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CHAPTER 3. NATURAL HAZARDS

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3.1 INTRODUCTION

7

Over the years, residents of Yakima County have dealt with a variety of disasters, most notably several major floods, ash fallout from Mt. St. Helens, and ~~a~~ landslides that demolished ~~a~~ state highways and blocked ~~the Naches~~ Rivers. According to the Washington Department of Emergency Management, there have been ~~13~~ federal disaster declarations in Yakima County since 1956. The ~~vast~~ majority of the disaster declarations have been due to extreme weather events, such as drought, wildfire, flooding or severe winter weather, the most notable exception being the 1980 eruption of Mt. St. Helens. Some of these are natural events, others are influenced by human activities. While comprehensive planning cannot prevent a volcano from erupting, there are many ways in which planning policies can prevent loss of life and damage to property from natural disasters and decisions made under growth management.

8

When planning for natural hazards, the county must balance public safety with the protection of individual property rights. Goal (6) of the Growth Management Act (GMA) states:

9

(6) Property rights. Private property shall not be taken for public use without just compensation having been made. The property rights of landowners shall be protected from arbitrary and discriminatory actions.

10

In some cases - for example, the identification and designation of landslide hazard areas - a careful balance must be struck between notifying (and protecting) property owners of the hazard, while still protecting the value and use of their property.

11

12

3.2 HAZARD MITIGATION PLANNING

13

3.2.1 Hazard Mitigation Element

The intent of this new Comprehensive Plan Element is to establish goals and policies resulting in development that minimizes loss of life and property from natural disasters. Including hazard mitigation in the Comprehensive Plan establishes hazard mitigation planning as a priority in Yakima County. Mitigation is an action taken with the intention of permanently reducing or alleviating losses of life, property, and injuries resulting from hazards through long and short-

Commented [KW1]: Some of these are natural events, others are influenced by human activities. Consider "Environmental Hazards"

Commented [KW2R1]: This was an early suggestion. Makes sense but too many other municipalities and DOE use "natural" so we're back to that.

Commented [TH3]: not new now?

Commented [TH4]: Could it also include economic impacts such as reduced detours around flooded roadways, or health considerations when considering backup of treatment plants that end up limiting services, and those types of things?

Commented [KWSR4]: I don't see why not. That's part of resiliency, being able to deal with hazards in an effective, and cost/time etc. efficient way. Health for sure. In climate change we call these "co-benefits" e.g., reduced childhood respiratory illness as a result of better air quality (GHS reductions).

Commented [KW6R4]: Anyway, looks like we off to a good start with shared comments. I won't respond to all until we're in a work session or joint draft review mode.

1 term strategies. While the timing of natural hazards is often unpredictable, planners and
2 emergency management professionals can identify areas that are at risk of a natural hazard
3 within a reasonable timeframe.

4
5 By including hazard mitigation into **Horizon 2040 2046**, mitigation measures captured in
6 associated plans are integrated into policies. These policies provide a legal basis for implementing
7 mitigation measures through land use regulations.

8 3.2.2 Yakima County Multi-Jurisdictional Hazard Mitigation Plan

9 Yakima Valley Office of Emergency Management (YVEM) coordinates the Multi-Jurisdictional
10 Hazard Mitigation Plan (HMP) for Yakima County and other jurisdictions or districts that wish to
11 participate, which is typically updated every five years; the most recent update was adopted on
12 January 17, 2023¹⁵. YVEM strives to capture informal status updates each year for accountability
13 and awareness for the 5-year update. The following jurisdictions and districts are included in the
14 HMP adopted in 2023:

- 15 • City of Granger Annex
- 16 • City of Grandview Annex
- 17 • City of Moxee Annex
- 18 • City of Selah Annex
- 19 • City of Sunnyside Annex
- 20 • City of Tieton Annex
- 21 • City of Toppenish Annex
- 22 • City of Union Gap Annex
- 23 • City of Yakima Annex
- 24 • Town of Harrah Annex
- 25 • Town of Naches Annex
- 26 • Yakima County Fire Districts Annex
- 27 • Yakima County-wide Flood Control Zone District Annex

28
29 —
30
31
32 INSERT

33 The Yakima County Multi-Jurisdictional Hazard Mitigation Plan includes resources and
34 information to assist county residents, public and private sector organizations, and others
35 interested in participating in planning for natural, biological, and technological hazards. The
36 mitigation planHMP provides a list of activities that may assist Yakima County in reducing risk and
37 preventing loss from future hazard events. The action items address multi-hazard issues, as well
38 as activities for flood, landslide, avalanche, drought, severe winter storm, windstorm, wildfire,
39 extreme temperatures, hail, lightning, tornado, earthquake, volcanic eruptionⁿn and hazardous
40 materials and more.

Commented [TH7]: not sure what "associated" means. local hazard mitigation plans, statewide plans, adopted plans, etc?

Commented [KW8R7]: I think this is used to ID projects and programs that support the intent of the chapter. Like: YBIP's groundwater group and the lit. about the value of Managed Aquifer Recharge - something I'm adding to the CARA CAO. Saying "we will work with other 'associated' programs, for coordination's sake at the very least, is one way of saying this. "Comparable" or "Similar" programs in the basin....is another

Commented [TH9]: can we add projects? or is that not appropriate.

Commented [KW10R9]: I think we should both add projects, as examples, and eventually, CITE as another way.

Commented [TH11]: I think they removed these words from their title, but there's been some inconsistency in branding.

Commented [TH12]: This could be valuable in making it clear which districts are not part of the plan and help garner additional participants during the next round but also could become outdated and unnecessary. Curious what everyone thinks.

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1 Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act)
2 42 U.S.C. 5165, as amended by the Disaster Mitigation Act of 2000 (DMA) (P.L. 2 &390) provides
3 for States, Tribes, and Local governments to undertake mitigation planning. The National Flood
4 Insurance Program (NFIP) links flood mitigation assistance programs with communities'
5 mitigation plans. Section 322 of the amended Stafford Act states that as a condition of receiving
6 a disaster loan or grant:

7
8 "The state and and local government(s) shall agree that natural hazards in the areas affected
9 shall be evaluated and appropriate action taken to mitigate such hazards, including safe land-use
10 and construction practices. For disasters declared after November 1, 2004, all potential
11 applicants (sub-grantees) must have either their own, or be included in a regional, locally adopted
12 and FEMA approved all hazard mitigation plans in order to be eligible to apply for mitigation
13 grant funds."

14
15 The regulations governing the mitigation planning requirements for local mitigation plans are
16 published under 44 CFR §201.6. Under 44 CFR §201.6, local governments must have a FEMA-
17 approved Local Mitigation Plan in order to be eligible to apply for and/or receive project grants
18 under several the following hazard mitigation assistance programs; a few examples provided
19 below:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Fire Management Assistance Grant (FMAG)
- Severe Repetitive Loss (SRL)
- Building Resilient Infrastructure and Communities (BRIC)

Commented [TH13]: This was going for several years, but ended in 2025 by presidential order. Current grants are still alive, but my understanding is that there wont be any future funding opportunities under this title (subject to change).

3.3 SPECIAL DISTRICTS/PROGRAMS

3.3.1 Yakima Countywide Flood Control Zone District/Yakima County Water Resources Division

32 In response to damaging floods that occurred in the 1990s, on January 13, 1998, the Board of
33 Yakima County Commissioners established the Yakima Countywide Flood Control Zone District
34 (FCZD) under RCW 86.15. The activities of the district can include, but are not limited to, flood
35 warning and emergency response, flood proofing and elevation of structures, property
36 acquisition, implementation of consistent development regulations that recognize the impacts
37 of flooding, basin wide flood planning, and the identification, engineering, and construction of
38 capital projects to mitigate and/or address flooding problems.

Commented [KW14]: Updated?

Commented [TH15R14]: This is still relevant. It's the history of the formation of the district.

3.3.1.1 Comprehensive Flood Hazard Management Plans (CFHMPs):

41 Comprehensive Flood Hazard Management Plans contain recommendations on future flood
42 hazard management alternatives for problematic areas and follow Ecology's process for flood

Commented [KW16]: Continue to include? Consistency with
SMP and are they really "up to date" regarding predictability under
current and future conditions i.e., extreme weather events under
climate change scenario planning and or modeling?

1 hazard management plans redefined by the 1991 Ecology guidelines. -Once the plan is adopted
 2 by the local government, it serves as a policy document for the County and Cities that adopt it.
 3 The Plan itself is not a regulatory ~~document, but~~document but identifies and prioritizes flood
 4 control and mitigation projects for the community. Adoption of the plans increases the chances
 5 of State and Federal funding of projects and post flood disaster relief.

Commented [TH17]: Troy to check if this is a requirement of FbD.

- 7 • Upper Yakima CFHMP: The Upper Yakima CFHMP was adopted in 1998 as a response to
 8 Yakima County's desire to identify flooding issues along the Yakima River from the
 9 Yakima Canyon to Union Gap and along the Naches River from Twin Bridges to its mouth.
 10 The purpose of this Plan, the first CFHMP adopted in the County, was to gain an
 11 understanding of flood hazard management alternatives that appropriate and informed
 12 management proposals and decisions, and to develop flood hazard management
 13 program to address identified flooding issues. The Plan was amended in 2007.

Commented [KW18]: 1998!

Commented [KW19R18]: Cannot possibly reflect current conditions.

- 14 • Upper Yakima CFHMP 2018 Cowiche Addendum: This addendum to the 2007 Upper
 15 Yakima River CFHMP addresses the flood risks posed by Lower Cowiche Creek and its
 16 confluence with the Naches River, located within the original CFHMP study area. These
 17 risks were not previously addressed in the earlier CFHMP due to a lack of Available
 18 Information. The Plan developed near, short, and long-term recommendations that
 19 match the risk with agencies' ability to provide the required concurrent infrastructure
 20 modifications that reduce current flood hazard.

Commented [TH20]: Insert language about this (recent)

- 21 • Naches CFHMP: The Naches River Comprehensive Flood Hazard Management Plan
 22 (CFHMP) covers the Naches River from the confluence of the Naches and Tieton Rivers to
 23 the Twin Bridges northwest of Yakima. The Naches River CFHMP was adopted in 2007.
 24 Many of the recommendations have been completed since adoption, and the County
 25 wishes to soon update this plan once the flood maps have been updated by FEMA to
 26 reflect the suite of flood risk reduction actions implemented by the County.

- 27 • Ahtanum-Wide Hollow CFHMP: The Ahtanum-Wide Hollow CFHMP covers the entire
 28 Ahtanum and Wide Hollow watersheds, focusing on the Ahtanum Valley Floor, West
 29 Valley, Union Gap, and parts of Yakima. The Yakama Nation is a partner in the project -
 30 Ahtanum Creek forms the northern boundary of the Yakama Reservation. This plan was
 31 adopted by the Board of County Commissioners in 2012.

- 32 • Lower Yakima River Watershed CFHMP: The State of Washington and Yakama Nation
 33 identified the Lower Yakima Watershed as a priority for FEMA's Risk MAP program that
 34 includes a portion of Yakima County and the Yakama Nation Reservation. The state
 35 determines its priorities based on population at risk to hazards, recent events, and
 36 community interest. FEMA, State and Yakima County community stakeholders have been
 37 participating in Discovery and subsequent Flood Study meetings since 2016. Draft Maps
 38 for this area are anticipated to be generated and available for the community to analyze
 39 in 2026. These maps and the underlying 2-dimensional hydraulic model will lead to key
 40 insights on areas of mitigation interest that could be further underscored through a Lower

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1 Yakima River CFHMP process with stakeholders. The hydraulic model will serve as a key
2 tool to exploring mitigation alternatives for the area.

4 Other CFHMPs: A few watersheds within Yakima County do not have CFHMPs, including
5 Wenas, Cowiche, and the Upper Naches (Nile). These areas could benefit from more
6 robust planning based on population at risk, recent events, and community interest which
7 should be explored.

3.3.1.2~~4.1.5~~ National Flood Programs

10 The National Flood Insurance Program (NFIP) was created in 1968 and is now managed by FEMA.
11 There are currently 22,600 participating communities in the country, one of which is Yakima
12 County with participation dating to 1985. The NFIP provides affordable insurance opportunities
13 to property owners within participating communities and encourages communities to adopt and enforce floodplain management regulations as part of participation.
14 Community participation in the NFIP provides eligibility for federal disaster relief funds as well as several FEMA grant programs, including grants related to planning, hazard
15 mitigation, disaster relief, and resilient infrastructure. The Washington State Military Department
16 administers these FEMA grants through the Emergency Management Division.

3.3.1.3 Community Rating System

23 The Community Rating System (CRS) is a voluntary program for communities to enter for
24 discounted flood insurance for residents. The CRS program encourages community floodplain
25 management practices that exceed the minimum requirements of the NFIP. CRS has rigid
26 administrative requirements and strict deadlines for participating communities, making inter-
27 departmental cooperation necessary for communities to stay active. ~~This makes cooperation~~
28 ~~from multiple Departments and Divisions within the County necessary, and can be a substantial~~
29 ~~amount of work... NOT SURE IF WE SHOULD PUT THIS IN HERE>>>~~

32 ~~SHOULD WE TALK ABOUT THE NFIP SOMEWHERE? BRIEF HISTORY AND WHY IT IS VALUABLE?~~

3.3.1.4~~2~~ Hazus Mapping Efforts

36 Since 2011, Yakima County FCZD has been using FEMA's Hazus program, a modeling technique,
37 to estimate physical, economic, and social impacts of flooding in Yakima County using Geographic
38 Information Systems (GIS). Hazus provides risk assessments and is used to determine the most
39 beneficial mitigation measures to reduce loss.

41 Yakima County uses level-2 user defined inputs including building locations, elevations, and
42 values and a combination of multiple flow-dependent flood depth grids from the best available
43 riverine flood models on file. Hazus then calculates a variety of loss scenarios across the various
44 annual exceedance probabilities to generate an Average Annualized Loss. This output informs

Commented [NS21]: @Troy Havens my stab at the NFIP comment

Commented [TH22R21]: I just added disaster relief funds and some clarification.

Commented [NS23]: moved proposed CRS paragraph over here (from under "project pipeline"), created a new section for CRS/NFIP, and added 2 sentences for review (highlighted in green).

Commented [TH24]: It's not a plan, so probably doesn't fit in here but wondering if it should be somewhere...

Commented [KW25R24]: It seems important w/I the context of existing, and planned, CFHMP's. For the Lower Yakima, right?

Commented [TH26R24]: no, the National Flood Insurance Program - participation therein since 1985

Commented [KW27R24]: Thanks

Commented [KW28]: Current? HECRAS?

Commented [KW29R28]: Appeals so....need to add significantly here to describe the process and its output relative to its use for monitoring impacts, and importantly, how it is used to "change" or reduce hazards.

Commented [TH30R28]: The only way it is used to monitor impacts is assuming the project is completed and you have a future benefit.

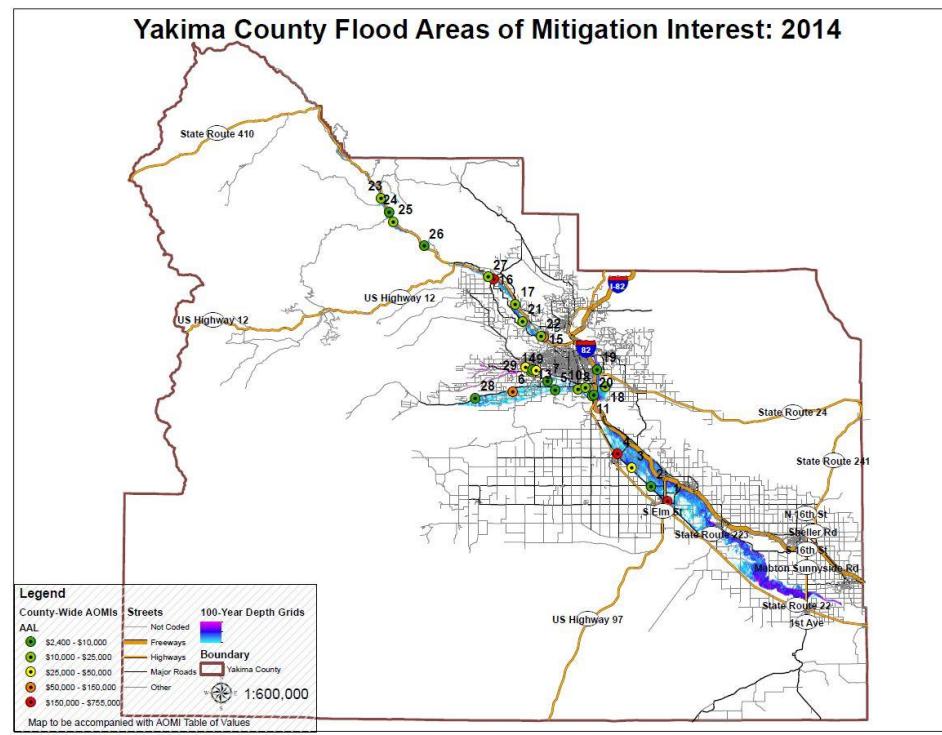
Commented [TH31]: may be able to delete this and incorporate below.

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1 loss costs structure by structure, allowing development of conceptual mitigation scenarios to
2 determine effectiveness and cost benefits. In most cases, flood risk mitigation strategies can be
3 evaluated at the reach based level to account for ~~multiple~~multiple structures or neighborhoods.
4 The Table below shows priority areas and status of these mitigation priority Hazus outputs
5 <INSERT TABLE>
6

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May 1997 – GMA Update June 2017 June 2025 – GMA Update 2046

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Table 1: County-wide Hazus Level 2 Risk Assessment - 2016 Areas of Mitigation Interest (AOMI) and Average Annualized Loss (AAL)

Modeled Area	Average Annualized Loss (AAL)*	Area of Mitigation Interest (AOMI)	Comments/Current Status	Model Notes	Number of Structures	Average Annualized Loss/Structure*	AOMI Map Reference #
Naches River - Upper Reach	\$22,426	8th Valley Lane - Right Bank of River	Requires homeowner meetings. Not Simple	Preliminary Depth Grids: Created Summer 2014	56	\$387	23
	\$12,144	Left Bank above DOT Level	Simple Solution not evident		10	\$1,214	26
	\$9,822	Left Bank across from Niles Creek Ln	Simple Solution not evident		21	\$468	24
Naches River - Lower Reach	\$26,452	S. Naches Rd Bridge Near Town (≈ 1/2 mile reach)	Floodplains by Design grant underway		101	\$2,616	16
	\$135,610	Pence Road near Sunsites	Floodplains by Design grant underway		88	\$1,541	15
	\$47,000	Low Road near City Water Treatment Plant	Reassess Eschbach Park Project impacts		8	\$5,875	17
	\$44,170	Craig Road and Jennings Lane	Floodplains by Design grant underway		78	\$566	27
	\$39,330	S. Naches Road, S. of Young Grade near fish hatchery (approx. 1/2 of Naches Rd)	Needs analysis		11	\$3,575	21
	\$39,186	Powerhouse Road - 2 Wrecking yards and adjacent residential structures	Floodplains by Design grant underway		12	\$3,266	22
Yakima River - Gap to Gap Reach	\$46,168	Bell Rd. and Riverside Rd.	Currently Pursing USACE Section 1135	100-Year FIS Supplemented With a Locally Developed Model	9	\$5,130	18
Yakima River - Lower Reach	\$1,507,620	Northeast Wapato	Reassess mitigation from Wrecking Yard removal and Bridge replacement projects	Depth Grids From Unknown Source - Effective Model Not Available	470	\$3,208	4
	\$528,826	Northeast Toppenish	Reassess mitigation from Wrecking Yard removal and Bridge replacement projects		867	\$610	1
Wide Hollow Creek	\$51,598	Track Rd. and Phillip John Rd.	Relatively Dense Community for Area		13	\$3,869	3
	\$50,800	Union Gap Main Street near 1st & 82	No Simple Solution		10	\$3,080	11
	\$20,540	Bay Street and Ahtanum Road	No Simple Solution		6	\$3,423	10
	\$20,044	S. 80th and Wide Hollow Road	Reassess during PDM grant		6	\$3,341	9
	\$15,354	Holiday and Spring Ave - South Union Gap			7	\$2,193	20
Shaw Creek	\$93,418	72nd Ave. and Vista Ave. S. of Nob Hill Blvd.	Engaged in Mitigation - FEMA R104 grant	Final Effective Model December 2008	54	\$1,730	14
	\$61,928	South of 88th Ave. and Teton Dr.	Engaged in Mitigation - FEMA PDM grant		39	\$1,588	12
	\$12,634	80th Ave. and Nob Hill Blvd.	Engaged in Mitigation - FEMA PDM grant		71	\$178	13
Ahtanum Creek - Lower Reach	\$19,978	Emma Lane	FEMA HMGPR grant cancelled by Yakama Nation	Revised Preliminary Model 10-01-13	15	\$1,332	5
	\$15,020	52nd Ave. and Washington St.			16	\$939	7

* - Based on model calibration and verification in Yakima County Recommended Average Annualized Loss (AAL) values are twice the Hazus Level 2 generated values.

Note: Map and Table assume that the Federal Project Levees (Yakima River - Gap to Gap Reach) do not fail. All other levees fail.

Note: Risk Assessment was limited to FEMA mapped floodplains and floodways with available hydraulic models. The Yakima River above Selah gap, Cowiche Creek, Satus Creek, Toppenish Creek, Wenatchee Creek, Tieton River and the upper reach of the Ahtanum Creek were not included in the risk assessment. Cottonwood Creek was assessed however only \$1 AAL was identified.

Note: Average Annualized Loss (AAL) include local depth grids and georeferenced building data such as footprint, location, type, replacement cost, etc. AAL includes building and content losses computed for an annual average loss through risk assessments from 10-year, 25-year, 50-year, 100-year, and 500-year flooding events.

Note: Level 2 Risk Assessment Average Annualized Loss values were based on 2012 dollars.

Note: AOMIs 2, 6, 8, 19, and 25 have been removed due to prioritization.

Note: Comments/Current Status last updated May 2016.

1
2 Once projects are completed, it is assumed that the specific identified risks the project addressed
3 are now mitigated.
4

5 3.3.1.5 Project Pipeline with Partners

6 Project Pipeline "Plan or Database"?

7
8 Yakima County has been involved in efforts by American Rivers and BEF, etc. to insert
9 many of their floodplain restoration/flood risk reduction projects into a "project pipeline". The
10 intent here is to show potential funders where money is needed and for what kind of projects.
11 This isn't a plan, should we mention that?

Commented [TH32]: Discussion item.

Commented [KW33R32]: Yeah, this doesn't really fit now, especially as a doc that will rep. current - 2046. We can allude to partnerships (continuing) and intent in the Purpose, Policy and Goals.

Commented [TH34R32]: ok, delete

13 NEW SECTION: Community Rating System

14
15 The Community Rating System is a voluntary program for communities to enter for discounted
16 flood insurance for residents. This program requires cooperation from multiple Departments
17 and Divisions within the County, and can be a substantial amount of work... NOT SURE IF WE
18 SHOULD PUT THIS IN HERE>>>

Commented [KW35]: Spoke to Doug Werts about this as part of the "fire, flood and drought" climate change/resiliency/sustainability section inserts. Still valid?

Commented [KW36R35]: Ask Doug to take a look, and provide access to update material, or update this section.

21 3.3.2 Yakima County Fire and Life Safety Division

23 Yakima Valley Fire Adapted Communities Coalition

24 Fire Adapted Communities (FAC) are communities within wildfire prone areas that collaborate
25 between residents, businesses, government agencies, and non-profit organizations to prepare

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1 for the effects of wildland fires. These communities acknowledge the risks associated with living
2 in or among fire prone ecosystems. FACs address wildfire risks through activities that prevent
3 destructive wildfires, provide recovery from wildfire damage, and increase resilience to the
4 effects of wildfires. In 2014, Yakima County Fire and Life Safety Division, in collaboration with
5 other agencies, organizations, and community members, launched the Yakima Valley Fire
6 Adapted Communities Coalition to promote and enhance wildfire mitigation activities across the
7 county. In addition, Yakima County adopted the first Wildland Urban Interface building code in
8 Washington. Other FAC programs and plans adopted by Yakima County include:

9

- 10 • Firewise Program: Firewise is a national program that addresses a community's
11 vulnerability to wildfire, and uses outreach, education, and community events to
12 empower communities to mitigate for the hazard. The mitigation activities include
13 improving access and directional signage for emergency vehicles, implementing
14 landscaping techniques, using fire resistant building materials, and reducing fuel loads.
15 Yakima County dedicated a full-time staff to manage the local Firewise program in 2015.
- 16 • 2014 Yakima County Community Wildfire Protection Plan (CWPP): Community Wildfire
17 Protection Plans clarify and refine a community's mitigation priorities in the wildland-
18 urban interface. It provides a framework to collaborate with Federal land management
19 agencies on the implementation of strategic forest management and hazardous fuel
20 reduction projects.
- 21 • 2012 Cowicheche Mountain Community Wildfire Protection Plan: The Cowicheche
22 Mountain CWPP identifies concurrent fire mitigation activities, implementers, and
23 funding opportunities to reduce the risk of and be prepared for future fires. This plan
24 focuses on a shrub-steppe environment, which distinguishes it from the other CWPPs in
25 the region that focus more on forested habitats. The plan focuses on safety, shrub-
26 steppe ecological principles, multijurisdictional collaboration, and education.
- 27 • 2005 State Highway 410 and U.S. Highway 12 CWPP: The Highways 410 and 12 CWPP set
28 goals to improve fire prevention, reduce hazardous fuels, promote community
29 assistance, recognize and adhere to environmental laws and policies, and tie to existing
30 and approved emergency response plans within Yakima County. This plan is for a specific
31 area within Yakima County; therefore, it contains more detail than the County-wide plan.

33 3.3.3 Federal/State Programs

34 Yakima River Basin Water Enhancement Project/ Yakima River Basin Integrated Water 35 Resource Management Plan

36 ~~This ongoing U.S. Bureau of Reclamation project aims to provide supplemental water for irrigated
37 lands, water for new lands, water for increased in-stream flows for aquatic life, and a
38 comprehensive plan for efficient management of basin water supplies. The Yakima Basin Plan
39 includes measures to increase water storage and provide water supply reliability for farmers and
40 communities. Strategies include increasing the size of the Bumping Lake reservoir, creating more
41 efficient means to convey water, ground water injection, and a water trading system.~~

Commented [KW37]: Updates? Its 2025 all y'all!

Commented [NS38R37]: I know a lot of fire districts are participating in DNR's "wildfire ready neighbors" program, but I don't know if it replaces this.

Commented [KW39R37]: I'll continue to follow up with Doug W. and once I get a USFS contact, will bring them in and get their program detail. Maybe WA DNR too?

Commented [KW40]: SPP [SIC] ?

Commented [TH41]: Old Language - New language proposed below.

Commented [KW42R41]: This one, because of its scope and long term commitment makes sense to cite for sure.

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1 The Yakima Basin Integrated Plan (YBIP) is a collaboration of state, federal, tribal, business, and
2 community organizations committed to addressing water, fishery, habitat and climate variability
3 challenges to ensure a robust Yakima River Basin within its built and natural systems.
4 The Yakima Basin Integrated Plan works toward a future with robust agriculture, abundant
5 fisheries, outstanding recreation, healthy forests, and thriving communities. In 2009, a diverse
6 group of interests in the basin came together with a desire to build a framework for resource
7 management that would address the community's needs and put long-standing conflicts over
8 water and fisheries behind them. The Yakima Basin Integrated Plan was born: a common-sense,
9 pragmatic approach. The Integrated Plan covers thirty years, divided into three ten-year
10 implementation phases. Work on the Initial Development Phase is now underway.
11

12 The Yakima Basin Integrated Plan offers a thirty-year approach to meeting the basin's water
13 needs – now and in the future. Goals for the Integrated Plan are:
14 • Provide opportunities for comprehensive watershed protection, ecological restoration,
15 and enhancement addressing instream flows, aquatic habitat, and fish passage;
16 • Improve water supply reliability during drought years for agricultural and municipal
17 needs;
18 • Develop a comprehensive approach for efficient management of water supplies for
19 irrigated agriculture, municipal and domestic uses, and power generation;
20 • Improve the ability of water managers to respond and adapt to a changing hydrograph;
21 and
22 • Contribute to the vitality of the regional economy and sustain the riverine environment.
23
24



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26 Figure 3.3.3-24 City of Toppenish Flooding, February 1996
27 Source: Yakima County FCZD
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3.4 Stormwater in Yakima County

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1 The Clean Water Act, enacted in 1972, contains the legal requirement for protecting the quality
2 of waters of the nation. The Act authorizes the USEPA Administrator to carry out its
3 requirements. USEPA initially focused water quality improvement efforts on reducing discharges
4 of pollutants from pipes (point sources), primarily wastewater from industrial processes and
5 municipal sewer treatment facilities.
6
7 Diffuse sources of pollutants (non-point sources) also contribute to water pollution nationwide.
8 Runoff from stormwater can collect pollutants as it flows across the landscape and discharges to
9 surface and ground water. As a result, USEPA regulates urban stormwater discharges by requiring
10 municipalities to obtain National Pollutant Discharge Elimination System (NPDES) permits for
11 stormwater. The Department of Ecology regulates the NPDES Municipal Stormwater Permits for
12 the State of Washington.
13
14 Phase I of the NPDES Stormwater Program began in 1990. Large and medium sized municipalities
15 with populations greater than 100,000 were required to develop and implement SWMPs. Phase
16 II of the regulations requires small municipalities (<100,000) and contiguous areas with smaller –
17 but still urban – communities to develop and implement SWMPs. In February 2007, the
18 Department of Ecology issued the Eastern Washington Phase II Municipal Stormwater Permit,
19 requiring permittees to submit a Notice of Intent (NOI) seeking coverage and to comply with the
20 terms of the permit. Ecology requires permittees and co-permittees to submit an NOI for
21 coverage and to comply with the current Phase II Municipal Stormwater Permit every five years
22 to remain compliant.
23
24 Yakima County established a Stormwater Authority to provide for the protection of the citizens
25 of Yakima County from stormwater and drainage damage through planning and the regulation of
26 site drainage and discharges to stormwater control facilities, Underground Injection Control (UIC)
27 wells, and waters of the state. All new development and redevelopment shall provide for
28 drainage such that it does not conflict with present drainage patterns, or create a drainage, water
29 quality or water quantity problem within itself, for its neighbors, or to stormwater control
30 facilities.
31
32 Permittees must develop SWMPs that contain minimum performance measures in eight required
33 program elements: Public Education and Outreach, Public Involvement and Participation, Illicit
34 Discharge Detection and Elimination, Construction Site Stormwater Runoff Control, Post-
35 Construction Stormwater Management, Municipal Operations and Maintenance, Compliance
36 with TMDL Requirements, and Monitoring and Assessment. Descriptions of the performance
37 measures that Yakima County will perform are the core of this document. For context, the
38 regulatory and physical environment as related to stormwater is provided to support the
39 performance measures. Each performance measure identifies whether it is part of the ILA.
40 contains a goal, describes existing or related activities, presents measurable activities to meet
41 the goal, identifies documentation needed for assessment and describes responsibilities.
42 The SWMP and the permit do not focus on specific pollutants. The permit assumes that required
43 activities will reduce stormwater pollution, unless water quality impairment has been identified
44

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1 by Ecology and a specific pollutant reduction is required under the Total Maximum Daily Load
2 (TMDL) program. The SWMP will address new and emerging pollutants.

Commented [NS43]: Just wanted to get Jack's work in here. may not be the right placement.

3
4
5 **3.5 Yakima County's Strategy for Resilient and Sustainable Growth**

Commented [KW44R43]: We'll worry about document placement and flow (HAI) later.

Commented [KW45]: Proposed language

6 **Introduction and Purpose**

7 This Climate Resiliency Element is adopted pursuant to Second Engrossed Substitute House Bill
8 1180 (2023), which amended the Growth Management Act (GMA) under RCW 36.70A.070(8) to
9 require mandatory climate change planning. This element establishes a comprehensive
10 framework for identifying, preparing for, and adapting to the significant climate-related risks
11 facing Yakima County.

12 The Growth Management Act mandates that Yakima County's Horizon 2026 Comprehensive Plan
13 integrate resiliency and sustainability principles to address 21st-century challenges. The County
14 will do this while preserving the region's agricultural heritage and natural resources. This
15 recognizes that traditional planning approaches must evolve to accommodate rapid
16 environmental and demographic changes.

17 Comprehensive Plan Elements: Climate considerations must be integrated into Land Use
18 (directing growth away from high-risk areas), Housing (ensuring climate-resilient building
19 standards), Transportation (designing for extreme heat and flooding), Utilities (water supply
20 reliability, stormwater management), Economic Development (agricultural adaptation, economic
21 diversification), and Parks and Recreation (protecting natural systems that provide climate
22 adaptation benefits).

23 Overarching Goal: Ensure the resilience and sustainability of critical areas, shorelines, property,
24 life, health, and the economy through preparation for, survival of, and recovery from extreme
25 weather events and cumulative natural hazards. This Climate Resiliency Element aligns with the
26 Strategy's four goals:

- 27 1. Communities Goal: Foster healthy, safe, equitable, and economically vibrant communities
- 28 2. Infrastructure Goal: Advance infrastructure that supports natural systems and provides
29 reliable services
- 30 3. Natural and Working Lands Goal: Protect, restore, and manage natural systems and
31 working lands to provide continued benefits under climate impacts
- 32 4. Governance Goal: Develop efficient processes for strategic alignment, collaboration, and
33 accountability

34 In 2024, the Washington State Department of Ecology published the Washington State Climate
35 Resilience Strategy pursuant to RCW 70A.05, in partnership with nine state agencies including
36 the Departments of Agriculture, Commerce, Health, Natural Resources, Fish and Wildlife,
37 Transportation, the State Conservation Commission, Emergency Management Division, and

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1 Puget Sound Partnership. Yakima County will coordinate implementation of this element with
2 relevant state agency programs and funding opportunities identified in the Climate Resilience
3 Strategy, including conservation technical assistance, forest health and wildfire resilience
4 programs, irrigation efficiency grants, riparian restoration programs, and climate-informed water
5 resource planning.

6
7 Regional Context and Climate Baseline. Yakima County is situated within the Yakima River Basin,
8 a 15,900 square-kilometer (6,150 square-mile) watershed that drains the eastern slopes of the
9 central Washington Cascade Mountains. The basin's economy is fundamentally dependent on
10 irrigated agriculture, with over 180,000 hectares (450,000 acres) of highly productive farmland
11 generating the largest agricultural economy in Washington State. The region's agricultural
12 success—including tree fruits, wine grapes, hops, mint, hay, and specialty crops—relies on
13 carefully managed water resources supplied through the U.S. Bureau of Reclamation's five-
14 reservoir system (Bumping Lake, Cle Elum, Kachess, Keechelus, and Rimrock).

15
16 The basin's hydrology is characterized by strong seasonal variability. Mean annual precipitation
17 ranges from 203 to 356 centimeters (80 to 140 inches) along the Cascade Crest headwaters to
18 less than 25 centimeters (10 inches) at lower elevations in the county. Between 61 and 81 percent
19 of annual precipitation falls during the cool season (October through March), with much of it
20 stored as mountain snowpack that traditionally provides sustained runoff during the spring and
21 summer irrigation season. The reservoir system, with combined storage capacity of
22 approximately 1.2 billion cubic meters (1.07 million acre-feet), represents roughly 30 percent of
23 the river's mean annual flow—a relatively modest storage-to-runoff ratio that makes the system
24 highly sensitive to changes in snowpack accumulation and timing of spring melt.

25
26 This dependence on snowpack as a "sixth reservoir" creates significant vulnerability to climate
27 warming. Research conducted by the University of Washington Climate Impacts Group indicates
28 that 78 percent of the Yakima River Basin lies within the elevation "transition zone" where winter
29 precipitation frequently transitions between rain and snow, making the basin exceptionally
30 sensitive to even modest temperature increases.

Observed and Projected Changes to Extreme Weather and Events

31
32 Historical Trends: Analysis of historical observations demonstrates that climate change is already
33 affecting the Yakima Basin. Declining April 1st snowpack, earlier snowmelt timing, and shifts in
34 streamflow patterns have been documented across the Washington Cascades. These changes
35 have contributed to increased frequency of water supply shortfalls: between 1970 and 2005,
36 water allocations were restricted for junior water rights holders in 13 of 35 years (approximately
37 37 percent), with particularly severe shortages occurring in 1977, 1992-1994, 2001, and 2005.

38
39
40 Climate Projections for Yakima County: Pursuant to RCW 36.70A.172, this element incorporates
41 best available science from multiple authoritative sources, including climate projections
42 developed by the University of Washington Climate Impacts Group using downscaled outputs
43 from 20 global climate models archived by the Intergovernmental Panel on Climate Change (IPCC).

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1 [Fourth Assessment Report](#), analyzed for both the A1B (moderate-high emissions) and B1 (lower
2 emissions) scenarios.

3

4 [Temperature Increases: Projections indicate substantial warming throughout the 21st century:](#)

5

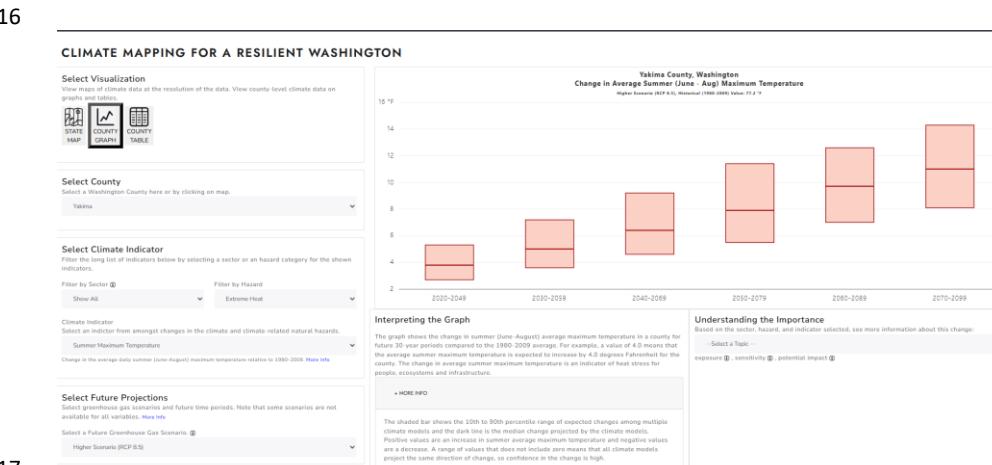
6 [2020s \(2010-2039\): Annual temperatures increase by +1.18°C \(+2.1°F\) under A1B](#)
7 [scenarios and +1.08°C \(+1.9°F\) under B1 scenarios](#)

8 [2040s \(2030-2059\): Annual temperatures increase by +2.05°C \(+3.7°F\) under A1B and](#)
9 [+1.57°C \(+2.8°F\) under B1](#)

10 [2080s \(2070-2099\): Annual temperatures increase by +3.52°C \(+6.3°F\) under A1B and](#)
11 [+2.49°C \(+4.5°F\) under B1](#)

12

13 [Example Resilient Washington Climate modeling \(University of WA. IPCC 2025\) for Yakima County](#)
14 [Change in Average Summer Temperature, Snowpack Peak Flooding and Wildfire \(ksw 10282025](#)
15 [model run\).](#)



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CLIMATE MAPPING FOR A RESILIENT WASHINGTON

Select Visualization
View maps of climate data at the resolution of the data. View county level climate data on graphs and tables.



Select County
Select a Washington County here or by clicking on map.

Yakima

Select Climate Indicator
Filter the long list of indicators below by selecting a sector or an hazard category for the shown indicators.

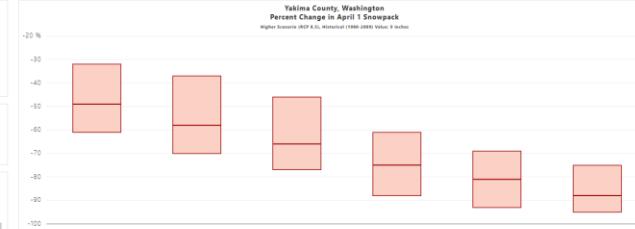
Filter by Sector Filter by Hazard
Show All Reduced Snowpack

Climate Indicator
Select an indicator from amongst changes in the climate and climate-related natural hazards.

Snowpack
Percent change in the amount of water contained in the snowpack (snow water equivalent, SWE) on April 1 relative to the average for 1980-2009. [More info](#)

Select Future Projections
Select greenhouse gas scenarios and Future time periods. Note that some scenarios are not available for all variables. [More info](#)

Select a Future Greenhouse Gas Scenario
Higher Scenario (RCP 8.5)



Interpreting the Graph
Based on the sector, hazard, and indicator selected, see more information about this change:
-Select a Topic:
exposure sensitivity potential impact

[MORE INFO](#)
The shaded bar shows the 10th to 90th percentile range of expected changes among multiple climate models. The range of values does not include zero, which means that all climate models project the same direction of change, so confidence in the change is high.

Understanding the Importance
Based on the sector, hazard, and indicator selected, see more information about this change:
-Select a Topic:
exposure sensitivity potential impact

[MORE INFO](#)

1
2
3

CLIMATE MAPPING FOR A RESILIENT WASHINGTON

Select Visualization
View maps of climate data at the resolution of the data. View county level climate data on graphs and tables.



Select County
Select a Washington County here or by clicking on map.

Yakima

Select Climate Indicator
Filter the long list of indicators below by selecting a sector or an hazard category for the shown indicators.

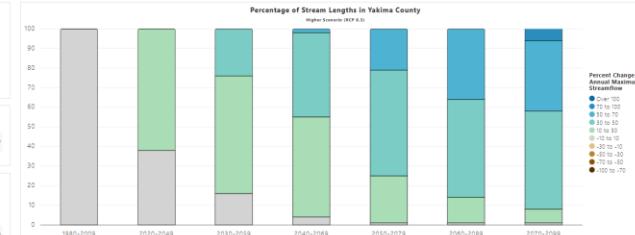
Filter by Sector Filter by Hazard
Show All Flooding

Climate Indicator
Select an indicator from amongst changes in the climate and climate-related natural hazards.

Peak Streamflow
Percent change in the magnitude of streamflow on the day of the year with the most streamflow. [More info](#)

Select Future Projections
Select greenhouse gas scenarios and Future time periods. Note that some scenarios are not available for all variables. [More info](#)

Select a Future Greenhouse Gas Scenario
Higher Scenario (RCP 8.5)



Interpreting the Graph
Based on the sector, hazard, and indicator selected, see more information about this change:
-Select a Topic:
exposure sensitivity potential impact

[MORE INFO](#)
Green shades are an increase in maximum streamflow and lower shades streamflows are a decrease. Darker green categories are stream segments with streamflow above the historical maximum streamflow value by a greater amount.

Understanding the Importance
Based on the sector, hazard, and indicator selected, see more information about this change:
-Select a Topic:
exposure sensitivity potential impact

[MORE INFO](#)

4

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CLIMATE MAPPING FOR A RESILIENT WASHINGTON

Select Visualization
View maps of climate data at the resolution of the data. View county-level climate data on
grids and tables.



Select County
Select a Washington County here or by clicking on map.

Yakima

Select Climate Indicator
Filter the long list of indicators below by selecting a sector or an hazard category for the shown
indicators.

Filter by Sector: Show All Filter by Hazard: Wildfire

Climate Indicator
Select an indicator from amongst changes in the climate and climate-related natural hazards.

Wildfire Danger

Change in the number of days per year, relative to 1971 - 2000, with high the potential based on dry fuels, fuel
moisture below the 20th percentile. [More info](#)

Select Future Projections
Select greenhouse gas (GCMs) and future time periods. Note that some scenarios are not
available for all variables. [More info](#)

Select a Future Greenhouse Gas Scenario: Higher Scenario (RCP 8.5)



1
2
3 Warm season temperature increases (April through September) are projected to be slightly
4 higher than cool season increases, with 2080s warm season temperatures rising by +3.79°C
5 (+6.8°F) under A1B scenarios.

6
7 Precipitation Changes: While annual precipitation is projected to increase modestly (between
8 0.22 and 4.9 percent depending on scenario and timeframe), the seasonal distribution shifts
9 significantly:

10
11 • Cool season precipitation (October through March) increases by 2.3 to 9.6 percent
12 • Warm season precipitation (April through September) decreases by 0.9 to 4.7 percent
13 • Critically, warmer temperatures cause an increasing proportion of winter precipitation to
14 fall as rain rather than snow

Cumulative Natural Hazards

15
16 Climate change does not occur in isolation but rather compounds and interacts with multiple
17 natural hazards that affect Yakima County:

18 Wildfire: Increasing temperatures, longer fire seasons, declining summer soil moisture, and more
19 frequent drought conditions substantially elevate wildfire risk across forest and shrub steppe
20 landscapes. Climate-driven forest stress increases vulnerability to insect outbreaks (such as
21 mountain pine beetle), creating additional fuel loads. Post-fire conditions dramatically increase
22 risks of debris flows, flooding, and erosion.

23
24 Flooding: While declining snowpack reduces spring snowmelt flood risk in some scenarios,
25 climate change increases flood risks through intensified precipitation events, rain-on-snow
26 events at higher elevations, and post-wildfire conditions that reduce watershed infiltration

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1 capacity and increase runoff velocity. Channel migration and erosion risks increase with altered
2 flow regimes. Additionally, invasive species like Crack Willow increase localized flooding, creating
3 dense thickets and produce fallen branches that choke waterways, blocking water flow and
4 trapping debris.

5
6 **Stormwater:** Heightened temperatures will cause more frequent and intense rainfall. This has
7 the potential to overwhelm infrastructure and magnify flood events. An increase in stormwater
8 activity will also lead to more toxins and pollutants in Yakima County waterways. This will
9 adversely affect fish, aquatic plants, and wildlife in the area.

10
11 **Drought:** Extended periods of below-average precipitation, combined with reduced snowpack
12 storage, higher evapotranspiration rates from warming, and earlier depletion of soil moisture,
13 create more frequent and severe agricultural and hydrological drought conditions. Drought
14 impacts cascade through reduced surface water availability, declining groundwater levels,
15 increased competition for limited water resources, crop stress and losses, and ecosystem
16 degradation.

17
18 **Extreme Heat:** Projected temperature increases will result in more frequent, longer duration, and
19 more intense heat waves. Extreme heat threatens public health (particularly for elderly, children,
20 outdoor workers, and those without access to cooling), reduces agricultural productivity,
21 increases irrigation demand, stresses infrastructure (electrical grids, transportation systems), and
22 creates compounding effects when combined with drought and wildfire smoke.

23
24 **Geologic Hazards:** Climate change exacerbates landslide and debris flow risks through changing
25 precipitation patterns (more intense rainfall events), post-wildfire conditions that destabilize
26 slopes, and altered groundwater conditions. Unstable slopes identified in critical areas
27 regulations face increased failure probability under projected climate conditions.

28
29 **Ecosystem and Habitat Stress:** Temperature increases affect cold-water fisheries (particularly
30 salmonids), cause habitat shifts and species range changes, alter phenology (timing of biological
31 events like flowering and migration), increase invasive species pressure, and create cumulative
32 stresses that reduce ecosystem resilience.

33
34 **Surface Water Resources.** Surface water from the Yakima River and its tributaries is delivered to
35 agricultural lands through an extensive network of irrigation districts and canals, supporting
36 approximately 464,000 acres of irrigated cropland throughout the basin.

37
38 **Groundwater Resources and Critical Aquifer Recharge Areas.** Groundwater resources constitute
39 an essential and increasingly important component of the basin's water supply system. Yakima
40 County's aquifer systems provide critical functions for both agricultural production and municipal
41 water supply.

42
43 **Agricultural Reliance on Groundwater:** Beyond the surface water irrigation system, the region's
44 agricultural economy is substantially dependent on groundwater. Thousands of agricultural wells

Commented [NS46]: don't know if this needs to be in here, and it's clunky.

Commented [KW47R46]: Agree...its going into CH3 !! I'll make it less clunky

Commented [KW48R46]: Oh wait...is this Jack's stuff?

Commented [KW49R46]: I was looking at the climate change stuff

Commented [KW50R46]: The "Heightened Temperatures" stuff should stay. Helps us talk about upsizing pipes etc. so we don't have overflow into receiving waters etc.

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1 supplement surface water supplies, particularly during drought years when surface water
2 allocations are curtailed. Groundwater provides approximately 20-30 percent of total irrigation
3 water in the basin, with this proportion increasing significantly during water-short years. Many
4 farmers with junior water rights—who experience the most severe surface water curtailments—
5 rely on groundwater wells as drought emergency backup supplies. The economic viability of
6 substantial acreage of farmland, particularly in areas outside primary irrigation district service
7 boundaries, depends entirely on reliable groundwater availability.

8
9 Agriculture Climate Resilience Planning. The Washington State Department of Agriculture's
10 Climate Resilience Plan for Washington Agriculture (2025) provides a companion framework
11 specifically addressing agricultural adaptation. Recognizing Yakima County's position as the
12 state's leading agricultural producer, this element incorporates the Agriculture Plan's priorities:
13 safeguarding operational resilience through enhanced emergency preparedness and recovery,
14 supporting agricultural innovation through research and workforce development, and
15 encouraging voluntary adoption of climate-smart practices that enhance farm resilience while
16 maintaining productivity.

17
18 Capital Facilities Plans: Infrastructure planning under RCW 36.70A.070(3) must address climate
19 resilience, ensuring that public facilities, transportation systems, stormwater management,
20 water supply, and other infrastructure are designed for projected future climate conditions over
21 their expected functional lifespan.

22
23 Municipal and Domestic Water Supply: Groundwater serves as the primary source of drinking
24 water for most rural Yakima County residents, numerous small communities, and supplemental
25 supply for larger municipalities. Thousands of domestic wells, Group A and Group B public water
26 systems, and municipal supply wells depend on the quantity and quality of groundwater
27 resources. Protection of groundwater recharge functions is therefore essential not only to
28 agricultural sustainability but also to public health and residential water security.

29
30 Critical Aquifer Recharge Areas (CARAs): Under the Growth Management Act and Yakima
31 County's Critical Areas Ordinance, Critical Aquifer Recharge Areas are designated and regulated
32 to protect groundwater quantity and quality. CARAs are defined as areas with a critical recharging
33 effect on aquifers used for potable water supplies, including: highly permeable soils and geologic
34 formations that allow precipitation and surface water to infiltrate rapidly to underlying aquifers;
35 areas where aquifers are vulnerable to contamination due to shallow depth to groundwater, high
36 permeability, or direct connection between surface water and groundwater; wellhead protection
37 areas for public drinking water sources; and sole source aquifers designated by the
38 Environmental Protection Agency.

39
40 Dual Function for Flood Management and Recharge: Critical Aquifer Recharge Areas perform the
41 dual essential functions of storing floodwaters during high precipitation events and facilitating
42 groundwater recharge that sustains summer base flows, well yields, and aquifer levels. Areas
43 with highly permeable glacial outwash, alluvial deposits, fractured basalt, and other
44 hydrogeologic formations act as natural infrastructure— infiltrating stormwater and snowmelt,

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1 reducing downstream flood peaks, filtering potential contaminants, and replenishing aquifers
2 that support both agricultural and domestic water needs. This natural storage and infiltration
3 capacity becomes increasingly valuable under climate change scenarios that project more intense
4 precipitation events in winter months combined with reduced summer moisture availability. The
5 loss of recharge capacity through conversion to impervious surfaces, compaction of soils, or
6 contamination that prevents beneficial use of groundwater represents a permanent reduction in
7 the basin's water supply resilience.

8
9 Groundwater-Surface Water Interaction: The Yakima Basin's aquifer systems are hydraulically
10 connected to surface water bodies, with groundwater discharge providing critical base flows to
11 streams during low-flow periods and supporting cold-water refugia essential for salmon and
12 steelhead survival. This interconnection means that groundwater depletion affects not only well
13 yields and aquifer storage but also in-stream flows, water temperatures, and riparian ecosystem
14 health. Conversely, declining surface water levels and reduced infiltration from canals and
15 irrigated fields affect aquifer recharge rates.

16
17 Integrated Water Resource Challenges. The basin's hydrology is characterized by strong seasonal
18 variability. Mean annual precipitation ranges from 203 to 356 centimeters (80 to 140 inches)
19 along the Cascade Crest headwaters to less than 25 centimeters (10 inches) at lower elevations
20 in the county. Between 61 and 81 percent of annual precipitation falls during the cool season
21 (October through March), with much of it stored as mountain snowpack that traditionally
22 provides sustained runoff during the spring and summer irrigation season.

23
24 Climate change impacts to this integrated surface water-groundwater system include: reduced
25 snowpack storage leading to earlier and lower peak stream flows; decreased summer surface
26 water availability requiring increased groundwater pumping; potentially altered groundwater
27 recharge patterns as the timing and form (rain versus snow) of precipitation changes; increased
28 competition for limited water resources between agricultural, municipal, domestic, and in-
29 stream ecological needs; and potential groundwater level declines from increased pumping
30 demand during more frequent drought periods. These interconnected stresses on both surface
31 water and groundwater resources threaten the agricultural economy, municipal water security,
32 domestic well reliability, and aquatic ecosystem health that define Yakima County's character
33 and prosperity.

34
35 Snowpack Decline: Temperature increases are expected to result in approximately 20 percent
36 loss of April 1st snowpack for each 1°C (1.8°F) of warming. Studies specific to the Yakima Basin
37 project snowmelt reductions of 12 percent with +1°C warming and 27 percent with +2°C warming
38 compared to the 1981-2005 baseline. By the 2080s under A1B scenarios, spring snowpack is
39 projected to decline dramatically, with peak snowmelt shifting from late May to mid-February.

40
41 Streamflow Timing: Hydrologic modeling indicates that peak streamflow in the Yakima River near
42 Parker historically occurs in late May at approximately 340 cubic meters per second (12,000 cubic
43 feet per second). Under projected climate scenarios:

44

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- 1 • By the 2020s, peak flows decline to approximately 280-310 cms (10,000-11,000 cfs) and
2 shift earlier
- 3 • By the 2080s under A1B, peak flows decline to 225 cms (8,000 cfs) and shift to mid-
4 February
- 5 • Summer low flows decrease, with June through October flows consistently below
6 historical levels

7
8 Implications for Water Supply and Agriculture: Climate modeling of the Yakima River Basin
9 reservoir system projects significant increases in water supply stress. Under historical conditions
10 (1970-2005), "water shortage years"—defined as years when Total Water Supply Available
11 (TWSA) prorating for junior water rights holders falls to 75 percent or less—occurred in 14
12 percent of years. Without adaptation measures:

13

- 14 • 2020s A1B scenarios: Water shortage years increase to 32 percent (range: 15 to 54
15 percent across ensemble members)
- 16 • 2040s A1B scenarios: Increase to 36 percent
- 17 • 2080s A1B scenarios: Increase to 77 percent
- 18 • B1 scenarios: Show slightly lower but still substantial increases (27 percent in 2020s, 33
19 percent in 2040s, 50 percent in 2080s)

20

21 Most critically, projections show increasing frequency of the historically unprecedented
22 condition where senior water rights holders also experience supply shortfalls—a situation that
23 would create systemic stress across the entire agricultural economy.

24

25 Economic analysis of climate impacts on Yakima Basin perennial crops (apples and sweet cherries,
26 representing 48 percent of regional crop value) projects annual losses in production value ranging
27 from \$23 million to \$70 million depending on timeframe and emissions scenario, representing 5
28 to 16 percent of historical production value for these crops. These estimates account for both
29 direct climate effects on growing conditions and water supply curtailments, but do not capture
30 additional losses from permanent tree damage, carryover effects, or impacts to other crops.

31

32 Equity and Vulnerable Populations. Consistent with GMA requirements under RCW
33 36.70A.070(8)(c), this element explicitly addresses equity considerations in climate adaptation.
34 Climate change impacts are not distributed equally to certain populations who face
35 disproportionate risks due to factors including:

36

- 37 • Agricultural workers and farmworker communities facing extreme heat exposure during
38 outdoor labor, housing conditions that lack adequate cooling, language and cultural
39 barriers to accessing emergency information and services, and economic vulnerability to
40 crop failures and reduced employment
- 41 • Low-income households with limited resources for emergency preparation, higher energy
42 cost burdens, housing stock more vulnerable to extreme weather, and reduced adaptive
43 capacity

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- 1 • Elderly residents with greater physiological vulnerability to extreme heat, potential
2 mobility limitations affecting evacuation, and higher rates of chronic health conditions
3 exacerbated by climate stresses
- 4 • Rural communities with longer emergency response times, limited access to cooling
5 centers and clean air spaces, dependence on private wells vulnerable to drought, and
6 economic dependence on climate-sensitive sectors

7
8 Climate adaptation planning, resource allocation, infrastructure investments, and emergency
9 management must prioritize these vulnerable populations and ensure equitable distribution of
10 climate resilience benefits and adaptive capacity.

12 **Cascading Natural Hazards: An Existential Challenge.**

13 Human activities and climate change require that Yakima County fundamentally rethink how it
14 manages growth, protects critical resources, and builds adaptive capacity for an uncertain future.
15 The county faces an interconnected web of natural hazards that threaten every aspect of
16 community life, economic stability, and environmental health.

17
18 **Wildfire: The Accelerating Threat.** Wildfires now pose an existential risk to Yakima County's
19 communities and economy. The 2020 Pearl Hill Fire consumed over 223,000 acres, destroying
20 homes in Malaga and forcing evacuations across the Wenatchee Valley border. The 2021
21 Schneider Springs Fire burned 108,000 acres of prime timber and grazing land, while the Evans
22 Canyon Fire threatened Yakima's western suburbs and shut down Interstate 82 for days,
23 disrupting the region's transportation lifeline.

24
25 These fires demonstrate wildfire's all-encompassing impact: residential areas face direct
26 destruction and chronic smoke exposure affecting public health; critical infrastructure including
27 power transmission lines, and cell towers, and transportation corridors suffer repeated damage
28 and costly rebuilding; agricultural operations lose crops, livestock, irrigation infrastructure, and
29 processing facilities, with smoke taint devastating wine grape harvests worth millions annually.
30 The economic cascade extends beyond immediate fire damage. Tourism to recreational areas
31 diminishes due to air quality concerns and facility closures. Insurance costs skyrocket, making
32 development and business operations financially challenging. Forest industries face supply chain
33 disruptions as timber harvests are delayed or rendered impossible. Most critically, wildfire
34 threatens the county's water supply infrastructure, with post-fire erosion and debris flows
35 compromising watershed quality and reservoir capacity for years following major burns.

36 37 **Drought: Historic Levels and Repeated Emergency Declarations**

38 Drought conditions, intensified by climate change and competing water demands, create a slow-
39 moving economic and environmental catastrophe. The 2015 drought declared the Yakima Basin
40 in emergency status, forcing farmers to fallow 164,000 acres of productive farmland—equivalent
41 to 14% of irrigated acreage. Junior water rights holders received zero allocation, while senior
42 rights holders faced 47% curtailment, triggering \$54 million in federal drought assistance. In April

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1 of 2025, Ecology declared a drought emergency that includes Yakima County for the third year in
2 a row.

3
4 **Residential communities** experience water shortages requiring usage restrictions, well failures
5 forcing expensive drilling deeper wells, and deteriorating water quality as aquifer levels drop.

6
7 **Municipal infrastructure** strains under increased demand while facing reduced supply, forcing
8 costly emergency water purchases and system upgrades.

9
10 **Agricultural impacts** extend far beyond immediate crop losses. Permanent crops like fruit trees
11 and vineyards, representing decades of investment, die during extended drought, requiring
12 complete replanting and years of recovery. Processing facilities face supply shortages, leading to
13 reduced operations and job losses. Ranchers sell livestock at distressed prices when grazing lands
14 fail, disrupting multi-generational ranch operations.

15
16 The **economic multiplier effect** is devastating: for every dollar of agricultural loss, rural
17 communities lose \$2-3 in related economic activity. Food processing plants, equipment dealers,
18 trucking companies, and agricultural service businesses face reduced demand. Rural banks
19 experience increased loan defaults as agricultural borrowers struggle with reduced income and
20 increased costs.

21
22 **Flooding: Our Rivers, Streams, Aquifers and Floodplains**

23 Yakima County's flood vulnerability became tragically evident during the November 1996 floods,
24 when record rainfall and rapid snowmelt caused \$270 million in damages, destroyed hundreds
25 of homes, and resulted in nine fatalities. The Yakima River at Umtanum reached 164,700 cubic
26 feet per second—nearly three times flood stage—while the Naches River crested at double its
27 previous record.

28
29 **Residential areas** face not only immediate displacement and property destruction but long-term
30 health risks from contaminated floodwaters and mold growth. Lower Valley communities,
31 including portions of Sunnyside, Grandview, and Mabton, remain chronically vulnerable, with
32 flood insurance claims averaging \$2.5 million annually even in non-disaster years.

33
34 **Critical infrastructure** suffers cascading failures during major floods. Transportation networks
35 become impassable, severing connections between communities and markets. The closure of
36 State Route 410, Interstate 82, and numerous county roads during flood events isolates rural
37 communities and disrupts agricultural supply chains worth hundreds of millions annually.
38 Wastewater treatment facilities overwhelmed by floodwaters discharge untreated sewage,
39 contaminating drinking water supplies and requiring expensive emergency responses.

40
41 **Agricultural infrastructure** faces complete destruction during major flood events. Irrigation
42 systems, farm buildings, equipment, and stored crops suffer losses exceeding \$100 million during
43 severe floods. Topsoil erosion removes the foundation of agricultural productivity, while debris
44 deposition renders fields unusable for multiple growing seasons. Livestock losses compound

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1 economic impacts, with dairy operations particularly vulnerable to extended power outages and
2 facility damage.

3
4 **Interconnected Vulnerabilities.** These hazards create compounding effects that threaten the
5 county's fundamental viability. Post-fire landscapes become more flood-prone, as burned
6 watersheds generate debris flows and increased runoff. Drought conditions increase wildfire risk
7 while making communities more vulnerable to water infrastructure failures. Flooding damages
8 water treatment facilities just as drought increases demand for clean water supplies.

9 10 Aquifer Protection: The Foundation of Ecosystem and Water Resource Integrity

11
12 Aquifer protection and groundwater recharge represent far more than safeguarding drinking
13 water supplies—they constitute the fundamental life-support system for Yakima County's
14 interconnected terrestrial and aquatic ecosystems. Groundwater serves as the critical
15 hydrological bridge between surface water bodies and deep subsurface systems, maintaining the
16 delicate hyporheic zones where streams and aquifers exchange water, nutrients, and dissolved
17 organic matter essential for aquatic ecosystem health. These hyporheic environments support
18 specialized biological communities that process nutrients, regulate water temperature, and
19 provide spawning and rearing habitat for salmon and steelhead during crucial life stages.

20
21 Throughout the county's riparian corridors, phreatophytic vegetation—including native
22 cottonwoods, willows, and shrub communities—depends on shallow groundwater access to
23 survive the region's arid summers, creating the green ribbons of habitat that support wildlife
24 movement corridors and provide critical ecosystem services including carbon sequestration,
25 flood mitigation, and stream shading. The intricate connectivity between groundwater and
26 surface water systems means that aquifer depletion or contamination cascades through entire
27 watersheds, reducing baseflows that sustain fish populations during low-flow periods,
28 compromising the water temperature regulation that prevents thermal stress in aquatic species,
29 and eliminating the subsurface water sources that maintain wetland hydroperiods essential for
30 migratory waterfowl and amphibian reproduction. Protecting aquifer recharge areas through
31 strategic land use planning, maintaining natural infiltration processes, and preventing
32 groundwater contamination thus represents a cornerstone strategy for preserving the biological
33 diversity and ecological resilience that underpin Yakima County's environmental and economic
34 sustainability.

35
36 **Infrastructure systems** designed for historical conditions fail under contemporary stresses. The
37 county's electrical grid, built for moderate weather, suffers cascading failures during extreme
38 events. Telecommunication networks experience repeated damage, hampering emergency
39 response and economic continuity. Transportation infrastructure faces simultaneous pressure
40 from flood damage, fire closures, and increased maintenance needs due to extreme weather.

41
42 **Economic resilience** erodes as businesses face repeated disruption. Agricultural operations
43 struggle with crop insurance gaps that fail to cover specialty crops and emerging climate risks.
44 Tourism, increasingly important for economic diversification, suffers from air quality impacts and

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1 facility closures. The county's competitive advantage in food processing becomes vulnerable as
2 reliable water supplies and transportation access face chronic threats.

3

4 **The Imperative for Integrated Planning**

5 Climate projections for the Yakima Basin indicate temperature increases of 3-5°F by 2050, earlier
6 snowmelt reducing summer water availability, and more frequent drought conditions coinciding
7 with extended fire seasons. These changes will stress existing infrastructure, alter flood patterns,
8 and challenge traditional water management practices that have sustained the region's
9 prosperity.

10

11 The Horizon 2046 Comprehensive Plan must therefore weave resiliency and sustainability into
12 every element—from transportation networks designed to withstand extreme weather, to land
13 use patterns that preserve carbon sequestration capacity and reduce fire risk, to economic
14 development strategies that build diversified, climate-adaptive local economies. This integration
15 requires moving beyond compliance to embrace innovation, ensuring that Yakima County's
16 unique assets—its agricultural productivity, natural beauty, cultural heritage, and strategic
17 location—remain viable despite escalating environmental challenges.

18

19 By embedding resiliency and sustainability principles into its comprehensive planning framework,
20 Yakima County positions itself not merely to meet Growth Management Act requirements, but
21 to lead Washington State in demonstrating how rural and agricultural communities can thrive
22 while adapting to environmental change and managing responsible growth. This approach
23 recognizes that true sustainability requires balancing economic vitality, environmental
24 stewardship, and social equity—creating a foundation for prosperity that can endure the
25 intensifying challenges and evolving opportunities of the decades ahead.

26

27 The county's survival and prosperity depend on this transformation. Without comprehensive
28 adaptation, the recurring cycle of drought, wildfire, and flood will eventually overwhelm the
29 community's capacity to recover, threatening not just individual livelihoods but the entire
30 regional economy that depends on Yakima County's agricultural production and strategic
31 location in the Pacific Northwest.

32

33 Often this analysis can be done in terms of outright dollars and cents. Yet our actions should
34 also be evaluated for their effects on the quality of life we enjoy today and want to see for our
35 children. Sustainability means leaving something for the next time, the next generation. This
36 practice applies equally to the streams we divert water from. We need to look closer at the
37 long term costs and benefits of our activities. This includes the operation of large scale
38 extractive industries and our individual daily actions.

39

40 **3.4 NATURAL HAZARD MITIGATION**

41 **3.4.1 Flood**

Commented [KW51]: One possible, and likely place for climate change/resiliency/sustainability section. Will also appear in CAO, Chapter 2 to protection of the five critical areas. Repetition is not the intent, but flood, wildfire and drought are the agents of threat, so.... We need to discuss how to deal with the term "natural" when climate change is not entirely a natural phenomenon.

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1 Flooding is a major concern in Yakima County. A 50- to 70-year flood event in 1996 caused \$18
2 million worth of damage in the County. Development pressures in the recent years have
3 increased the percentage of impervious surfaces both inside and outside of the floodplain.
4 Without vegetative surfaces, stormwater and meltwater can form streams and flow directly into
5 surface water, instead of being slowly absorbed into the soil. Additional impervious surfaces and
6 development cause the intensity of the floods and subsequent flood damages to increase.
7

8 ~~With current conditions, according~~ According to Hazus analysis, the top 25 AOMs in Yakima
9 County expects an average annualized loss due to flood damage of over \$3 million. The Yakima
10 FCZD and FEMA have addressed flood hazards through updating flood maps, land purchases, and
11 levee setbacks. Yakima County's existing Critical Area Ordinance and the Shoreline Master Plan
12 protect streams, wetlands, and vegetative buffers from development. These areas provide
13 floodwater storage, a critical function during flood events. In 2015, Yakima County contained
14 51,556 acres of land in 7,774 separate parcels within a floodplain or floodway, including 7,329
15 acres of land designated by Horizon 204020462046 for residential and/or urban development
16 (Table 3.4-1).

Table 3.4-1 Yakima County Land within FEMA Floodplain and Floodway (Zoning)		
Zoning	Acres within 100-year floodplain and floodway	Parcels within 100-year floodplain and floodway
Urban (UGA)	3,037	2,661
Forest Resource	286	905
Agricultural Resource	9,956	2,323
Fed/Trust Lands/Closed Areas	10,850	864
Rural Settlement LAMIRD	40	184
Rural Self-Sufficient	2,696	2,153
Rural Remote/Ltd. Dev	8,737	2,433
Rural Transitional	772	862
Totals	44,374	12,385

Table 3.4-1 Yakima County Land within FEMA Floodplain and Floodway

	Acres within 100-yr floodplain and floodway	Parcels within 100-yr floodplain and floodway
Urban (UGA)	3030	2416
Forest Resource	935	409
Agricultural Resource	10237	2359
Fed/Trust Lands/Closed Areas	18171	747
Rural Settlement LAMIRD	30	148
Rural Self-Sufficient	3188	2413
Rural Remote/ELDP	8574	2206
Rural Transitional	784	869
Totals	44949	11567

18 May 1997 – GMA Update June 2017 June 2025 – GMA Update 2046

Commented [TH52]: some 1933 documentation shows even more historic floods. should we include these? this prompted levee construction in the valley.

Commented [KW53R52]: Absolutely. The more non-anomalous these events are - the better. That's a little gallows, but you know what I mean!

Commented [TH54]: should we talk about the FCZD history of formation? How it's funded?

Commented [KW55R54]: I think so, especially since it will persist for the long term.

Commented [KW56R54]: Mentioning funding, w/i the long term context of this Chapter and the Comp. Plan seems to be something that will help support long term funding

Commented [KW57R54]: This is also a direct link to SMA and the SMP, and the integration of both required in GMA.

Commented [KW58R54]: The interaction of RMZ, CMZ, Shorelines of the State, wetlands, floodplain, floodway etc. is something I haven't yet tried to explain. I think we need to try. Maybe supported by some sort of graphic. Maybe it's just me, but the distinction between and among these areas is confusing. I do know that we'll have to describe these together (to be inclusive) and separately showing which GMA/SMA, CFR ++ apply. There's overlap for sure.

Commented [KW59]: Still used? Can you explain a bit about this? Qualitative/Quantitative? How can I describe/access to document BAS?

Commented [KW60]: Well need a 2025/2026 model run and analysis here.

Commented [TH61R60]: The model hasn't been run for nearly a decade. Many things on the model side could have changed (depth/damage equations, etc), and I'm not sure if GIS has the capability or memory or memory (re-learning curve) to do it. last I heard they had to keep an old computer around to run that version and I'm not sure if they still have it...not feasible in my opinion. Perhaps run new analysis for Lower Yakima River or Lower Naches River when we get the new model...

Commented [KW62]: At the time of this draft, the SMP is "to be adopted" but we expect this to be done by the June 2026 deadline.

Commented [KW63]: Update

Commented [KW64]: Update Table 3.4-1

Commented [NS65R64]: Troy and Kory are working on updating this data.

Commented [KW66R64]: yay!

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Table 3.4-2 Yakima County Land within FEMA Floodplain and Floodway			
FEMA Designation	Acreage	Parcels	Buildings
Floodway	7,838	3054	550
100-year floodplain	18,869	7,797	3,885
500-year floodplain	2280	4968	1,377
Totals	28,987	15,819	5,812

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Table 3.4-2 Yakima County Land Within FEMA Floodplain and Floodway			
	Acreage	Parcels	Buildings
Floodway	7940	3066	554
100-year floodplain	18838	7755	3891
500-year floodplain	2278	5045	1375
Totals	29056	15866	5820

Land subject to Yakima County Planning Jurisdiction. Fee title land not including Yakima Training Center and reservation lands not in fee.

Table 3.4-1 Yakima County Land within FEMA Floodplain and Floodway

Plan Designations	Acreage within 100yr Floodway and Floodplain	Number Parcels within 100yr Floodway and Floodplain
Urban (Urban Growth Area)	3,398	2,136
Forest Resource	1,124	300
Agricultural Resource	9,857	1,456
Fed/Trust Lands/Closed Areas	19,018	303
Rural Settlement LAMIRD	43	105
Rural Self-Sufficient	3,223	1,498
Rural Remote/Ltd. Dev.	8,728	1,491
Rural Transitional	665	485
Total	46,057	7,774

Commented [NS67]: for some reason I can't get rid of the old table- Maybe it will work better in the word version vs. the online version

Add 500, 100, 10 year and w/ structures. Up to date.

Yakima Countywide Flood Control Zone District, with funding from the Washington Department of Ecology, has taken steps to both improve floodwater conveyance, irrigation withdrawal and delivery, and fish habitat, as part of the Floodplain by Design program several programs. These programs include Washington State Ecology Floodplains by Design, Salmon Recovery Funding Board, FEMA BRIC, USBR WaterSmart, USFWS National Fish Passage, etc. The County has begun to purchase hundreds of acres of land along the Yakima and Naches Rivers, and removed and/or set-back existing levees, contracted pilot channels and side channels, removed a run of river dam, modernized irrigation withdrawals, etc. Many of these levees that were removed or setback, some of them existing since the 1940s, act to constrict the natural flow of the rivers and cause additional erosion, levee flanking, and flooding in unprotected areas. Additionally, the levees cause water to flow faster and deeper through the smaller space. Moving the levees away from the river reduces the constriction, slowing the flow and reducing the amount of property

Commented [KW68]: List these, or are these those provide in the succeeding sentences? Is the list complete through 2025?

Commented [KW69R68]: This is dimensionless - how many?

Commented [KW70R68]: As in "levee setback, breaching, or removal?"

Commented [KW71R68]: AWK: rewrite proposed:

Commented [NS72]: would you like to add something about habitat restoration and dam removal as well, or just stick to levees? Troy knows more specifics about the projects, but they're big ticket projects that help with flood storage, related loss, property damage, etc.

Commented [KW73R72]: Likely no for restoration and removal; that'll get zeroed in on. WDFW and YN will urge, and we'll add this stuff in then, but with their tag. Levees, yes! Water/drought/floods, yes. Wildfire, yes also but this will be a team effort with multiple commenters, include WR for sure.

Commented [KW74R72]: Gap to Gap for sure. I'll also be updating CH 2 Natural Settings to include YBIP, G2G, etc. So...yes. A future Tues. work session should have these updates tee'd up for discussion and eventual cross checking.

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1 damage up and downstream of the constrictions. In addition, levee set-backs improve fish and
2 wildlife habitat and allow the river to flow and interact with the floodplain more naturally. The
3 following levees have been modified over the past 30 years to improve resiliency:

4
5 Naches River: Ramblers (N1), McCormick (N2), Upper McCormick (N14), Town of Naches (N7),
6 Craig Road (N9)

7
8 Yakima River: Yakima Authorized Right Bank, Yakima Authorized Left Bank

9
10 ~~The more space the water has to travel unimpeded, the less a community will suffer from~~
11 ~~property losses and flood safety concerns.~~

12
13 ~~The more unobstructed space water must travel, the lower the risk of property damage and~~
14 ~~flood-related losses, or,~~

15
16 ~~Allowing water to move freely across open space reduces the threat of property damage and~~
17 ~~the severity of flood events.~~

3.4.2 Wildfire

21 Wildfire is a risk for several areas in Yakima County. As Yakima County's population has increased,
22 development has expanded into ~~traditionally~~traditional rural and resource lands. Expansion into
23 these areas has increased the threat of wildfires to life and property while also straining the
24 capabilities of existing fire protection systems/fire districts. Wildfire risk increases in years with
25 low snowpack and drought-like conditions. A dry winter and spring leads to less moisture in the
26 soils and more vulnerability for wildfires. Invasive species, such as cheatgrass, can increase risk
27 of wildfires spreading in the shrub-steppe habitat. Native vegetation in shrub-steppe plant
28 communities involve bunch grasses, which grow in distinct clumps, generally with spaces of soil
29 in between. The cheatgrass grows in continuous sections, which means a fire can rapidly spread
30 through the area.

Commented [KW75]: These existing sections may be a repeat
of the new proposed. Cross check

31
32 ~~Recent wildfires in Yakima County have caused \$4 million dollars in property damage. Additional~~
33 ~~impacts of wildfire, such as the costs of fighting the fires and the indirect impacts to the economy~~
34 ~~and air quality, can be much higher. Yakima County's Firewise program serves to address wildfire~~
35 ~~risks in partner communities along the highway. As of 2015, several communities along the~~
36 ~~Highway 410 and 12 corridors that were participating in the program. Firewise serves to reduce~~
37 ~~the economic impact of wildfires, as well as reduce the risk to personal safety and private~~
38 ~~property.~~

Commented [KW76]: Update to most recent

3.4.3 Drought

41 In 2025, the Department of Ecology declared a drought in Yakima County for the third
42 consecutive year. Drought is defined as a prolonged period of abnormal dryness that impacts
43 people, agriculture, and habitats. Washington state law (RCW Chapter 43.83B.400) identifies
44 drought conditions as: 1) water supply in the area is below 75 percent of normal and 2) water

1 uses and users in the area will likely incur undue hardships because of the water shortage.
2 Drought is different than other ~~natural~~ hazards because the onset can occur ~~slowly~~slowly, and it
3 can last for years. Yakima County is one of Washington State's counties most vulnerable to
4 drought. Historically, Yakima County has been in some ~~form of drought 10 to 15 percent of the~~
5 ~~time.~~

6
7 Climate ~~models~~ predict that Washington State will become warmer and wetter in the Cascades
8 in the coming years. A warmer, wetter weather pattern in the Cascades means while there may
9 be more precipitation falling on the mountains, it may be in the form of rain instead of snow. The
10 Yakima Valley depends on snowpack in the Cascades ~~to act as a reservoir~~ for irrigation purposes;
11 over half of the irrigation water Yakima Valley farmers depend is stored as snow in the mountains
12 and to fill the five reservoirs in the Yakima Project. ~~A lower snowpack in the Cascades leads to~~
13 ~~less water available for irrigation in Yakima Valley. Meanwhile, D~~drought in the Yakima Valley is
14 expected to become more common in these climate model [analysis \(citation and results here\)](#).

Commented [KW77]: Citations needed

Commented [KW78R77]: Dimensionless: Which models?

15
16 Drought ~~can have~~has devastating effects on Yakima County's economy. A 2001 drought caused
17 \$140 million in economic losses; a similar drought in 2005 caused losses upwards of \$195 million
18 within the Yakima River Basin. Perennial crops, such as apples and cherries, grapes, and hops are
19 especially sensitive to drought; fruit trees can take several years to mature, so a loss of an orchard
20 will have economic impacts that last for many years afterward. Extreme drought can ~~cause~~
21 ~~problems have significant impacts on with~~ municipal water and sewer systems. In addition,
22 prolonged drought can have health impacts. Water restrictions may cause reductions in
23 sanitation options. A reduced amount of water can lead to higher concentration of contaminants
24 in water, which can lead to water being dangerous or unhealthy for consumption. Much of
25 Washington's electricity is produced by hydroelectric dams. Extreme and lingering drought
26 conditions may impact the dams' ability to produce sufficient electricity for a growing population.
27 The combination of these factors can cause excess stress, which has its own health implications.
28

Commented [KW79]: Citations needed

3.4.4 Multi-Hazard

30 Natural hazards have the potential to compound. A drought can increase wildfire risk; in turn,
31 wildfire can lead to fall floods and spring landslides because of fire damage to vegetation. A
32 landslide can block a river channel and lead to upstream ~~flooding~~. Certain areas of Yakima County,
33 such as the Nile Valley, are susceptible to cumulative ~~hazards~~.

Commented [KW80]: KSW will provide some on "critical areas
"geologically unstable areas" and on a code scrub from 16C.08.03
and 06C.06 RE: landslide runoff and buffers... here?

Commented [KW81]: Add Yak Tieton stuff and other
compounting intyegrtatoin

Commented [KW82R81]: I think I was aiming to add
additional examples of interaction between and among wildfires,
floods and droughts...I can't decipher my own writing here... How
about the paper you or I found on the debris flood flows - Lahars!

Commented [KW83R81]: Certainly these wildfires
threatened/destroyed public infrastructure (Tieton) and cost
m/Billions. It isn't a lift to tell this comprehensive story about the
threats/hazards, but examples will help us get past politics,
especially if they are irrigation, AG, etc.

3.4.5 Recovery

36 Despite the best efforts of planning officials, emergency management personnel, and others to
37 mitigate for loss, natural disasters will occur. The Yakima County Multi-Hazard Mitigation Plan
38 outlines mitigation efforts undertaken prior to a disaster and relief responsibilities in the
39 immediate aftermath of a disaster. Recovery plans, created prior to the disaster and
40 implemented after the disaster, provide a framework for long-term resiliency in the face of
41 ~~calamity an extreme weather, natural, or otherwise significant event~~. A recovery plan allows
42 community leaders and the public to identify the next steps in rebuilding once the immediate
43 threat has passed. These plans are the final step in being fully prepared, should a major disaster
44 strike the community.

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3.5 NATURAL HAZARD AND MITIGATION - GOALS AND POLICIES

Flooding

Purpose Statement: Flooding poses a serious threat to public safety, property, and infrastructure in Yakima County. Protection from flood hazards is required by RCW 86.16 and 44 CFR 60, the Shorelines Management Act, and the Growth Management Act and essential to community wellbeing. Flood hazards include riverine flooding, stormwater flooding, post-wildfire debris flows, and climate-driven changes in precipitation patterns. Flood hazard management must include approaches based on Best Available Science, climate-adjusted projections, and nature-based solutions for implementation.

GOAL NH 1:	Prevent the loss of life or property and minimize public and private costs associated with repairing or preventing flood damages from development in frequently flooded and or flood hazard areas.
POLICIES:	
NH 1.1	Support comprehensive flood control planning.
NH 1.2	Conduct additional analysis and mapping of frequently flooded areas 100-year and 500-year floodplain maps using the best available science to adequately reflect the levels of risk or the geographic extent of flooding.
NH 1.3	Direct new critical facility development away from areas subject to catastrophic, life-threatening flood hazards where the hazards cannot be mitigated.
NH 1.4	Where the effects of flood hazards can be mitigated, require appropriate standards for subdivisions, parcel reconfigurations, site developments and for the design and placement of structures to be reasonably safe from flooding.
NH 1.5	Plan for and facilitate returning rivers to more natural hydrological conditions, and recognize that seasonal flooding is an essential natural process.
NH 1.6	When evaluating alternate flood control or mitigation measures in flood hazard areas: 1) Consider the removal or relocation of structures in the FEMA 100-year and 500-year floodplain; 2) Where feasible, give preference to nonstructural flood hazard reduction measures over structural measures; 3) Structural flood hazard reduction measures should be consistent with the County's comprehensive flood hazard management plans.
NH 1.7	New development or new uses, including the subdivision of land, should not be established when it would be reasonably foreseeable that the development or use would require structural flood hazard reduction measures within the channel migration zone or floodway unless such flood hazard reduction measures benefit a larger area or community.
NH 1.8	Site developments in fire-prone areas to minimize post-wildfire flooding which endangers lives, property, or resources.

Commented [TH84]: Does this sound better?

Conduct additional analysis and mapping of frequently flooded areas to serve as or support best available science where the 100-year and 500-year floodplain maps prepared by FEMA do not adequately reflect the levels of risk or the geographic extent of flooding.

Commented [KW85R84]: I think it does. We're getting close to a strong draft. Whew....

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<u>NH 1.9</u>	<u>Require fencing designs and installation based on flood risk or zone that do not cause or exacerbate flooding which endanger lives, property, or resources.</u>
<u>NH 1.10</u>	<u>Require stream crossing designs and installation based on flood risk zone and freeboard that do not cause or exacerbate flooding which endangers lives, properties or resources.</u>
<u>NH 1.11</u>	<u>When evaluating stream crossing siting or designs, use a tiered approach:</u>
<u>NH 1.12</u>	<u>1) Consider avoiding a new stream crossing by acquiring an access easement over adjacent properties outside of the flood hazard area.</u>
<u>NH 1.13</u>	<u>2) Consider avoiding a new stream crossing by utilizing existing stream crossings that do not cause or exacerbate flooding. Improve existing stream crossings that cause or exacerbate flooding prior to using as access for new development.</u>
<u>NH 1.14</u>	<u>3) Require stream crossings to be sited and designed in locations that do not cause or exacerbate flooding which endangers lives, properties, or resources.</u>
<u>NH 1.15</u>	<u>Restrict subdivisions in areas subject to flooding.</u>
<u>NH 1.16</u>	<u>Adopt the American Society of Engineers ASCE 24-24 Floodplain Resilient Design Building Standards, and the Washington Floodplain Managers Proposed Ordinance Language into the Periodic Update and YCC for Flood Hazard Protection, Critical Area Ordinances, the Shoreline Master Program and YCC Title 19.</u>
<u>NH 1.17</u>	<u>Adopt the International Certification Council and the State Building Code Councils recommendations for adoption of ASCE 24-24 into YCC Title 13 when available.</u>
<u>NH 1.18</u>	<u>Integration with Other Climate Hazards: Wildfire policies (drought increases fire risk); Extreme heat policies (compounding drought-heat stress); Flooding policies (altered precipitation timing); Surface water policies (maintaining flows during low-water); Agricultural viability policies (working lands adaptation); Vulnerable populations policies (equitable resource access).</u>
<u>NH 1.19</u>	<u>Where flood hazards caused by Crack Willow can be mitigated, provide deferred or no payment waiver in the CAO permit to help defray permitting expenses for landowners. Deferred or no payment option selection in the CAO permit for Crack Willow will only be awarded to applicants who meet specific financial criteria and must follow procedures established in Operating Procedure XXXX to properly identify Crack Willow before the waiver option can be verified and approved.</u>

1
2 **Stormwater Management**
3
4 Stormwater management is critical to protecting water quality, public health, and aquatic ecosystems in Yakima County. Proper stormwater controls are required by state and federal law
5

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1 and important to maintain clean rivers and streams. Stormwater impacts include flooding,
2 erosion, pollution of surface waters, groundwater contamination, and degradation of fish habitat.
3 Stormwater management must include Low Impact Development techniques, green
4 infrastructure approaches, and climate-resilient design standards for implementation.

5

GOAL NH 2:	Prevent increased flooding from stormwater runoff.
POLICIES:	
NH 2.1	<u>Require on-site retention of stormwater.</u>
NH 2.2	<u>Preserve natural drainage ways and drainage courses.</u>
NH 2.3	<u>Minimize adverse storm water quantity and quality impacts generated by the removal of vegetation and alteration of land forms .</u>
NH 2.4	<u>Encourage the use of Low-Impact Development and other best management practices for capturing and infiltrating stormwater.</u>
NH 2.3	<u>Update processes to include new information on resiliency and sustainability and how to mitigate climate impacts through stormwater management techniques, like:</u> <ul style="list-style-type: none">• <u>Nature-based solutions</u>• <u>Upsizing facilities and conveyances pipes</u>• <u>Reducing impervious surfaces</u> <u>This will ensure that stormwater infrastructure is designed to meet future needs under HB 1181 requirements.</u>
NH 2.4	<u>Climate-Adjusted Stormwater Design</u> <u>Require stormwater management systems designed for climate-adjusted precipitation scenarios including:</u> <ul style="list-style-type: none">• <u>Increased storm intensity (minimum 20% increase in design storm magnitude by 2050, 40% by 2080)</u>• <u>More frequent exceedance of historical design storms</u>• <u>Greater soil saturation from fall/winter precipitation increases leading to higher runoff coefficients</u>• <u>Post-wildfire conditions where infiltration capacity is severely reduced</u> <u>Design standards shall use forward-looking precipitation data from University of Washington Climate Impacts Group regional projections rather than historical records alone.</u>
NH 2.5	<u>Green Stormwater Infrastructure</u> <u>Prioritize green stormwater infrastructure including:</u> <ul style="list-style-type: none">• <u>Bioretention facilities (rain gardens, bioswales, filter strips)</u>• <u>Permeable pavements and porous surfaces</u>• <u>Tree canopy and vegetated areas that intercept precipitation</u>• <u>Rainwater harvesting and reuse systems</u>• <u>Green roofs and rooftop detention</u>• <u>Preservation and restoration of natural depressions, swales, and drainage features</u>

May 1997 – GMA Update June 2017 June 2025 – GMA Update 2046

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	<u>Green infrastructure provides multiple benefits including flood reduction, aquifer recharge, water quality improvement, temperature moderation, and habitat enhancement that become increasingly valuable under climate change</u>
<u>NH 2.6</u>	<u>Post-Wildfire Stormwater Management</u> <u>Require enhanced stormwater management for development in watersheds experiencing wildfire, including:</u> <ul style="list-style-type: none"> • <u>Increased design storm standards (minimum 50% increase in design flow capacity)</u> • <u>Sediment trapping and erosion control measures sized for post-fire debris loads</u> • <u>Monitoring and maintenance protocols for minimum 5 years following fire</u> • <u>Coordination with watershed-scale post-fire recovery planning</u> <u>Avoidance of development in areas at high risk of post-fire debris flows</u>
<u>NH 2.7</u>	<u>Use best available science to monitor and mitigate for new and emerging toxins in stormwater.</u>

1

<u>GOAL NH 3:</u>	<u>Protect the hydrologic functions of natural systems to store and slowly release floodwaters, reduce flood velocities, and filter sediment.</u>
POLICIES:	
<u>NH 3.1</u>	<u>Flood control measures should not be authorized if they obstruct fish passage and or result in the unmitigated loss or damage of fish and wildlife resources.</u>
<u>NH 3.2</u>	<u>Encourage and support the retention of natural open spaces or land uses which maintain hydrologic functions and are at low risk to property damage from floodwaters within frequently flooded areas.</u>

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Geologic Hazards (Drainage and Alluvial Fan Areas)

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Geologic hazards present significant risks to development and public safety in Yakima County. Protection from geologic hazards is required by the Growth Management Act and critical to preventing loss of life and property. Geologic hazards include landslides, erosion, unstable slopes, seismic risks, drainage issues, and alluvial fan flooding. Geologic hazard management must include approaches based on Best Available Science, geotechnical assessment, and climate considerations affecting slope stability for implementation.

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<u>GOAL NH 4:</u>	<u>Protect the public from personal injury, loss of life or property damage from geologic hazards.</u>
POLICIES:	
<u>NH 4.1</u>	<u>Ensure that land use practices in geologically hazardous areas do not cause or exacerbate natural processes which endanger lives, property, or resources.</u>
<u>NH 4.2</u>	<u>Locate development within the most environmentally suitable and naturally stable portions of the site.</u>

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<u>NH 4.3</u>	Classify and designate areas on which development should be prohibited, conditioned, or otherwise controlled because of danger from geological hazards.
<u>NH 4.4</u>	Prevent the subdividing of known or suspected landslide hazard areas, side slopes of stream ravines, alluvial areas, or slopes 40 percent or greater for development purposes.
<u>NH 4.5</u>	Maintain the integrity and moisture regimes of over steepened slopes and other areas at risk for landslides
<u>NH 4.6</u>	Ensure that geologic hazard information is readily available to the public.

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2 **Wildfire**
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4 Wildfire is an increasing threat to communities, ecosystems, and the economy in Yakima
5 County. Wildfire risk reduction is required by ESHB 1181 climate planning mandates and is
6 essential to protecting lives and property. Wildfire hazards include direct fire exposure, ember
7 ignition, post-fire flooding and debris flows, air quality impacts, and ecosystem degradation.
8 Wildfire hazard mitigation must include approaches based on Best Available Science, defensible
9 space requirements, ignition-resistant construction standards, and community preparedness
10 programs for implementation. Wildfire hazard areas present increasing risks to public health,
11 safety, property, and ecosystems as climate change intensifies fire frequency, severity, and
12 duration across Yakima County. Designation and protection of wildfire hazard areas is required
13 by ESHB 1181 climate planning mandates under RCW 36.70A.070(8) and necessary to reduce
14 community vulnerability in the wildland-urban interface. Wildfire hazard areas include high and
15 very high fire risk zones, wildland-urban interface areas, ember exposure zones, post-wildfire
16 debris flow and flooding hazard areas, and areas with limited emergency access or inadequate
17 water supply for fire protection. Protection and management of wildfire hazard areas must
18 include approaches based on Best Available Science under RCW 36.70A.172, climate-adjusted
19 fire weather and fuel moisture projections, ignition-resistant construction standards, defensible
20 space requirements, adequate emergency access and water supply for fire suppression, fuel
21 management and vegetation treatment, community wildfire preparedness programs, and
22 prohibition of development where fire risks cannot be adequately mitigated for implementation
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Goal NH 5:	Protect life, property, and ecosystems from wildfire hazards.
<u>NH 5.1</u>	<u>Encourage the development of adequate water supply/storage for new development which is not connected to a community water/hydrant system. A storage facility/fire well should be accessible by standard firefighting equipment and adequate for the needs of the structure(s) and people being protected.</u>
<u>NH 5.2</u>	<u>Roofing used in the construction of residential development shall be of a Class "A" fire retardant material when located outside of 5 road miles of a full service fire station.</u>

Commented [KW86]: Wildfire - Resiliency as a Hazard.
Currently in CH2 Policy and Goals - will move to here

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NH 5.3	<u>Encourage, where feasible, the undergrounding of electrical utilities to reduce their exposure to fire.</u>
NH 5.4	<u>Require new residential construction to provide for a fuel break around structures.</u>
NH 5.5	<u>Require proposed developments to provide sufficient access for heavy-duty firefighting equipment.</u>
NH 5.6	<u>Bridges, culverts, road drains and other structures shall be constructed and maintained in a manner to accommodate firefighting apparatus on a year around basis.</u>
NH 5.7	<u>Residences and driveways shall be clearly marked and visible with the appropriate address assigned by Yakima County.</u>
NH 5.8	<p><u>Designate Wildfire Hazard Areas as a critical area type under the Growth Management Act, recognizing that climate change is substantially increasing wildfire risk through:</u></p> <ul style="list-style-type: none"> • <u>Temperature increases +1.18°C to +3.52°C by end of century depending on emissions scenario</u> • <u>Extended fire seasons with earlier spring drying and later fall moisture</u> • <u>Declining summer soil moisture and more frequent drought conditions</u> • <u>Climate-driven forest stress increasing vulnerability to insect outbreaks (mountain pine beetle, spruce budworm) that create fuel loads</u> • <u>Longer periods of critically low fuel moisture and high fire danger</u> • <u>Increased lightning frequency from atmospheric instability</u> • <u>More extreme fire weather conditions including low humidity, high temperatures, and strong winds</u>
NH 5.9	<p><u>Mapping Map and classify the Wildland-Urban Interface (WUI) using criteria established by the U.S. Forest Service and Washington Department of Natural Resources, including:</u></p> <ul style="list-style-type: none"> • <u>Interface WUI: Areas where structures directly abut wildland vegetation (within 0-1.5 miles)</u> • <u>Intermix WUI: Areas where structures are interspersed within wildland vegetation</u> • <u>Occluded WUI: Areas of wildland vegetation isolated within predominantly developed areas that pose internal fire risk</u> <p><u>Map WUI boundaries shall be updated every 5 years or following significant development or vegetation changes and shall account for projected expansion of high fire risk areas under climate change scenarios.</u></p>
NH 5.10	<p><u>Wildfire Risk Classification Classify wildfire hazard areas into risk categories based on:</u></p> <ul style="list-style-type: none"> • <u>Fuel characteristics: Vegetation type, density, continuity, and fuel loading (shrub steppe, pine forests, mixed forests, recently burned areas with regenerating vegetation)</u> • <u>Topography: Slope, aspect, elevation, and terrain features that influence fire behavior (steep south-facing slopes present highest risk)</u>

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	<ul style="list-style-type: none"> Climate factors: Historical fire occurrence, projected temperature and precipitation changes, drought frequency, and seasonal fire weather patterns Access and water supply: Adequacy of emergency access routes, water availability for fire suppression, and response time from fire protection districts Exposure density: Concentration of structures and populations at risk <p>Risk classifications (Very High, High, Moderate, Low) shall inform development standards, vegetation management requirements, and emergency planning priorities.</p>
NH 5.11	<p><u>Post-Wildfire Hazard Area Designation</u> Automatically designate burned areas as Post-Wildfire Hazard Areas for minimum 5 years following fire events, or until watershed stabilization is demonstrated through:</p> <ul style="list-style-type: none"> Vegetation recovery assessment showing adequate ground cover to prevent erosion Hydrologic monitoring demonstrating return to pre-fire infiltration rates Geotechnical analysis confirming slope stability Removal of hazard trees and unstable fuels <p>Post-Wildfire Hazard Areas are subject to enhanced regulations addressing debris flow, flooding, erosion, landslide, and air quality risks described in Wildfire Policy 22-24.</p>
NH 5.12	<p><u>Development Standards in Wildfire Hazard Areas</u></p> <p><u>Wildfire Risk Assessment Requirement</u> Require comprehensive wildfire risk assessments prepared by qualified professionals (Washington State certified Wildfire Hazard Mitigation Specialist, Certified Fire Protection Specialist, or Registered Professional Forester with wildfire specialization) for:</p> <ul style="list-style-type: none"> All new residential subdivisions in High or Very High wildfire hazard areas Commercial, industrial, or institutional development in any wildfire hazard area Critical facilities (schools, hospitals, emergency services, utilities) within 2 miles of wildland fuels Any development requiring Type I, II, or III Forest Practice permit Expansion or modification of existing development increasing occupancy or exposure in wildfire hazard areas <p>Wildfire risk assessments shall evaluate site-specific fire behavior potential, ember exposure, structure ignitability, access and evacuation adequacy, water supply for fire suppression, and climate-driven trends in fire danger</p>
NH 5.13	<p><u>Adoption of Urban Wildfire Interface Code</u> Adopt the International Wildland-Urban Interface Code (IWUIC) or equivalent wildfire protection standards as amended for Yakima County conditions, establishing minimum requirements for:</p> <ul style="list-style-type: none"> Building location and siting to minimize fire exposure

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	<ul style="list-style-type: none"> • Ignition-resistant construction and materials • Defensible space vegetation management • Emergency vehicle access and fire apparatus turnaround • Water supply for fire protection • Fuel breaks and fire-resistant landscaping <p>Standards shall be consistent with Washington State Building Code provisions and may be enhanced based on local fire history and climate projections.</p>
NH 5.14	<p>Ignition-Resistant Construction Standards Require ignition-resistant construction for new buildings and substantial improvements to existing buildings in High and Very High wildfire hazard areas, including:</p> <ul style="list-style-type: none"> • Roofing: Class A fire-rated roofing materials (composition shingle, metal, tile, or approved equivalents); prohibition of wood shake roofs • Exterior walls: Non-combustible or ignition-resistant materials (stucco, fiber cement, brick, concrete, or approved fire-retardant treated wood) in areas within 5 feet of ground • Vents: Ember-resistant vents with 1/8-inch maximum mesh screening on all attic, foundation, and crawlspace vents • Windows and doors: Dual-pane tempered glass windows; weather-stripping and tight-fitting doors to prevent ember entry • Decks and attachments: Heavy timber or non-combustible deck materials; prohibition of combustible materials stored under decks or overhangs • Gutters and eaves: Enclosed eaves or non-combustible construction; gutter screens to prevent debris accumulation
NH 5.15	<p>Defensible Space Requirements Require creation and maintenance of defensible space around all structures in wildfire hazard areas, implementing three-zone approach:</p> <ul style="list-style-type: none"> • Zone 1 (Immediate/Ember-Resistant Zone - 0-5 feet from structure): Remove all flammable vegetation and combustible materials; use non-combustible hardscape materials (gravel, pavers, rock); maintain low-growing, fire-resistant, well-watered plants with no plant material touching structures • Zone 2 (Intermediate Zone - 5-30 feet from structure): Create fuel breaks with well-spaced fire-resistant plants; remove ladder fuels (vegetation connecting ground fuels to tree canopies); limb trees to 10 feet above ground; maintain horizontal spacing between tree crowns equal to 10 feet; mow grasses to maximum 4 inches; remove dead vegetation and slash • Zone 3 (Extended/Reduced Fuel Zone - 30-100 feet from structure, extended to 200 feet on steep slopes >20%): Thin trees to create crown spacing; remove ladder fuels and dead/dying trees; create shaded fuel breaks; maintain access to property for fire equipment

	<p>Defensible space distances shall be increased by 50% on slopes exceeding 20% and by 100% on slopes exceeding 40%, measured from downslope side of structures.</p>
NH 5.16	<p>Fuel Break Requirements for Subdivisions Require perimeter fuel breaks for residential subdivisions in High and Very High wildfire hazard areas, including:</p> <ul style="list-style-type: none">• Minimum 100-foot wide fuel break along subdivision boundaries adjacent to wildland vegetation (increased to 300 feet on steep south-facing slopes)• Reduction of shrub and tree density to limit fire intensity and rate of spread• Strategic placement considering prevailing wind directions and topographic features that channel fire• Maintenance responsibility assigned to homeowners association or similar permanent entity• Integration with natural features (ridgelines, roads, streams) where feasible• Native vegetation retention where compatible with fire safety objectives to prevent erosion and maintain habitat
NH 5.17	<p>Fire-Resistant Landscaping Standards Establish fire-resistant landscaping standards for development in wildfire hazard areas:</p> <ul style="list-style-type: none">• Prohibited plants: Highly flammable species including junipers, arborvitae, ornamental grasses, and other plants with high oil content, fine foliage, or dead material retention• Encouraged plants: Fire-resistant natives and adapted species including serviceberry, snowberry, currant, aspen, cottonwood, and low-growing succulents• Irrigation requirements: Permanent irrigation systems maintaining adequate soil moisture during fire season (May-October) for vegetation within 30 feet of structures• Mulch specifications: Non-combustible mulch (gravel, rock) within 5 feet of structures; bark or wood chip mulch maximum 3 inches depth in other areas• Tree siting: Large conifers located minimum 30 feet from structures; hardwoods with lower fire risk may be closer with adequate clearance and maintenance
NH 5.18	<p>Emergency Access Standards Require adequate emergency access for wildfire hazard areas meeting or exceeding:</p> <ul style="list-style-type: none">• Road width: Minimum 20 feet of unobstructed driving surface for single access; minimum 24 feet for roads serving >30 dwelling units• Vertical clearance: Minimum 13.5 feet for tree limbs and overhanging vegetation along entire route• Grade: Maximum sustained grade 15%; maximum short pitches (maximum 200 foot length) of 18%

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	<ul style="list-style-type: none"> Load capacity: Structural design for 75,000-pound fire apparatus with snow and ice loads in mountainous areas Turnaround provisions: Fire apparatus turnarounds (hammerhead or cul-de-sac minimum 60-foot radius) for dead-end roads exceeding 150 feet; turnarounds required at maximum 1,000-foot intervals on roads exceeding 1,000 feet length Surface: All-weather surface (asphalt, concrete, or gravel minimum 6 inches compacted depth) maintained year-round Signage: Reflective street signs and address markers visible from both directions meeting NFPA standards
NH 5.19	<p><u>Secondary Access Requirements</u> Require secondary emergency access for:</p> <ul style="list-style-type: none"> Residential subdivisions with more than 30 dwelling units in High or Very High wildfire hazard areas Subdivisions where primary access route exceeds 2 miles in length Developments in areas identified as high evacuation risk due to limited egress, steep terrain, or historical fire occurrence Critical facilities including schools, assisted living facilities, and emergency services <p>Secondary access may utilize different route, adjoining property easement, or emergency-only access meeting reduced but acceptable standards for evacuation (minimum 12-foot width, maximum 20% grade).</p>
NH 5.20	<p><u>Fire Flow and Water Supply Requirements</u> Require adequate water supply for fire protection in wildfire hazard areas:</p> <ul style="list-style-type: none"> Hydrant systems: Fire hydrants meeting NFPA 291 standards with minimum 1,000 gallons per minute (GPM) flow at 20 psi residual pressure where public water systems exist or are extended to serve development Alternative water sources: Where hydrant systems infeasible, require on-site water storage minimum 10,000 gallons in tanks with fire department drafting connection, or drafting access to ponds/streams with minimum 30,000 gallons year-round accessible water Dry hydrant systems: Where water sources available, install dry hydrant systems meeting NFPA 1142 standards providing fire department access Water source spacing: Hydrants or alternative water sources located maximum 1,000 feet apart along primary access routes; maximum 800 feet from any structure <p>Coordinate with fire protection districts on water supply adequacy and preferred systems during development review.</p>
NH 5.21	<p><u>Evacuation Route Planning</u> Require evacuation planning for development in wildfire hazard areas addressing:</p> <ul style="list-style-type: none"> Identification of primary and alternate evacuation routes to areas of refuge

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	<ul style="list-style-type: none"> Capacity analysis ensuring routes can accommodate simultaneous evacuation of affected populations within acceptable timeframes (target: complete evacuation within 3 hours of notification) Vulnerable populations requiring evacuation assistance (elderly, disabled, non-English speakers) Assembly areas and traffic control points Coordination with law enforcement, fire districts, and emergency management Public education and notification systems (reverse 911, emergency alert systems, sirens) Evacuation drills and periodic plan updates <p><u>Subdivisions creating more than 50 dwelling units in High or Very High hazard areas shall prepare formal Community Wildfire Protection Plans addressing evacuation, pre-positioning of resources, and mutual aid agreements.</u></p>
NH 5.22	<p><u>Adoption of USFS Wildfire Protection and Response Plan</u> Adopt and implement applicable provisions of the U.S. Forest Service Wildfire Protection and Response Plan, including:</p> <ul style="list-style-type: none"> Prioritization of fuel treatments in wildland-urban interface areas Coordination of federal, state, tribal, and local wildfire management activities Pre-positioning of firefighting resources during high fire danger periods Rapid initial attack strategies to contain fires at small size Use of prescribed fire and mechanical treatments to reduce fuel loads Post-fire rehabilitation to prevent erosion and promote resilient vegetation recovery <p><u>Coordinate with Okanogan-Wenatchee National Forest and other federal land managers on cross-boundary wildfire prevention and response.</u></p>
NH 5.23	<p><u>Community Wildfire Preparedness Programs</u> Support and facilitate community wildfire preparedness through:</p> <ul style="list-style-type: none"> Firewise USA recognition program encouraging neighborhood-scale risk reduction Community chipping programs for disposal of slash and pruning debris Wildfire education and outreach including property assessments and homeowner workshops Coordination with Washington State Department of Natural Resources and State Conservation Commission Forest Health and Community Wildfire Resiliency programs Technical assistance connecting private landowners with cost-share programs for fuel reduction treatments Recognition and incentive programs for property owners implementing comprehensive wildfire protection measures
NH 5.24	<p><u>Forest Health and Fuels Treatment on Private Lands</u> Encourage voluntary forest health treatments and fuel reduction on private forest lands through:</p>

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	<ul style="list-style-type: none">Coordination with conservation districts providing technical assistance for forest stewardship planning, wildfire risk assessments, and implementation of treatmentsConnection to funding programs including State Conservation Commission Forest Health and Community Wildfire Resiliency grants, USDA Natural Resources Conservation Service programs, and DNR competitive grantsStreamlined permitting for thinning, pruning, slash disposal, and fuel break creation meeting Best Management PracticesIntegration with Voluntary Stewardship Program for agricultural forest landsSupport for collaborative landscape-scale projects addressing continuous fuel beds across multiple ownerships <p>Priority treatments include thinning overstocked stands (target: <40% canopy closure in fire-prone forests), removing ladder fuels connecting surface fuels to tree crowns, limbing trees to minimum 10 feet above ground, removing dead and dying trees (particularly pine beetle-killed timber), and creating strategic fuel breaks along ridgelines and access corridors.</p>
NH 5.25	<p>Vegetation Management Along Roads and Utilities Require ongoing vegetation management along roads and utility corridors to:</p> <ul style="list-style-type: none">Maintain vertical clearance for emergency vehicle access (minimum 13.5 feet)Create fuel breaks limiting fire crossing potentialReduce ignition risk from vehicle sparks, hot exhaust components, and dragging chainsPrevent power line ignitions from vegetation contact or tree failure during high windsProvide refuge areas for trapped evacuees <p>County road maintenance shall include annual mowing, brush clearing, and hazard tree removal within 30 feet of road centerlines in wildfire hazard areas. Require utility providers to maintain vegetation clearance per National Electric Safety Code and additional requirements for high fire risk areas.</p> <p>Prescribed Fire and Cultural Burning Support use of prescribed fire as a wildfire risk reduction tool where appropriate, including:</p> <ul style="list-style-type: none">Coordination with Washington Department of Natural Resources, U.S. Forest Service, and Washington Prescribed Fire Council on burn permitting, smoke management, and burn plan approvalRecognition of prescribed fire benefits including fuel reduction, forest health improvement, habitat enhancement, and perpetuation of fire-adapted ecosystemsSupport for tribal cultural burning practices that reduce fuel loads while maintaining traditional plant species and cultural resourcesPublic education distinguishing prescribed fire from wildfire and communicating smoke management strategies

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	<ul style="list-style-type: none"> <u>Liability protection for prescribed burn practitioners following approved burn plans and meeting professional standards</u> <u>Prescribed fire should target shrub steppe fuel accumulations, understory fuels in pine forests, and regenerating post-fire vegetation creating continuous fuel beds</u>
NH 5.26	<p><u>Post-Fire Hazard Assessment</u> Require comprehensive post-fire hazard assessment for burned watersheds evaluating:</p> <ul style="list-style-type: none"> <u>Debris flow risk: Slope steepness, soil burn severity, basin morphology, potential debris volume, runout distance to structures and infrastructure</u> <u>Flooding risk: Loss of infiltration capacity, increased runoff rates and volumes, channel scour potential, culvert and bridge capacity</u> <u>Erosion and sedimentation: Soil loss rates, sediment delivery to streams, water quality impacts, reservoir sedimentation</u> <u>Landslide risk: Slope destabilization from root strength loss and altered groundwater conditions</u> <u>Air quality: Windblown ash and dust during dry periods affecting sensitive populations</u> <u>Hazard tree risk: Standing dead trees threatening roads, structures, and utilities</u> <p><u>Assessment shall use methodologies including USGS Debris Flow Assessment and USFS BAER (Burned Area Emergency Response) protocols.</u></p>
NH 5.27	<p><u>Post-Fire Development Moratorium</u> Implement development moratorium in Post-Wildfire Hazard Areas pending completion of hazard assessment and implementation of emergency stabilization measures. Moratorium shall remain in effect for a minimum of 2 years or until:</p> <ul style="list-style-type: none"> <u>Emergency stabilization treatments (erosion control, slope stabilization, drainage improvements) are completed</u> <u>Vegetation recovery reaches minimum 50% ground cover</u> <u>Hydrologic monitoring demonstrates substantial recovery toward pre-fire infiltration rates</u> <u>Geotechnical analysis confirms adequate slope stability</u> <p><u>Exceptions may be granted for emergency repairs, protective measures reducing post-fire risks, and infrastructure necessary for watershed stabilization.</u></p>
NH 5.28	<p><u>Post-Fire Debris Flow Protection</u> Establish debris flow hazard zones in burned watersheds with:</p> <ul style="list-style-type: none"> <u>Prohibition of new habitable structures in areas with >10% probability of debris flow impact over 5-year post-fire period</u> <u>Enhanced setbacks from drainage channels and debris flow pathways (minimum 200 feet horizontal distance)</u> <u>Required protection measures for existing structures including: engineered debris deflection berms; reinforced barriers; catch basins; early warning systems with 24-hour monitoring during storm events</u>

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	<ul style="list-style-type: none"> • Drainage improvements including: culvert and bridge upgrades sized for debris-laden flows; debris racks and settling basins; armored channels through vulnerable areas • Coordinated emergency response planning with evacuation triggers based on weather forecasts (evacuation when >0.5 inches/hour precipitation forecast)
NH 5.29	<p><u>Post-Fire Stormwater and Erosion Control</u> Require enhanced stormwater management and erosion control for any development in Post-Wildfire Hazard Areas:</p> <ul style="list-style-type: none"> • Stormwater design flows increased by minimum 100% over pre-fire conditions • Sediment trapping facilities sized for 5-10 times normal sediment loads • Armored conveyance channels and energy dissipation structures • Slope stabilization including erosion control blankets, mulching, seeding with native species, and structural measures on steep slopes • Construction timing restrictions avoiding wet season (October-May) when erosion risk highest • Intensive monitoring and maintenance for minimum 3 years
NH 5.30	<p><u>Post-Fire Air Quality Protection</u> Address air quality hazards in Post-Wildfire Hazard Areas including:</p> <ul style="list-style-type: none"> • Public health advisories during high wind events mobilizing ash and dust • Restrictions on ground-disturbing activities during dry, windy periods • Ash stabilization treatments (mulch, tackifiers, vegetation establishment) on exposed soils near inhabited areas • Indoor air quality improvements in structures with ash contamination • Coordination with Yakima Regional Clean Air Authority on monitoring and public notification
NH 5.31	<p><u>Fire District Coordination</u> Require consultation with local fire protection districts during review of development proposals in wildfire hazard areas, addressing:</p> <ul style="list-style-type: none"> • Adequacy of emergency access, water supply, and turnaround provisions • Appropriateness of defensible space and ignition-resistant construction standards • Evacuation route adequacy and capacity • Fire protection district capability to provide structure protection given available resources and response times • Mutual aid agreements and regional coordination for major fire events • Development contribution to fire protection infrastructure and equipment (proportionate share of station, apparatus, staffing needs generated by development)

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	<p><u>Fire district input shall be given substantial weight in permit decision-making, with deviations from district recommendations requiring specific findings of equivalent or superior fire protection.</u></p>
NH 5.32	<p><u>Community Wildfire Protection Plans Support development and implementation of Community Wildfire Protection Plans (CWPPs) as defined in Healthy Forests Restoration Act, providing:</u></p> <ul style="list-style-type: none"><u>Community-level wildfire risk assessment and prioritization of hazard reduction projects</u><u>Collaborative planning involving local governments, fire districts, state and federal agencies, tribes, and community members</u><u>Identification of wildland-urban interface boundaries and priority treatment areas</u><u>Fuels reduction strategies on federal, state, tribal, and private lands</u><u>Coordination of fire protection resources and mutual aid agreements</u><u>Structure ignitability reduction programs and public education campaigns</u><u>Monitoring and plan updates reflecting changing conditions and completed treatments</u> <p><u>Yakima County shall participate in CWPP development and use CWPPs to guide public investments in wildfire risk reduction, priority areas for fuels treatment on public lands, and coordination of regulatory and incentive-based programs.</u></p>
NH 5.33	<p><u>Climate Adaptation for Wildfire Management Implement adaptive management for wildfire hazard as climate impacts intensify:</u></p> <ul style="list-style-type: none"><u>Update wildfire hazard area mapping every 5 years based on fire occurrence, climate trends, vegetation conditions, and improved modeling</u><u>Adjust defensible space requirements, fuel break dimensions, and ignition-resistant construction standards as fire behavior potential increases</u><u>Enhance evacuation planning as fire spread rates accelerate and simultaneous fire events stress regional response capacity</u><u>Increase forest health treatment pace and scale to address expanding areas of climate-stressed vegetation vulnerable to insect outbreaks and fire</u><u>Coordinate with Washington State Department of Natural Resources 20-Year Forest Health Strategic Plan for Eastern Washington and state Climate Resilience Strategy wildfire priorities</u>
NH 5.34	<p><u>Integration with Emergency Management Coordinate wildfire planning with Yakima County Emergency Management and hazard mitigation planning under RCW 38.52:</u></p> <ul style="list-style-type: none"><u>Incorporate wildfire risk assessment into County Multi-Hazard Mitigation Plan</u>

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	<ul style="list-style-type: none"> • Develop pre-disaster recovery plans addressing post-fire rebuilding standards, debris management, watershed restoration, and long-term community recovery • Establish emergency operations protocols for large wildfire events including evacuation coordination; emergency services staging; public information and warning systems; resource requests through Washington State Emergency Operations Center; damage assessment • Conduct tabletop exercises and full-scale drills simulating major wildfire events • Integrate wildfire response with other climate-driven emergencies including extreme heat, drought, and smoke events affecting public health
NH 5.35	<p><u>Public Education and Outreach</u> Develop and maintain comprehensive public education programs on wildfire preparedness:</p> <ul style="list-style-type: none"> • Annual wildfire preparedness campaigns during spring (April-May) emphasizing defensible space creation, emergency supply preparation, evacuation planning, and home hardening • Multilingual materials and targeted outreach to vulnerable populations including farmworker communities, elderly residents, and non-English speakers • Property-specific wildfire risk assessments and action plans available to homeowners • School-based education programs teaching children and families about wildfire safety • Real estate disclosure requirements ensuring homebuyers are informed of wildfire risks in High and Very High hazard areas • Partnerships with insurance industry promoting risk reduction through premium incentives for wildfire-resistant construction and defensible space
NH 5.36	<p><u>Monitoring and Adaptive Management</u> Establish wildfire monitoring systems to track:</p> <ul style="list-style-type: none"> • Fire occurrence frequency, size, intensity, and cause • Effectiveness of fuel treatments in moderating fire behavior and protecting structures • Structure loss statistics and factors contributing to survival or destruction • Evacuation performance during actual fire events • Climate trends affecting fire season length, fire weather severity, and fuel moisture • Post-fire recovery including vegetation reestablishment, erosion rates, and watershed function <p><u>Use monitoring data to implement adaptive management adjustments to wildfire hazard regulations, prioritize public investments in risk reduction, and</u></p>

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	<p>inform updates to Comprehensive Plan during periodic review cycles (RCW 36.70A.130).</p>
NH 5.37	<p><u>Implementation Authority:</u> These policies shall be implemented through new Yakima County Code chapter establishing Wildfire Hazard Area regulations as a critical area type, amendments to building code for ignition-resistant construction, road standards for emergency access, subdivision regulations for wildland-urban interface development, and coordination protocols with fire protection districts and emergency management, consistent with Growth Management Act requirements (RCW 36.70A.060, 36.70A.172) and best available science on climate-driven wildfire risk.</p> <p><u>Cross-Reference:</u> These wildfire policies integrate with and support:</p> <ul style="list-style-type: none">• Frequently Flooded Areas policies (addressing post-fire debris flows and flooding)• Geologically Hazardous Areas policies (addressing post-fire landslides and slope stability)• Surface Water policies (addressing post-fire water quality and sedimentation)• Fish and Wildlife Habitat policies (addressing fire impacts to cold-water refugia and riparian corridors)• Critical Aquifer Recharge Areas policies (addressing post-fire infiltration loss and water supply impacts)

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4 [**Drought Threat Assessment and Planning Context**](#)

5 *Drought poses a serious and intensifying threat to the resilience of communities and ecosystems*
6 *in Yakima County. Over the past several years, the region has experienced increasingly severe*
7 *drought conditions, fueled by prolonged periods of reduced precipitation, declining mountain*
8 *snowpack, and exceptionally warm temperatures. Historical drought years including 1977, 1992-*
9 *1994, 2001, 2005, and 2015 resulted in significant agricultural losses, widespread domestic well*
10 *failures, ecosystem degradation, and economic hardship. As documented by the U.S. Geological*
11 *Survey and University of Washington Climate Impacts Group modeling specific to the Yakima*
12 *River Basin, as global and regional temperatures continue to rise, the frequency, severity, and*
13 *duration of droughts are expected to increase dramatically, with particularly acute impacts in*
14 *semi-arid regions like Yakima County where water resources are already fully appropriated.*

15 *Pursuant to ESHB 1181 (2023) requiring drought preparedness and water resource vulnerability*
16 *assessment under RCW 36.70A.070(8)(c), best available science on wildfire risk in the Yakima*
17 *Basin, and the increasing frequency and severity of wildfire documented by the University of*
18 *Washington Climate Impacts Group, and consistent with Growth Management Act critical areas*
19 *protection requirements under RCW 36.70A.060 and best available science standards under RCW*
20 *36.70A.172, the following policies guide drought planning, water resource protection, wildfire*
21 *hazard planning and development regulation:*

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GOAL NH 6:	Protect public health, safety, and welfare by identifying and mitigating draught hazards, prioritizing irrigation demand and aquifer protection, through climate-resilient planning.
NH 6.1	<p>Use Best Available Science to develop drought resilience and sustainability policy. Examples include Using climate projections indicate water shortage years—historically occurring 14% of the time—increasing to 32% in the 2020s, 36% in the 2040s, and 77% by the 2080s under moderate-high emissions scenarios. Most significantly, senior water rights holders will experience historically unprecedented supply shortfalls with increasing frequency (2-3% of years by mid-century). These changes are driven by temperature increases of +1.18°C to +3.52°C transforming the basin's hydrology through: declining snowpack (20% loss per 1°C warming); earlier and reduced peak stream flows (shifting from late May to February-March by 2080s, declining 34%); critically reduced summer base flows; increased evapotranspiration demand; and shift from snow-dominant to rain-dominant precipitation creating winter flooding risk but reduced summer water storage.</p> <p>Drought impacts cascade through interconnected systems: agricultural losses of \$23-70 million annually for major crops alone; permanent damage to perennial crops requiring years to replace; domestic well failures affecting rural residents; stream temperature increases threatening cold-water fish; wetland drying and habitat loss; increased wildfire risk; and compounding effects when drought co-occurs with extreme heat. Economic and ecosystem consequences are already manifested in 2025 and will intensify without substantial adaptation measures.</p>
NH 6.2	<p>Critical Aquifer Recharge Area Protection for Drought Resilience Enhance CARA regulations to support drought preparedness: Development restrictions - prohibit or minimize development reducing infiltration through impervious surface limitations, clustered development preserving recharge areas, soil compaction prevention, and drainage maintaining natural flow paths and infiltration;</p>
NH 6.3	<p>Low Impact Development requirements - mandate LID techniques including bioretention facilities, permeable pavement, preservation of natural depressions, dispersion of roof runoff, and retention of native vegetation</p>
NH 6.4	<p>Mandatory Drought Preparedness and Vulnerability Assessment As required by ESHB 1181, conduct comprehensive water resource vulnerability assessment addressing: reduced summer stream flows (projections show June-October flows consistently below historical levels by 2040s); declining snowpack storage (20% loss per 1°C warming, with Yakima Basin losing 12-27% snowpack under +1-2°C scenarios); increased water demand from temperature increases (+1.18°C to +3.52°C by end of century); frequency of water shortage years (increasing from historical 14% to 32-77% depending on scenario and</p>

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	<p>timeframe); unprecedented senior water rights shortfalls (2-3% frequency by mid-century); groundwater sustainability under increased pumping during drought; and ecosystem water needs including in-stream flows and cold-water refugia for temperature-sensitive species.</p> <p>Assessment shall use best available science from University of Washington Climate Impacts Group, U.S. Bureau of Reclamation Yakima Project modeling, USGS streamflow projections, NOAA climate scenarios, and SNOTEL snowpack monitoring. Update assessment every 5 years during Comprehensive Plan periodic review under RCW 36.70A.130 to incorporate new climate projections and observed hydrologic trends.</p>
NH 6.5	<p>Managed Aquifer Recharge support - establish streamlined permitting for MAR projects demonstrating net benefit to aquifer storage, summer base flows, well reliability, and water quality (approaches include surface infiltration basins, aquifer storage and recovery, irrigation efficiency with recharge dedication, and floodplain reconnection). Recognize CARAs' dual function for flood storage and drought resilience through groundwater recharge sustaining summer base flows, domestic wells, agricultural irrigation, and ecosystem water needs.</p>
NH 6.6	<p>Integration with Other Climate Hazards: Wildfire policies (drought increases fire risk); Extreme heat policies (compounding drought-heat stress); Flooding policies (altered precipitation timing); Surface water policies (maintaining flows during low-water); Agricultural viability policies (working lands adaptation); Vulnerable populations policies (equitable resource access).</p>

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2 **Extreme Heat**, Extreme heat hazard areas present increasing risks to public health, vulnerable
3 populations, agricultural workers, infrastructure, and ecosystems as climate change intensifies
4 temperature extremes, heat wave frequency, and duration across Yakima County. Planning for
5 extreme heat hazards is required by ESHB 1181 climate planning mandates under RCW
6 36.70A.070(8) and necessary to protect community health and reduce heat-related mortality and
7 morbidity. Extreme heat hazards include urban heat islands with elevated surface and ambient
8 temperatures, areas lacking tree canopy and vegetation cooling, outdoor work locations with
9 inadequate worker protections, neighborhoods with limited access to cooling resources, areas
10 vulnerable to heat-related power outages, and communities with high concentrations of heat-
11 sensitive populations including elderly residents, low-income households, outdoor agricultural
12 workers, and individuals with chronic health conditions. Management of extreme heat hazards
13 must include approaches based on Best Available Science under RCW 36.70A.172, climate-
14 adjusted temperature projections and heat wave frequency modeling, urban heat island
15 mitigation through tree canopy preservation and expansion, cool surface materials and reflective
16 roofing standards, access to cooling centers and public facilities during heat emergencies, heat-
17 health warning systems and public education.

GOAL NH 7:	Protect public health, safety, and welfare by identifying and mitigating extreme heat hazards, prioritizing vulnerable populations and outdoor
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	<u>workers, through climate-resilient planning, equitable resource distribution, and evidence-based heat adaptation strategies.</u>
POLICIES:	
NH 7.1	<u>Apply Best Available Science, including climate-adjusted temperature projections, heat wave frequency modeling, and local heat vulnerability assessments, when planning for extreme heat hazards as required by RCW 36.70A.172.</u>
NH 7.2	<u>Identify and map extreme heat hazard areas, including urban heat islands, areas with inadequate tree canopy, neighborhoods with limited cooling access, and locations with high concentrations of heat-vulnerable populations.</u>
NH 7.3	<u>Preserve and expand urban tree canopy in high-heat areas through tree preservation ordinances, planting programs, and development standards that prioritize shade in parking lots, streetscapes, and public spaces.</u>
NH 7.4	<u>Promote cool surface materials and reflective roofing in new development and redevelopment projects, particularly in urban heat islands and areas with concentrated vulnerable populations.</u>
NH 7.5	<u>Integrate green infrastructure, including parks, green roofs, permeable surfaces, and vegetated corridors, into land use and capital facilities planning to reduce ambient temperatures and provide cooling benefits.</u>
NH 7.6	<u>Reduce impervious surfaces and urban hardscape through Low Impact Development (LID) standards and design guidelines that minimize heat retention.</u>
NH 7.7	<u>Prioritize extreme heat mitigation resources and investments in neighborhoods with high concentrations of elderly residents, low-income households, individuals with chronic health conditions, and communities with limited access to air conditioning or cooling facilities.</u>
NH 7.8	<u>Ensure equitable distribution of cooling resources, including proximity to shade, tree canopy, parks, and cooling centers, across all communities with emphasis on environmental justice areas.</u>
NH 7.9	<u>Coordinate with social service providers, community health centers, and emergency management to identify heat-vulnerable individuals and provide targeted outreach, assistance, and resources during extreme heat events.</u>
NH 7.10	<u>Enhance energy system reliability and resilience to prevent heat-related power outages that would compromise access to cooling, particularly during extreme heat events when demand peaks and vulnerable populations depend on air conditioning.</u>
NH 7.11	<u>Adaptively manage extreme heat programs based on monitoring results, emerging climate science, evolving Best Available Science, and lessons learned from heat events to continuously improve community resilience.</u>
NH 7.12	<u>Update extreme heat hazard assessments and adaptation strategies periodically to reflect changing climate conditions, demographic shifts, and</u>

Commented [KW87]: Mainly a "City" task. ID County Heat Islands

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	<u>new scientific understanding as required by ongoing climate planning mandates.</u>
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Multi-Hazard

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4 Multiple natural hazards threaten Yakima County communities, often occurring simultaneously
5 or in cascading sequences. Comprehensive hazard planning is required by the Growth
6 Management Act and ESHB 1181 climate mandates and essential to public safety. Multi-hazard
7 planning addresses flooding, wildfire, drought, extreme heat, geologic hazards, and their
8 interactions and cumulative effects. Multi-hazard approaches must include coordination based
9 on Best Available Science, integrated risk assessment, and comprehensive emergency
10 management systems for implementation.

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GOAL NH 8:	<u>Protect property, life, and health from impacts of multiple and cumulative natural hazards.</u>
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POLICIES:

<u>NH 8.1</u>	<u>Ensure proposed subdivisions, other development, and associated infrastructure are designed at a density, level of site coverage, and occupancy to preserve the structure, values, and functions of the natural environment or to safeguard the public from hazards to health and safety.</u>
<u>NH 8.2</u>	<u>Encourage mechanisms to restrict or minimize development in high-risk hazard areas to protect public health and safety.</u>
<u>NH 8.3</u>	<u>Maintain existing infrastructure to reduce the risk of infrastructure fail during a natural disaster.</u>
<u>NH 8.4</u>	<u>Locate critical facilities and infrastructure outside of high-risk hazard areas.</u>
<u>NH 8.5</u>	<u>Ensure new developments in high-risk hazard areas include secondary egress.</u>
<u>NH 8.6</u>	<u>Develop processes and procedures for streamlining projects intended to mitigate for natural hazards.</u>

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Disaster Recovery

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15 Disaster recovery planning is essential to helping Yakima County communities rebuild safely and
16 equitably after natural disasters. Recovery planning is required by emergency management law
17 and critical to long-term community resilience. Disaster recovery includes post-event response
18 coordination, damage assessment, rebuilding standards, economic recovery support, and long-
19 term adaptation strategies. Recovery planning must include approaches based on Best Available
20 Science, pre-disaster recovery frameworks, and Build Back Better principles for implementation.

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GOAL NH 9:	<u>Be prepared to recover from a major natural disaster.</u>
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POLICIES:

<u>NH 9.1</u>	<u>Implement Recovery Plan to guide the redevelopment, public participation process, and long-term recovery after a natural disaster.</u>
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<u>NH 9.2</u>	<u>Provide a process and procedure to streamline projects intended to provide relief and recovery from a natural disaster while still complying with local, state and federal regulations.</u>
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2 **NATURAL HAZARDS RESILIENCY IMPLEMENTATION**

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4 *Effective implementation of this Climate Resiliency Element requires coordinated action across*
5 *multiple county departments, integration with all Comprehensive Plan elements, updates to*
6 *development regulations, capital facility investments, interagency coordination, community*
7 *engagement, and sustained commitment to climate-informed decision-making. The County shall*
8 *develop an implementation strategy that identifies priority actions, responsible departments,*
9 *timelines, funding sources, and performance metrics. Implementation will be coordinated with*
10 *updates to Critical Areas Ordinances, Shoreline Master Program provisions where applicable,*
11 *Capital Facilities Plan, and other development regulations to ensure consistency and mutual*
12 *support of climate resilience objectives. The Climate Resiliency Element establishes one*
13 *overarching goal and fifteen implementing policies that guide Yakima County's response to*
14 *climate change impacts. These goals and policies are detailed here in the Policy and Goals section*
15 *of this chapter and address the following topic areas:*

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GOAL NH 10:	<u>Provide guidance and reasonable processes to implement effective resiliency and sustainability policies.</u>
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POLICIES:	
<u>NH 10.1</u>	<u>Revise Natural Hazard programs and policy to be compatible with Critical Areas Ordinances, Comprehensive Flood Hazard Management Plans, Multi-Jurisdictional Hazard Mitigation Plans, and other Comprehensive Plan elements as necessary.</u>
<u>NH 10.2</u>	<u>Incorporate climate-informed flood projections, post-wildfire hazards, temperature impacts on fish and wildlife habitat, and other climate considerations.</u>
<u>NH 10.3</u>	<u>Update development regulations to address wildfire risk in high-hazard areas.</u>
<u>NH 10.4</u>	<u>Integrate climate resilience standards into capital facilities planning and design manuals</u>
<u>NH 10.5</u>	
<u>NH 10.6</u>	<u>Develop stormwater management standards emphasizing green infrastructure</u>
<u>NH 10.7</u>	<u>Coordinate with agencies and use BAS to develop a water resource vulnerability assessment accounting for projected changes in snowpack, streamflow timing, and demand</u>
<u>NH 10.8</u>	<u>Complete wildland-urban interface mapping and wildfire risk assessment for areas within and adjacent to forestlands.</u>
<u>NH 10.9</u>	<u>Assess infrastructure vulnerability to extreme heat, flooding, and other climate hazards</u>

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<u>NH 10.10</u>	<u>Establish coordination protocols with State Conservation Commission and local conservation districts for agricultural technical assistance programs</u>
<u>NH 10.11</u>	<u>Partner with Washington State Department of Ecology on implementation of Climate Resilience Strategy actions</u>
<u>NH 10.12</u>	<u>Coordinate with irrigation districts, tribes, and adjacent jurisdictions on water resource planning and drought preparedness</u>
<u>NH 10.13</u>	<u>Work with Yakima Health District and community organizations to develop extreme heat response and wildfire smoke protection programs</u>
<u>NH 10.14</u>	<u>Create online resources and mapping tools to help property owners understand climate risks and adaptation options</u>
<u>NH 10.15</u>	<u>The County will pursue multiple funding strategies to support implementation including:</u> <ul style="list-style-type: none"><u>• State grants from Department of Ecology, Commerce, Conservation Commission, and other agencies</u><u>• Federal funding through FEMA hazard mitigation programs, US Bureau of Reclamation, National Oceanic and Atmospheric Association, US Fish and Wildlife Service, US Geological Survey, USDA conservation programs, and infrastructure legislation</u><u>• Climate Commitment Act revenues where available for eligible projects</u><u>• Integration of climate resilience into existing capital improvement programs</u><u>• Partnership leverage with irrigation districts, conservation districts, tribes, flood control zone districts, non-profit organizations and other special purpose districts.</u><u>• Private sector engagement for agricultural adaptation and working lands conservation</u>
<u>NH 10.16</u>	<u>Prepare progress reports on implementation of Climate Resiliency Element policies and actions</u>
<u>NH 10.17</u>	<u>Update Comprehensive Plan during periodic reviews required under RCW 36.70A.130 to incorporate new climate projections and lessons learned</u>

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