Expected Annual Loss Score**	**Expected Annual Loss Rating**
0 events per year	0.00	$17,400	$4,500	N/A	$21,900	56.0	$21,900

Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.*
Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.*
Expected Annual Loss *scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*

Source: FEMA National Risk Index (2024)

4.11.8 FEMA Hazard-Specific Risk Index Table

Table 4.44. Franklin County FEMA Hazard Specific Risk Index Table

FRANKLIN COUNTY, WA FEMA HAZARD SPECIFIC RATINGS - LANDSLIDE		
Risk Index Score	**Social Vulnerability Rating**	**Community Resilience Rating**
65.7	Very High	Relatively Low

Risk Index Scores: *are a quantitative rating calculated using data for only a single hazard type. Risk Index Scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value.*
Social Vulnerability Ratings: *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the Centers for Disease Control and Prevention (CDC).*
Community Resilience Ratings: *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Community Resilience is measured using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).*

Source: FEMA National Risk Index (2024)

4.11.9 FEMA NRI Exposure Value Table

Table 4.45. Franklin County FEMA NRI Exposure Value Table

FRANKLIN COUNTY, WA FEMA EXPOSURE VALUE TABLE - LANDSLIDE					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Landslide	$103,906,910,494	$1,382,100,740	$102,524,809,754	8,838.35	N/A

Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in Hazus 6.0, which provides 2022 valuations of the 2020 Census.*

Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in Hazus 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 million of economic loss (2022 dollars).*

Agriculture: *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*

Source: FEMA National Risk Index (2024)

4.12 Severe Summer Storms

4.12.1 Hazard Description

In this Plan, Severe Summer Storms are considered to be extreme heat, dust storms, and straight-line winds.

Extreme Heat: NOAA defines extreme heat as a period of excessively high temperatures that significantly exceeds the long-term average for a particular location. This definition takes into account the local climate and expected temperature ranges for a given region. Extreme heat events are typically characterized by several consecutive days of high temperatures that can pose significant health and safety risks. NOAA often uses specific temperature thresholds, such as heat indices or heat advisories, to define extreme heat conditions. During such events, there is an increased likelihood of heat-related illnesses, including heat exhaustion and heatstroke, as well as potential stress on critical infrastructure, power grids, and water resources. Extreme heat events are becoming more frequent and severe due to climate change, making them a growing concern for public health and safety.

Dust Storms: According to NOAA, a dust storm is a wall of dust and debris that is blown into an area by strong winds, often from thunderstorms. These storms can be miles long and several thousand feet high, significantly reducing visibility and creating hazardous conditions for motorists and air traffic. Dust storms are most common in arid and semi-arid regions, such as the southwestern United States, where they can occur frequently during certain seasons.

Straight-Line Winds: According to NOAA, straight-line winds are any thunderstorm winds that are not associated with rotation, distinguishing them from tornado winds. These winds, which are often responsible for significant damage, result from the downdraft of a thunderstorm, where

cooled, dense air descends rapidly and spreads out upon reaching the ground. This spreading air can create gust fronts and cause extensive damage over a broad area.

Straight-line winds can be as powerful as tornadoes, with speeds potentially exceeding 100 mph. They are categorized into macrobursts and microbursts. Macrobursts cover areas larger than 2.5 miles in diameter and can last for several minutes, while microbursts are smaller, covering less than 2.5 miles but can be equally intense and short-lived, lasting only a few minutes

4.12.2 Hazard Location

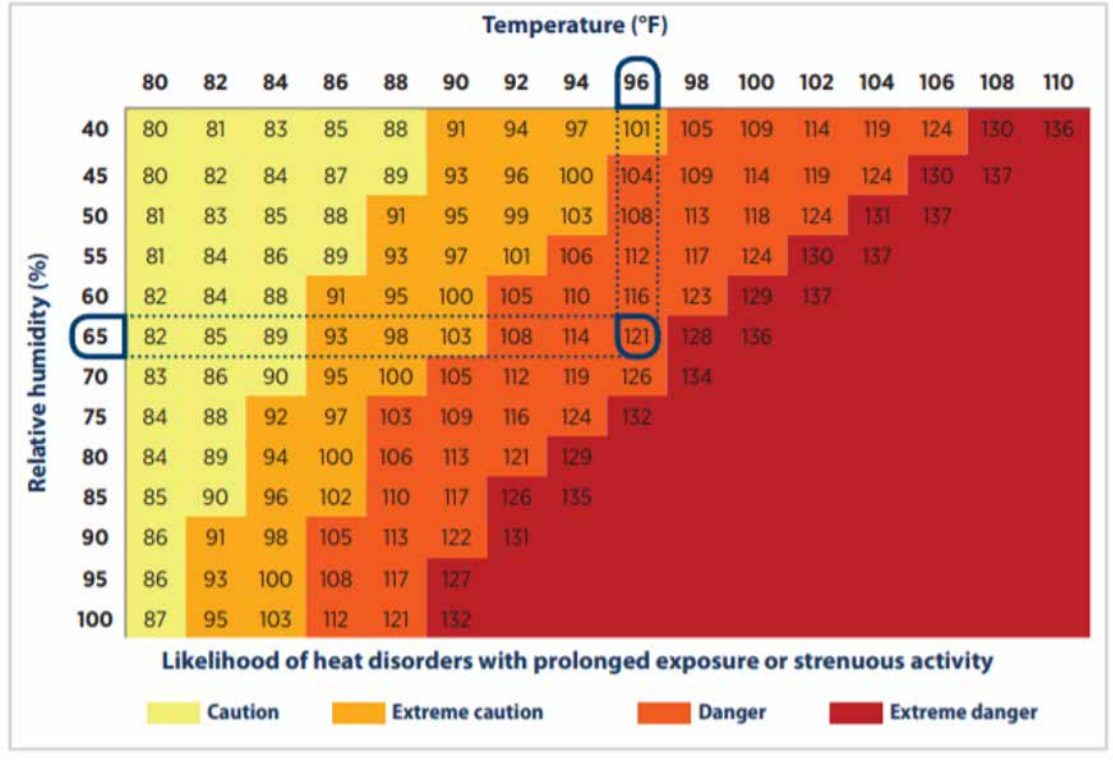
Severe summer storms could occur anywhere in Franklin County.

4.12.3 Hazard Extent/Intensity

Extreme Heat: When an extreme heat event occurs, NWS may issue an excessive heat warning, an excessive heat watch, a heat advisory, or a heat outlook. The NWS defines these as the following:

- Excessive Heat Warning – Take Action. An Excessive Heat Warning is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Warning is when the maximum heat index temperature is expected to be 105° or higher for at least two days and nighttime air temperatures will not drop below 75°; however, these criteria vary across the country, especially for areas not used to extreme heat conditions. If you don't take precautions immediately when conditions are extreme, you may become seriously ill or die (NOAA, 2024).
- Excessive Heat Watches—Be Prepared. Heat watches are issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain (NOAA, 2024).
- Heat Advisory – Take Action. A Heat Advisory is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Advisory is when the maximum heat index temperature is expected to be 100° or higher for at least two days, and nighttime air temperatures will not drop below 75°; however, these criteria vary across the country, especially for areas that are not used to dangerous heat conditions. Take precautions to avoid heat illness. If you don't take precautions, you may become seriously ill or even die (NOAA, 2024).
- Excessive Heat Outlooks are issued when the potential exists for an excessive heat event in the next 3-7 days. An Outlook provides information to those who need considerable lead-time to prepare for the event (NOAA, 2024).

Figure 4.24. National Oceanic and Atmospheric Administration National Weather Service Heat Index



Dust Storms: NOAA measures the extent and intensity of dust storms using a combination of satellite imagery, atmospheric models, and ground-based observations. Satellites such as GOES-16 and Suomi NPP are essential tools for tracking dust particles in the atmosphere. These satellites provide both visible and infrared imagery, allowing scientists to distinguish dust from other atmospheric elements like clouds and smoke. Advanced imaging techniques, including RGB (red-green-blue) enhancements, highlight dust in false-color imagery, facilitating more accurate tracking and analysis of dust storms.

Atmospheric models like the Global Ensemble Forecast System – Aerosol (GEFS-Aerosol) and the FENGSHA dust model play a crucial role in predicting the distribution and movement of dust particles. These models account for factors such as wind speed, direction, and source regions, and provide forecasts for aerosols, including dust, helping to predict air quality impacts. GEFS-Aerosol, for instance, offers seven-day forecasts for various aerosols, aiding in air quality predictions.

Straight-Line Wind: NOAA measures and monitors wind incidents through a combination of meteorological tools, observation networks, and reporting systems, including:

1. Weather Stations and Anemometers: NOAA operates a vast network of weather stations equipped with anemometers that measure wind speed. These stations are strategically located across the United States and provide real-time data on wind conditions. The data collected from these stations is crucial for monitoring wind speed and direction.
2. Weather Radar: NOAA's Doppler weather radar systems ~~are capable of~~ detect~~ing~~ and track~~ing~~ severe weather events, including high winds associated with thunderstorms,

hurricanes, and other atmospheric disturbances. Radar data help meteorologists identify areas with strong winds and their movement.

3. Satellite Observations: NOAA uses weather satellites equipped with various sensors, including instruments that can provide information about atmospheric circulation and wind patterns. These satellite observations are particularly valuable for tracking high wind incidents in remote or oceanic areas.
4. Meteorological Models: NOAA utilizes advanced meteorological models and computer simulations to forecast and predict high wind events. These models use factors such as atmospheric pressure gradients, temperature differences, and weather patterns, to anticipate areas where high winds may occur.
5. NWS Reporting and Warnings: NOAA's National Weather Service (NWS) issues a range of alerts and warnings related to high wind events. These include High Wind Watches, High Wind Warnings, and Wind Advisories. The NWS uses data from weather stations, radar, and satellite observations to issue these alerts when high winds are expected.
6. Storm Spotter Reports: NOAA encourages the participation of trained storm spotters, emergency responders, and the public in reporting high wind incidents. Observations from storm spotters and the public help validate and refine NOAA's understanding of ongoing weather conditions.
7. Real-Time Data and Observations: NOAA continuously collects and analyzes real-time data and observations to monitor wind conditions. This information is disseminated through various communication channels, including websites, mobile apps, and weather broadcasts.

The NOAA Beaufort Wind Scale shown below is a system used to estimate wind speeds based on observed sea conditions or the effects of the wind on land features. The scale ranges from 0 to 12, with each number corresponding to a specific range of wind speeds and associated sea or land conditions.

Table 4.46. NOAA Beaufort Scale for Estimating Wind Speed

NOAA BEAUFORT WIND SCALE				
ESTIMATING WIND SPEED AND SEA STATE WITH VISUAL CLUES				
Beaufort Number	**Wind Description**	**Wind Speed (Knots)**	**Wave Height**	**Visual Clues**
0	Calm	0 kts	0 feet	Sea is like a mirror. Smoke rises vertically.
1	Light Air	1-3 kts	< 1/2	Ripples with the appearance of scales are formed, but without foam crests. Smoke drifts from funnel.
2	Light breeze	4-6 kts	1/2 ft (max 1)	Small wavelets, still short but more pronounced, crests have glassy appearance and do not break. Wind felt on face. Smoke rises at about 80 degrees.
3	Gentle Breeze	7-10 kts	2 ft (max 3)	Large wavelets, crests begin to break. Foam of glassy appearance. Perhaps scattered white horses (white caps). Wind extends light flag and pennants. Smoke rises at about 70 deg.
4	Moderate Breeze	11-16 kts	3 ft (max 5)	Small waves, becoming longer. Fairly frequent white horses (white caps). Wind raises dust and loose paper on deck. Smoke rises at about 50 deg. No noticeable sound in the rigging. Slack halyards curve and sway. Heavy flag flaps limply.
5	Fresh Breeze	17-21 kts	6 ft (max 8)	Moderate waves, taking more pronounced long form. Many white horses (white caps) are formed (chance of some spray). Wind felt strongly on face. Smoke rises at about 30 deg. Slack halyards whip while bending continuously to leeward. Taut halyards maintain slightly bent position. Low whistle in the rigging. Heavy flag doesn't extend but flaps over entire length.
6	Strong Breeze	22-27 kts	9 ft (max 12)	Large waves begin to form. White foam crests are more extensive everywhere (probably some spray). Wind stings face in temperatures below 35 deg F (2C). Slight effort in maintaining balance against wind. Smoke rises at about 15 deg. Both slack and taut halyards whip slightly in bent position. Low moaning, rather than whistle, in the rigging. Heavy flag extends and flaps more vigorously.
7	Near Gale	28-33 kts	13 ft (max 19)	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of wind. Necessary to lean slightly into the wind to maintain balance. Smoke rises at about 5 to 10 deg. Higher pitched moaning and whistling heard from rigging. Halyards still whip slightly. Heavy flag extends fully and flaps only at the end. Oilskins and loose clothing inflate and pull against the body.
8	Gale	34-40 kts	18 ft (max 25)	Moderately high waves of greater length. Edges of crests begin to break into the spindrift. The foam is blown in well-marked streaks along the direction of the wind. Head pushed back by the force of the wind if allowed to relax. Oilskins and loose clothing inflate and pull strongly.

				Halyards rigidly bent. Loud whistle from rigging. Heavy flag straight out and whipping.
9	Strong Gale	41-47 kts	23 ft (max 32)	High waves. Dense streaks of foam along direction of wind. Crests of waves begin to topple, tumble and roll over. Spray may affect visibility.
10	Storm	48-55 kts	29 ft (max 41)	Very high waves with long overhanging crests. The resulting foam, in great patches is blown in dense streaks along the direction of the wind. On the whole, the sea takes on a whitish appearance. Tumbling of the sea becomes heavy and shock-like. Visibility affected.
11	Violent Storm	56-63 kts	37 ft (max 52)	Exceptionally high waves (small and medium-sized ships might be for time lost to view behind the waves). The sea is completely covered with long white patches of foam lying along the direction of the wind. Everywhere, the edges of the wave crests are blown into froth. Visibility greatly affected.
12	Hurricane	64+ kts	45+ ft	The air is filled with foam and spray. The sea is completely white with driving spray. Visibility is seriously affected.
Source: National Weather Service (2024)				

4.12.4 Probability and Frequency

Extreme Heat Frequency: Between 01/01/19 and 12/31/23 Franklin County recorded six events over 1,826 days. This averages to 0.003285 incidents per day during this time and 1.2 incidents annually.

Extreme Heat Probability: NOAA measures the probability of extreme heat through a comprehensive approach, integrating meteorological tools and data analysis. It closely monitors temperature forecasts, heat index values, and the output of advanced meteorological models to assess the potential for extreme heat events. Comparisons to historical climate data help determine the likelihood of such events. NOAA also considers the duration and intensity of extreme heat conditions, with a focus on nighttime warmth, which can significantly affect public health. Collaboration with public health agencies contributes to the analysis of heat-related illnesses. Ultimately, NOAA issues Heat Advisories and Excessive Heat Warnings to provide the public with information on the probability of extreme heat, associated health risks, and recommended safety measures.

Dust Storms Frequency: Between 01/01/19 and 12/31/23 Franklin County recorded two events over 1,826 days. This averages to 0.001095 incidents per day during this time and 0.4 incidents annually.

Dust Storms Probability: NOAA measures the probability of a dust storm using a combination of satellite data, atmospheric models, and ground-based observations. Satellites like GOES-16 and Suomi NPP provide critical imagery that helps in tracking dust particles in the atmosphere. These satellites use visible and infrared channels to differentiate dust from other atmospheric elements. Advanced imaging techniques, such as RGB (red-green-blue) enhancements, make dust more visible in false-color imagery, enabling accurate tracking and analysis of dust storms. Atmospheric models, including the Global Ensemble Forecast System – Aerosol (GEFS-Aerosol) and the

FENGSHA dust model, predict the distribution and movement of dust particles by considering factors like wind speed, direction, and source regions. These models provide forecasts for aerosols, including dust, aiding in air quality predictions and enabling more precise probability assessments of dust storms.

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Straight-Line Winds Frequency: Between 01/01/19 and 12/31/23 Franklin County recorded no events over 1,826 days.

Straight-Line Winds Probability: NOAA measures the probability of straight-line winds by utilizing meteorological tools and data analysis. Doppler radar systems monitor atmospheric conditions and the movement of weather systems, offering real-time information on high wind intensity. Advanced meteorological models consider atmospheric parameters, including pressure gradients, temperature differences, and wind patterns, to forecast the likelihood of straight-line winds. Monitoring temperature and pressure patterns in the atmosphere, in addition to wind speed and gusts, provides crucial indicators of high wind probability. NOAA tracks severe weather events associated with high winds, such as thunderstorms, hurricanes, and tornadoes. Real-time data from weather stations and public observations further contribute to the assessment of straight-line wind probability. This information supports NOAA in issuing weather advisories and warnings to ensure public safety during straight-line wind events.

4.12.5 Past Events

Over the past 20 years, Franklin County has experienced impacts from regional extreme heat events, most notably the June - July 2021 Pacific Northwest heat wave, widely recognized by federal and state agencies as the most severe heat event in Washington's recorded history. During this event, temperatures across inland portions of Washington exceeded 110°F, far above normal seasonal averages, and were driven by a persistent high-pressure system known as a "heat dome." The Washington State Department of Health reported significant public health impacts, including a sharp increase in heat-related illness and over 100 heat-related deaths during the peak period, with emergency department visits for heat illness increasing dramatically compared to prior years. Additional statewide analyses found that the 2021 heat event resulted in hundreds of fatalities and was the deadliest weather-related disaster in Washington State history.

Table 4.47. Extreme Heat Events in Franklin County (2019-2023)

Location	County	State	Date	Time	T.Z.	Type	Dth	Inj	PrD	CrD
Totals:							**2**	**0**	**0.0K**	**0.00K**
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	6/26/21	0:00	PST-8	Excessive Heat	2	0	0.00K	0.00K
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	7/1/21	0:00	PST-8	Excessive Heat	0	0	0.00K	0.00K
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	7/25/22	0:00	PST-8	Excessive Heat	0	0	0.00K	0.00K
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	8/1/22	0:00	PST-8	Excessive Heat	0	0	0.00K	0.00K

LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	8/9/22	0:00	PST-8	Excessive Heat	0	0	0.00K	0.00K
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	8/18/22	0:00	PST-8	Excessive Heat	0	0	0.00K	0.00K
Totals:							**2**	**0**	**0.0K**	**0.00K**

Table 4-12. Dust Storm Events in Franklin County (2019-2023)

Location	County	State	Date	Time	T.Z.	Type	Dth	Inj	PrD	CrD
Totals:							**0**	**5**	**0.0K**	**0.00K**
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	2/23/20	10:00	PST-8	Dust Storm	0	5	0.00K	0.00K
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	9/7/20	11:50	PST-8	Dust Storm	0	0	0.00K	0.00K
Totals:							**0**	**5**	**0.0K**	**0.00K**

Between 01/01/19 and 12/31/23 Franklin County recorded no Straight-Line Wind events over 1,826 days.

4.12.6 Vulnerability and Impacts

Life Safety and Public Health (Extreme Heat): According to NOAA, extreme heat events carry significant health and life safety risks, notably heat-related illnesses such as heat exhaustion and heatstroke. These conditions can be life-threatening if not promptly addressed, with the elderly, young children, and individuals with pre-existing health conditions being particularly susceptible. Dehydration is a common and dangerous consequence of high temperatures, leading to symptoms like dizziness and confusion, and exacerbating the effects of heat-related illnesses. Respiratory problems are also aggravated by the heat, especially in areas with poor air quality, increasing the likelihood of respiratory distress for individuals with chronic respiratory diseases.

Extreme heat also places strain on both the human body and critical infrastructure. The cardiovascular system can be overburdened, heightening the risk of heart-related issues in individuals with underlying heart conditions. Physical and cognitive functions can be impaired due to excessive body strain, which raises the risk of accidents and injuries. Infrastructure such as roads and power lines may fail, causing widespread disruptions. Heatwaves intensify water scarcity, affecting potable water availability and agriculture, and increase the propensity for wildfires, endangering both life and property. These conditions can also lead to a spike in heat-related mortality rates, particularly in vulnerable groups, underscoring the importance of effective heatwave preparedness and response strategies.

Life Safety and Public Health (Dust Storms): According to NOAA, dust storms impact life safety and public health in several ways. First, they drastically reduce visibility, creating hazardous driving conditions that can lead to serious traffic accidents, often involving multiple vehicles. Visibility can drop to less than a quarter mile, making navigation difficult for drivers. Additionally, inhaling dust particles poses serious respiratory health risks. Dust storms carry fine particulate matter (PM2.5), which can penetrate deep into the lungs and enter the bloodstream, exacerbating conditions such as asthma, bronchitis, and other chronic respiratory diseases. Vulnerable populations, including the elderly, children, and those with pre-existing health conditions, are at higher risk.

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Dust storms degrade air quality by increasing the concentration of airborne particles, impacting both human health and environmental health, affecting plant life and animal habitats. The air

quality index (AQI) often rises to unhealthy levels during dust storms, prompting health advisories and warnings. Infrastructure and transportation systems also suffer as dust storms can damage power lines, causing outages, and disrupt air travel by reducing visibility and affecting aircraft mechanical systems. Roads can become slippery due to dust accumulation, leading to further transportation hazards.

Agriculture is notably affected as dust storms can strip topsoil from farmlands, reducing soil fertility and damaging crops, leading to economic losses for farmers and contributing to food supply issues. Dust deposition can also clog irrigation systems, impacting water availability for agriculture. Lastly, dust particles can carry spores and pathogens, such as the fungus that causes Valley Fever (Coccidioidomycosis), which can cause flu-like symptoms and is particularly prevalent in areas affected by frequent dust storms, posing additional public health risks.

Life Safety and Public Health (Straight-Line Winds): According to NOAA, straight-line winds present a range of health and life safety impacts including direct physical risks, such as injuries or fatalities caused by flying debris, falling trees, or structural damage. Individuals who are outdoors during high winds are particularly vulnerable to being struck by debris. Additionally, straight-line winds can cause significant property damage, including roof damage, broken windows, and structural failures, resulting in both financial losses and safety risks for occupants.

Straight-line winds can also damage power lines and electrical infrastructure, leading to power outages. These outages can disrupt essential services, affect communication systems, and impact public safety and emergency response efforts. Straight-line winds can also make travel hazardous, especially for high-profile vehicles, leading to accidents, road closures, and transportation delays, thereby posing safety risks for drivers and passengers.

Lastly, strong winds can exacerbate wildfires, causing them to spread rapidly and intensify, which threatens life and property. Damage to telecommunication infrastructure can disrupt emergency communication systems, hindering the ability to convey critical information and coordinate response efforts.

Property Damage and Critical Infrastructure (Extreme Heat): According to NOAA, extreme heat can lead to property damage and critical infrastructure impacts. Prolonged exposure to high temperatures can cause structural damage to buildings and transportation networks, affecting road surfaces and railway tracks. High demand for electricity during heatwaves can strain electrical grids, resulting in power outages that impact homes, businesses, and critical facilities. Water supply shortages and reduced water quality may occur due to drought conditions. Healthcare facilities may be overwhelmed with patients suffering from heat-related illnesses, affecting critical healthcare infrastructure. Extreme heat can also disrupt telecommunications equipment and communication systems and contribute to the ignition and spread of wildfires, resulting in property damage and environmental impacts. Lastly, vulnerable populations are at increased risk of heat-related illnesses, and public safety concerns arise, regarding strained emergency response and healthcare systems.

Property Damage and Critical Infrastructure (Dust Storms): According to NOAA, dust storms can lead to property damage and disruption of critical infrastructure . Prolonged exposure to high

winds can cause damage to buildings and farmland. High dwinds Dust storms also create hazardous driving conditions with reduced visibility. Critical infrastructure in the county, including power lines, transportation routes like I-82 and local roads, irrigation systems crucial for agriculture, and communication networks, are susceptible to disruption from dust accumulation and strong winds. These events can lead to economic losses for the agricultural sector and other industries, pose health risks from dust inhalation, and disrupt the daily lives of residents.

Property Damage and Critical Infrastructure (Straight-Line Winds): According to NOAA, straight-line winds can cause property damage and impact critical infrastructure in several ways. These winds, which can exceed speeds of 100 mph, are often the result of severe thunderstorms and can create extensive damage over a large area. Straight-line winds can knock down trees and power lines, leading to widespread power outages and posing a direct threat to homes and businesses. The force of these winds can cause structural damage to buildings, ripping off roofs, breaking windows, and even collapsing walls in extreme cases.

Straight-line winds can also severely impact transportation systems. Roads can become blocked by fallen debris, making travel hazardous or impossible. This can delay emergency response efforts and disrupt daily commutes. Airports can also be affected, with high winds posing risks to aircraft during takeoff and landing, potentially causing delays or cancellations.

Critical infrastructure, such as communication networks, can also be disrupted. Downed power lines can lead to communication outages, affecting both landline and cellular services. This can hinder emergency communications and coordination during and after severe weather events. Lastly, straight-line winds can damage pipelines and water treatment facilities, leading to interruptions in essential services like water supply and sewage treatment.

4.12.7 Economy

Extreme Heat: According to NOAA, there are several economic impacts associated with extreme heat including increased healthcare costs resulting from a surge in heat-related illnesses, which necessitate medical treatment and contribute to healthcare expenditures. Extreme heat can also lead to reduced productivity in various economic sectors, impacting labor efficiency and overall economic output. During heatwaves, cooling demands soar, driving up energy consumption, elevating utility bills, and placing strain on energy infrastructure.

The agricultural sector is also impacted by extreme heat due to damaged crops, reducing yields and affecting agriculture, thereby disrupting food supply chains and causing financial losses for farmers. Next, high temperatures can stress transportation infrastructure, causing road buckling, rail deformation, and necessitating repairs.

Water resources may also face increased demand, requiring additional treatment and distribution efforts, which come with associated costs. The tourism and outdoor recreation industries can be adversely affected as extreme heat deters tourists and outdoor enthusiasts, impacting local economies dependent on these sectors. In the realm of insurance, heightened heat-related property and infrastructure damage may lead to higher premiums for individuals and businesses.

Lastly, prolonged periods of extreme heat heighten the risk of wildfires, incurring costs associated with property damage, ecosystem disruption, firefighting efforts, and resource allocation.

Dust Storms: According to NOAA, dust storms have various economic impacts across different sectors. In agriculture, dust storms can strip topsoil from farmlands, reducing soil fertility and damaging crops, which leads to decreased agricultural productivity and financial losses for farmers. The deposition of dust can also clog irrigation systems, affecting water distribution and further harming crop yields.

In the transportation sector, dust storms can disrupt road, air, and rail transport. Reduced visibility can cause traffic accidents and delays, increasing travel time and the cost of goods transportation. Airports may experience flight cancellations and delays due to poor visibility and dust-related mechanical issues in aircraft.

The health impacts of dust storms translate into economic costs. Increased hospital admissions for respiratory and cardiovascular issues, particularly among vulnerable populations, lead to higher healthcare expenses. Workers' productivity may decline due to health issues caused by dust exposure, further impacting the economy.

Infrastructure damage is another economic concern. Dust storms can damage buildings, power lines, and communication networks, leading to costly repairs and maintenance. Power outages caused by dust storms can disrupt businesses and essential services, compounding economic losses.

Straight-Line Wind: According to NOAA, straight-line wind incidents have substantial economic impacts across multiple sectors. In the agriculture sector, these winds can cause extensive damage to crops and soil, leading to decreased agricultural productivity and financial losses for farmers. Fields may experience erosion, and crops can be physically damaged or destroyed by the high winds, resulting in lower yields and increased replanting costs.

In the infrastructure sector, straight-line winds can damage buildings, power lines, and other critical infrastructure. The winds can tear off roofs, break windows, and cause structural failures, necessitating costly repairs and replacements. Power outages caused by downed power lines can disrupt businesses, leading to economic losses due to halted operations and decreased productivity. Communication networks may also be affected, impacting both personal and business communications.

The transportation sector also faces significant economic challenges during straight-line wind events. High winds can block roads with debris, causing travel delays and increasing transportation costs. Airports may experience delays and cancellations due to unsafe flying conditions, which can affect both passenger travel and cargo transport, leading to economic disruptions and increased operational costs.

4.12.8 Changes in Development and Impact to Future Development

Extreme Heat: According to NOAA, extreme heat events can impact changes in development and future urban planning and construction. As temperatures rise, cities and developers are increasingly considering the heat resilience of buildings and infrastructure. Currently, there's an increasing emphasis on designing structures that can withstand high temperatures while minimizing the need for energy-intensive cooling methods. This includes integrating materials that

reflect rather than absorb heat, enhancing natural ventilation, and increasing green spaces to reduce the urban heat island effect. Additionally, there's a trend toward "cool roofs," urban tree canopies, and permeable pavements to manage heat.

In many areas, climate-resilient urban planning is becoming a priority to accommodate the anticipated increase in frequency and severity of heatwaves due to climate change. This planning involves the creation of heat action plans, the development of early warning systems, and the construction of cool refuges to protect vulnerable populations. Water resource management also becomes more critical in the design of new developments, as extreme heat can exacerbate water scarcity. Communities are also re-evaluating building codes, zoning laws, and development policies to ensure that new constructions and city expansions are both sustainable and resilient in the face of rising temperatures.

Dust Storms: According to NOAA, dust storm incidents can impact future development and influence changes in development patterns. Dust storms can lead to increased costs for maintaining and repairing infrastructure, as the abrasive nature of airborne dust particles can damage buildings, roads, and power lines. This necessitates frequent repairs and can deter investment in affected areas due to the higher maintenance costs and potential for repeated damage.

Dust storms can also degrade air quality, making areas less attractive for residential and commercial development. Poor air quality can deter new businesses and residents from moving into affected regions, impacting economic growth and development opportunities. Additionally, health concerns related to dust inhalation, such as respiratory issues and diseases like Valley Fever, can lead to increased healthcare costs and reduce the workforce's overall productivity, further discouraging development

Straight-Line Wind: According to NOAA, straight-line wind incidents can impact future development and influence changes in development patterns, including extensive damage to buildings, infrastructure, and landscapes, which can lead to increased costs for repairs and maintenance. The frequent need for repairs due to wind damage can deter investments in affected areas, as businesses and developers may seek more stable environments to minimize potential financial losses.

Additionally, the threat of straight-line winds can influence building codes and construction practices. Areas prone to these incidents may implement stricter building codes to ensure structures can withstand high winds, increasing construction costs but ultimately leading to safer and more resilient communities. These enhanced building standards can impact the overall cost and design of new developments, potentially slowing growth but improving long-term sustainability.

Infrastructure planning and development are also affected by the risk of straight-line winds. Essential services such as power and communication lines may need to be buried underground or fortified to prevent outages, which can be costly but necessary to ensure reliability. Transportation infrastructure, including roads and airports, must be designed to withstand debris and damage from high winds, which can influence the location and design of new projects.

4.12.9 Effects of Climate Change on Severity of Impacts

Extreme Heat: According to the NOAA, climate change is impacting the severity and frequency of extreme heat events. As global temperatures rise due to increasing greenhouse gas emissions, extreme heat events are becoming more intense, frequent, and prolonged. NOAA data indicates that heatwaves are occurring earlier in the year and lasting longer, leading to higher temperatures than historically recorded. This increase in temperature exacerbates the urban heat island effect in cities, where concrete and asphalt store and re-radiate heat, further intensifying the impact of extreme heat events in these areas.

The compounding effects of climate change on extreme heat also have broader ecological impacts, such as altering natural ecosystems and increasing the risk of wildfires. Higher temperatures contribute to more significant evaporation and soil dryness, which in turn can lead to drought conditions, affecting water supplies and agriculture. Additionally, the changing patterns of extreme heat are impacting public health, with increases in heat-related illnesses and deaths, particularly among vulnerable populations such as the elderly, children, and those with pre-existing health conditions.

Dust Storms: According to NOAA, climate change can impact the severity of dust storm events. As global temperatures rise, changes in precipitation patterns and increased frequency and intensity of droughts can lead to more arid conditions. These conditions are conducive to the formation of dust storms, as dry soil and lack of vegetation provide an abundant source of dust particles that can be lifted by strong wind.

Higher temperatures can also enhance the intensity of convective storms, which are often responsible for generating the strong winds that trigger dust storms. With climate change, the frequency of these storms is expected to increase, leading to more frequent and severe dust storm events. Additionally, changes in land use and desertification, driven by climate shifts, can expand the areas susceptible to dust storms, further exacerbating their impact.

The increased severity of dust storms due to climate change poses additional challenges for public health, infrastructure, and agriculture. More intense storms can carry larger amounts of dust over greater distances, affecting air quality and respiratory health in broader regions. The economic costs associated with these impacts are likely to rise, necessitating more robust mitigation and adaptation strategies to protect vulnerable communities and ecosystems.

Table 4-13. 25-Year Climate Projections for Franklin County

25-YEAR CLIMATE PROJECTIONS FOR FRANKLIN COUNTY, WA
HIGHER EMISSIONS (RCP8.5)
Franklin County is expected to experience a **51% increase** in extremely hot days within 25 years.
By 2049, Franklin County is expected to have a **2°F increase** (from 55°F to 57°F) in average annual temperatures.
LOWER EMISSIONS (RCP4.5)
Franklin County is expected to experience a **31% increase** in extremely hot days within 25 years.
By 2049, Franklin County is expected to have a **2°F increase** (from 54°F to 56°F) in average annual temperatures.
Source: Neighborhoods at Risk (2024)

Table 4-14. 25-Year Precipitation Projections for Franklin County

25-YEAR PRECIPITATION PROJECTIONS FOR FRANKLIN COUNTY, WA
HIGHER EMISSIONS (RCP8.5)
Franklin County is expected to experience a **32% increase** in heavy precipitation within 25 years.
By 2049, Franklin County is expected to have a **increase** (from precipitation.
LOWER EMISSIONS (RCP4.5)
Franklin County is expected to experience a 13**% increase** in heavy precipitation within 25 years.
By 2049, Franklin County is expected to have a **increase** (from in average annual precipitation.
Source: Neighborhoods at Risk (2024)

Table 4-15. Future Climate Temperature Indicators for Franklin County

FUTURE CLIMATE INDICATORS FOR FRANKLIN COUNTY, WA							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Temperature Thresholds							
Annual Days With Maximum Temperature >90	**34 days**	**52 days**	**54 days**	**60 days**	**66 days**	**69 days**	**91 days**
	34-41	42-65	42-63	47-77	49-83	50-90	61-112
Annual Days With Maximum Temperature >95	**17 days**	**28 days**	**29 days**	**34 days**	**41 days**	**44 days**	**67 days**
	15-20	19-36	19-36	24-50	24-55	25-64	37-91
Annual Days With Maximum Temperature >100	**5 days**	**11 days**	**12 days**	**15 days**	**20 days**	**21 days**	**43 days**
	3-6	6-15	5-19	8-24	9-34	9-24	18-70
Annual Days With Maximum Temperature >105	**0 days**	**2 days**	**3 days**	**4 days**	**7 days**	**8 days**	**22 days**
	0-1	1-4	1-6	1-9	2-17	2-18	5-46
Annual Temperature							
Annual Single Highest Temperature °F	**103°F**	**106°F**	**106°F**	**107°F**	**108°F**	**109°F**	**114°F**
	102-104	104-108	103-109	105-110	105-113	105-114	108-120
Annual Highest Maximum Temperature Averaged Over a 5-Day Period	**98°F**	**101°F**	**102°F**	**103°F**	**104°F**	**105°F**	**109°F**
	97-100	98-103	99-105	100-106	100-109	101-110	104-117
Cooling Degree Days (CDD)	**695 degree days**	**951 degree days**	**986 degree days**	**1,098 degree days**	**1,243 degree days**	**1,293 degree days**	**1,873 degree days**
	626-785	787-1,183	807-1,181	846-1,421	937-1,596	948-1,671	1,223-2,576
Source: Climate Mapping for Resilience and Adaptation (2024)							

Table 4-16. Future Climate Indicators for Franklin County

FUTURE CLIMATE INDICATORS FOR FRANKLIN COUNTY, WA							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation:							
Annual Average Total Precipitation	**9”**	**9”**	**9”**	**10”**	**10”**	**10”**	**10”**
	8-9	8-11	9-10	9-11	9-11	9-11	9-11
Days Per Year With Precipitation (Wet Days)	**108 days**	**108 days**	**108 days**	**107 days**	**109 days**	**107 days**	**106 days**
	104-111	102-116	102-120	102-116	98-127	98-114	97-118
Maximum Period of Consecutive Wet Days	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**
	8-11	7-10	8-10	7-10	8-11	7-10	8-11
Annual Days With:							
Annual Days With Total Precipitation > 1 inch	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 2 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 3 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days That Exceed 99th Percentile Precipitation	**1 day**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**
	1-2	1-2	1-2	2-2	2-2	2-2	2-3
*Days With Maximum Temperature Below 32*F*	**17 days**	**13 days**	**11 days**	**10 days**	**9 days**	**8 days**	**5 days**
	14-20	8-17	6-15	5-16	4-12	3-12	2-10
Source: Climate Mapping for Resilience and Adaptation (2024)							

4.12.10 FEMA NRI Expected Annual Loss Estimates

Table 4-17. Franklin County Expected Annual Loss Table

FRANKLIN COUNTY, WA FEMA NRI EXPECTED ANNUAL LOSS TABLE – EXTREME HEAT							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total Value**	**Expected Annual Loss Score**	**Expected Annual Loss Rating**
1.3 events per year	0.32	$3,705,578	$9,921	$52,019	$3,767,518	97.1	Relatively High
FRANKLIN COUNTY, WA FEMA NRI EXPECTED ANNUAL LOSS TABLE – STRONG WIND							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total Value**	**Expected Annual Loss Score**	**Expected Annual Loss Rating**
0.3 events per year	0.01	$69,991	$65,586	$22,305	$157,883	31.9	Relatively Low

Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.*
Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.*
Expected Annual Loss *scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*

Source: FEMA National Risk Index (2024)

4.12.11 FEMA Hazard-Specific Risk Index Table

Table 4-18. Franklin County FEMA Hazard Specific Risk Index Table

FRANKLIN COUNTY, WA FEMA HAZARD SPECIFIC RATINGS - EXTREME HEAT		
Risk Index Score	**Social Vulnerability Rating**	**Community Resilience Rating**
97.7	Very High	Relatively Low
FRANKLIN COUNTY, WA FEMA HAZARD SPECIFIC RATINGS - STRONG WIND		
Risk Index Score	**Social Vulnerability Rating**	**Community Resilience Rating**
33.3	Very High	Relatively Low

Risk Index Scores: *are a quantitative rating calculated using data for only a single hazard type. Risk Index Scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value.*

Social Vulnerability Ratings: *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the Centers for Disease Control and Prevention (CDC).*

Community Resilience Ratings: *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Community Resilience is measured using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).*

Source: FEMA National Risk Index (2024)

4.12.12 FEMA NRI Exposure Value Table

Table 4-19. Franklin County FEMA NRI Exposure Value Table

FRANKLIN COUNTY, WA FEMA EXPOSURE VALUE TABLE - EXTREME HEAT					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Extreme Heat	$3,767,518	$9,921	$3,705,578	0.32	$52,019
FRANKLIN COUNTY, WA FEMA EXPOSURE VALUE TABLE - STRONG WIND					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Strong Wind	$157,883	$65,586	$69,991	0.01	$22,305

Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in Hazus 6.0, which provides 2022 valuations of the 2020 Census.*

Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in Hazus 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 millions of economic loss (2022 dollars).*

Agriculture: *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*

Source: FEMA National Risk Index (2024)

4.13 Severe Winter Storms

4.13.1 Hazard Description

In this *Plan*, Severe Winter Storms are considered to be extreme cold, blizzard, and heavy snow.

Extreme Cold: NOAA defines extreme cold as a period of excessively low temperatures that significantly fall below the long-term average for a specific location. This definition takes into account the local climate and expected temperature ranges. Extreme cold events are typically characterized by a prolonged duration of very cold weather, often accompanied by harsh wind chills, which can pose significant risks to human health, safety, and infrastructure. NOAA often uses specific temperature thresholds to define extreme cold conditions, and they issue advisories and warnings, such as Wind Chill Advisories and Extreme Cold Warnings, to alert the public to these hazardous conditions. During extreme cold events, there is an increased risk of cold-related illnesses, such as frostbite and hypothermia, and the potential for damage to water systems, transportation infrastructure, and power grids. Extreme cold events are a concern, especially during the winter months, and can vary in intensity based on geographical location and local climate.

Blizzard: NOAA defines a blizzard as a severe snowstorm characterized by strong winds and low visibility. Specifically, for a storm to be classified as a blizzard, it must have sustained winds or

frequent gusts of 35 miles per hour or greater, accompanied by considerable falling or blowing snow that reduces visibility to less than a quarter mile. These conditions must persist for at least three hours. Blizzards create life-threatening travel conditions, significant disruptions, and potential power outages due to the intensity of the wind and snow.

Heavy Snow: NOAA defines heavy snow as snowfall accumulating to at least 4 inches (10 cm) in 12 hours or less, or to at least 6 inches (15 cm) in 24 hours or less.

4.13.2 Hazard Location

Severe winter storms could occur anywhere in Franklin County.

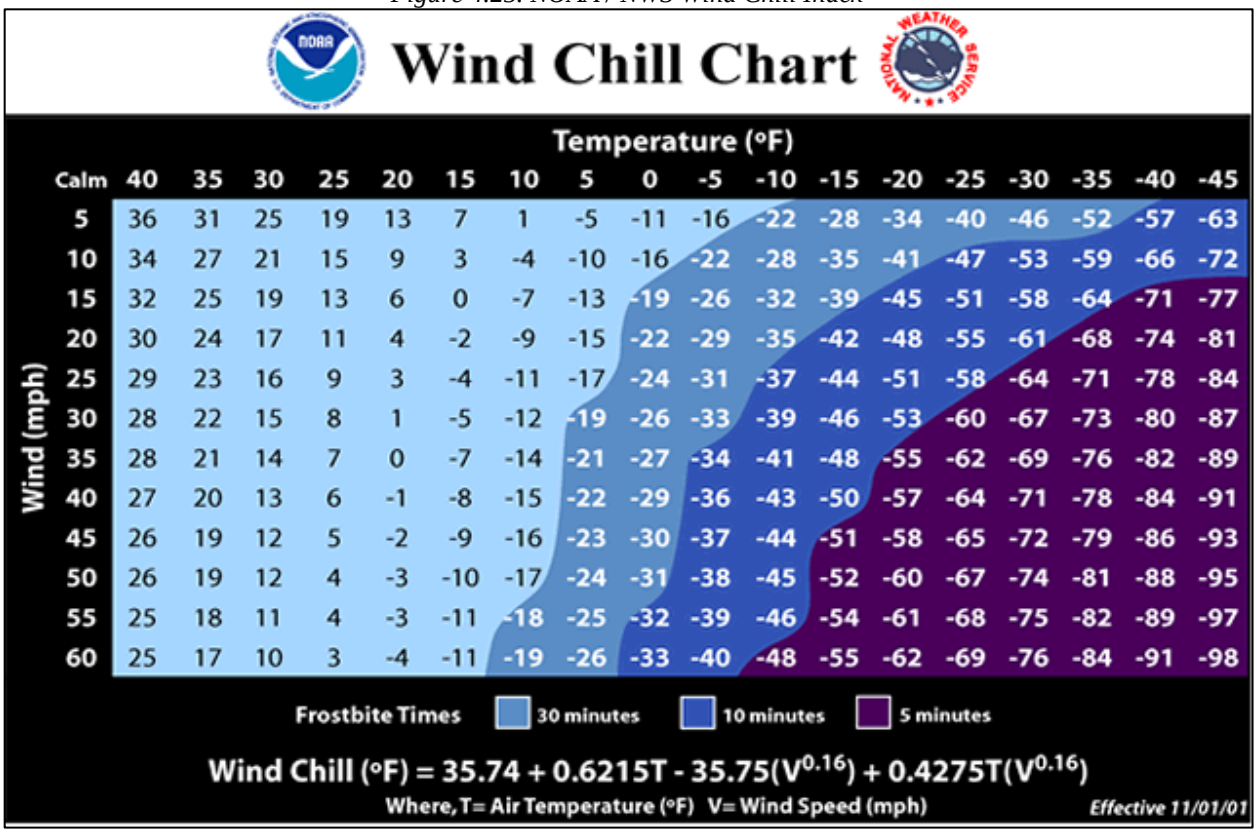
4.13.3 Hazard Extent/Intensity

Extreme Cold: NOAA measures the extent and intensity of extreme cold using a combination of meteorological tools and observation networks. The assessment of extreme cold conditions involves analyzing various data points and indicators, including:

- Temperature Readings: NOAA uses a network of weather stations and temperature sensors to record air temperature data. During extreme cold events, temperature readings well below the normal or seasonal averages are noted. Extremely low temperatures are a primary indicator of the intensity of extreme cold conditions.
- Wind Chill Index: In addition to actual air temperature, NOAA calculates the wind chill index. This index reflects how cold it feels to the human body and is determined by a combination of air temperature and wind speed. A lower wind chill index indicates more severe cold conditions.
- Historical Climate Data: NOAA maintains extensive records of historical climate data, including records of the lowest temperatures ever recorded in specific locations. Comparing current temperatures to historical records helps assess the extremeness of the cold event.
- Duration of Extreme Cold: The length of time that extreme cold conditions persist is another factor in assessing their intensity. Prolonged periods of extreme cold can have more significant impacts on both the environment and human health.
- Wind Speed and Gusts: Wind speed and gusts can exacerbate the intensity of extreme cold. NOAA monitors these parameters to determine whether wind-driven cold temperatures are causing more significant issues.
- Real-Time Monitoring: NOAA continuously collects real-time data from weather stations and sensors to monitor the current conditions during an extreme cold event. These data points provide insights into the extent and intensity of the event.
- Public Reports: Reports from the public, including trained weather spotters and community members, are valuable sources of information regarding the extent and impacts of extreme cold. Public reports contribute to NOAA's understanding of the real-time conditions on the ground.

NOAA uses all of these tools and data sources to assess the extent and intensity of extreme cold conditions and to issue appropriate advisories and warnings, such as Wind Chill Warnings and Extreme Cold Warnings, to inform the public and provide guidance on how to stay safe during extreme cold events.

Figure 4.25. NOAA / NWS Wind Chill Index



Blizzard: The extent and intensity of a blizzard are measured based on several key meteorological parameters tracked by NOAA. These parameters include wind speed, visibility, and duration of the storm conditions. To classify a storm as a blizzard, it must have sustained winds or frequent gusts of 35 miles per hour (mph) or greater, visibility of less than a quarter mile, and these conditions must persist for at least three hours.

Table 4-20. NOAA Blizzard Measurement Table

NOAA BLIZZARD MEASUREMENT TABLE	
Parameter	**Measurement**
Wind Speed	
Visibility	< 0.25 miles
Duration	

These measurements are obtained through a combination of surface observations from weather stations, satellite data, and radar information. The comprehensive analysis of these parameters allows NOAA to assess the severity of a blizzard, providing essential data for weather forecasting and public safety warnings.

Heavy Snow: NOAA measures the extent and intensity of heavy snowfall using a combination of ground-based observations, radar, and satellite data:

1. Ground-Based Observations: NOAA relies on a network of weather stations and observers who measure snowfall manually. These measurements are taken using standardized procedures to ensure consistency. Snow depth is measured using a snow gauge, which consists of a cylindrical container that captures the snowfall. The snow is then melted to measure the water equivalent, which helps in determining the snowfall's intensity.
2. Automated Weather Stations: These stations are equipped with instruments that automatically measure snowfall and other meteorological variables. These instruments can measure the depth of snow as it accumulates and provide continuous data.
3. Radar: Weather radars are used to estimate snowfall rates over large areas. By analyzing the radar reflectivity, meteorologists can estimate the intensity and extent of snowfall. This is particularly useful for identifying and tracking snowstorms as they move.
4. Satellites: Satellites provide a broader view of snow cover and can help track the development and movement of snowstorms. They use visible and infrared imagery to monitor snow extent and to estimate snowfall rates. This data is particularly valuable in remote areas where ground-based observations are sparse.
5. Numerical Weather Models: These models use mathematical representations of the atmosphere to simulate and predict weather conditions, including snowfall. The models assimilate data from ground-based observations, radar, and satellites to provide forecasts of snowfall intensity and extent.
6. Snow Water Equivalent (SWE): This measurement is crucial for understanding the water content of the snow, which impacts the potential for flooding when the snow melts. SWE is measured using snow pillows (which measure the weight of the snow) and manual snow surveys.

Table 4-21. National Weather Service - Snow Load Information

NATIONAL WEATHER SERVICE SNOW LOAD INFORMATION			
WATER = 62.4 pounds/cubic foot			
INCHES	**WE=lbs./sq ft.**	**INCHES**	**WE=lbs./sq ft.**
1.0	5.2	21.0	109.2
2.0	10.4	22.0	114.4
3.0	15.6	23.0	119.6
4.0	20.8	24.0	124.8
5.0	26.0	25.0	130.0
6.0	31.2	26.0	135.2
7.0	36.4	27.0	140.4
8.0	41.6	28.0	145.6
9.0	46.8	29.0	150.8
10.0	52.0	30.0	156.0
11.0	57.2	31.0	161.2
12.0	62.4	32.0	166.4
13.0	67.6	33.0	171.6
14.0	72.8	34.0	176.8
15.0	78.0	35.0	182.0
16.0	83.2	36.0	187.2
17.0	88.4	37.0	192.4
18.0	93.6	38.0	197.6
19.0	98.8	39.0	202.8
20.0	104.0	40.0	208.0
Source: NWS Snow Load (2024)			

NOAA uses these tools and data sources to assess the extent and intensity of a winter storm and to issue appropriate advisories and warnings, such as Winter Storm Watches and Winter Storm Warnings, to inform the public and provide guidance on how to stay safe during winter storm events.

In addition, NOAA also produces the Regional Snowfall Index (RSI) shown in the table below for significant snowstorms that impact the eastern two thirds of the U.S. The Regional Snowfall Index, however, can still be a useful tool for considering extent values of snowfall throughput the planning area.

Table 4-22. NOAA Regional Snowfall Index (RSI)

NOAA REGIONAL SNOWFALL INDEX (RSI)		
Category	**RSI Value**	**Description**
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	18.0+	Extreme
Source: NOAA (2024)		

4.13.4 Frequency/Probability

Extreme Cold Frequency: Between 01/01/2019 and 12/31/2023 Franklin County recorded one extreme cold events over 1,826 days. This averages to 0.000547 incidents per day during this time and 0.2 incidents annually.

Extreme Cold Probability: NOAA measures the probability of extreme cold using meteorological tools and data analysis. It closely monitors temperature forecasts and calculates the Wind Chill Index, which assesses the impact of temperature and wind speed on human comfort. Advanced meteorological models are used to forecast extreme cold events by considering atmospheric conditions, high-pressure systems, temperature anomalies, and other relevant factors. Historical climate data and records of the lowest temperatures recorded in specific areas aid in evaluating the probability of extreme cold. NOAA also examines the expected duration and intensity of extreme cold, particularly during prolonged periods of low temperatures. Collaboration with public health agencies enhances the analysis of cold-related illnesses, and advisories and warnings are issued to provide the public with information about the likelihood of extreme cold, health risks, and recommended safety measures.

Blizzard Frequency: Between 01/01/19 and 12/31/23 Franklin County recorded two events over 1,826 days. This averages to 0.001095 incidents per day during this time and 0.4 incidents annually.

Blizzard Frequency: NOAA measures the probability of blizzard activity

Heavy Snow Frequency: Between 01/01/19 and 12/31/23 Franklin County recorded five events over 1,826 days. This averages to 0.002738 incidents per day during this time and one incident annually.

Heavy Snow Probability: NOAA measures the probability of heavy snow using meteorological tools, data analysis, and monitoring systems. Doppler radar systems track atmospheric conditions and the movement of weather systems that can lead to winter storms, offering real-time data on precipitation types. Advanced meteorological models consider atmospheric conditions, temperature gradients, moisture levels, and weather system movement to assess the likelihood of heavy snow. NOAA's network of weather stations measures temperature and precipitation, vital for evaluating heavy snow probability. Historical climate data and records of past heavy snow

events contribute to the assessment. Additionally, NOAA analyzes the expected duration and intensity of heavy snow conditions. Reports from the public and the issuance of Winter Storm Watches and Warnings inform the public about the likelihood of winter storms, expected snowfall amounts, and recommended safety measures.

4.13.5 Past Events

Over the past 20 years, Franklin County has been periodically affected by regional severe winter storm events impacting Washington State, although impacts at the county level have generally been limited compared to western Washington. State and federal disaster records document multiple significant winter storms affecting Washington, including events in 2006, 2007, 2009, 2011, and 2012 that produced heavy precipitation, snow, flooding, and associated hazards such as landslides and infrastructure disruption. These events were typically driven by large Pacific storm systems bringing a combination of snow, rain, and freezing conditions across the state. While eastern Washington counties such as Franklin generally experience less severe snowfall than mountainous or coastal regions, these storms have still resulted in transportation impacts, hazardous road conditions, and occasional service disruptions

Table 4-23. Extreme Cold Events in Franklin County, WA (2019-2023)

Location	County	State	Date	Time	T.Z.	Type	Dth	Inj	PrD	CrD
Totals:							**0**	**0**	**0.00K**	**0.00K**
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	12/22/22	0:00	PST-8	Extreme Cold	0	0	0.00K	0.00K
Totals:							**0**	**0**	**0.00K**	**0.00K**

Table 4-24. Blizzard Events in Franklin County, WA (2019-2023)

Location	County	State	Date	Time	T.Z.	Type	Dth	Inj	PrD	CrD
Totals:							**0**	**0**	**0.00K**	**0.00K**
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	2/9/19	10:00	PST-8	Blizzard	0	0	0.00K	0.00K
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	11/27/19	19:00	PST-8	Blizzard	0	0	0.00K	0.00K
Totals:							**0**	**0**	**0.00K**	**0.00K**

Table 4-25. Heavy Snow Events in Franklin County, WA (2019-2023)

Location	County	State	Date	Time	T.Z.	Type	Dth	Inj	PrD	CrD
Totals:							**0**	**0**	**0.00K**	**0.00K**
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	2/4/19	14:00	PST-8	Heavy Snow	0	0	0.00K	0.00K
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	2/8/19	8:00	PST-8	Heavy Snow	0	0	0.00K	0.00K
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	2/12/21	9:00	PST-8	Heavy Snow	0	0	0.00K	0.00K

LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	1/5/22	19:00	PST-8	Heavy Snow	0	0	0.00K	0.00K
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	12/4/22	21:37	PST-8	Heavy Snow	0	0	0.00K	0.00K
Totals:							**0**	**0**	**0.00K**	**0.00K**

4.13.6 Vulnerability and Impacts

Life Safety and Public Health (Extreme Cold): According to NOAA, exposure to extreme cold can lead to hypothermia, a life-threatening condition where the body loses heat faster than it can produce it, causing confusion, loss of consciousness, and, if not treated promptly, death. Frostbite, which occurs when skin and underlying tissues freeze, typically affects extremities like fingers, toes, ears, and the nose, and severe frostbite can result in tissue damage and the need for amputation. Cold air can exacerbate respiratory conditions such as asthma and increase the risk of respiratory distress, particularly in areas with high levels of air pollution. Additionally, extreme cold can strain the cardiovascular system, increasing the risk of heart-related complications, especially in individuals with heart conditions.

Icy and slippery conditions elevate the risk of slips, trips, and falls, leading to injuries, fractures, and head trauma. Cold weather also impacts transportation systems, causing road closures, flight cancellations, and delays, which pose safety risks for travelers. Extreme cold can damage power lines and electrical infrastructure, leading to power outages that affect critical services, including heating and medical equipment. Freezing temperatures can also damage water supply systems, leading to water shortages or frozen pipes, affecting drinking water availability. Heavy snowfall and blizzards contribute to snow accumulation, road closures, and the risk of being trapped in vehicles or homes. Finally, extreme cold poses particular risks to individuals experiencing homelessness, who may lack access to shelter and adequate protection from the elements.

Blizzard: According to NOAA, blizzard events can create hazardous conditions that pose serious risks to individuals and communities. Travel hazards are a primary concern, as blizzards often lead to numerous accidents and fatalities on roads due to reduced visibility and slippery surfaces, resulting in road closures and stranded vehicles. The severe cold temperatures associated with blizzards can cause hypothermia and frostbite, especially for those without adequate shelter or protective clothing. Next, high winds and heavy snow can damage power lines and infrastructure, leading to widespread power outages. These outages leave homes and businesses without heat, light, and essential services, exacerbating risks associated with cold weather exposure.

Blizzards also limit access to emergency services, as snow-covered roads and poor visibility can delay or prevent emergency vehicles from reaching those in need, increasing the potential for injury or death. The disruption of healthcare services is another critical impact, as medical staff may be unable to travel to work and patients may be unable to reach healthcare facilities, with potentially severe consequences for those requiring urgent medical attention. The use of alternative heating sources such as generators, gas stoves, or charcoal grills indoors during power outages can lead to carbon monoxide poisoning. Without proper ventilation, the buildup of this odorless, colorless gas can be deadly.

Life Safety and Public Health (Heavy Snow): According to NOAA, transportation hazards are a primary concern, as heavy snow creates treacherous driving conditions, increasing the risk of car accidents. Snow and ice on roads can cause vehicles to skid, reduce visibility, and make travel dangerous, resulting in injuries and fatalities. Health risks are also prevalent, as exposure to severe winter weather can lead to hypothermia and frostbite. Hypothermia occurs when the body loses heat faster than it can produce it, causing dangerously low body temperatures, while frostbite can

cause permanent damage to body tissues. Additionally, heavy physical exertion, such as shoveling snow, can lead to heart attacks, particularly in individuals with pre-existing heart conditions.

Carbon monoxide poisoning is another risk during heavy snow events, as power outages often lead people to use alternative heating sources such as generators, which can produce carbon monoxide (CO). Without proper ventilation, CO poisoning can be deadly. Heavy snow can also isolate homes and communities, cutting off access to essential services such as healthcare, food, and emergency aid. This isolation is particularly dangerous for vulnerable populations, including the elderly, sick, and those living in remote areas. Structural damage is also an impact, as the weight of accumulated snow can cause roofs to collapse and damage infrastructure, leading to potential injuries and disruptions in utility services such as electricity and water. In mountainous regions, heavy snow can trigger avalanches, posing severe risks to life and property.

Property Damage and Critical Infrastructure (Extreme Cold): According to NOAA, extreme cold can lead to property damage and critical infrastructure impacts. Low temperatures can result in frozen and burst water pipes, heating system failures, road and transportation infrastructure damage, and power outages, affecting homes, businesses, and critical facilities like hospitals. Healthcare facilities may struggle to provide care in frigid conditions, and transportation disruptions, including road closures and accidents, can impact critical infrastructure and supply chains. Communication equipment can be affected, potentially hindering emergency communication systems, and snow accumulation can stress roofs and structures, leading to damage. Finally, extreme cold poses health risks, particularly for vulnerable populations, and can strain emergency response and healthcare systems.

Blizzard: According to NOAA, the combination of heavy snowfall, high winds, and freezing temperatures during a blizzard can lead to various forms of property damage, including collapsed roofs, broken windows, and damaged vehicles. The weight of accumulated snow can strain building structures, particularly roofs, causing them to collapse, which poses risks to occupants and leads to expensive repairs.

Blizzards also have a profound impact on critical infrastructure. High winds and heavy snow can damage power lines and electrical grids, leading to widespread power outages. These outages disrupt heating systems, which are crucial during extremely cold weather, and can also affect communication networks, leaving residents without essential services. Additionally, blizzards can damage water supply systems, causing pipes to freeze and burst, leading to water shortages and flooding when the pipes thaw.

Transportation infrastructure is particularly vulnerable during blizzard events. Roads can become impassable due to heavy snow accumulation, and airports may experience closures or significant delays, disrupting travel and the delivery of goods and services. Railways can also be affected, with snow and ice interfering with tracks and signals.

Lastly, blizzards can delay or prevent emergency responders from reaching those in need, further endangering lives. This disruption extends to healthcare facilities, where staff may be unable to reach their workplaces, and patients may be unable to access medical care.

Property Damage and Critical Infrastructure (Heavy Snow): According to NOAA, heavy snow incidents can impact property damage and critical infrastructure. The accumulation of snow can lead to structural damage as the weight of the snow may cause roofs to collapse, particularly those of older buildings not designed to bear heavy loads. This structural damage extends to other infrastructure, including communication towers and utility lines, leading to widespread power outages and loss of communication services. The heavy snow and ice can knock down trees and power lines, further disrupting electricity supply and communication networks.

Transportation infrastructure is also impacted by heavy snow events, with roads becoming impassable, airports shutting down, and rail services being interrupted. This not only hampers daily commutes but also affects emergency services, making it difficult for ambulances, fire trucks, and other emergency vehicles to reach those in need. The snow removal process itself can be costly and time-consuming, and delays in clearing roads can prolong the isolation of communities, disrupting the flow of goods and services, and impacting local economies. Lastly, heavy snow can damage water supply systems and lead to flooding when the snow melts, overwhelming drainage systems and causing water damage to properties.

4.13.7 Economy

Extreme Cold: Extreme cold has a range of economic impacts including healthcare costs stemming from cold-related illnesses and injuries, which result in medical expenses. Severe cold can also disrupt daily activities, reduce productivity across various economic sectors, and affect labor efficiency, impacting overall economic output. Cold weather necessitates increased heating demands, driving up energy consumption, utility bills, and placing strain on energy infrastructure. The agricultural sector is also vulnerable to extreme cold, which can damage crops and agricultural operations, causing food supply disruptions and financial losses for farmers. Transportation disruptions, including road closures, accidents, and heightened maintenance requirements, can affect supply chains and commerce. Infrastructure, such as roads, bridges, and water supply systems, is stressed by freezing temperatures, necessitating repairs and maintenance.

Extreme cold events may also increase the demand for emergency response and public safety services, resulting in additional costs, and can necessitate emergency shelters and services for vulnerable populations, incurring expenses for local governments. Insurance premiums for individuals and businesses may rise due to increased cold-related property damage. Lastly, extreme cold can harm wildlife and ecosystems, leading to conservation and recovery efforts.

Blizzard: The direct costs of blizzard events associated with property damage, such as repairs to homes, businesses, and infrastructure, can be substantial. The weight of snow can cause structural failures, leading to expensive repairs and reconstruction efforts. Additionally, power outages caused by blizzards can result in lost productivity for businesses, as operations are disrupted, and employees are unable to work. Transportation disruptions further compound economic losses, as road closures and airport shutdowns hinder the movement of goods and people, delaying deliveries and travel plans.

The agricultural sector can also suffer considerable losses during blizzard events. Livestock may be at risk due to extreme cold and snow cover, which can disrupt feeding and sheltering practices. Crop losses can occur if a blizzard hits during a sensitive period for growth. Retail businesses may see a decline in sales as consumers stay home during severe weather, leading to decreased revenue.

Lastly, the costs associated with emergency response and recovery efforts, including snow removal, road clearing, and public safety measures, place a financial strain on local governments and municipalities.

Heavy Snow: According to NOAA, heavy snow incidents can have various economic impacts on community areas. The direct costs of snow removal and infrastructure repair are significant, requiring substantial resources to clear roads, restore power, and repair damaged buildings and utilities. These activities can strain municipal budgets, particularly in regions unaccustomed to frequent heavy snowfalls. Additionally, the economic activities can come to a halt as businesses close, transportation networks are disrupted, and supply chains are interrupted. This leads to lost revenue for local businesses, increased operational costs for industries reliant on timely deliveries, and broader economic losses due to decreased productivity.

Property damage from heavy snow can be extensive, affecting homes, commercial buildings, and critical infrastructure such as power lines and water systems. This financial burden on property owners and insurance companies can be significant, with costs associated with repairs and claims adding up quickly. Prolonged power outages and communication disruptions can also lead to additional economic losses, affecting both residential and commercial sectors.
The agricultural sector can also be impacted by heavy snow, with livestock losses, damage to crops, and delays in planting or harvesting. These impacts can result in reduced agricultural output and financial losses for farmers.

In mountainous regions, the threat of avalanches can further endanger properties and infrastructure, necessitating costly preventive measures and emergency responses.

4.13.8 Changes in Development and Impact to Future Development

Extreme Cold: Extreme cold events can impact current and future development. In areas prone to such conditions, there is an increasing emphasis on constructing buildings and infrastructure that can withstand the rigors of extreme cold. This includes enhanced insulation, robust heating systems, and materials resistant to freezing and thawing cycles. Building codes are also being revised to incorporate these considerations, ensuring structures are not only energy-efficient but also resilient to cold-related damages like burst pipes and ice accumulation. Urban planning is also focusing on ensuring essential services and transportation remain operational during severe cold events, and that communities, (especially vulnerable populations), have access to adequate heating and emergency services.

The frequency and intensity of extreme cold events, can potentially be exacerbated by climate change and are being factored into long-term development strategies. This involves planning for increased energy demands during cold snaps, incorporating sustainable and renewable energy sources, and developing emergency response protocols for cold weather events. Additionally, environmental considerations, such as the ecological impact of road salt and other ice-melting agents, are becoming a part of the planning process.

Blizzard: The immediate impacts of blizzards, such as property damage, transportation disruptions, and infrastructure strain, can result in investment for repairs and upgrades. Communities may need to reconsider building standards and codes to ensure that structures can

withstand the heavy snow loads and high winds associated with blizzards. This can lead to changes in construction practices, including the reinforcement of roofs, improved insulation, and the installation of more resilient utility systems.

In the long term, the experience of severe blizzards can drive urban planners and developers to incorporate climate resilience into their designs. This might involve developing better drainage systems to handle snowmelt, creating more reliable and redundant power grids, and planning for emergency services that can operate effectively under extreme weather conditions. Additionally, the increased frequency and intensity of blizzards due to climate change may prompt policymakers to revise zoning laws, restricting development in areas particularly vulnerable to severe winter storms
.
Future development plans can prioritize sustainable and resilient infrastructure to reduce the economic and social impacts of blizzards. Investments in advanced weather forecasting and early warning systems can improve preparedness and response, minimizing the disruption caused by such events.

Heavy Snow: Heavy snow incidents can necessitate the incorporation of resilient infrastructure and urban planning to mitigate the effects of extreme winter weather. Communities may need to invest in more robust building codes to ensure that structures can withstand the weight of heavy snow accumulation, which can lead to roof collapses and other structural failures. This could include the use of stronger materials and innovative architectural designs that facilitate the shedding of snow from rooftops.

Transportation infrastructure also requires adaptation, with the enhancement of road maintenance capabilities, including more efficient snow removal equipment and strategies to keep roads passable. Urban planners might prioritize the development of underground utilities to protect against outages caused by snow-laden power lines. Heavy snowfall can also isolate communities, ensuring accessible and reliable emergency services is critical. This might involve the creation of emergency shelters equipped with adequate heating, food supplies, and medical care.

Lastly, future development may also need to address climate change projections, as research suggests that the frequency and intensity of extreme snowstorms could be influenced by warmer ocean temperatures and changing atmospheric patterns. These projections highlight the need for adaptive strategies in urban planning and infrastructure development to handle the potential increase in severe winter weather events.

4.13.9 Effects of Climate Change on the Severity of Impacts

Extreme Cold: Climate change can lead to various effects on the severity of extreme cold events. While global temperatures are generally rising, shifts in atmospheric circulation patterns and disruptions in polar vortex behavior can contribute to more variable and severe cold weather in specific regions. These changes can result in intense cold snaps and frigid conditions, even during overall warming trends. Extreme cold events can also have adverse effects on public safety, infrastructure, and agriculture.

Blizzard: Climate change can significantly impact the severity of blizzard events. While warmer global temperatures might suggest a decrease in snowstorms, the reality is more complex. Climate change can lead to more intense and unpredictable weather patterns. Warmer air holds more moisture, which can result in heavier snowfall during winter storms. Consequently, blizzards may become more severe, with increased snowfall rates and accumulation.

The warming Arctic has been linked to disruptions in the polar jet stream, which can cause cold air to dip further south more frequently. These changes can lead to more frequent and intense cold snaps, increasing the likelihood of severe blizzards. In addition, the variability in temperatures caused by climate change can create conditions where rapid freezing and thawing occur, exacerbating the impact of snow and ice on infrastructure. The increased severity of blizzards due to climate change also highlights the need for enhanced preparedness and resilience measures. Communities may need to invest in more robust infrastructure, improved snow removal capabilities, and better emergency response systems to cope with the heightened risks associated with these extreme weather events.

Heavy Snow: Climate change has complex effects on heavy snow events. Despite global warming, heavy snowstorms and significant snowfall can still occur and, in some cases, may even become more intense. This is because warmer atmospheric conditions can hold more moisture, which can lead to heavier precipitation, including snow, when temperatures are conducive to snowfall.

The frequency of extreme snowstorms in the eastern two-thirds of the contiguous United States has increased over the past century. Factors such as warmer-than-average ocean surface temperatures can contribute to greater moisture availability and storm intensification. For instance, higher ocean temperatures in the Atlantic can lead to more moisture being transported into a storm system, resulting in heavier snowfall. This was observed during the "Snowmageddon" event in 2010, where Washington, DC, experienced one of its highest recorded snowfall totals due to these conditions.

Lastly, changes in Arctic sea ice and atmospheric circulation patterns may also play a role. The reduction in Arctic sea ice has been linked to the development of high-pressure blocking patterns over the North Atlantic, which can result in cold outbreaks and slower-moving storm systems in the eastern United States. These conditions can exacerbate the severity and duration of snowstorms.

Table 4-26. 25-Year Precipitation Projections for Franklin County

25-YEAR PRECIPITATION PROJECTIONS FOR FRANKLIN COUNTY, WA
HIGHER EMISSIONS (RCP8.5)
Franklin County is expected to experience a **32% increase** in heavy precipitation within 25 years.
By 2049, Franklin County is expected to have a **increase** (from precipitation.
LOWER EMISSIONS (RCP4.5)
Franklin County is expected to experience a 13**% increase** in heavy precipitation within 25 years.
By 2049, Franklin County is expected to have a **increase** (from precipitation.
Source: Neighborhoods at Risk (2024)

Table 4-27. Future Climate Indicators for Franklin County

FUTURE CLIMATE INDICATORS FOR FRANKLIN COUNTY, WA							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation:							
Annual Average Total Precipitation	**9”**	**9”**	**9”**	**10”**	**10”**	**10”**	**10”**
	8-9	8-11	9-10	9-11	9-11	9-11	9-11
Days Per Year With Precipitation (Wet Days)	**108 days**	**108 days**	**108 days**	**107 days**	**109 days**	**107 days**	**106 days**
	104-111	102-116	102-120	102-116	98-127	98-114	97-118
Maximum Period of Consecutive Wet Days	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**
	8-11	7-10	8-10	7-10	8-11	7-10	8-11
Annual Days With:							
Annual Days With Total Precipitation > 1 inch	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 2 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 3 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days That Exceed 99th Percentile Precipitation	**1 day**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**
	1-2	1-2	1-2	2-2	2-2	2-2	2-3
*Days With Maximum Temperature Below 32*F*	**17 days**	**13 days**	**11 days**	**10 days**	**9 days**	**8 days**	**5 days**
	14-20	8-17	6-15	5-16	4-12	3-12	2-10
Source: Climate Mapping for Resilience and Adaptation (2024)							

4.13.10 FEMA NRI Expected Annual Loss Estimates

Table 4-28. Franklin County Expected Annual Loss Table

FRANKLIN COUNTY, WA FEMA NRI EXPECTED ANNUAL LOSS TABLE – EXTREME COLD							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total Value**	**Expected Annual Loss Score**	**Expected Annual Loss Rating**
0.2 events per year	0.03	$324,184	$1,617	$674,895	$1,000,696	93.5	Relatively High
FRANKLIN COUNTY, WA FEMA NRI EXPECTED ANNUAL LOSS TABLE – WINTER WEATHER							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total Value**	**Expected Annual Loss Score**	**Expected Annual Loss Rating**
1.7 events per year	0.00	$30,064	$3,941	$2,275	$36,280	43.7	Relatively Low

Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.*
Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.*
Expected Annual Loss *scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*

Source: FEMA National Risk Index (2024)

4.13.11 FEMA Hazard-Specific Risk Index Table

Table 4-29. Franklin County FEMA Hazard Specific Risk Index Table

FRANKLIN COUNTY, WA FEMA HAZARD SPECIFIC RATINGS - EXTREME COLD		
Risk Index Score	**Social Vulnerability Rating**	**Community Resilience Rating**
95.4	Very High	Relatively Low
FRANKLIN COUNTY, WA FEMA HAZARD SPECIFIC RATINGS – WINTER WEATHER		
Risk Index Score	**Social Vulnerability Rating**	**Community Resilience Rating**
45.9	Very High	Relatively Low

Risk Index Scores: *are a quantitative rating calculated using data for only a single hazard type. Risk Index Scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value.*

Social Vulnerability Ratings: *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the Centers for Disease Control and Prevention (CDC).*

Community Resilience Ratings: *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Community Resilience is measured using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).*

Source: FEMA National Risk Index (2024)

4.13.12 FEMA NRI Exposure Value Table

Table 4-30. Franklin County FEMA NRI Exposure Value Table

FRANKLIN COUNTY, WA FEMA EXPOSURE VALUE TABLE - EXTREME COLD					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Extreme Cold	$1,135,928,010,236	$14,028,747,907	$1,121,174,800,000	96,653.00	$724,462,329
FRANKLIN COUNTY, WA FEMA EXPOSURE VALUE TABLE – WINTER WEATHER					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Winter Weather	$1,135,928,010,236	$14,028,747,907	$1,121,174,800,000	96,653.00	$724,462,329

Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in Hazus 6.0, which provides 2022 valuations of the 2020 Census.*

Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in Hazus 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 millions of economic loss (2022 dollars).*

Agriculture: *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*

Source: FEMA National Risk Index (2024)

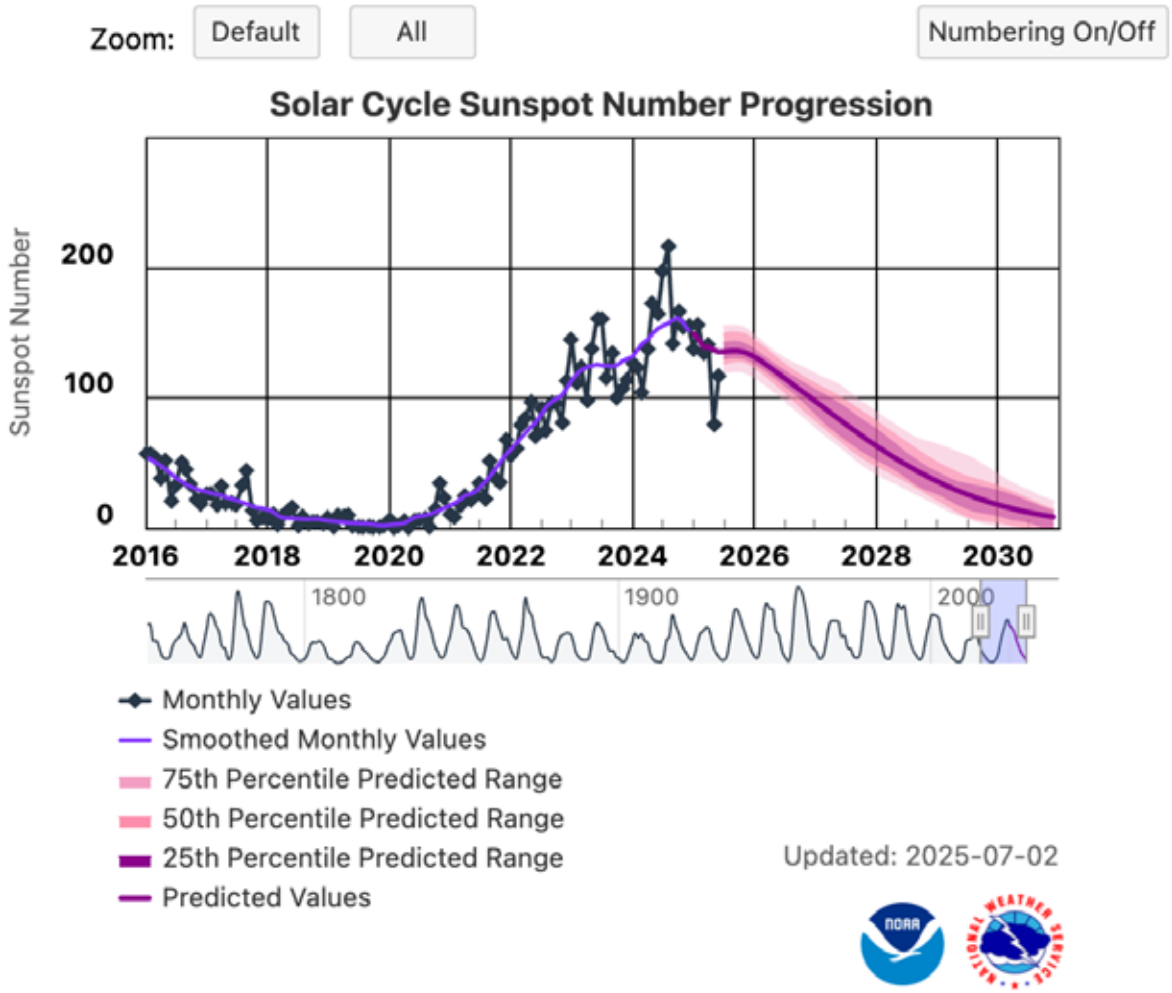
4.14 Space Weather

4.14.1 Hazard Description

The National Oceanic and Atmospheric Administration (NOAA) defines space weather as the variable conditions on the Sun and in space that can influence the performance and reliability of space- and ground-based technological systems, and endanger life or health.

During years of high solar activity, known as **solar maximum**, events like solar flares and eruptions occur more frequently. These events can release enormous amounts of energy over just a few minutes—enough to equal **200 times** the energy humans use in an entire year. When these eruptions are directed at Earth, they can result in **geomagnetic storms** after traveling the 93 million miles from the Sun.

Figure 4.26 NOAA Current Space Weather Conditions: Solar Cycle Progression



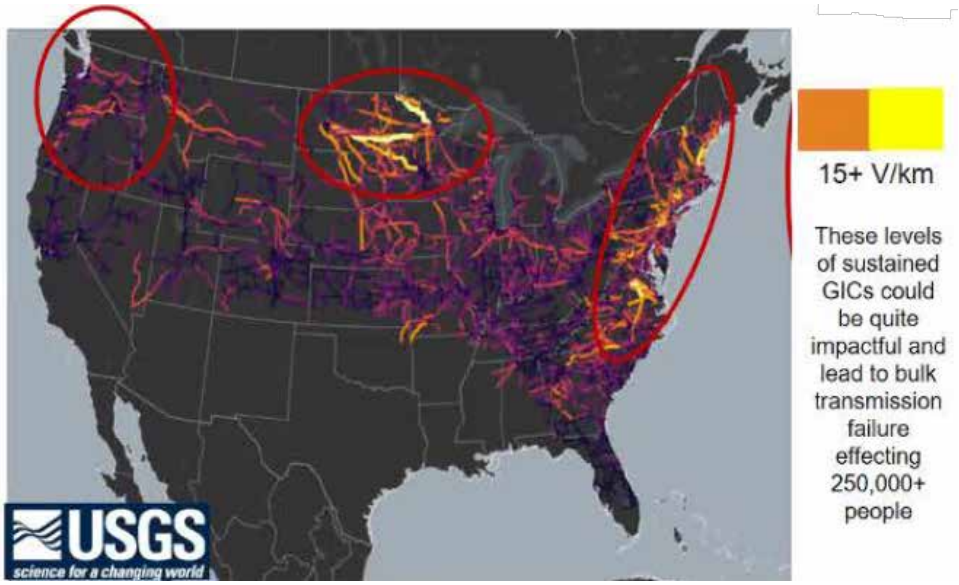
4.14.2 Hazard Location

Space weather can impact any location within Franklin County.

Coronal Mass Ejections (CMEs), which are large expulsions of plasma and magnetic field from the Sun, are the primary drivers of geomagnetic storms. While CMEs can reach Earth in as little as **15 hours**, typical travel times are **2–4 days**.

Washington State is known to be susceptible to geomagnetic storm impacts due to its geographic and magnetic positioning.

Figure 4.27 USGS Map from the report showing 100-year storm-induced voltages on the National Electric Power Grid



4.14.3 Hazard Extent/Intensity

Geomagnetic storms are measured using the **G-Scale**, which corresponds to the **Kp Index (0–9)**:

- NOAA issues alerts starting at **Kp level 4**.
- Once Kp exceeds 4, the G-Scale is applied:
  - **G1 (Minor)** to **G5 (Extreme)**
- NOAA issues official warnings between **G1–G5 / Kp4–Kp9**.

Table 4.66 NOAA G-Scale for Geomagnetic Storms

G-Level	Kp Index	Potential Impacts	Frequency (Approx.)
G1 (Minor)	Kp = 5	Minor impact on power grids, auroras visible at high latitudes	1700 days per 11-year cycle (~900/year)
G2 (Moderate)	Kp = 6	Possible transformer damage, HF radio issues, auroras at mid-latitudes	600 days per cycle (~55/year)
G3 (Strong)	Kp = 7	Voltage corrections needed, satellite orientation issues	200 days per cycle (~20/year)
G4 (Severe)	Kp = 8	Widespread voltage control problems, satellite and GPS degradation	100 days per cycle (~4/year)

G5 (Extreme)	Kp = 9	Grid collapse possible, severe satellite navigation and communication loss	4 days per cycle (very rare)

Source: NOAA Space Weather Scales - https://www.swpc.noaa.gov/noaa-scales-explanation

4.14.4 Frequency and Probability

The Sun undergoes an 11-year solar cycle, transitioning from quiet to active and back again. 2025 is projected to be the peak year of Solar Cycle 25.

4.14.4 Past Events

May 10–11, 2024 – G3/G4 Geomagnetic Storms
During the geomagnetic storms on May 10–11, 2024, which escalated from a G3 Watch to a G4 event, several sectors experienced significant disruptions:

Power and Grid Impacts: Grid operators across the U.S. and Canada, including those in Washington State, implemented numerous mitigative actions in response to the NOAA-issued G3 Watch, which was later upgraded to G4 status.

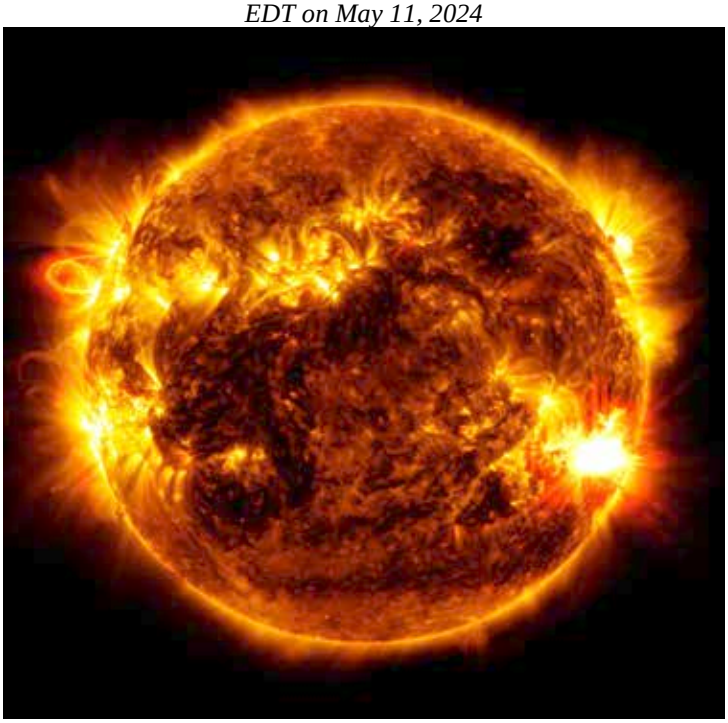
Aviation Disruptions: Trans-oceanic flights were rerouted due to the loss of High Frequency (HF) radio signals. Additionally, the Wide Area Augmentation System (WAAS), which supports precision landings and performance-based navigation, was offline for more than 15 hours, affecting aviation operations based in Washington.

GPS and Agriculture: The storms caused widespread loss of GPS signal lock and significant range errors, which led to halted GPS-guided farming operations in the Midwest and potentially disrupted agricultural machinery in Washington State.

Satellite Impacts: Satellite communications were degraded, with services such as Starlink and Iridium experiencing performance issues. Increased atmospheric drag on satellites required orbital adjustments to maintain proper positioning.

Communication & Infrastructure: NOTAMs (Notices to Air Missions) were issued to warn of ongoing communication and navigation disruptions. Furthermore, atomic clocks—specifically NIST cesium standards—exhibited a 0.1% variation in timing accuracy during the storm period.

Figure 4.28 NASA's Solar Dynamics Observatory captured this image of an X1.5 solar flare peaking at 7:44 am EDT on May 11, 2024



4.14.5 Vulnerabilities and Impacts

Public Health and Life Safety

Ongoing studies suggest that intense solar activity and geomagnetic storms may affect human health, potentially causing:

- Increased systemic inflammation
- Autonomic nervous system imbalances
- Reduced melatonin secretion
- Variability in heart rate

Property Damage and Critical Infrastructure:

Extreme solar weather events can disrupt:

- Power grids
- Water/wastewater systems
- Heating and cooling
- Communication networks
- Fuel distribution

4.14.6 Economy

Impacts may include:

- Disruptions and damage to satellites
- Power grid instability
- Losses in GPS-reliant industries (e.g., agriculture, logistics, aviation)

4.15 Volcanic Activity

4.15.1 Hazard Description

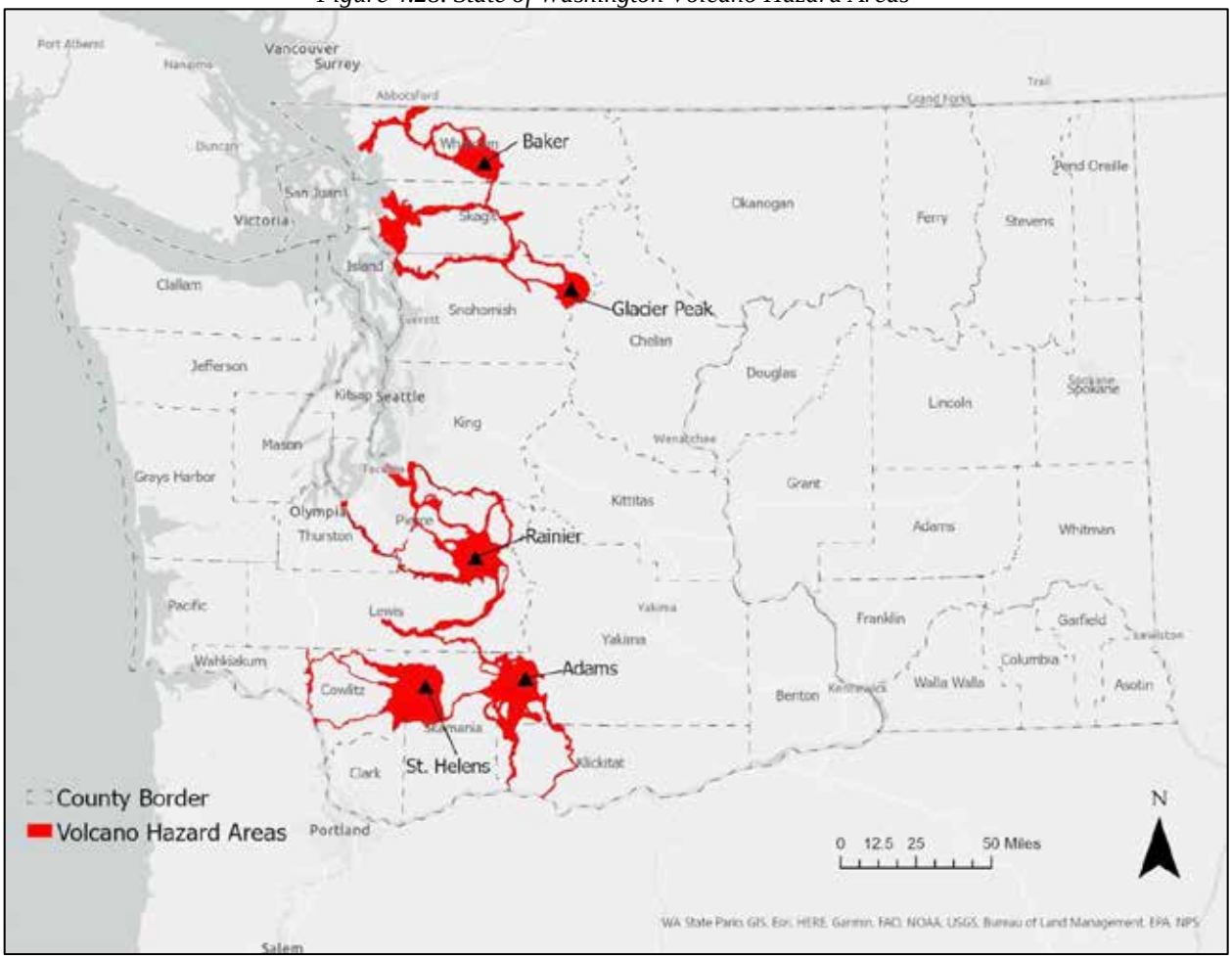
Often forming along boundaries of the Earth's crust, the USGS describes volcanoes as vents "at the Earth's surface through which magma (molten rock) and associated gases erupt, and also the cone built by effusive and explosive eruptions." Volcanic eruptions have created 80% of the Earth's surface. Although volcanoes can cause widespread damage during eruptions, they also create nutrient rich soil, and are a source of geothermal energy for many countries.

Volcanoes are classified as active, dormant, or extinct, although scientists disagree on defining criteria due to the long lifespans of volcanoes. The USGS, responsible for monitoring volcanoes in the United States defines any volcano that has erupted within the past 10,000 years as "Active." There are five active volcanoes in Washington State, all of which could begin erupting again if magma enters their systems. This is why the USGS watches these volcanoes closely, to help mitigate the potential damaging impacts of an eruption.

4.15.2 Hazard Location

There are no volcanoes located in Franklin County, however, the following image illustrates existing volcano hazard areas in the State of Washington.

Figure 4.28. State of Washington Volcano Hazard Areas



4.15.3 Hazard Intensity/Extent

The Extent and intensity of a volcanic eruption depend on the eruption type, but are generally confined into three different hazard types: near-volcano hazards, lahar hazards, and ash hazards. Volcanic hazards assessments, available from the USGS and Washington Department of Natural Resources describe the areas in which Near-volcano hazards and lahar hazards can occur.

Near-volcano hazards are the most potentially destructive hazards of an eruption, such as explosions, heavy ash fall, pyroclastic density currents, ballistics, and lava flows. All are possible during a volcanic eruption, however, they do not travel far from the slopes of the volcano itself, and are extremely unlikely to impact populated areas.

Lahars, or volcanic mudflows are also extremely destructive, and can cause damage tens of miles downstream from the volcano. However these flows are contained within river channels, of rivers sources from the volcano itself. While they can be extremely damaging to areas within the lahar hazard zone, they will not cause any immediate destruction outside of the lahar hazard zones defined by studying previous areas of lahar hazard.

Volcanic Ash, or small pieces of volcanic glass fractured by the explosion, is potentially the farthest reaching hazard. It is not shown on hazard maps, because it can travel in any direction from the volcano, depending on the direction the wind blows. For instance, on May 18th, 1980, during the catastrophic eruption of Mt. St. Helens, Ash travelled over 200 miles from the volcano, and deposited a centimeter of ash as far away as Montana, impacting all the communities in Washington along the way. On a later eruption in September 1980, Volcanic ash travelled to the Southwest, and fell in Portland, OR. Volcanic Ash can cause disruptions to a wide area. Volcanic ash is abrasive, conductive, easily redispersed through the air while attempting to clean up, can be a respiratory nuisance, can cause trouble for machinery and agriculture, and becomes extremely heavy when wet. Fortunately, only the largest eruptions produce significant amounts of ash, and only Mt. St. Helens and Glacier Peak in Washington have had eruptions large enough for their ash to reach eastern Washington.

Table 4.67. Summary of USGS Volcanic Activity Monitor Types

USGS VOLCANIC ACTIVITY MONITOR TYPES AND PURPOSES	
Technique	**Purpose**
Seismic Monitoring	Detect and record earthquakes associated with magma movement
Ground Deformation Monitoring	Measure changes in Earth's surface (swelling/subsidence)
Gas Emissions Monitoring	Measure volcanic gas emissions (e.g., sulfur dioxide)
Thermal Imaging	Detect heat from volcanic activity (lava, hot gases)
Visual and Remote Sensing	Provide real-time imagery of eruptions and ash plumes
Geophysical Surveys	Measure variations in gravitational and magnetic fields
Volcanic Ash Monitoring	Track ash clouds for aviation safety and health impacts
Source: USGS (2024)	

4.15.4 Frequency and Probability

Frequency: Between 01/01/2014 and 12/31/2022 the state of Washington did not record any events over 3,652 days. According to the USGS, approximately 2-3 Volcanic eruptions happen in the Cascades (including Oregon) per century.

Probability: According to USGS, probability of volcanic activity is measured through a combination of monitoring techniques, historical data analysis, and volcanic hazard assessments. The USGS employs an array of instruments to monitor volcanic activity, including seismometers to detect earthquakes, GPS and satellite imagery to measure ground deformation, gas sensors to analyze volcanic gases, and thermal cameras to detect heat changes. Historical data on past eruptions and geological studies of volcanic deposits provide context and help identify patterns in volcanic behavior. The USGS also conducts hazard assessments, which integrate these monitoring data and historical records to evaluate the likelihood of future volcanic events.

It is important to note that due to monitoring being conducted by the USGS Cascades Volcano Observatory, our volcanoes will not erupt without warning. The instruments used in the table below describe ways that the USGS detect activity and can evaluate whether it indicates that it is leading to a potential eruption or not.

Table 4.68. USGS Volcanic Probability Measurement Table

USGS VOLCANIC PROBABILITY MEASUREMENT TABLE			
Measurement Technique	**What It Measures**	**Details**	**Typical Ranges**
Seismic Monitoring	Earthquake frequency and intensity	Detects earthquakes caused by magma movement. Increased activity indicates rising magma.	Typically, 10-100 events/day during unrest, varying by volcano
Ground Deformation	Changes in the Earth's surface	Measures swelling or sinking of the ground, indicating magma movement below the surface.	5-30 mm/year during significant volcanic unrest
Gas Emissions Analysis	Amount of volcanic gases released	Measures gases like sulfur dioxide and carbon dioxide. Changes in emissions can signal unrest.	500-2000 tons/day for sulfur dioxide during heightened activity
Thermal Imaging	Surface temperature changes	Detects heat from volcanic activity, identifying hot spots and changes in lava flow or eruption site.	Temperature increases of 2-10°C above baseline
Remote Sensing	Ash plumes and lava flow movement	Provides real-time data on volcanic activity, including ash plumes and lava flow extents.	Variable: plumes can extend tens of miles upwards, and may travel hundreds of miles from the volcano; lava flow rates vary
Source: USGS (2024)			

As seen in the table above, USGS measures the probability of volcanic activity with various monitoring techniques and data analyses including seismic monitoring, ground deformation measurements, volcanic gas emission analysis, thermal imaging, and remote sensing.

Seismic monitoring involves using networks of seismometers to detect and record earthquakes that indicate magma movement beneath the surface. Increased seismic activity often precedes volcanic eruptions, making it a critical factor in assessing eruption probabilities. Ground deformation monitoring uses GPS and InSAR (Interferometric Synthetic Aperture Radar) to measure changes in the earth’s surface, such as swelling or sinking, which signal magma movement. Volcanic gas emissions are analyzed through instruments that measure gases like sulfur dioxide and carbon dioxide released by volcanoes. Variations in these gas emissions can suggest increasing volcanic activity.

Thermal imaging employs infrared cameras and satellite sensors to detect heat from volcanic activity, allowing scientists to monitor surface temperature changes and identify hot spots. Remote sensing, utilizing satellites, provides real-time data on volcanic activity, including the size and movement of ash plumes and lava flows.

By combining data from these various monitoring techniques, USGS develops probabilistic models that estimate the likelihood of volcanic activity. These models are essential for issuing warnings and planning mitigation strategies. For instance, increased seismic activity coupled with significant ground deformation and elevated gas emissions can collectively raise the probability of an eruption, prompting timely alerts and preparedness actions.

4.15.5 Vulnerability and Impacts

Public Health and Life Safety: According to the U.S. Geological Survey (USGS), volcanic ash events can have significant public health and life safety impacts. Volcanic ash, which consists of fine particles of volcanic rock and glass, can cause a range of health issues, particularly affecting the respiratory system and eyes. The following are examples of these impacts:

- Respiratory Effects: Inhalation of volcanic ash can irritate the upper airways, leading to symptoms such as nasal irritation, throat soreness, and coughing. Individuals with pre-existing respiratory conditions, such as asthma or bronchitis, may experience exacerbated symptoms, including shortness of breath, wheezing, and persistent coughing. The smallest ash particles (<4 μm) can penetrate deep into the lungs, potentially causing more severe health issues over prolonged exposure.
- Eye Irritation: Volcanic ash can also cause eye discomfort, including corneal abrasions and conjunctivitis. These effects are more pronounced for individuals wearing contact lenses, as ash particles can get trapped behind the lenses, leading to further irritation.
- Structural Damage and Indirect Health Risks: Heavy ashfall can accumulate on buildings, leading to roof collapses and associated injuries or fatalities. The clean-up process can also pose risks, including physical injuries and respiratory problems from stirring up ash particles.
- Psychological Impact: The disruption caused by volcanic ashfall can lead to increased levels of stress and anxiety among affected populations, particularly if the event leads to significant social and economic disruption.

Table 4.69. Health and Safety Impacts of Volcanic Ash

HEALTH AND SAFETY IMPACTS OF VOLCANIC ASH			
Impact	**Description**	**Severity**	**Preventative Measures**
Respiratory Issues	Irritation of nasal passages, throat soreness, coughing, exacerbation of asthma/bronchitis	Moderate to Severe (for pre-existing conditions)	Use masks, avoid outdoor activities, ensure medication availability
Eye Irritation	Corneal abrasions, conjunctivitis	Mild to Moderate	Wear goggles, avoid contact lenses, stay indoors
Structural Damage	Roof collapses due to ash accumulation	Severe (potential for injury/fatality)	Regular removal of ash from roofs, structural reinforcements
Psychological Impact	Increased stress and anxiety	Mild to Severe	Community support, mental health resources
Source: USGS Volcano Hazards (2024)			

Property Damage and Critical Infrastructure: According to USGS, volcanic ash events can cause extensive property damage and significantly impact critical infrastructure. Volcanic ash, consisting of fine particles of volcanic rock and glass, can cover vast areas, leading to both

immediate and long-term damage to buildings, transportation systems, power supplies, and water resources. Typical impacts include the following:

- Buildings and Structures: The accumulation of volcanic ash on rooftops can cause them to collapse, particularly if the ash becomes wet and heavy. This can lead to severe structural damage and potential injuries or fatalities. Even small amounts of ash can infiltrate buildings, damaging electronics, HVAC systems, and other sensitive equipment.
- Transportation Systems: Ashfall can severely disrupt transportation, reducing visibility on roads and making surfaces slippery, leading to increased accidents. Airports can be closed as ash damages aircraft engines and affects ground operations. Roads may become impassable due to ash accumulation, hindering emergency response efforts.
- Power Supply: Volcanic ash can cause power outages by short-circuiting electrical grids and damaging power lines. Ash can also contaminate and clog power generation facilities, such as hydroelectric plants, leading to significant disruptions in electricity supply.
- Water Resources: Ash can contaminate water supplies, clogging filters and reducing water quality. This can affect both drinking water and water used for agriculture. In severe cases, entire water treatment facilities may need to be shut down for cleaning and repairs.
- Agriculture: Volcanic ash can blanket crops, leading to reduced photosynthesis and crop failure. Livestock can also be affected, as ash contaminates grazing areas and water sources, leading to dental or stomach damage in livestock animals.

Table 4.70. Property Damage and Infrastructure Impact of Volcanic Ash

PROPERTY DAMAGE AND INFRASTRUCTURE IMPACT OF VOLCANIC ASH			
Impact	**Description**	**Severity**	**Measurement/Indicator**
Buildings and Structures	Roof collapses, infiltration into buildings causing damage to electronics and HVAC systems	Severe	Ash load >100 kg/m² can cause roof collapse when wet
Transportation Systems	Reduced visibility, slippery roads, damage to aircraft engines, closure of airports	Moderate to Severe	Visibility <500 meters; airport closures lasting several days
Power Supply	Short-circuiting of electrical grids, damage to power lines, contamination of power generation facilities	Severe	Power outages affecting thousands of households; repair costs >$1M
Water Resources	Contamination of water supplies, clogging of filters, reduced water quality	Moderate to Severe	Ashfall >5 mm can necessitate water treatment shutdowns
Agriculture	Crop failure due to reduced photosynthesis, contamination of grazing areas and water sources for livestock	Moderate to Severe	Crop yield reduction >50%; livestock health issues reported
Source: USGS Volcano Hazards (2024)			

Economy: According to USGS, volcanic ash events have diverse and far-reaching economic impacts, including sectors such as infrastructure, transportation, agriculture impacts including:

- Infrastructure Damage: Volcanic ash can cause extensive damage to buildings and critical infrastructure, leading to high repair and maintenance costs. Roof collapses, damage to

HVAC systems, and contamination of electrical equipment require significant expenditures to restore. The cleanup operations themselves can be costly and time-consuming, adding to the economic burden on local governments and property owners.

- Transportation Disruptions: Ashfall can severely disrupt transportation networks, including road, air, and rail systems. Reduced visibility and slippery road conditions increase the likelihood of accidents, necessitating road closures and cleanup efforts. Airports may shut down due to ash accumulation, resulting in flight cancellations and delays, which can cost airlines millions of dollars in lost revenue and operational expenses. The economic impact extends to tourism and business travel, affecting local economies that depend on these sectors.
- Power Supply Issues: Volcanic ash can cause power outages by damaging power lines and electrical infrastructure. The costs of repairing these damages and restoring power can be substantial. Businesses and industries reliant on continuous power supply may face significant financial losses due to downtime and disrupted operations.
- Agricultural Losses: Ashfall can blanket crops, reducing photosynthesis and leading to crop failure. The agricultural sector can suffer from both immediate crop losses and long-term soil fertility issues, impacting food production and supply chains. Livestock can also be affected by contaminated grazing fields and water sources, leading to health issues and reduced productivity.
- Public Health Costs: The health impacts of volcanic ash, such as respiratory issues and eye irritation, can lead to increased healthcare costs. There may be a rise in hospital visits, medical treatments, and public health interventions. Additionally, the psychological stress associated with volcanic ash events can have economic implications, including lost productivity and the need for mental health services.

Table 4.71. Economic Impacts of Volcanic Ash

ECONOMIC IMPACTS OF VOLCANIC ASH			
Impact	**Description**	**Severity**	**Measurement/Indicator**
Infrastructure Damage	Costs for repair and maintenance of buildings, cleanup operations	Severe	Cleanup costs up to $200,000 per building
Transportation Disruptions	Flight cancellations, road closures, increased accidents	Severe	Airline losses up to $250 million per major event
Power Supply Issues	Damage to electrical infrastructure, power outages	Severe	Repair costs and economic losses exceeding $10 million
Agricultural Losses	Crop failure, reduced soil fertility, livestock health issues	Moderate to Severe	Crop yield reduction by 50%; financial losses up to $100 million
Public Health Costs	Increased healthcare costs, respiratory issues, psychological stress	Moderate	Hospital visits increase by 30%; healthcare costs surge by 20%
Source: USGS Volcanic Ash (2024)			

5.15.6 Past Events

Historical volcanic impacts to Franklin County are tied primarily to regional eruptions within the Cascade Range, most notably the 1980 eruption of Mount St. Helens, which is extensively documented by the U.S. Geological Survey (USGS) as the most significant volcanic event

affecting eastern Washington in modern history. On May 18, 1980, the eruption produced a massive ash plume that was carried across Washington and into much of the western United States, depositing volcanic ash over large portions of eastern Washington, including areas consistent with Franklin County. Ashfall from this event disrupted transportation, agriculture, and air quality across the region, with fine volcanic material traveling hundreds of miles from the source due to atmospheric winds. While no direct lava flows or lahars impacted Franklin County, USGS and Washington State Department of Natural Resources data indicate that volcanic hazards in this area are primarily limited to ashfall from distant eruptions rather than direct volcanic activity.

Changes in Development and Impact to Future Development: Volcanic activity can impact changes in development and influence future development in various ways. Active and potentially active volcanoes pose substantial risks to nearby communities, infrastructure, and economies. Eruptions can lead to the destruction of property, the displacement of populations, and the disruption of essential services such as transportation, water supply, and power generation. The presence of volcanic hazards necessitates careful land-use planning and development regulations to minimize risk. For example, areas prone to lava flows, ashfall, and pyroclastic surges may be designated as exclusion zones where new construction is prohibited. Existing infrastructure might need to be retrofitted or relocated to withstand potential volcanic events. Lastly, future development plans must consider the availability of evacuation routes and emergency response strategies.

Effects of Climate Change on Severity of Impacts: As global temperatures rise, the accelerated melting of glaciers and ice caps can reduce the pressure on Earth's crust in volcanic regions, potentially triggering volcanic eruptions. Additionally, changes in precipitation patterns and the intensity of weather events can affect volcanic activity. Increased rainfall can lead to the formation of lahars—dangerous volcanic mudflows—by saturating volcanic ash deposits and loose materials on volcanic slopes. These climate-induced changes can exacerbate the impacts of volcanic eruptions, causing more widespread and severe damage to communities and ecosystems.

Table 4.72. 25-Year Climate Projections for Franklin County

25-YEAR CLIMATE PROJECTIONS FOR FRANKLIN COUNTY, WA
HIGHER EMISSIONS (RCP8.5)
Franklin County is expected to experience a **51% increase** in extremely hot days within 25 years.
By 2049, Franklin County is expected to have a **2°F increase** (from 55°F to 57°F) in average annual temperatures.
LOWER EMISSIONS (RCP4.5)
Franklin County is expected to experience a **31% increase** in extremely hot days within 25 years.
By 2049, Franklin County is expected to have a **2°F increase** (from 54°F to 56°F) in average annual temperatures.
Source: Neighborhoods at Risk (2024)

Table 4.73. 25-Year Precipitation Projections for Franklin County

25-YEAR PRECIPITATION PROJECTIONS FOR FRANKLIN COUNTY, WA
HIGHER EMISSIONS (RCP8.5)

	Franklin County is expected to experience a **32% increase** in heavy precipitation within 25 years.
	By 2049, Franklin County is expected to have a **increase** (from precipitation.
LOWER EMISSIONS (RCP4.5)	
	Franklin County is expected to experience a 13**% increase** in heavy precipitation within 25 years.
	By 2049, Franklin County is expected to have a **increase** (from precipitation.
Source: Neighborhoods at Risk (2024)	

Table 4.74. Future Climate Temperature Indicators for Franklin County

FUTURE CLIMATE INDICATORS FOR FRANKLIN COUNTY, WA							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Temperature Thresholds							
Annual Days With Maximum Temperature >90	**34 days**	**52 days**	**54 days**	**60 days**	**66 days**	**69 days**	**91 days**
	34-41	42-65	42-63	47-77	49-83	50-90	61-112
Annual Days With Maximum Temperature >95	**17 days**	**28 days**	**29 days**	**34 days**	**41 days**	**44 days**	**67 days**
	15-20	19-36	19-36	24-50	24-55	25-64	37-91
Annual Days With Maximum Temperature >100	**5 days**	**11 days**	**12 days**	**15 days**	**20 days**	**21 days**	**43 days**
	3-6	6-15	5-19	8-24	9-34	9-24	18-70
Annual Days With Maximum Temperature >105	**0 days**	**2 days**	**3 days**	**4 days**	**7 days**	**8 days**	**22 days**
	0-1	1-4	1-6	1-9	2-17	2-18	5-46
Annual Temperature							
Annual Single Highest Temperature °F	**103°F**	**106°F**	**106°F**	**107°F**	**108°F**	**109°F**	**114°F**
	102-104	104-108	103-109	105-110	105-113	105-114	108-120
Annual Highest Maximum Temperature Averaged Over a 5-Day Period	**98°F**	**101°F**	**102°F**	**103°F**	**104°F**	**105°F**	**109°F**
	97-100	98-103	99-105	100-106	100-109	101-110	104-117
Cooling Degree Days (CDD)	**695 degree days**	**951 degree days**	**986 degree days**	**1,098 degree days**	**1,243 degree days**	**1,293 degree days**	**1,873 degree days**
	626-785	787-1,183	807-1,181	846-1,421	937-1,596	948-1,671	1,223-2,576
Source: Climate Mapping for Resilience and Adaptation (2024)							

Table 4.75. Future Climate Indicators for Franklin County

FUTURE CLIMATE INDICATORS FOR FRANKLIN COUNTY, WA							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation:							
Annual Average Total Precipitation	**9”**	**9”**	**9”**	**10”**	**10”**	**10”**	**10”**
	8-9	8-11	9-10	9-11	9-11	9-11	9-11
Days Per Year With Precipitation (Wet Days)	**108 days**	**108 days**	**108 days**	**107 days**	**109 days**	**107 days**	**106 days**
	104-111	102-116	102-120	102-116	98-127	98-114	97-118
Maximum Period of Consecutive Wet Days	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**
	8-11	7-10	8-10	7-10	8-11	7-10	8-11
Annual Days With:							
Annual Days With Total Precipitation > 1 inch	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 2 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 3 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days That Exceed 99th Percentile Precipitation	**1 day**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**
	1-2	1-2	1-2	2-2	2-2	2-2	2-3
*Days With Maximum Temperature Below 32*F*	**17 days**	**13 days**	**11 days**	**10 days**	**9 days**	**8 days**	**5 days**
	14-20	8-17	6-15	5-16	4-12	3-12	2-10
Source: Climate Mapping for Resilience and Adaptation (2024)							

4.15.6 FEMA NRI Expected Annual Loss

According to the FEMA NRI, expected annual is not applicable to Franklin County.

4.15.7 FEMA Hazard-Specific Risk

According to the FEMA NRI, hazard-specific risk is not applicable to Franklin County.

4.15.8 FEMA NRI Exposure Value

According to the FEMA NRI, exposure value is not applicable to Franklin County.

4.16 Wildfire

Wildfire is an uncontrolled vegetative fire that burns in forests, grasslands, and other natural areas. Wildfires can spread quickly, driven by factors like wind and dry conditions, and they often pose significant threats to life, property, and the environment. These fires can be ignited by various sources, including lightning, human activities, and other natural causes. Wildfires can result in widespread devastation and require coordinated efforts for containment, suppression, and recovery.

4.16.1.1 General Wildfire Types

Flammable expanses of brush, diseased timberland, overstocked forests, hot and dry summers, extreme topography, intense fire weather wind events, summer lightning storms, and human acts all contribute to wildfire threat. Wildfires can generally be classified as follows:

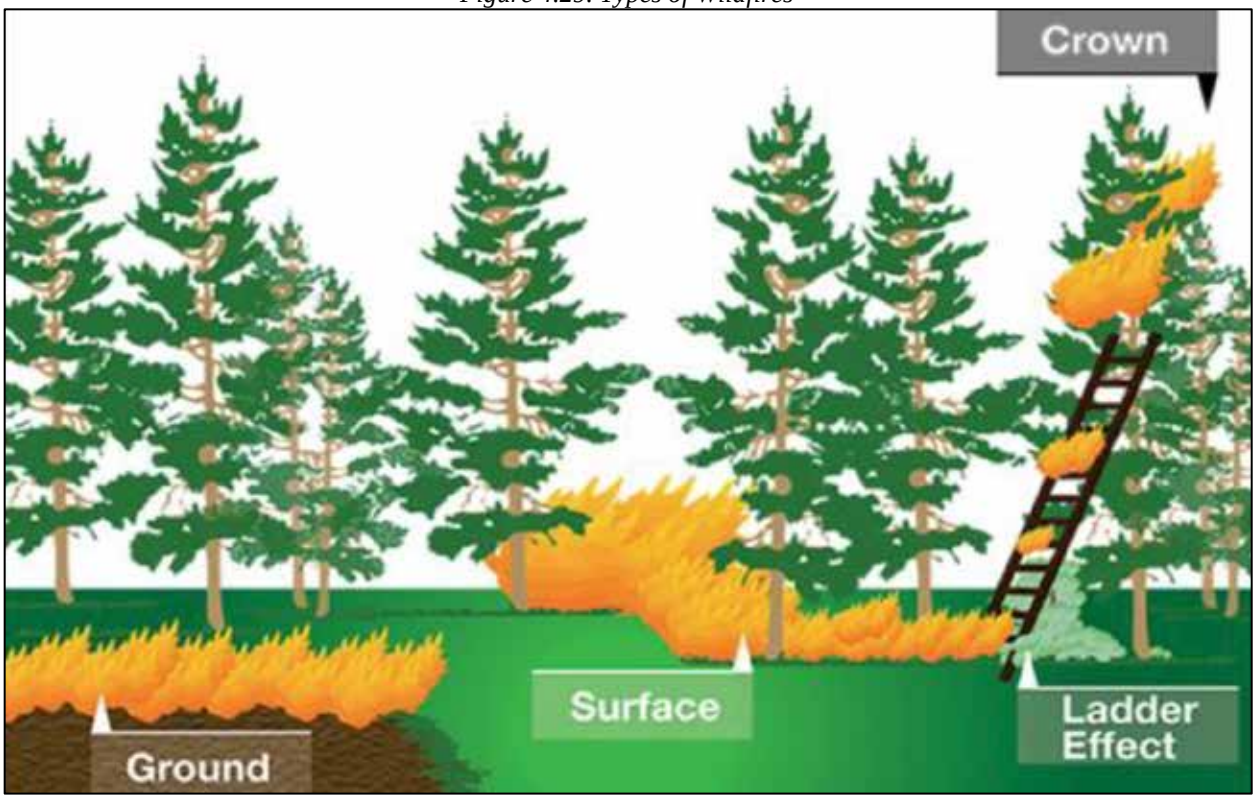
- Ground fires occur when fuels ignite and burn underground. Ground fires may eventually burn through the ground surface and become surface fires.
- Surface fires burn on the surface of the ground and are primarily fueled by low-lying vegetation.
- Ladder fuels are vegetation that allow surface fires to climb into the tree canopy and become crown fires.
- Crown fires spread from treetop to treetop spread at a rapid pace. Crown fires are often pushed by wind and can be extremely intense.

4.16.1.2 Factors Affecting Fire Behavior

The are several factors that affect fire behavior, including the following:

- Fuel: Fuel may include living and dead vegetation on the ground, along the surface as brush and small trees, and above the ground in tree canopies. Lighter fuels such as Arundo donax and other grasses, leaves, and needles quickly expel moisture and burn rapidly, while heavier fuels such as tree branches, logs, and trunks take longer to warm and ignite. Trees killed or defoliated by forest insects and diseases are more susceptible to wildfire.
- Weather: Relevant weather conditions include temperature, relative humidity, wind speed and direction, cloud cover, precipitation amount and duration, and the stability of the atmosphere. Conditions are very favorable for extensive and severe wildfires when the temperature is high, relative humidity is low, wind speed is increasing and there has been little or no precipitation, so vegetation is dry. These conditions occur more frequently where temperatures are higher, and fog is less prevalent.
- Terrain: The slope and elevation of a region influences the amount and moisture of fuel; the impact of weather conditions such as temperature and wind; potential barriers to fire spread, such as highways and lakes; and elevation and slope of landforms (fire spreads more easily uphill than downhill).

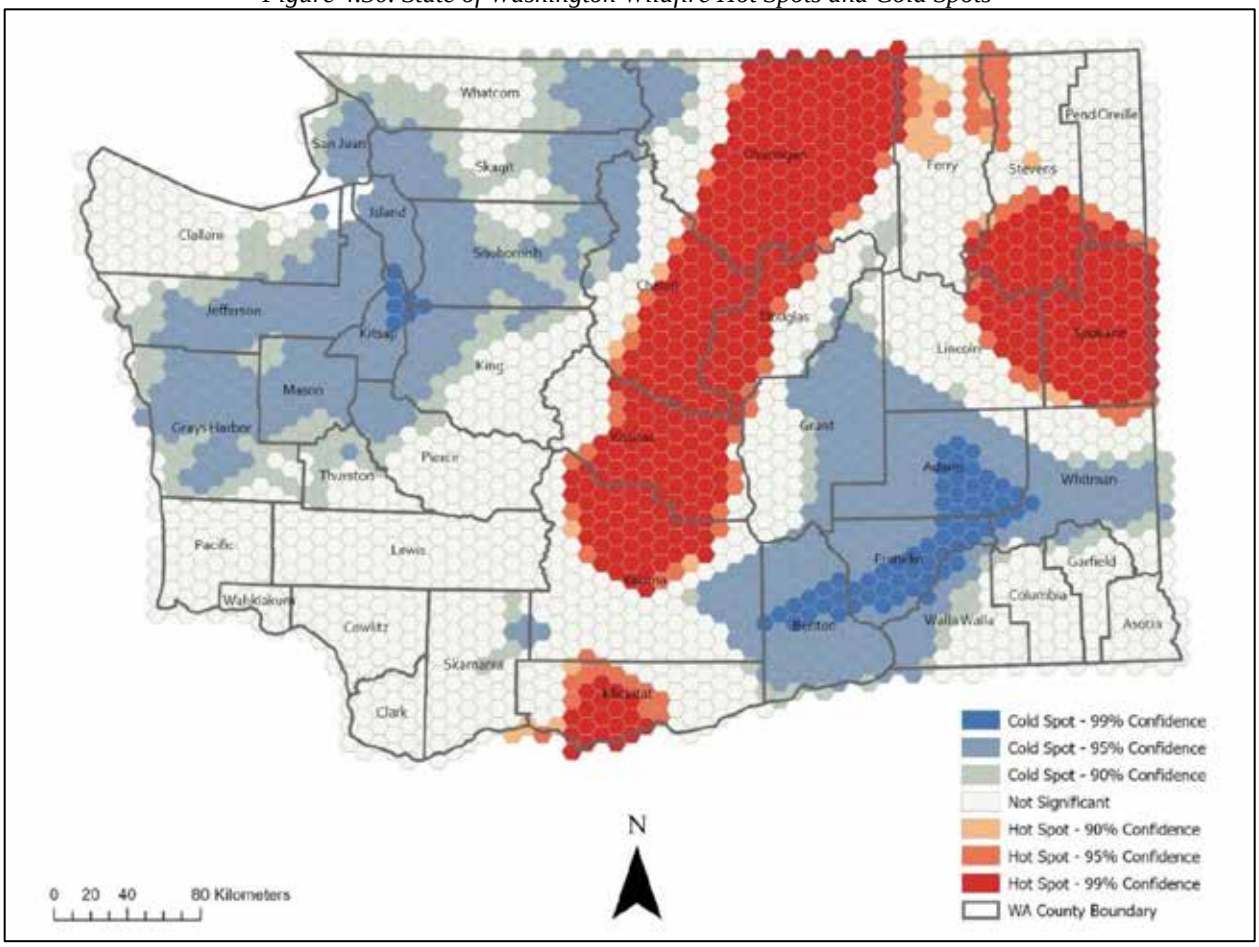
Figure 4.29. Types of Wildfires



4.16.2 Hazard Location

According to the 2023 State of Washington HMP, wildfire hot spots and cold spots are based on wildfire activity between 1970 and 2020. Hot spots were determined by counting the number of wildfire incidents within a 29-mile radius of each hexagon cell and comparing that number with the average for the state. The deepest red color is most prone to large fires in the future.

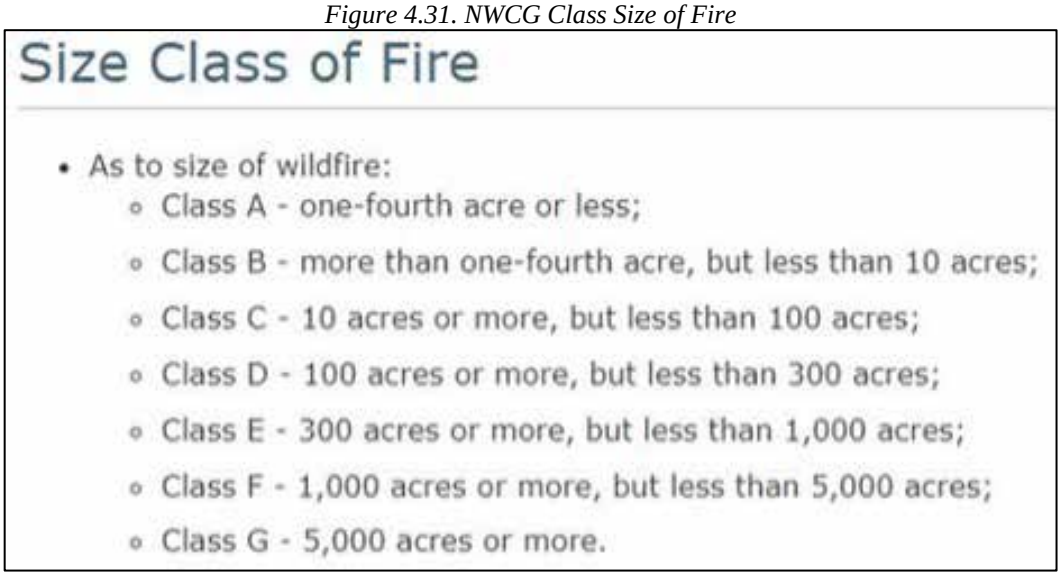
Figure 4.30. State of Washington Wildfire Hot Spots and Cold Spots



4.16.3 Hazard Extent/Intensity

The National Wildfire Coordinating Group (NWCG) classifies fire sizes using classification standards. The standard data values are included in the data table below.

Figure 4.31. NWCG Class Size of Fire



The National Interagency Fire Center (NIFC) employs several measures and tools to assess the extent and intensity of wildfires. These include the acreage burned, which quantifies the size of the affected area, with larger acreages indicating more extensive wildfires. Fire behavior indicators such as the rate of spread, fireline intensity, and flame length offer insights into the wildfire's intensity, with rapid spread and high-intensity flames signifying a more severe fire. The table below illustrates fire suppression interpretations of flame length and fireline intensity.

Table 4.76. Flame Length and Fireline Intensity Table

US DEPARTMENT OF AGRICULTURE – FOREST SERVICE		
Fire Suppression Interpretations of Flame Length and Fireline Intensity		
Flame Length	**Fire Intensity**	**Interpretation**
Feet	*Btu/ft/s*	Fire can generally be attacked at the head or flanks by persons using hand tools. Handline should hold the lire
< 4	< 100	
4-8	100-500	Fires are too intense for direct attack on the head by persons using hand tools. Handline cannot be relied on to hold fire. Equipment such as plows, dozers, pumpers, and retardant aircraft can be effective.
8-11	500-1,000	Fires may present serious control problems-torching out, crowning, and spotting. Control efforts at the fire head will probably be ineffective.
>11	>1,000	Crowning, spotting, and major fire runs are probable. Control efforts at head of fire are ineffective.
Source: US Department of Agriculture – Forest Service		

The containment status, measured as the percentage of the fire's perimeter under control, tracks the progress in limiting the wildfire's spread. Meteorological data on temperature, humidity, wind speed, and direction are crucial for understanding fire potential, with critical fire weather conditions contributing to more intense wildfires. The extent of damage to homes, infrastructure, and communities, as well as the scale of evacuation orders issued, reflects the wildfire's impact. Lastly, resource deployment and fire danger ratings are considered, enabling NIFC to assess wildfire severity and effectively manage response efforts.

4.16.4 Frequency and Probability

Frequency: Between 01/01/2019 and 12/31/2023 Franklin County recorded two wildfire events over 1,826 days. This averages to 0.001095 incidents per day during this time and 0.4 incidents annually.

Probability: The National Interagency Fire Center (NIFC) measures the probability of wildfires by considering various factors and conditions that contribute to the likelihood of ignition and fire spread. Key elements in assessing this probability include:

- Weather Conditions: NIFC monitors weather data, including temperature, humidity, wind speed, and precipitation, to evaluate the fire weather outlook. Dry and windy conditions with low humidity increase the likelihood of wildfires.
- Fuel Moisture: The moisture content of vegetation, such as grasses, shrubs, and trees, is a critical factor. Dry or drought-affected fuels are more susceptible to ignition.
- Lightning Activity: NIFC tracks lightning activity in wildfire-prone regions, as lightning strikes are a common natural cause of wildfires.

- Human Activities: Monitoring human activities that can lead to unintentional ignitions, such as campfires, discarded cigarettes, and equipment sparks, helps assess the human-related wildfire risk.
- Historical Data: Historical wildfire data, including the frequency and size of past wildfires, can inform the probability of future incidents.
- Fire Danger Ratings: Fire danger ratings, such as the Fire Weather Index, provide a standardized assessment of fire risk based on weather and fuel conditions.

4.16.5 Past Events

The table below illustrates both wildfire events in Franklin County between 2019-2023. During this time there were two events with no deaths and no injuries reported.

Table 4.77. Past Wildfire Events in Franklin County (2019-2023)

Location	County	State	Date	Time	T.Z.	Type	Dth	Inj	PrD	CrD
Totals							**0**	**0**	**0.00M**	**0.00K**
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	7/18/19	13:30	PST-8	Wildfire	0	0	0.00K	0.00K
LOWER COLUMBIA BASIN (ZO...	LOWER COLUMBIA BASIN (ZO...	WA	9/7/20	17:45	PST-8	Wildfire	0	0	0.00K	0.00K
Totals							**0**	**0**	**0.00M**	**0.00K**

4.16.6 Vulnerabilities and Impacts

Life Safety and Public Health: Wildfires can have significant life safety and public health impacts. First, wildfires produce smoke and particulate matter that can degrade air quality over large areas, potentially leading to respiratory issues, exacerbating pre-existing conditions, and causing symptoms such as coughing, shortness of breath, and irritation of the eyes and throat. Secondly, wildfires often necessitate the evacuation of communities, temporarily displacing residents from their homes. This displacement can result in stress, anxiety, and potential health risks, particularly for vulnerable populations.

Additionally, the dynamic nature of wildfires can lead to injuries and fatalities among responders and the public. These incidents may occur during evacuations, firefighting efforts, or while navigating hazardous fire conditions. Furthermore, the mental health impact of wildfires is noteworthy, as they can cause stress, anxiety, and trauma for those affected. The loss of homes and possessions, coupled with the uncertainty of wildfire impacts, can contribute to long-term mental health challenges. Wildfires also have the potential to disrupt the food supply chain and water infrastructure, potentially leading to contamination of drinking water sources and causing shortages of essential supplies. Lastly, evacuation centers and crowded living conditions can facilitate the spread of infectious diseases, making disease control and public health management a priority during and after wildfires.

Property Damage and Critical Infrastructure: Overall, wildfires have far-reaching consequences on both property and critical infrastructure, emphasizing the importance of fire prevention and mitigation measures. Wildfires can cause extensive destruction to homes, buildings, and infrastructure, resulting in significant financial losses. Homes and properties

situated in or near the path of a wildfire are particularly vulnerable, and even with firefighting efforts, many structures may be lost. In addition to property damage, wildfires can disrupt critical infrastructure such as power lines, electrical substations, transportation networks, and communication facilities.

Power outages can occur as a result of infrastructure damage, impacting not only residents but also essential services like hospitals, water treatment plants, and emergency communication systems. Roads and bridges may be compromised or rendered impassable due to the force of the wildfires, hindering access to affected areas. The aftermath of wildfires can also lead to environmental damage, with erosion, sedimentation, and water quality issues affecting ecosystems and water sources. Cleanup and restoration efforts can be costly and time-consuming, and the long-term economic impact on communities and regions is a significant concern.

Figure 3-8 in the Community Profile illustrates the locations of critical facilities within Franklin County.

Economy: Wildfires can result in significant economic losses for communities and regions affected by these disasters. Some of the primary economic impacts include property damage and loss, the cost of firefighting efforts, and the expenses associated with recovery and rebuilding. Property damage encompasses homes, businesses, and infrastructure, leading to insurance claims and financial burdens on individuals and organizations. The cost of deploying firefighting resources, including personnel, equipment, and air support, is another significant economic factor. Additionally, post-fire efforts such as erosion control, reforestation, and repair of damaged infrastructure contribute to the economic toll. The disruption of economic activities, such as agriculture, tourism, and outdoor recreation, can further affect the local and regional economies.

Changes in Development and Impact of Future Development: Wildfires can significantly impact changes in development and future development in several ways. The effects of wildfires on communities, infrastructure, and ecosystems can influence land use planning and development decisions. After a wildfire, local authorities may reassess land use and zoning regulations, especially in areas prone to wildfires. They may impose stricter building codes, setback requirements, and vegetation management rules to reduce fire risk in future developments.

Wildfires can also expose vulnerabilities in critical infrastructure, such as power lines, roads, and water supply systems. This can lead to investment in infrastructure upgrades to enhance resilience and prevent future damage. Communities affected by wildfires often face the decision of whether to rebuild in the same location or relocate to safer areas. The experience of a wildfire can influence the choices made by property owners and developers. The increased frequency and severity of wildfires may impact the availability and cost of property insurance. Insurers may adjust premiums or coverage terms, affecting property development decisions. Moreover, wildfires can lead to increased community awareness and preparedness efforts, influencing development decisions. Communities may implement Firewise practices and community wildfire protection plans that affect future development.

Lastly, wildfires can alter ecosystems and natural landscapes. Land managers and conservationists may adjust their plans for ecological restoration and habitat conservation, which can, in turn,

influence land development in affected areas. Lastly, the cumulative impact of wildfires on a region can inform long-term planning strategies, influencing where and how future development occurs. It may lead to regional development policies that prioritize resilience and fire risk reduction. In summary, wildfires can prompt changes in development and future development by affecting land use regulations, infrastructure investment, community resilience, and long-term planning. These changes are often driven by the need to reduce the risks associated with wildfires and their potential impacts on communities and the environment.

Effects of Climate Change on Severity of Impacts: According to NOAA, climate change is having a profound influence on wildfires. Climate change can manifest its impact in various ways, significantly intensifying the frequency and severity of wildfires. Firstly, escalating global temperatures lead to heightened evaporation rates, causing vegetation to dry out and become more susceptible to ignition. This prolonged warmth results in an extended fire season, providing more opportunities for wildfires to occur. Secondly, climate change can exacerbate drought conditions in many regions, depleting soil moisture and rendering vegetation more flammable. As a result, severe and extended droughts increase the ease with which wildfires ignite and spread. Additionally, alterations in precipitation patterns, driven by climate change, can lead to more intense rainfall events, followed by prolonged dry periods. This cycle promotes rapid vegetation growth, which, in turn, creates additional fuel for wildfires. The impact of climate change is further exacerbated by an increase in extreme weather events, like thunderstorms and lightning strikes, which often serve as ignition sources for wildfires. Changes in wind patterns, brought about by shifting atmospheric circulation, can result in more frequent and intense wind events, facilitating the rapid spread of wildfires. Warmer temperatures can also contribute to increased insect outbreaks, weakening and killing trees, thus providing more fuel for fires. Lastly, climate change can extend the fire season in many regions, heightening the likelihood of wildfires.

Table 4.78. 25-Year Climate Projections for Franklin County

25-YEAR CLIMATE PROJECTIONS FOR FRANKLIN COUNTY, WA
HIGHER EMISSIONS (RCP8.5)
Franklin County is expected to experience a **51% increase** in extremely hot days within 25 years.
By 2049, Franklin County is expected to have a **2°F increase** (from 55°F to 57°F) in average annual temperatures.
LOWER EMISSIONS (RCP4.5)
Franklin County is expected to experience a **31% increase** in extremely hot days within 25 years.
By 2049, Franklin County is expected to have a **2°F increase** (from 54°F to 56°F) in average annual temperatures.
Source: Neighborhoods at Risk (2024)

Table 4.79. 25-Year Precipitation Projections for Franklin County

25-YEAR PRECIPITATION PROJECTIONS FOR FRANKLIN COUNTY, WA
HIGHER EMISSIONS (RCP8.5)
Franklin County is expected to experience a **32% increase** in heavy precipitation within 25 years.
By 2049, Franklin County is expected to have a **increase** (from precipitation.
LOWER EMISSIONS (RCP4.5)
Franklin County is expected to experience a 13**% increase** in heavy precipitation within 25 years.
By 2049, Franklin County is expected to have a **increase** (from precipitation.
Source: Neighborhoods at Risk (2024)

Table 4.80. Future Climate Temperature Indicators for Franklin County

FUTURE CLIMATE INDICATORS FOR FRANKLIN COUNTY, WA							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Temperature Thresholds							
Annual Days With Maximum Temperature >90	**34 days**	**52 days**	**54 days**	**60 days**	**66 days**	**69 days**	**91 days**
	34-41	42-65	42-63	47-77	49-83	50-90	61-112
Annual Days With Maximum Temperature >95	**17 days**	**28 days**	**29 days**	**34 days**	**41 days**	**44 days**	**67 days**
	15-20	19-36	19-36	24-50	24-55	25-64	37-91
Annual Days With Maximum Temperature >100	**5 days**	**11 days**	**12 days**	**15 days**	**20 days**	**21 days**	**43 days**
	3-6	6-15	5-19	8-24	9-34	9-24	18-70
Annual Days With Maximum Temperature >105	**0 days**	**2 days**	**3 days**	**4 days**	**7 days**	**8 days**	**22 days**
	0-1	1-4	1-6	1-9	2-17	2-18	5-46
Annual Temperature							
Annual Single Highest Temperature °F	**103ºF**	**106ºF**	**106ºF**	**107ºF**	**108ºF**	**109ºF**	**114ºF**
	102-104	104-108	103-109	105-110	105-113	105-114	108-120
Annual Highest Maximum Temperature Averaged Over a 5-Day Period	**98ºF**	**101ºF**	**102ºF**	**103ºF**	**104ºF**	**105ºF**	**109ºF**
	97-100	98-103	99-105	100-106	100-109	101-110	104-117
Cooling Degree Days (CDD)	**695 degree days**	**951 degree days**	**986 degree days**	**1,098 degree days**	**1,243 degree days**	**1,293 degree days**	**1,873 degree days**
	626-785	787-1,183	807-1,181	846-1,421	937-1,596	948-1,671	1,223-2,576
Source: Climate Mapping for Resilience and Adaptation (2024)							

Table 4.81. Future Climate Indicators for Franklin County

FUTURE CLIMATE INDICATORS FOR FRANKLIN COUNTY, WA							
Indicator	**Modeled History** (1976-2005)	**Early Century** (2015-2044)		**Mid Century** (2035-2064)		**Late Century** (2070-2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
Precipitation:							
Annual Average Total Precipitation	**9”**	**9”**	**9”**	**10”**	**10”**	**10”**	**10”**
	8-9	8-11	9-10	9-11	9-11	9-11	9-11
Days Per Year With Precipitation (Wet Days)	**108 days**	**108 days**	**108 days**	**107 days**	**109 days**	**107 days**	**106 days**
	104-111	102-116	102-120	102-116	98-127	98-114	97-118
Maximum Period of Consecutive Wet Days	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**	**9 days**
	8-11	7-10	8-10	7-10	8-11	7-10	8-11
Annual Days With:							
Annual Days With Total Precipitation > 1 inch	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 2 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days With Total Precipitation > 3 inches	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**	**0 days**
	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Annual Days That Exceed 99th Percentile Precipitation	**1 day**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**	**2 days**
	1-2	1-2	1-2	2-2	2-2	2-2	2-3
*Days With Maximum Temperature Below 32*F*	**17 days**	**13 days**	**11 days**	**10 days**	**9 days**	**8 days**	**5 days**
	14-20	8-17	6-15	5-16	4-12	3-12	2-10
Source: Climate Mapping for Resilience and Adaptation (2024)							

4.16.7 FEMA NRI Expected Annual Loss Estimates

Table 4.82. Franklin County Expected Annual Loss Table

FRANKLIN COUNTY, CA FEMA NRI EXPECTED ANNUAL LOSS TABLE – WILDFIRE							
Annualized Frequency	**Population**	**Population Equivalence**	**Building Value**	**Agriculture Value**	**Total Value**	**Expected Annual Loss Score**	**Expected Annual Loss Rating**
0.467% chance per year	0.00	$167	$3,941	$3,842	$326,972	77.5	Relatively Low
Annualized Frequency: *The natural hazard annualized frequency is defined as the expected frequency or probability of a hazard occurrence per year. Annualized frequency is derived either from the number of recorded hazard occurrences each year over a given period or the modeled probability of a hazard occurrence each year.* ***Population:*** *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology.* ***Expected Annual Loss*** *scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios (Expected Annual Loss = Exposure × Annualized Frequency × Historic Loss Ratio). Source: hazards.fema.gov/nri/expected-annual-loss*							
Source: FEMA National Risk Index (2024)							

4.16.8 FEMA Hazard-Specific Risk Index Table

Table 4.83. Franklin County FEMA Hazard Specific Risk Index Table

FRANKLIN COUNTY, CA FEMA HAZARD SPECIFIC RATINGS - WILDFIRE		
Risk Index Score	**Social Vulnerability Rating**	**Community Resilience Rating**
79.4	Very High	Relatively Low
Risk Index Scores: *are a quantitative rating calculated using data for only a single hazard type. Risk Index Scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value.* ***Social Vulnerability Ratings:*** *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the Centers for Disease Control and Prevention (CDC).* ***Community Resilience Ratings:*** *are a qualitative rating that describe the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Community Resilience is measured using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).*		
Source: FEMA National Risk Index (2024)		

4.16.9 FEMA NRI Exposure Value Table

Table 4.84. Franklin County FEMA NRI Exposure Value Table

FRANKLIN COUNTY, CA FEMA EXPOSURE VALUE TABLE - WILDFIRE					
Hazard Type	**Total Value**	**Building Value**	**Population Equivalence**	**Population**	**Agriculture Value**
Wildfire	$61,352,060,774	$790,569,606	$60,444,870,542	5,210.76	$116,620,626

Buildings: *Building exposure value is defined as the dollar value of the buildings determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible building exposure of an area (Census block, Census tract, or county) is its building value as recorded in Hazus 6.0, which provides 2022 valuations of the 2020 Census.*

Population: *Population exposure is defined as the estimated number of people determined to be exposed to a hazard according to a hazard type-specific methodology. The maximum possible population exposure of an area (Census block, Census tract, or county) is its population as recorded in Hazus 6.0. Population loss is monetized into a population equivalence value using a VSL approach in which each fatality or ten injuries is treated as $11.6 million of economic loss (2022 dollars).*

Agriculture: *Agriculture exposure value is defined as the estimated dollar value of the crops and livestock determined to be exposed to a hazard according to a hazard type-specific methodology. This is derived from the USDA 2017 Census of Agriculture county-level value of crop and pastureland with 2018 values for the US territories. All dollar values are inflation-adjusted to 2022 dollars.*

Source: FEMA National Risk Index (2024)

OTHER HAZARDS OF CONCERN

Although FEMA does not require non-natural hazards for inclusion in a hazard mitigation plan, Franklin County wishes to rank an additional hazard that could impact the county. Due to the nature of non-natural hazards and the discretionary status regarding their inclusion, the following hazard of interest has been briefly and qualitatively assessed for public education and informing its inclusion within the hazard ranking and mitigation process:

- ***Natural Hazards***
  - Invasive Species
- ***Technological (Manmade Hazards)***
  - Structural Fire
- ***Biological Hazards***
  - *Public Health Emergency*

4.17 Invasive Species

4.17.1 Hazard Definition

According to the National Invasive Species Council (NISC), an invasive species is defined as a species that is non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species can be plants, animals, or other organisms, such as microbes, that thrive in areas where they do not naturally occur, often to the detriment of native species and ecosystems.

There are different types of invasive species, categorized based on the ecosystems they impact and their modes of introduction. These categories include terrestrial invasives, aquatic invasives, and pathogens.

Table 4.85. Types of Invasive Species

TYPES OF INVASIVE SPECIES		
Type	**Description**	**Examples**
Terrestrial Invasives	These are non-native plants and animals that invade land ecosystems, often outcompeting native species.	- Japanese Beetle (insect) - Nutria (rodent) - Cheatgrass (plant) - Brown treesnake (snake)
Aquatic Invasives	These species invade freshwater or marine ecosystems, disrupting native aquatic life and habitats.	- Elodea (plant) - Zebra mussel (mollusk)
Pathogens	Disease-causing organisms that can spread rapidly and affect native plants, animals, and humans.	- Batrachochytrium dendrobatidis (fungus affecting amphibians)
Source: USDA National Invasive Species Center (2024)		

Invasive species are spread primarily through human activities, including international trade, travel, and transportation. For example, invasive plants and animals can be transported in ballast water of ships, on wooden shipping pallets, or as ornamental plants and pets that escape into the wild. The introduction and spread of invasive species can lead to significant ecological and economic impacts, such as the extinction of native species, loss of biodiversity, and damage to infrastructure and agriculture.

4.17.1.1 Cyanobacteria and Cyanotoxins

Cyanobacteria, sometimes called "blue-green algae," is an aquatic invasive and can occur in freshwater lakes, ponds, impoundments, rivers, and streams. They are a type of bacteria similar to algae that move vertically in the water column to find sunlight at the surface and nutrients in the deeper layers. Cyanobacteria convert inert atmospheric nitrogen into an organic form that is usable for growth. When the amount of sunlight, temperature, and nutrients are adequate, they reproduce rapidly. This rapid growth creates blooms that can appear as visible scum on the surfaces of lakes and rivers. They also can grow attached to sediments or rocks in rivers and lakes. When attached, these are known as benthic cyanobacteria. Since bacterial growth may not be apparent in visual inspection, water samples must be collected and analyzed for blooms. Blooms typically occur in late summer after nitrogen has been diminished from the water column.

Cyanotoxins are chemical compounds produced by some species of cyanobacteria that pose public health risks if they are found in drinking water. When cyanotoxins are present in high concentrations, they can harm people, animals, and wildlife. Health effects on people can include skin rashes, vomiting, gastroenteritis, headaches, and eye, ear, and throat irritations. Severe symptoms can affect a person's liver or nervous system.

Anatoxin-A: Anatoxin-A is a potent neurotoxin (it causes damage to the nervous system) and is the smallest of the cyanotoxins. Anatoxin-a was first detected in the Columbia River in 2021, along with reports of cattle, cat, and dog poisonings. Algal cells retain anatoxin-a in favorable growth

conditions. These cells then release toxins if disrupted, such as when exposed to chlorine or through biological methods. When an animal consumes water that contains the algal cells either through drinking the contaminated water or licking the toxins on their fur, the cells will enter the animal's gastrointestinal tract. Pets are at high risk for anatoxin-a exposure. However, ingestion of a sub-lethal dose leaves no chronic effects and recovery appears to be complete. Anatoxin-a degrades to a non-toxic product in sunlight and at a high pH (8 to 9).

Microcystins: Microcystins are the most common cyanotoxin, and more than one microcystin may occur in a particular cyanotoxin strain. Microcystins cause liver damage; at lethal doses they can cause death by liver necrosis within a few hours or up to a few days. However, noticeable symptoms only occur in severe cases. Researchers suspect that microcystins are liver carcinogens, which would increase the cancer risk to humans following continuous low-level exposure. Unlike other cyanotoxins, microcystins are bound within the cell and are only released into water when the cell ruptures due to being oxidized. When released, microcystins are stable in water and can be found in the water for months.

4.17.2 Hazard Location

According to the Quad Cities Algal Management Plan, algal blooms on the Columbia River resulted in the detection of Anatoxin-a in water samples taken near Richland, WA in summer 2021. The Columbia River is main source of water supply, and has a combination of six intakes on the river for obtaining source drinking water.

4.17.3 Extent/Intensity

According to the NISC, the extent and intensity of invasive species are measured through several methods that provide quantitative data on their presence and impact. This process includes monitoring the distribution and abundance of invasive species, evaluating their ecological and economic impacts, and assessing the effectiveness of control measures. The following table illustrates these methods of measurement.

Table 4.86. USDA Measurement of Invasive Species

USDA MEASUREMENT OF INVASIVE SPECIES		
Measurement	**Description**	**Indicator**
Distribution and Abundance	Locations and population sizes of invasive species	Number of individuals per unit area (density)
Ecological Impact	Effects on native biodiversity and ecosystem processes	Change in native species richness and abundance
Economic Impact	Financial costs of damage and management	Cost in dollars per year
Control Effectiveness	Success of management strategies	Reduction in invasive species population (%)
Source: USDA National Invasive Species Center (2024)		

4.17.4 Probability and Frequency

Probability: The National Invasive Species Council (NISC) employs a multifaceted approach to measure the probability of invasive species establishment and spread. This approach integrates ecological modeling, risk assessment frameworks, and expert evaluations. NISC's methodology often involves the use of species distribution models (SDMs) that predict potential habitats based

on environmental variables and species' characteristics. These models help in assessing the likelihood of a species becoming invasive in new environments. Additionally, risk assessments are conducted, considering factors such as the species' reproductive rate, dispersal mechanisms, environmental tolerance, and historical data on invasions in similar ecosystems. Expert panels and stakeholder consultations further refine these assessments by incorporating localized knowledge and recent observations. Anything specific to Franklin Co?

4.17.5 Vulnerability and Impacts

Public Health and Life Safety: According to the NISC, invasive species have public health and life safety impacts as some species can act as vectors for diseases, thereby increasing the incidence and spread of illnesses among human populations. For example, invasive mosquitoes like Aedes aegypti and Aedes albopictus are known to transmit viruses such as Zika, dengue, and chikungunya, posing substantial public health threats. Anything specific to Franklin Co?

Additionally, invasive plants can exacerbate allergies and respiratory issues by introducing potent allergens or increasing the pollen load in the environment. Invasive species also significantly impact water quality, often leading to the proliferation of harmful algal blooms. These blooms can produce dangerous toxins like Anatoxin-a and Microcystins, which are harmful to human health. Exposure to these toxins can cause severe neurological and liver damage, highlighting the critical need for monitoring and managing water systems.

In terms of life safety, invasive species can disrupt infrastructure and natural disaster mitigation systems. For example, invasive plants that alter fire regimes by increasing the frequency and intensity of wildfires can endanger lives and properties. Moreover, invasive aquatic species can damage levees and water conveyance systems, heightening the risk of flooding and compromising community safety.

Property Damage and Critical Infrastructure: According to the NISC, invasive species can have property damage and critical infrastructure impacts including damaged crops, forests, and urban landscapes. For example, invasive insects such as the emerald ash borer and the Asian long-horned beetle can devastate tree populations in both rural and urban areas, necessitating costly tree removal and replacement efforts. Invasive plants can overrun agricultural fields, leading to reduced crop yields and the need for expensive control measures.

In addition to these terrestrial impacts, invasive species can severely affect water quality and infrastructure. Harmful algal blooms caused by invasive species can produce toxins like Anatoxin-a and Microcystins, which pose significant threats to water systems. These toxins can damage water treatment facilities and create hazards for drinking water supplies, resulting in increased maintenance costs and the need for advanced treatment technologies.

Aquatic invasive species, such as zebra mussels and quagga mussels, can further exacerbate these issues by attaching themselves to water intake structures, pipes, and treatment facilities, leading to blockages and increased operational costs. These species can also damage critical infrastructure, including dams, levees, and irrigation systems, compounding the economic burden on affected communities.

Invasive species can also clog waterways and damage infrastructure such as dams, levees, and irrigation systems. Aquatic invasive species like anatoxin-a, zebra mussels and quagga mussels attach themselves to water intake structures, pipes, and treatment facilities, leading to blockages and increased maintenance costs.

Economy: According to the NISC, invasive species can have substantial economic impacts and financial harm by reducing agricultural productivity, degrading fisheries, and increasing the costs of managing and mitigating their spread. For example, invasive plants like kudzu and water hyacinth can overrun agricultural lands and waterways, leading to decreased crop yields and obstructed irrigation systems, which in turn increase operational costs for farmers and land managers. Similarly, invasive insects such as the emerald ash borer and the brown marmorated stink bug wreak havoc on forests and crops, necessitating expensive pest control measures and reforestation efforts.

The economic impacts are not limited to land-based invasions. Aquatic invasive species, such as zebra mussels, can clog water intake pipes and damage infrastructure, resulting in higher maintenance costs for water treatment facilities and power plants. Additionally, the proliferation of harmful algal blooms caused by invasive species can produce toxins like Anatoxin-a and Microcystins, which pose significant risks to fisheries and water resources. These toxins can lead to fish kills and contaminate drinking water supplies, further straining public health resources and increasing the financial burden on affected communities.

The tourism and recreation industries also suffer economic losses due to invasive species. Infestations can degrade the aesthetic and ecological value of natural areas, deterring tourists and impacting local economies that rely on outdoor recreation. The presence of toxic algal blooms, for instance, can close beaches and waterways, reducing tourism revenue and harming businesses that depend on these attractions.

Changes in Development and Impact of Future Development: According to the NISC, invasive species can alter land use patterns and development priorities by degrading natural resources and ecosystems that are critical for sustainable development. For example, the spread of invasive plants and animals can lead to the loss of native biodiversity, disrupting ecosystems and reducing the availability of essential resources like timber, clean water, and fertile soil. This degradation can hinder agricultural expansion, forestry activities, and other land-based developments.

Invasive species also complicate construction and infrastructure projects, increasing costs and complexity. For instance, invasive plant roots can damage foundations and drainage systems, while invasive animals can undermine the stability of infrastructure. Furthermore, the proliferation of harmful algal blooms, producing toxins such as Anatoxin-a and Microcystins, can contaminate water sources and disrupt water management systems, leading to delays and added costs in development projects.

The financial and human resources required to manage and mitigate invasive species often divert funds from other critical development initiatives. In urban areas, invasive species can decrease property values and necessitate increased spending on maintenance and control measures,

impacting housing development and urban planning. The presence of toxic algal blooms, driven by invasive species, can further complicate urban water management and public health strategies, influencing future development plans.

Invasive species can shape future development by requiring stringent biosecurity measures and environmental assessments to prevent their spread. These measures can lead to delays and added costs in development projects, impacting overall planning and execution.

Effects of Climate Change on Severity of Impacts: Climate change can exacerbate the severity of invasive species events by altering environmental conditions in ways that favor the spread and establishment of these species. Rising temperatures, shifting precipitation patterns, and the increased frequency of extreme weather events create new opportunities and extend suitable habitats for many invasive species. For example, warmer temperatures can expand the range of invasive insects like the Asian tiger mosquito, which transmits diseases such as Zika and dengue fever, into regions that were previously too cold for their survival. Similarly, changes in precipitation patterns can benefit invasive plants like kudzu and cheatgrass, which thrive in disturbed environments and outcompete native vegetation.

In aquatic ecosystems, climate change further compounds these challenges by increasing water temperatures and altering hydrological cycles. These changes can enhance the proliferation of harmful algal blooms that produce toxins like Anatoxin-a and Microcystins, posing severe risks to water quality and public health. The warmer and altered water conditions also promote the spread of invasive aquatic species, such as zebra mussels and water hyacinth, which disrupt native species, alter community compositions, and impair ecosystem functions.

Extreme weather events, such as hurricanes and floods, further facilitate the spread of invasive species by dispersing seeds, larvae, and other propagules over large distances, accelerating their establishment in new areas. These events can also damage ecosystems, making them more vulnerable to invasions by creating openings in the landscape that invasive species can exploit. As climate change continues to intensify, the severity of these invasive species impacts is likely to increase, leading to more widespread ecological and economic consequences.

Table 4.87. Climate Change Impact on Invasive Species

CLIMATE CHANGE IMPACTS ON INVASIVE SPECIES		
Invasive Species Type	**Climate Change Impact**	**Species Impacted**
Invasive Insects	Expanded range due to warmer temperatures	Asian tiger mosquito
Invasive Plants	Increased growth and spread with altered precipitation	Kudzu, Cheatgrass
Aquatic Invasive Species	Enhanced proliferation with warmer water temperatures	Anatoxin-a, Microcystins, Zebra mussel, Water hyacinth
Invasive Pathogens	Increased disease transmission with changing climates	Phytophthora ramorum (Sudden Oak Death)
Source: USDA (2024)		

4.18 Reduced Air Quality Incidents

4.18.1 Hazard Definition

Reduced air quality refers to the presence of pollutants in the air at concentrations high enough to pose health risks and environmental hazards. This is typically quantified using the Air Quality Index (AQI), which reports daily air quality based on the concentrations of five major pollutants regulated by the Clean Air Act: ground-level ozone, particulate matter (PM10 and PM2.5), carbon monoxide, sulfur dioxide, and nitrogen dioxide. These pollutants can cause various health problems, including respiratory issues, cardiovascular diseases, and premature death, especially in sensitive populations such as children, the elderly, and those with pre-existing health conditions.

4.18.2 Hazard Extent/Intensity

According to AirNow *(managed by U.S. Environmental Protection Agency)* (EPA), extent and intensity of an air quality incident are measured using the Air Quality Index (AQI), which is a numerical scale that ranges from 0 to 500. The AQI is used to communicate how polluted the air currently is or how polluted it is forecasted to become. The AQI focuses on health impacts people may experience within a few hours or days after breathing polluted air.

Table 4.88. Air Quality Index Scale

EPA AIR QUALITY INDEX SCALE		
AQI Value	**Category**	**Health Implications**
0 - 50	Good	Air quality is considered satisfactory, and air pollution poses little or no risk.
51 - 100	Moderate	Air quality is acceptable; however, for some pollutants, there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
101 - 150	Unhealthy for Sensitive Groups	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
151 - 200	Unhealthy	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
201 - 300	Very Unhealthy	Health alert: everyone may experience more serious health effects.
301 - 500	Hazardous	Health warnings of emergency conditions. The entire population is more likely to be affected.
Source: AirNow / US EPA (2024)		

Measurement of Pollutants:

The AQI measures the following major pollutants:

1. **Ground-**
2. **Particulate Matter (PM2.5 and PM10)**
3. **Carbon Monoxide (CO)**
4.
5.

Each of the above listed pollutants are measured in parts per million (ppm) or micrograms per cubic meter (µg/m³), and their concentrations are converted to the AQI scale. The pollutant with the highest AQI value for a given day is used as the overall AQI value for that day.

The table below illustrates shows how different levels of pollutants translate to the AQI values and their corresponding health categories. These measurements help the public understand the extent and intensity of air quality incidents and the potential health impacts they might experience.

Table 4.90. Examples of Specific Pollutant Levels Corresponding to AQI Categories

EXAMPLES OF SPECIFIC POLLUTANT LEVELS CORRESPONDING TO AQI CATEGORIES							
Pollutant	**AQI Range**	**8-hr avg)**	**PM2.5 (µg/m³, 24-hr avg)**	**PM10 (µg/m³, 24-hr avg)**	**CO (ppm, 8-hr avg)**	**(ppb, 1-hr avg)**	**(ppb, 1-hr avg)**
Good	0 - 50	0.000 - 0.054	0.0 - 12.0	0 - 54	0.0 - 4.4	0 - 35	0 - 53
Moderate	51 - 100	0.055 - 0.070	12.1 - 35.4	55 - 154	4.5 - 9.4	36 - 75	54 - 100
Unhealthy for Sensitive Groups	101 - 150	0.071 - 0.085	35.5 - 55.4	155 - 254	9.5 - 12.4	76 - 185	101 - 360
Unhealthy	151 - 200	0.086 - 0.105	55.5 - 150.4	255 - 354	12.5 - 15.4	186 - 304	361 - 649
Very Unhealthy	201 - 300	0.106 - 0.200	150.5 - 250.4	355 - 424	15.5 - 30.4	305 - 604	650 - 1249
Hazardous	301 - 500	0.201 - 0.404	250.5 - 500.4	425 - 604	30.5 - 50.4	605 - 1004	1250 - 2049

4.18.3 Past Events

Data from the Washington State Department of Ecology shows that between 01/01/2019 and 12/31/2024, Franklin County experienced 16 days with air quality levels ranging from Unhealthy for Sensitive Groups to Very Unhealthy. Additionally, the Air Quality Index (AQI) was classified as Moderate for 205 days during this same period. (https://airqualitymap.ecology.wa.gov/aqi-count/29)

4.18.5 Vulnerability and Impacts

Reduced air quality has significant life safety and public health impacts, particularly for vulnerable populations such as children, the elderly, and individuals with pre-existing health conditions. Poor air quality exacerbates respiratory conditions such as asthma, bronchitis, and chronic obstructive

pulmonary disease (COPD) due to exposure to pollutants like particulate matter (PM2.5 and PM10) and ground-level ozone, leading to increased respiratory symptoms, reduced lung function, and airway inflammation. Long-term exposure to air pollution is also linked to cardiovascular diseases, including heart attacks, strokes, and hypertension, with pollutants such as nitrogen dioxide (NO2) and sulfur dioxide (SO2) contributing to these conditions.

High levels of air pollution can lead to premature death, particularly from heart and lung diseases, with studies showing a correlation between elevated pollution levels and increased mortality rates. Additionally, exposure to certain air pollutants during pregnancy can harm fetal development, potentially resulting in low birth weight, preterm birth, and developmental issues in children. Long-term exposure to pollutants such as benzene and formaldehyde is associated with an increased risk of cancer, particularly lung cancer.

The overall public health burden from reduced air quality includes increased healthcare costs, more hospital admissions, and greater absenteeism from work and school, which strains healthcare systems and impacts economic productivity.

Property Damage and Critical Infrastructure: According to NOAA, reduced air quality can impact changes in development and influence future development trends. Poor air quality necessitates stricter environmental regulations and air quality standards, prompting the adoption of cleaner technologies and more sustainable practices in various industries. This includes advancements in emissions control technologies, the transition to renewable energy sources, and improvements in transportation infrastructure to reduce vehicular emissions.

In urban planning, efforts to mitigate air pollution lead to the incorporation of green spaces, increased public transportation options, and the development of pedestrian-friendly infrastructure. These changes aim to reduce the reliance on fossil fuels and lower overall emissions. Lastly, the economic implications of poor air quality, such as healthcare costs and lost productivity, drive investments in air quality monitoring and research. Enhanced monitoring capabilities, including satellite-based observations and advanced modeling, help provide accurate forecasts and inform public health interventions.

Economy: Reduced air quality can have economic impacts, including increased healthcare costs due to higher rates of respiratory and cardiovascular illnesses, leading to more hospital visits and treatments. It also reduces productivity by causing more sick days and limiting outdoor work. Additionally, businesses may face higher operating costs due to the need for air filtration systems and compliance with stricter air quality regulations. Long-term, these economic burdens can hinder economic growth and development by diverting resources away from other critical areas.

Changes in Development and Impact of Future Development: Reduced air quality can drive changes in development and influence future development trends. Poor air quality necessitates stricter environmental regulations, leading to the adoption of cleaner technologies and sustainable practices in various industries. Urban planning may incorporate more green spaces, increased public transportation options, and pedestrian-friendly infrastructure to reduce emissions. Additionally, economic implications like healthcare costs and productivity losses prompt

investments in air quality monitoring and research, fostering innovation in air quality management and sustainable development strategies.

Effects of Climate Change on Severity of Impacts: Climate change can exacerbate the severity of air quality incidents in multiple ways. As global temperatures rise, the frequency and intensity of heatwaves are expected to increase, leading to more episodes of poor air quality. Hot, dry conditions and intense sunlight can enhance the production of ground-level ozone, a harmful air pollutant that negatively affects health, crops, and ecosystems. Stable atmospheric conditions during heatwaves can trap pollutants near the surface, further degrading air quality.

Additionally, climate change is expected to increase the frequency and severity of wildfires, which contribute significantly to air pollution. Wildfires release large quantities of particulate matter (PM2.5) and other pollutants into the atmosphere, worsening air quality over vast regions. For instance, the wildfires across western North America in recent years have caused widespread increases in PM2.5 pollution, exceeding World Health Organization air quality guidelines. This trend is anticipated to continue as the climate warms, even under low-emission scenarios.

4.19 Structural Fire

4.19.1 Hazard Definition

According to the National Interagency Fire Center (NIFC), a structural fire is defined as a fire that occurs in a building or other structure. This type of fire involves residential, commercial, or industrial buildings and can include houses, apartments, offices, factories, and other structures.

Structural fires differ from wildfires in that they are confined to man-made structures rather than natural vegetation. The response and management of structural fires typically involve local fire departments and emergency services, whereas wildfires often require coordinated efforts from multiple federal, state, and local agencies.

4.19.2 Hazard Location

A structural fire could occur anywhere in Franklin County.

4.19.3 Hazard Extent/Intensity

The intensity of an active fire is a measure of vertical heat transfer above ground, and the degree to which vegetation mortality has occurred. Although temperature extremes are an integral part of any fire, temperature itself is not a good indicator of fire intensity. Woody fuels ignite at roughly 350 °C and maximum temperatures in forest fire flames can reach 1000 °C. However, flames 5 cm high have a markedly different measure of intensity relative to flames 5 m high, despite having the same core temperature.

The following table illustrates ranges of fire severity and intensity with associated fire types.

Table 4.91. Ranges of Fire Severity and Intensity with Associated Fire Types

RANGES OF FIRE SEVERITY AND INTENSITY WITH ASSOCIATED FIRE TYPES			
	Severity (°C)	**Intensity (kW h)**	**Associated fire type**
Low	< 180	100–2000	Surface

Moderate	180–300	2000–10 000	Intermittent crown
High	> 300	> 1,000	Continuous Crown
Source: Science Direct (2024)			

4.19.4 Probability and Frequency

Probability: The National Interagency Fire Center (NIFC) measures the probability of structure fires through a combination of risk assessment models and historical data analysis. These methods consider several factors:

1. Historical Fire Data: Analyzing past fire incidents helps identify trends and areas with a higher likelihood of future fires. This includes data on fire frequency, causes, and locations.
2. Environmental Conditions: The probability of structure fires is influenced by current environmental conditions such as temperature, humidity, wind speed, and drought levels. These factors are monitored using weather stations and remote sensing technologies.
3. Vegetation and Fuel Load: The amount and type of vegetation surrounding structures can significantly impact fire risk. Areas with high fuel loads (dense vegetation) are more susceptible to fires. Fuel load assessments are conducted regularly to update risk models.
4. Human Activity: The presence of human activities such as construction, recreational fires, and industrial operations can increase the probability of structure fires. Risk assessments incorporate data on human activities to predict potential fire outbreaks.
5. Infrastructure Vulnerability: The construction materials and design of buildings, as well as the presence of firebreaks and other protective measures, are considered. Buildings made of fire-resistant materials and those with adequate spacing are less likely to catch fire.

4.19.5 Vulnerability and Impacts

Life Safety and Public Health: According to NIFC, structural fires can lead to severe injuries or fatalities due to burns, smoke inhalation, and toxic fume exposure. Smoke from structural fires contains hazardous substances such as carbon monoxide, cyanide, and fine particulate matter, which can cause respiratory issues, cardiovascular problems, and long-term health complications. Vulnerable populations, including children, the elderly, and individuals with pre-existing health conditions, are particularly at risk.

In addition to immediate health impacts, structural fires can lead to long-term psychological effects on survivors, including post-traumatic stress disorder (PTSD), anxiety, and depression. The destruction of homes and personal belongings contributes to emotional distress and can lead to displacement, further exacerbating public health issues. This can lead to strains on local healthcare systems and emergency response resources. Lastly, the release of pollutants during a fire can have environmental repercussions, affecting air quality and contributing to broader public health concerns.

Property Damage and Critical Infrastructure: Structural fires can often result in the complete destruction of buildings, causing significant financial losses. Damage from fire also extends beyond the physical structures to include personal property, essential documents, and irreplaceable items. In commercial settings, structural fires can disrupt business operations, leading to economic losses and unemployment due to the destruction of workplaces.

Critical infrastructure, such as power lines, water supply systems, transportation networks, and communication systems, is also vulnerable to structural fires. Damage to these systems can have widespread consequences, disrupting essential services and hindering emergency response efforts. For instance, fires can damage electrical grids, causing power outages that affect thousands of homes and businesses. Similarly, the destruction of water supply lines can impede firefighting efforts and disrupt access to clean water for affected communities.

Economy: According to NIFC, the economic impacts of structural fires can cause direct economic losses by destroying residential, commercial, and industrial properties, leading to the loss of goods, machinery, and inventory. The costs associated with rebuilding and repairing damaged structures are substantial, and often insurance does not fully cover these expenses, leaving property owners to bear significant financial burdens.

Structural fires can also disrupt economic activities by causing business closures and job losses. When businesses are forced to shut down temporarily or permanently due to fire damage, employees may face unemployment, and local economies can suffer from reduced commercial activity. The interruption of critical infrastructure, such as power grids and transportation systems, further exacerbates economic losses by hindering the movement of goods and services and impeding access to essential utilities.
Lastly, structural fires can lead to increased public spending on emergency response and recovery efforts. Firefighting, medical services, and temporary housing for displaced residents require significant financial resources from local and state governments. Long-term economic impacts include decreased property values in fire-prone areas, which can deter investment and development, further straining local economies.

Changes in Development and Impact of Future Development: The immediate aftermath of a fire often involves reassessing building codes and safety regulations to prevent similar incidents in the future. This reassessment can lead to stricter construction standards, such as the use of fire-resistant materials and the incorporation of advanced fire suppression systems.

Developers and city planners may also re-evaluate the spatial design of communities to enhance fire safety. This includes increasing the distance between buildings, creating firebreaks, and ensuring adequate access for emergency vehicles. Urban development plans may integrate more green spaces and buffer zones to reduce the spread of fires.

Other impacts include changes in land use policies or restrictions on rebuilding in high-risk zones, leading to shifts in population density and the relocation of residential or commercial areas to safer regions. Insurance companies might also adjust their coverage policies and premiums based on the perceived risk, influencing where and how new developments are planned and financed.

Effects of Climate Change on Severity of Impacts: Rising global temperatures and prolonged periods of drought can lead to drier vegetation and building materials, creating ideal conditions for fires to ignite and spread more rapidly. Increased temperatures also result in more frequent and intense heatwaves, which can dry out potential fuel sources and lower humidity levels, further exacerbating fire risks.

Climate change is also linked to more extreme and unpredictable weather patterns, including stronger winds and more frequent lightning storms. High winds can fan flames and carry embers over long distances, spreading fires quickly across urban and rural areas. Lightning storms increase the likelihood of fire ignitions, particularly in areas with dry vegetation.

As a result, structural fires in a changing climate tend to be more severe and harder to control. They can cause greater damage to buildings and infrastructure, leading to higher economic losses and more significant impacts on communities.

4.20 Public Health Emergency

4.20.1 Hazard Definition

Vector-borne disease (or communicable disease) is usually discussed in two ways—an epidemic and a pandemic. An epidemic/pandemic is defined as a disease that appears as new cases in the human population at a rate, during a given time period and location, that substantially exceeds the number expected and causes a public health emergency.

It is, thus, a relative term, and there is no quantitative criterion for designating a health crisis as an epidemic. In addition to its application to infectious diseases, the term is sometimes used to describe outbreaks of other adverse health effects, including those stemming from chemical exposure, sociological problems, and psychological disorders. A “pandemic” is a worldwide epidemic, while the term “outbreak” may be applied to a more geographically limited medical problem as, for instance, in a single community rather than statewide or nationwide. The term “cluster” is often used with reference to non-communicable diseases.

Three factors combine to produce an epidemic: an “agent” that causes the disease, a “host” that is susceptible to the disease, and an “environment” that permits the host to be exposed to the agent. The spread of an infectious disease depends on the chain of transmission: a source of the agent, a route of exit from the host, a mode of transmission between the susceptible host and the source, and a route of entry into another susceptible host. Modes of spread may involve direct physical contact between the infected host and the new host or airborne spread, such as coughing or sneezing. Indirect transmission takes place through vehicles such as contaminated water, food, or intravenous fluids; inanimate objects such as bedding, clothes, or surgical instruments; or a biological vector such as a mosquito or flea.

Health agencies closely monitor for diseases with the potential to cause an epidemic and seek to develop immunizations and eliminate vectors. While this effort has been remarkably successful, there are many diseases of concern, and the HIV/AIDS pandemic is still not controlled despite more than 40 years of effort since recognition of the disease in 1981.

4.20.2 Hazard Location

This hazard effects every community in Franklin County.

4.20.3 Hazard Extent/Intensity

The Centers for Disease Control and Prevention (CDC) measures the extent or intensity of a public health emergency, including outbreaks such as bird flu, through a combination of surveillance

systems, epidemiological data analysis, and health indicators. Surveillance systems collect data on various health-related events, such as the incidence and prevalence of diseases like bird flu, hospitalization rates, and mortality rates. These systems are essential for tracking the spread of infectious diseases, identifying outbreaks, and monitoring ongoing health threats. In the case of bird flu, this allows the CDC to detect its spread among bird populations and any transmission to humans.

Epidemiological data analysis involves studying the distribution and determinants of health states or events in specific populations, helping to understand the scope and impact of a public health emergency like bird flu. This analysis reveals trends, risk factors, and populations most at risk, guiding targeted interventions and resource allocation to mitigate the spread of the virus.

In addition to surveillance and epidemiology, the CDC uses specific health indicators to gauge the intensity of a public health emergency. These indicators may include the rate of disease transmission (in the case of bird flu, how quickly it spreads among birds and potentially to humans), the proportion of healthcare resources utilized, and the effectiveness of public health interventions. The CDC collaborates with local, state, and international partners to gather and analyze data, ensuring a comprehensive understanding of the situation. This integration of methods allows the CDC to assess the severity of a public health emergency like bird flu accurately, inform decision-making, and communicate risks to the public and policymakers.

4.20.4 Probability and Frequency

Public health emergencies, such as bird flu outbreaks, vary in their probability and frequency over time. Factors including emerging infectious diseases, natural disasters, and other health-related events influence the likelihood and occurrence of these emergencies. For example, bird flu can occur periodically in both poultry and wild bird populations, with the potential to affect humans, leading to public health concerns. While the exact probability and frequency of public health emergencies, including bird flu outbreaks, over the last ten years can fluctuate, the World Health Organization (WHO) and other public health agencies continuously monitor and prepare for potential threats. Anything in Franklin Co?

WHO collects and analyzes data from affected countries and regions to assess the magnitude, severity, and impact of health emergencies, including those caused by bird flu. They monitor disease outbreaks, conduct epidemiological investigations, and provide technical expertise to understand the dynamics of each crisis. The WHO collaborates with partners to develop standardized tools and methodologies for data collection and analysis, including for zoonotic diseases like bird flu. Additionally, they facilitate information sharing, research collaboration, and the dissemination of best practices among countries and stakeholders to ensure a coordinated global response to public health threats.

4.20.5 Past Events

Over the last five years, the most notable public health emergency has been the COVID-19 pandemic, which began in late 2019 and continues to have a global impact at the time of this plan. Another significant international event was the Ebola outbreak in the Democratic Republic of Congo, which persisted from 2018 to 2020. The ongoing crisis of opioid overdoses and addiction in various countries, including the United States, has also been considered a public health

emergency. Additionally, the Zika virus outbreak in 2015-2016, primarily affecting the Americas, raised significant concerns.

In Franklin County, avian influenza (bird flu) has been a public health concern as well. In past events, outbreaks of bird flu among poultry and wild bird populations prompted emergency responses to contain the virus and prevent it from spreading to humans. While no widespread human infections have been reported, these events highlighted the potential risks and the importance of public health preparedness in managing zoonotic diseases such as avian influenza.

4.20.6 Vulnerability and Impacts

Health and Safety: Public health emergencies, including outbreaks of diseases such as bird flu, significantly impact health and safety. These emergencies often lead to increased morbidity and mortality rates, posing serious threats to the well-being of individuals and communities. In the case of bird flu, the virus can spread rapidly among bird populations and, in some cases, infect humans, leading to widespread illness and potentially overwhelming healthcare systems. Public health emergencies like bird flu can also disrupt routine healthcare services, delay access to necessary treatments, and hinder the management of chronic conditions. Additionally, the fear of infection and the associated public health responses can result in psychological distress, social disruption, and economic challenges within affected populations.

Property Damage and Critical Infrastructure: Public health emergencies can disrupt essential services and infrastructure systems critical for public health and safety. For instance, healthcare facilities may experience increased demands and strains on resources, potentially affecting their capacity to provide adequate care. In addition, transportation networks, including airports, seaports, and roadways, may face disruptions, impacting the movement of supplies, personnel, and patients. Public health emergencies can also affect the functioning of utilities such as water and wastewater systems, power grids, and communication networks.

Economy: Public health emergencies can often lead to disruptions in various sectors of the economy. For instance, lockdowns, travel restrictions, and social distancing guidelines can result in business closures, reduced consumer spending, and job losses. Industries directly impacted by public health emergencies, such as hospitality, tourism, and retail, may experience a decline in revenue and profitability. Additionally, healthcare systems and public health agencies may face increased financial burdens due to the surge in service demand and the need to invest in emergency response capabilities.

Part IV: Capability Assessment

CHAPTER 5 CAPABILITY ASSESSMENT

Franklin County has a dedicated Emergency Management department. Hazard Mitigation Planning efforts are led by the Emergency Management Director as well as staff.

5.1 Preventative Measures

Preventative activities keep problems related to natural hazards from escalating and ensure new developments have reduced vulnerability to hazards. The following examples of preventative measures are usually carried out by building, planning, zoning, and/or code enforcement officials:

- Floodplain Mapping and Data
- Open Space Preservation
- Floodplain Regulations
- Erosion Setbacks
- Planning and Zoning
- Stormwater Management
- Drainage System Maintenance
- Building Codes

The information within this Chapter largely focuses on building codes, planning and zoning, stormwater runoff, floodplain management, water quality protection, and soil erosion control.

5.1.1 Building Codes

Updating and adopting new building codes, as well as addressing the effectiveness of these codes, can be one of the best ways to conduct mitigation. When properly designed and constructed, many buildings can withstand the impacts of high winds, a flood, or a tornado. Franklin County works with various versions of the International Codes published by the International Code Council, Inc. (ICC). These codes include:

- International Building Code (IBC)
- International Residential Code (IRC)
- International Fire Code (IFC)
- International Mechanical Code (IMC)
- International Fuel Gas Code (IFGC)
- International Property Maintenance Code (IPMC)
- International Swimming Pool and Spa Code (ISPSC)
- International Zoning Code (IZC)

Additionally, Franklin County is required by the State of Washington to enforce the State Environmental Policy Act.

5.1.2 Code Administration

Enforcement of code standards is very important to hazard mitigation. Adequate inspections are needed during the course of construction to ensure that the builder understands and implements the requirements. The Building Code Effectiveness Grading Schedule (BCEGS) is a national program used by the insurance industry to determine how well new construction is protected from

wind, earthquake and other non-flood hazards. It is similar to the CRS program and the fire insurance rating scheme: building permit programs are reviewed and scored. A class 1 community is the highest rating, and a class 10 community is the most basic rating.

Training of code officials is also very important for code enforcement. Training of code officials and inspectors is a large part of the BCEGS rating for a community. Courses are offered through the building code associations to help local officials understand standards that apply to seismic, wind and flood hazards.

The table below lists building code adoptions in use within Franklin County and the City of Pasco.

Table 5.1. Building Codes used in the Franklin County, WA

	Building Code Residential/Commercial
City of Pasco	· 2021 NFPA 54 National Fuel Gas Code · 2020 NFPA 58 Liquefied Petroleum Gas Code · 2021 International Building Code · 2021 International Fire Code · 2021 International Fuel Gas Code · 2021 International Mechanical Code · 2021 International Property Maintenance Code/Chapter 16.30 · 2021 International Residential Code · 2021 Uniform Plumbing Code · ICC/ANSI A117.1-2017 Accessibility Code · Washington State Energy Code (PDF) · Washington State University Energy Program (PDF) · 2021 Energy Code Cycle Memo (PDF)
Franklin County	2018 ICC International Building Code

5.1.3 Planning and Zoning

Planning and zoning activities, such as land use plans, transportation plans, subdivision ordinances, zoning code and economic re-development plans, can be used to direct development away from hazardous areas. For example, comprehensive land use plans can designate floodplains and wetlands as areas for open space, wetlands, or low-density residential. The table below shows Franklin County's adopted comprehensive plans, zoning ordinances, and subdivision ordinances. The table also highlights communities where flood or other hazards are addressed or could be improved.

5.1.4 Comprehensive Plans

Comprehensive Plans are the primary tools used by communities to address future development. They can reduce future flood-related damages by indicating open space or low-density development within floodplains and other hazardous areas. Natural hazards should be emphasized in specific land use recommendations.

5.1.5 Capital Improvement Plans

Communities use Capital Improvement Plans or Community Investment Programs to guide major public expenditures for the next five to 20 years. Capital expenditures can include roadways, water

and sewer lines, floodplain open space acquisition, and retrofitting existing public structures to withstand hazards.

The table below illustrates Franklin County's efforts to integrate hazard mitigation, hazards, and other mitigation considerations into their comprehensive or related community-wide plans. The table also describes each participating jurisdiction's ability to expand and improve mitigation capabilities by evaluating and integrating existing planning mechanisms that address identified hazards and support implementation of mitigation actions.

Franklin County demonstrates strong capability through its Comprehensive Plan (2018–2038, currently being updated), which addresses wildfires, floodplains, and geologically hazardous areas and includes actionable mitigation projects, as well as its Shoreline Master Program, which supports mitigation related to floodplains, wetlands, and other critical areas. Similarly, the City of Pasco and the City of Connell maintain comprehensive plans that address key hazards and identify projects that can be implemented through their mitigation strategies. Pasco further strengthens its capability through a Capital Improvements Plan that aligns infrastructure investments with hazard mitigation goals. While some planning documents, such as Capital Improvements Plans or Economic Development Plans in certain jurisdictions, do not consistently identify hazards or mitigation actions, they present opportunities for future integration and capability enhancement. Collectively, these planning frameworks demonstrate that participating jurisdictions have the foundational tools to implement mitigation actions and can expand their capabilities over time by incorporating hazard mitigation principles into additional plans and programs.

Table 5.2. Franklin County Planning and Land Use Ordinances

Community	Plans	Does the plan address hazards?	Does the plan identify projects to include in the mitigation strategy?	Can the plan be used to implement mitigation actions?
Franklin County	2018 – 2038 Franklin County Comprehensive Plan (being updated in 2026)	Wildfires, Floodplains, geologically hazardous areas	Yes	Yes
Franklin County	2023 Franklin County Shoreline Master Program	Floodplains, aquaculture, wetlands, geologically hazardous areas	Yes	Yes
Franklin County	Capital Improvements Plan	No		
Franklin County	Economic Development Plan	Extreme weather	No	
Franklin County	State Environmental Policy Act	No		
City of Pasco	Comprehensive Plan	Extreme weather, floods, geologically hazardous areas	Yes	Yes
City of Pasco	Capital Improvements Plan	Extreme weather, flooding	Yes	Yes
City of Pasco	Economic Development Plan	No		
City of Pasco	Shoreline Master Program	flooding	Yes	Yes
City of Connell	Comprehensive Plan	Flooding, fire, extreme weather	Yes	Yes

CHAPTER 6: MITIGATION GOALS

The mitigation strategy includes the development of goals and prioritized hazard mitigation actions. Goals are long-term policy statements and global visions that support the mitigation strategy.

6.1 Community Priorities

The following topics were identified by the planning team to be of priority for Franklin County:

- Life Safety
- Public Health
- Critical Infrastructure Maintenance and Protection
- Public Information and Warning
- Public Outreach, Education, and Awareness
- Equitable outcomes for underserved communities and socially vulnerable populations
- Inter-governmental Coordination
- Public-Private Partnerships
- Repetitive Loss Properties
- Climate Change

6.2 Goals and Guidelines

6.2.1 Mitigation Goals

The following goals (shown in order of importance) were developed by the planning team for the purpose of guiding and directing the Plan in accordance with governmental requirements, community priorities, and changing circumstances. These goals were compared with State of Washington Plans to ensure aligning viewpoints are used.

Goal 1. Life Safety: Prioritize the health and safety of Franklin County residents from the impacts of natural hazards.

Goal 2. Preventative Actions: Reduce risks through regulations, including building codes, limiting development within hazardous areas, and integrating mitigation strategies into local planning or capital improvement projects.

Goal 3. Property Protection. Reduce exposure to hazards through building or parcel-specific activities, such as structure/building acquisition, and protecting critical infrastructure and community lifelines within Franklin County by identifying and reducing impacts of natural hazards through activities such as floodproofing and retrofitting.

Goal 4. Emergency Services. Reduce impacts of natural hazards by building response and recovery capabilities that are implemented during a disaster.

Goal 5. Structural Projects. Minimize the impacts of natural hazards on key structures in within Franklin County through the implementation of mitigation projects, such as detention basins, tornado shelters, advanced warning systems, etc.

6.2.2 Mitigation Guidelines

The following guidelines were developed by the planning team for purpose of achieving the goals and to facilitate the development of hazard mitigation action items in Chapter 7:

- **Guideline 1.** Prioritize hazard mitigation projects on the hazards that pose the greatest threat to the community.
- **Guideline 2**. Promote public education strategies for the community around the need to take steps to protect themselves, their families, and their property.
- **Guideline 3**. Create and foster public-private partnerships and relationships with leaders from underserved communities to accomplish hazard mitigation activities and equitable outcomes for all communities, including underserved communities and socially vulnerable populations.
- **Guideline 4**. Encourage interdepartmental and multi-jurisdictional collaboration and shared resources when developing and conducting hazard mitigation exercises and projects.
- **Guideline 5**. Strive to improve and expand communication/coordination between public works and emergency services before, during, and after a disaster response.
- **Guideline 6**. Seek State, and Federal support for mitigation projects

CHAPTER 7: MITIGATION ACTION PLAN

This chapter presents the mitigation strategy for Franklin County and its cities—Pasco, Connell, Mesa, and Kahlotus—developed to reduce the risks posed by identified hazards through a structured approach to goals, action plans, and implementation processes. Building on the comprehensive risk assessment outlined in Chapter 4 and the planning efforts conducted from May 1, 2024, to December 8, 2025, as detailed in Chapter 2 (see Section 2.4 for process documentation), this strategy aligns with FEMA regulations (44 CFR § 201.6) to enhance resilience, protect lives, and minimize economic losses. The strategy is informed by stakeholder input, public surveys, and the Capability Assessment from Chapter 5, ensuring actions are tailored to each jurisdiction's unique hazard profiles and capacities. A full list of current mitigation actions, past actions from the 2018 plan, and new actions introduced in this 2025 update is provided in Appendix E for comprehensive reference, supporting transparency and detailed planning. Plan adoption by each jurisdiction's governing body is documented in Appendix F.

7.1 Mitigation Goals

The mitigation goals, established in Chapter 6, articulate the long-term vision for reducing risk across Franklin County and its cities (Pasco, Connell, Mesa, and Kahlotus), informed by the Chapter 4 risk assessment and the planning process conducted from May 1, 2024, to December 8, 2025. The 19 objectives, listed below, guide the development and implementation of mitigation actions, addressing hazards prioritized by risk scores from Table 4.7 (e.g., Wildfire: 195, Drought: 126) and action distribution (e.g., 17 wildfire actions, 20 drought actions). These goals aim to enhance resilience, protect lives, and minimize economic losses through coordinated jurisdictional efforts.

- **Goals**:
    - Goal 1: Protect lives and property during and after hazard events.
    - Goal 2: Enhance emergency response and recovery capabilities.
    - Goal 3: Reduce property damage and economic losses.
    - Goal 4: Promote sustainable land use and development practices.
    - Goal 5: Increase public awareness and preparedness.
- **Objectives**:

1. Increase resilience of infrastructure and critical facilities (Goals 2, 3, 5).
2. Sustain reliable local emergency operations and facilities (Goals 1, 5).
3. Inform the public on risks and promote safety activities (Goals 1, 3, 5).
4. Minimize impacts on land use with mitigation incentives (Goals 1, 3, 5).
5. Prevent new development in hazardous areas (Goals 1, 3, 5).
6. Improve hazard understanding using best data (Goals 1, 2, 3, 4, 5).

7. Ensure development meets life safety standards (Goals 1, 2, 3, 5).
8. Monitor plan progress annually (Goals 1, 2, 3, 5).
9. Promote floodplain management best practices (Goals 3, 4, 5).
10. Provide flood protection with control structures (Goals 2, 3, 4).
11. Enhance codes for hazard resistance (Goals 1, 3).
12. Consider hazards in land use planning (Goals 1, 3).
13. Minimize disruption of government operations (Goals 1, 3, 4).
14. Use open space in high-risk zones (Goals 1, 2, 3, 4, 5).
15. Retrofit or relocate high-risk structures (Goals 1, 3, 4).
16. Establish government-business partnerships (Goals 1, 2, 3, 4, 5).
17. Promote hazard measures enhancing natural processes (Goals 2, 3, 4).
18. Align plans with climate action goals (Goals 1, 2, 3, 4, 5).
19. Reduce vulnerability for all residents (Goal 1).

7.2 Mitigation Action Plan

This plan update complies with FEMA regulations (44 CFR § 201.6), excluding the Building Resilient Infrastructure and Communities (BRIC) program per Recommendation 1. The process commenced on May 1, 2024, with hazard identification from June to August 2024, risk assessment updates, and action development from summer to fall 2025, overseen by the Steering Committee as detailed in Chapter 2 (see Section 2.4 for process documentation). Actions were prioritized using risk scores from Table 4.7, capabilities assessed in Chapter 5, and public survey results, with all actions evaluated through the STAPLE+E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) process to rank their feasibility and impact.

7.2.1 Summary

The plan comprises 108 mitigation actions: 33 for Franklin County, 19 each for the Cities of Pasco, Connell, Mesa, and Kahlotus. From the 2018 plan's 120 actions, 80 were carried over (updated or ongoing, such as wildfire prevention programs initiated in 2019), 25 were completed (e.g., 2017 flood mitigation projects following DR-4309-WA), and 15 were eliminated (due to redundancy, insufficient funding, or obsolescence, such as outdated seismic studies). Approximately 50% of the current actions are designated as High priority, determined through the STAPLE+E process, addressing key hazards including wildfire (17 actions), drought (20 actions), and flood (13 actions) as identified in Chapter 4. While some actions address common hazards (e.g., drought mitigation), they are customized to each jurisdiction's specific risks, resources, and lead agencies.

7.2.2 Mitigation Strategy/Action Timeline Parameters

While the preference is to provide definitive project completion dates, this is only possible for some mitigation strategies/actions. Therefore, the parameters for the timeline (Projected Completion Date) are as follows:

- **Short-term**—To be completed in one to five years
- **Long-term**—To be completed in greater than five years
- **Ongoing**—Currently being implemented under existing programs but without a definite completion date

7.2.3 Mitigation Strategy/Action Benefit Parameters

Benefit ratings are defined as follows:

- **High**—The project will provide an immediate reduction of risk exposure for life and property.
- **Medium**—The project will have a long-term impact on reducing risk exposure for life and property, or the project will provide an immediate reduction in the risk exposure for property.
- **Low**—Long-term benefits of the project are difficult to quantify in the short term.

7.3 Mitigation Projects

Listed below are the projects that were developed to address the risks posed. It should be noted that this Plan serves only to recommend mitigation measures. Implementing these recommendations depends on adopting this Plan by the Franklin County Board of Commissioners and local jurisdiction's board of trustees of each participating municipality. It also depends on the cooperation and support of the designated offices responsible for each action item. In addition, each community was encouraged to include additional community-specific action/project items.

A summary of the previous plan's action items through the final annual report, along with the mitigation activities communities completed to achieve each action item, can be found in Appendix E.

Participating jurisdictions agreed upon the following mitigation actions. These shared actions, some of which address all hazards, help to meet the following requirement: "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 or more action(s) per jurisdiction for each hazard identified within the risk assessment?" In addition to the 17 mitigation measures that apply to the city/county and all participating jurisdictions, most communities identified additional mitigation actions unique to their jurisdiction. The following table summarizes the jurisdictions' mitigation measures in relationship to the hazards addressed in the risk assessment.

7.3.1 Mitigation Actions by Hazard

- **Wildfire (Risk Score: 195, 17 actions)**: Includes installation of fire station backup generators, vegetation management programs, and firebreak development.

- **Drought (Risk Score: 126, 20 actions)**: Encompasses well upgrades, water storage tank installations, and drought response planning.
- **Flood (Risk Score: 64, 13 actions)**: Involves road elevation projects, retention pond upgrades, and flood drainage improvements.
- **Earthquake (Risk Score: 64, 5 actions)**: Features structural retrofits and seismic hazard mapping.
- **Dam/Levee Failure (Risk Score: 59, 5 actions)**: Includes adoption of dam failure plans and levee maintenance.
- **Severe Storm (Risk Score: 180, 10 actions)**: Addresses storm shelter upgrades and drainage infrastructure enhancements.
- **Landslide (Risk Score: 56, 3 actions)**: Includes monitoring programs and slope stabilization.
- **Space Weather (Risk Score: 8, 1 action)**: Involves power grid assessments.
- **Volcanic Activity (Risk Score: N/A, 1 action)**: Features ash response planning.

Note: Each listed hazard has at least one associated action, ensuring comprehensive mitigation coverage as required by FEMA.

7.3.2 Jurisdiction-Hazard Linkages

Jurisdiction	Primary Hazards (Risk Score/Action Count)	Secondary Hazards (Risk Score)
Franklin County	Wildfire (195, 17), Drought (126, 20)	Flood (64), Earthquake (64)
City of Pasco	Drought (126, 20), Flood (64)	Wildfire (195), Severe Storm (180)
City of Connell	Drought (126, 20), Dam/Levee Failure (59)	Wildfire (195), Flood (64)
City of Mesa	Drought (126, 20), Wildfire (195)	Severe Storm (180)
City of Kahlotus	Wildfire (195, 17), Drought (126, 20)	Flood (64), Severe Storm (180)

Note: Linkages were derived from the completed risk assessment (Chapter 4) as the hazards most germane to each jurisdiction. Some actions may apply to multiple jurisdictions due to shared regional risks (e.g., drought mitigation across all areas).

7.4 Mitigation Actions – Franklin County

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
FC-PLAN-01	Complete 2025-2026 Comprehensive Plan update, funded by Local	Goals 3, 4, 5; Obj. 4, 6, 7, 11, 12, 18	High	$50K–$150K	Short-term	Franklin County Planning (Sean Davis)
FC-FIH-24	Install fire station backup generator, funded by HMGP, EMPG	Goals 1, 2, 5; Obj. 1, 2, 13	High	$100K	Short-term	Franklin County Fire District #3 (Mike Harris)
FC-PW-01	Raise Elm/Everett and Birch/Dayton roads, funded by HMGP	Goals 1, 2, 3; Obj. 2, 3, 7	High	$500K	Short-term	Franklin County Public Works (Craig Erdman)
F-INF01	Upgrade wells in District 1, funded by HMGP	Goals 1, 2, 5; Obj. 1, 2, 5	High	$75K	Short-term	Franklin County Public Works (Craig Erdman)
F-INF02	Install water storage tanks, funded by HMGP	Goals 1, 2, 5; Obj. 1, 2, 13	High	$100K	Short-term	Franklin County Public Works (Craig Erdman)
F-INF03	Develop drought response plan, funded by LOCAL	Goals 1, 3, 5; Obj. 3, 5	Medium	$20K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
F-INF04	Promote water conservation education, funded by LOCAL	Goals 1, 3, 5; Obj. 3, 5	Medium	$10K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
F-HAZ01	Retrofit critical facilities for earthquakes, funded by HMGP	Goals 1, 2, 3; Obj. 1, 7, 15	High	$200K	Medium-term	Franklin County Public Works (Craig Erdman)
F-HAZ02	Adopt dam failure plan by Q2 2026, funded by LOCAL	Goals 1, 5; Obj. 5, 14	Low	Staff time	Short-term	Franklin County Emergency Mgmt (Sean Davis)
FC-WIL01	Implement vegetation management program	Goals 1, 3; Obj. 4, 5	High	$50K	Short-term	Franklin County Public Works (Craig Erdman)
FC-FLO01	Improve flood drainage systems	Goals 1, 2, 3; Obj. 2, 10	High	$150K	Short-term	Franklin County Public Works (Craig Erdman)

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
FC-STR01	Upgrade storm shelters for extreme heat	Goals 1, 2, 5; Obj. 1, 2, 13	Medium	$75K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
FC-EAR02	Conduct seismic hazard mapping	Goals 1, 6; Obj. 6, 12	Medium	$30K	Medium-term	Franklin County GIS (Michael Morgan)
FC-LAN01	Monitor landslide-prone areas	Goals 1, 3; Obj. 3, 6	Low	$15K	Medium-term	Franklin County Public Works (Craig Erdman)
FC-SPA01	Assess space weather impact on power grid	Goals 1, 2; Obj. 2, 13	Low	$20K	Long-term	Franklin County Emergency Mgmt (Sean Davis)
FC-VOL01	Develop volcanic ash response plan	Goals 1, 3; Obj. 3, 5	Low	$10K	Long-term	Franklin County Emergency Mgmt (Sean Davis)
FC-HEA01	Develop heatwave preparedness plan	Goals 1, 3, 5; Obj. 3, 5	Medium	$15K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
FC-DAM02	Conduct levee maintenance assessments	Goals 1, 2, 3; Obj. 2, 10	Medium	$25K	Short-term	Franklin County Public Works (Craig Erdman)
FC-WIL02	Establish community firebreaks	Goals 1, 3; Obj. 4, 5	High	$40K	Short-term	Franklin County Fire District #3 (Mike Harris)
FC-FLO02	Install flood warning sirens	Goals 1, 3, 5; Obj. 3, 10	High	$60K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
FC-EAR03	Upgrade bridge supports for seismic safety	Goals 1, 2, 3; Obj. 1, 7, 15	High	$300K	Medium-term	Franklin County Public Works (Craig Erdman)
FC-STR02	Enhance wind-resistant roofing on public buildings	Goals 1, 2, 3; Obj. 1, 7	Medium	$80K	Short-term	Franklin County Public Works (Craig Erdman)
FC-LAN02	Install slope stabilization measures	Goals 1, 3; Obj. 3, 15	Low	$20K	Medium-term	Franklin County Public Works (Craig Erdman)

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
FC-SPA02	Train staff on space weather response	Goals 1, 2; Obj. 2, 13	Low	$5K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
FC-VOL02	Stockpile ash removal equipment	Goals 1, 3; Obj. 3, 5	Low	$15K	Long-term	Franklin County Public Works (Craig Erdman)
FC-HEA02	Distribute heatwave safety kits	Goals 1, 3, 5; Obj. 3, 5	Medium	$10K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
FC-DAM03	Upgrade dam inspection protocols	Goals 1, 2, 3; Obj. 2, 10	Medium	$30K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
FC-WIL03	Conduct annual wildfire drills	Goals 1, 3; Obj. 3, 5	High	$5K	Short-term	Franklin County Fire District #3 (Mike Harris)
FC-FLO03	Map flood-prone properties	Goals 1, 6; Obj. 6, 12	Medium	$25K	Medium-term	Franklin County GIS (Michael Morgan)
FC-EAR04	Retrofit schools for seismic safety	Goals 1, 2, 3; Obj. 1, 7, 15	High	$250K	Medium-term	Franklin County Public Works (Craig Erdman)
FC-STR03	Install storm drainage pumps	Goals 1, 2, 3; Obj. 2, 10	Medium	$90K	Short-term	Franklin County Public Works (Craig Erdman)
FC-LAN03	Develop landslide evacuation routes	Goals 1, 3; Obj. 3, 5	Low	$10K	Medium-term	Franklin County Emergency Mgmt (Sean Davis)
FC-SPA03	Install backup power for critical facilities	Goals 1, 2; Obj. 2, 13	Low	$50K	Long-term	Franklin County Public Works (Craig Erdman)

7.4.1 Mitigation Actions – City of Pasco

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
P-INF01	Upgrade Pasco retention ponds, funded by HMGP	Goals 1, 2, 5; Obj. 1, 2, 5	High	$200K	Short-term	City of Pasco Public Works (Maria Serra)
P-MH06	Develop flood evacuation plan, funded by LOCAL	Goals 1, 3, 5; Obj. 3, 5, 7	Medium	$10K	Short-term	City of Pasco Emergency Mgmt (Kevin Crowley)
P-WIL01	Implement vegetation management program, funded by HMGP	Goals 1, 3; Obj. 4, 5	High	$50K	Short-term	City of Pasco Public Works (Maria Serra)
P-DRO01	Install rainwater harvesting systems, funded by LOCAL	Goals 1, 5; Obj. 1, 5	Medium	$30K	Short-term	City of Pasco Public Works (Maria Serra)
P-FLO02	Install flood warning system	Goals 1, 3, 5; Obj. 3, 10	High	$40K	Short-term	City of Pasco Public Works (Maria Serra)
P-EAR01	Retrofit public buildings for seismic safety	Goals 1, 2, 3; Obj. 1, 7, 15	High	$150K	Medium-term	City of Pasco Public Works (Maria Serra)
P-STR01	Upgrade storm drainage infrastructure	Goals 1, 2, 3; Obj. 2, 10	Medium	$100K	Short-term	City of Pasco Public Works (Maria Serra)
P-WIL02	Establish community firebreaks	Goals 1, 3; Obj. 4, 5	High	$40K	Short-term	City of Pasco Public Works (Maria Serra)
P-DRO02	Develop drought contingency plan	Goals 1, 3, 5; Obj. 3, 5	Medium	$15K	Short-term	City of Pasco Emergency Mgmt (Kevin Crowley)
P-FLO03	Conduct flood risk mapping	Goals 1, 6; Obj. 6, 12	Medium	$20K	Medium-term	City of Pasco GIS (via County)
P-EAR02	Install seismic sensors in critical areas	Goals 1, 2, 3; Obj. 1, 6, 15	High	$80K	Medium-term	City of Pasco Public Works (Maria Serra)
P-STR02	Enhance wind-resistant windows on public buildings	Goals 1, 2, 3; Obj. 1, 7	Medium	$60K	Short-term	City of Pasco Public Works (Maria Serra)
P-LAN01	Monitor landslide risks near slopes	Goals 1, 3; Obj. 3, 6	Low	$10K	Medium-term	City of Pasco Public Works (Maria Serra)

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
P-SPA01	Assess space weather impact on utilities	Goals 1, 2; Obj. 2, 13	Low	$15K	Long-term	City of Pasco Emergency Mgmt (Kevin Crowley)
P-VOL01	Develop volcanic ash cleanup plan	Goals 1, 3; Obj. 3, 5	Low	$10K	Long-term	City of Pasco Public Works (Maria Serra)
P-HEA01	Distribute heatwave safety kits	Goals 1, 3, 5; Obj. 3, 5	Medium	$10K	Short-term	City of Pasco Emergency Mgmt (Kevin Crowley)
P-DAM01	Conduct levee inspection training	Goals 1, 2, 3; Obj. 2, 10	Medium	$20K	Short-term	City of Pasco Public Works (Maria Serra)
P-WIL03	Conduct annual wildfire safety workshops	Goals 1, 3; Obj. 3, 5	High	$5K	Short-term	City of Pasco Emergency Mgmt (Kevin Crowley)
P-FLO04	Upgrade flood evacuation routes	Goals 1, 3, 5; Obj. 3, 10	High	$70K	Short-term	City of Pasco Public Works (Maria Serra)

7.4.2 Mitigation Actions – City of Connell

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
C-LEV01	Maintain Esquatzel Coulee levees, funded by HMGP	Goals 1, 2, 3; Obj. 2, 3, 10	High	$150K	Short-term	City of Connell Public Works (Hallie Tuck)
C-DRO01	Implement drought-resistant landscaping, funded by LOCAL	Goals 1, 5; Obj. 1, 5	Medium	$20K	Short-term	City of Connell Public Works (Hallie Tuck)
C-WIL01	Create defensible space ordinance, funded by County support	Goals 1, 3; Obj. 4, 5	High	$5K	Short-term	City of Connell Planning (via County)
C-FLO01	Install flood barriers along key areas	Goals 1, 2, 3; Obj. 2, 10	High	$80K	Short-term	City of Connell Public Works (Hallie Tuck)
C-DRO02	Develop water reuse program	Goals 1, 5; Obj. 1, 5	Medium	$15K	Short-term	City of Connell Public Works (Hallie Tuck)

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
C-EAR01	Conduct seismic safety assessments	Goals 1, 6; Obj. 6, 12	Medium	$20K	Medium-term	City of Connell Public Works (Hallie Tuck)
C-STR01	Install storm-resistant roofing on public buildings	Goals 1, 2, 3; Obj. 1, 7	Medium	$50K	Short-term	City of Connell Public Works (Hallie Tuck)
C-LAN01	Monitor landslide risks near coulees	Goals 1, 3; Obj. 3, 6	Low	$10K	Medium-term	City of Connell Public Works (Hallie Tuck)
C-SPA01	Assess space weather impact on communication	Goals 1, 2; Obj. 2, 13	Low	$15K	Long-term	City of Connell Emergency Mgmt (via County)
C-VOL01	Develop volcanic ash disposal plan	Goals 1, 3; Obj. 3, 5	Low	$10K	Long-term	City of Connell Public Works (Hallie Tuck)
C-HEA01	Conduct heatwave preparedness training	Goals 1, 3, 5; Obj. 3, 5	Medium	$5K	Short-term	City of Connell Emergency Mgmt (via County)
C-DAM01	Upgrade levee monitoring systems	Goals 1, 2, 3; Obj. 2, 10	Medium	$30K	Short-term	City of Connell Public Works (Hallie Tuck)
C-WIL02	Install firebreaks along community edges	Goals 1, 3; Obj. 4, 5	High	$30K	Short-term	City of Connell Public Works (Hallie Tuck)
C-FLO02	Develop flood evacuation signage	Goals 1, 3, 5; Obj. 3, 10	High	$10K	Short-term	City of Connell Public Works (Hallie Tuck)
C-EAR02	Retrofit community center for seismic safety	Goals 1, 2, 3; Obj. 1, 7, 15	High	$100K	Medium-term	City of Connell Public Works (Hallie Tuck)
C-STR02	Upgrade storm drainage channels	Goals 1, 2, 3; Obj. 2, 10	Medium	$60K	Short-term	City of Connell Public Works (Hallie Tuck)
C-LAN02	Install slope stabilization fencing	Goals 1, 3; Obj. 3, 15	Low	$15K	Medium-term	City of Connell Public Works (Hallie Tuck)
C-SPA02	Train staff on space weather protocols	Goals 1, 2; Obj. 2, 13	Low	$5K	Short-term	City of Connell Emergency

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
						Mgmt (via County)
C-VOL02	Stockpile ash removal supplies	Goals 1, 3; Obj. 3, 5	Low	$10K	Long-term	City of Connell Public Works (Hallie Tuck)

7.4.3 Mitigation Actions – City of Mesa

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
M-WIL01	Adopt wildfire ordinance, funded by County support	Goals 1, 3; Obj. 4, 5	High	$5K	Short-term	Franklin County Planning (Wesley McCart)
M-DRO01	Promote water conservation education, funded by LOCAL	Goals 1, 3, 5; Obj. 3, 5	Medium	$2K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
M-PLH01	Develop landslide awareness program, funded by County grant	Goals 1, 3; Obj. 3, 5	Low	$3K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
M-FLO01	Conduct flood preparedness training	Goals 1, 3, 5; Obj. 3, 5	Medium	$2K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
M-WIL02	Install community firebreaks	Goals 1, 3; Obj. 4, 5	High	$3K	Short-term	Franklin County Planning (Wesley McCart)
M-DRO02	Install rainwater collection barrels	Goals 1, 5; Obj. 1, 5	Medium	$2K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
M-FLO02	Develop flood evacuation plan	Goals 1, 3, 5; Obj. 3, 5	Medium	$3K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
M-EAR01	Conduct seismic safety assessments	Goals 1, 6; Obj. 6, 12	Medium	$5K	Medium-term	Franklin County Public Works (via County)
M-STR01	Upgrade storm-resistant roofing	Goals 1, 2, 3; Obj. 1, 7	Medium	$10K	Short-term	Franklin County Public Works (via County)

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
M-LAN02	Monitor landslide-prone areas	Goals 1, 3; Obj. 3, 6	Low	$5K	Medium-term	Franklin County Public Works (via County)
M-SPA01	Assess space weather impact on power	Goals 1, 2; Obj. 2, 13	Low	$5K	Long-term	Franklin County Emergency Mgmt (Sean Davis)
M-VOL01	Develop volcanic ash response plan	Goals 1, 3; Obj. 3, 5	Low	$5K	Long-term	Franklin County Emergency Mgmt (Sean Davis)
M-HEA01	Conduct heatwave safety training	Goals 1, 3, 5; Obj. 3, 5	Medium	$2K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
M-DAM01	Monitor levee conditions	Goals 1, 2, 3; Obj. 2, 10	Medium	$5K	Short-term	Franklin County Public Works (via County)
M-WIL03	Conduct annual wildfire drills	Goals 1, 3; Obj. 3, 5	High	$2K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
M-FLO03	Install flood warning signs	Goals 1, 3, 5; Obj. 3, 10	Medium	$3K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
M-EAR02	Retrofit community center	Goals 1, 2, 3; Obj. 1, 7, 15	High	$20K	Medium-term	Franklin County Public Works (via County)
M-STR02	Enhance storm drainage systems	Goals 1, 2, 3; Obj. 2, 10	Medium	$15K	Short-term	Franklin County Public Works (via County)
M-LAN03	Develop landslide evacuation routes	Goals 1, 3; Obj. 3, 5	Low	$5K	Medium-term	Franklin County Emergency Mgmt (Sean Davis)

7.4.4 Mitigation Actions – City of Kahlotus

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
K-WIL01	Develop wildfire awareness program, funded by County grant	Goals 1, 3; Obj. 3, 5	High	$3K	Short-term	Franklin County Planning (Wesley McCart)

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
K-FLO01	Assess Washtucna Coulee flood risk, funded by LOCAL	Goals 1, 3, 5; Obj. 3, 5	Medium	$5K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
K-DRO01	Install rain barrels, funded by County support	Goals 1, 5; Obj. 1, 5	Medium	$2K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
K-EAR01	Conduct earthquake safety drills	Goals 1, 3, 5; Obj. 3, 7	Medium	$2K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
K-WIL02	Install vegetation clearance zones	Goals 1, 3; Obj. 4, 5	High	$3K	Short-term	Franklin County Planning (Wesley McCart)
K-FLO02	Develop flood evacuation plan	Goals 1, 3, 5; Obj. 3, 5	Medium	$3K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
K-DRO02	Promote water conservation education	Goals 1, 3, 5; Obj. 3, 5	Medium	$2K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
K-EAR02	Conduct seismic hazard assessments	Goals 1, 6; Obj. 6, 12	Medium	$5K	Medium-term	Franklin County Public Works (via County)
K-STR01	Upgrade storm-resistant roofing	Goals 1, 2, 3; Obj. 1, 7	Medium	$10K	Short-term	Franklin County Public Works (via County)
K-LAN01	Monitor landslide risks near coulees	Goals 1, 3; Obj. 3, 6	Low	$5K	Medium-term	Franklin County Public Works (via County)
K-SPA01	Assess space weather impact on power	Goals 1, 2; Obj. 2, 13	Low	$5K	Long-term	Franklin County Emergency Mgmt (Sean Davis)
K-VOL01	Develop volcanic ash response plan	Goals 1, 3; Obj. 3, 5	Low	$5K	Long-term	Franklin County Emergency Mgmt (Sean Davis)
K-HEA01	Conduct heatwave safety training	Goals 1, 3, 5; Obj. 3, 5	Medium	$2K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
K-DAM01	Monitor levee conditions	Goals 1, 2, 3; Obj. 2, 10	Medium	$5K	Short-term	Franklin County Public Works (via County)

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
K-WIL03	Conduct annual wildfire drills	Goals 1, 3; Obj. 3, 5	High	$2K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
K-FLO03	Install flood warning signs	Goals 1, 3, 5; Obj. 3, 10	Medium	$3K	Short-term	Franklin County Emergency Mgmt (Sean Davis)
K-EAR03	Retrofit community buildings	Goals 1, 2, 3; Obj. 1, 7, 15	High	$20K	Medium-term	Franklin County Public Works (via County)
K-STR02	Enhance storm drainage systems	Goals 1, 2, 3; Obj. 2, 10	Medium	$15K	Short-term	Franklin County Public Works (via County)
K-LAN02	Develop landslide evacuation routes	Goals 1, 3; Obj. 3, 5	Low	$5K	Medium-term	Franklin County Emergency Mgmt (Sean Davis)

7.5 Past and Ongoing Actions

The 2018 Franklin County Hazard Mitigation Plan included 120 actions. Based on Chapter 2 meeting notes (e.g., September 4, 2025), 80 actions were carried over (updated or ongoing, such as wildfire prevention programs since 2019), 25 were completed (e.g., 2017 flood mitigation projects following DR-4309-WA), and 15 were eliminated (due to redundancy, insufficient funding, or obsolescence, such as outdated seismic studies no longer applicable). A full list of current actions, past actions from the 2018 plan, and new actions from this 2025 update is located in Appendix E for detailed reference.

7.6 Implementation and Monitoring

Franklin County Emergency Management (Sean Davis) will oversee annual progress reviews, assessing action status and updating the plan in accordance with FEMA’s 5-year cycle. The Cities of Mesa and Kahlotus will depend on County support, while Pasco and Connell will coordinate through their respective departments (Maria Serra, Hallie Tuck), consistent with the Capability Assessment outlined in Chapter 5. Progress reports will be made available to the public via the Franklin County website.

The Franklin County Emergency Management Department is identified as the lead agency responsible for the overall administration and coordination of mitigation actions outlined in this plan, including tracking progress, supporting implementation, and facilitating interagency collaboration. Specific mitigation actions are assigned to the appropriate implementing departments, agencies, or partners based on their jurisdictional authority and operational capacity, as detailed in the action plan tables. Each action also identifies potential funding sources, which may include federal programs such as FEMA Hazard Mitigation Assistance grants, state funding

opportunities, and local resources, as applicable. Expected timeframes for implementation are provided for each action and categorized as short-term, medium-term, or long-term to support prioritization and planning.

CHAPTER 8: PLAN MAINTENANCE

Franklin County Emergency Management (FCEM) will continue to monitor, evaluate, and update the Plan, specifically focusing on progress towards each action item within the All-Hazard Mitigation Plan (Plan). The Franklin County Hazard Mitigation Plan will be reviewed on an annual basis to determine the effectiveness of mitigation programs, projects, or other related activities, and to reflect changes in land development or programs that may affect mitigation priorities and/or strategies. The plan will be updated every five years. These fire-year updates will be delivered to the Washington State Hazard Mitigation Program Manager for review and forwarding to the Federal Emergency Management Agency, Region X Office.

To facilitate the annual plan review process, the Franklin County Hazard Mitigation Planning Committee will remain a semi-active group following the formal adoption of this plan and shall be charged with the responsibility of conducting an annual plan review. The Director of Franklin County Emergency Management or his/her designee assigned shall be responsible for coordinating and overseeing the annual review process. In addition, to continue to encourage community participation, annual meetings shall be open to the public and a public comment period shall be incorporated into each meeting.

Per the Federal Emergency Management Agency (FEMA), this Plan shall be updated every five years. Franklin County coordination shall be overseen by Franklin County Emergency Management. In addition, it is recommended that the next 5-year update be conducted over the process of one to two years. This will provide the Steering Committee ample time to meet, develop drafts, involve the public, coordinate with stakeholders, and finalize the Plan.

This chapter describes the Plan maintenance process for Franklin County.

8.1 Formal Review Process

The Plan will be reviewed on an annual basis by FCEM and/or the Steering Committee to determine the effectiveness of programs and to reflect changes that may affect mitigation priorities. The Director of Franklin County Emergency Management or designee will be responsible for contacting the Steering Committee and organizing the review. FCEM will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan. FCEM and/or the Steering Committee will review the goals and action items to determine their relevance to changing situations in the county as well as changes in Federal policy and to ensure they are addressing current and expected conditions. FCEM will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any new available data. The organizations responsible for the various action items will report on the status of the projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised or removed.

The Director of FCEM or designee will be responsible for ensuring the updating of the Plan. The Director or designee will also notify all holders of the Plan and affected stakeholders when changes have been made. Every five years, the updated Plan will be submitted to Washington State Hazard

Mitigation Program Manager and to the Federal Emergency Management Agency for review and approval.

8.2 Continued Public Involvement

All participating entities are dedicated to involving the public directly in the review and updates of the Plan.

Copies of the Franklin County Hazard Mitigation Plan will be kept and made available for public review at the following locations:

- Franklin County Emergency Management
- Franklin County Planning & Building Department and/or website
- City of Pasco Department of Community & Economic Development and/or website
- City of Connell City Hall and/or website
- City of Mesa City Hall and/or website
- City of Kahlotus City Hall and/or website
- Mid-Columbia Regional Library System (2 copies) and/or website
- Online at www.franklinem.org

Franklin County Emergency Management shall be responsible for receiving, tracking, and filing public comments regarding the Franklin County Hazard Mitigation Plan. Contact information for Franklin County Emergency Management is included in the Point of Contact information page. A public meeting will be held as part of the review process as well as the final five-year plan update. The purpose of these meetings is to provide a public forum so that citizens can express concerns, opinions, or ideas about the Franklin County Hazard Mitigation Plan. The Franklin County Hazard Mitigation Planning Committee will continue to meet as needed and be made up of representatives from the participating jurisdictions as well as entities, departments, and agencies involved or impacted by hazard events in Franklin County.

8.3 Monitoring, Evaluation, and Updating the Plan

Franklin County Emergency Management is responsible for contacting Steering Committee members and organizing a meeting if updates to the plan are necessary. FCEM's responsibilities include:

- Reviewing each goal to determine its relevance and appropriateness.
    - Monitor and evaluate the mitigation strategies in this Plan to ensure the document reflects current hazard analyses, development trends, code changes and risk analyses and perceptions.
    - Ensure the appropriate implementation of status reports and regular maintenance of the Plan.
    - Create future action plans and mitigation strategies. These should be carefully assessed and prioritized using benefit-cost analysis (BCA) methodology that FEMA has developed.
    - Ensure the public has access to the plan and are encouraged to comment and be involved in mitigation plan updates.

- Ensure that the city/county complies with all applicable Federal statutes and regulations during the periods for which it receives grant funding, in compliance with 44 CFR.
- Reassess the Plan in light of any major hazard event. FCEM and appropriate stakeholders will convene within 45 days of any major event to review all applicable data and to consider the risk assessment, Plan goals, and action items given the impact of the hazard event.
- Review the Plan in connection to other plans, projects, developments, and other significant initiatives.
- Coordinate with appropriate municipalities and authorities to incorporate regional initiatives that transcend the boundaries of the county.
- Update the Plan every five years and submit for FEMA approval.
- Amend the Plan whenever necessary to reflect changes in State or Federal laws and statutes required in 44 CFR.

8.3.1 The Five-Year Action Plan

This section outlines the implementation agenda that Franklin County Emergency Management should follow five years following adoption of this Plan, and then every five years thereafter. Franklin County Emergency Management is responsible to ensure the All-Hazard Mitigation Plan is updated every five years.

Franklin County Emergency Management will consider the following action plan for the five-year planning cycle. It should be noted that the schedule below can be modified as necessary and does not include any meetings and/or activities that would be necessary following a disaster event.

If an emergency meeting occurs, this proposed schedule may be altered to fit any new needs.

Year 0:

- **2025:** Update Franklin County All-Hazard Mitigation Plan, including a series of meetings & public meetings.
- **January 2026 – December 2026:** Submit 2024 All-Hazard Mitigation Plan for FEMA approval.

Year 1:

- **2027:** Work on mitigation actions. Franklin County Emergency Management to stay in contact with lead departments and municipalities to keep tabs on project status. Encourage Plan integration efforts.

Year 2:

- **January 2028 – December 2028:** Work on mitigation actions. Franklin County Emergency Management to stay in contact with lead departments and municipalities to keep tabs on project status. Encourage Plan integration efforts.
- **Fall/Winter 2028:** FCEM and Steering Committee review plan. Discuss opportunities for mitigation plan integration with other planning documents. Discuss recent hazards. Update the status of projects. If necessary, host a public meeting.

Year 3:

- **January 2029 – December 2029:** Work on mitigation actions. Franklin County Emergency Management to stay in contact with lead departments and municipalities to keep tabs on project status. Encourage Plan integration efforts.
- **Summer/Fall 2029:** Apply for Hazard Mitigation Grant Program funds to update the next iteration of the mitigation plan.
- **Fall/Winter 2029:** FCEM and Steering Committee review plan. Discuss opportunities for mitigation plan integration with other planning documents. Discuss recent hazards. Update the status of projects. If necessary, host a public meeting.

Year 4:

- **January 2030 – December 2030:** Work on mitigation actions. Franklin County Emergency Management to stay in contact with lead departments and municipalities to keep tabs on project status. Encourage Plan integration efforts. Update 2024 All-Hazard Mitigation Plan, including a series of meetings & public meetings.

Year 5:

- **2031:** Submit 2031 All-Hazard Mitigation Plan for FEMA approval. Repeat.

8.4 Natural Hazard Mitigation Plan Review Meetings

During each Hazard Mitigation Plan Review meeting, FCEM and the Steering Committee will be responsible for a brief evaluation of the 2025 All-Hazard Mitigation Plan and review the progress of mitigation actions.

8.4.1 Plan Evaluation

To evaluate the Plan, the Steering Committee should answer the following questions:

- Are the goals still relevant?
- Is the risk assessment still appropriate, or has the nature of the hazard and/or vulnerability changed over time?
- Are current resources appropriate for implementing this Plan?
- Have lead agencies participated as originally proposed?
- Has the public been adequately involved in the process? Are their comments being heard?
- Have city departments and participating jurisdictions been integrating mitigation into their planning documents?

If the answer to each of the above questions is “yes,” the Plan evaluation is complete. If any questions are answered with a “no,” the identified gap must be addressed.

8.4.2 Review of Mitigation Actions

Once the Plan evaluation is complete, FCEM will review the status of the mitigation actions. To do so, FCEM should answer the following questions:

- Have the mitigation actions been implemented as planned?
- Have outcomes been adequate?
- What problems have occurred in the implementation process?

8.4.3 Meeting Documentation

Each review meeting must be documented, including the Plan evaluation and review of mitigation actions. This may be done by survey or other means, as appropriate.

8.5 Implementation through Existing Programs

Hazard mitigation practices must be incorporated within existing plans, projects, and programs. Therefore, the involvement of all departments, private non-profits, private industry, and appropriate jurisdictions is necessary in order to find mitigation opportunities within existing or planned projects and programs. To execute this, Franklin County Emergency Management will assist and coordinate resources for the mitigation actions and provide strategic outreach to implement mitigation actions that meet the goals identified in this Plan.

Appendix A: Stakeholder Participation and Documentation

This appendix describes the methods Franklin County used to involve stakeholders in the mitigation planning process.

A.1 Local representatives, participation activities, and planning documents to facilitate the planning process

A.1.1 Plan Participants and Representatives

Representative	Agency	Position
Alexis Spencer	Benton & Franklin Conservation Districts	Research & Monitoring Program Coordinator
Boys and Girls Club of Benton and Franklin Counties		
Brian Terbush	WA EMD	Earthquake/Volcano Program Coordinator
Bryan Thornhill	Franklin County Fire District #5	Fire Chief
Chris Lee	City of Connell	Police Chief
Chris Mortensen	City of Pasco	Fire Deputy Chief
Craig Erdman	Franklin County Public Works Department	Director
Craig Raymond	City of Pasco	Community & Economic Development Deputy Director
Elizabeth Garcia	Benton Franklin Council of Governments	Assistant Regional Planner
Eric Mauseth	Franklin County Fire District #1	Fire Chief
Erin Braich	Benton Franklin Council of Governments	Deputy Director
Erin Coyle	Washington State Department of Agriculture	Emergency Manager
Franklin County Local Emergency Planning Committee		
Hallie Tuck	City of Connell	Public Works Director
Jason Langston	Franklin County Fire District #3	Captain
Jim House	WA Department of Social and Health Services	Disability/AFN Integration Manager on Inclusive Emergency Planning
John Christensen	Franklin County Public Works Department	Surveyor
John Rosenau	Franklin County Assessor's Office	County Assessor
Kara Kaelber	Franklin County Conservation District	District Manager
Kathleen Neuman	Franklin County Public Works	Engineer
Katy Branham	National Weather Service – Pendleton	Warning Coordination Meteorologist

Representative	Agency	Position
McCue	City of Pasco	Public Works Operations Manager
Lee Barrow	City of Connell	Mayor
Lucas Van Holenbeke	Franklin County Fire Protection District #2	Fire Chief
Maria Serra	City of Pasco	Public Works Director
Matt Truman	Housing Authority of the City of Pasco and Franklin County	Executive Director
Michael Morgan	Franklin County	Geographic Information Systems Manager
Michelle Callighan	Housing Authority of the City of Pasco and Franklin County	Finance Director
Michelle Holt	Benton Franklin Council of Governments	Director
Mike Harris	Franklin County Fire District #3	Fire Chief
Mike Troidl	Franklin County	Building Official
Sierra Knutson	Northwest Healthcare Response Network	Eastside District Coordinator
Steve Cooper	Franklin County Fire Protection District #4	Fire Chief
Suzanne Henderson	Bureau of Reclamation	Regional Emergency Management Program Coordinator
Tim Harkins	City of Pasco	Deputy Fire Chief
Tim Waters	Washington State University	Professor – Agriculture and Natural Resources Unit
Tricia Sears	Washington Department of Natural Resources	Geologic Planning Liaison
Wesley McCart	Franklin County Planning and Building	Director
Zach Ratkai	Benton Franklin Council of Governments	Local Government Programs Director
Erin Hockaday	Benton Franklin Health District	Senior Manager of Surveillance & Investigation

All of the listed representatives in this table were invited to be a part of the planning process via email. The meetings were held via Zoom with invites being sent by email as well. All documents (including drafts, surveys, maps and other data) were shared via email and cloud drive. The stakeholders were provided the direct phone numbers of the planning team in the case they needed to reach anyone directly and promptly regarding the planning process. Monthly meetings were held to review drafts and go over the planning process. A vote was held in these meetings to

approve each draft of the plan throughout the process. Comments provided by stakeholders were collected via Word Document comments as well as summary notes in emails. All changes were reviewed and made prior to the voting process.

A.1.2 Mitigation Workshops

Emergency Management
Franklin County

FRANKLIN COUNTY
EMERGENCY MANAGEMENT
1011 E. Ainsworth Street
Pasco, WA 99301
(509) 545-3546

FCEM

Hazard Mitigation Plan Steering Committee Meeting #1 – 07/11/2024

Name (please print)	Title/Position	Organization	Phone #	Email	Initials
Sean Davis		Franklin County EM	(509) 316.2953	sdavis@franklincountywa.gov	SD
Jordan Hanes	Deputy Director	Franklin County EM	(509) 302.2337	jhanes@franklincountywa.gov	[illegible]
Tim Waters	Director & Adult SP	WSU/Fr. County	509 554 0182	twaters@wsu.edu	[illegible]
Chris Lee	Chief of Police	Connell PD	509-554-8352	clee@connellwa.org	CL
Cade Scott	Public Work Sup	City of Mesa	509 539-1287	pwsmesa@yahoo.com	CS
Michael Morgan	Geo Info Manager	Franklin Co.	509-545-3585	mmorgan@franklincountywa.gov	[illegible]
Michael Kemp	ISC-LEMO	ISC			
Craig Erdman	DIRECTOR	FC PW			
BRYAN THORNHILL	CHIEF	FC FIRE DIST. #5			
Charlie	Community Resilience	WDNR			
Daniel Andereza	ISC-COORDINATOR	ISC			
Derrick Braaten	DIRECTOR	FC Planning			

FRANKLIN COUNTY
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1011 E. Ainsworth Street
Pasco, WA 99301
(509) 545-3546

Hazard Mitigation Plan Steering Committee Meeting #2 – 08/22/2024

Name (please print)	Organization	Cell phone #	Email	Initials
Jordan Hanes	Franklin County EM	(509) 302-2337	jhanes@franklincountywa.gov	JHA
Sean Davis	Franklin County EM	(509) 316-2953	sdavis@franklincountywa.gov	SD
Heather Noles	Franklin County EM	(509) 302-2420	hnoles@franklincountywa.gov	HN
Brian Fackler	BFHD	917-876-2955	Brian.fackler@bfhd.wa.gov	BF
John ROSENAU	County Assessor	509 531 7044	JROSENAU@FRANKLINCOUNTYWA.GOV	JR
Mike Harris	Franklin Co FD3	509 547-9306	mharris@fcfd3.org	MH
Tim Waters	WSU Extension	509 554 0152	twaters@wsu.edu	TW

FRANKLIN COUNTY
EMERGENCY MANAGEMENT
1011 E. Ainsworth Street
Pasco, WA 99301
(509) 545-3546

CWPP/HMP Meeting with Regional Fire Chiefs – 08/28/2025

Name (please print)	Organization	Signature
Paul Carlyle	BCFD 4 chief	
Mike Harris	FCFD #3, chief	
Michael Heffner	Kennewick Fire, Chief	
Micheal Kemp	ISC	online
Jake Van Horn	KFD	

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1011 E. Ainsworth Street
Pasco, WA 99301
(509) 545-3546

CWPP/HMP Meeting with Regional Fire Chiefs – 08/28/2025

Name (please print)	Organization	Signature
Sean Davis	FCEM	
Jordan Hanes	FCEM	
Scott Lolarco	BCFD#1, Chief	
Mike Wickstrom	WWCFD 5, Chief	
Dennis Bates	BCFPD #2, Chief	
Paul Olheiser	WW-5, Chief	
Daniel Drayton	BCFD 4, Chief	
Ryan Nicholls	BLFD#1, Chief	
Kevin Crowley	PFD, Chief	
Randy Aust	RFES, Chief.	

FRANKLIN COUNTY
EMERGENCY MANAGEMENT
1011 E. Ainsworth Street
Pasco, WA 99301
(509) 545-3546

Hazard Mitigation Plan Meeting – 03/18/2025

Name (please print)	Organization	Initials
Sean Davis	Franklin County Emergency Management	SD
Jordan Hanes	Franklin County Emergency Management	
CHRIS LEE	CONNELL PD	
Cade Scott	Mesa Public Works	CDS
JOHN ROSENAU	ASSESSOR	
MIKE TROIDL	PLANNING + BUILDING	
Michael Robitaille	City of Kahlotus	MNR
Alexis Spencer	Franklin Conservation district	
Betsy Cysael	FC Weed Board	B.C.
Todd J. Hanson	FC Weed Board	

FRANKLIN COUNTY
EMERGENCY MANAGEMENT
1011 E. Ainsworth Street
Pasco, WA 99301
(509) 545-3546

Hazard Mitigation Plan Public Meetings – 09/04/2025

Name (please print)	Organization/Session	Signature
Sean Davis	FCEM	
Jordan Hanes	FCEM	
Michael Robitaille	City of Kahlotus	
Cade Scott	City of Mesa	
Megan Woods	FCEM	
Eli Bear	BFHD	
Alyssa Munro	BFHD	

FRANKLIN COUNTY
EMERGENCY MANAGEMENT
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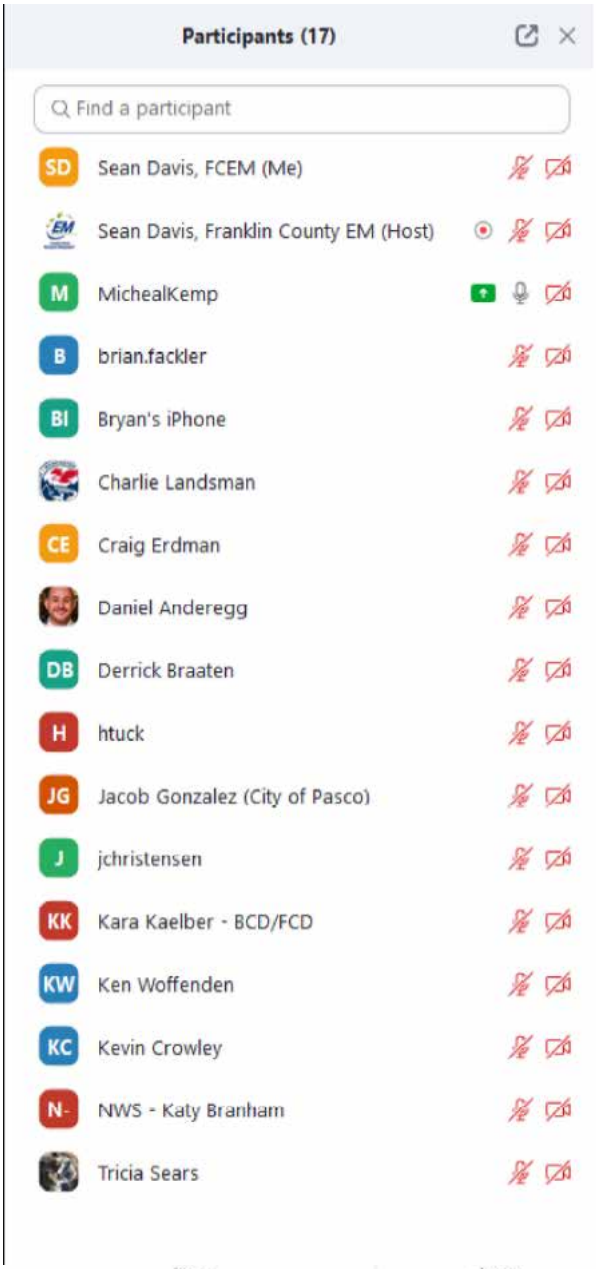
Pasco, WA 99301
(509) 545-3546

Hazard Mitigation Plan Public Meetings – 09/04/2025

Name (please print)	Organization	Signature
Ben Hanes	does business in FC	Virtual
Kent McClure	City of Pasco Operations Manager	Virtual
Michael Morgan	Franklin County GIS	virtual



Name	Agency	Role	Number	email	
Jordan Hanes	Franklin County Emergency Management	Deputy Director	509-546-5848	jhanes@franklincountywa.gov	
Sean Davis	Franklin County Emergency Management	Director	509-546-5846	sdavis@franklincountywa.gov	
Heather Noles	Franklin County Emergency Management	Program Coordinator	509-546-5847	hnoles@franklincountywa.gov	(just observing)
Brian Fackler	Benton-Franklin Health District	Emergency Preparedness Coordinator	509-460-4314	brian.fackler@bfhd.wa.gov	
John Rosenau	Franklin County Assessor	County Assessor	509-531-7044	jrosenau@franklincountywa.gov	
Mike Harris	Franklin County Fire District #3	Chief	509-547-9306	mharris@frcfd3.org	
Tim Waters	Washington State University Extension	Director	509-554-8152	twaters@wsu.edu	
Michael Morgan	Franklin County GIS	Geographic Information Systems Manag	509-545-3585	mmorgan@franklincountywa.gov	
Micheal Kemp	ISC				
Daniel Anderegg	ISC				
Derrick Braaten	Franklin County Planning and Building	Director	509-545-3521	dbraaten@franklincountywa.gov	
Cade Scott	City of Mesa	Public Works Superintendent	509-265-4252	pwmesa@yahoo.com	
Clint Didier	Franklin County Elected Official	Commissioner	509-412-4022	cdidier@franklincountywa.gov	
Charlie Landsman	DNR	Community Resilience Coordinator	360-972-4249	charles.landsman@dnr.wa.gov	
Jacob Gonzalez	City of Pasco	Director of Community & Economic Development		gonzalezj@pasco-wa.gov	
Kara Kaelber	Franklin Conservation District		509-430-1455	kara-kaelber@franklincd.org	
Ken Woffenden	City of Connell	Fire Chief	509-236-5451	kwoffenden@connellwa.org	
Kylie Peel	City of Kennewick	Tri-Cities HOME Consortium		kylie.peel@ci.kennewick.wa.us	
Matt Truman	Pasco Housing Authority			mtruman@hacpfc.org	
Katy Branham	National Weather Service, Pendleton	Warning Coordination Meteorologist	541-276-7832	katy.branham@noaa.gov	
Sophia Fox	WRCD	Natural Hazards Planner	360-660-8748	sophia@washingtoncerd.org	
Suzanne Henderson	Bureau of Reclamation	EM Program Manager	208-510-8482	shenderson@usbr.gov	
Toni Lehman	City of Richland	Tri-Cities HOME Consortium Administra	509-942-7580	tlehman@ci.richland.wa.us	covers all of tri-cities
Tricia Sears	Washington Geological Survey	Geologic Planning Liaison	360-628-2867	tricia.sears@dnr.wa.gov	

Hazard Mitigation Planning Meeting
03/18/2025 – 09:00 a.m.
1011 E. Ainsworth Street Pasco, WA 99301

Attendees

Sean Davis – Franklin County Emergency Management – Director

Jordan Hanes – Franklin County Emergency Management – Deputy Director

Micheal Kemp – ISC Consultant

Chris Lee – Connell Police Department – Chief

Cade Scott – City of Mesa – Public Works

John Rosenau – Franklin County – Assessor

Mike Troidl – Franklin County Planning & Building - Official

Michael Robitaille – City of Kahlotus – Mayor

Alexis Spencer – Franklin Conservation District – Research & Monitoring Program Coordinator

Betsy Crysel – Franklin County Noxious Weed Control Board – Office Manager

Todd Harris – Franklin County Noxious Weed Control Board – Program Coordinator

Sierra Knutson – Northwest Healthcare Response Network – Eastside District Coordinator

Heather Noles – Franklin County Emergency Management – Program Coordinator

Wes McCart – Franklin County Planning & Building – Director

Craig Erdman – Franklin County Public Works – Director

Chris Mortensen – Pasco Fire Department – Deputy Chief

Virtual

Elizabeth Garcia – Benton Franklin Council of Governments – Assistant Regional Planner

Kent McCue – Pasco Public Works – Operations Manager

Micheal Morgan – Franklin County GIS – Manager

Tricia Sears – Department of Natural Resources – Geologic Planning Liaison

Clint Didier – Franklin County – Commissioner

Meeting Notes

The assessed risk ratings were reviewed. The final risk scores were as follows:

1. Air Quality Incidents

Hazard Mitigation Planning Meeting
03/18/2025 – 09:00 a.m.
1011 E. Ainsworth Street Pasco, WA 99301

2. Wildfire
3. Volcano
4. Severe Summer Storms
5. Earthquake
6. Extreme Witner Weather
7. Drought
8. Structural Fire
9. High Hazard Dams and Levees
10. Flooding (combined with Flash/Urban and Riverine)
11. Invasive Species
12. Landslide
13. Solar Flare
14. Tornado

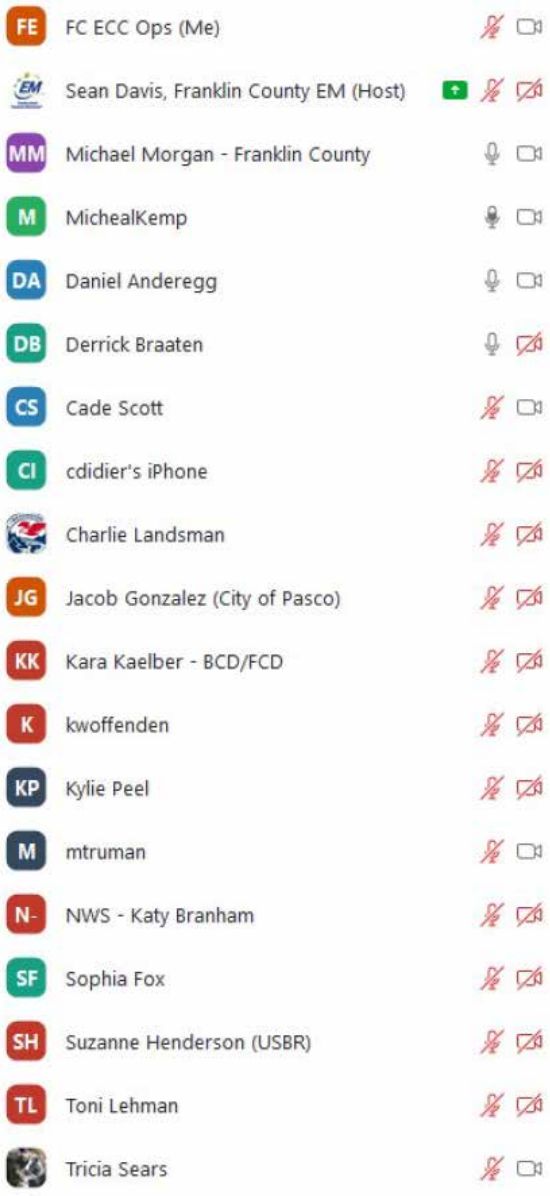
There was some concern that invasive species is not as high as the group thinks it should be. We have seen an increase of invasive species events over the last several years with the algae blooms, Russian thistle, cheat grass and Japanese beetles.

It was decided to keep the list as decided with the combined scores. The planning group would like to emphasize that invasive species is becoming a rising concern in our area and are closely monitoring the situation.

Chapters 1/3 were reviewed by Sean and Jordan and they have been sent back for comment. When the edits have been added, they will be sent to the planning group for review before they are shared with the public.

Within the next few weeks, members of the planning group will receive a HMP Action Review form talking about the action items from the previous plan. Members were asked to review the initiatives and give feedback.

Looking to the future, we will have public meetings once the draft is complete and the steering committee is ready to share. Jordan/Sean will be in contact with Benton County to see if we can public meetings to reduce travel time.


FE FC ECC Ops (Me)
Sean Davis, Franklin County EM (Host)
MM Michael Morgan - Franklin County
M MichealKemp
DA Daniel Anderegg
DB Derrick Braaten
CS Cade Scott
CI cdidier's iPhone
Charlie Landsman
JG Jacob Gonzalez (City of Pasco)
KK Kara Kaelber - BCD/FCD
K kwoffenden
KP Kylie Peel
M mtruman
N- NWS - Katy Branham
SF Sophia Fox
SH Suzanne Henderson (USBR)
TL Toni Lehman
Tricia Sears

FRANKLIN COUNTY
EMERGENCY MANAGEMENT
1011 E. Ainsworth Street
Pasco, WA 99301
(509) 545-3546

Hazard Mitigation Planning Meeting – 06/03/2025

Name (please print)	Organization	Signature
Elizabeth Garcia	Benton Franklin Council of Governments	virtual
Micheal Kemp	ISC	virtual
Michael Morgan	Franklin County GIS	
Hallie Tuck	Connell Public Works	
Tricia Sears	Washington Geological Survey	
Katherine Guest	ISC	
Kent McCue	Franklin County	
Chris Mortensen	Pasco Fire	
Ken Wolfender	Connell Fire Department	

FRANKLIN COUNTY
EMERGENCY MANAGEMENT
1011 E. Ainsworth Street
Pasco, WA 99301
(509) 545-3546

Hazard Mitigation Planning Meeting – 06/03/2025

Name (please print)	Organization	Signature
Sean Davis	FCEM	
Jordan Hanes	FCEM	
Megan Woods	FCEM	
Heather Noles	FCEM	
Michael Robitaille	City of Kahlotus	
John Rosenau	Franklin County Assessor	
Eli Bear	Benton-Franklin Health District	
Sierra Knutson	NWRMW	
Wes McCourt	Franklin County Planning & Building	

FRANKLIN COUNTY
EMERGENCY MANAGEMENT
1011 E. Ainsworth Street
Pasco, WA 99301
(509) 545-3546

Hazard Mitigation Planning Meeting – 08/26/2025

Name (please print)	Organization	Signature
Michael Robitaille	City of Kahlotus	Virtual
Chris Lee	City of Connell	" "
Micheal Kemp	ISC	" "
Scott Downes	WDFW	" "
Kent McCue	Franklin County Operations Manager	" "
Michael Morgan	Franklin County IS	" "
Tricia Sears	Department of Natural Resources Washington Geological Survey	" "
Craig Erdman	Franklin County Public Works	" "
Ken Woffenden	Connell Fire	" "
Eli Bear	BFHD	" "
Elizabeth Garza	Benton Franklin Council of Governments	" "

FRANKLIN COUNTY
EMERGENCY MANAGEMENT
1011 E. Ainsworth Street
Pasco, WA 99301
(509) 545-3546

Hazard Mitigation Planning Meeting – 08/26/2025

Name (please print)	Organization	Signature
Sean Davis	FCEM Franklin County Emergency Management	
Jordan Hanes	FCEM	
Alyssa Munro	BFHD Benton Franklin Health District	
Heather Noles	FCEM	
Sierra Knutson	NWHRN Northwest Healthcare Response Network	virtual
Troy Maikis 509-312-8117	WDFW Washington Department of Fish & Wildlife	virtual
Chris Mortensen	Pasco Fire	virtual

Jordan Hanes

From: Jordan Hanes
Sent: Monday, June 3, 2024 11:10 AM
Cc: Sean Davis
Subject: Franklin County Hazard Mitigation Planning Committee 2024 - FCEM

Good Morning,

Franklin County Emergency Management is initiating the process to update **Franklin County's Hazard Mitigation Plan (HMP)**. We are reaching out to you to invite you as a member of our Steering Committee. We will be providing further information about specific participation opportunities in the coming weeks.

The HMP serves as a roadmap for reducing risks from natural and human-caused hazards in our community. This plan also helps meet specific planning requirements for your jurisdiction. Once the plan is adopted and mitigation projects are established, this can provide justification for funding opportunities. Your unique perspective and expertise are essential in ensuring the updated plan effectively addresses the needs of all residents and stakeholders.

Our last HMP was published in 2018. It can be found here at https://franklinem.org/wp-content/uploads/Franklin-County-HMP-2019.pdf.

Please contact **Jordan Hanes** at **509-546-5848** or **jhanes@franklincountywa.gov** to confirm your participation in the HMP update. If you have someone else in mind that you would like to participate, please let me know.

Thank you,

Jordan Hanes
Deputy Director
Franklin County Emergency Management
Phone: 509-546-5848
Mobile: 509-302-2337
Email: jhanes@franklincountywa.gov
1011 E. Ainsworth St.
Pasco, WA 99301
www.franklinem.org

Appendix B: Public Involvement Activities and Documentation

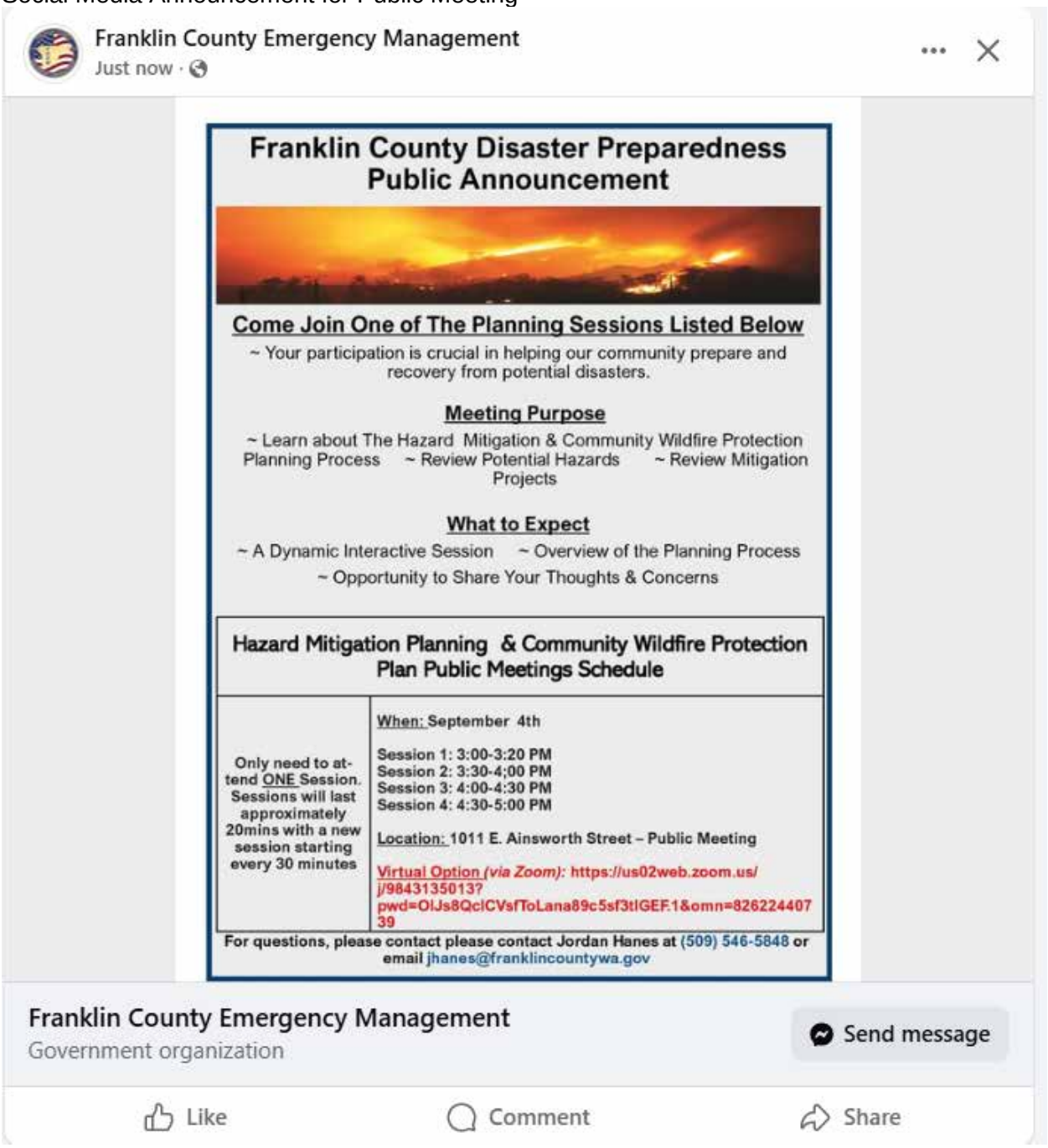
Below are samples of public information and public involvement activities that were used during the development of the *Franklin County All-Hazard Mitigation Plan*, including:

- Survey Results
- Public Meeting Announcements / News Releases
- Outreach Activities
- Public Meeting Photos

B.1 Public Meeting Documentation

Link to Public Comment Draft

Social Media Announcement for Public Meeting



Facebook Announcement for Public Meeting

Franklin County Emergency Management
2m ·

Your voice matters! 📣 Join us on September 4th to help shape our community's future and prepare for potential disasters. We're looking for your input on hazard mitigation and wildfire protection.

Choose one of our quick, interactive sessions—they're just 20 minutes long!

📍 In-person: 1011 E. Ainsworth Street
💻 Virtual: https://tinyurl.com/5dhy53vw

Session Times:

3:00-3:20 PM

3:30-4:00 PM

4:00-4:30 PM

4:30-5:00 PM

Let's build a safer community together! #CommunityResilience #DisasterPreparedness #WildfireReady #LocalGovernment #YourInputMatters

~~~~~~~

¡Tu voz importa! 📣 Únete a nosotros el 4 de septiembre para ayudar a dar forma al futuro de nuestra comunidad y prepararnos para posibles desastres. Buscamos tu opinión sobre la mitigación de riesgos y la protección contra incendios forestales.

Elige una de nuestras sesiones interactivas y rápidas: ¡duran solo 20 minutos!

📍 En persona: 1011 E. Ainsworth Street
💻 Virtual: https://tinyurl.com/5dhy53vw

Horarios de las sesiones:

3:00-3:20 PM

3:30-4:00 PM

4:00-4:30 PM

4:30-5:00 PM

¡Construyamos juntos una comunidad más segura!

#ResilienciaComunitaria #PreparaciónParaDesastres #ListosParaIncendiosForestales #GobiernoLocal #TuOpiniónImporta
~~~~~~~

Flyer Announcement for Public Meeting

Franklin County Disaster Preparedness Public Announcement

Come Join One of The Planning Sessions Listed Below

~ Your participation is crucial in helping our community prepare and recovery from potential disasters.

Meeting Purpose

~ Learn about The Hazard Mitigation & Community Wildfire Protection Planning Process ~ Review Potential Hazards ~ Review Mitigation Projects

What to Expect

~ A Dynamic Interactive Session ~ Overview of the Planning Process

~ Opportunity to Share Your Thoughts & Concerns

Hazard Mitigation Planning & Community Wildfire Protection Plan Public Meetings Schedule	
Only need to attend ONE Session. Sessions will last approximately 20mins with a new session starting every 30 minutes	When: September 4th Session 1: 3:00-3:20 PM Session 2: 3:30-4:00 PM Session 3: 4:00-4:30 PM Session 4: 4:30-5:00 PM Location: 1011 E. Ainsworth Street – Public Meeting Virtual Option *(via Zoom):* https://tinyurl.com/338aswyy

For questions, please contact please contact Jordan Hanes at (509) 546-5848 or email jhanes@franklincountywa.gov

Franklin County Disaster Preparedness Public Announcement

Come Join One of The Planning Sessions Listed Below

~ Your participation is crucial in helping our community prepare and recovery from potential disasters.

Meeting Purpose

~ Learn about The Hazard Mitigation & Community Wildfire Protection Planning Process ~ Review Potential Hazards ~ Review Mitigation Projects

What to Expect

~ A Dynamic Interactive Session ~ Overview of the Planning Process

~ Opportunity to Share Your Thoughts & Concerns

Hazard Mitigation Planning & Community Wildfire Protection Plan Public Meetings Schedule	
Only need to attend ONE Session. Sessions will last approximately 20mins with a new session starting every 30 minutes	When: September 4th Session 1: 3:00-3:20 PM Session 2: 3:30-4;00 PM Session 3: 4:00-4:30 PM Session 4: 4:30-5:00 PM Location: 1011 E. Ainsworth Street – Public Meeting Virtual Option *(via Zoom):* https://us02web.zoom.us/j/98431350 13?pwd=OlJs8QclCVsfToLana89c5sf3tIGEF.1&omn=82622440739

For questions, please contact please contact Jordan Hanes at (509) 546-5848 or email jhanes@franklincountywa.gov

Benton, Franklin & Walla Walla Counties LEPC
September 4, 2025 @ 10:00am
Franklin County ECC
1011 E. Ainsworth St., Pasco, WA 99301

* Virtual

Name (please print)	Organization	County – BC/FC/WW
Jeremy Gerard	Autozone	FC
Marcus McCready	Ben-Franklin Transit	BC/FC
Michael Hefner	KFD	BC
Michelle Frost	USACE Walla Walla	ALL ~~USACE~~
~~Pete~~		
Pete Harsin	WA Odd Fellows Home	WW
Rob Hewes	USACE Walla Walla	~~A/L~~
Sandi Duffey	Adams County EM	AC
Scott LoParco	BCFD1	BC
Steven Hughes	Regency at the Park	WW
Tony F	HFD	BC
Bekt Hammons	Kadlec	BC
Clint Didier	Franklin County	FC
Nick Alvarado	Nutmen	BC/FC/WW

Benton, Franklin & Walla Walla Counties LEPC
September 4, 2025 @ 10:00am
Franklin County ECC
1011 E. Ainsworth St., Pasco, WA 99301

Name (please print)	Organization	County – BC/FC/WW
Kathy Wyatt	Hamb Weston	BC/FC
Dorothy Trainer	DOC Coyote Ridge	FC

Benton, Franklin & Walla Walla Counties LEPC
September 4, 2025 @ 10:00am
Franklin County ECC
1011 E. Ainsworth St., Pasco, WA 99301

Name (please print)	Organization	County – BC/FC/WW
Brent Keseman	CHS	FC
Tony Beach	BCEM	BC
Marike Kortleever	Lineage	BC
John Bushard	Clean Harbors	FC
[illegible]	Gryphon Environmental	[illegible]
Sean Schulenky	Lourdes	[illegible]
Deanna Davis	BCEM	[illegible]
Vasiliy Kravtsov	Tree Top Inc.	
Sierra Knutson	NWHRN	[illegible]
Dan Brown	CISA	[illegible]
Dustin Drout	WSP	[illegible]

Benton, Franklin & Walla Walla Counties LEPC
September 4, 2025 @ 10:00am
Franklin County ECC
1011 E. Ainsworth St., Pasco, WA 99301

Name (please print)	Organization	County – BC/FC/WW
Kelly Gilchrist	Dept of Ecology - Spills	—
Sandi Jacobsen	WA St. Penitentiary / Dept of Corrections	
Roberto Castaneda	Paxco Processing LLC / PSM Coordinator	
Larry Nierenberg	National Weather Service Pendleton	
Alyssa Munro	Benton Franklin Health District	
Eli Bear	Benton-Franklin Health District	
Shasta Hay Grimes	Reser's Fine Foods	
Cami Luppold	Benton Co EM	
Mike Hoeres	Franklin Co Fire District #3	
Melissa Fillmore	Grayson Environmental Services	
Dan Anderson	Marathon Pipe Line	
Esther Click	WESCOM	2C

Benton, Franklin & Walla Walla Counties LEPC
September 4, 2025 @ 10:00am
Franklin County ECC
1011 E. Ainsworth St., Pasco, WA 99301

Name (please print)	Organization	County – BC/FC/WW
Sean Davis	FCEM	FC
Megan Woods	FCEM	FC
T Chris Lee	WWEM	WW
Jordan Hanes	FCEM	~~WW~~ FC
Patrick B. Purcell	WWEM	WW
Adam J Martin	Lamb Weston Richland - PSM	BC
Sarah Ellis	Energy Northwest	BC
Jared Simmons	Nutrien KFO	BC
George Ficenec	[illegible] - Walla Walla	[illegible]
Brenda Bamford	ALTC - Kennewick	BC
Amber Leahy	Pacific Power	
STEPHANIE HAKALA	WA EMD	YAK+EastWA
Heidi Cousens	Ecology	Yakima
Jami Lewis	Franklin ALTC	

Benton, Franklin & Walla Walla Counties LEPC
September 4, 2025 @ 10:00am
Franklin County ECC
1011 E. Ainsworth St., Pasco, WA 99301

Virtual

Name (please print)	Organization	County – BC/FC/WW
Angela Caldwell	LEPC for Walla Walla	WW
Angie Peters	Valley Transit	WW
Chris Mortensen	PFD	FC
Brent Carlson	Coyote Ridge	FC
Brooks Stanfield	EPA	ALL
Chad Messerly	Harms Pacific Transport	FC
David Evans	Oakdell Egg Farms	FC
Diane Fowler	Dept. of Ecology	ALL
Douglas Frenette	GM Republic Services	BC
Erin Williams	EPA Region 10	ALL
Jason Clapp	USACE Walla Walla District	~~BOW~~ AH
Givey Kesterson	Lamb Weston	FC/BC
Jeff M		
Jen Carson	Verdesian Life Sciences	BC

between Moses Lake and Connell

Rail Interchange project garners state funds - still no timeline

By: Katherine Trowbridge

Interchange Project received additional $4 million in state funds

The Columbia Basin Railroad Company, which operates between Moses Lake and Connell, has received $11,552,000 to rehabilitate approximately ten miles of railroad line.

With a 20% match by the Columbia Basin Railroad (CBR), the proposed project will replace approximately ten miles of rail and approximately 8,000 cross ties on the company's rail lines. Supporters of the project say this work will enhance safety and improve system performance as the project will return the line to a state of

Continued on page - 5

OneEnergy invites community to learn more about proposed Solar Farm

OneEnergy invites the North Franklin community to a public meeting to discuss plans a proposed solar energy project east of Connell.

Members of OneEnergy have held two smaller meetings at the Connell Visitors Center. The first hosted by the Greater Connell Area Chamber of Commerce, answered people's questions on the topic of solar farms and OneEnergy.

The latest, held on Tuesday, Oct. 22, featured renderings of how the project would look in our landscape.

OneEnergy has been speaking with neighbors of the proposed site, near the Connell airport as well as working with Franklin PUD.

The project has received the name Palouse Junction Solar, a nod to our history.

SAVE THE DATE!

The public meeting will be held on Thursday, November 14 at 6:00 PM at the Connell Community Center, 211 E. Elm Street.

More information about the meeting will be shared in next week's paper – if you have any questions in the meantime, please contact us at: palousejunctionsolar@oneenergyrenewables.com.

Franklin County Emergency Management seeks your input on Hazard Mitigation

By: Katherine Trowbridge

Shawn Davis, Jordan Hanes and Michael Kemp, with Franklin County Emergency Management presented their Hazard Mitigation Plan update at a variety of venues earlier in October.

This multi-agency, city, and county plan is up for review.

So you may ask, what is hazard mitigation? The purpose of hazard mitigation is to reduce the negative impacts of natural or man made disasters in our community. This is achieved by taking actions before a disaster occurs to lessen its effects on people, property, and essential services. Mitigation efforts aim to make our communities more resilient, potentially saving lives, reducing property damage, and minimizing description to daily life when hazards do occur.

Some examples presented include: strengthening buildings to withstand earthquakes, improving drainage systems to reduce flooding, creating firebreaks to slow the spread of wildfires, or developing early warning signs for severe weather.

Benefits of a hazard mitigation plan among the obvious of preventing damage and loss, along with continuity across the board, it will also provide eligibility for certain types of federal grant funds. Grant funding provided through the hazard mitigation program under former Connell Fire Chief Chris Schulte led to the chipper program, and mitigation clean-up of the Esquatzel Coulee.

Plans must be updated and approved every five years. FCEM will work with local fire chiefs and officials to update the mitigation plan and submit it to the state and FEMA for final approval.

Mitigation plans work, for every one dollar spent on mitigation it can save between $6 up to $16 in future costs.

Mitigation includes several areas from infrastructure projects, natural systems protection, local planning and regulations, and an education and awareness piece.

Mitigation planning

Continued on page - 5

The Greater Connell Area Chamber of Commerce is seeking nominations for their annual awards for man, woman, educator, and senior of the year.

Nomination forms are available online at: https://connellwa.com/chamber/people

The Greater Connell Area Chamber of Commerce collects nominations for the People of the and uses the information provided to decide on the award recipients.

It is NOT a voting process.

With many nominations, the panel only has the information provided to make decisions, so your input is welcome and needed.

The chamber board asks that you please review past award recipients before nominating.

Veterans

You're Invited!

Local Veterans are invited to attend a variety of events in their honor.

The North Franklin School District will be hosting Veterans at the following events:

Nov. 6 - Mesa Elementary at 1pm.

Nov. 8 - Connell Elementary invites Veterans for lunch with students beginning at 11 am.

Nov. 8 - Basin City Elementary 1pm.

Nov. 8 - Connell High School at 2:15 pm.

Nov. 27 - Olds Junior High annual Veterans/VIP breakfast and program.

Kahlotus School District will also honor Veterans at a 10 am on Nov. 8.

bia Basin Railroad - continued from front page

ds," added Washing-
Senator Maria Can-

ie CBR also received
illion dollars in state
ing last spring, during
2024 legislative ses-
towards its $19 mil-
project to improve the
ell rail interchange.
tate Sen. Mark
esler, R-Ritzville,
ed secure the fund-
with Sen. Curtis King,
kima, and Rep. Tom
, R-Moses Lake, help-
o keep the legislation
e forefront during the
session.
ie Connell rail in-
ange is one project
lents of Connell are
r for, as it will ease
c congestion caused
alled trains across the
le of town.
ie project is a key one
stern Washington as the CBRW intersects with BNSF Railway's Lakeside Subdivision line, running between Spokane and Pasco.

The $19 million project includes $10 million in funding already appropriated by the Legislature in 2015, plus an additional $5 million in the 2023 Legislative session. The coalition, overseeing the project, stated that about $500,000 has been spent on design and engineering since 2015. Yet no timeline for construction of the project has been officially slated.

The funding will be used to relocate and reconfigure the interchange in Connell to industrial property south of the city, as well as improve safety and efficiency along the route. The current interchange is located just north of the Clark Street intersection.

The upgrades will allow long trains heading west on BNSF lines to be routed to CBR's lines without breaking the train apart, time-consuming switching, or extensive roadway grade-crossing blockages, the coalition said.

The interchange reconfiguration will also allow for the simultaneous accommodation of an inbound and outbound train without one locomotive blocking the other. To put this into perspective, the minimum number of tracks required for this type of operation is three, with a length of 8,600 feet each.

The Port of Warden and Columbia Basin Railroad are the lead agencies for the Connell Rail interchange project. Project partners also include the City of Connell, State Department of Transportation, BNSF and the ports of Moses Lake, Othello, Royal Slope and Pasco.

CBRW, is one of the busiest shortline railways in Washington State due to growth along its route, according to the Connell Rail Interchange Coalition. Its trains haul thousands of loads of various agricultural and industrial commodities and other cargo along the rail line annually for 60 active rail shippers in the Columbia Basin, which employs nearly 7,000 people in Grant and Adams counties.

Hazard 'Mitigation

- continued from front page

phases include an ongoing resource organization, risk assessment/identifying hazards, strategy development, and then implementation/monitoring.

Right now, FCEM is in the risk assessment phase where they seek to inventory assets, estimate potential losses, and profile potential hazardous events.

This is where you come in. FCEM is seeking public input on the top risks within Franklin County.

They ask that you take their survey at https://survey.alchemer.com/s3/7986562/Franklin-County-HMP-Hazard-Ranking

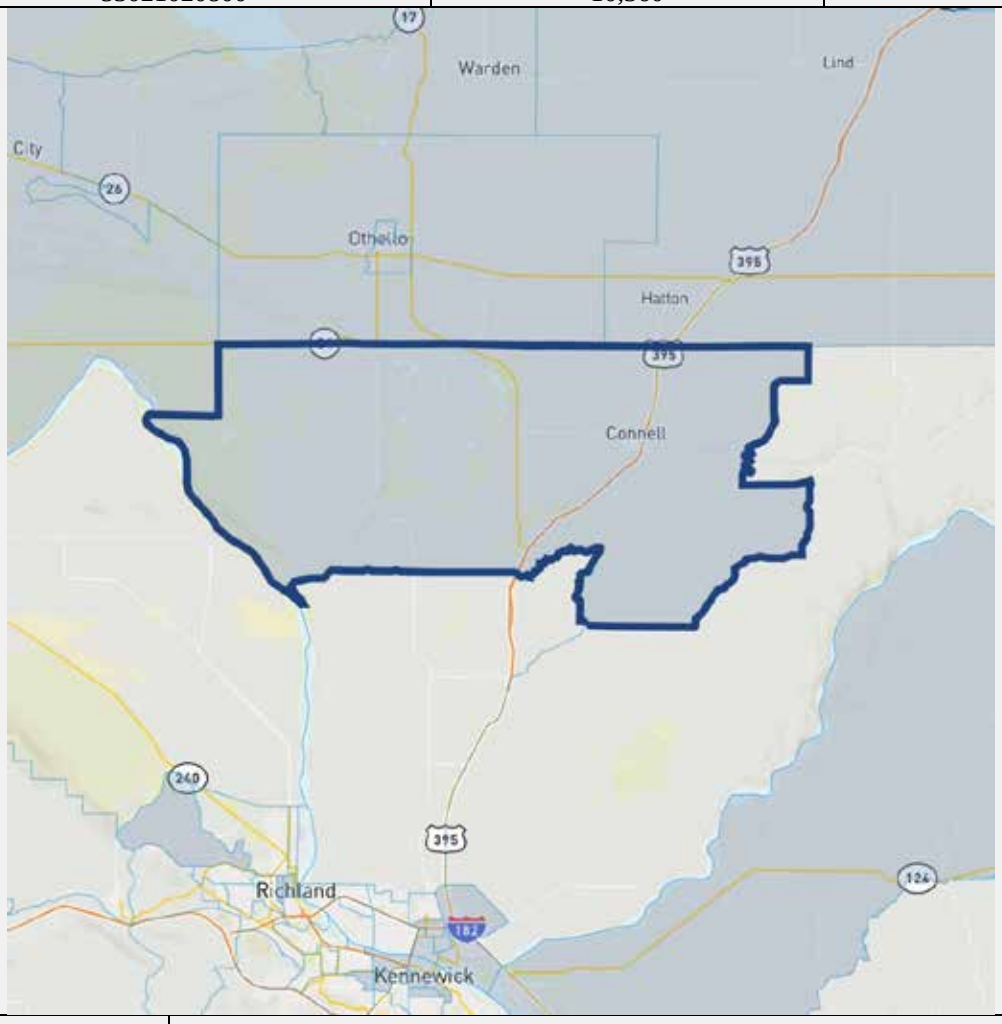
or scan the QR code below:

Correction

In our last edition, October 24, the Connell City Council article stated that the city had budgeted $10,000 for a pool cover. We were mistaken. The city actually budgeted $10,000 for the FREE summer open, cover has already been purchased and in use.

Appendix C: Disadvantaged Community Maps

FRANKLIN COUNTY, WA		
CLIMATE & ECONOMIC JUSTICE SCREENING TOOL - CENSUS TRACT ANALYSIS		
CENSUS TRACT 2010 ID	**CENSUS TRACT POPULATION**	**LOW INCOME TRACT?**
53021020800	10,360	NO



BURDEN	DESCRIPTION AND REPORTED DATA
Workforce Development	***Linguistic Isolation*** *Share of households where no one over age 14 speaks English very well (94th)*
Workforce Development	***High school education*** *Percent of people ages 25 years or older whose high school education is less than a high school diploma (94th)*

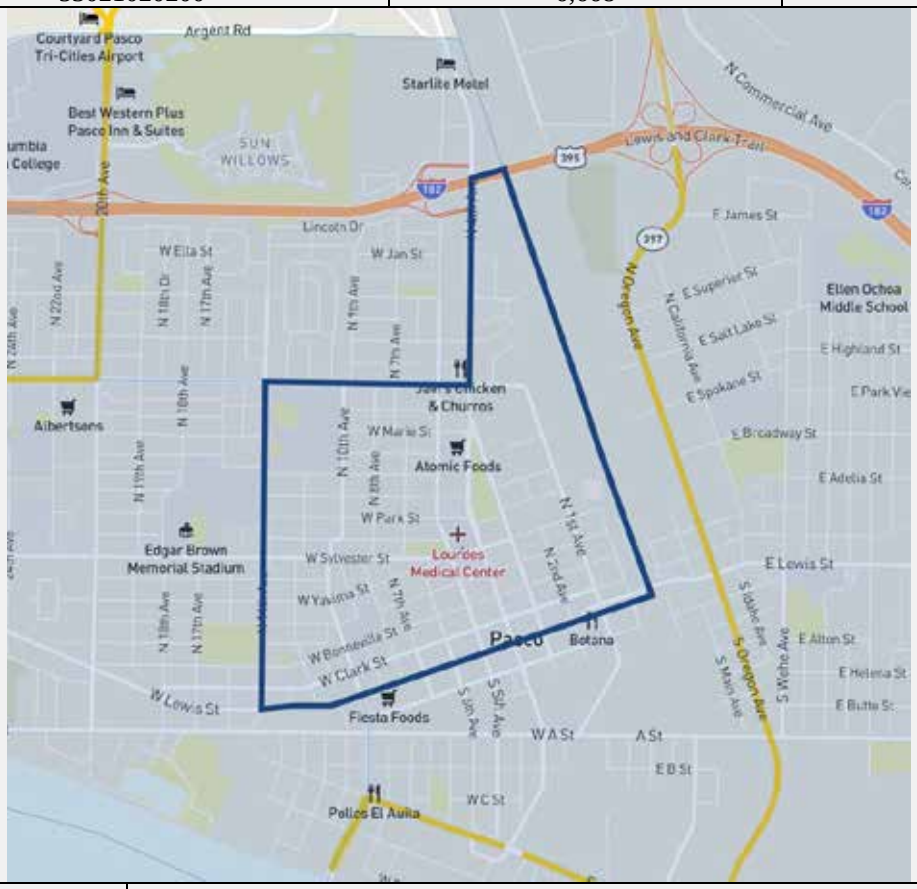
Source: U.S. Council on Environmental Quality – Climate & Economic Justice Screening Tool (2024)

FRANKLIN COUNTY, WA		
CLIMATE & ECONOMIC JUSTICE SCREENING TOOL - CENSUS TRACT ANALYSIS		
CENSUS TRACT 2010 ID	**CENSUS TRACT POPULATION**	**LOW INCOME TRACT?**
53021020100	11,279	YES

BURDEN	DESCRIPTION AND REPORTED DATA
Legacy Pollution	***Proximity to Risk Management Plan facilities:*** *Count of Risk Management Plan (RMP) facilities within 5 kilometers (99th)*
Legacy Pollution	***Proximity to Superfund sites:*** *Count of proposed or listed Superfund (or National Priorities List (NPL)) sites within 5 kilometers (91st)*
Workforce Development	***Linguistic isolation:*** *Share of households where no one over age 14 speaks English very well (99th)*
Workforce Development	***Unemployment:*** *Number of unemployed people as a part of the labor force (92nd)*
Workforce Development	***High School Education:*** *Percent of people ages 25 years or older whose high school education is less than a high school diploma (56%)*

Source: U.S. Council on Environmental Quality – Climate & Economic Justice Screening Tool (2024)

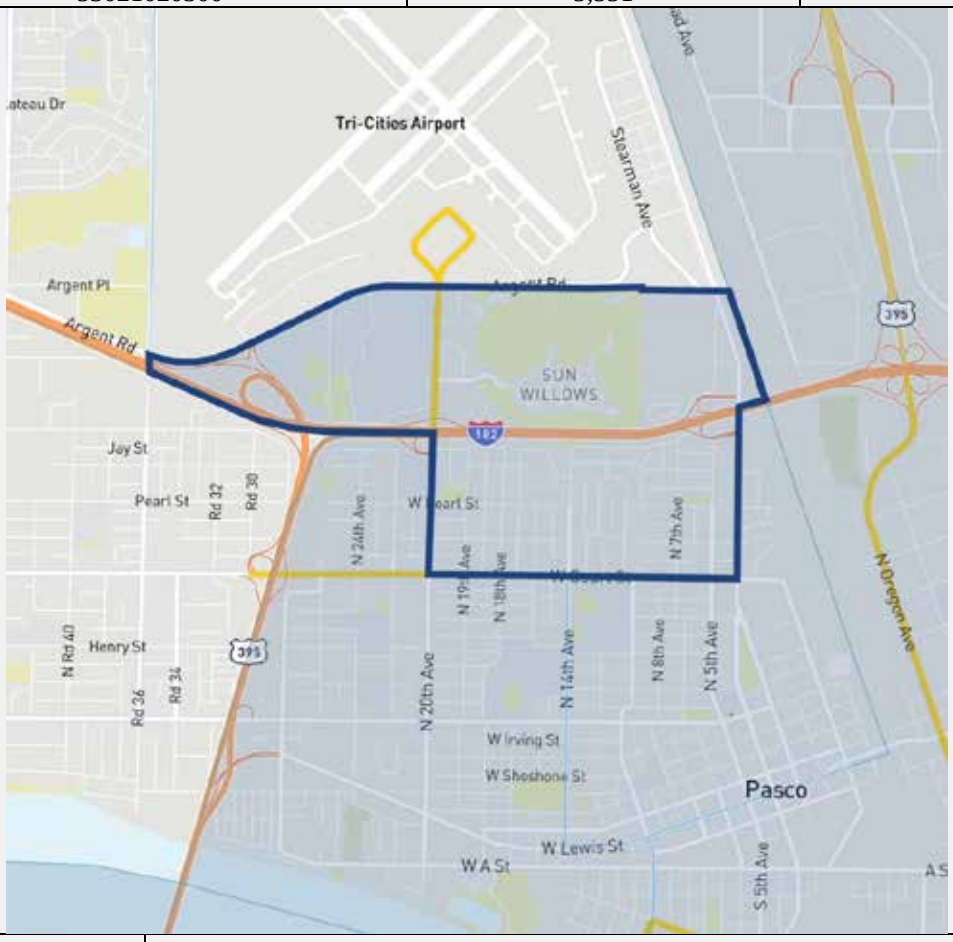
FRANKLIN COUNTY, WA		
CLIMATE & ECONOMIC JUSTICE SCREENING TOOL - CENSUS TRACT ANALYSIS		
CENSUS TRACT 2010 ID	**CENSUS TRACT POPULATION**	**LOW INCOME TRACT?**
53021020200	6,668	YES



BURDEN	DESCRIPTION AND REPORTED DATA
Legacy Pollution	***Proximity to Risk Management Plan facilities:*** *Count of Risk Management Plan (RMP) facilities within 5 kilometers (99th)*
Workforce Development	***Linguistic isolation:*** *Share of households where no one over age 14 speaks English very well (99th)*
Workforce Development	***Poverty:*** *Share of people in households where income is at or below 100% of the Federal poverty level (90th)*
Workforce Development	***High School Education:*** *Percent of people ages 25 years or older whose high school education is less than a high school diploma (47%)*

Source: U.S. Council on Environmental Quality – Climate & Economic Justice Screening Tool (2024)

FRANKLIN COUNTY, WA		
CLIMATE & ECONOMIC JUSTICE SCREENING TOOL - CENSUS TRACT ANALYSIS		
CENSUS TRACT 2010 ID	**CENSUS TRACT POPULATION**	**LOW INCOME TRACT?**
53021020300	5,551	YES



BURDEN	DESCRIPTION AND REPORTED DATA
Legacy Pollution	***Proximity to Risk Management Plan facilities:*** *Count of Risk Management Plan (RMP) facilities within 5 kilometers (99th)*
Workforce Development	***Linguistic isolation:*** *Share of households where no one over age 14 speaks English very well (96th)*
Workforce Development	***High School Education:*** *Percent of people ages 25 years or older whose high school education is less than a high school diploma (38%)*
Source: U.S. Council on Environmental Quality – Climate & Economic Justice Screening Tool (2024)	

FRANKLIN COUNTY, WA		
CLIMATE & ECONOMIC JUSTICE SCREENING TOOL - CENSUS TRACT ANALYSIS		
CENSUS TRACT 2010 ID	**CENSUS TRACT POPULATION**	**LOW INCOME TRACT?**
53021020400	9,000	YES

BURDEN	DESCRIPTION AND REPORTED DATA
Climate Change	***Projected flood risk:*** *Projected risk to properties from projected floods, from tides, rain, riverine and storm surges within 30 years (93rd)*
Housing	***Lack of indoor plumbing:*** *Share of homes without indoor kitchens or plumbing (98th)*
Unemployment	*Number of unemployed people as a part of the labor force (91st)*
Legacy Pollution	***Proximity to Risk Management Plan facilities:*** *Count of Risk Management Plan (RMP) facilities within 5 kilometers (97th)*
Workforce Development	***Linguistic isolation:*** *Share of households where no one over age 14 speaks English very well (98th)*
Workforce Development	***Low median income:*** *Comparison of median income in the tract to median incomes in the area (92nd)*
Workforce Development	***High school education:*** *Percent of people ages 25 years or older whose high school education is less than a high school diploma (44%)*
Source: U.S. Council on Environmental Quality – Climate & Economic Justice Screening Tool (2024)	

APPENDIX D: Hazard Mitigation Actions Forms by Jurisdictions

Mitigation Action Forms

Mitigation Action Item:

It seems to me that the greatest source of wildfires in the county is fires starting from vehicles along our Washinton State highways. State highways should have at least 8-10 feet of buffer to mitigate potential sparks from vehicles before they hit combustible fuels that line the edge of the highways. Bare ground or perennial grasses planted along the highways can be an effective fire deterrent. Lack of funding has led to little or no fire mitigation along state highways.

Year Initiated (i.e. 2024, 2025)	
Applicable Jurisdiction/Special District	Franklin County Noxious Weed Control Board
Lead Agency/Organization	Washington State Department of Transportation
Supporting Agencies/Organizations (if applicable)	
Potential Funding Source **Examples:** Local Budgeted Funds, Local or State Special Taxes, Private/Non-Profit Funds, State Special Funds, Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA) Program, Community Development Block Grant (CDBG), FEMA Public Assistance (PA)	
Estimated Cost (If estimated cost is unknown, indicate Low=bellow $100,000, Medium= Between $100,00 & $500,000.00, or Hig 1M and above)	
Benefits (Indicate Low, Medium, or High)	Medium

Projected Duration (If estimated duration is unknown, indicate Short Term= Less than a Year, Long Term = ore than a year, or Ongoing/repeating)	
PRIORITY (High, Medium, Low)	High

X	Place an "X" by the applicable goals, if applicable
x	Goal 1: Save (or protect) lives and reduce injury.
x	Goal 2: Increase resilience of infrastructure and critical facilities.
x	Goal 3: Avoid (minimize or reduce) damage to property.
x	Goal 4: Encourage the development and implementation of long-term, cost-effective, and environmentally sound mitigation projects.
x	Goal 5: Build and support capacity to enable local government and the public to prepare for, respond to and recover from the impact of natural hazards.

This mitigation action:

The mitigation strategies/actions will be prioritized and evaluated using the STAPLEE+E method, which uses eight (8) criteria for evaluating a mitigation action – Social, Technical, Administrative, Political, Legal, Economic, Environmental, and Equity. Additional considerations are within each of these criteria. Each criterion is evaluated on a scale from one (1) to five (5), with one (1) defined as strongly disagree and five (5) as strongly agree. The summation will result in the STAPLEE+E Prioritization Score.

Instructions: Circle the best option

	Strongly Disagree (1)	**Disagree (2)**	**Neither Agree or Disagree (3)**	**Agree (4)**	**Strongly Agree (5)**
Social: Do you agree or disagree that the mitigation action is more likely to: be acceptable to the community, does not adversely affect a particular segment of the population, does not cause relocation of lower-income people, and is compatible with the community's social and cultural values?	1	2	3	4	5
Technical: Do you agree or disagree that the mitigation action is technically effective in providing a long-term	1	2	3	4	5

reduction of losses and has minimal secondary adverse impacts?					
Administrative: Do you agree or disagree that your jurisdiction/organization has the necessary staffing and funding to carry-out this mitigation action?	1	2	3	4	5
Political: Do you agree or disagree that the mitigation action has the support of the public and stakeholders who have been offered an opportunity to participate in the planning process?	1	2	3	4	5
Legal: Do you agree or disagree that the jurisdiction or implementing agency has the legal authority to implement and enforce the mitigation action?	1	2	3	4	5
Economic: Budget constraints can significantly deter the implementation of mitigation actions. Do you agree or disagree that the mitigation action is cost-effective, as determined by a cost-benefit review, and is possible to fund?	1	2	3	4	5
Environmental: Do you agree or disagree that the mitigation action is sustainable and does not have an adverse effect on the environment, complies with federal, state, and local environmental regulations, and is consistent with the community's environmental goals?	1	2	3	4	5
Equity: Do you agree or disagree that the mitigation actions are consistent and systematically fair? (i.e., Does not create an opportunity for unequal distribution of resources; racism; affect a particular segment of the population, including communities of color, communities that face discrimination based on sex, sexual orientation or gender identity, persons with disabilities, persons who identify with a certain religion, persons with Limited English Proficiency, or rural communities, etc.).	1	2	3	4	5

X	Place an “X” by the applicable hazard
x	Air Quality Incidents
x	Wildfire
	Volcano
	Severe Summer Weather (Dust, Heat & Straight-line Wind Events)
	Earthquake
	Severe Winter Weather (Blizzard, Heavy Snow & Extreme Cold)
	Drought
x	Structural Fire
	High Hazard Dams and Levees
	Flooding (combined with Flash/Urban and Riverine)
x	Invasive Species
	Landslide
	Space Weather
	Public Health Emergency
x	

1. Mitigation Action Item:

We provide weed control along most of the County roads thereby providing a more defense able buffer along county roads We provide this service through an interlocal agreement with Franklin County Public Works. We prioritize dryland area roads as they are the most critical and contain more combustible fuels. I would only suggest that we would expand our spray zone from 8 feet wide to 12 feet wide in order to provide a more defense able space.

Year Initiated (i.e. 2024, 2025)	**2025**
Applicable Jurisdiction/Special District	Control Board
Lead Agency/Organization	
Supporting Agencies/Organizations (if applicable)	Franklin County Public Works
Potential Funding Source Examples:	

Local Budgeted Funds, Local or State Special Taxes, Private/Non-Profit Funds, State Special Funds, Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA) Program, Community Development Block Grant (CDBG), FEMA Public Assistance (PA)	
Estimated Cost (If estimated cost is unknown, indicate Low=bellow $100,000, Medium= Between $100,00 & $500,000.00, or Hig 1M and above)	$50000
Benefits (Indicate Low, Medium, or High)	Medium
Projected Duration (If estimated duration is unknown, indicate Short Term= Less than a Year, Long Term = ore than a year, or Ongoing/repeating)	Ongoing
PRIORITY (High, Medium, Low)	Medium

X	Place an “X” by the applicable goals, if applicable
x	Goal 1: Save (or protect) lives and reduce injury.
x	Goal 2: Increase resilience of infrastructure and critical facilities.
x	Goal 3: Avoid (minimize or reduce) damage to property.
	Goal 4: Encourage the development and implementation of long-term, cost-effective, and environmentally sound mitigation projects.
	Goal 5: Build and support capacity to enable local government and the public to prepare for, respond to and recover from the impact of natural hazards.

This mitigation action:
The mitigation strategies/actions will be prioritized and evaluated using the STAPLEE+E method, which uses eight (8) criteria for evaluating a mitigation action – Social, Technical, Administrative, Political, Legal, Economic, Environmental, and Equity. Additional considerations are within each of these criteria. Each criterion is evaluated on a scale from one (1) to five (5), with one (1) defined as strongly disagree and five (5) as strongly agree. The summation will result in the STAPLEE+E Prioritization Score.

	Strongly Disagree (1)	Disagree (2)	Neither Agree or Disagree (3)	Agree (4)	Strongly Agree (5)
Social: Do you agree or disagree that the mitigation action is more likely to: be acceptable to the community, does not adversely affect a particular segment of the population, does not cause relocation of lower-income people, and is compatible with the community's social and cultural values?	1	2	3	4	5
Technical: Do you agree or disagree that the mitigation action is technically effective in providing a long-term reduction of losses and has minimal secondary adverse impacts?	1	2	3	4	5
Administrative: Do you agree or disagree that your jurisdiction/organization has the necessary staffing and funding to carry-out this mitigation action?	1	2	3	4	5
Political: Do you agree or disagree that the mitigation action has the support of the public and stakeholders who have been offered an opportunity to participate in the planning process?	1	2	3	4	5
Legal: Do you agree or disagree that the jurisdiction or implementing agency has the legal authority to implement and enforce the mitigation action?	1	2	3	4	5
Economic: Budget constraints can significantly deter the implementation of mitigation actions. Do you agree or disagree that the mitigation action is cost-effective, as determined by a cost-benefit review, and is possible to fund?	1	2	3	4	5
Environmental: Do you agree or disagree that the mitigation action is sustainable and does not have an adverse effect on the environment, complies with federal, state, and local environmental regulations, and is consistent with the community's environmental goals?	1	2	3	4	5
Equity: Do you agree or disagree that the mitigation actions are consistent and systematically fair? (i.e., Does not create an opportunity for unequal distribution of resources; racism; affect a particular segment of the population, including communities of	1	2	3	4	5

color, communities that face discrimination based on sex, sexual orientation or gender identity, persons with disabilities, persons who identify with a certain religion, persons with Limited English Proficiency, or rural communities, etc.).					

X	Place an “X” by the applicable hazard
x	Air Quality Incidents
x	Wildfire
	Volcano
	Severe Summer Weather (Dust, Heat & Straight-line Wind Events)
	Earthquake
	Severe Winter Weather (Blizzard, Heavy Snow & Extreme Cold)
	Drought
x	Structural Fire
	High Hazard Dams and Levees
	Flooding (combined with Flash/Urban and Riverine)
x	Invasive Species
	Landslide
	Space Weather
	Public Health Emergency

2. Mitigation Action Item: Toxic Algae Research Project

Year Initiated (i.e. 2024, 2025)	**2024**
Applicable Jurisdiction/Special District	Benton-Franklin Health District
Lead Agency/Organization	Benton-Franklin Health District
Supporting Agencies/Organizations (if applicable)	
Potential Funding Source **Examples:** Local Budgeted Funds, Local or State Special Taxes, Private/Non-Profit Funds, State Special Funds, Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA) Program, Community Development Block Grant (CDBG), FEMA Public Assistance (PA)	
Estimated Cost (If estimated cost is unknown, indicate Low=bellow $100,000, Medium= Between $100,00 & $500,000.00, or Hig 1M and above)	Low to Medium
Benefits (Indicate Low, Medium, or High)	High
Projected Duration (If estimated duration is unknown, indicate Short Term= Less than a Year, Long Term = ore than a year, or Ongoing/repeating)	Long Term, Ongoing
PRIORITY (High, Medium, Low)	High

X	Place an “X” by the applicable goals, if applicable
X	Goal 1: Save (or protect) lives and reduce injury.
	Goal 2: Increase resilience of infrastructure and critical facilities.
	Goal 3: Avoid (minimize or reduce) damage to property.
X	Goal 4: Encourage the development and implementation of long-term, cost-effective, and environmentally sound mitigation projects.

	Goal 5: Build and support capacity to enable local government and the public to prepare for, respond to and recover from the impact of natural hazards.

This mitigation action:

The mitigation strategies/actions will be prioritized and evaluated using the STAPLEE+E method, which uses eight (8) criteria for evaluating a mitigation action – Social, Technical, Administrative, Political, Legal, Economic, Environmental, and Equity. Additional considerations are within each of these criteria. Each criterion is evaluated on a scale from one (1) to five (5), with one (1) defined as strongly disagree and five (5) as strongly agree. The summation will result in the STAPLEE+E Prioritization Score.

	Strongly Disagree (1)	**Disagree (2)**	**Neither Agree or Disagree (3)**	**Agree (4)**	**Strongly Agree (5)**
Social: Do you agree or disagree that the mitigation action is more likely to: be acceptable to the community, does not adversely affect a particular segment of the population, does not cause relocation of lower-income people, and is compatible with the community's social and cultural values?	1	2	3	4	5
Technical: Do you agree or disagree that the mitigation action is technically effective in providing a long-term reduction of losses and has minimal secondary adverse impacts?	1	2	3	4	5
Administrative: Do you agree or disagree that your jurisdiction/organization has the necessary staffing and funding to carry-out this mitigation action?	1	2	3	4	5
Political: Do you agree or disagree that the mitigation action has the support of the public and stakeholders who have been offered an opportunity to participate in the planning process?	1	2	3	4	5
Legal: Do you agree or disagree that the jurisdiction or implementing agency has the legal authority to implement and enforce the mitigation action?	1	2	3	4	5
Economic: Budget constraints can significantly deter the implementation of mitigation actions. Do you agree or disagree	1	2	3	4	5

that the mitigation action is cost-effective, as determined by a cost-benefit review, and is possible to fund?					
Environmental: Do you agree or disagree that the mitigation action is sustainable and does not have an adverse effect on the environment, complies with federal, state, and local environmental regulations, and is consistent with the community's environmental goals?	1	2	3	4	5
Equity: Do you agree or disagree that the mitigation actions are consistent and systematically fair? (i.e., Does not create an opportunity for unequal distribution of resources; racism; affect a particular segment of the population, including communities of color, communities that face discrimination based on sex, sexual orientation or gender identity, persons with disabilities, persons who identify with a certain religion, persons with Limited English Proficiency, or rural communities, etc.).	1	2	3	4	5

X	Place an "X" by the applicable hazard
	Air Quality Incidents
	Wildfire
	Volcano
	Severe Summer Weather (Dust, Heat & Straight-line Wind Events)
	Earthquake
	Severe Winter Weather (Blizzard, Heavy Snow & Extreme Cold)
	Drought
	Structural Fire
	High Hazard Dams and Levees
	Flooding (combined with Flash/Urban and Riverine)
	Invasive Species
	Landslide
	Space Weather
	Public Health Emergency

3. Mitigation Action Item: Toxic Algae Public Information Campaign

Year Initiated (i.e. 2024, 2025)	2025
Applicable Jurisdiction/Special District	-Franklin Health District
Lead Agency/Organization	Benton-Franklin Health District
Supporting Agencies/Organizations (if applicable)	
Potential Funding Source Examples: Local Budgeted Funds, Local or State Special Taxes, Private/Non-Profit Funds, State Special Funds, Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA) Program, Community Development Block Grant (CDBG), FEMA Public Assistance (PA)	
Estimated Cost (If estimated cost is unknown, indicate Low=bellow $100,000, Medium= Between $100,00 & $500,000.00, or Hig 1M and above)	Low
Benefits (Indicate Low, Medium, or High)	High
Projected Duration (If estimated duration is unknown, indicate Short Term= Less than a Year, Long Term = ore than a year, or Ongoing/repeating)	Long Term, Ongoing
PRIORITY (High, Medium, Low)	High

X	Place an “X” by the applicable goals, if applicable
X	Goal 1: Save (or protect) lives and reduce injury.
	Goal 2: Increase resilience of infrastructure and critical facilities.
	Goal 3: Avoid (minimize or reduce) damage to property.
X	Goal 4: Encourage the development and implementation of long-term, cost-effective, and environmentally sound mitigation projects.

	Goal 5: Build and support capacity to enable local government and the public to prepare for, respond to and recover from the impact of natural hazards.

This mitigation action:

The mitigation strategies/actions will be prioritized and evaluated using the STAPLEE+E method, which uses eight (8) criteria for evaluating a mitigation action – Social, Technical, Administrative, Political, Legal, Economic, Environmental, and Equity. Additional considerations are within each of these criteria. Each criterion is evaluated on a scale from one (1) to five (5), with one (1) defined as strongly disagree and five (5) as strongly agree. The summation will result in the STAPLEE+E Prioritization Score.

	Strongly Disagree (1)	**Disagree (2)**	**Neither Agree or Disagree (3)**	**Agree (4)**	**Strongly Agree (5)**
Social: Do you agree or disagree that the mitigation action is more likely to: be acceptable to the community, does not adversely affect a particular segment of the population, does not cause relocation of lower-income people, and is compatible with the community's social and cultural values?	1	2	3	4	5
Technical: Do you agree or disagree that the mitigation action is technically effective in providing a long-term reduction of losses and has minimal secondary adverse impacts?	1	2	3	4	5
Administrative: Do you agree or disagree that your jurisdiction/organization has the necessary staffing and funding to carry-out this mitigation action?	1	2	3	4	5
Political: Do you agree or disagree that the mitigation action has the support of the public and stakeholders who have been offered an opportunity to participate in the planning process?	1	2	3	4	5
Legal: Do you agree or disagree that the jurisdiction or implementing agency has the legal authority to implement and enforce the mitigation action?	1	2	3	4	5

Economic: Budget constraints can significantly deter the implementation of mitigation actions. Do you agree or disagree that the mitigation action is cost-effective, as determined by a cost-benefit review, and is possible to fund?	1	2	3	4	5
Environmental: Do you agree or disagree that the mitigation action is sustainable and does not have an adverse effect on the environment, complies with federal, state, and local environmental regulations, and is consistent with the community's environmental goals?	1	2	3	4	5
Equity: Do you agree or disagree that the mitigation actions are consistent and systematically fair? (i.e., Does not create an opportunity for unequal distribution of resources; racism; affect a particular segment of the population, including communities of color, communities that face discrimination based on sex, sexual orientation or gender identity, persons with disabilities, persons who identify with a certain religion, persons with Limited English Proficiency, or rural communities, etc.).	1	2	3	4	5

X	Place an "X" by the applicable hazard
	Air Quality Incidents
	Wildfire
	Volcano
	Severe Summer Weather (Dust, Heat & Straight-line Wind Events)
	Earthquake
	Severe Winter Weather (Blizzard, Heavy Snow & Extreme Cold)
	Drought
	Structural Fire
	High Hazard Dams and Levees

	Flooding (combined with Flash/Urban and Riverine)
	Invasive Species
	Landslide
	Space Weather
	Tornado
	Public Health Emergency

4. Mitigation Action Item: Toxic Algae & Safe Drinking Water Public Health Integrated Preparedness Plans

Year Initiated (i.e. 2024, 2025)	**2025**
Applicable Jurisdiction/Special District	-Franklin Health District
Lead Agency/Organization	Benton-Franklin Health District
Supporting Agencies/Organizations (if applicable)	
Potential Funding Source **Examples:** Local Budgeted Funds, Local or State Special Taxes, Private/Non-Profit Funds, State Special Funds, Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA) Program, Community Development Block Grant (CDBG), FEMA Public Assistance (PA)	
Estimated Cost (If estimated cost is unknown, indicate Low=bellow $100,000, Medium= Between $100,00 & $500,000.00, or Hig 1M and above)	Low
Benefits (Indicate Low, Medium, or High)	High
Projected Duration (If estimated duration is unknown, indicate Short Term= Less than a Year,	Short to Long Term; Ongoing

Long Term = ore than a year, or Ongoing/repeating)	
PRIORITY (High, Medium, Low)	High

X	Place an "X" by the applicable goals, if applicable
X	Goal 1: Save (or protect) lives and reduce injury.
	Goal 2: Increase resilience of infrastructure and critical facilities.
	Goal 3: Avoid (minimize or reduce) damage to property.
X	Goal 4: Encourage the development and implementation of long-term, cost-effective, and environmentally sound mitigation projects.
	Goal 5: Build and support capacity to enable local government and the public to prepare for, respond to and recover from the impact of natural hazards.

This mitigation action:

The mitigation strategies/actions will be prioritized and evaluated using the STAPLEE+E method, which uses eight (8) criteria for evaluating a mitigation action – Social, Technical, Administrative, Political, Legal, Economic, Environmental, and Equity. Additional considerations are within each of these criteria. Each criterion is evaluated on a scale from one (1) to five (5), with one (1) defined as strongly disagree and five (5) as strongly agree. The summation will result in the STAPLEE+E Prioritization Score.

	Strongly Disagree (1)	**Disagree (2)**	**Neither Agree or Disagree (3)**	**Agree (4)**	**Strongly Agree (5)**
Social: Do you agree or disagree that the mitigation action is more likely to: be acceptable to the community, does not adversely affect a particular segment of the population, does not cause relocation of lower-income people, and is compatible with the community's social and cultural values?	1	2	3	4	5
Technical: Do you agree or disagree that the mitigation action is technically effective in providing a long-term reduction of losses and has minimal secondary adverse impacts?	1	2	3	4	5

Administrative: Do you agree or disagree that your jurisdiction/organization has the necessary staffing and funding to carry-out this mitigation action?	1	2	3	4	5
Political: Do you agree or disagree that the mitigation action has the support of the public and stakeholders who have been offered an opportunity to participate in the planning process?	1	2	3	4	5
Legal: Do you agree or disagree that the jurisdiction or implementing agency has the legal authority to implement and enforce the mitigation action?	1	2	3	4	5
Economic: Budget constraints can significantly deter the implementation of mitigation actions. Do you agree or disagree that the mitigation action is cost-effective, as determined by a cost-benefit review, and is possible to fund?	1	2	3	4	5
Environmental: Do you agree or disagree that the mitigation action is sustainable and does not have an adverse effect on the environment, complies with federal, state, and local environmental regulations, and is consistent with the community's environmental goals?	1	2	3	4	5
Equity: Do you agree or disagree that the mitigation actions are consistent and systematically fair? (i.e., Does not create an opportunity for unequal distribution of resources; racism; affect a particular segment of the population, including communities of color, communities that face discrimination based on sex, sexual orientation or gender identity, persons with disabilities, persons who identify with a certain religion, persons with Limited English Proficiency, or rural communities, etc.).	1	2	3	4	5

X	Place an "X" by the applicable hazard

	Air Quality Incidents
	Wildfire
	Volcano
	Severe Summer Weather (Dust, Heat & Straight-line Wind Events)
	Earthquake
	Severe Winter Weather (Blizzard, Heavy Snow & Extreme Cold)
	Drought
	Structural Fire
	High Hazard Dams and Levees
	Flooding (combined with Flash/Urban and Riverine)
	Invasive Species
	Landslide
	Space Weather
	Tornado
	Public Health Emergency

APPENDIX E: Hazard Mitigation Actions Charts

Past Mitigation Actions

Initiative Name	Initiative Category	Initiative Description	Priority	Estimated Cost	Funding Sources	Responsible Organization	Timeline	Status	Contact Information
FC-MH1	Development Regulations	Review and Update/Improve Critical Area Regulations	High	2000	U	Franklin County Planning Department		Complete. FCC Chapter 18.08 was amended with the passage of Ordinance 8-2023.	Nicole Stickney, AICP (Contract Planner to Franklin County) contractplanner@franklincountywa.gov Craig Erdman - cerdman@franklincountywa.gov Andrea R. Cardoza - arcardoza@franklincountywa.gov
FC-MH2	Development Regulations	Incorporate latest update to the Uniform Building Code into the County Building Code Ordinance	Low	2000	U	Franklin County Planning Department		Complete. Ordinance 5-2024 and 6-2024 amended Title 15 “Buildings and Construction” and incorporated the latest updates.	Nicole Stickney, AICP (Contract Planner to Franklin County) contractplanner@franklincountywa.gov Craig Erdman - cerdman@franklincountywa.gov Andrea R. Cardoza - arcardoza@franklincountywa.gov
FC-FLH1	Development Regulations	Review and Update/Improve Floodplain Regulations	Moderate	2000	U	Franklin County Planning Department		Completed. The Flood Damage Prevention Code at FCC Chapter 15.08 was amended with the passage of Ordinance 2-2022.	Nicole Stickney, AICP (Contract Planner to Franklin County) contractplanner@franklincountywa.gov

									Craig Erdman - cerdman@franklincountywa.gov Andrea R. Cardoza - arcardoza@franklincountywa.gov
FC-FIH3	Emergency Response	Establish a delegation of authority plan to expedite the transition process between incident command teams.	High		U, C	Franklin County Commissioners	2021	Completed.	Sean Davis - Director EM - sdavis@franklincountywa.gov
FC-FIH13	Public Education	Develop a residential/agriculture burning procedures pamphlet that addresses each Fire District, Pasco, and Connell.	Moderate		U	Franklin County Fire Districts		Completed	May need to be reprinted if supplies are getting low - Mike Harris Mike Harris - Fire Chief FCFD#3 - mharris@fcfd3.org
FC-FIH17	Emergency Response	Develop a program to replace worn out road signage with new reflective road signs to allow firefighters to easily navigate to a wildfire.	High		K,O,U	Franklin County Public Works	2019	Completed	John Christensen - jchristensen@franklincountywa.gov
FC-FIH5	Public Education	Implementation of youth and	High	2000	L, U	Franklin Conservation	2020	Completed	I wasn't involved in the previous versions of this,

		adult wildfire educational program				District and WSU Extension			so was unaware of the initiatives that WSU Extension were responsible for. We don't really do that type of work in my office, but if it is something that is needed, we could work to identify individuals that might be able to help in the areas below Tim Waters - WSU Extension - twaters@wsu.edu
FC-FIH6	Public Education	Prepare for wildfire events in high-risk areas by conducting home site risk assessments and developing area-specific "Response Plans to include participation by all affected jurisdictions and landowners	High	5000	C, L, U	Franklin Conservation District and WSU Extension	2020	Completed	I wasn't involved in the previous versions of this, so was unaware of the initiatives that WSU Extension were responsible for. We don't really do that type of work in my office, but if it is something that is needed, we could work to identify individuals that might be able to help in the areas below Tim Waters - WSU Extension - twaters@wsu.edu
FC-FIH7	Public Education	Work with area homeowner's associations to foster cooperative approach to fire protection and awareness and identify	High		C, L, U	Franklin Conservation District	2020	Completed	

		mitigation needs.							
FC-FIH8	Public Education	Work with WSU Extension, Master Gardeners, and other existing programs to offer Firewise landscaping clinics to assist property owners in maintaining fire-resistant defensible space around structures.	Moderate		C, H, L, U	Franklin Conservation District	2019	Completed	
FC-FIH9	Public Education	Develop a range of public education programs to encourage healthy management of natural resources on private property.	High	2000	C, H, L	CWPP Steering committee	2023	Completed	
FC-FIH11	Public Education	Promote a County wide chip day where property owners can have their slash chipped.	Moderate		C, H, L, U	Franklin Conservation District		Completed	
FC-FIH14	Public Education	Fund the existing Fire Prevention/Public Education	Moderate	3000	H, L, U	Franklin County Fire Districts	2019	Incomplete	Mike Harris - Fire Chief FCFD#3 - mharris@fcfd3.org

		team to continue the public information campaign addressing wildland fire, fire safety, Firewise, etc.							
FC-FIH18	Emergency Response	Improve departmental capability by establishing a program to increase the retention and recruitment of volunteer firefighters.	High		U	Franklin County Fire Districts	2021	Completed	
FC-FIH21	Facilities Improvement	Install two single-phase backup generators for station 36 in Fire District #3.	High	100000	D,L,U	Franklin County Fire District #3	2019	Incomplete	Mike Harris - Fire Chief FCFD#3 - mharris@fcfd3.org
FC-FIH22	Wildfire Mitigation	Implement the 5-year priority fuels reduction projects identified in the Franklin County CWPP (see Table G, and Figure 11).	High		C,H,I,L,U	Franklin County Fire Districts	2020	Involve WSU Extension, Master Gardener's for a fire resistant landscape guide for Franklin County. Chelan and Douglas County Extension has a recommended plant guide to reduce flammable fuels around the home. https://extension.wsu.edu/chelan-douglas/gardening/firewise-landscapes/	Mike Harris - Fire Chief FCFD#3 - mharris@fcfd3.org

P-MH1	Critical Facility Replacement/ Retrofit	Procure and install emergency generators for the water and wastewater treatment plants.	High	400000	C, G, O, U	Pasco Public Works	2020	Incomplete	
P-MH2	Development Regulations	Incorporate mitigative policies into the planning process for all capital improvement projects.	High	5000	G, P, U	Pasco Planning	2021	Complete	
P-MH3	Development regulations	Update and maintain all hazard-specific ordinances.	Moderate	4000	A, N, O, R, U	Pasco Planning	2019	Completed	
P-MH5	Public Education	Distribute Firewise-type educational brochures with occupancy permit.	High	2000	C, H, I, L, U	Pasco Planning	2020	Completed	
C-FIH2	Wildfire Mitigation	Purchase and installation of backup generator at the City of Connell Fire Department	High	30000	A, O, U	Connell Fire Department	Contingent on funding	Completed	Ken Woffenden - Fire Chief Connell - kwoffenden@connellwa.org
C-MH1	Critical Facilities Replacement Retrofit	Procure, install, and test propane powered emergency	High	250000	A, J, O, U	City of Connell	Contingent on funding	Incomplete	

		electric power generator of sufficient size and capability to operate the pump at Well #8 for at least 3 days.							
C-MH2	Critical Facilities Replacement Retrofit	Relocate City Hall/ Police Department outside floodplain and ensure ability to conduct emergency operations for prolonged periods during a multitude of natural hazard emergencies.	High	2500000	A, G, N, O, P, U	City of Connell	Contingent on funding	Incomplete	
C-EH1	Critical Facilities Replacement Retrofit	Install and replace/upgrade city water distribution lines to meet current seismic standards.	Moderate	2500000	A, C, J, N, O, P, U	City of Connell	Contingent on funding	Incomplete	
C-FLH1	Plan Coordination & Implementation	Plan and implement improvements to the Esquatzel coulee floodway to reduce flood potential.	Moderate	10000000	A, B, G, H, J, N, O, P, U	City of Connell	Contingent on funding	Incomplete	

C-EH2	Critical Facilities Replacement Retrofit	Install/replace wastewater collection lines to ensure system meets current seismic code and incorporates mitigative features that will reduce the affects to the system from an earthquake.	Moderate	2500000	A, J, O, U	City of Connell	Contingent on funding	Incomplete	
C-MH3	Critical Facilities Replacement Retrofit	Install backup generator at the Community Center in Connell.	Moderate	100000	A, U	City of Connell	Contingent on funding	Completed	
C-MH4	Critical Facilities Replacement Retrofit	Install a backup generator at the Fire Station, including site preparation (Pad, Electrical, etc.).	Moderate	100000	A, U	City of Connell	Contingent on funding	Completed	
M-MH1	Critical Facility Replacement Retrofit	Install emergency electrical power generator at Water Well #1.	High	40000	U	City of Mesa		Completed	Cade Scott - mentioned that they may want to look into a generator on wheels to share between water wells.
K-MH1	Critical Facility Replacement Retrofit	Install emergency Generators for water wells.	High	60000	U	City of Kahlotus		Completed	

K-MH2	Plan Coordination and Implementation	Develop and implement a Continuity of Operations Plan	Moderate	10000	A, U	City of Kahlotus	2019	Completed	
K-MH3	Critical Facility Replacement Retrofit	Establish an emergency well as a backup source for city water.	High	50000	A, G, H, O	City of Kahlotus	Contingent on funding	Incomplete	
K-MH4	Critical Facility Replacement Retrofit	Install emergency generator for city hall and community evacuation center/shelter.	High	50000	A, D, O, U	City of Kahlotus	Contingent on funding	Incomplete	
K-FI1	Wildfire Mitigation	Purchase used dump truck for debris removal in the wildland urban interface.	Moderate	20000	A, K, O, U	City of Kahlotus	Contingent on funding	Incomplete	
K-MH5	Public Education	Distribute Firewise-type educational brochures with occupancy permit.	High	2000	C, H, I, L, U	City of Kahlotus	Contingent on funding	Incomplete	

Ongoing Mitigation Action

Initiative Name	Initiative Category	Initiative Description	Priority	Estimated Cost	Funding Sources	Responsible Organization	Timeline	Status	Contact Information

FC-FIH1	Public Education	Review and improve Wildfire Mitigation Program Regulations	Moderate	1000	U	Franklin County Planning Department	Implemented Maintain	Ongoing	Nicole Stickney, AICP (Contract Planner to Franklin County) contractplanner@franklincountywa.gov Craig Erdman - cerdman@franklincountywa.gov Andrea R. Cardoza - arcardoza@franklincountywa.gov
FC-FIH4	Development Regulations	Adopt a County ordinance requiring all existing and new construction to create and maintain "defensible space" around homes.	Moderate		U	Franklin Conservation District and WSU Extension	Completed Maintain	I wasn't involved in the previous versions of this, so was unaware of the initiatives that WSU Extension were responsible for. We don't really do that type of work in my office, but if it is something that is needed, we could work to identify individuals that might be able to help in the areas below	Tim Waters - WSU Extension - twaters@wsu.edu
FC-FIH10	Development Regulations/ Public Education	Review building codes and promote the adoption of Firewise standards among builders and homeowners.	Low		U	Franklin Conservation District	Implemented Maintain	Ongoing	

FC-FIH12	Wildfire Mitigation	Identify fuel reduction projects throughout the County, but particularly around Pasco.	Moderate		C, L, O, Q, R	Franklin Conservation District	Implemented Maintain	Ongoing	
FC-FIH15	Emergency Response	Map, develop a GIS database, and provide signage for onsite water sources such as hydrants, underground storage tanks, and drafting or dipping sites on all ownerships across the county.	High		G, O, R, U	Franklin County Fire Districts/	Started Continue (2020)	Michael Mendez at SEComm is maintaining GIS data for fire hydrants and their water sources for the 2 cities in Franklin County that use hydrants (Pasco and Connell), plus Fire District 3 in the Pasco growth area. I also have GIS data for rural water franchises in the county. I am currently not maintaining GIS data for fire hydrants outside of cities, which I believed was turned over to SEComm when they started managing dispatch for Franklin County in 2018, but I can assist if this is identified by SEComm and fire departments as a continuing need. - Michael Morgan For hydrant data, we just ingest whatever	Michael Morgan - mmorgan@franklincountywa.gov Michael Mendez - m.mendez@bces.wa.gov

								we're sent from municipalities to add to our hydrant layer but it's just a layer for visual representation on the CAD map. We don't maintain all the hydrant data. When I started, we had zero hydrant data for Benton City, and only about half of the hydrants for all other municipalities within Benton and Franklin Counties so I don't think it was ever being maintained here. I have no issues though taking that on from here on out. - Michael Mendez	
FC-FIH16	Emergency Response	Develop a program to encourage landowners to install reflective address signage on their drive to allow firefighters and emergency responders to better locate residences.	High	5000	K,O,U	Franklin County Fire Districts	Started Continue (2020)	Rural addressing is still ongoing and maintained by FCFD#3 but supplies have not been replenished. Est. $1,000 annually	Mike Harris - Fire Chief FCFD#3 - mharris@fcfd3.org

FC-FIH19	Emergency Response	Enhance radio availability in each district, link to existing dispatch, improve range within the region, and convert to a consistent standard of radio types.	High	20000	D,U	Franklin County Information Services	2019 Maintain	Ongoing	Michael Namchek - mnamchek@franklincountywa.gov
FC-FIH20	Emergency Response	Training for Fire Districts including FFT1, Engine Boss, EWTZ (Eastern Washington Training Zone), etc.	High	3000	L,U	Region 8 Training Group	Yearly	Should be annual and ongoing. $450 each year for Pocket Guides, Instructor Guide and Student Workbook.	Mike Harris - Fire Chief FCFD#3 - mharris@fcfd3.org
P-SSH1	Hazard Damage Reduction	Inspect all trees within falling distance of critical facilities	High	500	D,L,U	Pasco Facilities	2019 Maintain	Our city arborist has inspected the trees within the city that pose hazards and has trimmed or removed any limb or tree that was considered a hazard. This is a continuous process that never stops. We do our best to mitigate any tree risk within the city.	Patrick Hicks - Parks Manager - hicksp@pasco-wa.gov

C-FIH1	Wildfire Mitigation	Provide residents of Connell with a one-time offer to remove debris from selected properties at no charge to the property owner (Properties will be identified by the Chief).	Moderate		L, U	Connell Fire	Implemented Maintain	Ongoing Project	Ken Woffenden - Fire Chief Connell - kwoffenden@connellwa.org
M-SSH1	Hazard Damage Reduction	Inspect trees around public facilities and trim/remove to prevent damage due to broken branches or downed trees during a severe storm.	High	6000	O, U	City of Mesa	2019 Maintain	can keep	Cade Scott

New Mitigation Actions

Initiative Name	Initiative Category	Initiative Description	Priority	Estimated Cost	Funding Sources	Responsible Organization	Timeline	Contact Information
NEW						Franklin County Planning Department	For the year 2025, the County will be working on a periodic update to the	Nicole Stickney, AICP (Contract Planner to Franklin County) contractplanner@franklincountywa.gov

							Comprehensive Plan. The project will conclude in 2026 (with the statutory dealine for adoption being June 30, 2026).	Craig Erdman - cerdman@franklincountywa.gov Andrea R. Cardoza - arcardoza@franklincountywa.gov
NEW						Franklin County Public Works	Shirley Jones with the PW Dept. mentioned that there is maintenance needed on a bridge, unsure if there are any natural hazards associated with it's condition. There are two road which have a continual water runoff issue and need to be raised. Elm and Everett Road and the other is Birch and Dayton. "A culvert would be helpful in both situations but on each side of the road is private property so the only solution we have is to raise the road in those two areas"	Nicole Stickney, AICP (Contract Planner to Franklin County) contractplanner@franklincountywa.gov Craig Erdman - cerdman@franklincountywa.gov Andrea R. Cardoza - arcardoza@franklincountywa.gov Shirley Jones - sjjones@franklincountywa.gov
FC-FIH23	Wildfire Mitigation	Provide residents of Franklin County with a one-time offer to remove debris from selected properties at no	Moderate		L, U	Franklin County	2025 (NEW)	

		charge to the property owner (Properties will be identified by the Chief).						
FC-FIH24	Critical Facilities Replacement Retrofit	Install a backup generator at the Fire Station, including site preparation (Pad, Electrical, etc.).	Moderate	100000	A, U	Franklin County	2025 (NEW)	
FC-FIH25	Hazard Damage Reduction	Inspect trees around public facilities and trim/remove to prevent damage due to broken branches or downed trees during a severe storm.	High	6000	O, U	Franklin County	2025 (NEW)	
F-INF01	Infrastructure/Drought	Upgrades to critical well/pump infrastructure				Franklin County	2025 (NEW)	
F-INF02	Infrastructure/Drought	Develop emergency water conservation plan				Franklin County	2025 (NEW)	
F-INF03	Infrastructure/Drought	Join regional emergency water vendor contract				Franklin County	2025 (NEW)	

F-INF04	Infrastructure/Drought	Evaluate reservoir/backup capacity				Franklin County	2025 (NEW)	
F-HAZ02	Dam Failure Plan reference	Reference county level dam failure plan				Franklin County	2025 (NEW)	
F-HAZ03	Solar Storm Communications	Plans is in place for communications around a solar storm.				Franklin County	2025 (NEW)	
F-HAZ04	Volcano Debris Collection	Reference BFHD coordination.				Franklin County	2025 (NEW)	
F-COM01	Communications Plans	Update all communications plans				Franklin County	2025 (NEW)	
F-COM02	Hydrant Data Sharing	Share hydrant/water source data with regional database				Franklin County	2025	
P-MH6	Development Regulations	Adopt a County ordinance requiring all existing and new construction to create and maintain "defensible space" around homes.	Moderate		U	Pasco Planning	2025 (NEW)	
P-MH7	Emergency Response	Develop a program to encourage landowners to	High	5000	K,O,U	Pasco Planning	2025 (NEW)	

		install reflective address signage on their drive to allow firefighters and emergency responders to better locate residences.						
P-MH8	Wildfire Mitigation	Provide residents of Pasco with a one-time offer to remove debris from selected properties at no charge to the property owner (Properties will be identified by the Chief).	Moderate		L, U	Pasco Planning	2025 (NEW)	
P-MH9	Critical Facilities Replacement Retrofit	Install a backup generator at the Fire Station, including site preparation (Pad, Electrical, etc.).	Moderate	100000	A, U	Pasco Planning	2025 (NEW)	
P-MH10	Hazard Damage Reduction	Inspect trees around public facilities and trim/remove to prevent damage due to broken branches or downed trees during a severe storm.	High	6000	O, U	Pasco Planning	2025 (NEW)	

P-INF01	Infrastructure/Drought	Upgrades to critical well/pump infrastructure				Pasco Planning	2025 (NEW)	
P-INF02	Infrastructure/Drought	Develop emergency water conservation plan				Pasco Planning	2025 (NEW)	
P-INF03	Infrastructure/Drought	Join regional emergency water vendor contract				Pasco Planning	2025 (NEW)	
P-INF04	Infrastructure/Drought	Evaluate reservoir/backup capacity				Pasco Planning	2025 (NEW)	
P-HAZ02	Dam Failure Plan reference	Reference county level dam failure plan				Pasco Planning	2025 (NEW)	
P-HAZ03	Solar Storm Communications	Plans is in place for communications around a solar storm.				Pasco Planning	2025 (NEW)	
P-HAZ04	Volcano Debris Collection	Reference BFHD coordination.				Pasco Planning	2025 (NEW)	
P-COM01	Communications Plans	Update all communications plans				Pasco Planning	2025 (NEW)	
P-COM02	Hydrant Data Sharing	Share hydrant/water source data with regional database				Pasco Planning	2025 (NEW)	

C-MH5	Public Education	Distribute Firewise-type educational brochures with occupancy permit.	High	2000	C, H, I, L, U	City of Connell	2025 (NEW)	
C-MH6	Development Regulations	Adopt a County ordinance requiring all existing and new construction to create and maintain "defensible space" around homes.	Moderate		U	City of Connell	2025 (NEW)	
C-MH7	Emergency Response	Develop a program to encourage landowners to install reflective address signage on their drive to allow firefighters and emergency responders to better locate residences.	High	5000	K,O,U	City of Connell	2025 (NEW)	
C-MH8	Critical Facilities Replacement Retrofit	Install a backup generator at the Fire Station, including site preparation (Pad, Electrical, etc.).	Moderate	100000	A, U	City of Connell	2025 (NEW)	
C-MH9	Hazard Damage Reduction	Inspect trees around public facilities and	High	6000	O, U	City of Connell	2025 (NEW)	

		trim/remove to prevent damage due to broken branches or downed trees during a severe storm.						
C-INF01	Infrastructure/Drought	Upgrades to critical well/pump infrastructure				City of Connell	2025 (NEW)	
C-INF02	Infrastructure/Drought	Develop emergency water conservation plan				City of Connell	2025 (NEW)	
C-INF03	Infrastructure/Drought	Join regional emergency water vendor contract				City of Connell	2025 (NEW)	
C-INF04	Infrastructure/Drought	Evaluate reservoir/backup capacity				City of Connell	2025 (NEW)	
C-HAZ02	Dam Failure Plan reference	Reference county level dam failure plan				City of Connell	2025 (NEW)	
C-HAZ03	Solar Storm Communications	Plans is in place for communications around a solar storm.				City of Connell	2025 (NEW)	
C-HAZ04	Volcano Debris Collection	Reference BFHD coordination.				City of Connell	2025 (NEW)	

C-COM01	Communications Plans	Update all communications plans				City of Connell	2025 (NEW)	
C-COM02	Hydrant Data Sharing	Share hydrant/water source data with regional database				City of Connell	2025 (NEW)	
M-MH2	Public Education	Distribute Firewise-type educational brochures with occupancy permit.	High	2000	C, H, I, L, U	City of Mesa	2025 (NEW)	
M-MH3	Development Regulations	Adopt a County ordinance requiring all existing and new construction to create and maintain "defensible space" around homes.	Moderate		U	City of Mesa	2025 (NEW)	
M-MH4	Emergency Response	Develop a program to encourage landowners to install reflective address signage on their drive to allow firefighters and emergency responders to better locate residences.	High	5000	K,O,U	City of Mesa	2025 (NEW)	

M-MH5	Wildfire Mitigation	Provide residents of Mesa with a one-time offer to remove debris from selected properties at no charge to the property owner (Properties will be identified by the Chief).	Moderate		L, U	City of Mesa	2025 (NEW)	
M-INF01	Infrastructure/Drought	Upgrades to critical well/pump infrastructure				City of Mesa	2025 (NEW)	
M-INF02	Infrastructure/Drought	Develop emergency water conservation plan				City of Mesa	2025 (NEW)	
M-INF03	Infrastructure/Drought	Join regional emergency water vendor contract				City of Mesa	2025 (NEW)	
M-INF04	Infrastructure/Drought	Evaluate reservoir/backup capacity				City of Mesa	2025 (NEW)	
M-HAZ02	Dam Failure Plan reference	Reference county level dam failure plan				City of Mesa	2025 (NEW)	
M-HAZ03	Solar Storm Communications	Plans is in place for communications around a solar storm.				City of Mesa	2025 (NEW)	

M-HAZ04	Volcano Debris Collection	Reference BFHD coordination.				City of Mesa	2025 (NEW)	
M-COM01	Communications Plans	Update all communication s plans				City of Mesa	2025 (NEW)	
M-COM02	Hydrant Data Sharing	Share hydrant/water source data with regional database				City of Mesa	2025 (NEW)	
K-MH6	Development Regulations	Adopt a County ordinance requiring all existing and new construction to create and maintain "defensible space" around homes.	Moderate		U	City of Kahlotus	2025 (NEW)	
K-MH7	Emergency Response	Develop a program to encourage landowners to install reflective address signage on their drive to allow firefighters and emergency responders to better locate residences.	High	5000	K,O,U	City of Kahlotus	2025 (NEW)	
K-MH8	Wildfire Mitigation	Provide residents of Kahlotus with a one-time offer to remove debris	Moderate		L, U	City of Kahlotus	2025 (NEW)	

		from selected properties at no charge to the property owner (Properties will be identified by the Chief).						
K-MH9	Critical Facilities Replacement Retrofit	Install a backup generator at the Fire Station, including site preparation (Pad, Electrical, etc.).	Moderate	100000	A, U	City of Kahlotus	2025 (NEW)	
K-MH10	Hazard Damage Reduction	Inspect trees around public facilities and trim/remove to prevent damage due to broken branches or downed trees during a severe storm.	High	6000	O, U	City of Kahlotus	2025 (NEW)	
K-INF01	Infrastructure/Drought	Upgrades to critical well/pump infrastructure				City of Kahlotus	2025 (NEW)	
K-INF02	Infrastructure/Drought	Develop emergency water conservation plan				City of Kahlotus	2025 (NEW)	
K-INF03	Infrastructure/Drought	Join regional emergency water vendor contract				City of Kahlotus	2025 (NEW)	

K-INF04	Infrastructure/Drought	Evaluate reservoir/backup capacity				City of Kahlotus	2025 (NEW)	
K-HAZ02	Dam Failure Plan reference	Reference county level dam failure plan				City of Kahlotus		
K-HAZ03	Solar Storm Communications	Plans is in place for communications around a solar storm.				City of Kahlotus	2025 (NEW)	
K-HAZ04	Volcano Debris Collection	Reference BFHD coordination.				City of Kahlotus	2025 (NEW)	
K-COM01	Communications Plans	Update all communications plans				City of Kahlotus	2025 (NEW)	
K-COM02	Hydrant Data Sharing	Share hydrant/water source data with regional database				City of Kahlotus	2025 (NEW)	

APPENDIX F: Resolutions of Adoption

Franklin County
City of Connell
City of Mesa
City of Kahlotus
City of Pasco

FRANKLIN COUNTY RESOLUTION 2026-161

BEFORE THE BOARD OF COMMISSIONERS
FRANKLIN COUNTY, WASHINGTON

A RESOLUTION OF THE FRANKLIN COUNTY BOARD OF COMMISSIONERS DECLARING SUPPORT AND ADOPTION OF THE FRANKLIN COUNTY, WASHINGTON MULTI-HAZARD MITIGATION PLAN 2026, WHICH INCORPORATES THE COMMUNITY WILDFIRE PROTECTION PLAN.

WHEREAS, The Franklin County Board of Commissioners supports the Franklin County Multi-Hazard Mitigation Plan 2026, and

WHEREAS, The Franklin County Board of Commissioners have authorized and participated in the preparation and development of the Franklin County, Washington Multi-Hazard Mitigation Plan 2026, to protect life and property, and

WHEREAS, The Franklin County, Washington Multi-Hazard Mitigation Plan 2026 has been reviewed by the Washington Emergency Management Division and the Federal Emergency Management Agency (FEMA), and

WHEREAS, FEMA has issued a letter of commitment to approve the plan upon receiving documentation of the Franklin County, Washington Multi-Hazard Mitigation Plan 2026 adoption by Franklin County and incorporated communities, and

WHEREAS, The Franklin County Multi-Hazard Mitigation Plan will be utilized as guidance related to planning and project proposals, eligibility for mitigation project grants once FEMA approves the plan and other purposes as deemed prudent and appropriate by the adopting communities, and

THEREFORE, be it resolved that the Franklin County Board of County Commissioners do hereby adopt, support, and will facilitate the Franklin County, Washington Multi-Hazard Mitigation Plan 2026 implementation. as deemed appropriate.

APPROVED this 29 day of April, 2026.

BOARD OF COUNTY COMMISSIONERS
FRANKLIN COUNTY, WASHINGTON

Chairman

Chairman Pro Tem

Member

ATTEST:

Clerk to the Board

Franklin County Emergency Management **RESOLUTION NO.** 01 - 2026

BEFORE THE FRANKLIN COUNTY EMERGENCY MANAGEMENT BOARD

RE: A resolution of the Franklin County Emergency Management Board declaring support and adoption of the Franklin County Multi-Hazard Mitigation Plan, which incorporates the Community Wildfire Protection Plan as Appendix 1.

WHEREAS, the Franklin County Emergency Management Board supports the Franklin County Multi-Hazard Mitigation and Community Wildfire Protection Planning, and

WHEREAS, The Franklin County Emergency Board has authorized and participated in the preparation and development of the Franklin County Multi-Hazard Mitigation Plan (HMP), to include incorporation of the Community Wildfire Protection Plan as Appendix 1 within the HMP, with the intent to protect life and property, and.

WHEREAS, The Franklin County Multi-Hazard Plan has been reviewed by the Washington Emergency Management Division and forwarded to the Federal Emergency Management Agency (FEMA), and

WHEREAS, FEMA will issue a letter of commitment to approve the plan once all required changes/edits are incorporated into the document and upon receiving documentation of the Franklin County Multi-Hazard Mitigation Plan adoption by Franklin County and incorporated communities, and

WHEREAS, The Franklin County Multi-Hazard Mitigation Plan will be utilized as guidance related to planning and project proposals, eligibility for mitigation project grants once FEMA approves the plan and other purposes as deemed prudent and appropriate by the adopting communities, and

NOW, THEREFORE, BE IT RESOLVED the Franklin County Emergency Management Board does hereby adopt, support, and will facilitate the Franklin County Multi-Hazard Mitigation Plan's implementation, as deemed appropriate.

Approved this 16th day of April 2026. Franklin County Emergency Management Board

Attest:

Secretary to the Board

Ken Woffenden, FCEM Board Chairman

Y:\BOARD\2026\Agendas\04-16-2026\Board Packet Docs\01-2026 Adoption of FC HMP-CWPP.docx
04/16/2026

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Figure 4.31. NWCG Class Size of Fire

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APPENDIX 1: Community Wildfire Protection Plan

APPENDIX 1: Community Wildfire Protection Plan

Planning Process Documentation

This appendix documents the planning process for the Franklin County Community Wildfire Protection Plan (CWPP), which was developed in conjunction with the 2025 Franklin County Multi-Hazard Mitigation Plan. Documentation of the planning process, including public involvement, is necessary to meet multiple federal and state requirements:

- **Healthy Forests Restoration Act (HFRA) of 2003** (Public Law 108-148) - Requires collaborative planning process with local government, fire departments, and state forestry agency
- **FEMA Disaster Mitigation Act (DMA) 2000** (44CFR§201.4(c)(1) and §201.6(c)(1)) - Requires documentation of planning process and public involvement for hazard mitigation plans
- **Washington State Community Wildfire Protection Plan Guidelines** - Washington Department of Natural Resources guidance for wildfire planning and mitigation

This integrated approach ensures the CWPP meets both federal wildfire planning requirements under HFRA and federal hazard mitigation planning requirements under DMA 2000, while aligning with Washington State wildfire planning standards.

Note: The CWPP planning process was integrated into the broader HMP development effort, with specific meetings and activities dedicated to wildfire hazard assessment, mitigation strategy development, and coordination with fire service partners. For complete details on the overall planning process, including full stakeholder participation and public engagement activities, please refer to **Chapter 2: Planning Process** of the Franklin County Multi-Hazard Mitigation Plan.

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1. CWPP Core Collaborative Team and HFRA Compliance

The Franklin County Community Wildfire Protection Plan was developed in accordance with the Healthy Forests Restoration Act (HFRA) of 2003, which requires a collaborative process involving three core partners: local government, local fire departments, and the state forestry agency. The following individuals comprised the CWPP Core Collaborative Team:

Core Three-Party Collaborative Team:

1. Local Government Representatives:

- **Sean Davis**, Director, Franklin County Emergency Management
- **Jordan Hanes**, Deputy Director, Franklin County Emergency Management
- **Craig Raymond**, Deputy Director of Community & Economic Development, City of Pasco
- **Chris Lee**, Police Chief, City of Connell
- **Hallie Tuck**, Public Works Director, City of Connell
- **Cade Scott**, Public Works Superintendent, City of Mesa
- **Michael Robitaille**, Mayor, City of Kahlotus

2. Fire Department Representatives:

- **Chris Mortensen**, Fire Deputy Chief, City of Pasco Fire Department (Steering Committee Member)
- **Kevin Crowley**, Fire Chief, Pasco Fire Department
- **Ken Woffenden**, Fire Chief, City of Connell Fire Department
- **Eric Mauseth**, Fire Chief, Franklin County Fire District #1
- **Luke Van Holenbeke**, Fire Chief, Franklin County Fire District #2
- **Mike Harris**, Fire Chief, Franklin County Fire District #3
- **Steve Cooper**, Fire Chief, Franklin County Fire District #4
- **Matt Nelson/ Bryan Thornhill**, Fire Chief, Franklin County Fire District #5

3. State Forestry Agency (Washington Department of Natural Resources):

- **Charlie Landsman**, Community Resilience Coordinator, Washington Department of Natural Resources
- **Tricia Sears**, Geologic Planning Liaison, Washington Department of Natural Resources

HFRA Compliance Statement:

This CWPP planning process meets the collaborative requirements of the Healthy Forests Restoration Act (Public Law 108-148). The Core Collaborative Team participated throughout the planning process by attending meetings, providing technical expertise, reviewing risk assessments, developing mitigation strategies, and approving the final plan. The collaborative approach ensured that the CWPP reflects local priorities, operational realities, and state-level technical guidance.

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2. CWPP Planning Timeline

The CWPP was developed as part of the Franklin County Multi-Hazard Mitigation Plan update process that commenced on June 3, 2024. Throughout this process, wildfire emerged as the highest-priority hazard based on both technical risk assessment and community input. The plan was completed and submitted to the Washington Division of Emergency Management on [INSERT DATE], 2025.

Key Milestones:

- June 2024: Planning process initiated
- July-August 2024: Wildfire identified as top community concern through public survey
- October 2024: Public meetings with wildfire mitigation discussions
- March 2025: CWPP orientation and wildland season preparation
- August 2025: Regional fire chiefs coordination meeting
- November 2025: Final public comment period on CWPP/HMP
- March 2026: Plan submission

---

3. Planning Committee Meetings - CWPP Focus

The following meetings included specific discussions, presentations, or decisions related to wildfire hazard assessment and Community Wildfire Protection Planning:

Meeting #1: HMP Kickoff Meeting

DATE & LOCATION: July 11, 2024, 1011 E. Ainsworth St., Pasco, 11:00 AM–1:00 PM (hybrid)

Attendance:

- In-Person Attendees: 12 participants
- Virtual Attendees: 8 participants
- Full attendance roster available in Appendix B of the Franklin County HMP

Key CWPP-Related Activities:

- FEMA requirements review for hazard mitigation planning
- Discussion of planning committee roles and responsibilities
- Public involvement planning, including survey development
- Initial discussion of hazard identification process

Wildfire Planning Elements:

- Established framework for integrating CWPP into broader HMP process
- Discussed need for coordination with fire districts and emergency services
- Planned public survey to identify community hazard priorities

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Meeting #2: Risk Assessment Workshop

DATE & LOCATION: August 22, 2024, 11:00 AM–1:00 PM (hybrid)

Attendance:

- In-Person Attendees: 7 participants
- Virtual Attendees: 17 participants
- Full attendance roster available in Appendix B of the Franklin County HMP

Key CWPP-Related Activities:

- Risk assessment review for all hazards including wildfire
- Validation of preliminary risk assessment using local fire service expertise
- Hazard ranking and prioritization
- Review of preliminary public survey results

Wildfire Planning Elements:

- **Wildfire identified as highest community concern** from preliminary survey results (35.6% of respondents selected wildfire as most concerning hazard)
- Discussion of wildfire risk factors specific to Franklin County
- Integration of local fire district knowledge and historical incident data
- Initial mapping and wildland-urban interface (WUI) discussions

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Meeting #3: Feedback Integration Workshop

DATE & LOCATION: October 30, 2024

Key CWPP-Related Activities:

- Integration of public feedback from October 1-2 public meetings
- Development of mitigation actions, including wildfire preparedness education
- Refinement of hazard rankings based on community input

Wildfire Planning Elements:

- Validation of wildfire as top-priority hazard
- Discussion of wildfire preparedness and public education initiatives
- Development of wildfire-specific mitigation actions

Meeting #3a & #3b: Public Meetings

MEETING #3a DATE & LOCATION: October 1, 2024, 1011 E. Ainsworth Street, Pasco

Attendance: 12 participants (Full attendance roster available in Appendix B of the Franklin County HMP)

MEETING #3b DATE & LOCATION: October 2, 2024, 104 E Adams Street, Connell

Attendance: 15 participants (Full attendance roster available in Appendix B of the Franklin County HMP)

Key CWPP-Related Activities:

- Public outreach and engagement sessions

- Presentation of draft hazard rankings showing wildfire as top concern
- Community input on wildfire hazard concerns and mitigation priorities

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Meeting #4: Hazard Prioritization Meeting

DATE & LOCATION: March 18, 2025, 09:00 AM, 1011 E. Ainsworth Street, Pasco (hybrid)

Attendance:

- In-Person Attendees: 10 participants
- Virtual Attendees: 11 participants
- Full attendance roster available in Appendix B of the Franklin County HMP

Key CWPP-Related Activities:

- Review of assessed risk ratings for all hazards
- Discussion of hazard prioritization methodology
- Establishment of final risk scores

Wildfire Planning Elements:

- **Final risk scores established with Air Quality Incidents, Wildfire, and Volcano ranking highest**
- Discussion of relationship between wildfire events and air quality impacts
- Planning group emphasized rising concern about invasive species (cheatgrass, Russian thistle) that increase wildfire fuel loads
- Discussion of how invasive species management relates to wildfire risk reduction
- Review of HMP Action Review forms for previous wildfire-related mitigation initiatives

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Meeting #5: HMP Update & CWPP Orientation & Initiatives Update

DATE & LOCATION: March 19, 2025, 1011 E. Ainsworth Street, Pasco

Attendance: 10 participants (Full attendance roster available in Appendix B of the Franklin County HMP)

Key CWPP-Related Activities:

- **Comprehensive CWPP orientation session**
- HMP risk assessment update specific to wildfire hazards
- 2025 wildland fire season preparation discussion
- Forestland Response Agreements (FLRA) coordination
- Review of ongoing wildfire mitigation initiatives and action items

CWPP Planning Elements:

- Comprehensive CWPP orientation session
- HMP risk assessment update specific to wildfire hazards
- 2025 wildland fire season preparation discussion
- Forestland Response Agreements (FLRA) coordination
- Review of ongoing wildfire mitigation initiatives and action items

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Meeting #8: Steering Committee Meeting

DATE & LOCATION: June 3, 2025, 1011 E. Ainsworth Street, Pasco (hybrid)

Attendance:

- In-Person Attendees: 9 participants
- Virtual Attendees: 9 participants
- Full attendance roster available in Appendix B of the Franklin County HMP

Key CWPP-Related Activities:

- Finalization of hazard profiles including wildfire
- Review of wildfire risk assessment methodology and results
- Mitigation action review of current and past wildfire-related actions

Wildfire Planning Elements:

- Validation of wildfire hazard profile data
- Review of wildfire incident history and trends

- Discussion of completed and ongoing wildfire mitigation projects
- Assessment of wildfire mitigation action effectiveness

Meeting #9: Public Comment Period - HMP & CWPP

DATE & LOCATION: September 4, 2025, 1011 E. Ainsworth Street, Pasco (hybrid)

Format: Four 20-minute interactive sessions (3:00 PM, 3:30 PM, 4:00 PM, 4:30 PM)

Attendance:

- In-Person Attendees: 7 participants
- Virtual Attendees: 3 participants
- Full attendance roster available in Appendix B of the Franklin County HMP

Key CWPP-Related Activities:

- Overview of Community Wildfire Protection Planning process
- Review of wildfire hazard assessment and mitigation projects
- Public comment period on draft CWPP/HMP
- Opportunity for public to share wildfire concerns and feedback

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Meeting #10: CWPP/HMP Meeting with Regional Fire Chiefs

DATE & LOCATION: August 28, 2025, 1011 E. Ainsworth Street, Pasco

Attendance:

- In-Person Attendees: 14 participants
- Virtual Attendees: 1 participant
- Full attendance roster available in Appendix B of the Franklin County HMP

Participating Fire Agencies:

- Franklin County Fire District #1 (Fire Chief Eric Mauseth)
- Franklin County Fire District #2 (Fire Chief Lucas Van Holenbeke)
- Franklin County Fire District #3 (Fire Chief Mike Harris)

- Franklin County Fire District #4 (Fire Chief Steve Cooper)
- Franklin County Fire District #5 (Fire Chief Bryan Thornhill)
- Pasco Fire Department (Fire Chief Kevin Crowley, Deputy Chief Chris Mortensen, Deputy Chief Tim Harkins)
- City of Connell Fire Department (Fire Chief Ken Woffenden)
- Benton County Fire Districts
- Walla Walla County Fire Districts
- Additional regional fire service partners

Key CWPP-Related Activities:

- **Comprehensive CWPP coordination and planning session**
- Wildfire preparedness strategy development
- Regional coordination for wildfire response
- Mutual aid agreements and resource sharing discussions
- Review of regional mitigation strategies

CWPP Planning Elements:

- Fire chiefs provided operational expertise on wildfire response capabilities and coordination
- Discussion of wildfire preparedness strategy development
- Regional coordination for wildfire response and resource sharing
- Review of mutual aid agreements
- Discussion of regional mitigation strategies

Meeting #11: Tri-County LEPC Meeting

DATE & LOCATION: September 4, 2025, 10:00 AM, 1011 E. Ainsworth Street, Pasco (hybrid)

Attendance:

- In-Person Attendees: 11 participants

- Virtual Attendees: Approximately 40 participants
- Full attendance roster available in Appendix B of the Franklin County HMP

Key CWPP-Related Activities:

- Regional emergency planning coordination including wildfire preparedness
- Discussion of hazardous materials in relation to wildfire events
- Regional coordination for emergency response

Wildfire Planning Elements:

- Coordination between Franklin, Benton, Walla Walla, and Adams Counties on wildfire response
- Discussion of evacuation planning across county boundaries
- Regional resource sharing for wildfire incidents

Meeting #12: CWPP Final Review and Acceptance Period Make sure this happens

DATE: January 2026

Meeting Format: Asynchronous review period

Purpose: Final CWPP review, comment, and approval by Core Collaborative Team and key stakeholders

Distribution: The draft Community Wildfire Protection Plan was distributed to Core Collaborative Team members and key stakeholders for final review, comment, and approval. All recipients were provided direct access to the CWPP document and given the opportunity to submit comments, edits, or recommendations.

Priority Recipients **- CWPP Core Collaborative Team (Required for HFRA Compliance):**

Local Government Representatives:

- Sean Davis, Director, Franklin County Emergency Management
- Jordan Hanes, Deputy Director, Franklin County Emergency Management
- Craig Raymond, Deputy Director of Community & Economic Development, City of Pasco

- Chris Lee, Police Chief, City of Connell
- Hallie Tuck, Public Works Director, City of Connell
- Cade Scott, Public Works Superintendent, City of Mesa
- Michael Robitaille, Mayor, City of Kahlotus

Fire Department Representatives:

- Chris Mortensen, Fire Deputy Chief, City of Pasco Fire Department
- Kevin Crowley, Fire Chief, Pasco Fire Department
- Ken Woffenden, Fire Chief, City of Connell Fire Department
- Eric Mauseth, Fire Chief, Franklin County Fire District #1
- Lucas Van Holenbeke, Fire Chief, Franklin County Fire District #2
- Mike Harris, Fire Chief, Franklin County Fire District #3
- Steve Cooper, Fire Chief, Franklin County Fire District #4
- Matt Nelson/ Bryan Thornhill, Fire Chief, Franklin County Fire District #5

State Forestry Agency (Washington DNR):

- Charlie Landsman, Community Resilience Coordinator, Washington Department of Natural Resources
- Tricia Sears, Geologic Planning Liaison, Washington Department of Natural Resources

Additional Key Stakeholders:

- Wesley McCart, Director, Franklin County Planning and Building
- Craig Erdman, Director, Franklin County Public Works Department
- Michael Morgan, GIS Manager, Franklin County
- Tim Harkins, Deputy Fire Chief, City of Pasco
- Katy Branham, Warning Coordination Meteorologist, National Weather Service - Pendleton
- Eli Bear, Emergency Preparedness Coordinator, Benton-Franklin Health District
- Regional fire chiefs from Benton and Walla Walla Counties

Review Process:

- Draft CWPP distributed electronically to all recipients
- 30+-day review period provided for thorough document review
- Recipients invited to submit comments, edits, or recommendations
- Follow-up communication to ensure all Core Team members had opportunity to review
- Comments compiled and reviewed by Franklin County Emergency Management

Comment Incorporation: All comments received during the review period were carefully reviewed and incorporated into the final CWPP document. Comments addressed technical corrections, clarification of mitigation actions, refinement of risk assessment language, and validation of local conditions and priorities. The collaborative review process ensured the final CWPP reflects the collective expertise and priorities of all participating agencies and stakeholders.

Outcome: The CWPP received approval from the Core Collaborative Team and key stakeholders, meeting the collaborative requirements of the Healthy Forests Restoration Act. Documentation of comments received and incorporated is maintained by Franklin County Emergency Management.

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4. Public Involvement in CWPP Development

Public participation was a critical component of the CWPP development process. All public involvement activities are documented in detail in **Chapter 2: Planning Process** of the Franklin County Multi-Hazard Mitigation Plan. The following sections summarize public engagement specific to wildfire planning.

4.1 Public Survey Results - Wildfire Priority

The County of Franklin conducted a comprehensive community survey as part of the planning process. The survey achieved a 92.5% completion rate with 106 total responses (98 complete, 8 partial).

Wildfire Survey Results:

Hazard Ranking - Wildfire as Top Priority:

- **Wildfire received the highest concern score of 1,144 points** out of all 14 hazards assessed
- **35.6% of respondents selected wildfire as their single most concerning hazard** (highest percentage of any hazard)
- Wildfire ranked #1 in the comprehensive hazard ranking
- Only 3.8% of respondents indicated wildfire was NOT a significant concern

Top Five Hazards Identified:

1. **Wildfire (Score: 1,144)** - Highest priority
2. Air Quality Incidents (Score: 1,046)
3. Structural Fire (Score: 1,004)
4. Severe Summer Storms (Score: 988)
5. Severe Winter Weather (Score: 929)

Community Priorities Related to Wildfire:

- 65.4% indicated safety of family and self as primary concern
- 33.7% anticipate significant personal impact from wildfire hazard
- 17.3% anticipate catastrophic impact from wildfire
- 70.2% believe resources should focus on hazards that occur most frequently

Survey Demographics:

- 66.3% work in Franklin County
- 48.1% live in Franklin County
- Of county residents, 45.2% live in the City of Pasco
- 25.3% identified as members of marginalized or historically underserved groups
- 11.0% identified as individuals with access and functional needs

Survey Distribution:

The survey was widely distributed through:

- Franklin County official website
- Participating city official pages
- County's newspaper of record
- Social media channels
- Public meetings with staff assistance for completion
- Stakeholder networks

Complete survey results are included in **Appendix C** of the Franklin County HMP.

4.2 Public Meetings - Wildfire Discussions

October 1-2, 2024 Public Meetings:

Multiple public meeting sessions were held to maximize community participation and gather input on hazard priorities, including wildfire concerns.

Meeting Format:

- Day 1 (October 1): Two sessions in Pasco at 1011 E. Ainsworth Street
- Day 2 (October 2): One session in Pasco, one session in Connell at 104 E Adams Street
- Both in-person and virtual attendance options available
- Total attendance: 27 participants across both days

Wildfire-Related Public Input: Community members provided feedback on wildfire hazards and mitigation priorities during the public meetings.

September 4, 2025 Public Meeting:

Meeting Format:

- Four 20-minute interactive sessions (3:00 PM, 3:30 PM, 4:00 PM, 4:30 PM)
- Held at 1011 E. Ainsworth Street, Pasco (hybrid format)
- Total attendance: 10 participants (7 in-person, 3 virtual)

Public Meeting Advertisements: All public meetings were advertised through:

- Franklin County official website

- Participating city websites
- Newspaper advertisements (county's paper of record)
- Social media platforms
- Direct stakeholder notifications
- Email distribution lists

Copies of public meeting advertisements and invitations are available in **Appendix E** of the Franklin County HMP.

4.3 Draft Plan Public Review Period

Initial Draft Review: A draft of the 2024 Franklin County Multi-Hazard Mitigation Plan (including CWPP content) was made available to the public and linked on the Franklin County website on the Office of Emergency Management page beginning on July 15, 2024.

Final Draft Review: The completed version of the plan was posted in [INSERT DATE] 2025 for final public comment. The plan remained available for review throughout the public comment period.

Public Comments Received: Minor editing comments were received and incorporated within the plan document. During the public meetings, survey results were discussed to demonstrate that all public feedback was integrated into the draft plan. The meetings resulted in adjustments to the hazard ranking and validation of wildfire mitigation actions.

Screenshot evidence of the public draft plan posting is provided in **Appendix E** of the Franklin County HMP.

4.4 Second Public Survey - Mitigation Actions

A second survey was created and made available in the month of November 2025 to provide public comment on proposed mitigation actions and the draft plan, including wildfire-specific mitigation strategies.

Survey Details:

- Open for 30-day public comment period
- Focused on review of proposed mitigation actions
- Opportunity to comment on draft CWPP/HMP content
- Results shared with steering committee

- Public comments considered for final plan revisions

Results of this second survey are included in **Appendix C** of the Franklin County HMP.

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5. Wildfire Planning Stakeholders

The CWPP was developed with input from a comprehensive group of stakeholders with expertise in wildfire prevention, response, and mitigation. The following stakeholders participated in the planning process by attending meetings, providing technical information, reviewing draft materials, and/or contributing to mitigation strategy development.

Complete stakeholder participation documentation is available in Chapter 2: Planning Process, Section 2.5.3 and Table 2.3 of the Franklin County Multi-Hazard Mitigation Plan.

5.1 Fire Service Agencies

Franklin County Fire Districts:

- Franklin County Fire Protection District #1 - Fire Chief Eric Mauseth, Eric Brittain
- Franklin County Fire Protection District #2 - Fire Chief Luke Van Holenbeke
- Franklin County Fire Protection District #3 - Fire Chief Mike Harris, Captain Jason Langston
- Franklin County Fire Protection District #4 - Fire Chief Steve Cooper
- Franklin County Fire Protection District #5 - Fire Chief Matt Nelson

Municipal Fire Departments:

- City of Pasco Fire Department - Fire Chief Kevin Crowley, Fire Deputy Chief Chris Mortensen, Deputy Fire Chief Tim Harkins
- City of Connell Fire Department - Fire Chief Ken Woffenden

Regional Fire Service Partners:

- Benton County Fire District #1 - Fire Chief Ryan Nicholls, Fire Chief Scott LoParco
- Benton County Fire District #2 - Fire Chief Dennis Bates
- Benton County Fire District #4 - Fire Chief Daniel Drayton, Fire Chief Paul Carlyle

- Walla Walla County Fire District #5 - Fire Chief Mike Wickstrom, Fire Chief Paul Olheiser
- Kennewick Fire Department - Fire Chief Michael Heffner, Jake Von Horn
- Richland Fire and Emergency Services - Fire Chief Randy Aust

5.2 Federal Agencies

- **Bureau of Land Management** - Lonnie Newton (manages significant federal lands with wildfire risk)
- **U.S. Army Corps of Engineers (USACE) Walla Walla District** - Jason Clapp, Rob Henes, Michelle Frost (water resources and infrastructure protection)
- **Environmental Protection Agency (EPA) Region 10** - Erin Williams, Brooks Stanfield (environmental impacts of wildfire)
- **Bureau of Reclamation** - Suzanne Henderson, Regional Emergency Management Program Coordinator (infrastructure protection)
- **Cybersecurity and Infrastructure Security Agency (CISA)** - Dan Brown (critical infrastructure protection)

5.3 State Agencies

- **Washington Emergency Management Division** - Stephanie Hakala
- **Washington Emergency Management Division** - Brian Terbush, Earthquake/Volcano Program Coordinator (multi-hazard coordination)
- **Washington Department of Natural Resources** - Charlie Landsman, Community Resilience Coordinator (CWPP technical guidance and wildfire expertise)
- **Washington Department of Natural Resources** - Tricia Sears, Geologic Planning Liaison (natural hazards planning)
- **Washington State Fire Marshal Office** - (fire safety and prevention coordination)
- **Washington Division of Forestry, Fire and State Lands** - (forestland fire protection)
- **Washington Department of Fish & Wildlife** - Scott Downes, Tony Maris (wildlife habitat and ecosystem impacts)
- **Washington State Patrol** - Dustin Drout (emergency response coordination)
- **Washington Department of Ecology** - Heidi Cousens

- **Washington Department of Social and Health Services** - Jim House, Disability/AFN Integration Manager (vulnerable populations)

5.4 County Emergency Management

- **Franklin County Emergency Management** - Sean Davis (Director), Jordan Hanes (Deputy Director), Heather Noles (Program Coordinator), Megan Woods
- **Benton County Emergency Management** - Carli Luppold, Deanna Davis, Tony Bench
- **Adams County Emergency Management** - Sandi Duffey
- **Walla Walla County Emergency Management** - Chris Lee, Patrick Purcell

5.5 County Departments

- **Franklin County Public Works Department** - Craig Erdman (Director), Geoff Wagner (Project/Program Manager), John Christensen (Surveyor), Kent McCue (City of Pasco Public Works Operations Manager)
- **Franklin County Planning and Building** - Wesley McCart (Director), Mike Troidl (Building Official)
- **Franklin County Information Services** - Michael Namchek
- **Franklin County Geographic Information Systems** - Michael Morgan (GIS Manager), Brent Keseman (GIS)
- **Franklin County Assessor's Office** - John Rosenau (County Assessor)
- **Franklin County Sheriff's Office** - (law enforcement coordination)

5.6 Municipal Representatives

- **City of Pasco** - Craig Raymond (Community & Economic Development Deputy Director), Maria Serra (Public Works Director)
- **City of Connell** - Chris Lee (Police Chief), Hallie Tuck (Public Works Director), Lee Barrow (Mayor)
- **City of Mesa** - Cade Scott (Public Works Superintendent)
- **City of Kahlotus** - Michael Robitaille (Mayor)

5.7 Weather and Climate Monitoring

- **National Weather Service - Pendleton** - Katy Branham (Warning Coordination Meteorologist), Larry Niernberg (provides fire weather forecasts and red flag warnings)

5.8 Conservation and Natural Resources

- **Franklin County Conservation District** - Kara Kaelber (District Manager)
- **Benton-Franklin Conservation Districts** - Alexis Spencer (Research & Monitoring Program Coordinator)
- **Franklin County Noxious Weed Control Board** - Todd Harris (Program Coordinator), Betsy Crysel (Office Manager) (invasive species management related to wildfire fuel loads)
- **Washington RCD** - Sophia Fox (Natural Hazards Planner)
- **Washington State University Extension** - Tim Waters (Professor – Agriculture and Natural Resources Unit) (rural outreach and education)

5.9 Health and Social Services

- **Benton-Franklin Health District** - Alyssa Munro, Eli Bear (public health impacts of wildfire smoke and air quality)
- **Northwest Healthcare Response Network** - Sierra Knutson (Eastside District Coordinator) (healthcare facility coordination)
- **Kadlec Regional Medical Center** - Beki Hammons
- **Lourdes Health Network**

5.10 Utilities and Critical Infrastructure

- **Energy Northwest** - Sarah Ellis (nuclear facility wildfire protection)
- **Pacific Power** - Amber Lighty (electrical infrastructure and fire risk)
- **Ben-Franklin Transit** - Marcus McCready, Angie Peters (Valley Transit) (evacuation transportation)

5.11 Private Sector / Critical Facilities

Major employers and industrial facilities that participated in wildfire risk assessment and emergency planning:

- **Agricultural Processing:** Lamb Weston Richland (Adam Martin, Gwen Kestenson, Kathryn Wyatt), Reser's Fine Foods (Shasta Hay Grimes), Tree Top Inc (Vasiliy Kravtsov), Pasco Processing LLC (Roberta Cartanello), Oakdell Egg Farms (David Evans), Nutrien KFO (Janet Simmons)
- **Transportation & Logistics:** Harms Pacific Transport (Chad Messerly), Marathon Pipeline (Dan Anderson), Republic Services (Douglas Franette)
- **Other Critical Infrastructure:** Lineage (Marlies Portleever), Clean Harbors (John Bushard), ISC (Daniel Anderegg, Katherine Guest, Michael Kemp), Nothem (Nick Alvarado)

5.12 Regional Planning and Coordination

- **Benton Franklin Council of Governments** - Michelle Holt (Director), Erin Braich (Deputy Director), Zach Ratkai (Local Government Programs Director), Elizabeth Garcia (Assistant Regional Planner)
- **Tri-County Local Emergency Planning Committee (LEPC)** - Franklin, Benton, Walla Walla, and Adams Counties coordination
- **Franklin County Local Emergency Planning Committee**

5.13 Community Organizations

- **Boys and Girls Club of Benton and Franklin Counties** (youth engagement)
- **Housing Authority of the City of Pasco and Franklin County** - Matt Truman (Executive Director), Michelle Callighan (Finance Director)
- **Tri-Cities HOME Consortium** - Kylie Peel (City of Kennewick), Toni Lehman (City of Richland)

5.14 Correctional and Institutional Facilities

- **Washington State Penitentiary / Department of Corrections** - Sandi Jacobson, Dorothea Trainer (institutional emergency planning)
- **Coyote Ridge Corrections Center** - Brent Carlson
- **Washington Odd Fellows Home** - Pete Harsin
- **Regency at the Park** - Steven Hughes
- **ALTC Facilities** - Brenda Bamford (Kennewick), Jenni Lewis (Franklin)

6. Wildfire Mitigation Action Development Process

The development of wildfire mitigation actions for the CWPP was conducted through a collaborative process with participating fire agencies, ensuring that mitigation strategies reflected operational expertise and on-the-ground experience.

6.1 Fire Agency Solicitation and Action Review

Participating fire agencies were directly engaged in the mitigation action development process. Each fire district and fire department was solicited to:

Review Past Mitigation Actions:

- Evaluate the status and effectiveness of previously identified wildfire mitigation actions
- Assess which actions were completed, ongoing, or deferred
- Identify lessons learned and challenges encountered during implementation
- Determine which actions should continue, be modified, or discontinued

Identify New Mitigation Actions:

- Based on operational experience and emerging wildfire risks
- Considering changes in development patterns and wildland-urban interface expansion
- Addressing gaps in current wildfire preparedness and response capabilities
- Incorporating new technologies and best practices in wildfire mitigation

Participating Fire Agencies in Action Development:

- Franklin County Fire Protection District #1
- Franklin County Fire Protection District #2
- Franklin County Fire Protection District #3
- Franklin County Fire Protection District #4
- Franklin County Fire District #5
- City of Pasco Fire Department

- City of Connell Fire Department
- Regional fire service partners from Benton and Walla Walla Counties

6.2 Comprehensive Action List Development

Following the individual agency reviews, Franklin County Emergency Management compiled and synthesized the input from all participating fire agencies to develop a comprehensive list of wildfire mitigation actions. This process included:

Consolidation of Actions:

- Combining similar actions identified by multiple agencies
- Eliminating duplication while preserving agency-specific priorities
- Organizing actions by category (prevention, preparedness, response, recovery)
- Prioritizing actions based on risk reduction potential and feasibility

Coordination Between Fire Departments:

- Identifying actions requiring multi-agency coordination
- Establishing lead agencies and supporting partners for each action
- Determining mutual aid and resource sharing opportunities
- Coordinating regional approaches to fuel reduction and vegetation management

Integration with County-Wide Priorities:

- Aligning fire agency actions with broader county mitigation goals
- Ensuring consistency with land use planning and development regulations
- Coordinating with public works, planning departments, and other county agencies
- Identifying funding sources and implementation timelines

6.3 Stakeholder Review and Approval

Once the comprehensive list of wildfire mitigation actions was developed, it was shared with the broader stakeholder group for review and approval:

Stakeholder Review Process:

- Draft action list distributed to all planning committee members and stakeholders
- Review period provided for stakeholder feedback and comments

- Actions presented at planning meetings for discussion and refinement
- Public review opportunity during public comment periods

Stakeholder Groups Involved in Review:

- Emergency management agencies (county and regional)
- Municipal governments and elected officials
- Public works and planning departments
- Conservation districts and natural resource agencies
- Utility providers and critical infrastructure owners
- Community organizations and residents
- State and federal agency partners

Approval Process:

- Stakeholder comments incorporated into final action list
- Planning committee validation of priority actions
- Jurisdictional approval by participating cities and county
- Final review by fire chiefs at August 28, 2025 regional coordination meeting

6.4 Ongoing Coordination and Implementation

The wildfire mitigation actions developed through this process will be implemented through continued coordination between fire departments, emergency management, and stakeholder agencies:

Implementation Coordination:

- Lead agency identified for each mitigation action
- Supporting agencies and partners designated
- Implementation timelines and milestones established
- Funding sources and resource allocation determined

Multi-Agency Collaboration:

- Regular coordination meetings between fire agencies
- Mutual aid agreements for resource sharing

- Regional training and exercise opportunities
- Shared equipment and technology resources

Monitoring and Updates:

- Annual review of action progress by fire agencies
- Regular reporting to planning committee and stakeholders
- Updates to action list based on changing conditions and priorities
- Integration of new actions as needs are identified

This collaborative approach ensures that wildfire mitigation actions are grounded in operational reality, supported by the agencies responsible for implementation, and coordinated across jurisdictional boundaries for maximum effectiveness.

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7. Planning Committee Member List

The core steering committee that guided the CWPP/HMP planning process included representatives from Franklin County and all participating jurisdictions:

Name	Title	Organization
Sean Davis	Director	Franklin County Emergency Management
Jordan Hanes	Deputy Director	Franklin County Emergency Management
Craig Raymond	Deputy Director of Community & Economic Development	City of Pasco
Chris Mortensen	Fire Deputy Chief	City of Pasco Fire Department
Chris Lee	Police Chief	City of Connell
Hallie Tuck	Public Works Director	City of Connell
Cade Scott	Public Works Superintendent	City of Mesa

Name	Title	Organization
Michael Robitaille	Mayor	City of Kahlotus

Complete roster of all planning participants (130+ stakeholders) is available in Chapter 2: Planning Process, Table 2.3 of the Franklin County Multi-Hazard Mitigation Plan.

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8. Integration with Franklin County HMP

This Community Wildfire Protection Plan was developed as an appendix to the Franklin County Multi-Hazard Mitigation Plan to ensure coordination between wildfire-specific planning and comprehensive hazard mitigation efforts. This integrated approach provides the following benefits:

Comprehensive Risk Assessment:

- Wildfire risk assessment conducted alongside assessment of all hazards
- Recognition of connections between wildfire and other hazards (air quality, drought, invasive species)
- Comprehensive vulnerability analysis including infrastructure, populations, and community assets

Coordinated Mitigation Strategy:

- Wildfire mitigation actions aligned with broader county mitigation priorities
- Consistent prioritization and implementation approach across all hazards
- Efficient use of resources through multi-hazard mitigation projects

Unified Public Engagement:

- Community input on wildfire integrated with overall hazard concerns
- Streamlined public meeting process covering all hazard mitigation topics
- Comprehensive public education addressing multiple hazard preparedness needs

Regulatory Compliance:

- Meets FEMA DMA 2000 requirements for hazard mitigation planning

- Satisfies state CWPP requirements for wildfire planning
- Ensures consistency with local comprehensive plans and capital improvement programs

Implementation and Maintenance:

- Coordinated plan maintenance and updates
- Unified monitoring and reporting on mitigation action progress
- Single point of contact for plan implementation (Franklin County Emergency Management)

For complete information on the following topics, please refer to the indicated chapters of the **Franklin County Multi-Hazard Mitigation Plan:**

- **Community Profile** - Chapter 1
- **Complete Planning Process Documentation** - Chapter 2
- **Wildfire Risk Assessment** - Chapter 3: Hazard Identification and Risk Assessment
- **Capability Assessment** - Chapter 5
- **Wildfire Mitigation Strategy** - Chapter 4
- **Plan Maintenance Procedures** - Chapter 6

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9. Equity Considerations in CWPP Development

Franklin County recognizes that wildfire impacts are not experienced equally across all community members. Special attention was given to ensuring equitable outcomes in CWPP development:

Vulnerable Population Engagement:

- Survey included specific questions about access and functional needs
- 25.3% of survey respondents identified as members of marginalized or historically underserved groups
- 11.0% identified as individuals with access and functional needs
- Coordination with organizations serving disadvantaged populations

Organizations Serving Disadvantaged Populations:

- Boys and Girls Club of Benton and Franklin Counties
- Washington State Department of Health and Social Services
- Benton Franklin Health District
- WA Emergency Management Division - Access and Functional Needs Program Manager (Jim House)

Climate & Economic Justice Screening:

The U.S. Council on Environmental Quality's Climate & Economic Screening Tool was used to analyze census tracts in Franklin County for disadvantaged communities. Analysis of environmental and socioeconomic burdens in each census tract is provided in **Appendix C** of the Franklin County HMP.

Equitable Mitigation Priorities:

- Recognition that wildfire smoke disproportionately impacts vulnerable populations
- Consideration of evacuation challenges for individuals with mobility limitations
- Attention to language access needs in emergency notifications
- Focus on protecting affordable housing in wildland-urban interface areas

Complete equity considerations and disadvantaged community analysis are documented in **Chapter 2: Planning Process, Section 2.6** of the Franklin County HMP.

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10. Related Plans and Studies

The CWPP was developed in coordination with existing plans, studies, and reports. The following documents were reviewed and incorporated into the planning process:

Local Plans:

- Franklin County Comprehensive Plan
- Franklin County Capital Improvement Plan
- City of Pasco Comprehensive Plan
- City of Connell Comprehensive Plan
- City of Mesa Comprehensive Plan

- City of Kahlotus Comprehensive Plan
- Franklin County Emergency Operations Plan

State and Federal Guidance:

- Washington State CWPP Guidelines (Washington DNR)
- FEMA Hazard Mitigation Planning Guidelines
- DMA 2000 Requirements (44CFR§201.4 and §201.6)
- Washington State Hazard Mitigation Plan

Technical Studies:

- National Weather Service fire weather forecasts and climatology
- Washington DNR wildfire hazard mapping
- Benton-Franklin Health District Community Health Assessment
- Franklin County Conservation District resource assessments

Complete review of existing plans, studies, and ordinances is provided in Chapter 5: Capabilities Assessment of the Franklin County HMP.

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11. Documentation Appendices

The following appendices to the Franklin County Multi-Hazard Mitigation Plan contain additional CWPP planning process documentation:

- **Appendix B** - Complete meeting minutes and attendance rosters for all planning meetings
- **Appendix C** - Complete public survey results, including wildfire-specific responses and Climate & Economic Justice Screening Tool analysis
- **Appendix E** - Public meeting advertisements, website screenshots, and public outreach materials

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This appendix compiled by: Franklin County Emergency Management 1011 E. Ainsworth Street Pasco, Washington

Primary Contacts:

- Sean Davis, Director, Franklin County Emergency Management
- Jordan Hanes, Deputy Director, Franklin County Emergency Management

Date Compiled: [INSERT DATE], 2026

Appendix 2: Franklin County Community Wildfire Protection Plan

Introduction:

The Franklin County, Washington Community Wildfire Protection Plan (CWPP) establishes a coordinated framework for identifying, assessing, and mitigating wildfire risks across the county. Developed in collaboration with local governments, fire districts, state and federal agencies, and community stakeholders, the CWPP integrates scientific modeling, spatial data analysis, and historical fire information to inform proactive wildfire management and land-use planning. The purpose of this plan is to reduce the risk of wildfire to people, property, infrastructure, and natural resources while promoting resilient landscapes and fire-adapted communities. The CWPP aligns with state and federal wildfire management policies and serves as a guiding document for implementing prioritized mitigation actions and coordinating interagency response efforts. This plan has been developed in accordance with the **Healthy Forests Restoration Act of 2003**, which provides the legislative framework and authority for the development and implementation of Community Wildfire Protection Plans.

Risk Analysis Models:

Historic Fire Regime

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995). Coarse-scale definitions for natural (historical) fire regimes have been developed by Hardy et al. (2001) and Schmidt et al. (2002) and interpreted for fire and fuels management by Hann and Bunnell (2001). The five natural (historical) fire regimes are classified based on average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation. These five regimes include: I – 0-35 year frequency and low (surface fires most common) to mixed severity (less than 75% of the dominant overstory vegetation replaced); II – 0-35 year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced); III – 35-100+ year frequency and mixed severity (less than 75% of the dominant overstory vegetation replaced); IV – 35-100+ year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced); V – 200+ year frequency and high (stand replacement) severity.

A database of fire history studies in Washington was used to develop modeling rules for predicting historical fire regimes (HFRs). Tabular fire-history data and spatial data was stratified into ecoregions, potential natural vegetation types (PNVs), slope classes, and aspect classes to derive rule sets which were then modeled spatially. Expert opinion was substituted for a stratum when empirical data was not available.

Fire is one of the dominant disturbance processes that manipulate vegetation patterns in Washington. The HFR data were prepared to supplement other data necessary to assess integrated risks and opportunities at regional and subregional scales. The HFR theme was derived specifically to estimate an index of the relative change of a disturbance process, and the subsequent patterns of vegetation composition and structure.

These data were derived using fire history data from a variety of different sources. These data were designed to characterize broad scale patterns of historical fire regimes for use in regional and subregional assessments. Any decisions based on

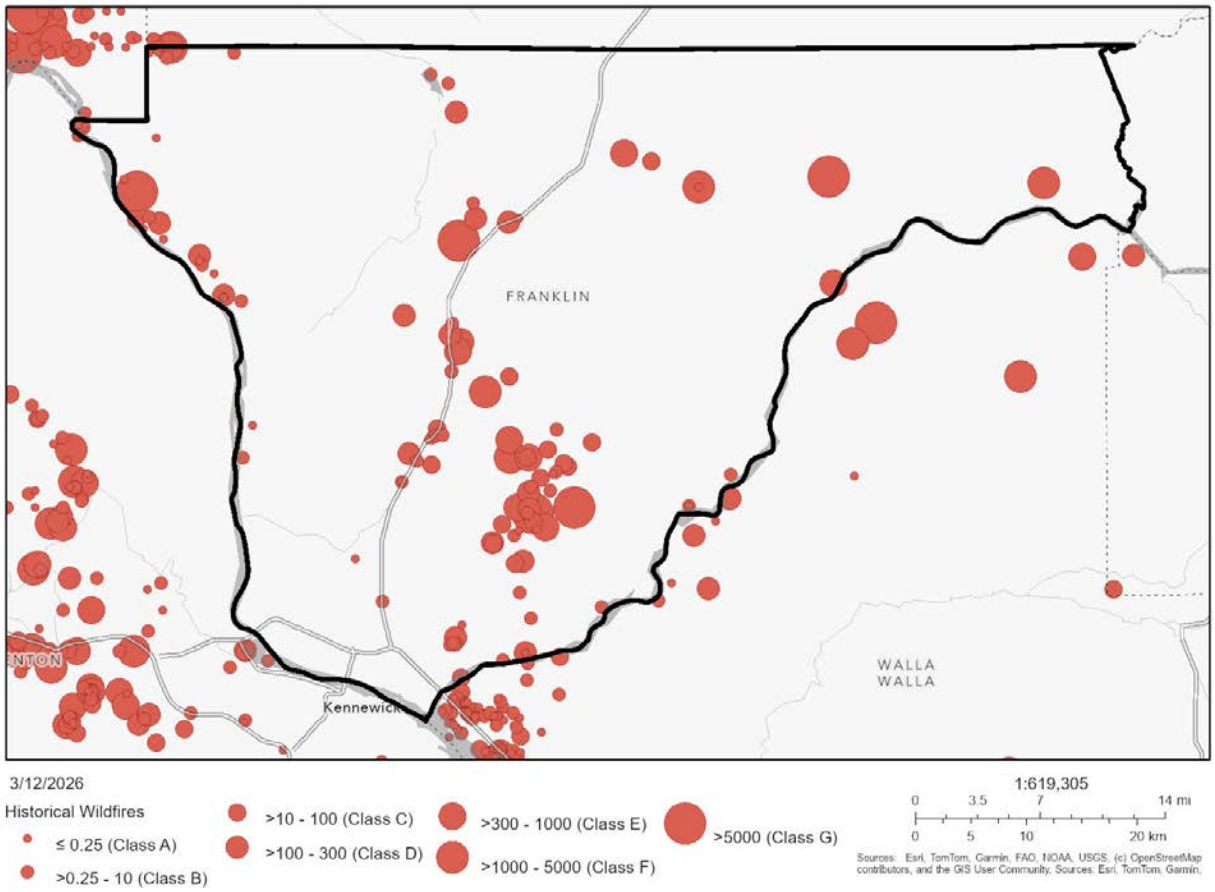
these data should be supported with field verification, especially at scales finer than 1:100,000. Because the resolution of the HFR theme is 30 meter cell size, the expected accuracy does not warrant their use for analyses of areas smaller than about 10,000 acres (for example, assessments that typically require 1:24,000 data).

Historical Wildfires

The locations of historical wildfires shown in the map below were used by the planning team to understand the prevalence and patterns of wildfire in and in the vicinity of the Planning Area, which informed the delineation of Areas of Concern and where to prioritize Projects.

The Planning Area has **113 historical wildfires** within its boundaries.

For more details about these fires, please visit the **Historical Wildfire Occurrences Dashboard** for Franklin County.


FRANKLIN
WALLA
WALLA
Kennewick
3/12/2026
Historical Wildfires
≤ 0.25 (Class A)
>0.25 - 10 (Class B)
>10 - 100 (Class C)
>100 - 300 (Class D)
>300 - 1000 (Class E)
>1000 - 5000 (Class F)
>5000 (Class G)
1:619,305
0 3.5 7 14 mi
0 5 10 20 km
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Sources: Esri, TomTom, Garmin,

Vegetation Condition Class

Vegetation Condition Class (VCC) is an interagency, standardized tool for determining the degree of departure from reference condition vegetation, fuels, and disturbance regimes. Assessing VCC can help guide management objectives and set priorities for treatments.

As scale of application becomes finer the five historic fire regimes may be defined with more detail, or any one class may be split into finer classes, but the hierarchy to the coarse scale definitions should be retained. Coarse-scale VCC classes have been defined and mapped by Hardy et al. (2001) and Schmidt et al. (2001). They include three condition classes for each historic fire regime. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. This departure results in changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g. insect and diseased mortality, grazing, and drought). There are no wildland vegetation and fuel conditions or wildland fire situations that do not fit within one of the three classes.

The three classes are based on low (VCC 1), moderate (VCC 2), and high (VCC 3) departure from the central tendency of the natural (historical) regime (Hann and Bunnell 2001, Hardy et al. 2001, Schmidt et al. 2002). The central tendency is a composite estimate of vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated natural disturbances. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside.

Characteristic vegetation and fuel conditions are considered to be those that occurred within the natural (historical) fire regime. Uncharacteristic conditions are considered to be those that did not occur within the natural (historical) fire regime, such as invasive species (e.g. weeds, insects, and diseases), “high graded” forest composition and structure (e.g. large trees removed in a frequent surface fire regime), or repeated annual grazing that maintains grassy fuels across relatively large areas at levels that will not carry a surface fire.

Determination of amount of departure is based on comparison of a composite measure of fire regime attributes (vegetation characteristics; fuel composition; fire

frequency, severity and pattern) to the central tendency of the natural (historical) fire regime. The amount of departure is then classified to determine the vegetation condition class. A simplified description of the fire regime condition classes and associated potential risks follow.

Vegetation Condition Class	Description	Potential Risks
Condition Class 1	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and other types of management that do not mimic the natural fire regime and associated vegetation and fuel characteristics. Composition and structure of vegetation and fuels are similar to the natural (historical) regime. Risk of loss of key ecosystem components (e.g., native species, large trees, and soil) is low.
Condition Class 2	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). Composition and structure of vegetation and fuel are moderately altered. Uncharacteristic conditions range from low to moderate. Risk of loss of key ecosystem components is moderate.
Condition Class 3	High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and	Fire behavior, effects, and other associated disturbances are highly departed (more or less severe). Composition and structure of vegetation and fuel are highly altered.

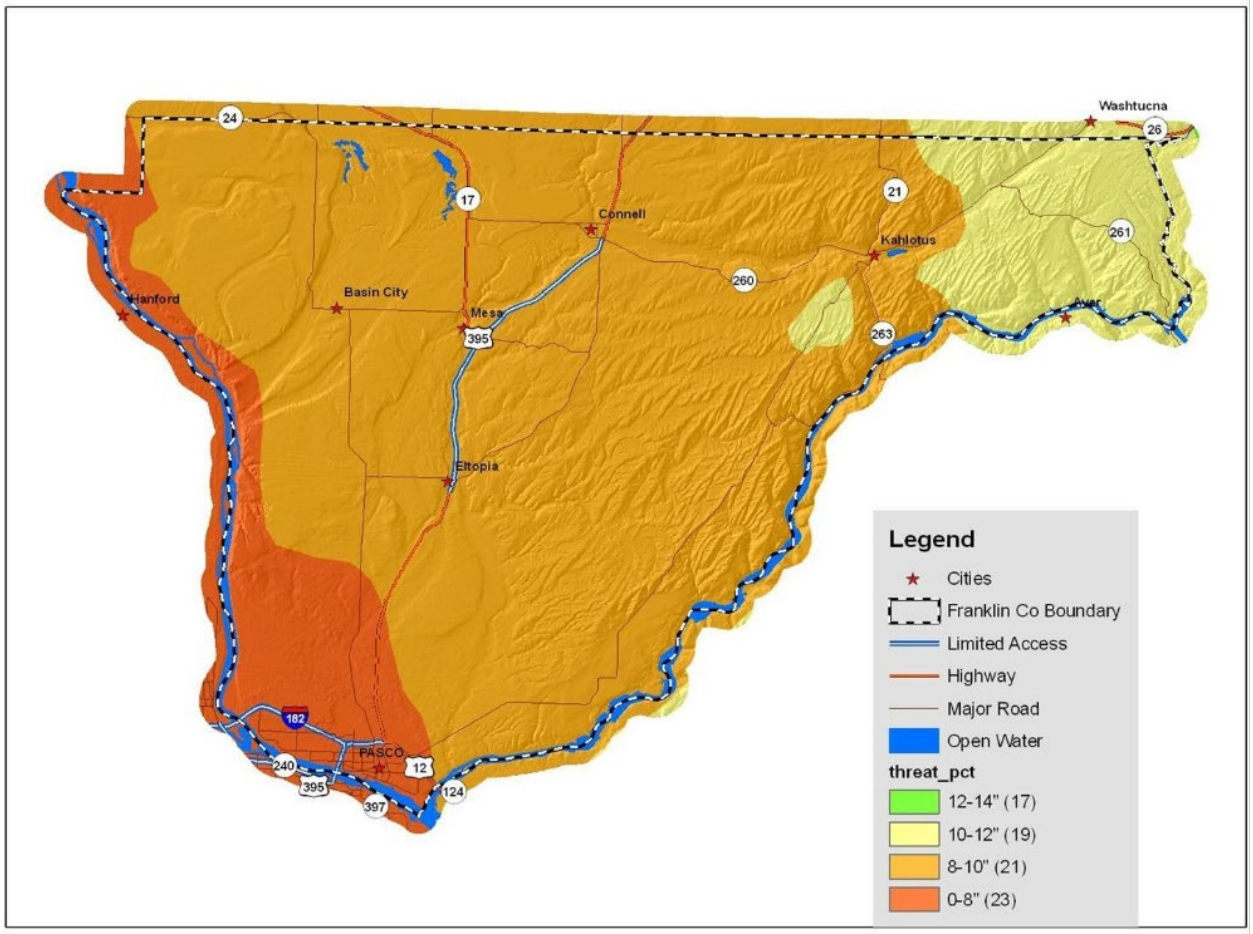
	pattern; and other associated disturbances.	Uncharacteristic conditions range from moderate to high. Risk of loss of key ecosystem components is high.

Relative Threat Level

Development of a Threat Level map for the Franklin County CWPP involved geographically developing and ranking the various threat categories identified by the CWPP Committee. Threat categories identified for the analysis include Slope, Aspect, Fire Behavior Fuel Model, Predicted Flam Length Class, Precipitation Levels, Predicted Rate of Fire Spread, Predicted Wild Fire Intensity and Population Density. The various data sets for each threat or condition were developed and ranked based on their significance pertaining to wildfire. The various ranked layers were then analyzed in a geographical information system to produce a cumulative effects map based on the ranking. Following is a brief explanation of the various threats identified for the analysis, and the general value ranking scheme used for each. The Relative Threat Level Map is found on page 9 of the appendices of the CWPP document.

Precipitation

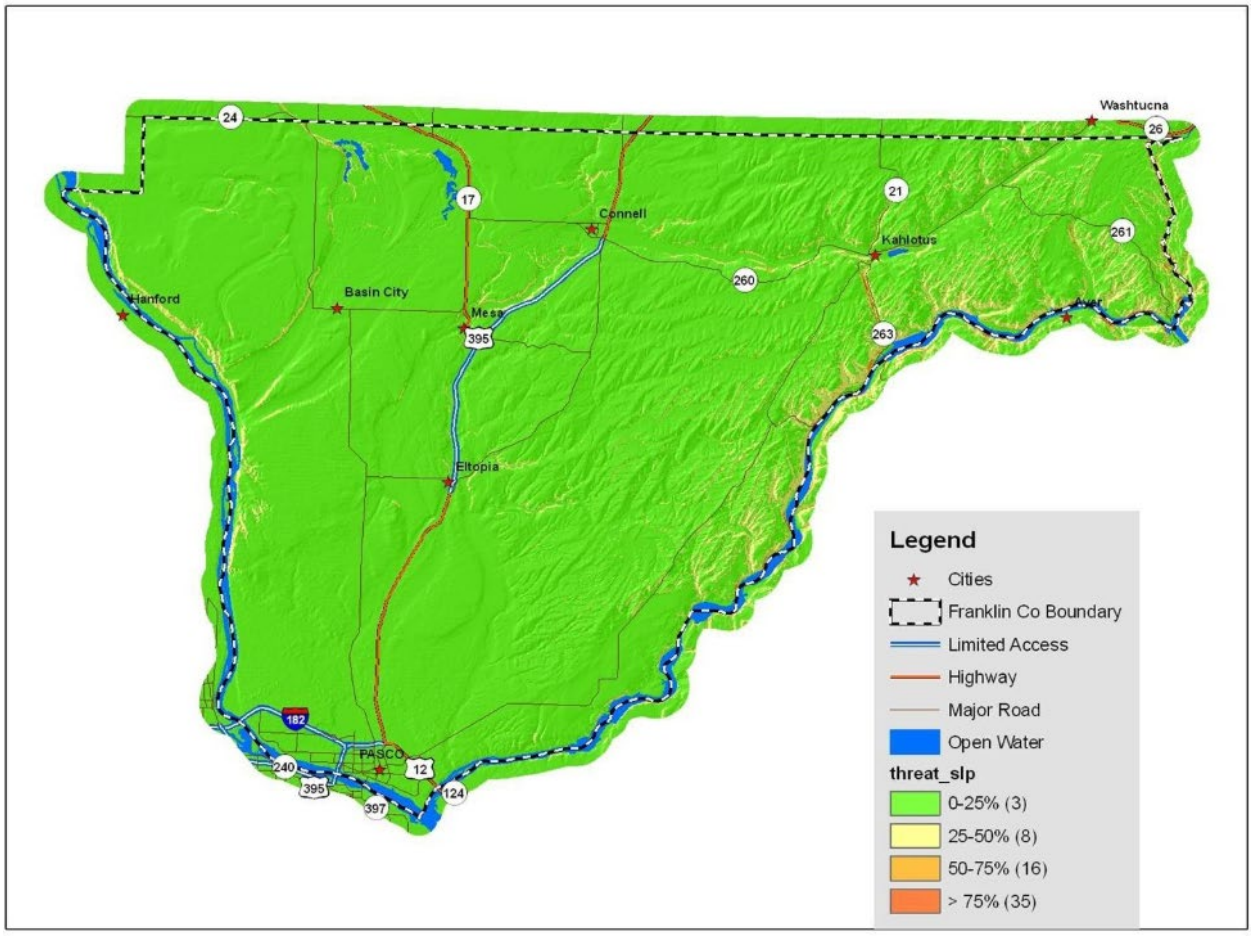
A GIS precipitation data layer developed by the USDA/NRCS – National Cartography & Geospatial Center, was used to identify average precipitation across Franklin County. The dataset provides derived average annual precipitation in polygon contour format according to a model using point precipitation and elevation data for the 30 year period of 1971-2000. Precipitation plays a role in wildfire threat; areas of lower precipitation are more likely to exhibit a higher threat than high precipitation areas. For the threat level analysis, a precipitation layer value was derived using the average for the range of values, multiplied by two, and subtracting the range value. This gives an inverse value relationship indicating that increased precipitation has a decreased threat level. The threat level range is between 7 and 23 with low precipitation



areas exhibiting the high threat level value, and high precipitation area the low value.

Slope

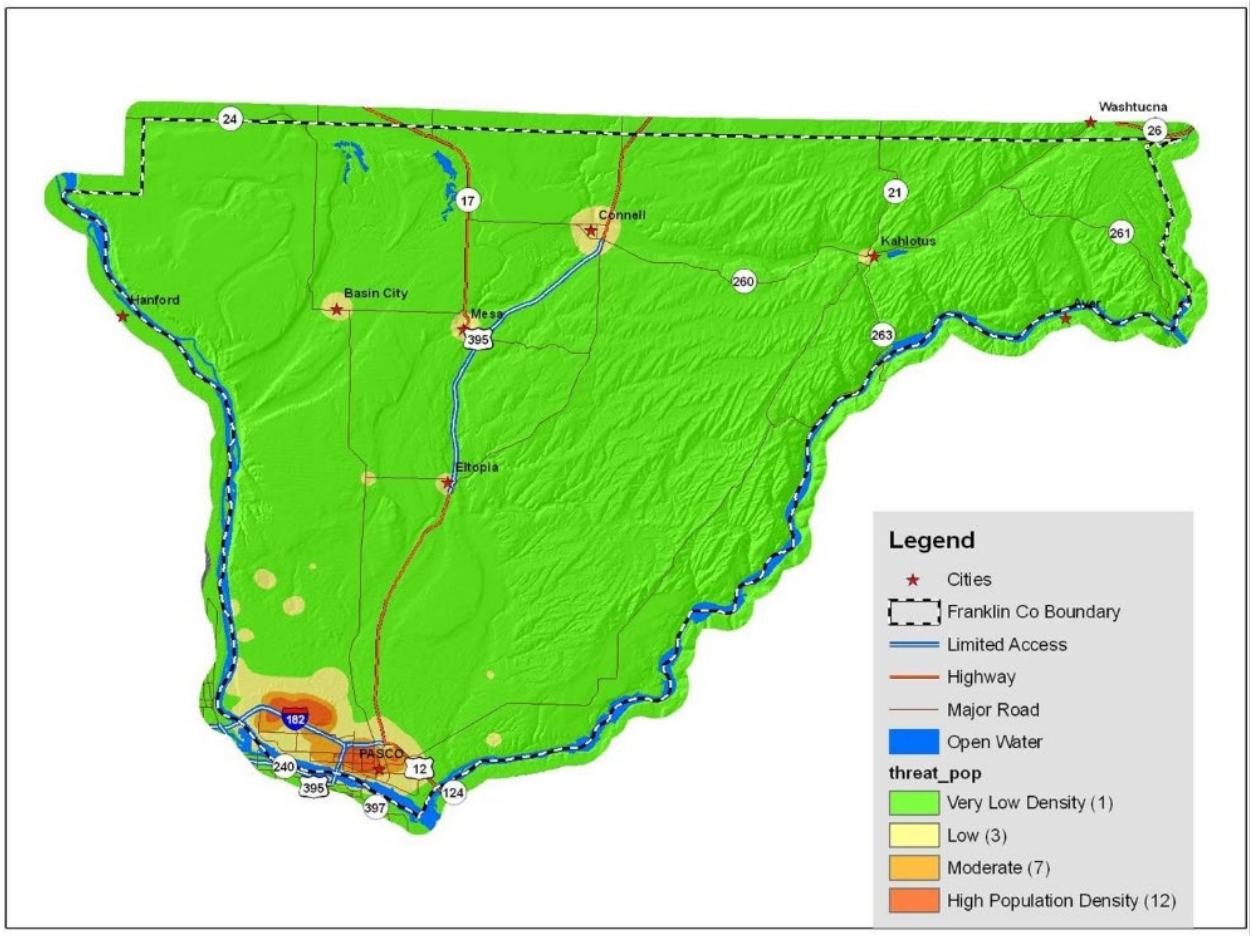
A slope raster data layer was created in ArcGIS using the Spatial Analyst extension and a 10 meter digital elevation model. Data processing in ArcGIS assigns a slope value in percent for each pixel. Once created, the slope model was classified into 4 groups, Low, Moderate, High and Extreme for final analysis. From a wildfire stand point, the treat from fire increases with increased slope. For this analysis, 0-25% slope was assigned a value of 8 for low threat, 25-50% slope a value of 25 for moderate threat, 50-75% slope a value of 32 for high threat, and



greater than 75% slope a value of 50 for extreme threat.

Population

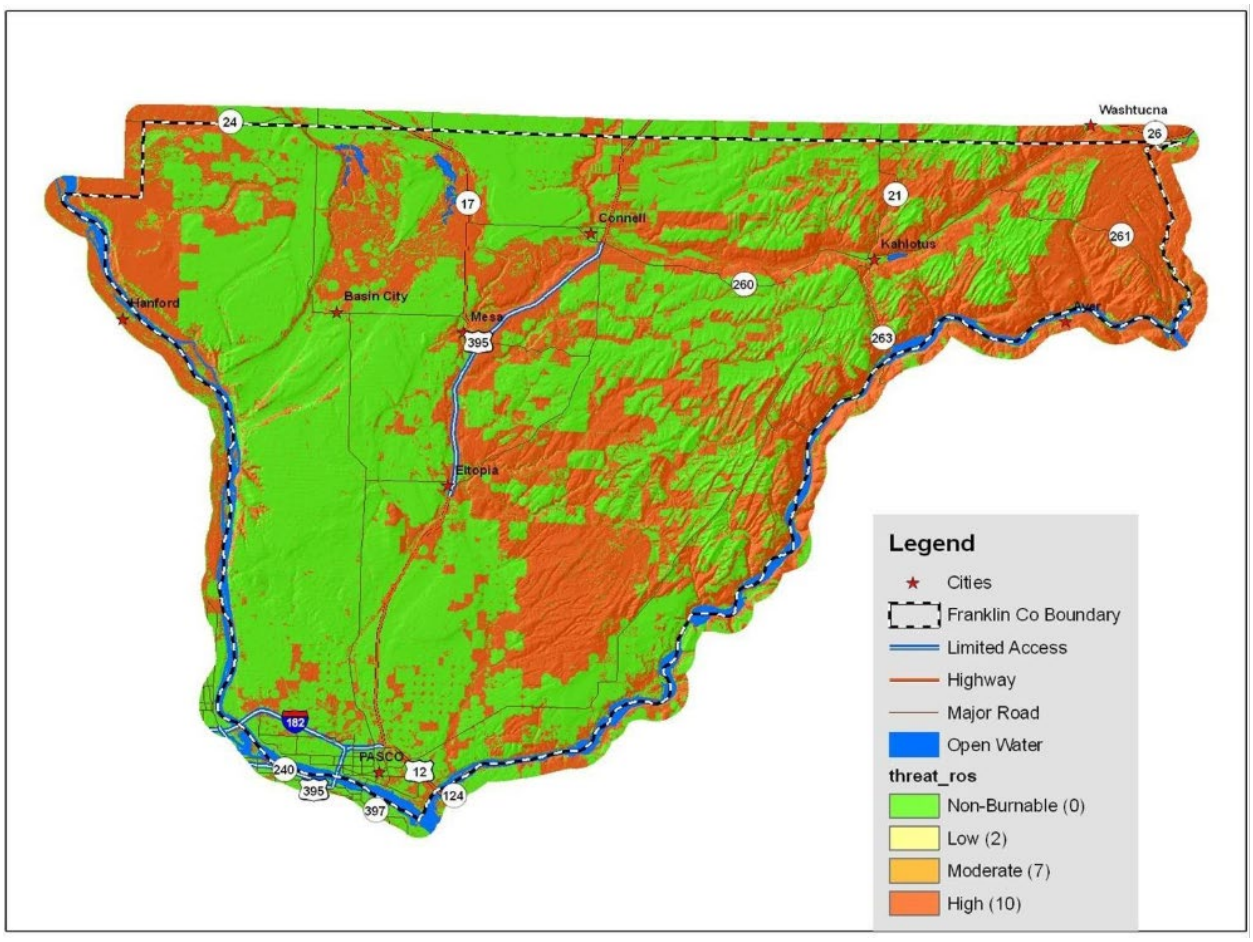
Population density plays a role in Franklin County wildfire threat. Most wildfires in the county are man caused. To represent this in a threat level analysis, population density across the county was mapped using a Kernel density model based on structure point locations. The output from this analysis produces contour polygons of equal population density across the landscape. The contour polygon data set was then reclassified into four categories and assigned a population threat level value. The assigned threat level values represent the relative threat caused by population density and the increased risk of fire being man caused as population increases. The



four values used are 1 for very low population density, 3, 7 and 12 for high density.

Rate of Spread

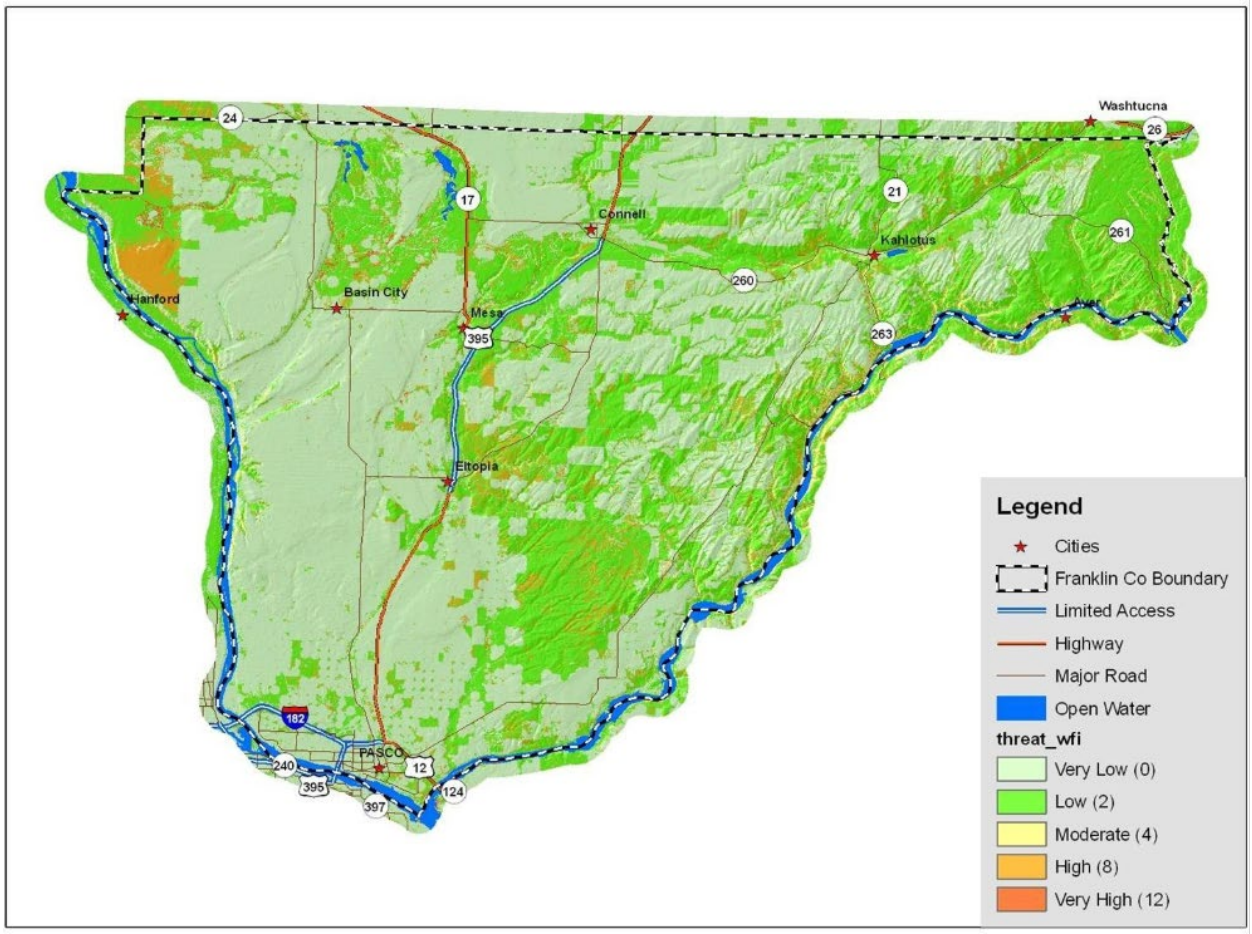
Output data from the Fire Behavior Assessment Tool (FBAT) was used to predict Rate of Spread (ROS). Rate of Spread is a derived metric that classifies areas into four classes representing non- burnable low (0<ROS<5.5 ft/min), moderate (5.5ft/min< ROS< 55ft/min) and high spread rates (>55 ft/min ROS). Predicted ROS outputs from the FBAT model were reclassified to incorporate a threat level value. A value of 0 was assigned to the non-burnable ROS, 2 to the



low ROS, 7 to the moderate ROS, and 10 to the high ROS.

Wildland Fire Intensity

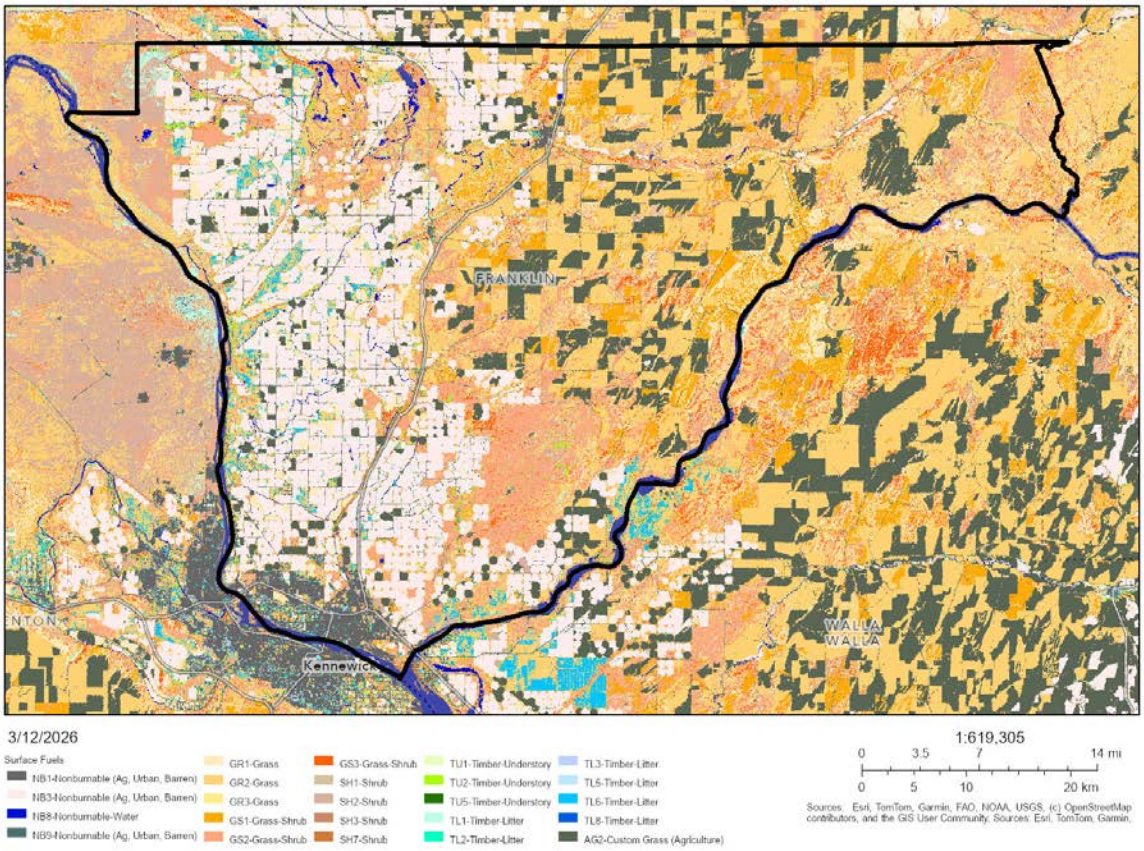
Output data from the Fire Behavior Assessment Tool (FBAT) was used to predict Wildland Fire Intensity (WFI). Wildland Fire Intensity is a derived metric that facilitates communication about and interpretation of fireline intensity. It is analogous to the logarithmic Richter scale used to measure the magnitude of earthquakes. For threat level analysis, the predicted WFI outputs from the FBAT model were classified into four categories, (Low, Moderate, High and Extreme) and

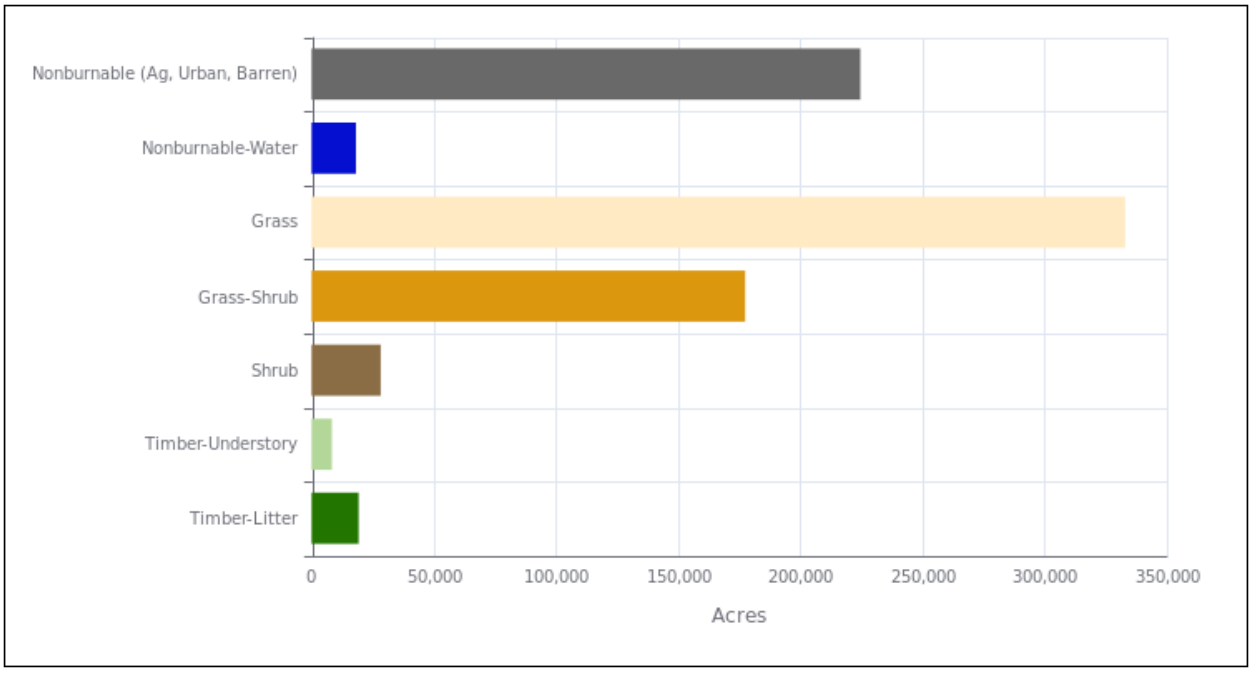


given threat level values from 0-40 with a 10 fold increase in treat value between threat levels.

Fire Behavior Fuel Model

Scott and Burgan's 40 Fire Behavior Fuel Model was used in the threat level analysis to provide wildfire fuels information. For this analysis, the variety of fuels present in Franklin County that were depicted in the fuels layer were grouped into 5 threat level value categories based on perceived relative contribution to wildfire threat. The following ranking was used in the analysis. Agricultural areas were assigned a value of 0, timber fuels were assigned a value of 10, grasslands were assigned a value of 20, mixed shrub and grass were assigned a value of 30, and tall grass and CRP fields were assigned a value of 40. The values given the categories are meant

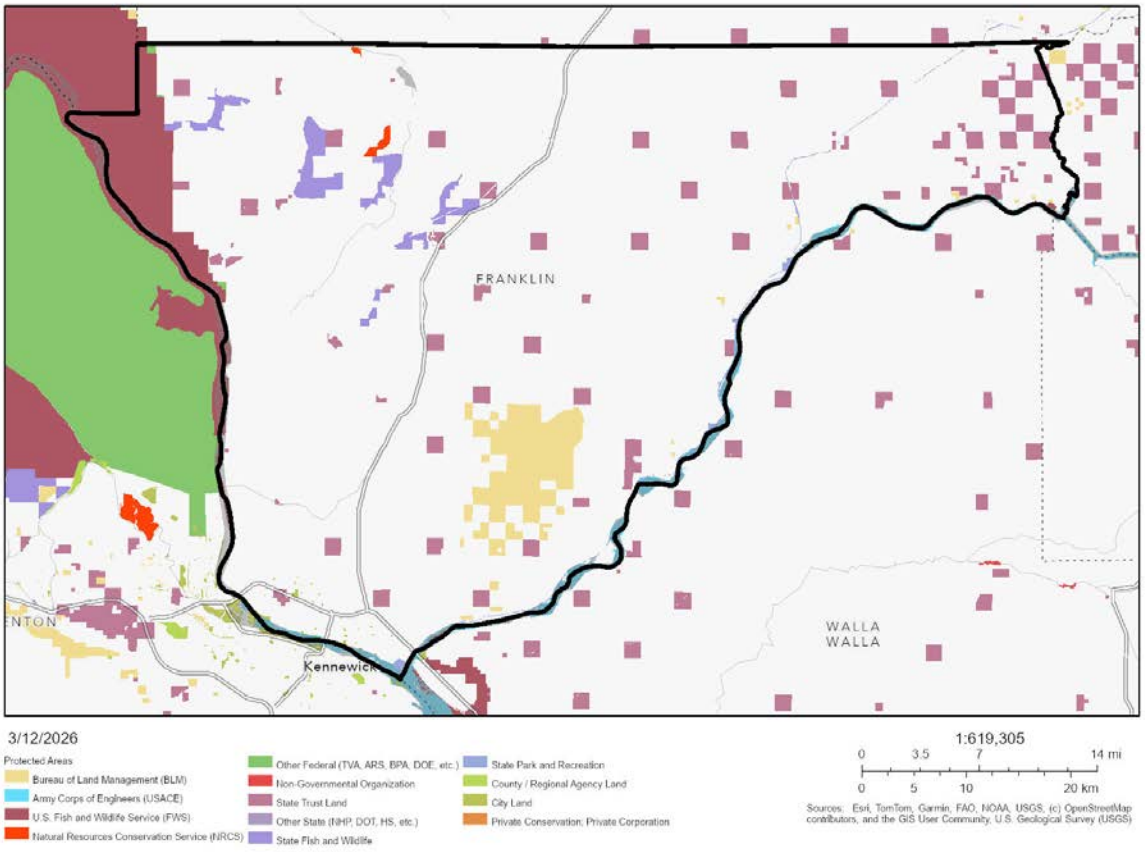

FRANKLIN
WALLA WALLA
Kennewick
3/12/2026
1:619,305
0 3.5 7 14 mi
0 5 10 20 km
Surface Fuels
NB1-Nonburnable (Ag, Urban, Barren)
NB3-Nonburnable (Ag, Urban, Barren)
NB8-Nonburnable-Water
NB9-Nonburnable (Ag, Urban, Barren)
GR1-Grass
GR2-Grass
GR3-Grass
GS1-Grass-Shrub
GS2-Grass-Shrub
GS3-Grass-Shrub
SH1-Shrub
SH2-Shrub
SH3-Shrub
SH7-Shrub
TU1-Timber-Understory
TU2-Timber-Understory
TU5-Timber-Understory
TL1-Timber-Litter
TL2-Timber-Litter
TL3-Timber-Litter
TL5-Timber-Litter
TL6-Timber-Litter
TL8-Timber-Litter
AG2-Custom Grass (Agriculture)
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community. Sources: Esri, TomTom, Garmin,

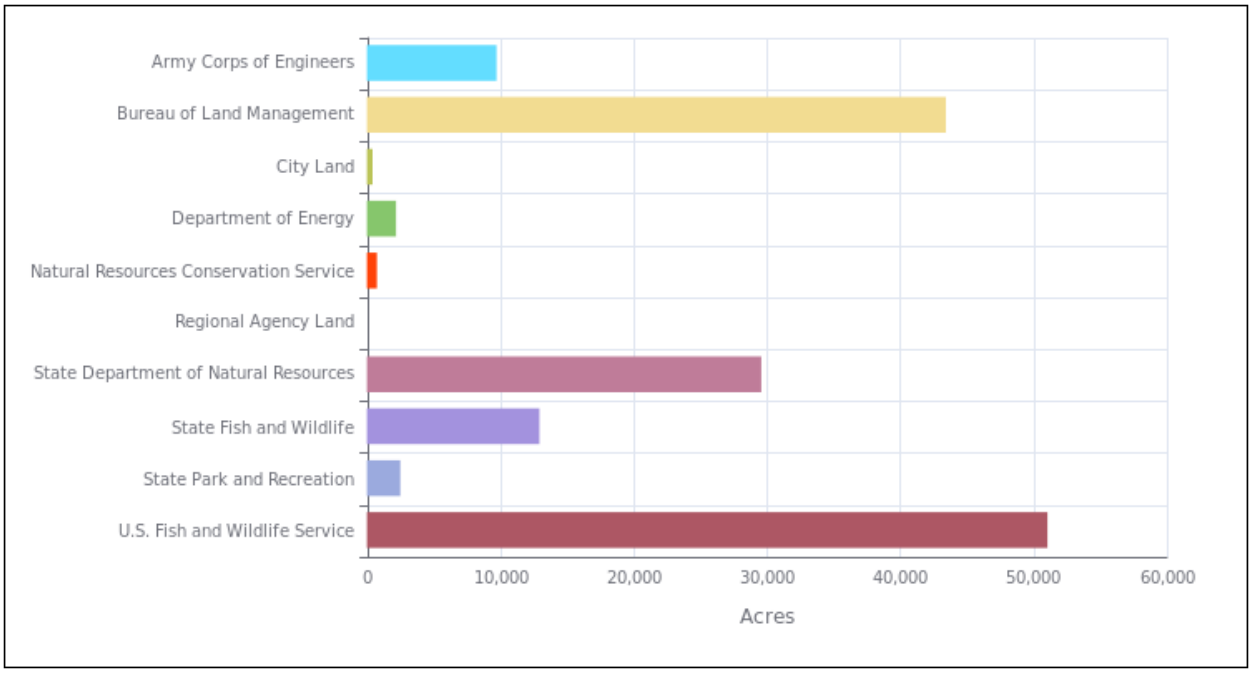

Nonburnable (Ag, Urban, Barren)
Nonburnable-Water
Grass
Grass-Shrub
Shrub
Timber-Understory
Timber-Litter
0
50,000
100,000
150,000
200,000
250,000
300,000
350,000
Acres

to represent the role various surface fuels contribute to overall wildfire threat in Franklin County.

Each data layer was developed, ranked and converted to a raster format using ArcGIS 9.3.1. The ten data layers were analyzed in ArcGIS using the Spatial Analyst extension to calculate their cumulative effects. This process sums the ranked overlaid values geographically at the pixel level to produce a draft overall threat map layer. The draft layer had many areas of mixed pixel classification. To clean up and create a final output the draft data set was reprocessed in ArcGIS Spatial Analyst using the Majority Filter and Boundary Clean tools. This process cleaned and generalized areas of the data layer by grouping areas of scattered and mixed pixelization into areas of uniform pixelization. Values in the cleaned version were then grouped into four categories based on the summed value and color coded to produce the final threat map layer. The final layer show areas of highest threat using red, to lowest threat using purple (see threat level map). Areas with the highest values are the areas of concern based on the threats identified and values used. Varying results will occur by adjusting the threat value with in a particular layer, or omitting layers from the analysis. All threat values used in this analysis are based on discussion with committee members, documentation and general wildfire behavior characteristics. Adjusting or varying threat level values may result in a different final threat level in a particular geographic area.

Major Public Lands within Franklin County (non-DNR)





Wildland-Urban Interface (WUI)

Overview

The Wildland–Urban Interface (WUI) refers to areas where human development meets or intermingles with flammable vegetation and natural fuels. These zones face elevated wildfire risk due to the combination of ignition sources, abundant vegetation, challenging suppression access, and the presence of structures vulnerable to fire spread.

In Franklin County, the WUI includes a mix of agricultural landscapes, shrub-steppe ecosystems, riparian corridors, rural residential clusters, and infrastructure adjacent to natural or unmanaged fuels. Although the county has a lower tree-dominated wildfire risk compared to forested parts of Washington, Franklin County's wind-driven rangeland fires, wildfires, and crop field fires pose significant threats to WUI communities—often spreading rapidly with limited warning.

WUI Characteristics in Franklin County

1. Vegetation & Fuels

Franklin County's WUI is primarily influenced by:

- **Grasslands and shrub-steppe fuels** (cheatgrass, sagebrush, bitterbrush).
- **Irrigated agricultural fields** that can create patchy fuel breaks but also carry fire through dry stubble.
- **Riparian vegetation** along the Columbia, Snake, and Palouse Rivers, which can create dense fuel corridors.
- **CRP (Conservation Reserve Program) lands**, which often accumulate continuous fine fuels.

These fuel types are susceptible to **fast-moving, wind-driven fires**, especially during late spring through early fall.

2. Climate & Fire Behavior

Key wildfire behavior considerations in the county's WUI:

- **High winds** accelerate rate of spread, especially from southwest and northwest wind events.
- **Low humidity and high summer temperatures** result in highly receptive fuels.
- **Periodic droughts** increase both fine and heavy fuel availability.
- **Lightning storms** are a recurring natural ignition source, alongside human-caused ignitions from agricultural work, transportation corridors, and recreation.

3. Housing & Development Patterns

WUI exposure increases where:

- Rural subdivisions interface with rangeland or brush.
- Isolated agricultural homesteads are located near unmanaged fuels or steep drainages.
- Communities border river corridors or coulees with heavy vegetation.
- Residential areas exist along major transportation corridors (e.g., SR-395, US-12, SR-17), where roadside ignitions frequently begin.

WUI communities often lack:

- Adequate defensible space
- Fire-resistant landscaping
- Secondary evacuation routes
- Consistent access to fire flow (water supply)

WUI Designation Within Franklin County

While Franklin County is predominately agricultural, several areas are considered high-priority WUI zones due to the combination of population concentration and surrounding fuels. Typical WUI areas include:

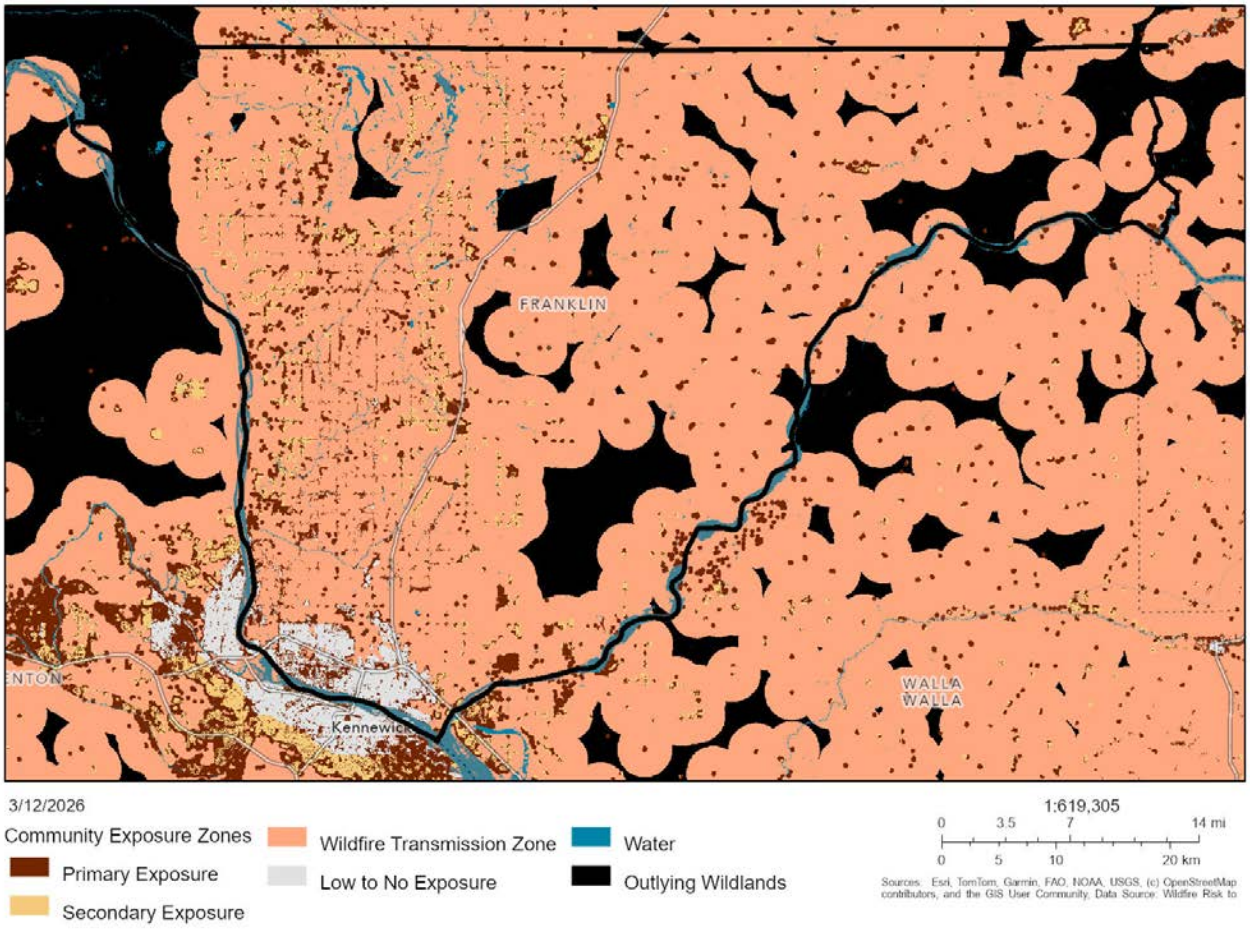
Primary WUI Communities

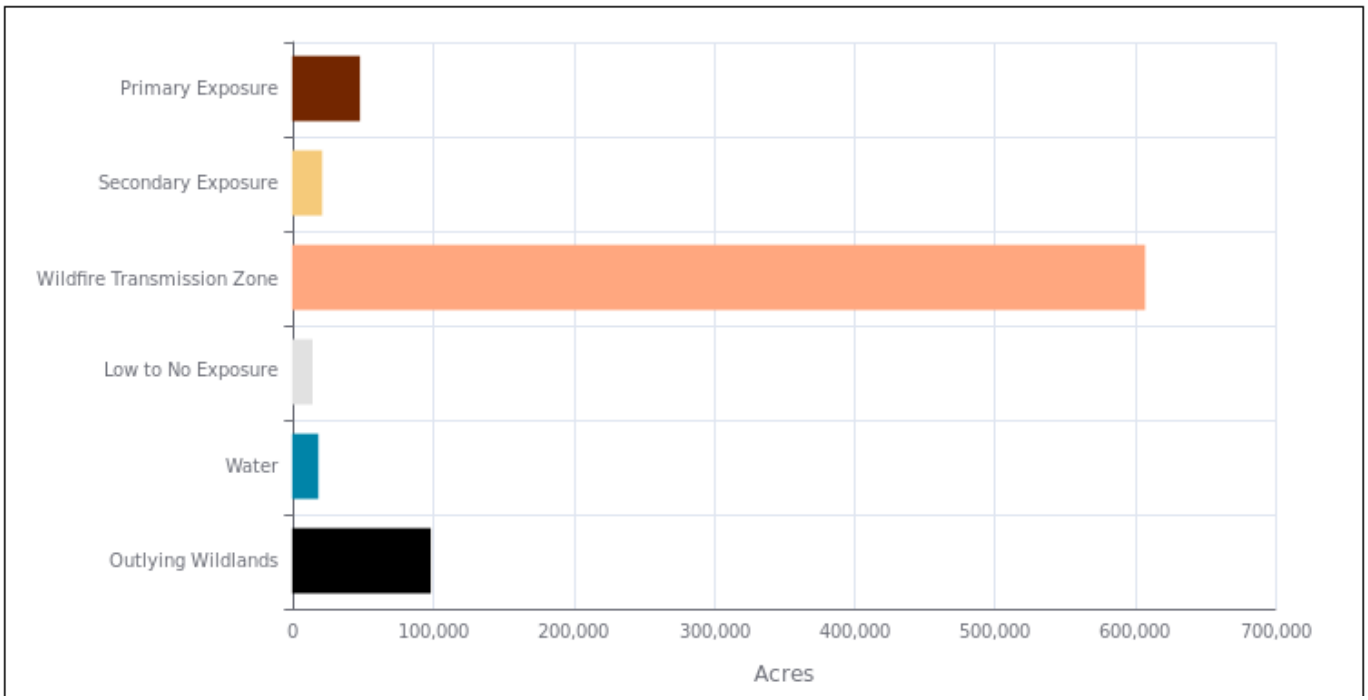
- **Pasco perimeter areas**, particularly north and northwest fringes where development meets grasslands.
- **Basin City** and surrounding agricultural-rangeland interfaces.
- **Kahlotus** and the surrounding shrub-steppe landscape.
- **Connell** and outskirts with mixed agricultural and natural fuels.

- **Rural agricultural homesteads and farm clusters** throughout the county.
- **Recreation corridors** near the Columbia River shoreline and recreational sites.

Community Exposure Zones

Community exposure zones is a delineation and classification of the wild and urban interface, where development meets or intermingles with undeveloped wildland vegetation, into operational zones that indicate what actions are best to take – including home hardening, fuel management, evacuation planning, and indoor air quality management. This information was used by the planning team to help determine Areas of Concern and where to prioritize Projects.





WUI Risk Factors

1. Structural Vulnerability

Common characteristics affecting WUI risk:

- Combustible roofing or siding materials and attachments including decks and fences between structures
- Vulnerable vents or open under-structures
- Proximity of flammable landscaping to structures
- Lack of defensible space or fuel modification zones

2. Access & Response Limitations

- Limited roadway networks in rural areas
- Long response distances for volunteer or combination fire departments
- Inadequate road width for apparatus
- Bridges with weight restrictions
- Inconsistent addressing or signage in remote areas

3. Water Supply Constraints

- Limited hydrant availability outside municipal boundaries
- Dependence on tender operations for rural areas
- Seasonal water access issues in agricultural zones

WUI Priorities for Franklin County

Home Hardening & Defensible Space

- Promote Firewise USA® practices
- Encourage ignition-resistant building materials
- Support community education on defensible space (0–100 ft)

Fuel Modification

- Maintain fuel breaks along transportation corridors and evacuation routes
- Treat hazardous vegetation in riparian areas where feasible
- Coordinate with landowners on CRP land fuel management
- Reduce fine-fuel accumulation near WUI neighborhoods

Access Improvements

- Enhance road signage and addressing
- Evaluate secondary emergency access routes
- Improve ingress/egress planning for WUI communities

Fire Response Capacity

- Maintain mutual aid and fire protection agreements
- Increase training and pre-planning for wildland fire events
- Improve mapping of WUI assets and hazards

Community Engagement

- Encourage WUI community participation in mitigation programs
- Partner with agricultural producers on fire-safe harvest practices

- Conduct outreach on evacuation planning and Ready, Set, Go! Principles

Summary

The WUI in Franklin County is shaped by the interaction of rural housing, agricultural operations, grassland fuels, and rapidly intensifying fire behavior influenced by wind and drought conditions. Reducing risk requires a combined approach of fuel management, home hardening, community engagement, and response readiness. This WUI section provides the foundation for identifying priority areas, evaluating community vulnerability, and guiding mitigation projects throughout the county.

At-Risk Populations

At-risk populations are community members who may experience greater vulnerability during wildfire events due to physical, social, economic, or geographic factors. These individuals may have limited capacity to receive warnings, evacuate quickly, protect property, or recover after an incident. Franklin County's demographic patterns, rural landscapes, and agricultural workforce create unique considerations for identifying and supporting at-risk groups.

Populations at Elevated Wildfire Risk in Franklin County

1. Older Adults (65+)

Older adults may experience difficulty receiving emergency notifications, require mobility assistance during evacuation, or rely on medical devices that depend on uninterrupted electrical power. Franklin County's rural retirement households and isolated rural residences heighten these concerns.

2. Individuals with Disabilities or Access & Functional Needs (AFN)

This includes people with mobility impairments, sensory impairments, cognitive disabilities, behavioral health challenges, or chronic medical conditions. Persons with AFN may require:

- Accessible transportation

- Assistance with evacuation or sheltering
- Continuity of care for medications, caregivers, or power-dependent medical equipment

Emergency planning must account for registries or outreach systems to ensure these residents are not overlooked.

3. Low-Income Households

Low-income households may not have:

- Resources to prepare defensible space
- Fire-resistant home improvements
- Reliable transportation for evacuation
- Insurance coverage for post-fire recovery

Franklin County's agricultural and service-sector workforce includes many low-income households who are disproportionately affected when wildfire disrupts employment and housing stability.

4. Farmworkers & Migrant/Seasonal Laborers

Franklin County has a substantial agricultural workforce, including migrant and seasonal farmworkers who face distinct wildfire vulnerabilities:

- Language barriers affecting warning comprehension
- Employer-provided or temporary housing located in high-fuel areas
- Limited access to transportation
- Hesitancy to seek emergency services due to economic or documentation concerns

These communities require culturally and linguistically appropriate outreach and emergency messaging.

5. Non-English-Speaking Residents

A large portion of Franklin County residents primarily speak Spanish or another non-English language. This can affect:

- Understanding of evacuation orders
- Access to preparedness information
- Ability to communicate needs during emergencies

Bilingual emergency messaging, signage, and alerts are essential for equitable wildfire response.

6. Children & Schools

Children are dependent on caregivers for evacuation and preparedness. Schools, childcare facilities, and after-school programs must be included in:

- Evacuation route planning
- Shelter-in-place protocols
- Coordination with local fire districts and emergency management

Rural school bus routes may be impacted by rapidly spreading wildland fires.

7. Rural & Isolated Households

Residents living in remote parts of the county—particularly outside Pasco, Basin City, Kahlotus, and Connell—are at higher risk because:

- Emergency response times are longer
- Road networks may be limited or easily overtaken by fast-moving fire
- Water supply for suppression may be limited
- Communications may be unreliable

Many rural homes border rangeland fuels and lack formal defensible space.

8. Individuals Without Reliable Transportation

People who rely on public transit, rides from relatives, or employer shuttles may struggle to evacuate during a fast-moving wildfire. This is especially critical in regions with agricultural labor camps, manufactured home parks, or low-income housing clusters.

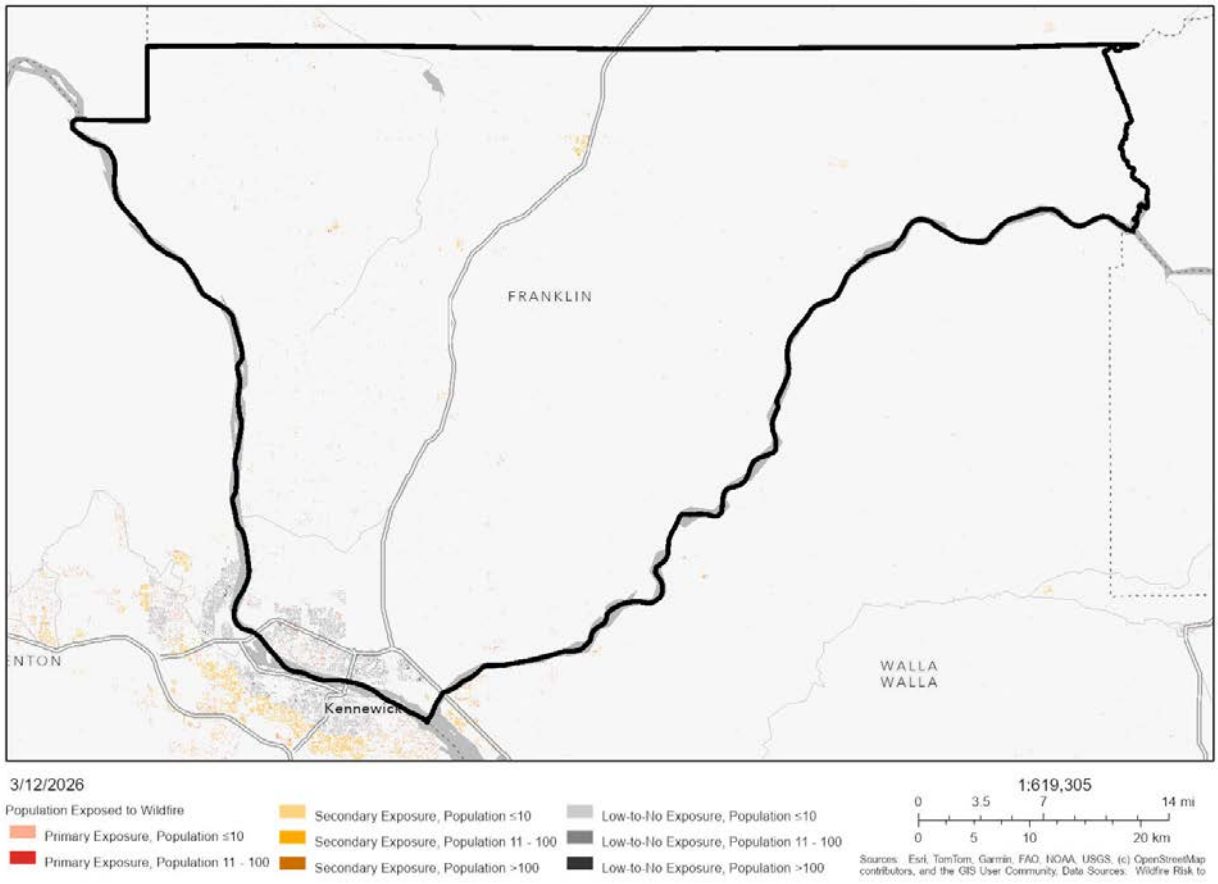
Geographic Areas of Concern

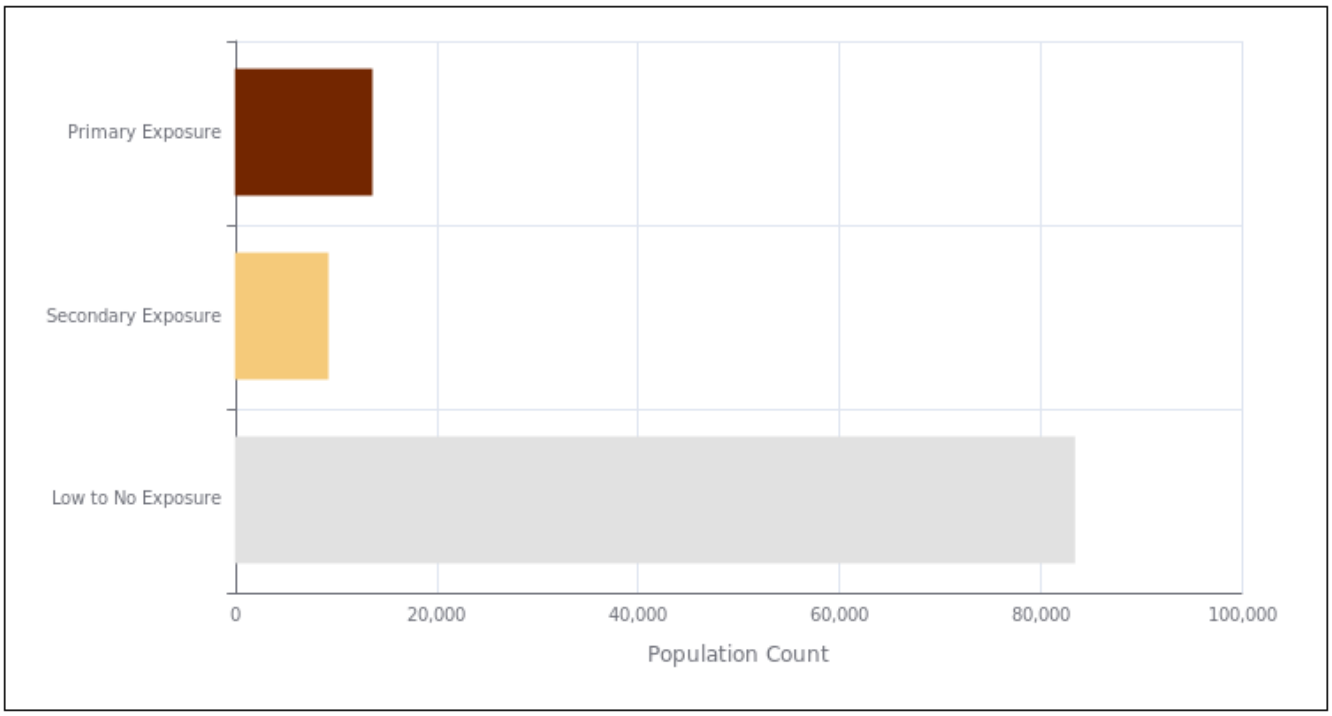
While at-risk populations exist countywide, the following areas require special attention due to demographic concentration or environmental conditions:

- **North and west Pasco outskirts** with mixed low-income, multifamily, and rural residential housing.
- **Connell and Kahlotus** areas where older adults and isolated households are more common.
- **Agricultural housing clusters and labor camps** throughout unincorporated Franklin County.
- **Mobile/manufactured home communities**, which often lack defensible space and have higher structural vulnerability.
- **Riparian corridors and canyons**, where communities may be geographically constrained by limited evacuation routes.

Population Exposed to Wildfire

Populations exposed to wildfire are classified based on the size of the population and their level of exposure. Primary exposure indicates a higher probability of the population being in the direct path of wildfires, whereas secondary exposure indicates populations likely to be vulnerable to significant smoke impacts and/or post-fire hazards. This information is used by the planning team to help determine Areas of Concern and where to prioritize Projects.


FRANKLIN
WALLA
WALLA
Kennewick
3/12/2026
1:619,305
Population Exposed to Wildfire
Primary Exposure, Population ≤10
Primary Exposure, Population 11 - 100
Secondary Exposure, Population ≤10
Secondary Exposure, Population 11 - 100
Secondary Exposure, Population >100
Low-to-No Exposure, Population ≤10
Low-to-No Exposure, Population 11 - 100
Low-to-No Exposure, Population >100
0 3.5 7 14 mi
0 5 10 20 km


Primary Exposure
Secondary Exposure
Low to No Exposure
0
20,000
40,000
60,000
80,000
100,000
Population Count

Barriers to Preparedness and Evacuation

At-risk groups in Franklin County may experience one or more of the following obstacles:

- Limited access to emergency alerts (language barriers, technology limitations)
- Physical or cognitive challenges impacting evacuation
- Lack of personal vehicles or driver's licenses
- Inadequate defensible space due to financial constraints
- Housing located in or adjacent to high-fuel zones
- Dependence on medical services or equipment
- Difficulty taking time away from work during emergencies

These barriers should be directly incorporated into mitigation planning, public outreach strategies, and evacuation procedures.

Strategies to Support At Risk Populations

1. Inclusive Emergency Communications

- Provide bilingual (English/Spanish) wildfire alerts and printed materials.
- Utilize culturally trusted communication pathways (schools, churches, local nonprofit groups).
- Ensure messaging is accessible for people with disabilities (audio, large print, captioning).

2. Evacuation & Transportation Planning

- Identify transportation providers willing to support emergency evacuations.
- Create evacuation assistance registries for AFN populations.
- Coordinate with employers, government entities, or non-profits who house or transport agricultural workers.

3. Community-Based Partnerships

- Engage organizations serving older adults, families, low-income residents, and migrant communities.

- Support Firewise USA® and Ready, Set, Go!, Wildfire Ready Neighbors outreach through local community groups.

4. Home Hardening & Defensible Space Support

- Provide low-cost or grant-funded programs for low-income households.
- Offer community clean-up days or fuel-reduction assistance.

5. Improved Emergency Response Planning

- Map locations of AFN facilities, care homes, schools, and labor camps.
- Develop pre-incident plans with fire districts for high-risk clusters.

Summary

At-risk populations in Franklin County include older adults, individuals with disabilities, migrant and seasonal farmworkers, low-income households, children, non-English-speaking residents, and isolated rural households. These populations may face additional barriers to receiving emergency information, evacuating safely, or recovering after a wildfire event. Addressing their needs through inclusive communication, transportation planning, partnerships, and mitigation assistance is essential to building an equitable, effective, and community-centered wildfire protection strategy.

State and Federal CWPP Guidance

HAZUS Wildfire Risk Analysis

Overview of HAZUS Methodology

HAZUS is FEMA's nationally standardized, GIS-based loss estimation tool used to model the potential impacts of natural hazards, including wildfires. For Franklin County, HAZUS provides a quantitative estimate of exposure and potential loss by evaluating:

- Fuel characteristics
- Slope and topography
- Fire behavior inputs
- Building inventory and infrastructure data
- Population distribution

- Critical facilities and lifelines

HAZUS outputs inform risk reduction priorities by identifying areas of highest potential loss, vulnerable population centers, and infrastructure at risk.

Data Inputs for Franklin County

1. Fuel Models

Based on LANDFIRE vegetation data, common fuel types in Franklin County include:

- **Grass and brush fuels** (GR1–GR7)
- **Sagebrush and shrub-steppe fuels** (SH1–SH7)
- **Agricultural stubble and fallow fields**
- **Riparian corridor fuels** (denser brush/trees along rivers)

These fuel models support fast-spreading, wind-driven fire behavior typical of rangeland wildfire events.

2. Topography

Franklin County's overall low-relief terrain results in:

- Minimal slope-driven fire intensity
- High-rate-of-spread potential across flat or rolling terrain
- Rapid fire movement facilitated by wind rather than elevation

3. Weather & Wind Inputs

Modeled weather scenarios typically use:

- Summer temperature and humidity values
- Southwest and northwest wind events
- Drought conditions based on local historical records

Wildfire Exposure Analysis (HAZUS)

1. Building Exposure

Based on default HAZUS inventory (or your uploaded local inventory, if used), the model typically evaluates:

- Number of structures exposed to wildfire
- Total building replacement value
- Construction type (wood frame, manufactured homes, agricultural outbuildings)
- Density within WUI zones

Franklin County's wildfire exposure is highest around:

- **Rural residential clusters outside Pasco, Connell, Basin City, Kahlotus**
- **Mobile/manufactured home parks in WUI fringe areas**
- **Agricultural homesteads near CRP lands or shrub-steppe fuels**

2. Population Exposure

HAZUS estimates population exposure by analyzing wildfire hazard overlays with census blocks. Populations at highest exposure typically include:

- Rural households in rangeland or agricultural transition zones
- Farmworkers residing in seasonal or employer-provided housing
- Older adults and low-income residents in dispersed rural areas

This analysis supports evacuation planning and resource allocation during wildfire events.

3. Infrastructure Exposure

Critical infrastructure identified in HAZUS may include:

- Electrical substations and transmission corridors
- Irrigation systems and pump stations
- Water supply infrastructure
- Transportation corridors (US-395, US-12, SR-17, SR-261)
- Communication towers

These systems are essential for emergency response, agriculture, and regional mobility.

Potential Loss Estimation

HAZUS wildfire modeling typically provides estimates for:

Structural Losses

- Dollar value of destroyed or damaged buildings
- Number of buildings at high versus moderate risk
- Residential vs. agricultural vs. commercial losses

For Franklin County, potential structural losses are often concentrated in:

- High-density WUI fringes
- Manufactured home parks
- Isolated rural homesteads surrounded by fine fuels

Population Impacts

- Estimated displaced households
- Temporary shelter needs
- At-risk population segments requiring evacuation assistance

Infrastructure Impacts

- Damage probabilities for electric, water, and communication systems
- Transportation access limitations
- Loss estimates for agricultural infrastructure (storage, barns, machinery buildings)

Agricultural Impacts

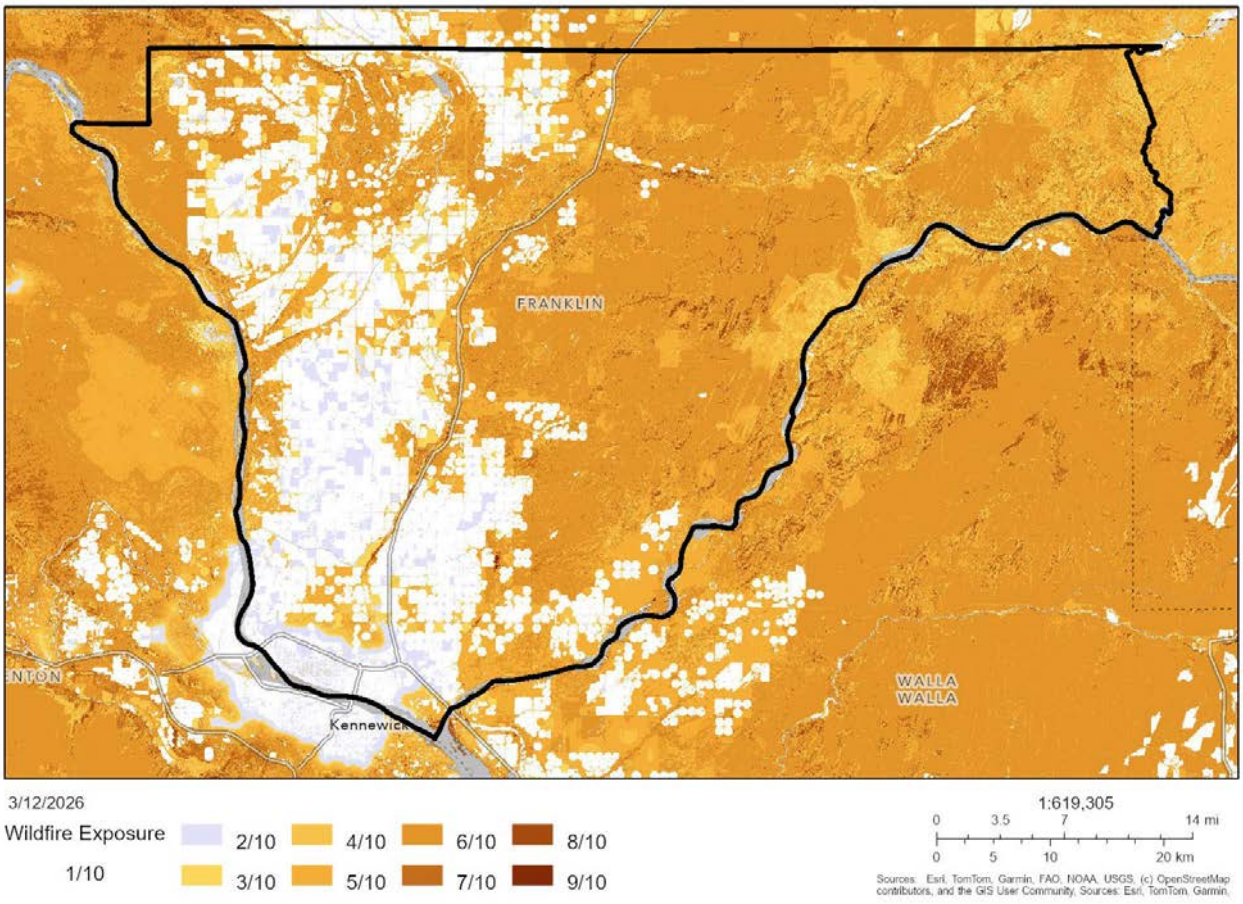
Although not a direct HAZUS output, wildfire loss models can be paired with:

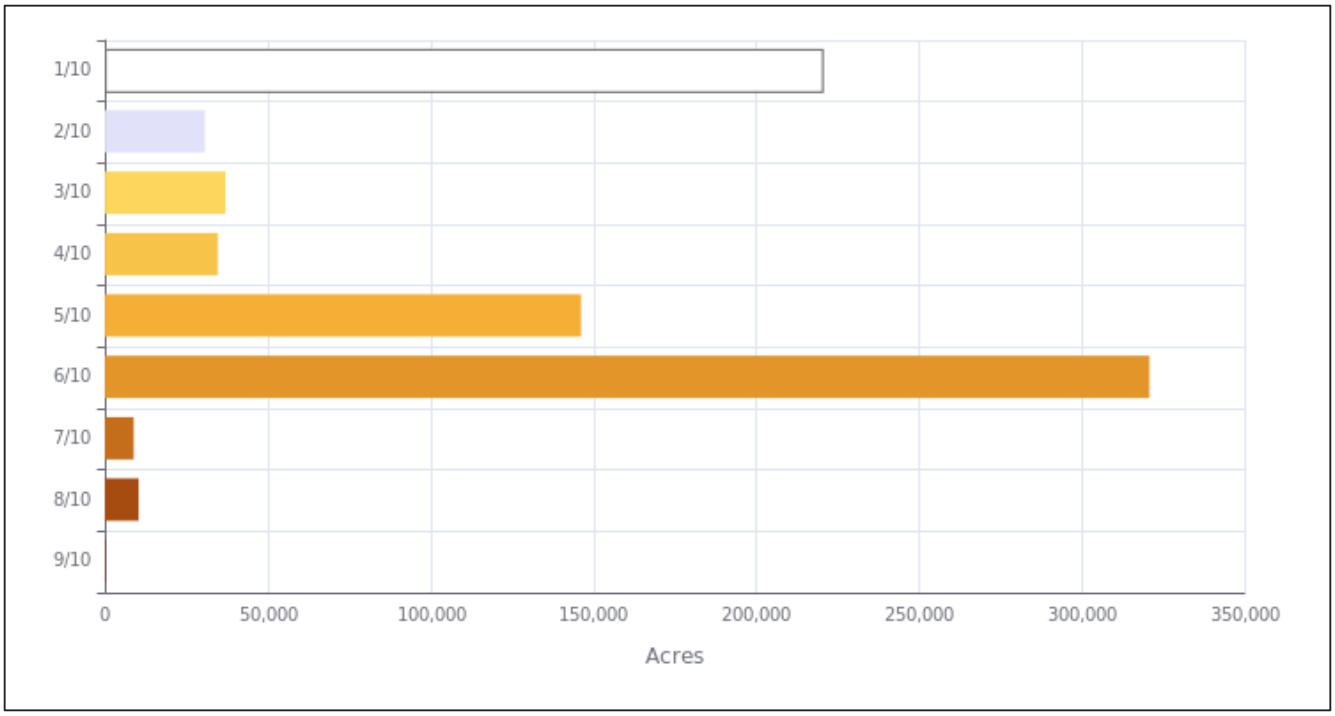
- Crop damage estimates
- CRP land losses
- Livestock facility impacts

This is especially important given Franklin County's high proportion of agricultural assets.

Wildfire Exposure Score

Wildfire exposure scores classify (or score) the likelihood of a property or community being harmed by wildfire, considering factors like vegetation, slope, past fires, and future climate conditions. Darker areas indicate higher exposure scores, whereas lighter areas indicate lower exposure. This information is used by the planning team to help determine Areas of Concern and where to prioritize Projects.





HAZUS Wildfire Exposure & Loss Summary Table

Category	HAZUS Output Summary	Relevance to Franklin County
Study Area Characteristics	Geographic extent, fuel models, topography, weather inputs	Primarily shrub-steppe and agricultural fuels; low-relief terrain; wind-driven fire behavior dominant
Total Buildings in Study Area	Model generates countywide structure inventory	Inventory includes rural homes, manufactured home communities, farms, commercial buildings, and critical facilities
Buildings Exposed to Wildfire Hazard	Number and percentage of structures intersecting Moderate–High hazard zones	Highest exposure in rural fringes of Pasco, Basin City, Connell, Kahlotus, and dispersed farmsteads

Building Value Exposed	Replacement value of structures in hazard zones (dollars)	Significant value concentrated in residential neighborhoods, agricultural operations, and industrial sites along major highways
Potential Building Losses	Estimated number and value of buildings damaged or destroyed in modeled events	Wind-driven grassfire scenarios show rapid structure loss potential in WUI neighborhoods and mobile home parks
Population Exposed	Number of residents living in hazard zones	Greatest exposure in rural/isolated households, agricultural worker housing, and mobile home parks
At-Risk / Vulnerable Population Exposure	Population segments intersecting hazard grids (older adults, AFN individuals, low-income households, non-English speakers)	High vulnerability in agricultural labor housing, low-income areas, and rural households with limited evacuation routes
Critical Facilities Exposed	Schools, fire stations, hospitals, water infrastructure, communication sites	Infrastructure located along river corridors, transportation routes, and rural communities show highest exposure
Infrastructure & Lifeline Exposure	Electrical transmission, substations, water systems, roads, bridges, communications	Potential disruptions to irrigation systems, transmission corridors, and key roadways (US-395, US-12, SR-17, SR-261)
Transportation Exposure	Road segments in hazard zones and estimated delays	High likelihood of rapid closure of rural roads during fast-moving grassfires; evacuation constraints in

		limited-access communities
Agricultural Exposure (Supplemental)	Not a core HAZUS output but can be estimated via overlays	Crop lands, CRP parcels, and farm structures have high burn potential; agricultural loss drives economic impact
Estimated Shelter Needs	Modeled displaced population and short-term shelter demand	Highest displacement potential in manufactured home communities and densely clustered rural housing
Direct Economic Loss Estimates	Loss estimates for buildings, contents, inventory, and agricultural infrastructure	Greatest losses projected where industrial/agricultural facilities intersect high-fuel zones
Fire Risk Hotspots	Areas of high hazard based on fuel, slope, and weather	Western and northern Pasco outskirts, Kahlotus region, agricultural corridors, and riparian zones

Summary

The HAZUS Wildfire Model provides Franklin County with a standardized and quantitative assessment of wildfire exposure and potential losses. By analyzing fuel characteristics, the built environment, population distribution, and infrastructure locations, HAZUS helps identify the areas with the highest vulnerability. These insights guide the CWPP's prioritization of mitigation actions, emergency planning, and resource investments.

National Cohesive Strategy

In response to requirements of the Federal Land Assistance, Management, and Enhancement (FLAME) Act of 2009, the Wildland Fire Leadership Council (WFLC)

directed the development of the National Cohesive Wildland Fire Management Strategy (Cohesive Strategy).

The Cohesive Strategy is a collaborative process with active involvement of all levels of government and non-governmental organizations, as well as the public, to seek national, all- lands solutions to wildland fire management issues.

The Cohesive Strategy is being implemented in three phases, allowing stakeholders to systematically develop a dynamic approach to planning for, responding to, and recovering from wildland fire incidents. This phased approach is designed to promote dialogue between national, regional and local leadership.

Phase I involved the development of two documents: *A National Cohesive Wildland Fire Management Strategy* and the *The Federal Land Assistance, Management And Enhancement Act Of 2009 - Report to Congress*. These documents provide the foundation of the Cohesive Strategy.

In Phase II, regional assessments were completed to address the national goals to the needs and challenges found at regional and local levels. Regional Strategy Committees representing three regions of the country—the Northeast, Southeast, and West—examined the processes by which wildland fire, or the absence thereof, threatens areas and issues that American value, including wildlife habitats, watershed quality, and local economies, among others.

Phase III involves taking the qualitative information gathered in Phase II and translating it into quantitative models that can help inform management actions on the ground. Once the strategy is finalized, it will be implemented across the country and overseen by the Wildland Fire Executive Council (WFEC), which will establish a five-year review cycle to provide updates to Congress.

The Wildland Fire Executive Council (WFEC) accepted the final Regional Action Plans for each of the Cohesive Strategy Regions: Northeast, Southeast, and West in April 2013. The WFEC tasked the Cohesive Strategy Sub-Committee (CSSC) to use the regional action plans to inform the development of the national action plan. The National Risk Analysis Report and National Action Plan will become WFEC recommendations to the Wildland Fire Leadership Council (WFLC) and ultimately to the Secretaries of the Interior and Agriculture. The regional action plans reflect the regional perspective that is important in the development of that national-level recommendation. Implementation of actions identified in Regional Action Plans is the responsibility of the sponsoring organizations at the discretion of those organizations.

The NFP goals of this Community Wildfire Protection Plan include:

1. Improve Fire Prevention and Suppression
2. Reduce Hazardous Fuels
3. Restoration and Post-Fire Recovery of Fire-Adapted Ecosystems
4. Promote Community Assistance

By endorsing this implementation plan, all signed parties agree that reducing the threat of wildland fire to people, communities, and ecosystems will require:

- Maintaining firefighter and public safety continuing as the highest priority.
- Communities and individuals in the wildland-urban interface to initiate personal stewardship and volunteer actions that will reduce wildland fire risks.
- A sustained, long-term and cost-effective investment of resources by all public and private parties, recognizing overall budget parameters affecting federal, state, county, and local governments.
- A unified effort to implement the collaborative framework called for in the strategy in a manner that ensures timely decisions at each level.
- Accountability for measuring and monitoring performance and outcomes, and a commitment to factoring findings into future decision making activities.
- The achievement of national goals through action at the local level with particular attention to the unique needs of cross-boundary efforts and the importance of funding on- the-ground activities.
- Management activities, both in the wildland-urban interface and in at-risk areas across the broader landscape.
- Active forestland management, including thinning that produces commercial or pre- commercial products, biomass removal and utilization, prescribed fire and other fuels reduction activities to simultaneously meet long-term ecological, economic, and community objectives.

The National Fire Plan identifies a three-tiered organizational structure including 1) the local level, 2) state/regional and tribal level, and 3) the national level. This plan adheres to the collaboration and outcomes consistent with a local level plan. Local level collaboration involves participants with direct responsibility for management decisions affecting public and/or private land and resources, fire protection responsibilities, or good working knowledge and interest in local resources. Participants in this planning process include local representatives from federal and state agencies, local governments, landowners and other stakeholders, and community-based groups with a demonstrated commitment to achieving the strategy's four goals. Existing resource

advisory committees, watershed councils, or other collaborative entities may serve to achieve coordination at this level. Local involvement, expected to be broadly represented, is a primary source of planning, project prioritization, and resource allocation and coordination. The role of the private citizen should not be underestimated as all phases of risk assessment, mitigation, and project implementation are greatly facilitated by their involvement.

National Association of State Foresters

This plan is written with the intent to provide decision makers (elected and appointed officials) the information they need to prioritize projects across the entire county. These decisions may be made by the Board of Commissioners or other elected body or through the recommendations of ad hoc groups tasked with making prioritized lists of communities at risk as well as project areas. It is not necessary to rank communities or projects numerically, although that is one approach. Rather, it may be possible to rank them categorically (high priority set, medium priority set, and so forth) and still accomplish the goals and objectives set forth in this planning document.

The following was prepared by the National Association of State Foresters (NASF), June 27, 2003, and is included here as a reference for the identification and prioritizing of treatments between communities.

Purpose: To provide national, uniform guidance for implementing the provisions of the "Collaborative Fuels Treatment" Memorandum of Understanding (MOU), and to satisfy the requirements of Task e, Goal 4 of the Implementation Plan for the 10-Year Comprehensive Strategy.

Intent: The intent is to establish broad, nationally compatible standards for identifying and prioritizing communities at risk, while allowing for maximum flexibility at the state and regional level. Three basic premises are:

- Include all lands and all ownerships.
- Use a collaborative process that is consistent with the complexity of land ownership patterns, resource management issues, and the number of interested stakeholders.
- Set priorities by evaluating projects, not by ranking communities.

The National Association of State Foresters (NASF) set forth the following guidelines in the Final Draft Concept Paper; Communities at Risk, December 2, 2002.

Task: Develop a definition for "communities at risk" and a process for prioritizing them, per the Implementation Plan for the 10-Year Comprehensive Strategy (Goal 4.e.). In addition, this definition will form the foundation for the NASF commitment to annually identify priority fuels reduction and ecosystem restoration projects in the proposed MOU with the federal agencies (section C.2 (b)).

Conceptual Approach

1. NASF fully supports the definition of the Wildland Urban Interface (WUI) previously published in the Federal Register. Further, proximity to federal lands should not be a consideration. The WUI is a set of conditions that exists on, or near, areas of wildland fuels nationwide, regardless of land ownership.

2. Communities at risk (or, alternately, landscapes of similar risk) should be identified on a state-by-state basis with the involvement of all agencies with wildland fire protection responsibilities: state, local, tribal, and federal.

3. It is neither reasonable nor feasible to attempt to prioritize communities on a rank order basis. Rather, communities (or landscapes) should be sorted into three, broad categories or zones of risk: high, medium, and low. Each state, in collaboration with its local partners, will develop the specific criteria it will use to sort communities or landscapes into the three categories. NASF recommends using the publication "Wildland/Urban Interface Fire Hazard Assessment Methodology" developed by the National Wildland/Urban Interface Fire Protection Program (circa 1998) as a reference guide. (This program, which has since evolved into the Firewise USA® Program, is under the oversight of the National Wildfire Coordinating Group (NWCG)). At a minimum, states should consider the following factors when assessing the relative degree of exposure each community (landscape) faces.

- **Risk:** Using historic fire occurrence records and other factors, assess the anticipated probability of a wildfire ignition.
- **Hazard:** Assess the fuel conditions surrounding the community using a methodology such as fire condition class, or [other] process.
- **Values Protected:** Evaluate the human values associated with the community or landscape, such as homes, businesses, and community infrastructure (e.g. water systems, utilities, transportation systems, critical care facilities, schools, manufacturing and industrial sites, and high value commercial timber lands).
- **Protection Capabilities:** Assess the wildland fire protection capabilities of the agencies and local fire departments with jurisdiction.

4. Prioritize by project not by community. Annually prioritize projects within each state using the collaborative process defined in the national, interagency MOUs, "For the Development of a Collaborative Fuels Treatment Program." Assign the highest priorities to projects that will provide the greatest benefits either on the landscape or to communities. Attempt to properly sequence treatments on the landscape by working first around and within communities, and then moving further out into the surrounding landscape. This will require:
   - First, focusing on the zone of highest overall risk but considering projects in all zones. Identify a set of projects that will effectively reduce the level of risk to communities within the zone.
   - Second, determining the community's willingness and readiness to actively participate in an identified project.
   - Third, determining the willingness and ability of the owner of the surrounding land to undertake, and maintain, a complementary project.
   - Last, setting priorities by looking for projects that best meet the three criteria above. It is important to note that projects with the greatest potential to reduce risk to communities and the landscape may not be those in the highest risk zone, particularly if either the community or the surrounding landowner is not willing or able to actively participate.

5. It is important, and necessary, that we be able to demonstrate a local level of accomplishment that justifies to Congress the value of continuing the current level of appropriations for the National Fire Plan. Although appealing to appropriators and others, it is not likely that many communities (if any) will ever be removed from the list of communities at risk. Even after treatment, all communities will remain at some, albeit reduced, level of risk. However, by using a science-based system for measuring relative risk, we can likely show that, after treatment (or a series of treatments); communities are at "*reduced risk*."

   Using the concept described above, the NASF believes it is possible to accurately assess the relative risk that communities face from wildland fire. Recognizing that the condition of the vegetation (fuel) on the landscape is dynamic, assessments and re-assessments must be done on a state-by-state basis, using a process that allows for the integration of local knowledge, conditions, and circumstances, with science-based national guidelines. We must remember that it is not only important to lower

the risk to communities, but once the risk has been reduced, to maintain those communities at a reduced risk.

Further, it is essential that both the assessment process and the prioritization of projects be done collaboratively, with all local agencies with fire protection jurisdiction taking an active role.

Firewise USA® Program

The Firewise USA® program is run by the National Fire Protection Association (NFPA) and managed by DNR at the state level. Firewise USA® empowers communities in wildland-urban interface areas to reduce wildfire risk through neighborly collaboration, education, and action, with a focus on creating defensible space, ignition-resistant construction, and vegetation management to protect homes from wildfire. Participants follow a six-step process that includes getting a risk assessment, creating a plan, conducting outreach, and investing in local risk reduction in order to earn national recognition and build safer living environments.

A core strength of the Firewise USA® program is its community-driven approach, which promotes local solutions by encouraging neighbors to work together to identify and address their unique wildfire risks. A major goal of the program is preventing home ignition from embers through vegetation management and the use of fire-resistant building materials, as emphasized by NFPA.

Recognition through Firewise USA® is based on completion of a defined six-step process. These steps include forming a committee, creating a community wildfire risk assessment, developing a three- to five-year action plan, conducting educational outreach, investing time and/or money in risk-reduction activities, and applying for recognition through the Firewise USA® portal.

Wildfire Ready Neighbors (WRN) Program

Reducing wildfire risk starts with the community. Wildfire Ready Neighbors (WRN) is a collaboration between the Washington State Department of Natural Resources and local wildfire experts to help everyone in the region prepare for wildfires. WRN provides a free Wildfire Ready Plan to help property owners prioritize wildfire-ready actions on their property and connects them with local wildfire experts in their area.

Healthy Forests Restoration Act

On December 3, 2003, President Bush signed into law the Healthy Forests Restoration Act of 2003 to reduce the threat of destructive wildfires while upholding environmental standards and encouraging early public input during review and planning processes. The legislation is based on sound science and helps further the President's Healthy Forests Initiative pledge to care for America's forests and rangelands, reduce the risk of catastrophic fire to communities, help save the lives of firefighters and citizens, and protect threatened and endangered species.

The Healthy Forests Restoration Act (HFRA) seeks to:

- Strengthens public participation in developing high priority projects;
- Reduces the complexity of environmental analysis allowing federal land agencies to use the best science available to actively manage land under their protection;
- Creates a pre-decisional objections process encouraging early public participation in project planning; and
- Issues clear guidance for court action challenging HFRA projects.

The Franklin County Community Wildfire Protection Plan was developed to adhere to the principles of the HFRA while providing recommendations consistent with the policy document. This should assist the federal land management agencies with implementing wildfire mitigation projects in Franklin County that incorporate public involvement and the input from a wide spectrum of fire and emergency services providers in the region.

Federal Emergency Management Agency Philosophy

Effective November 1, 2004, a hazard mitigation plan approved by the Federal Emergency Management Agency (FEMA) is required for Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM) eligibility. The HMGP and PDM programs provide funding, through state emergency management agencies, to support local mitigation planning and projects to reduce potential disaster damages.

The local hazard mitigation plan requirements for HMGP and PDM eligibility are based on the Disaster Mitigation Act (DMA) of 2000, which amended the Stafford Disaster Relief Act to promote an integrated, cost effective approach to mitigation. Local hazard mitigation plans must meet the minimum requirements of the Stafford Act-Section 322, as outlined in the criteria contained in 44 CFR Part 201. The plan criteria cover the

planning process, risk assessment, mitigation strategy, plan maintenance, and adoption requirements.

FEMA only reviews a local hazard mitigation plan submitted through the appropriate State Hazard Mitigation Officer (SHMO). FEMA reviews the final version of a plan prior to local adoption to determine if the plan meets the criteria, but FEMA will not approve it prior to adoption.

A FEMA designed plan is evaluated on its adherence to a variety of criteria.

- Adoption by the Local Governing Body
- Multi-jurisdictional Plan Adoption
- Multi-jurisdictional Planning Participation
- Documentation of Planning Process
- Identifying Hazards
- Profiling Hazard Events
- Assessing Vulnerability: Identifying Assets
- Assessing Vulnerability: Estimating Potential Losses
- Assessing Vulnerability: Analyzing Development Trends
- Multi-jurisdictional Risk Assessment
- Local Hazard Mitigation Goals
- Identification and Analysis of Mitigation Measures
- Implementation of Mitigation Measures
- Multi-jurisdictional Mitigation Strategy
- Monitoring, Evaluating, and Updating the Plan
- Implementation through Existing Programs
- Continued Public Involvement

Additional Information

Glossary of Terms

Defensible Space - The area within the perimeter of a parcel, development, neighborhood or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching wildfire or defense against encroaching wildfires or escaping structures fires. The perimeter as used in this definition is the area encompassing the parcel or parcels proposed for construction and or development, excluding the physical structure itself.

The establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures characterize the area.

Disturbance - An event which affects the successional development of a plant community (examples: fire, insects, windthrow, and timber harvest).

Diversity - The relative distribution and abundance of different plant and animal communities as well as species within an area.

Exotic/Invasive Plant Species - Plant species that are introduced and not native to the area.

Fire Behavior - The manner in which a fire reacts to the influences of fuel, weather, and topography.

Fire Behavior Prediction Model - A set of mathematical equations that can be used to predict certain aspects of fire behavior when provided with an assessment of fuel and environmental conditions.

Fire Danger - A general term used to express an assessment of fixed and variable factors such as fire risk, fuels, weather, and topography which influence whether fires will start, spread, and do damage; also the degree of control difficulty to be expected.

Fire Exclusion - The disruption of a characteristic pattern of fire intensity and occurrence (primarily through fire suppression).

Fire Intensity Level - The rate of heat release (BTU/second) per unit of fire front. Four foot flame lengths or less are generally associated with low intensity burns and four to six foot flame lengths generally correspond to “moderate” intensity fire behavior. High intensity flame lengths are usually greater than eight feet and pose multiple control problems.

Fire Prone Landscapes – The expression of an area’s propensity to burn in a wildfire based on common denominators such as plant cover type, canopy closure, aspect, slope, road density, stream density, wind patterns, position on the hillside, and other factors.

Fireline - A loose term for any cleared strip used in control of a fire. That portion of a control line from which flammable materials have been removed by scraping or digging down to the mineral soil.

Fire Management - The integration of fire protection, prescribed fire and fire ecology into land use planning, administration, decision making, and other land management activities.

Fire Prevention - An active program in conjunction with other agencies to protect human life, prevent modification of the ecosystem by human-caused wildfires, and prevent damage to cultural resources or physical facilities. Activities directed at reducing fire occurrence, including public education, law enforcement, personal contact, and reduction of fire risks and hazards.

Fire Regime - The fire pattern across the landscape, characterized by occurrence interval and relative intensity. Fire regimes result from a unique combination of climate and vegetation. Fire regimes exist on a continuum from short-interval, low-intensity (stand maintenance) fires to long-interval, high-intensity (stand replacement) fires.

Fire Return Interval - The number of years between two successive fires documented in a designated area.

Fire Risk - The potential that a wildfire will start and spread as determined by the presence and activities of causative agents.

Fire Severity - The effects of fire on resources displayed in terms of benefit or loss.

Fire Use – The management of naturally ignited fires to accomplish specific prestated resource management objectives in predefined geographic areas.

Flashy Fuel - Quick drying twigs, needles, and grasses that are easily ignited and burn rapidly.

Fuel - The materials which are burned in a fire: duff, litter, grass, dead branchwood, snags, logs, etc.

Fuel Break - A natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled.

Fuel Loading - Amount of dead and live fuel present on a particular site at a given time; the percentage of it available for combustion changes with the season.

Fuel Model - Characterization of the different types of wildland fuels (trees, brush, grass, etc.) and their arrangement, used to predict fire behavior.

Fuel Type - An identifiable association of fuel elements of distinctive species; form, size, arrangement, or other characteristics, that will cause a predictable rate of fire spread or difficulty of control, under specified weather conditions.

Fuels Management - Manipulation or reduction of fuels to meet protection and management objectives, while preserving and enhancing environmental quality.

Habitat - A place that provides seasonal or year-round food, water, shelter, and other environmental conditions for an organism, community, or population of plants or animals.

Habitat Type - A group of habitats that have strongly marked and readily defined similarities that when defined by its predominant or indicator species incites a general description of the area; *e.q. a ponderosa pine habitat type*.

Heavy Fuels - Fuels of a large diameter, such as snags, logs, and large limbwood, which ignite and are consumed more slowly than flashy fuels.

Human-Caused Fires - Refers to fires ignited accidentally (from campfires, equipment, debris burning, or smoking) and by arsonists; does not include fires ignited intentionally by fire management personnel to fulfill approved, documented management objectives (prescribed fires).

Intensity - The rate of heat energy released during combustion per unit length of fire edge.

Inversion - Atmospheric condition in which temperature increases with altitude.

Ladder Fuels - Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees with relative ease. They help initiate and assure the continuation of crowning.

Landsat Imagery - Land remote sensing, the collection of data which can be processed into imagery of surface features of the Earth from an unclassified satellite or satellites.

Landscape - All the natural features such as grasslands, hills, forest, and water, which distinguish one part of the earth's surface from another part; usually that portion of land which the eye can comprehend in a single view, including all its natural characteristics.

Lethal - Relating to or causing death.

Lethal Fires - A descriptor of fire response and effect in forested ecosystems of high-severity or severe fire that burns through the overstory and understory. These fires

typically consume large woody surface fuels and may consume the entire duff layer, essentially destroying the stand.

Litter - The top layer of the forest floor composed of loose debris, including dead sticks, branches, twigs, and recently fallen leaves or needles, little altered in structure by decomposition.

Mitigation - Actions to avoid, minimize, reduce, eliminate, replace, or rectify the impact of a management practice.

Monitoring Team - Two or more individuals sent to a fire to observe, measure, and report its behavior, its effect on resources, and its adherence to or deviation from its prescription.

Native - Indigenous; living naturally within a given area.

Natural Ignition - A wildland fire ignited by a natural event such as lightning or volcanoes.

Noxious Weeds - Rapidly spreading plants that have been designated “noxious” by law which can cause a variety of major ecological impacts to both agricultural and wildlands.

Planned Ignition - A wildland fire ignited by management actions to meet specific objectives.

Prescription - A set of measurable criteria that guides the selection of appropriate management strategies and actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Seral - Refers to the stages that plant communities go through during succession. Developmental stages have characteristic structure and plant species composition.

Stand Replacing Fire - A fire that kills most or all of a stand.

Surface Fire - Fire which moves through duff, litter, woody dead and down and standing shrubs, as opposed to a crown fire.

Watershed - The region draining into a river, river system, or body of water.

Wetline - Denotes a condition where the fireline has been established by wetting down the vegetation.

Wildland Fire - Any non-structure fire, other than prescribed fire, that occurs in the wildland.

Wildland Fire Use - The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in predefined geographic areas outlined in FMP's. Operational management is described in the WFIP. Wildland fire use is not to be confused with "fire use," which is a broader term encompassing more than just wildland fires.

Wildland Fire Use for Resource Benefit (WFURB) - A wildland fire ignited by a natural process (lightning), under specific conditions, relating to an acceptable range of fire behavior and managed to achieve specific resource objectives.

Wildland-Urban Interface (WUI) - For purposes of this plan, the wildland-urban interface is located defined in Section 4.5. In general, it is the area where structures and other human development meet or intermingle with undeveloped wildland.

General Mitigation Action Plan

Introduction

The Franklin County Community Wildfire Protection Plan (CWPP) 2025 Action Plan outlines a comprehensive strategy to mitigate wildfire risks, enhance community preparedness, and strengthen emergency response capabilities in alignment with the Healthy Forests Restoration Act (HFRA). This plan was developed through collaboration with key stakeholders, including Franklin County Fire Districts, Franklin Conservation District, Washington State University (WSU) Extension, Washington Department of Natural Resources (DNR), Bureau of Land Management (BLM), and county emergency management. The actions are informed by the risk analysis in the Franklin County Hazard Mitigation Plan and further enhanced by the Local/state leaders and fire districts, which identifies critical vulnerabilities such as high fuel loads, wildland-urban interface (WUI) expansion, and infrastructure gaps in high-risk areas like Pasco and Highway 395. Through workshops, public input, and GIS-based risk assessments, these initiatives prioritize fuel reduction, public education, infrastructure improvements, and fire department enhancements to protect lives, property, and natural resources.

Initiative Categories

1. **Safety & Policy**: Establishes regulatory frameworks, safety standards, and planning protocols to reduce wildfire risks and ensure compliance with state and federal guidelines, including WUI definitions and ordinances.
2. **Fire Prevention, Education, and Mitigation**: Promotes community education, Firewise USA® practices, and fuel reduction efforts to prevent ignitions and mitigate wildfire impacts in high-risk areas.
3. **Infrastructure Enhancement**: Improves physical infrastructure, such as signage and water source mapping, to support efficient wildfire response and navigation for emergency services.
4. **Resource and Capability Enhancements**: Strengthens fire department capabilities through equipment upgrades, training, and recruitment to enhance wildfire response and inter-agency coordination.
5. **Land Management Agency Projects**: Incorporates fuel reduction and mitigation projects led by federal and state agencies (e.g., BLM, DNR) to protect adjacent public lands and support community safety.

These categories collectively ensure the CWPP is collaborative, actionable, and fundable.

Fire Season: typically observe the State of Washington closed fire season between May and October. During this time, an individual seeking to conduct an open burn of any type shall obtain a permit to prescribe the conditions under which the burn can be conducted and the resources that need to be on hand to suppress the fire. Although this is a statewide regulation, compliance and enforcement has been variable between fire districts.

Defensible Space: Effective mitigation strategies begin with public awareness campaigns designed to educate homeowners of the risks associated with living in a flammable environment. Residents of Franklin County must be made aware that home defensibility starts with the homeowner. Once a fire has started and is moving toward a structure, the probability of that structure surviving is largely dependent on the structural and landscaping characteristics of the building. The Firewise Communities USA® program is an excellent tool for educating homeowners on the steps to take in order to create an effective defensible space. Residents of Franklin County should be encouraged to work with local fire departments and fire management agencies within the county to complete individual home site evaluations. Home defensibility steps should be enacted based on the results of these evaluations. Beyond the homes, forest

management efforts must be considered to slow the approach of a fire that threatens a community.

Evacuation: Development of community evacuation plans is necessary and critical to assure an orderly evacuation in the event of a threatening wildland fire. Designation and posting of escape routes would reduce chaos and escape times for fleeing residents. Community safety zones should also be established in the event safe evacuation is impossible and 'sheltering in place' becomes the better option.

Access: Also of vital importance is the accessibility of homes to emergency apparatus. The fate of a home will often be determined by homeowner actions prior to the event. A few simple guidelines such as widening or pruning along driveways and creating a turnaround area for large vehicles, can greatly enhance home survivability.

Facility Maintenance: Recreational facilities near communities or in the surrounding forests such as parks or natural areas should be kept clean and maintained. In order to mitigate the risk of an escaped campfire, escape-resistant fire rings and barbeque pits should be installed and maintained. In some cases, restricting campfires during dry periods may be necessary. Surface fuel accumulations in nearby forests can also be kept to a minimum by periodically conducting pre-commercial thinning, pruning and limbing, and possibly controlled burns.

Fire District Response: Once a fire has started, how much and how large it burns is often dependent on the availability of suppression resources. In most cases, rural fire departments are the first to respond and have the best opportunity to halt the spread of a wildland fire. For many districts, the ability to reach these suppression objectives is largely dependent on the availability of functional resources and trained individuals. Increasing the capacity of departments through funding and equipment acquisition can improve response times and subsequently reduce the potential for resource loss.

Development Standards: County, city, and even fire district policies can be updated or revised to provide for more fire conscious techniques such as using fire resistant construction materials; improving roads, and establishing permanent water resources.

Other Mitigation: Other actions to reduce fire hazards are thinning and pruning timbered areas, creating a fire resistant buffer along roads and power line corridors, and strictly enforcing fire- use regulations. Ensuring that areas beneath power lines have been cleared of potential high risk fuels and making sure that the buffer between the surrounding lands is wide enough to adequately protect the poles as well as the lines is imperative.

Mitigation Actions

Franklin County

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
6.1.a	Distribute Firewise USA®-type educational brochures with occupancy permit	Safety & Policy	High		Ongoing	Planning Department
6.1.b	Standardize enforceable outdoor burning ordinance with Benton County	Safety & Policy	Moderate		1 Year	Franklin Co. Fire Code Official
6.1.c	Fund the development of Fire Danger Rating System signs to be placed throughout the County that are consistent with Lower Columbia Basin Fire Region.	Safety & Policy	Moderate		1 Year	Franklin Co. Fire Code Official
6.1.d	Plan with pre-triage in mind to speed up handing an incident to a new team	Safety & Policy	Moderate		2 Years	Franklin Co. Emergency Management
6.1.e	Adopt a County ordinance requiring all existing and new construction to create and maintain "defensible space" around homes	Safety & Policy	Moderate		3 Years	Franklin Co. Commissioners

6.2.a	Implementation of youth and adult wildfire educational programs	Fire Prevention, Education, and Mitigation	High		1 Year	Franklin Conservation District & WSU Extension
6.2.b	Distribute educational information regarding construction in high risk wildfire areas	Fire Prevention, Education, and Mitigation	High		1 Year	Franklin Conservation District & WSU Extension
6.2.c	Prepare for wildfire events in high risk areas by conducting home site risk assessments and developing area-specific "Response Plans" to include participation by all affected jurisdictions and landowners.	Fire Prevention, Education, and Mitigation	High		2 Years	Franklin Conservation District & WSU Extension, WA Department of Natural Resources
6.2.d	Work with area homeowner's associations to foster cooperative approach to fire protection and awareness and identify mitigation needs	Fire Prevention, Education, and Mitigation	High		2 Years	Franklin Conservation District & WSU Extension, WA Department of Natural Resources
6.2.e	Work with WSU Extension, Master Gardeners, and other existing programs to offer Firewise USA® landscaping clinics to assist property owners in maintaining fire-resistant	Fire Prevention, Education, and Mitigation	Moderate		Ongoing	Franklin Conservation District, WA Department of Natural Resources

	defensible space around structures					
6.2.f	Develop a range of public education programs to encourage healthy management of natural resources on private property.	Fire Prevention, Education, and Mitigation	High		1 Year	Franklin Conservation District, WA Department of Natural Resources
6.2.g	Review building codes and revise to best practices as needed.	Fire Prevention, Education, and Mitigation	Low		5 Years	CWPP Steering Committee
6.2.h	Develop a Countywide chip day where property owners can have their slash disposed of.	Fire Prevention, Education, and Mitigation	Moderate		2 Years	Franklin Conservation District, WA Department of Natural Resources
6.2.i	Locate funding for fuel reduction projects throughout the County, but particularly around Pasco.	Fire Prevention, Education, and Mitigation	Moderate		3 Years	Franklin Conservation District, WA Department of Natural Resources
6.2.j	Develop a residential/agriculture burning procedures pamphlet that addresses each Fire District, Pasco, and Connell.	Fire Prevention, Education, and Mitigation	Moderate		1 Year	Franklin Conservation District
6.2.k	Fund the existing Fire Prevention/ Public Education team to continue the public information campaign addressing wildland fire, fire	Fire Prevention, Education, and Mitigation	Moderate		1 Year then Ongoing	Franklin Co. Fire Districts

	safety, Firewise USA®, etc.					
6.2.l	Provide residents of Connell with a one-time offer to remove debris from select properties (identified by Chief) at no charge to the property owner.	Fire Prevention, Education, and Mitigation	Moderate		1 Year	Franklin Co. Fire Districts
6.3.b	Map, develop GIS database, and provide signage for onsite water sources such as hydrants, underground storage tanks, and drafting or dipping sites on all ownerships across the county.	Infrastructure Enhancement	High		1 Year	Franklin Co. Fire Districts
6.3.d	Develop a program to encourage landowners to put up reflective address signage on their drive to allow firefighters to better locate residences.	Infrastructure Enhancement	High		1 Year	Planning Department
6.3.e	Develop a program to replace worn out road signage with new reflective road signs to allow firefighters to easily navigate to a wildfire.	Infrastructure Enhancement	High		1 Year	Franklin Co. Fire Districts
6.3.f	Provide funding to create County map books to be placed in all	Infrastructure Enhancement	Low		1 Year	Franklin County EM

	emergency vehicles which will allow emergency responders to navigate across jurisdictions.					
6.4.a	Improve departmental capability by establishing a program to increase the retention and recruitment of volunteer firefighters.	Resource and Capability Enhancements	High		Ongoing	Franklin Co. Fire Districts
6.4.b	Update personal protective equipment for all fire districts in Franklin County and provide training on the importance of proper PPE.	Resource and Capability Enhancements	High		Ongoing	Franklin Co. Fire Districts
6.4.c	Enhance radio availability in each district, link to existing dispatch, improve range within the region, and convert to a consistent standard of radio types.	Resource and Capability Enhancements	High		3 Years	Dispatch/Information Services
6.4.d	Obtain funding to support the Type 3 Communication Trailer including annual maintenance.	Resource and Capability Enhancements	Moderate		1 Year/Ongoing	Franklin County EM
6.4.e	Obtain monitors for hazardous materials, air quality, and	Resource and Capability Enhancements	High		2 Years	Franklin County EM

	hazmat kits to protect citizens should a wildland fire burn into areas were such things are stored.					
6.4.f	Training for Fire Districts including FFT1, Engine Boss, ICS, etc.	Resource and Capability Enhancements	High		Ongoing	Eastern Washington Training Zone (EWTZ)
6.4.i	Fire and EMS training designed for law enforcement needs for County dispatch.	Resource and Capability Enhancements	High		3 Years	Franklin County Emergency Management
6.4.j	Upgrade and interlink the County's CAD system to accurately fulfill resource requests.	Resource and Capability Enhancements	High		2 Years	Franklin County Emergency Management
6.4.k	Purchase water tenders and Type 3 engines to be used in both rural and suburban settings.	Resource and Capability Enhancements	High		2 Years	Franklin County Fire Districts
6.4.l	Support the County Emergency Management activation of the Emergency Operations Center during a large wildland fire and other disasters	Resource and Capability Enhancements	High		Ongoing	Franklin County Fire Districts
6.4.m	Train local firefighters to perform home assessments which will provide home owners with quality advice on	Resource and Capability Enhancements	High		Ongoing	Region 8 Fire Training Group, WA Department of Natural Resources

	how to make their homes defensible.					
NEW	Project on improving the clearing around Highway 395 and doing some sort of weed prevention.					
NEW	Firewise USA®- public outreach campaign on Firewise USA ®program encouraging homeowners in area to be Firewise USA® registered.					
NEW	Fuel Reduction Plan? - in the brochure?					
NEW	Training for Fire Districts including FFT1, Engine Boss, ICS, etc.					

Connell

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
6.4.h	Upgrade Connell Fire department's firefighting apparatus	Resource and Capability Enhancements	High		3 Years	Connell Fire Department

Franklin Fire Districts #2 & #5

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency

6.4.g	Fire District #2 & #5 need fire hose and wildland fire engine upgrades.	Resource and Capability Enhancements	High		2 Years	Franklin County Fire Districts #2 & #5

Franklin Fire District #3

Action ID	Description	Goals/Objectives Addressed	Priority	Cost	Timeline	Lead Agency
NEW	Develop a public outreach campaign on services for reflective post installation with FCFD #3.					
6.5m	Purchase drone with infrared capability for wildland fire size up, detection and investigation.	Resource and Capability Enhancements	Moderate			Franklin County Fire District #3

Mitigations Actions Summary

The Franklin County Community Wildfire Protection Plan outlines mitigation actions across four main categories to reduce wildfire risks. Safety and policy measures include high-priority distribution of Firewise USA® educational brochures (ongoing, led by Planning Department), and moderate-priority actions like standardizing burning ordinances and funding fire danger signs (both complete within one year), pre-triage planning (two years), and adopting defensible space ordinances (three years).

Fire prevention, education, and mitigation efforts emphasize public outreach, with high-priority initiatives such as youth/adult education programs, construction guidance in high-risk areas, home assessments/response plans, homeowner association collaboration, and natural resource management programs (mostly one to two years, led by Franklin

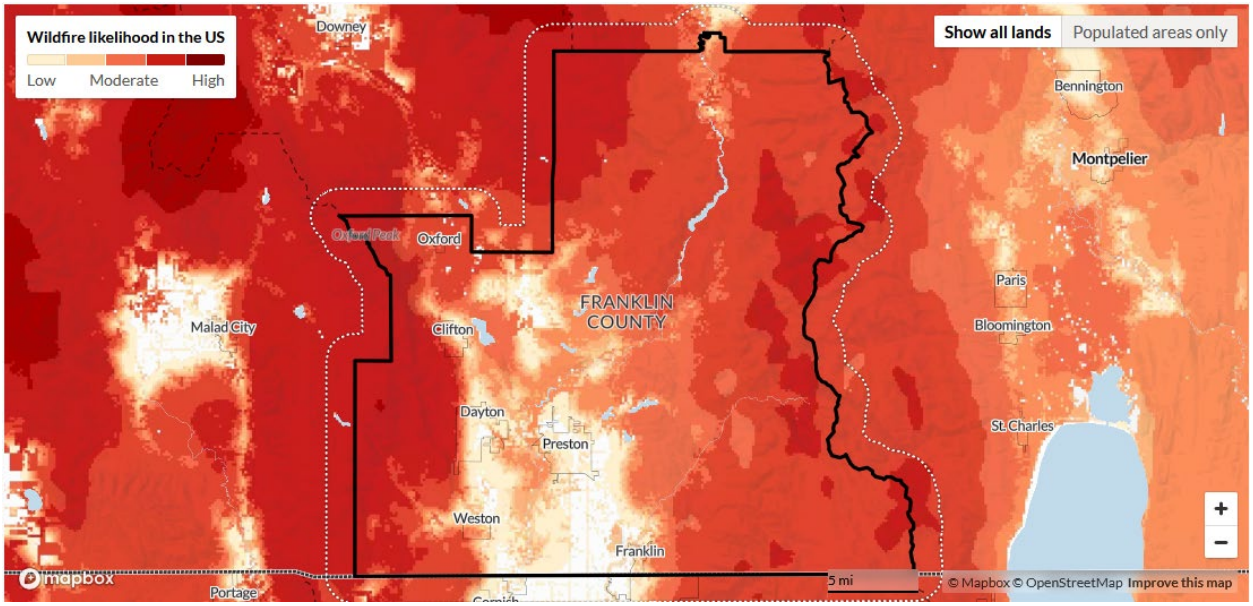
Conservation District and WSU Extension). Moderate-priority actions include Firewise USA® landscaping clinics (ongoing), countywide chip days (complete, two years), fuel reduction funding (three years), burning pamphlets (complete, one year), ongoing public education campaigns, and Connell debris removal (one year); a low-priority building code review spans five years.

Infrastructure enhancements focus on response improvements, with high-priority mapping/signage for water sources, reflective address signage (complete, with outreach interest), and road signs (all one year, led by fire districts and Planning); a low-priority map book project (one year) is noted as less viable due to web services.

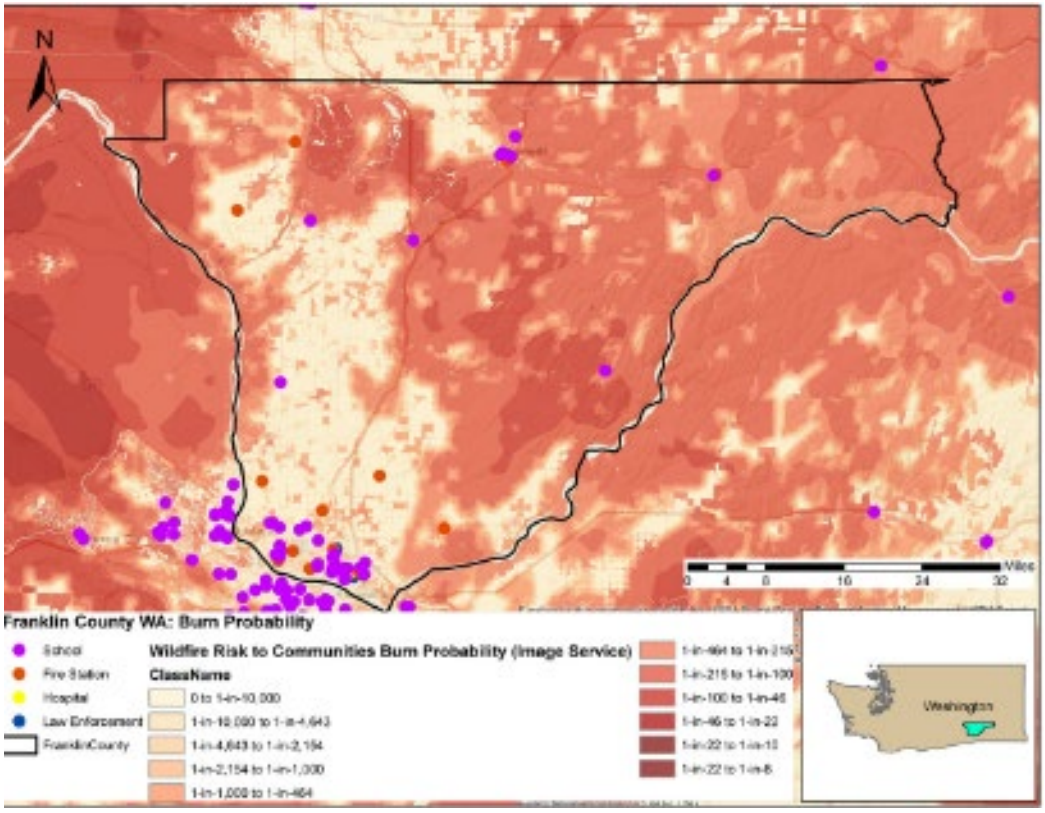
Resource and capability enhancements prioritize firefighting readiness, including ongoing volunteer recruitment and PPE updates (led by fire districts), high-priority radio upgrades (three years), hazmat monitoring (two years), various trainings (ongoing or two to three years), equipment upgrades for specific districts, CAD system improvements (two years), water tenders/engines (three years), EOC support (ongoing), and home assessment training (ongoing). Moderate-priority includes communication trailer funding (one year/ongoing). New proposals cover reflective post outreach, Highway 395 clearing/weed prevention, Firewise USA® registration campaigns, fuel reduction brochures, additional training, and a drone purchase (moderate, led by Fire District #3).

Spatial Outputs and Mapping

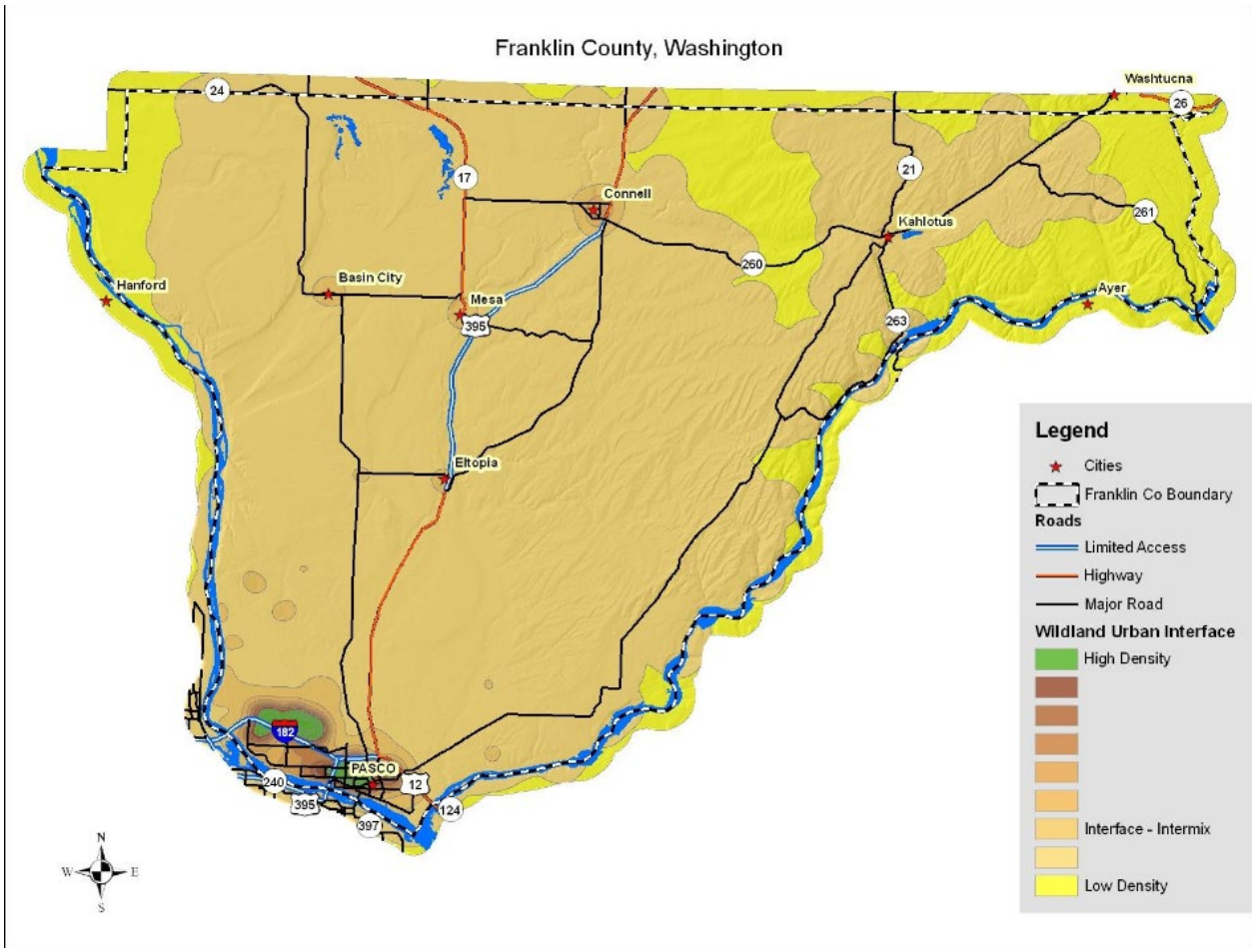
Burn probability and intensity layers



Burn probability with Critical Assets

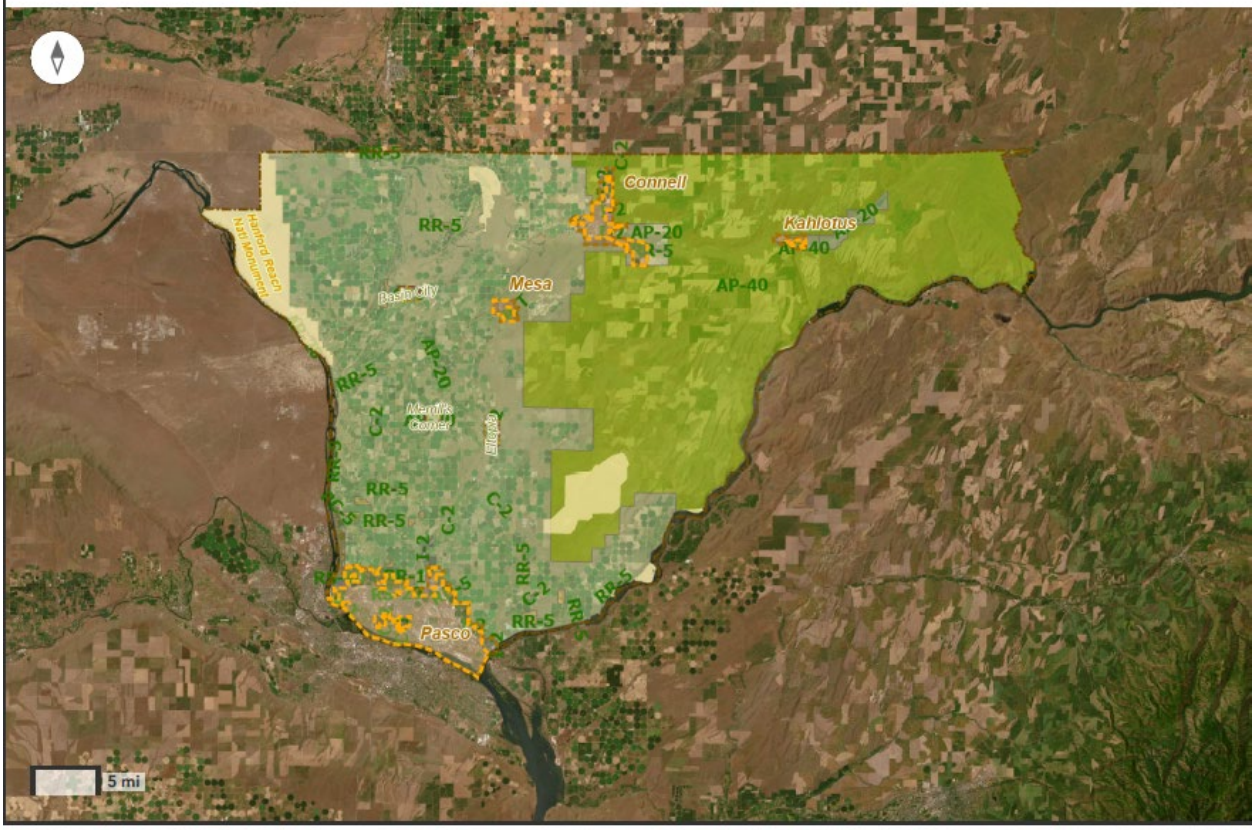


Franklin County Wildland Urban Interface Map



Franklin County Planning & Urban Growth Map

Franklin County Planning & Urban Growth Map



City and County Boundaries

City

Unincorporated

County

Rural Settlements

Rural Settlements

Parks and reserves

Federal Reserves

Urban Growth Area

Urban Growth Area

Summary of Franklin County CWPP 2025 Requirements and Initiative Categories

The Franklin County Community Wildfire Protection Plan (CWPP) 2025 aligns with the Healthy Forests Restoration Act (HFRA) requirements to foster collaboration, prioritize fuel reduction, and enhance community and fire department preparedness for wildfire risks. Developed with input from Franklin County Fire Districts, Franklin Conservation District, Washington State University (WSU) Extension, Washington Department of Natural Resources (DNR), Bureau of Land Management (BLM), and county emergency management, the plan leverages risk analyses from the Franklin County Hazard Mitigation Plan to address vulnerabilities in high-risk wildland-urban interface (WUI) areas. The initiatives are organized into five categories to ensure the CWPP is collaborative, actionable, and fundable.

HFRA Requirements and Corresponding Initiative Categories

Collaboration with Stakeholders

Description: Requires cooperative development with local government, fire chiefs, and state forestry (DNR), alongside federal agencies (BLM) and community groups, to ensure diverse input and coordinated wildfire strategies.
Categories: All (Safety & Policy, Fire Prevention, Education, and Mitigation, Infrastructure Enhancement, Resource and Capability Enhancements, Land Management Agency Projects)
Alignment: All initiatives (6.1.a–6.4.m) involve stakeholders like Fire Districts, DNR, BLM, and WSU Extension. For example, 6.4.m enhances resources and capabilities within regional fire services by training firefighters to conduct home assessments and advise homeowners, targeting 200 completed assessments, led by Region 8 Fire Training Group with Fire Districts and DNR support, funded by DNR grants and FEMA Community Wildfire Defense Grants (CWDG) at $20,000.

Identification and Prioritization of Fuel Reduction Areas

Description: Mandates identifying and prioritizing areas for hazardous fuel reduction (e.g., vegetation clearing, prescribed burns) based on risk assessments, targeting high-risk WUI zones on federal and non-federal lands.
Alignment: Initiatives like 6.2.i (fuel reduction, including Highway 395 clearing, $150,000, 1,000 acres treated) and 6.2.h (chip day, 500 properties served) prioritize

fuel reduction, with BLM/DNR support in 6.2.i. Agency-led projects are limited, but 6.2.i addresses WUI risks identified in the Hazard Mitigation Plan.

Recommendations for Reducing Structural Ignitability and Enhancing Community Preparedness

Description: Requires measures to reduce structure ignition risks (e.g., Firewise USA® standards, defensible space) and improve community and fire department readiness (e.g., equipment, training, infrastructure).

Categories: Safety & Policy; Fire Prevention, Education, and Mitigation; Infrastructure Enhancement; Resource and Capability Enhancements

Alignment: Initiatives span multiple categories: 6.1.e (defensible space ordinance, 500 homes compliant), 6.2.b (Firewise USA® outreach, 200 homes registered), 6.3.d (reflective signage, 300 signs installed), and 6.4.a–m (e.g., 6.4.b: PPE for 100 firefighters; 6.4.f: training 50 firefighters; 6.4.m: 200 home assessments). These enhance fire department capabilities and community preparedness, with 6.4.m specifically training firefighters for assessments, funded by FEMA CWDG and DNR.

Conclusion:

The Franklin County Community Wildfire Protection Plan represents a collaborative and science-based approach to understanding and reducing wildfire risk across the county's landscapes and communities. By integrating data on historic fire regimes, vegetation condition classes, and relative threat levels, the CWPP provides a foundation for informed decision-making and coordinated action among local, state, and federal partners. Implementation of the strategies and priorities outlined in this plan will enhance public safety, protect critical infrastructure, and promote the health and resilience of the county's natural resources. The CWPP is intended to be a living document—regularly reviewed, updated, and refined to reflect new data, evolving conditions, and community priorities. Continued collaboration and commitment among all stakeholders will be essential to achieving the shared goal of a safer, more fire-adapted Franklin County.

Hazard Mitigation Actions Worksheet

Initiative Category	Initiative Description	Priority	Responsible Organization	Timeline	Status
6.1.a - Safety & Policy	Distribute Firewise®-type educational brochures with occupancy permit	High	**Lead**: Planning Department **Support**: Franklin Conservation District	Ongoing	EM provides Firewise®-type educational brochures at their facility
6.1.b- Safety & Policy	Standardize enforceable outdoor burning ordinance with Benton County	Moderate	**Lead**: Franklin Co. Fire Code Official **Support**: Franklin County Fire Departments & Districts	1 Year	complete
6.1.c- Safety & Policy	Fund the development of Fire Danger Rating System signs to be placed throughout the County that are consistent with Benton County.	Moderate	**Lead**: Franklin Co. Fire Code Official **Support**: Franklin County Fire Departments & Districts	1 Year	complete
6.1.d- Safety & Policy	Plan with pre-triage in mind to speed up handing an incident to a new team	Moderate	**Lead**: Franklin Co. Emergency Management **Support**: Franklin County Fire Departments & Districts	2 Years	ICS training has been conducted. EM doesn't have anything to do with pre-triage
6.1.e- Safety & Policy	Adopt a County ordinance requiring all existing and new construction to create and maintain "defensible space" around homes	Moderate	**Lead**: Franklin Co. Commissioners **Support**: Franklin County Fire Departments & Districts	3 Years	

6.2.a - Fire Prevention, Education, and Mitigation	Implementation of youth and adult wildfire educational programs	High	**Lead**: Franklin Conservation District & WSU Extension **Support:** Franklin County Fire Districts & Local Schools	1 Year	
6.2.b - Fire Prevention, Education, and Mitigation	Distribute educational information regarding construction in high risk wildfire areas	High	**Lead**: Franklin Conservation District & WSU Extension**Support:** Franklin County Fire Districts & Local Schools	1 Year	
6.2.c- Fire Prevention, Education, and Mitigation	Prepare for wildfire events in high risk areas by conducting home site risk assessments and developing area-specific "Response Plans" to include participation by all affected jurisdictions and landowners.	High	**Lead**: Franklin Conservation District & WSU Extension **Support:** Franklin County Fire Districts	2 Years	
6.2.d - Fire Prevention, Education, and Mitigation	Work with area homeowner's associations to foster cooperative approach to fire protection and awareness and identify mitigation needs	High	**Lead**: Franklin Conservation District & WSU Extension **Support:** Franklin County Fire Districts	2 Years	
6.2.e - Fire Prevention, Education, and Mitigation	Work with WSU Extension, Master Gardeners, and other existing programs to offer Firewise® landscaping clinics to assist property owners in maintaining fire-resistant defensible space around structures	Moderate	**Lead**: Franklin Conservation District **Support:** Spokane Master Gardeners and WSU Extension	Ongoing	

6.2.f - Fire Prevention, Education, and Mitigation	Develop a range of public education programs to encourage healthy management of natural resources on private property.	High	**Lead**: Franklin Conservation District **Support:** Franklin County Fire Districts, WSU Extension, and BLM	1 Year	
6.2.g - Fire Prevention, Education, and Mitigation	Review building codes and revise to meet Firewise® standards as needed.	Low	**Lead:** CWPP Steering Committee **Support:** County Emergency Management and Planning & Building Department	5 Years	
6.2.h - Fire Prevention, Education, and Mitigation	Develop a Countywide chip day where property owners can have their slash disposed of.	Moderate	**Lead**: Franklin Conservation District **Support:** Franklin County Fire Districts	2 Years	Complete
6.2.i - Fire Prevention, Education, and Mitigation	Locate funding for fuel reduction projects throughout the County, but particularly around Pasco.	Moderate	**Lead**: Franklin Conservation District **Support:** Franklin County Fire Districts	3 Years	
6.2.j - Fire Prevention, Education, and Mitigation	Develop a residential/agriculture burning procedures pamphlet that addresses each Fire District, Pasco, and Connell.	Moderate	**Lead**: Franklin Conservation District **Support:** Franklin County Fire Districts	1 Year	Complete - need more printd

6.2.k - Fire Prevention, Education, and Mitigation	Fund the existing Fire Prevention/ Public Education team to continue the public information campaign addressing wildland fire, fire safety, Firewise®, etc.	Moderate	**Lead**: Franklin Co. Fire Districts **Support:** Franklin County Conservation District	1 Year then Ongoing	
6.2.l - Fire Prevention, Education, and Mitigation	Provide residents of Connell with a one-time offer to remove debris from select properties (identified by Chief) at no charge to the property owner.	Moderate	**Lead**: Franklin Co. Fire Districts **Support:** Franklin County Conservation District	1 Year	
6.3.b - Infrastructure Enhancement	Map, develop GIS database, and provide signage for onsite water sources such as hydrants, underground storage tanks, and drafting or dipping sites on all ownerships across the county.	High	**Lead**: Franklin Co. Fire Districts **Support:** Franklin County GIS	1 Year	
6.3.d - Infrastructure Enhancement	Develop a program to encourage landowners to put up reflective address signage on their drive to allow firefighters to better locate residences.	High	**Lead:** Planning Department**Support:** Franklin County Fire Districts, BLM	1 Year	
6.3.e - Infrastructure Enhancement	Develop a program to replace worn out road signage with new reflective road signs to allow firefighters to easily navigate to a wildfire.	High	**Lead**: Franklin Co. Fire Districts **Support:** Franklin County GIS	1 Year	Complete - would like to have a public outreach campaign showcasing this service in the FC Graphic.
6.3.f - Infrastructure Enhancement	Provide funding to create County map books to be placed in all emergency vehicles which will allow emergency responders to navigate across jurisdictions.	Low	**Lead**: Franklin County EM **Support:** Franklin County GIS, Fire Districts	1 Year	Not sure how viable Map Books are anymore with up to date web services

6.4.a - Resource and Capability Enhancements	Improve departmental capability by establishing a program to increase the retention and recruitment of volunteer firefighters.	High	**Lead**: Franklin Co. Fire Districts **Support:** Washington DNR and BLM	Ongoing	
6.4.b - Resource and Capability Enhancements	Update personal protective equipment for all fire districts in Franklin County and provide training on the importance of proper PPE.	High	**Lead**: Franklin Co. Fire Districts **Support:** Washington DNR and BLM	Ongoing	
6.4.c - Resource and Capability Enhancements	Enhance radio availability in each district, link to existing dispatch, improve range within the region, and convert to a consistent standard of radio types.	High	**Lead**: Dispatch/Information Services **Support:** Franklin County Fire Districts	3 Years	
6.4.d - Resource and Capability Enhancements	Obtain funding to support the Type 3 Communication Trailer including annual maintenance.	Moderate	**Lead**: Franklin County EM **Support:** Franklin County Fire Districts	1 Year/Ongoing	
6.4.e - Resource and Capability Enhancements	Obtain monitors for hazardous materials, air quality, and hazmat kits to protect citizens should a wildland fire burn into areas were such things are stored.	High	**Lead**: Franklin County EM**Support:** Franklin County Fire Districts	2 Years	
6.4.f- Resource and Capability Enhancements	Training for Fire Districts including FFT1, Engine Boss, ICS, etc.	High	**Lead:** Eastern Washington Training Zone (EWTZ) **Support:** Franklin County Fire Districts, DNR	Ongoing	

6.4.g - Resource and Capability Enhancements	Fire District #2 & #5 need fire hose and wildland fire engine upgrades.	High	**Lead**: Franklin County Fire Districts #2 & #5 **Support:** Franklin County EM	2 Years	
6.4.h - Resource and Capability Enhancements	Upgrade Connell Fire department's firefighting apparatus	High	**Lead:** Connell Fire Department **Support:** Franklin County Fire Districts	3 Years	
6.4.i - Resource and Capability Enhancements	Fire and EMS training designed for law enforcement needs for County dispatch.	High	**Lead:** Franklin County Emergency Management **Support**: Franklin County Fire Districts	2 Years	
6.4.j - Resource and Capability Enhancements	Upgrade and interlink the County's CAD system to accurately fulfill resource requests.	High	**Lead:** Franklin County Emergency Management **Support**: Franklin County Fire Districts	2 Years	
6.4.k - Resource and Capability Enhancements	Purchase water tenders and Type 3 engines to be used in both rural and suburban settings.	High	**Lead:** Franklin County Fire Districts **Support**: Franklin County EM	3 Years	
6.4.l - Resource and Capability Enhancements	Support the County Emergency Management activation of the Emergency Operations Center during a large wildland fire and other disasters	High	**Lead:** Franklin County Fire Districts**Support**: Franklin County Sheriff's Department	Ongoing	

6.4.m - Resource and Capability Enhancements	Train local firefighters to perform home assessments which will provide home owners with quality advice on how to make their homes defensible.	High	**Lead:** Region 8 Fire Training Group **Support:** Franklin County Fire Districts, DNR	Ongoing	
NEW	Develop a public outreach campain on services for reflective post installation with FCFD #3.				
NEW	Project on improving the clearing around Highway 395 and doing some sort of weed prevention.				
NEW	Firewise® - public outreach campaign on Firewise® program encouraging homeowners in area to be Firewise® registered.				
NEW	Fuel Reduction Plan? - in the brochure?				
NEW	Training for Fire Districts including FFT1, Engine Boss, ICS, etc.			ongoing	
NEW 6.5m - Resource and Capability Enhancements	Purchase drone with infrared capability for wildland fire sizeup, detection and investigation.	Moderate	**Lead:** Franklin County Fire District #3 **Support:** Franklin County Fire Districts	1 year	

COMMUNITY WILDFIRE PROTECTION PLAN

Franklin County, Washington

Adoption Signature Page

The undersigned Fire Chiefs acknowledge and adopt this Community Wildfire Protection Plan (CWPP) for Franklin County, Washington. This plan represents a collaborative effort to reduce wildfire risk and enhance community preparedness and resilience.

Signature: Eric Mauseth
Printed Name: ERIC MAUSETH
Title: CHIEF
Fire District/Department: FRANKLIN COUNTY FIRE DISTRICT #1
Date: 1-20-26

Signature:
Printed Name: LUCAS VAN HOLLEBEKE
Title: CHIEF
Fire District/Department: FRANKLIN COUNTY FIRE DISTRICT #2
Date: 1-20-26

Signature: Mike Harris
Printed Name: MIKE HARRIS
Title: CHIEF
Fire District/Department: FRANKLIN COUNTY FIRE DISTRICT #3
Date: 1-21-2026

Signature:
Printed Name: STEVE COOPER
Title: CHIEF
Fire District/Department: FRANKLIN COUNTY FIRE DISTRICT #4
Date: 1/14/26

Signature: _____

Printed Name: MATT NELSON

Title: CHIEF

Fire District/Department: FRANKLIN COUNTY FIRE DISTRICT #5

Date: 1-16-26

Signature: _____

Printed Name: KEN WOFFENDEN

Title: CHIEF

Fire District/Department: CONNELL FIRE DEPARTMENT

Date: 1/14/2026

Signature: _____

Printed Name: KEVIN CROWLEY

Title: CHIEF

Fire District/Department: PASCO FIRE DEPARTMENT

Date: 1-13-2026

DEPARTMENT OF
NATURAL RESOURCES

WILDLAND FIRE
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April 23, 2026

From the Office of the State Forester:

State forester staff have reviewed the **Franklin County** FEMA Approved Hazard Mitigation Plan (HMP) to confirm the inclusion of the wildfire chapter, 4.16, and appendix 1 combined meets the needs/minimum requirements to be considered a Community Wildfire Protection Plan (CWPP) replacement.

The following minimum requirements for CWPP, as described in the Healthy Forests Restoration Act (HFRA) of 2003, have been included/considered in the wildfire chapter 4.16 and appendix 1 of the HMP.

1. Collaboration - local and state government representatives, along with federal agencies and other interested parties, participated in the planning effort.
2. A prioritized hazard mitigation project list is included.
3. Treatment of Structure Ignitability has been considered, and actions have been recommended.

George Geissler
State Forester | Deputy Supervisor, Forest Resilience and Wildland Fire Management