Cow Creek Band of Umpqua Tribe of Indians

All-Hazards Mitigation Plan

FINAL – 2018 Plan Update

Prepared by:

Cow Creek Band of Umpqua Tribe of Indians

Office of Emergency Management

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MEMORANDUM OF TRANSMITTAL

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MISSION, GUIDING PRINCIPLES, AND CHALLENGES

In an effort to align planning documents across all phases of emergency management, the Cow Creek Band of Umpqua Tribe of Indians (Tribe) has collaboratively developed a mission and guiding principles that will provide a conceptual framework for all tribal mitigation activities, including the 2018 update of the Cow Creek Band of Umpqua Tribe of Indians All-Hazards Mitigation Plan (HMP).

MISSION

In an effort to align with the Tribe's values, the HMP has adopted the Tribe's Mission Statement:

The Cow Creek Band of Umpqua Tribe of Indians upholds tribal government, protects and preserves tribal sovereignty, history, culture and the general welfare of the tribal membership, and serves to provide for the long-term economic needs of the Tribe and its members through the economic development of tribal lands.

The Tribe encourages and promotes a strong work ethic and personal independence for tribal members, while strongly upholding the "government-to-government" relationship with local, state and federal governments. The Tribe constantly strives to maintain and develop strong cooperative relationships that benefit the Tribe and local community.

GUIDING PRINCIPLES

The Mitigation Planning Team (MPT) has identified the following guiding principles to lead its efforts in incorporating hazard mitigation into all tribal affairs.

Stewardship: We consider ourselves as stewards of the land, community, and planet, and must consider how our actions may impact it. As such, the Tribe makes decisions on a basis of seven generations.

Awareness: We use this plan to raise awareness to both risks, but also tribal priorities and values.

Equity and Inclusion: We ensure our mitigation strategies benefit all tribal members and the broader community and take into consideration their needs.

Integrated: We ensure unity of effort among all levels of government and all elements of the community.

Collaborative: We create and sustain broad and sincere relationships among individuals and organizations to encourage trust, advocate a team atmosphere, build consensus, and facilitate communication.

CHALLENGES

Developing a functioning hazard mitigation plan and program is a priority of the Tribe, but a number of issues pose potential challenges to its implementation. The MPT has been encouraged to explore these

challenges throughout the planning process to identify proactive efforts to improve these areas. The following challenges will be considered in the development of actionable mitigation strategies:

Interactions with the Partner Governments: As a sovereign nation, the Tribe has a unique relationship with all levels of the United States government including the federal government, State of Oregon, Douglas and Jackson counties, and neighboring tribes. This provides unique opportunities but also requires consideration in the development of the hazard mitigation program.

Capacity: From time to time, the tribal government is constrained by limited resources and competing priorities and, therefore, many members of the hazard mitigation program are required to wear multiple hats.

Funding: Limited internal funding mechanisms mean that the Tribe must rely on external funding sources to implement many of their hazard mitigation priorities. The effectiveness of this plan and the larger program hinges on such grant funding availability.

Competing Priorities: What is beneficial for one department may not be beneficial for all departments. The Tribe must consider the benefits to all tribal members, the tribal government, and business operations, and will do so through formal cost benefit analyses to determine which priorities to fund and support.

Socialization of the Process: While the Tribe has previously developed a Hazard Mitigation Plan, a formal hazard mitigation program is a new concept to the Tribe. Program success will require ongoing socialization of this plan and its implementation process to ensure all Tribal members and employees are a part of the effort to reduce risks posed to the Tribe.

PLAN ADOPTION AND APPROVAL

44 CFR §201.7(c)(5) requires that the Cow Creek Band of Umpqua Tribe of Indians All-Hazards Mitigation Plan be formally adopted by the Tribal Board of Directors, which formally adopted the 2018 update of the Cow Creek Band of Umpqua Tribe of Indians Hazards Mitigation Plan on May 9, 2018. The plan adoption resolution follows.

This plan was approved by the Federal Emergency Management Agency on May 4, 2018. The official approval letter follows.

Resolution No: 2018-27

RESOLUTION OF THE COW CREEK BAND OF UMPQUA TRIBE OF INDIANS BOARD OF DIRECTORS ADOPTING THE FEMA REVIEW-2018 PLAN UPDATE OF THE COW CREEK BAND OF UMPQUA TRIBE OF INDIANS ALL-HAZARDS MITIGATION PLAN

WHEREAS, the Cow Creek Band of Umpqua Tribe of Indians (the "Tribe") is organized under the Indian Reorganization Act of June 18, 1934 (48 Stat. 984), the provisions of the Cow Creek Band of Umpqua Tribe of Indians Recognition Act of December 29, 1982 (P.L. 97-391), as amended by the Cow Creek Band of Umpqua Tribe of Indians Distribution of Judgment Funds Act of October 26, 1987 (P.L. 100-139), and the Cow Creek Tribal Constitution, duly adopted pursuant to a federally supervised constitutional ballot, on July 8, 1991; and,

WHEREAS, pursuant to Article III, Section 1 of the Tribe's Constitution, the Cow Creek Tribal Board of Directors (the "Board") is the governing body of the Tribe; and,

WHEREAS, pursuant to Article VII, Section 1 (b) of the Tribe's Constitution the Board has the power to "represent the Tribe before Federal, state and local governments and their departments and agencies"; and

WHEREAS, pursuant to Article VII, Section 1 (d) of the Tribe's Constitution the Board has the power to "administer the affairs and assets of the Tribe, including Tribal lands"; and

WHEREAS, pursuant to Article VII, Section 1 (I) of the Tribe's Constitution the Board has the power to "enact ordinances and laws governing the conduct of all persons on tribally owned land; to maintain order and protect the safety, health, and welfare of all persons within the jurisdiction of the Tribe; and to enact any ordinances or laws necessary to govern the administration of justice, and the enforcement of all laws, ordinances or regulations . . ."; and,

WHEREAS, pursuant to Article VII, Section I (t) of the Tribe's Constitution the Board has the power to "have such other powers and authority necessary to meet its obligations, responsibilities, objectives, and purposes as the governing body of the Tribe"; and,

WHEREAS, the Tribe through its Office of Emergency Management has been working with the Federal Emergency Management Agency (FEMA) to prepare the Cow Creek Band of Umpqua Tribe of Indians All-Hazards Mitigation Plan;

WHEREAS, the Board believes that it is in the best interests of the Tribe and its members to adopt the FEMA Review 2018 Plan Update of the Cow Creek Band of Umpqua Tribe of Indians All-Hazards Mitigation Plan as attached hereto as **Exhibit 1**;

NOW, THEREFORE, BE IT RESOLVED that the Tribe, by and through the Board, hereby adopts the Cow Creek Band of Umpqua Tribe of Indians All-Hazards Mitigation Plan as attached hereto as **Exhibit 1**; and,

BE IT FURTHER RESOLVED, that any and all actions heretofore or hereafter taken by any Tribal officers, employees or agents regarding the foregoing resolution be, and hereby are, ratified and confirmed as the act and deed of the Tribe taken or made by them within the scope of their duties to the Tribe; and,

BE IT FURTHER RESOLVED, that neither this resolution nor any document or representation related herewith or therewith shall constitute a waiver of the sovereign immunity of the Tribe, or its officers acting in their official capacity within the scope of their authority; and,

BE IT FURTHER RESOLVED, that the actions authorized and taken by this Resolution are intended to advance the sovereign self-governance of the Tribe, and to protect the political integrity, economic security and health and welfare of the Tribe and its members; and,

BE IT FURTHER RESOLVED, any prior Tribal regulations, resolutions, orders, motions, legislation, codes or other Tribal law which are materially inconsistent with this Resolution are hereby repealed, but only to the extent of any such inconsistency and as applied to the specific matter in which any such inconsistency arises.

CERTIFICATION

It is hereby certified that the Cow Creek Tribal Board of Directors, governing body of the Cow Creek Band of Umpqua Tribe of Indians, composed of eleven (11) members of whom 10 constituting a quorum, were present at a meeting duly held on the 9 day of May 2018, adopted the foregoing **RESOLUTION OF THE COW CREEK BAND OF UMPQUA TRIBE OF INDIANS BOARD OF DIRECTORS ADOPTING THE COW CREEK BAND OF UMPQUA TRIBE OF INDIANS ALL-HAZARDS MITIGATION PLAN,** by the affirmative vote of 10 for and 0 against.

Gary Jackson, Vice Chairman
Daniel Courtney, Tribal Chairperson

Attest: Yvonne McCafferty
Tribal Secretary

U.S. Department of Homeland Security
Region X
130 228th Street, SW
Bothell, WA 98021-9796

FEMA

MAY 29 2018

The Honorable Dan Courtney
Chairman, Cow Creek Band of Umpqua Tribe of Indians
2371 NE Stephens Street
Suite 100
Roseburg, Oregon 97470

Dear Chairman Courtney:

Congratulations, on May 14, 2018, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) Region 10 approved the Cow Creek Band of Umpqua Tribe of Indians All-Hazards Mitigation Plan as a Tribal Mitigation Plan, in accordance with Code of Federal Regulations Title 44 Part 201.

An approval provides the Cow Creek Band of Umpqua Tribe of Indians eligibility to apply directly with FEMA for Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) programs, i.e., Pre-Disaster Mitigation project grants, Public Assistance (Categories C-G), Fire Management Assistance and Hazard Mitigation Grant Program (HMGP) projects through May 13, 2023. Recipients are required to develop and maintain hazard mitigation plans compliant with FEMA standards as a condition for receiving funds. To continue eligibility, within five years from date of this letter, tribes must review, revise as appropriate and re-submit plans for approval. For further assistance on hazard mitigation planning, please contact our Regional Mitigation Planning Program Manager, Brett Holt, at (425) 487-4553.

FEMA's approval of your updated plan as a Tribal Mitigation Plan provides the Cow Creek Tribe Band of Umpqua Tribe of Indians continued eligibility to apply for various Stafford Act programs. FEMA evaluates applications for funding according to the specific requirements of the applicable program. A mitigation action identified in the plan may, or may not, meet a program's eligibility requirements. For assistance with hazard mitigation grant funding, please contact Braden Allen, Hazard Mitigation Assistance Programs Specialist, at (425) 487-4749.

We look forward to continuing a productive relationship between FEMA Region 10 and the Cow Creek Band of Umpqua Tribe of Indians. Our Regional Tribal Liaison Erin Ward, at (425) 487-4567, is available to facilitate this relationship and delivery of our programs. You are also welcome to contact me directly, at (425) 487-4604.

Sincerely,

Michael F. O'Hare
Regional Administrator

Enclosures

cc: Angie Lane, Oregon Office of Emergency Management

ACKNOWLEDGEMENTS

The development of the Cow Creek Band of Umpqua Tribe of Indians All-Hazards Mitigation Plan was made possible by the tireless work of the Mitigation Planning Team. Over the course of 10 months, the team held six formal workshops and met informally many other times. This cross-sector team identified the hardest hitting hazards, described their risks and cascading impacts, and developed a comprehensive mitigation strategy to reduce risk to tribal members and their property. The following individuals are acknowledged for their efforts to develop an effective plan and sustainable program.

Name	Title	Department
Brian Boswell	Operations Manager	Umpqua Indian Utility Cooperative (UIUC)
Brian Mladenich	Geographic Information System (GIS) Manager	Natural Resources
Jason Robison	Natural Resources Director	Natural Resources
Jessie Pluerd	Cultural Program Manager	Natural Resources
John McCafferty	Chief Operations Officer	Umpqua Indian Development Corporation
Justin Mathison	Housing Director	Housing
Kelly Coates	Wind Energy Research Program (WERP) Manager	Natural Resources
Lonnie Rainville	Chief Operations Officer	Government Operations
Luann Urban	Board Member	Tribal Board of Directors
Mary Stevenson	Health Admin	Cow Creek Health and Wellness Center
Michele Moore	Human Services Director	Human Services
Nathan Jackson	General Manager, Business and Administration	Umpqua Indian Development Corporation – K Bar Ranches
Rich Rader	Chief Technology Officer	Information Technology
Ryan Bochart	Accountant	Accounting
Sarah Thompson	Resident Manager	Housing
Scott Van Norman	Wildlife Specialist	Natural Resources
Tim Vredenburg	Director of Forest Management	Forest Management
Tracy DePew	Director of Emergency Management	Government Operations
Travis Mackie	Fish Biologist	Natural Resources
Wayne Stinson	Emergency Manager	Douglas County Sheriff's Department

Support for the 2018 update of the Cow Creek Band of Umpqua Tribe of Indians All-Hazards Mitigation Plan was provided under contract by Ecology and Environment, Inc.

RECORD OF PLAN UPDATE AND APPROVAL

The Cow Creek Band of Umpqua Tribe of Indians All-Hazards Mitigation Plan is required to be updated once every five years and submitted to the Tribal Board of Directors for adoption and the Federal Emergency Management Agency for approval. The Tribe may update the plan on a more frequent basis as needed.

Refer to Chapter 7 for more information on Plan Implementation guidance.

Date of Update	Date of Tribal Adoption	Date of FEMA Approval
2011	August 14, 2011	August 14, 2011
2018	May 9 ,2018	May 4, 2018

TABLE OF CONTENTS

MEMORANDUM OF TRANSMITTAL i
MISSION, GUIDING PRINCIPLES, AND CHALLENGES iii
PLAN ADOPTION AND APPROVAL v
ACKNOWLEDGEMENTS vi
RECORD OF PLAN UPDATE AND APPROVAL vii
1. Introduction 1-1
1.1 Authority 1-1
1.2 What is Hazard Mitigation? 1-2
1.3 Purpose and Scope 1-3
1.3.1 Purpose 1-3
1.3.2 Scope 1-4
1.4 Cow Creek Band of Umpqua Tribe of Indians Hazard Mitigation Program 1-4
1.4.1 Organization 1-4
1.4.2 Roles and Responsibilities 1-5
1.4.2.1 Tribal Members 1-5
1.4.2.2 Tribal Board of Directors 1-6
1.4.2.3 Government Operations Officer 1-6
1.4.2.4 Umpqua Indian Development Corporation 1-6
1.4.2.5 Director of Emergency Management 1-6
1.4.2.6 Mitigation Planning Team 1-7
1.4.2.7 Tribal Departments 1-7
1.4.2.8 Tribal Partners and Neighboring Jurisdictions 1-7
1.5 Plan Organization 1-8
1.6 What's New in the 2018 Update? 1-8
2. Planning Process 2-1
2.1 Planning Area 2-1
2.2 Data Collection and Incorporation of Existing Plans 2-2
2.2.1 2012 Cow Creek Tribe Hazard Mitigation Plan 2-2

2.2.2 Cow Creek Tribe Natural Resources Department Strategic Plan (2015-2020) 2-2
2.2.3 Douglas County Natural Hazard Mitigation Plan (2016) 2-3
2.2.4 Douglas County Community Wildfire Protection Plan (2013) 2-3
2.2.5 Oregon Department of Transportation District 7 Winter Operations Plan (2017) 2-3
2.2.6 Oregon Natural Hazards Mitigation Plan (2015) 2-3
2.2.7 Integration of Geographic Information Systems Data 2-3
2.3 Coordination with Other Planning Efforts 2-4
2.3.1 FEMA HMA External Stakeholder Working Group 2-4
2.3.2 Oregon Tribal Preparedness Coalition 2-4
2.3.3 Northwest Tribal Emergency Management Council 2-5
2.4 Mitigation Planning Team 2-5
2.4.1 MPT Members 2-5
2.4.2 MPT Meetings 2-7
2.5 Inclusive Outreach and Public Engagement 2-8
2.5.1 Inclusive Outreach and Public Engagement Plan 2-8
2.5.2 Neighboring Jurisdiction and Partner Engagement Strategies 2-9
2.6 Plan Development and Review 2-10
3. Tribal Profile 3-1
3.1 Tribal Sovereignty and Governance 3-1
3.2 Location and Geography 3-2
3.3 Population and Demographics 3-2
3.4 Tribal Enterprises 3-3
3.5 Tribal Lands and Ownership Trends 3-4
3.6 Natural Systems 3-5
3.7 Cultural Resources and Values 3-5
4. Hazard Profiles and Vulnerability Asessments 4-1
4.1 General 4-1
4.2 Hazard Ranking Methodology 4-3
4.3 Hazard Considerations 4-5
4.3.1 Cultural Implications 4-5

4.3.2 Mitigation vs. Adaptation 4-5
4.3.3 Future Climate Conditions 4-6
4.3.4 Cascading Impacts 4-6
4.4 Risk-Driven Planning 4-6
4.4.1 Stakeholder Feedback 4-6
4.4.2 GIS Analyses 4-7
4.5 Hazard-Specific Profiles and Risk Assessments 4-9
4.5.1 Fire 4-10
4.5.2 Utility Failure 4-14
4.5.3 Hazardous Materials Incident 4-16
4.5.4 Drought 4-19
4.5.5 Flooding 4-22
4.5.6 Earthquake 4-25
4.5.7 Landslide 4-29
4.5.8 Winter Storm 4-32
4.5.9 Active Threat 4-35
4.5.10 Emerging Infectious Disease 4-37
4.5.11 Cyberattack 4-39
4.5.12 Windstorm 4-41
4.5.13 Domestic Terrorism 4-43
4.5.14 Biosecurity 4-45
4.5.15 Social Unrest 4-48
4.6 Vulnerability Assessment 4-49
4.6.1 Identifying Critical Infrastructure 4-49
4.6.2 Asset Inventory 4-50
4.6.3 Data Limitations 4-50
4.6.4 Repetitive Loss Properties 4-51
4.6.5 Exposure Assessment 4-51
4.7 Land Use and Development Trends 4-51
5. Capability Assessment 5-1

5.1 General....5-1
5.2 Human and Technical Resources....5-1
5.3 Financial Resources....5-2
5.4 Legal and Regulatory Resources....5-4
5.5 FEMA Funded Hazard Mitigation Projects....5-6
5.6 Continuity of Operations Planning....5-7
5.7 Coordination with Community Partners....5-7
5.8 National Flood Insurance Program Participation....5-7
5.9 Integration of Mitigation into Existing Planning Mechanisms....5-7
5.9.1 Existing Plans....5-8
5.9.2 Future Planning....5-9
6. Mitigation Strategy....6-1
6.1 General....6-1
6.2 Mitigation Goals....6-1
6.3 Mitigation Actions....6-2
6.3.1 Review of 2012 Hazard Mitigation Actions....6-2
6.3.2 Identification and Analysis of Mitigation Actions....6-2
6.3.3 2018 Mitigation Actions by Hazard....6-3
6.4 Evaluating and Prioritizing Mitigation Actions....6-4
6.4.1 Maximizing Loss Reduction....6-5
6.4.2 STAPLEE Analysis....6-5
6.4.3 Mitigation Effectiveness Analysis....6-5
6.4.4 Mitigation Action Case Study....6-6
6.5 2018-2022 Mitigation Implementation Plan....6-9
7. Program Implementation....7-1
7.1 Plan Adoption....7-1
7.2 Plan Update and Review....7-1
7.2.1 Annual Review....7-1
7.2.2 Following a Major Disaster....7-2
7.2.3 Formal Plan Update....7-2

7.3 Monitoring Project Implementation 7-3
7.3.1 Grant Management Process 7-3
7.3.2 Mitigation Action Status and Tracking Loss Reduction 7-4
7.4 Incorporation of Existing Planning Mechanisms 7-4
7.5 Continued Public Involvement 7-4

APPENDICES

Appendix A Plan Process Materials
Appendix B Mitigation Action Worksheets
Appendix C Hazard Ranking Results
Appendix D FEMA Review Tool
Appendix E Risk Assessment Materials
Appendix F Asset Inventory
Appendix G Plan Adoption Resolution

LIST OF TABLES AND FIGURES

Tables

Table 2-1 Mitigation Planning Team Members 2-6
Table 2-2 Mitigation Planning Team Meeting Schedule 2-7
Table 2-3 Stakeholder and Public Outreach Activities Schedule 2-9
Table 2-4 Cow Creek Tribe HMP Update Milestones and Timeline 2-10
Table 4-1 Hazards Addressed in Plan 4-2
Table 4-2 Hazard Ranking Table 4-4
Table 4-4 Average Age of Tribal Buildings 4-50
Table 4-5 Major Disaster Declarations in Douglas County 4-1
Table 5-1 Human and Technical Resources Integrated with Hazard Mitigation 5-1
Table 5-2 Accessible Financial Resources 5-2
Table 5-3 Financial Resources Integrated with Hazard Mitigation 5-3
Table 5-4 Legal and Regulatory Resources Integrated with Hazard Mitigation 5-4
Table 6-1 2018 Mitigation Actions by Group 6-3
Table 6-2 2018 Mitigation Actions by Hazard 6-3
Table 6-3 STAPLEE Criteria 6-5
Table 6-4 Mitigation Effectiveness Criteria 6-6
Table 6-5 2018-2023 Mitigation Implementation Plan 6-9
Table 6-6 Status of 2012 Mitigation Actions ..... **Error! Bookmark not defined.**

Figures

Figure 1-1 Emergency Management Cycle 1-3
Figure 1-2 Cow Creek Band of Umpqua Tribe of Indians Mitigation Program Organization 1-5
Figure 2-1 FEMA Recommended Mitigation Planning Tasks 2-1
Figure 2-2 Cow Creek Tribe HMP Planning Area 2-11
Figure 6-1 Mitigation Strategy Process 6-1

ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
COOP	Continuity of Operations
CWPP	Community Wildfire Protection Plan
CSZ	Cascadia Subduction Zone
DMA 2000	Disaster Mitigation Act of 2000
DFPA	Douglas Forest Protective Association
DFIRM	Digital Flood Insurance Rate Map
E & E	Ecology and Environment, Inc.
ESWG	External Stakeholder Working Group
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
DOGAMI	Oregon Department of Geology and Mineral Industries
EOP	emergency operations plan
GIS	Geographic Information System
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMP	All-Hazards Mitigation Plan
M	magnitude
mph	miles per hour

MPT	Mitigation Planning Team
NFIP	National Flood Insurance Program
NHMP	Natural Hazards Mitigation Plan
NWTEMC	Northwest Tribal Emergency Management Council
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988
Tribe	Cow Creek Band of Umpqua Tribe of Indians
USDA	United States Department of Agriculture
UIDC	Umpqua Indian Development Corporation
UIUC	Umpqua Indian Utility Cooperative
USGS	United State Geological Survey
WERP	Wind Energy Research Program
WUI	Wildland-Urban Interface

1. INTRODUCTION

Chapter 1 describes the authorities and principles that provide the basis for the Cow Creek Band of Umpqua Tribe of Indian's (Tribe's or Cow Creek Tribe's) mitigation program as well as provides a description of the program's organization and how the plan is organized to support it.

1.1 Authority

The Cow Creek Tribe is organized under the Indian Reorganization Act of June 18, 1934 (48 Stat. 984); the provisions of the Cow Creek Band of Umpqua Tribe of Indians Recognition Act of December 29, 1982 (P.L. 97-391), as amended by the Cow Creek Band of Umpqua Tribe of Indians Distribution of Judgement Funds Act of October 26, 1987 (P.L. 100-139); and the Cow Creek Tribal Constitution, duly adopted pursuant to a federally supervised constitutional ballot, on July 17, 1991.

TRIBAL RECOGNITION

The Cow Creek Tribe is unique in that they, on September 19, 1853, were one of the first two tribes in Oregon to secure a treaty with the United States of America. This treaty, ratified by the U.S. Senate on April 12, 1854, established the government-to-government relationship between two sovereign governments. As a result of the treaty, the Cow Creek Tribe became a landless tribe, ceding more than 800 square miles of Southwestern Oregon to the United States. The Tribe was paid 2.3 cents an acre for their land. The U.S. Government was selling that same land, through the Donation Land Claims Act, for $1.25 per acre to pioneer settlers. This treaty between the United States Indian agent, General Joel Palmer, and the Cow Creek Indian people, had many deficiencies. Specifically, there was no understanding by the Indians of the language or the concept of signing (making their mark on) the treaty document and, further, there was no understanding by the Indians of land ownership, let alone land boundaries (hunting, fishing and gathering sites, as well as Tribal composites, were well established).

The treaty also promised health, housing, and education to the Cow Creek Tribe. However, the treaty was ignored by the U.S. Government for nearly a century until the Western Oregon Indian Termination Act of 1954. This act, advertised as legislation to "Set the Indians Free," caused federal relations with over 60 tribes and bands in Western Oregon to cease to exist. The Cow Creek Tribe had never received services or "recognition" since shortly after 1855. Ironically, however, they were "recognized" for the purpose of their involuntary termination in 1954.

The Cow Creek Tribe received no prior notification of the termination act, as required by law, and because of that, were able to obtain presidential action in 1980 to take a land claims case to the U.S. Court of Claims. The Court of Claims case was subsequently litigated by the Tribe to a negotiated settlement of $1.5 million.

The Cow Creek Tribe vested their entire judgement fund of $1.5 million in an endowment, from which they draw, on an annual basis, only the earned interest. These earnings have always been earmarked for economic development, education, and housing, in order to create a higher quality of life for all Cow Creek Tribal members.

In recognition of tribal sovereignty and the government-to-government relationship between the federal government and Indian tribal governments, 44 Code of Federal Regulations (CFR) § 201 at 72

Fed. Reg. 61720 and 74 Fed. Reg. 47471 have been amended to clarify the requirements for Indian tribal governments to establish tribal mitigation plans separate from state and local mitigation plans.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act), as amended by the Disaster Mitigation Act of 2000 (DMA 2000), Public Law 106-390, and its implementing CFR provisions, 44 CFR § 201, provide the legal authority for local hazard mitigation planning. The DMA 2000 requires state, local, and Tribal governments to develop a hazard mitigation plan that identifies the jurisdiction's natural hazards, risks, vulnerabilities, and mitigation strategies. The planning process requirements mandated by the Federal Emergency Management Agency (FEMA) (outlined in 44 CFR §201.7) include the following activities:

- Document the planning process;
- Provide stakeholders with an opportunity to participate;
- Conduct and document public involvement;
- Incorporate existing plans and reports;
- Discuss continued public participation and plan maintenance; and
- Provide a method for monitoring, evaluating, and updating the hazard mitigation plan.

Once complete, the hazard mitigation plan must be submitted to FEMA for approval. FEMA's approval of a hazard mitigation plan is a prerequisite for federal Hazard Mitigation Assistance (HMA) grant program eligibility (outlined in 42 CFR §5165(a)).

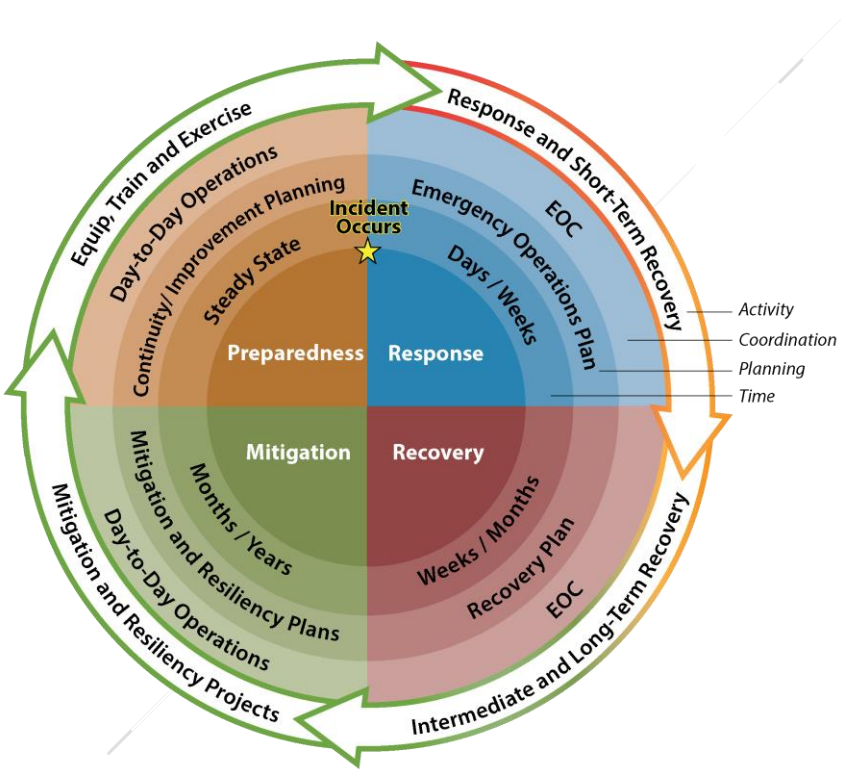
The Cow Creek Tribe All-Hazards Mitigation Plan (HMP) was prepared in accordance with the requirements of the Stafford Act, as amended by the DMA 2000, and the implementing 44 CFR § 201 provisions. The Tribe will integrate appropriate Americans with Disabilities Act (ADA) standards into mitigation projects and actions implemented as a part of the planning process. For example, alterations to existing facilities, such as seismic retrofits, will comply with all applicable federal accessibility requirements.

1.2 What is Hazard Mitigation?

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property posed by hazards (44 CFR §201.2). Hazard mitigation activities may be implemented prior to, during, or after an event. However, it has been demonstrated that mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs.

Additionally, hazard mitigation planning is one of the five mission areas presented in the National Preparedness Goal: Mitigation, Prevention, Protection, Response, and Recovery (see Figure 1-1). The Cow Creek Tribe HMP is an integral piece of the Tribe's comprehensive approach to emergency management and is designed to align and integrate with other existing plans and emergency management activities.

Figure 1-1 Emergency Management Cycle



Mitigation planning is important because it not only encourages communities to become more flexible and adapt to change more easily, but it also:

- Guides mitigation activities in a coordinated and efficient manner;
- Integrates mitigation into existing tribal plans/programs;
- Considers future growth and development trends;
- Makes the Tribe more disaster resilient; and
- Ensures eligibility for grant funding.

1.3 Purpose and Scope

1.3.1 Purpose

The Cow Creek Tribe HMP assesses the potential impact of all prioritized hazards to the Tribe's members and property, and provides mitigation strategies and actions to reduce such risks. The HMP prioritizes these strategies and includes an implementation plan to ensure strategic actions are carried out. The 2018 HMP is the required update of the Tribe's 2012 Natural Hazards Mitigation Plan, expanded to account for both natural and human-caused hazards. The updated HMP ensures tribal members have

access to the most up-to-date hazard risk information and maintains the Tribe's eligibility to receive federal mitigation funding.

1.3.2 Scope

While the HMP is focused on tribal members and property, strategies for broader community risk reduction are included. The Tribe lacks a reservation and, therefore, the HMP largely focuses on key tribally owned properties while recognizing the Tribe's ancestral territory as a larger area of interest. The HMP is designed to integrate with other tribal planning efforts and neighboring government's mitigation plans. During the finalization of plan content, the Tribe received over 17,000 acres of conveyance land from the U.S. Government via the Western Oregon Tribal Fairness Act (HR 1306). The Tribe's approach to mitigation in this conveyance land will be addressed at a future date with an appendix to the HMP.

1.4 Cow Creek Band of Umpqua Tribe of Indians Hazard Mitigation Program

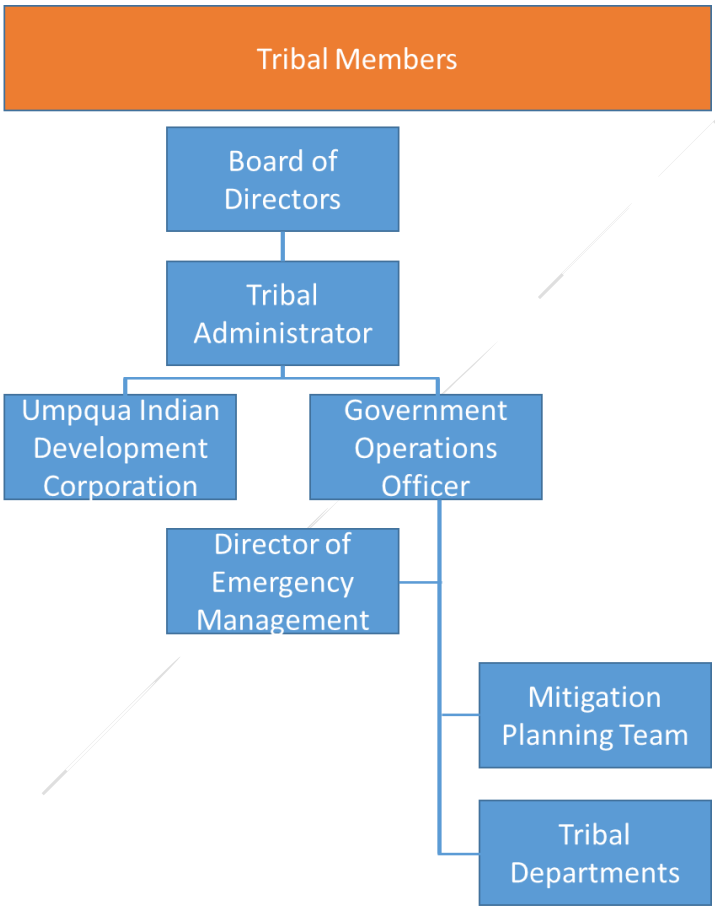
The HMP is one component of the Tribe's approach to hazard mitigation. While not as robust as many large cities, the Tribe maintains capabilities to ensure all elements of the tribal government and business operations are able to support hazard mitigation activities (see Chapter 5).

See Chapter 7 for details on ongoing implementation of the Tribe's mitigation program.

1.4.1 Organization

Figure 1-2 illustrates how the Tribe organizes to ensure an engaged and collaborative approach to mitigation planning and program implementation. This organization is informally referred to in this plan as the Tribe's mitigation program.

Figure 1-2 Cow Creek Band of Umpqua Tribe of Indians Mitigation Program Organization



1.4.2 Roles and Responsibilities

The HMP exists as a framing document for the Tribe's overall mitigation program. All members of the Tribe, the tribal government, and business operations play a role in mitigation, and this section outlines those roles and responsibilities.

1.4.2.1 Tribal Members

Prepared and educated tribal members are a critical aspect of the Tribe's resiliency, and the Tribe actively encourages its members to participate in efforts to minimize vulnerability to hazards by engaging in the following activities:

- Participate in the Tribes' preparedness programs. More information can be found in the tribal newsletter, Facebook page, and through direct tribal engagement; and
- Engage in personal and family preparedness and mitigation activities at home and at work.

1.4.2.2 Tribal Board of Directors

The Tribe's leadership plays a key role in the Tribe's mitigation program. As the Tribe's decision makers, they are responsible for balancing budgetary needs with the need to reduce risks. The Tribal Board of Directors perform the following activities in support of the Tribe's mitigation program:

- Develop and set policy guidance and direction for the Tribe's hazard mitigation program;
- Pass required ordinances to support the hazard mitigation program;
- Provide resources, funding, and direction for protecting and enhancing the lives of tribal members, and protecting cultural and natural resources;
- Adopt the HMP; and
- Approve funding and projects outlined in the HMP.

1.4.2.3 Government Operations Officer

The Government Operations Officer provides oversight of all tribal government departments and services. Key responsibilities of the Government Operations Officer include the following:

- Provide oversight and ensure the mitigation program is adequately supported through staff and resources;
- Ensure incorporation of mitigation planning into all tribal operations and planning processes; and
- Monitor accountability of tribal departments.

1.4.2.4 Umpqua Indian Development Corporation

The Umpqua Indian Development Corporation (UIDC) leads the Tribe's enterprises and business operations (see Section 3.5). These business operations play a significant role in generating revenue for the Tribe and ultimately must be heavily involved in all aspects of the Tribe's mitigation program. Key responsibilities of the UIDC include the following:

- Provide oversight and ensure mitigation program is adequately supported through staff and resources;
- Incorporate mitigation planning into all aspects of business operations; and
- Monitor accountability of tribal business operations.

1.4.2.5 Director of Emergency Management

The Cow Creek Tribe Director of Emergency Management serves as the lead coordinator for the Tribe's mitigation program. The director facilitates mitigation activities, including updates to the Cow Creek Tribe HMP, and provides technical assistance to other tribal departments. Key responsibilities of the Director of Emergency Management include the following:

- Facilitate the Tribe's hazard mitigation program;
- Provide technical support to tribal departments regarding integration of hazard mitigation into department activities; and
- Keep the Tribal Board of Directors apprised of the status of the Tribe's hazard mitigation program.

1.4.2.6 Mitigation Planning Team

The Mitigation Planning Team (MPT) includes members of various tribal departments and was developed to ensure the HMP was representative of tribal capabilities, resources, and concerns. Moving forward, the MPT will regularly convene to monitor, evaluate, and implement the Tribe's mitigation program. Additional key responsibilities of the MPT include the following:

- Support ongoing implementation of the Tribe's hazard mitigation program (see Chapter 7);
- Meet quarterly to address progress made on mitigation actions to date; and
- Provide input and technical support for updating and maintaining the HMP.

Refer to Chapter 2 for a discussion of the role of the MPT in the 2018 update of the Cow Creek Tribe HMP.

1.4.2.7 Tribal Departments

The success of the Tribe's mitigation program is dependent on mitigation being a shared endeavor across all organizational elements of the Tribe. Tribal departments are strongly encouraged to incorporate hazard mitigation into their plans and programs and be active participants in the Tribe's efforts to enhance resiliency. Key responsibilities of tribal departments include the following:

- Implement actions identified in the Cow Creek Tribe HMP;
- Incorporate hazard mitigation into other departmental planning efforts; and
- Assign a representative to serve as a liaison to the MPT.

1.4.2.8 Tribal Partners and Neighboring Jurisdictions

The Tribe is committed to a collaborative mitigation program that strives to integrate with other community efforts to mitigate the impacts of hazards. While the scope of the Cow Creek Tribe HMP primarily includes tribal departments, the Tribe will continue to look for opportunities to partner with neighboring jurisdictions, private industry, nonprofit organizations, and community- and faith-based organizations in its mitigation program. In particular, the Tribe will coordinate with Douglas and Jackson counties, the State of Oregon, the Oregon Tribal Preparedness Coalition, FEMA Region X, the Bureau of Indian Affairs (BIA), and the Indian Health Service. Key responsibilities of community partners include the following:

- Incorporate hazard mitigation into organizational and business activities; and
- To the greatest extent possible, coordinate hazard mitigation activities with those of the Tribe and other community partners.

Refer to Chapter 2 for a discussion of how community partners were engaged in the 2018 update of the Cow Creek Tribe HMP.

1.5 Plan Organization

The 2018 update of the Cow Creek Tribe HMP is organized into the following sections:

- **Chapter 1 – Introduction.** Identifies the authorities on which the plan is based, describes the plan's purpose and scope, describes how the plan is organized, and identifies changes to the plan since 2012.
- **Chapter 2 – Planning Process.** Describes the process used to update the plan, including data sources and plan integration activities, outreach and engagement strategies, MPT activities, and plan development milestones.
- **Chapter 3 – Tribal Profile.** Provides a summary community profile for the Cow Creek Tribe including geographic, demographic, and economic characteristics that make the Tribe unique.
- **Chapter 4 – Hazard Profiles and Vulnerability Assessments.** Contains a summary of the hazards that could potentially impact the Tribe, including a hazard-ranking table.
- **Chapter 5 – Capability Assessment.** Identifies the existing mitigation capabilities of tribal departments and highlights mitigation accomplishments over the last planning cycle.
- **Chapter 6 – Mitigation Strategy.** Provides updated goals and objectives for the Tribe's mitigation program and identifies a comprehensive set of prioritized mitigation actions that would contribute to the Tribe's resiliency.
- **Chapter 7 – Program Implementation.** Describes the Tribe's plan for monitoring, evaluating, and updating the Cow Creek Tribe HMP over the next five-year period.

In addition to the base document, the Cow Creek Tribe HMP is supported by a series of appendices that provide documentation of the planning process, expanded map sets, and additional data supporting the Vulnerability Assessment.

1.6 What's New in the 2018 Update?

The 2012 HMP served as a starting point for tribal mitigation efforts. The plan was not effectively socialized, but it did provide a benchmark to work against. In contrast to the update process, the MPT noted that the 2018 update has been a more inclusive process with far more engagement and planning team consideration to what the plan's content really means. As indicated in Table 6-5, key actions were taken in alignment with the expectations of the 2012 HMP. Nonetheless, the Tribe desires to go beyond creating an approved HMP

and instead develop a tribe-wide mitigation program that is constantly integrating hazard mitigation into daily operations. The MPT believes the 2018 planning process will ensure that becomes a reality.

In the years since the release of the 2012 plan, the Tribe has undergone many changes. In years past, mitigation planning was largely handled on an ad hoc basis related to specific project and risk needs. However, since then, the Tribe has hired a Director of Emergency Management and incorporated the responsibility for development and maintenance of a hazard mitigation program into that job title.

The 2018 update of the Cow Creek Tribe HMP includes the following major revisions to the 2012 plan:

- Incorporation of additional hazards and more comprehensive risk assessments (see Chapter 4);
- Expanded capability assessment (see Chapter);
- Comprehensive and focused mitigation strategy with prioritized mitigation actions (see Chapter 6);
- Integration of hazard mitigation planning into existing mechanisms (see Chapter 7); and
- Establishment of a formal hazard mitigation program and organizational structure (see Chapters 1 and 7).

Additionally, to aid in plan review and to ensure that all FEMA planning requirements are met, text box callouts have been inserted into the plan that identify the planning element, based on FEMA's tribal mitigation plan review tool, that is addressed in that particular section of the plan. The plan also strives to make robust use of internal call outs to ensure that plan users can easily find related information. For example, in Chapter 2, which addresses the planning process, the following text box appears:

FEMA	**A1.** Does the Plan document the planning process, including how it was prepared and who was involved in the process for [the Cow Creek Band of Umpqua Tribe of Indians]? (Requirement §201.7(c)(1))

See Appendix D for the completed FEMA Local Plan Mitigation Review Tool for the Cow Creek Tribe HMP.

2. PLANNING PROCESS

Chapter 2 provides a narrative description of the planning process the Tribe conducted to ensure that the Tribe's mitigation strategy was informed by input from key tribal departments, community partners, and tribal members. The process was based on strategies for inclusive engagement and integration with existing planning efforts.

FEMA	**A1.** Does the Plan document the planning process, including how it was prepared and who was involved in the process for [the Cow Creek Band of Umpqua Tribe of Indians]? (Requirement §201.7(c)(1))

A tribal hazard mitigation plan's organization is driven by the needs of the Tribe. The following priorities were used to steer development of the HMP:

- Communicate tribal priorities and values through mitigation strategies;
- Build community through a comprehensive and inclusive planning process; and
- Engage tribal members, leadership, and our partners to ensure an equitable plan and mitigation program.

FEMA recommends nine tasks for developing or updating tribal hazard mitigation plans (see Figure 2-1). Tasks 1 through 3 include the people and process involved in the all-hazards mitigation plan development or update; Tasks 4 through 8 focus on the analytical and decision steps that need to be taken; and Task 9 includes suggestions for plan implementation.

Figure 2-1 FEMA Recommended Mitigation Planning Tasks

Source: FEMA Local Mitigation Planning Handbook, March 2013

2.1 Planning Area

A notable feature of the Tribe is the lack of a reservation. This feature makes mitigation planning unique as the Tribe relies on critical services and infrastructure outside of their sovereign lands. While the Tribe's ancestral territory is quite sizeable, tribal members are spread throughout the United States with their greatest

The Tribe identifies their lands through the term "properties," which may encompass one or more parcels. The 307 Tribal parcels are condensed into 141 Tribal properties.

presence in the Pacific Northwest. The tribal government has only recently been able to begin building back their land base through private acquisition of property. For the purposes of ensuring mitigation strategies are realistic and actionable, the planning area of the HMP is designated as tribally owned, operated, and leased lands. According to the Tribe's Geographic Information System (GIS) program data, these lands total 307 parcels over 10,645.28 acres in size. Of these, 158 are parcels held "in trust" for the Tribe and represent 4,456.44 acres.

At the time of the HMP update, the Tribe was informed of the impending legislation of conveyance of 17,519 acres of Bureau of Land Management (BLM) land to the Tribe as per HR 1306. At the time of submission, certain actions by the Secretary of the Interior are pending to complete the conveyance. An appendix to the 2018 HMP will be developed to include these additional land holdings.

See Figure 2-2 for a map of the planning area.

2.2 Data Collection and Incorporation of Existing Plans

FEMA	**A4.** Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.7(c)(1)(iii))

Data collection efforts for the Cow Creek Tribe HMP focused on documents pertaining to the planning area. The primary source documents for the plan update were the 2012 Cow Creek Tribe HMP and GIS data. Additionally, related emergency management plans, current county and state hazard mitigation plans, and tribal plans with relevant hazard mitigation topics were reviewed as part of the data collection efforts. Examples of hazard mitigation planning best practices were also reviewed for their applicability to the Cow Creek Tribe HMP, including the Douglas County Natural Hazards Mitigation Plan, Douglas County Community Wildfire Protection Plan, and others.

2.2.1 2012 Cow Creek Tribe Hazard Mitigation Plan

As part of the 2018 plan update, the following actions were taken to ensure that the update reflected progress in the Tribe's mitigation efforts and any changes in priorities:

- Shift from a 'natural hazards' approach to one of an 'all-hazards' approach;
- Review and refinement of 2012 plan goals and objectives by the MPT;
- Update of tribal department mitigation capabilities; and
- Update of status for all mitigation actions identified in the 2012 plan.

Refer to Chapter 6, Table 6-6 for a review of the status of all mitigation actions identified in the 2012 Plan Update.

2.2.2 Cow Creek Tribe Natural Resources Department Strategic Plan (2015-2020)

The Tribe's Natural Resources Department plays a key role in the mitigation program, serving as the lead department for many of the outlined mitigation actions outlined in Section 6. The updated strategic plan

outlines a number of key priorities to strengthen the department. Many of these priorities, such as the redevelopment of a fish acclimation pond, have direct links to hazard mitigation and have been incorporated into the HMP, where applicable.

2.2.3 Douglas County Natural Hazard Mitigation Plan (2016)

Douglas County and the cities of Canyonville, Drain, Elkton, Glendale, Myrtle Creek, Oakland, Reedsport, Riddle, Roseburg, Sutherlin, Winston and Yoncalla participated in developing the multi-jurisdictional Natural Hazards Mitigation Plan (NHMP) in 2016. As the majority of Cow Creek Tribe properties lie within Douglas County, the county NHMP was used as a source document to align tribal and county efforts and areas of concerns.

2.2.4 Douglas County Community Wildfire Protection Plan (2013)

Collaboratively developed by countywide participants (as well as state and federal agencies), including the Tribe, the Community Wildfire Protection Plan (CWPP) identifies and prioritizes areas for fuel reduction treatments in at-risk communities. The CWPP also outlines recommended measures for homeowners and communities to reduce the likelihood of a fire impacting their structures. Fire was measured as the highest risk for the Tribe, and the CWPP was used to validate specifics related to the hazard.

2.2.5 Oregon Department of Transportation District 7 Winter Operations Plan (2017)

The Tribe's properties fall within Oregon Department of Transportation's (ODOT) District 7. Winter storms have been highlighted as a significant hazard within the HMP and in relied upon data within ODOT's Winter Operations Plan.

2.2.6 Oregon Natural Hazards Mitigation Plan (2015)

The Oregon NHMP identifies and prioritizes potential actions throughout Oregon that would reduce the state's vulnerability to natural hazards. In addition, the plan satisfies the requirements of FEMA to ensure that Oregon is eligible to receive hazard mitigation and disaster assistance funds from the federal government. The current version of plan was approved on September 24, 2015 as an enhanced plan and is effective through September 23, 2020.

2.2.7 Integration of Geographic Information Systems Data

Efforts were made to ensure the HMP incorporates the most up-to-date and comprehensive data available. These data were used to develop maps contained within the HMP and develop comprehensive risk assessments that describe exposure to risk in terms of dollar amount and provide property counts (where available).

Refer to Appendix E-2 for a comprehensive list of all GIS source data.

2.3 Coordination with Other Planning Efforts

FEMA	**A5.** Does the plan include a discussion on how the planning process was integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA programs and initiatives? (Requirement §201.7(c)(1)(iv))

The Tribe's reservation-less status – having no contiguous landmass in which tribal members live – presents a number of unique challenges for the Tribe. Primarily, tribal members are spread over a wide geographic space. While many tribal members live within the Douglas County region, members are also spread throughout Oregon, California, Washington, and other western states. In addition, this reservation-less status means that the Tribe relies on roads, utilities, and natural systems that begin or end outside of their jurisdiction. Therefore, the Tribe makes a concerted effort to participate in the planning processes of the jurisdictions surrounding them. These include the following:

- Douglas County planning, specifically the Douglas County Natural Hazards Mitigation Plan and Douglas County CWPP;
- Jackson County planning, specifically the Jackson County Hazard Mitigation Plan;
- City of Medford Natural Hazards Mitigation Plan development participation; and
- Statewide emergency planning efforts including exercises and trainings, including participation in the 2016 Cascadia Rising Functional Exercise through coordination with all nine tribes in Oregon.

2.3.1 FEMA HMA External Stakeholder Working Group

Via the Tribe's Emergency Management Director, the Tribe has the unique opportunity to have a voice on FEMA's HMA External Stakeholder Working Group (ESWG). The ESWG provides an opportunity for FEMA staff to increase engagement with non-federal partners and gather insight into the needs and perspectives of state, territory, tribal, and local governments. The Tribe is one of three Indian tribal perspectives involved in the current ESWG, which both enhances the Tribe's understanding of FEMA expectations, as well as articulates tribal capabilities and capacities. This role serves to educate FEMA of tribal concerns, while also conveying knowledge to the Cow Creek Tribe, neighboring tribes, and Region 10 FEMA staff.

2.3.2 Oregon Tribal Preparedness Coalition

The Oregon Tribal Preparedness Coalition is made up of the emergency management and public health preparedness staff from all nine federally recognized tribes within Oregon. Meetings are held throughout the year to allow for collaboration between tribes to support one another in becoming more prepared. While the coalition was formally chartered in 2016, its roots stretch back to 2005 at the 1st Annual Tribal Public Health Preparedness Conference in Spokane, Washington. Through the years, the Oregon tribes have collaborated on a number of topics related to emergency planning and hazard mitigation, including:

- Deployment of emergency resources to each tribe;
- Pre-staging of public health assets;
- Installation of generators for each tribal clinic on the Oregon Coast; and
- Development of emergency operations plans (EOPs) for each tribe.
- Annual public health conference, monthly technical calls, and semiannual conference of tribal preparedness coordinators; and
- Co-facilitation of Cascadia Rising 2016 Functional Exercise activities as well as development of a shared after action report with corrective actions.

2.3.3 Northwest Tribal Emergency Management Council

The Tribe is an active participant in the Northwest Tribal Emergency Management Council (NWTEMC). NWTEMC is a 501(c)(3) non-profit organization that was initially formed in 2004 as a consortium of Tribes in the northwest region of Washington State to help tribes participate in homeland security and emergency management preparedness efforts.

Currently the NWTEMC is composed of and serves Tribes in Washington, Oregon, Idaho, and Alaska for the purposes of information sharing and solidarity in dealing with homeland security/emergency management/public health issues as they pertain to Native Nations.

2.4 Mitigation Planning Team

The Tribe began preparing for the update of the HMP by preparing an application to receive FEMA funding via the Pre Disaster Mitigation Grant Program. Funding was received in June 2017, which allowed for the planning process to commence with contract support provided by Ecology and Environment, Inc. (E & E). The Tribe's Director of Emergency Management initiated the planning process through pre-planning via internal meetings and email exchanges with MPT members.

The MPT was convened at the start of the Cow Creek Tribe HMP update project to facilitate tribal department and tribal member input into the Cow Creek Tribe HMP update. The MPT aided in the revision of mitigation goals and objectives, determination of risks and vulnerabilities, identification of mitigation strategies, refinement of mitigation review criteria, and prioritization and implementation of mitigation strategies. This planning process focused on improving interdepartmental coordination to ensure that the resulting document met the needs of all tribal departments.

2.4.1 MPT Members

The MPT was led and organized by the Tribe's Director of Emergency Management. The members of the MPT who participated in the plan update and their associated organizations and departments are listed in Table 2-1.

Table 2-1 Mitigation Planning Team Members

Name	Title	Department	Meetings Attended
Tracy DePew	Director of Emergency Management	Government Operations	1-5
Lonnie Rainville	Operations Officer	Government Operations	1-5
Nathan Jackson	General Manager, Business and Administration	UIDC – K Bar Ranches	1-3, 4*
Ryan Bochart	Accountant	Accounting	1, 2, 4, 5
Scott Van Norman	Wildlife Specialist	Natural Resources	1, 3, 5
Brian Mladenich	GIS Manager	Natural Resources	1, 3, 5
Justin Mathison	Housing Director	Housing	1-5
Michele Moore	Human Services Director	Human Services	1-5
Jessie Plueard	Cultural Program Manager & Tribal Historic Preservation Officer	Natural Resources	1, 2, 3, 5
Rich Rader	Chief Technology Officer	Information Technology	1, 3^
Sarah Thompson	Resident Manager	Housing	1-5
Jason Robison	Natural Resources Director	Natural Resources	1-5*
Kelly Coates	Wind Energy Research Program (WERP) Manager	Natural Resources	1-5
John McCafferty	Chief Operations Officer	Umpqua Indian Development Corporation	2, 3,
Luann Urban	Board Member	Tribal Board of Directors	2*, 3, 4, 5
Brian Boswell	Operations Manager	Umpqua Indian Utility Cooperative (UIUC)	1-5
Travis Mackie	Fish Biologist	Natural Resources	2, 3, 4, 5
Mary Stevenson	Health Admin	Cow Creek Health and Wellness Center	2, 3, 5
Tim Vredenburg	Director of Forest Management	Natural Resources	2, 3, 5
Zane Beall	Contract Support, Project Manager	Ecology and Environment, Inc.	1-5
Matthew Lieuallen	Contract Support, Principal in Charge	Ecology and Environment, Inc.	1, 2^, 3

*Individual called into meeting or participated in targeted outreach to recap missed meeting
^Individual had representative attend in their place

See Appendix A for full MPT member contact information.

2.4.2 MPT Meetings

Plan needs were discussed and key deliverables were reviewed at the MPT's formal meetings. The MPT convened for a series of six meetings over the course of the project (see Table 2-2) where representatives from key tribal departments and other stakeholders had the opportunity to provide project insights, engage with the contractors, and collaboratively work on plan content. MPT members were informed of meetings via email reminders and conference call-in lines were provided for those unable to attend meetings.

The MPT meetings served as the primary data gathering mechanism throughout the planning process, and the importance of these meetings cannot be overstated. While contract support to develop the plan was provided by E & E, tribal members and employees within the MPT crafted every concept outlined in the HMP. This includes data collection, determination of goals and objectives, articulation of specific hazards and risks, and development of a comprehensive mitigation strategy. MPT meeting outputs are referred to throughout each chapter of the HMP, indicated by MPT Meeting Deliverable graphic displayed to the right.

Table 2-2 Mitigation Planning Team Meeting Schedule

MPT Meeting	Date	Objectives
Meeting #1: Project Kickoff Workshop	6/14/2017	Project kickoff, including review of the planning process, ranking of hazards, determination of goals and objectives, and information gathering.
Meeting #2: Risk Assessment Workshop	8/17/2017	Review of updated risk assessment and development of additional risk characteristics (held concurrently with Public Meeting #1).
Meeting #3: Mitigation Strategy Workshop	10/25/2017	Development and prioritization of mitigation strategies.
Meeting #4: Action Prioritization Workshop	12/13/2017	Draft plan review, mitigation action prioritization, and deep dive into implementation of prioritized actions.
Meeting #5: Draft Plan Review	1/23/2018	Draft plan review for MPT and tribal members.
Meeting #6: Final Presentation	2/28/2018	Final plan review, MPT approval, and Tribal Board of Directors approval.

The MPT comes together to identify mitigation strategies to be incorporated into the HMP.

See Appendix A for documentation of all MPT activities.

In addition to five MPT meetings, the MPT was engaged through follow-up emails and requests to provide additional information pertaining to internal capabilities, department-specific risks, and mitigation strategy development. MPT members unable to attend meetings were consulted after all meetings to ensure all inputs and perspectives were represented in the final HMP.

2.5 Inclusive Outreach and Public Engagement

FEMA	**A2.** Does the Plan document an opportunity for public comment during the drafting stage and prior to plan approval, including a description of how the tribal government defined "public"? (Requirement §201.7(c)(1)(i)) **A3.** Does the Plan document, as appropriate, an opportunity for neighboring communities, tribal and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.7(c)(1)(ii))

A critical component of the Cow Creek Tribe HMP update effort is a robust stakeholder engagement process that provides "an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval" (44 CFR §201.7).

2.5.1 Inclusive Outreach and Public Engagement Plan

For the purposes of the HMP, "public" is defined as tribal members and employees. All members of MPT were tribal employees, with a large segment also being tribal members. Additional tribal members were

invited to participate in the events outlined in Table 2-3, including risk assessment workshops and mitigation strategy feedback sessions. Furthermore, tribal members were provided with the draft HMP from 1/2/2018 to the present on the Tribe's internal website and informed through the Tribe's monthly newsletter in January and update on the Tribe's private Facebook page.

An initial public comment period was held from 1/2/2018 to 2/5/2018. Tribal members were invited to share their thoughts about what hazards concern them most, and how they think the Tribe should prioritize its activities to reduce hazard risks. No public comments were received during this time period, but the Tribe will continue to socialize the plan and solicit input to guide the mitigation program.

See Appendix A for a summary of outreach and engagement activities.

Table 2-3 Stakeholder and Public Outreach Activities Schedule

Outreach Event	Date	Objectives
Tribal Member Hazard Discussion	8/16/2017	Confirm hazard rankings and risk assessments align with the concerns of tribal members.
Neighboring Jurisdiction Risk Assessment Discussion	8/17/2017	Support identification of specific risks and vulnerabilities posed by hazards potentially impacting the Tribe.
Douglas County Participation in Mitigation Strategy Development	10/25/2017	Douglas County's Emergency Manager participated in the development of tribal-specific mitigation actions to ensure coordination between partners.
Tribal Member Review Period	1/2/2018 to 2/5/2018	Tribal member review of draft plan available on Tribe's website.
Final Tribal HMP Approval	2/28/2018	Tribal members representing the Board of Directors provided with opportunity to provide input on plan prior to FEMA review.

2.5.2 Neighboring Jurisdiction and Partner Engagement Strategies

Being a Tribe without a contiguous land boundary requires constant coordination with neighboring jurisdictions including the City of Roseburg, City of Canyonville, Douglas County, and others. These partners were invited to participate in the MPT Workshop #2 – Risk Assessment to ensure the HMP properly identified risks that each governmental body works within. Agencies in attendance included:

- Mercy Healthcare;
- Douglas County Emergency Management;
- Douglas County Public Works;
- Roseburg School District; and
- Douglas County Fire District No. 2.

In addition, the partners provided feedback to the draft HMP, which was sent to the following jurisdictions and agencies during the initial review period discussed above:

- Douglas Forest Protective Association (DFPA);
- Coos Forest Protective Association;
- Douglas County Sheriff's Office; and
- Douglas County Planning Department.

2.6 Plan Development and Review

FEMA	**A6.** Does the plan include a description of the method and schedule for keeping the plan current (monitoring, evaluating, and updating the mitigation plan within the plan update cycle)? (Requirement §201.7(c)(4)(i))

The Cow Creek Tribe HMP development was conducted according to the process outlined above and described in detail in FEMA's Tribal Mitigation Planning Handbook. The MPT reviewed the previous plan during the Project Kickoff Workshop and identified sections that required revision. Ultimately, the MPT determined that much of the plan required extensive updating and reconfiguration, as well as the determination to move away from a 'natural hazards' plan to an 'all hazards' plan.

Updating the Tribe's mitigation strategy was treated as the plan's primary purpose and the plan serves as the written record of the comprehensive planning process. In addition, the Cow Creek Tribe HMP reflects the Tribe's current needs and hazard concerns. The development of the Cow Creek Tribe HMP update occurred over a 10-month period from June 2017 to March 2018. The plan development was conducted through a series of seven steps as detailed in Table 2-4. Many of the steps occurred concurrently. Table 2-4 also illustrates the corresponding FEMA local mitigation planning task for each Cow Creek Tribe HMP development milestone. The requisite State Hazard Mitigation Officer and FEMA review periods occurred during the draft and final HMP steps.

Table 2-4 Cow Creek Tribe HMP Update Milestones and Timeline

Cow Creek Tribe HMP Update Development Milestone	Corresponding FEMA Recommended Mitigation Planning Task[1]	Timeline	Updates Made? (Yes/No)
1. Data Collection and Document Review	Task 1 – Determine the Planning Area and Resources Task 5 – Conduct a Risk Assessment	June 2017-July 2017	Yes
2. Mitigation Planning Team Coordination	Task 2 – Build the Planning Team	June 2017-February 2018	Yes
3. Stakeholder Engagement and Outreach	Task 3 – Create an Outreach Strategy	June 2017-February 2018	Yes
4. Hazard Mitigation Strategy Update	Task 4 – Review Tribal Capabilities Task 6 – Develop a Mitigation Strategy	October 2017-December 2017	Yes
5. Draft Hazard Mitigation Plan[1]	Written documentation of the planning process (all tasks)	August 2017-December 2017	Yes

Cow Creek Tribe HMP Update Development Milestone	Corresponding FEMA Recommended Mitigation Planning Task[1]	Timeline	Updates Made? (Yes/No)
6. Final Hazard Mitigation Plan	Written documentation of the planning process (all tasks)	December 2017-February 2018	Yes
7. Plan Adoption	Task 8 – Review and Adopt the Plan	March 2018-May 2018	Yes

Figure 2-2 Cow Creek Tribe HMP Planning Area

Document Path: Q:\Portland\Cow_Creek\Maps\MXDs\Hazard_Assessment\CowCreek_MasterMap.mxd

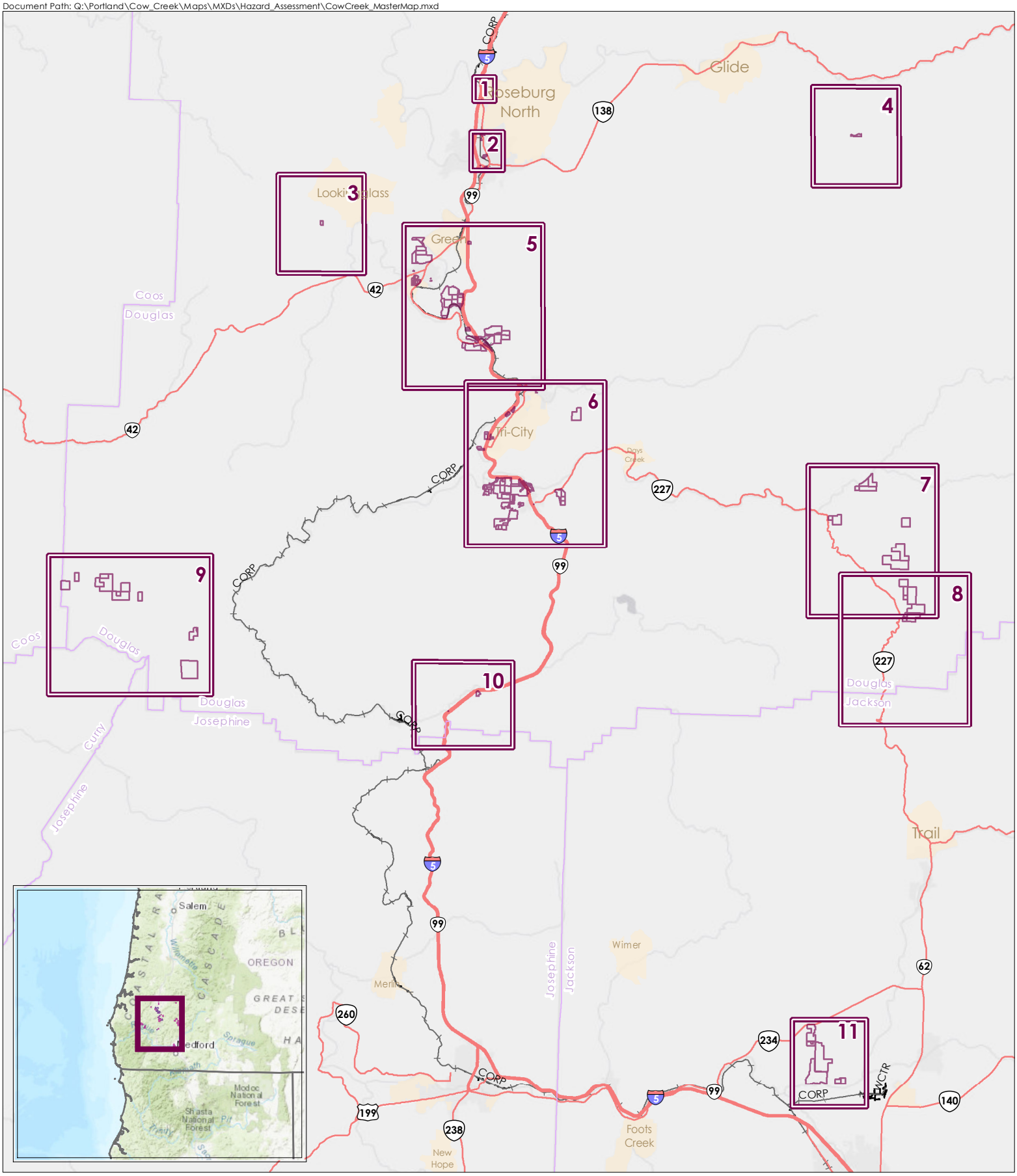


Figure X.1
Cow Creek Band of Umpqua Tribe of Indians
Master Map

0 5 10 20 Miles

Series Page
CCBUTI Parcels
County
Other Highway
Interstate
US Route
State Highway
Rail: Siding / Spur
Rail
Populated Place

3. TRIBAL PROFILE

Chapter 3 provides a summary of the Tribe's place within these lands. The Tribe's mitigation strategy is designed to be reflective of the unique characteristics of the Tribe.

3.1 Tribal Sovereignty and Governance

One of nine federally recognized Indian tribal governments in the state of Oregon, the Cow Creek Tribe's history is one of survival and resilience. Upon contact from European settlers, tribal members were pushed into marginal lands. In the early twentieth-century, multiple attempts to gain recognition were met with defeat, culminating with the 1954 passage of the Western Oregon Indian Termination Act, which resulted in the Tribe being listed as a "terminated tribe." Despite termination, the Tribe continued its efforts for recognition, which finally resulted in a "recognition" law passed by Congress and signed by the Tribe in 1982. While sovereignty was granted, the Tribe has never received the reservation that was promised to them in an 1853 treaty. Nonetheless, the Tribe continues to buy back land within their ancestral territory in an effort to provide a place for all tribal members.

Tribal elders initiated the modern tribal government in 1918 in an effort to increase support to tribal members. A formal tribal constitution was created and accepted by tribal members and the Tribal Board of Directors on July 17, 1991. Today, the Tribal Government Office, located in Roseburg, Oregon, houses the eleven-member elected Tribal Board of Directors (the governing authority for the Tribe's legislative and executive functions, while the board-appointed Chief Judge of the Tribal Court oversees all tribal judicial matters). The tribal board ensures that all tribal government functions are in accordance with tribal law. Board members serve four-year terms and have the authority to establish committees and advisory boards, when appropriate, to conduct tribal functions. The Tribe also has a board-appointed Tribal Administrator and Government Operations Officer tasked with running the Tribe's daily affairs.

Additional tribal programs include the following programs and departments:

- Administrative Government Services;
- Cow Creek Health and Wellness Center;
- Education Department;
- Elders Program;
- Emergency Management Program;
- Human Services;
- Natural Resources Department including the Cultural Resources Program;
- Tribal Housing Program; and
- Veterans Program

The Tribal Government Office in Roseburg, Oregon; Source: http://www.cowcreek.com/tribal-story/modern-history-today/

3.2 Location and Geography

Cow Creek tribal lands are generally defined as its ancestral territory, which is the Tribe's traditional pre-contact land and is comprised of the entire Umpqua River and Rogue River Watershed basins above the head of tide waters in Scottsburg and Agness, respectively. The Tribe was also entitled to Treaty-ceded lands which consisted of about 5,433 square miles. However, because these Treaty lands were never granted, this area is under the jurisdiction of Douglas County, and multiple federal government agencies including the U.S. Forest Service and the BLM.

The Tribe's current property holdings are located in present day Douglas and Jackson counties, with current tribal lands centered along a 22-mile stretch of the Interstate 5 corridor along the South Umpqua River between Roseburg and Canyonville, Oregon. The Tribe also has interests in Jackson County including the K Bar Ranch Central Point and maintains a memoranda of understanding between the Tribe, the BLM, and Nature Conservancy establishing government-to-government relationships related to the management of Table Rocks.

3.3 Population and Demographics

Although historic population counts are not available, it is known that interactions with fur trappers in the 1700s decimated entire villages of neighboring tribes by introducing small pox, measles, and the plague. While the Cow Creek Tribe did not have their first interaction with non-natives until 1819, these interactions with neighboring tribes spread disease to the Cow Creek Tribe. The 1850s brought white gold miners to ancestral lands and resulted in many deaths from miners who burned entire Indian villages, killing all inhabitants. Overcrowding and disease further decimated the tribal population following the forced move to reservation lands (also in the 1850s) [Cow Creek Tribal Hazard Mitigation Plan, 2012]. The members of the contemporary Cow Creek Band of Umpqua Tribe of Indians are

descendants of Indians that were not removed to reservations, but instead went into seclusion in their traditional homelands.

According to a study of the Tribe's population in conjunction with the 2010 United States Census, the Tribe included 1,553 members. More than 51% of the tribal population was younger than 25 and only about 4% (67 members) was older than 65 years. Of the tribal members with permanent addresses, approximately 52% lived in Oregon (including minors). Most resided in Douglas County (26%), but many lived in several other Oregon counties (which together with Douglas County comprise the Tribe's service area) including the following: Coos County (6 members), Josephine County (50 members), Klamath County (12 members), Lane County (34 members), Deschutes County (54 members), and Jackson County (60 members). Together these equal roughly 45% of the Tribe's population. Additionally, other members lived in California (12%), Washington (14%), and 33 other states (22%).

The Tribe is currently preparing to update their population figures in conjunction with the upcoming 2020 United States Census.

3.4 Tribal Enterprises

The Cow Creek Tribe is the second largest employer in Douglas County, employing over 1,200 people. In 1998, the UIDC was established and chartered to take the lead in making the Tribe economically self-sufficient. Working closely with the tribal board, UIDC manages and administers the Tribe's business ventures. UIDC's most financially productive venture is the Seven Feathers Casino Resort. First established in 1992 as the Cow Creek Bingo Hall, the Seven Feathers Casino Resort employs over 772 people (both tribal and non-tribal). Over 63% of the Tribe's employees work at the Seven Feathers Hotel & Casino Resort in Canyonville, Oregon. Tribal businesses account for one in every 25 jobs in Douglas County, according to a 2010 study conducted by ECO-Northwest, Inc..

The Tribe operates various business enterprises for economic development to support tribal members and the communities in which they live. These enterprises include:

- Seven Feathers Casino Resort and Truck and Travel Center;
- K-Bar Ranches;
- Nesika Health Group;
- Anvil Northwest;
- Canyon Cubbyholes; and
- Takelma Roasting Company

ENTERPRISE HIGHLIGHT

The K-Bar Ranch leads many of the Tribe's agricultural business efforts. Staffed with nine employees, the ranch produces and generates the following outputs:

- Maintains 3,000 head of cattle
- Sells 10 tons of hay annually

K-Bar Ranches represents one of the Tribe's most active enterprises.

3.5 Tribal Lands and Ownership Trends

As of 2018, Cow Creek tribal lands total 141 properties (307 parcels) equaling 10,645.28 acres in size. Tribal properties are located in the towns and unincorporated areas surrounding Roseburg and Canyonville, including Winston, Myrtle Creek, Riddle, Glendale, and Tri-City. As previously mentioned, these totals are not in line with the Tribe's ancestral territory which equals approximately 6.2 million acres (9,687.5 sq. miles), the Usual and Accustomed Land area which equals approximately 5,433 square miles, nor does it align with the originally agreed to ceded lands. The Tribe continues to purchase private property and its owned acreage is trending upward.

Following initial development of the HMP, the Tribe was informed of the impending legislation of conveyance of 17,519 acres of BLM land to the Tribe as per SBS.508. At the time of submission, certain actions by the Secretary of the Interior were pending to complete the conveyance. An appendix to the 2018 HMP will be developed to include these additional land holdings.

Trust Lands

Of the 307 parcels, 158 are in trust status, meaning the United States government holds the legal title, and the Tribe holds the beneficial interest. Trust lands are communal assets and managed by the Tribe and managed by the tribal government. The Tribe may not convey or sell these lands without the consent of the federal government. By land area, about 67% of the Tribe's lands are in trust.

3.6 Natural Systems

The Tribe's ancestral territory, as well as today's land holdings, are largely located within present day Douglas County and the Umpqua watershed. Major natural systems present within this area include the following features:

- **Geology:** Douglas County is comprised of four geologic provinces: the Klamath Mountains Province in south central Douglas County, the Coast Range Province of rugged mountains to the west, the Western Cascade Province to the west; and the High Cascade Province to the northwest. The Tribe owns and operates properties throughout each geologic province.
- **Rivers:** The Umpqua River drainage basin lies entirely within Douglas County and interacts with many tribal activities. Covering approximately 4,560 square miles, the basin has ten major streams all of which flow into the main Umpqua River. The main Umpqua River flows 111 miles into the Pacific Ocean and encounters varying degrees of gradient.
- **Climate:** The Umpqua Valley is noted as having a relatively temperate climate with summer highs in the mid-80s and winter lows in the mid-30s. The region generally experiences cool, rainy winters and warm, dry summers.
- **Wildlife:** Fish, deer, and elk are prominent throughout the region. The Tribe maintains a fish acclimation pond and hunting program. Events occur during the year that support the gathering and harvest of first foods across the tribal ancestral territory. Events are coordinated by Cultural Resources Program, and some gathering and harvest is conducted by tribal members and families individually. The tribal garden also produces some first foods for use by tribal members.

3.7 Cultural Resources and Values

The Cow Creek Tribe's ancestral territory has been inhabited for thousands of years and until the last 200 years, before epidemics wiped out much of the tribal population, was fully utilized and inhabited with a network of villages, summer and winter camping locations, hunting/gathering spots and sacred places; all connected by a vast network of trails. Although much has been lost to memory and re-growth of the forests, remnants of these trails and habitations can still be identified. For this plan, particular

locations are not specifically identified for hazard analysis. However, multiple locations throughout the ancestral territory are likely important for cultural, spiritual, historic, and archaeological reasons.

Cow Creek continues to revive its cultural and traditional language through a variety of activities for tribal members and the general public. Harvesting of first foods, arts, fish acclimations to traditional waterways, Pow-Wow, and other culture gatherings and courses are coordinated through the Cultural Resources Program within the Natural Resources Department. The Cultural Resources Program also documents and maps sites of cultural significance. Events specific to tribal elders are coordinated through the human services, education and cultural resources programs.

4. HAZARD PROFILES AND VULNERABILITY ASESSMENTS

Chapter 4 contains hazard profiles and vulnerability assessments to determine the potential impact of hazard to the people, economy, and built and natural environments of the Cow Creek Band of Umpqua Tribe of Indians. They have been streamlined to increase the effectiveness and usability of the HMP. Additional detail is contained within Appendix E.

FEMA	**B1.** Does the Plan include a description of the type, location, and extent of all natural hazards that can affect [the Cow Creek Band of Umpqua Tribe of Indians]? (Requirement §201.7(c)(2)(i)) **B2.** Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for [the Cow Creek Band of Umpqua Tribe of Indians]? (Requirement §201.7(c)(2)(i)) **B3.** Does the plan include a description of each identified hazard's impact as well as an overall summary of the vulnerability of the tribal planning area? [44 CFR § 201.7(c)(2)(ii)]

4.1 General

The Tribe has never received a major disaster declaration. However, having the vast majority of its property holdings within Douglas County, it has encountered a number of major disaster declarations within the county. Table 4-1 identifies these declarations.

Table 4-1 Major Disaster Declarations in Douglas County

Declaration #	Declaration Date	Incident(s)	Incident(s) Period
DR-184	24-Dec-64	Flood	24-Dec-64
DR-319	21-Jan-72	Flood	21-Jan-72
DR-413	25-Jan-74	Flood	25-Jan-74
DR-1036	2-Aug-94	El Nino Effects	1-May-94 to 31-Oct-94
DR-1099	9-Feb-96	Severe Storms, Flooding	4-Feb-96 to 21-Feb-96
DR-1107	19-Marc-96	Severe Storms, High Winds	10-Dec-96 to 12-Dec-96
DR-1149	23-Dec-96	Severe Storms, Flooding	17-Nov-96 to 6-Jan-97
DR-1160	23-Jan-97	Severe Winter Storms, Flooding	25-Dec-96 to 14-Jan-97
DR-1405	12-Mar-02	Severe Winter Windstorm w/ High Winds	7-Feb-02 to 8-Feb-02
DR-1510	19-Feb-04	Severe Winter Storms, Flooding	26-Dec-03 to 14-Jan-04
FM-2549	21-Aug-04	Bland Mountain #2 Fire	20-Aug-04 to 5-Sep-04

Table 4-1 Major Disaster Declarations in Douglas County

Declaration #	Declaration Date	Incident(s)	Incident(s) Period
DR-1632	20-Mar-06	Severe Storms, Flooding, Landslides, Mudslides	18-Dec-05 to 21-Jan-06
DR-1956	17-Feb-11	Severe Winter Storms, Flooding, Landslides, Mudslides, Debris Flow	13-Jan-11 to 21-Jan-11
DR-4055	2-Mar-12	Severe Winter Storm, Flooding, Landslides, Mudslides	17-Jan-12 to 21-Jan-12
FM-5037	28-Jul-13	Douglas Fire Complex	27-Jul-13 to 19-Aug-13
FM-5092	31-Jul-15	Stouts Creek Fire	30-Jul-15 to 29-Aug-15
DR-4258	17-Feb-16	Severe Winter Storms, Straight-line Winds, Flooding, Landslides, Mudslides	6-Dec-15 to 23-Dec-15
Source: FEMA, Oregon Disaster History, Major Disaster Declarations			

The hazard profiles and vulnerability assessments contained in this chapter represent a considerable amount of work performed by the MPT. MPT members ranked hazards using a number of key considerations, followed up by activities to validate hazard analysis results and identify specific areas of risk. Table 4-2 displays the hazards that MPT selected for further assessment.

Table 4-2 Hazards Addressed in Plan

Hazard Type	Hazard Name
Natural Hazards	Fire Drought Flooding Earthquake Landslide Winter Storm Wind Storm
Human-Caused Hazards	Hazardous Material Incident Active Threat Emerging Infectious Disease Domestic Terrorism Biosecurity Social Unrest
Technological Hazards	Utility Failure Cyberattack

MPT members discuss initial hazard rankings in small groups.

4.2 Hazard Ranking Methodology

The hazards identified in the HMP were initially ranked based on MPT feedback during MPT Meeting #1 and #2. Participants were asked to rank hazards on a scale of 1 (lowest concern) to 5 (highest concern) based on five key attributes:

- **Probability:** Likelihood of the hazard occurring.
- **Magnitude:** Areas potentially impacted, the overall impacts, and the chance of one hazard triggering another hazard, thus causing a cascading effect.
- **Onset:** The time between recognition of an approaching hazard and when the hazard begins to affect the Tribe.
- **Duration:** The length of time the hazard remains active, the length of time emergency operations continue after the hazard event, and the length of time that recovery will take.
- **Frequency:** How often a hazard has resulted in an emergency or disaster.

MPT Meeting Deliverable

Following the individual hazard ranking activity, the results were added up and aggregated to show an average score for the all MPT members. The aggregate results were shared with the MPT and the final rankings were adopted as the official rankings for the HMP and are available in Table 4-3.

Table 4-3 Hazard Ranking Table

	Probability (1=lowest, 5=highest)	Magnitude (1=lowest, 5=highest)	Onset (1=slowest, 5=fastest)	Duration (1=shortest, 5=longest)	Frequency (1=lowest, 5=highest)		Average	Rank
Wildfire	4.67	4.50	4.50	4.67	4.67		4.60	1
Utility Failures	4.17	3.08	4.33	3.00	3.50		3.62	2
Hazardous Materials Accident	4.25	3.17	4.75	2.92	2.83		3.58	3
Drought	4.25	3.33	2.50	3.67	3.42		3.43	4
Flooding	4.17	3.08	3.42	2.58	3.75		3.40	5
Cascadia Earthquake Event	2.50	4.83	4.75	3.58	1.17		3.37	6
Landslide	4.08	2.92	3.92	2.50	3.00		3.28	7
Winter Storm	3.67	2.63	2.92	2.67	3.08		2.99	8
Active Threat	2.33	4.67	5.00	1.33	1.42		2.95	9
Emerging Infectious Disease	2.33	3.83	3.75	3.25	1.58		2.95	9
Cyber Attack	2.83	3.08	3.92	2.58	2.17		2.92	11
Windstorm	2.83	2.92	3.83	1.33	2.83		2.75	12
Earthquake	1.58	3.92	5.00	2.25	1.00		2.75	13
Domestic Terrorism	2.08	3.33	4.42	2.25	1.42		2.70	14
Infestation	2.50	2.75	2.75	3.00	2.17		2.63	15
Animal Disease	2.50	2.83	2.75	2.92	1.92		2.58	16
Bio-Security	2.08	3.42	2.75	3.00	1.50		2.55	17
Social Unrest	2.00	3.17	1.83	2.75	1.58		2.27	18

Refer to Appendix C for individual hazard ranking results.

4.3 Hazard Considerations

Hazards cannot be simply viewed in a vacuum. Each community interacts with hazards according to a number of place-specific values.

4.3.1 Cultural Implications

While risk assessments within HMPs generally measure risk and vulnerability through a quantitative lens of dollars lost, it is critical that hazards on the Tribe's lands also account for the cultural implications. These are represented by the less tangible aspects of "community." As an example, the loss of a tree cannot simply be represented by the lost timber revenue. The loss of the tree has spiritual significance that goes far beyond these simple quantitative measures. Likewise, a cultural site has no intrinsic economic value, but it does represent tribal history and can be used for cultural and educational purposes.

During the 2017 fire season, the Tribe's annual huckleberry gathering activity was forced to be canceled due to safety risks. The cancellation represented the Tribe's inability to interact with the surrounding world, and could potentially be represented better through the evoking of a feeling and a place, rather than a quantitative loss. The lost opportunity for tribal members to engage in this activity speaks to the ways in which the Tribe may view "hazard extent" or "vulnerability" in a different measure than some readers of the HMP.

4.3.2 Mitigation vs. Adaptation

Mitigation plans speak to the need to reduce the risks associated with hazards. However, not all risks can always be reduced. Whether mitigation actions are too expensive or otherwise unfeasible, certain aspects to hazards have been removed from this plan as the Tribe views them as unattainable.

Adaptation has long been part of the Tribe's mentality. Throughout its history, the Tribe has been forced, again and again, to adjust to a new normal and find a way to survive. As such, the Tribe has elected to build adaptation into the HMP. The base of the plan focuses on strategies to mitigate against many hazards that could potentially impact the Tribe. However, in staying true to their history, they understand that certain hazard mitigation is not always feasible (based on cost and values), and that the Tribe must sometimes learn to adapt to the hazards occurring around them. The mitigation strategy outlined in Chapter 6 was developed with a focus on realistic, cost-effective actions. Certain risks identified in the following sections were deemed acceptable.

4.3.3 Future Climate Conditions

> We often think of hazards as having a linear occurrence interval. This notion is being challenged by a changing climate. Hazards such as flood that were once considered linear in nature are now being witnessed in a non-linear and irregular pattern.

Potential impacts of future climate conditions include increased average temperatures, decreased snow accumulation, and increased peak stream flow. The increasing average temperature is expected to be more pronounced during summer months, and decreased summer precipitation is expected to accompany this shift. The frequency and magnitude of extreme precipitation events is also expected to increase, particularly in the winter. In short, what is currently viewed as a 100-year event, may soon be reconsidered as a 50-year event or even a 10-year event. This would place further stress onto storm drainage systems and natural stream systems; placing tribal members at an increased risk for flooding.

Furthermore, changing precipitation and temperature may impact potable water and first food availability. If precipitation falls during a shorter period of the year, with a longer, drier, hotter summer, the need for water storage may grow. Decreased water availability combined with increased demand may exacerbate water rights conflicts.

Finally, changing climate conditions can impact ecosystems, with complicated feedbacks that may affect ecosystem services that tribal members rely on for recreation, water quality, and overall well-being.

4.3.4 Cascading Impacts

Hazards do not occur in a vacuum and the occurrence of one hazard has the potential to cause multiple other hazards and adverse effects. As such, the Tribe has attempted to take the risk assessment one step further by identifying the potential cascading, or secondary impacts that may be generated by a hazard. In better understanding these cascading impacts, the Tribe will be better prepared to holistically address their risks and vulnerabilities.

4.4 Risk-Driven Planning

The risk assessments discussed in this section were developed through a combination of stakeholder feedback and comprehensive GIS analyses. The combined findings shaped a risk-driven planning process that resulted in mitigation strategies focused on the real risks and vulnerabilities that the Tribe faces.

4.4.1 Stakeholder Feedback

In addition to the hazard ranking activity identified in Section 4.2, MPT participants were also engaged during MPT Meeting #2 to provide insights regarding the risk assessment portion of the HMP. As part of the workshop, participants were asked to review each hazard based on the following attributes (which are very closely aligned with the attributes identified in Section 4.5):

- **Geographic Scope:** A description of the locations most likely to be impacted by the hazard.
- **Health Impacts:** A description of the potential short- and long-term human health complications related to the hazard.
- **Displacement:** A description of the hazard's likelihood to cause the displacement of tribal members or visitors accompanied by an estimate on the anticipated displacement duration.
- **Economic Impacts:** A description of the potential economic and financial losses related to the hazard.
- **Environmental Impacts:** A description of the potential impacts that may adversely affect natural systems.
- **Structural Impacts:** A description of the scale and scope of potential building and infrastructure damages related to the hazard.
- **Critical Services:** A summary of the tribal departments and functions most likely to be taxed following the hazard.
- **Cascading Effects:** A brief overview of potential secondary hazards caused by the onset of the initial hazard in question.

See Appendix E-4 for the results of the MPT Risk Assessment Activity.

4.4.2 GIS Analyses

CASCADING IMPACT EXAMPLE

An earthquake stands as a singular hazard presenting unique risks, but an earthquake in and of itself is likely to cause secondary hazards for the Tribe such as:

- Landslides
- Utility Failure
- Urban Fires
- Transportation Accidents

Numerous risk assessments are supported by maps and tables generated through comprehensive GIS analyses. A series of processes were performed to identify areas in which tribal properties intersect with mapped hazards and estimate the potential economic losses associated with such losses. This project relied heavily upon publicly available data developed by the Oregon Department of Geology and Mineral Industries (DOGAMI). The data is newly updated and represents some of the best data available in the United States, providing a locally, sourced reference for hazard information. Table 4-4 indicates the data sources used to estimate such losses.

Table 4-4 GIS Data Sources

Data Grouping	Specific Data Files
Hazard Data	Earthquake Fault Lines
	Cascadia Subduction Zone Peak Ground Acceleration
	Fire Hazard Ratings
	Flood Hazard Zones
	Hazardous Materials Storage
	Environmental Cleanup Sites
	Other Hazardous Materials Sources
	Historic Landslides
	Landslide Deposits
	Landslide Susceptibility
	Liquefaction Susceptibility
Tribal Data	Tribal Parcels/Properties
	Tribal Structures
	Usual and Accustomed Lands
	Ancestral Territory
Additional Asset Data	Education Facilities
	Hospitals and Medical Facilities
	Fire Stations
	Other Infrastructure
Base Map Data	Arterials and Highways
	Waterways and Streams
	County Administrative Lines
	Railways
	City Outlines

See Appendix E-2 for GIS Data Sources.

4.5 Hazard-Specific Profiles and Risk Assessments

The following section profiles each hazard identified in Section 4.3 and assesses the risk associated with each. Each risk assessment considers the following attributes:

- **Hazard Description:** A brief introduction to the mechanisms behind the hazard.
- **Location:** An indication of geographic areas that are most likely to experience the hazard.
- **Past Occurrences/History:** Similar to location, a chronological highlight of recent occurrences of the hazard accompanied by an extent or damage cost, if available.
- **Potential Impacts from Future Climate Conditions:** A brief overview indicating ways in which the hazard profile may change over time due to a changing climate, if applicable.
- **Extent/Probability:** A description of the potential magnitude of the hazard, accompanied by the likelihood of the hazard occurring (or a timeframe of recurrence, if available).
- **Cascading Impacts:** A brief overview of secondary hazards often associated with the hazards.
- **Vulnerability:** A description of the potential magnitude of losses associated with the hazard. Vulnerability may be expressed in quantitative or qualitative values depending upon available data. Identifies development trends impact on the Tribe's vulnerability to each hazard since the 2012 plan development (Increased, decreased, unchanged).

To enhance the usability of the HMP, risk assessments have been streamlined to provide only critical information within the body of this section. Additional information including detailed, close-up maps can be found in Appendix E.

In addition, the hazards have been organized into three sub-sections (high-, medium-, and low-priority) to illustrate the risk-driven nature of the HMP. Each hazard has been given serious consideration of all attributes discussed within. However, low-priority hazards may be shorter in length and with less quantitative analyses, as a lack of usable data is frequently present when considering low-likelihood or low-magnitude events. The three sub-sections are as follows:

- **High-Priority:** Fire, Utility Failure, Hazardous Materials Incident, Drought, Flood, Cascadia Subduction Zone Earthquake, Landslide.
- **Medium-Priority:** Winter Storm, Active Threat, Emerging Infectious Disease, Cyberattack, Windstorm.
- **Low-Priority:** Domestic Terrorism, Infestation, Animal Disease, Biosecurity, Social Unrest.

4.5.1 Fire

Fire

Probability	Magnitude	Onset	Duration	Frequency		Average	Rank
4.67	4.50	4.50	4.67	4.67		4.60	1

Hazard Description

Agricultural – Fires burning in areas where the primary fuels are flammable cultivated crops, such as hay and pasture. This type of fire tends to spread very rapidly, but is relatively easy to suppress if adequate resources are available. Structures threatened are usually few in number and generally belong to the property owner. There may be significant losses in terms of agricultural products from such fires.

Forest – the classic wildfire; these fires burn in fuels composed primarily of timber and associated fuels, such as brush, grass, and logging residue. Due to variations of fuel, weather, and topography, this type of fire may be extremely difficult and costly to suppress. In wilderness areas these types of fires are often monitored and allowed to burn for the benefits brought by the ecology of fire, but also pose a risk to private lands when these fires escape these wilderness areas.

Wildland-Urban Interface (WUI) – these fires occur in areas where urbanization and natural vegetation fuels are mixed together. This mixture may allow fires to spread rapidly from natural fuels to structures and vice versa. Such fires are known for the large number of structures simultaneously exposed to fire. Especially in the early stage of WUI fires, structural fire suppression resources may be quickly overwhelmed, which may lead to the destruction of a large number of structures. Nationally, wildland interface fires have frequently resulted in catastrophic structure losses.

Location

Fires are a high risk in many areas with tribal members and properties. The greatest areas for concern are those within the WUI (namely the areas outside of Roseburg), where many tribal members live in rural homes, and areas in the Cascade Mountain foothills where the Tribe leases timber and agricultural lands. These locations represent potentially large economic losses following a fire. In addition, the Tribe has significant concerns of fire impacting areas near the South Umpqua Falls, Douglas Complex, Tiller traffic corridors, and Siskiyous.

Fire

Previous Occurrence/History

During the 2017 fire season, the Tribe's annual huckleberry gathering activity was forced to be canceled due to safety risks. The cancellation represented the Tribe's inability to interact with the surrounding environment. In addition, fires have historically led to smoke in the Tribe's casino, additional welfare checks on tribal elders and vulnerable populations, as well as the need to have tribal employees work overtime to monitor high risk locations and monitor firefighting progress.

Historical wildfires on tribal properties are unknown. Therefore, the following recent wildfires having occurred in close proximity to tribal assets are described below:

- 2017 Chetco Bar Fire—190,000 acres
- 2017 Umpqua North Complex—39,500 acres
- 2017 Horse Prairie—16,000 acres
- 2015 Stouts Creek—26,000 acres
- 2014 Clarks Branch—55 acres along the I5 corridor
- 2013 Douglas Complex—50,000 acres

http://www.oregon.gov/LCD/HAZ/docs/3.ORNHMP12-Fire.pdf

See Appendix E-3 for more detail.

Potential Impacts from Future Climate Conditions

- Reduced snow pack
- Prolonged drought and heat
- Stressed and weakened forest ecology
- Increase in insect infestation of trees
- Drier vegetation or lower water content in vegetation leading to faster and hotter burning fires

August 8th 2017—Burn Operation at Toketee Falls (Photo courtesy of InciWeb)

Fire

Extent and Probability

Tribal properties and population are scattered across a large range of Douglas County and beyond. Douglas County is primarily rural with small to mid-size population centers in close proximity to wild lands. The extent wild fire can impact the Tribe is wide and varied. The Tribe's large timber and agricultural holdings are significant concerns related to fires. In addition, a fire within the surrounding region would likely have a negative impact on the Tribe's hospitality enterprises.

Weather conditions greatly influence the impact and extent of wildfires. Drought, high temperatures, and wind contribute to a dynamic and changing conditions of wildfires. Fuel load and vegetation contribute to the size and intensity of wildfires.

Wildfires are frequent and inevitable. Within the region, the vast majority of wildfires burn during the June to October time period. The MPT rated the probability of fire as the most likely hazard to impact the Tribe and generally experiences the effects of wildfire every year.

Future Probability Trend – Based on potential decreases in annual snow pack and increases in the frequency and magnitude of drought and heat, the Tribe may be impacted by an **increase** in the probability of future fires.

Cascading Impacts

- Landslides, washouts, erosion, and potential re-burns
- Degraded water quality and damage to fisheries
- Power outages and communications disruptions
- Health affects including asthma

Fire

Vulnerability

The majority of fires in Oregon occur in Southern and Eastern Oregon; the Cow Creek Tribe occupying primarily the southern part of the state. Both Tribal members and their assets are generally located in or near the wildland/urban interface. The challenges the Tribe faces mitigating for wildfire includes urban and agricultural settings on small properties surrounded by state and federal land. The Tribe has limited jurisdiction over the larger area surrounding their facilities, infrastructure, and people which leads to an increased vulnerability. Fire risks are mitigated through the Tribe's EOP – Emergency Support Function 4. This is tasked to Douglas Forest Protection Association and Coos Forest Protection Association by way of the local operating plan and contract.

Property

- Ten properties in which greater than 50% of acreage is within high fire hazard areas (purchase value of $12,271,299)
- Sixty-six properties are within moderate fire hazard areas (purchase value of $115,595,126)

Recent Development Trends

- **Cultural:** Many of the Tribe's cultural resources are located in areas that have long-been associated with high vulnerability to fire events. (Unchanged vulnerability)
- **Economic:** The Tribe has not developed any additional economic holdings in areas prone to fire events. (Unchanged vulnerability)

Land Use: The 17,519 acres of conveyance land recently received is likely to be at high vulnerability to fire events. (Increased vulnerability)

See Appendix E-1 for full Risk Exposure Tables and E-5 for additional maps.

4.5.2 Utility Failure

Utility Failure

Probability	Magnitude	Onset	Duration	Frequency		Average	Rank
4.17	3.08	4.33	3.00	3.50		3.62	2

Hazard Description

A utility failure is defined as an abrupt pause to the availability of utility services. A utility failure represents any occurrence in which vital utilities or services are rendered inoperable. A utility failure may be caused by electrical blackouts, pipeline or pump malfunction, or an unanticipated surge in demand. A utility failure may impact any of the following services:

- Power outage
- Drinking water
- Wastewater or storm water
- Telecom and information technology outages

Location

Numerous tribal properties are at risk of being affected by utility failures. Tribal housing in the foothills of the cascades are known to experience power outages during winter and wind storms that can last anywhere from several hours to several weeks. In addition, the UIDC and UIUC operate extensive utility and information technology networks that could be at a risk to exposure of a hazard that could lead to a utility failure.

Previous Occurrence/History

Historically, utility disruptions and failures have been caused by natural disasters and human-caused accidents, but have not been recorded in a way that is publicly accessible. Numerous utility failures occur every year, most frequently in the form of electricity outages that may last as short as hours or as long as weeks. Previous utility failures have led to an increase in welfare checks and overall tribal member needs, as well as having negatively impacted the Tribe's economic interests.

Potential Impacts from Future Climate Conditions

- Increased demand during high intensity heat could result in widespread outages

Downed Power Lines

Utility Failure

Extent and Probability

It is difficult to predict the impacts of future utility failures, but they have the potential to impact all tribal government and business operations, and cause extensive economic losses among other impacts. Due to the sporadic nature of failures, it is also difficult to estimate how frequently such failures will occur or their duration. The Tribe generally deals with power outages multiple times per year with many of them only lasting a matter of hours. Every several years, a large utility failure is experienced.

Future Probability Trend – Based on potential increases in heat waves and increasing development trends resulting in greater demand, the Tribe may be impacted by an increase in the probability of future utility failure. However, mitigation actions outlined in this HMP are designed to decrease such strain on utility systems.

Cascading Impacts

- Human health impacts
- Revenue losses

Vulnerability

A lack of system redundancy presents a clear risk to tribal utilities, as electricity service runs through a single substation. In addition, the Tribe operates two data centers (one at the Seven Feathers Casino) which, if impacted, would cause widespread network outages to the Tribe's government office and tribal enterprises. The Tribe is taking measures to address these redundancy issues through the mitigation actions outlined in Chapter 7.

Since 2001, the UIUC has provided electrical service to the Tribe. Since that time, service has expanded to include sewer, water, irrigation, and pumping services. The presence of a tribally operated utility decreases the Tribe's overall vulnerability by ensuring the Tribe has access to needed utilities. This increase in self-reliance decreases the associated risks posed by a number of other hazards.

Recent Development Trends

- **Cultural:** Utility failures continue to pose limited risk to cultural resources, but many cultural resources are housed at Tribal buildings and access to these sites may be degraded during a utility failure. (Unchanged vulnerability)
- **Economic:** The Tribe has outlined mitigation actions to address electricity redundancy and decrease reliance on surrounding utilities. (Decreased vulnerability)
- **Land Use:** The Tribe's upward trend in land ownership increases the overall demand on utilities. (Increased vulnerability)

4.5.3 Hazardous Materials Incident

Hazardous Materials Incident

Probability	Magnitude	Onset	Duration	Frequency		Average	Rank
4.25	3.17	4.75	2.92	2.83		3.58	3

Hazard Description

Accidental releases of petroleum, toxic chemicals, gases and other hazardous materials occur frequently throughout the state. Even small releases can have the potential to endanger public health and contaminate groundwater, surface water, and soils. Environmental damage from such releases depends on the material spilled and the extent of contamination. Many are releases of small quantities that are contained and cleaned up quickly with little damage to the environment. In other instances, material releases seep through the soil and eventually into the groundwater, this can make water supplies unsafe to drink. Vapors from spilled materials can become inhalation hazards and collect in houses and businesses, creating fire and explosion hazards.

Transportation corridors in close proximity to tribal lands that carry hazardous materials include highways, railroads, pipelines, and navigable waterways. Interstate 5 is most likely to experience this type of hazard because of interstate and local commercial transport of hazardous materials. Transport vehicles do not typically travel through residential areas unless en route to destinations such as a gasoline service station or storage facility.

Location

Numerous fixed-location storage sites exist in close proximity to tribal properties, but have rarely caused an incident. Therefore, the Tribe views the most likely hazardous materials incident to be caused by a traffic accident along Interstate 5 or the railroad corridor. The Canyon Creek watershed experiences increased risk of an incident given its proximity to Interstate 5 and the frequency of motor vehicle crashes resulting in discharges into Canyon Creek. Canyon Creek feeds into fish acclimation sites (one co-managed by the Tribe and Umpqua Fisherman's Association and the other managed solely by the Tribe). A discharge into these sites can result in contamination and risk of fish mortality or early release requirements. In addition, the Tribe operates a truck and travel enterprise in Canyonville and a local utility that could be the site of a hazardous materials incident.

Previous Occurrence/History

Authorities within Douglas County have responded to nearly 1,050 hazardous materials-related calls since 2010. The vast majority of these calls were related to gas leaks or illegal dumping of gasoline or other flammable liquids. Records do not show any previous occurrences that resulted in the loss of life within the areas surrounding tribal properties. Hazardous materials incident have the potential to impact the Tribe in similar ways to the 2017 wildfires identified in Section 4.5.1.

See Appendix E-3 for more detail.

Potential Impacts from Future Climate Conditions

- Increased precipitation events causing an increase in traffic accidents.

Hazardous Materials Incident

Extent and Probability

The uncontrolled release of hazardous materials during transport can result in death or injury to people and damage to property and the environment through the material's flammability, toxicity, corrosiveness, chemical instability, and/or combustibility. Previous occurrences suggest that approximately 100 hazardous materials-related responses are made in the area every year. The probability of a large-scale incident is relatively low as there are no records of one having occurred. Nonetheless, the presence of Interstate 5 makes the risk much more likely due to a traffic accident.

Future Probability Trend – Increased development trends and potential increase in high intensity precipitation events present the potential for an increase in hazardous materials passing through the area and traffic accidents, respectively. Each presents the potential for an **increase** in future hazardous materials incidents.

Cascading Impacts

- Long-term health and environmental monitoring costs
- Contamination of water and air
- Conflagration (urban fire)

Vulnerability

Hazardous materials incidents can be caused by a number of factors. The Tribe's most pressing vulnerability is presented by a transportation incident occurring on the Interstate 5 highway. Many of the Tribe's most valuable assets are in close proximity to Interstate 5, particularly in the Canyonville area, where the Tribe's Seven Feathers Casino is located. Historically, the reporting protocols between Oregon Emergency Response System and the National Response System to tribal and local authorities about hazardous materials releases has been inconsistent.

Property

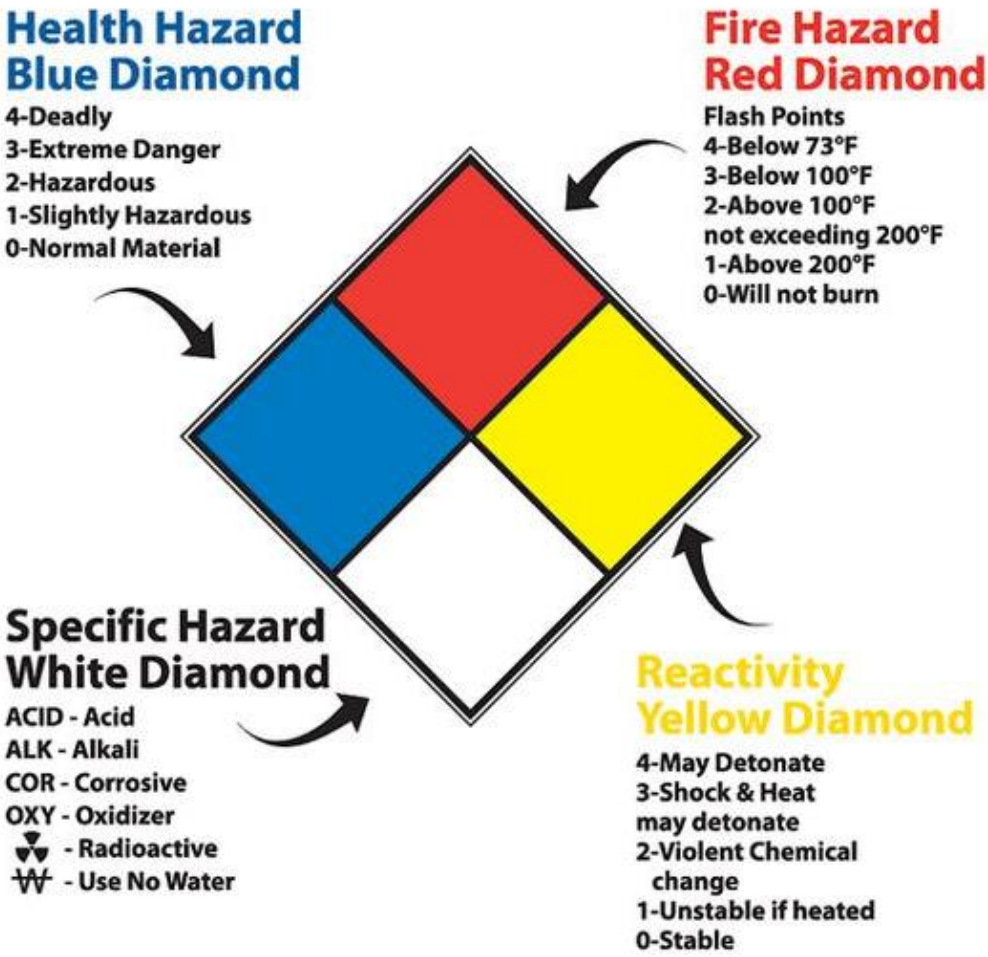
- The truck and travel location is owned and operated by the Tribe and sells gasoline, diesel, and propane (purchase value $6,146,730).

Recent Development Trends

- **Cultural:** A growing number of hazardous materials storage sites are located in the area and materials transported along Interstate-5, inherently increasingly the potential vulnerability of cultural resources. (Increased vulnerability)
- **Economic:** No new economic interests are located in known hazardous materials incident locations. (Unchanged vulnerability)
- **Land Use:** No new acquisition areas are located in known hazardous materials incident areas. (Unchanged vulnerability)

See Figures E-5 for additional hazard maps.

Hazardous Materials Placard



Source: https://environmentalsafetysvc.com/nfpa.html

4.5.4 Drought

Drought

Probability	Magnitude	Onset	Duration	Frequency		Average	Rank
4.25	3.33	2.50	3.67	3.42		3.43	4

Hazard Description

Droughts can be characterized by the dominant impact caused by increased demand or decreased supply. In the early 1980s, researchers with the National Drought Mitigation Center and the National Center for Atmospheric Research located more than 150 published definitions of drought. There clearly was a need to categorize the hazard by "type of drought." The following definitions are a response to that need. However, drought cannot always be neatly characterized by the following definitions, and sometimes all four definitions can be used to describe a specific instance of drought. Drought is a slow-onset phenomenon that usually takes at least three months to develop and may last for several seasons or years.

Agricultural droughts are of greatest concern to the Tribe. The focus is on precipitation shortages and soil-water deficits. Agricultural drought is largely the result of a deficit of soil moisture. A plant's demand for water is dependent on prevailing weather conditions, biological characteristics of the specific plant, its stage of growth, and the physical and biological properties of the soil. Hydrological droughts refer to deficiencies in surface water and sub-surface water supplies. It is reflected in the level of streamflow, lakes, reservoirs, and groundwater.

Hydrological droughts are also of great concern to the Tribe. Widespread droughts like those recently seen through California would present severe threats to water supply for tribal members and operations, and would impact the flora and fauna the Tribe so greatly value.

Location

Drought could impact all tribal properties that use water to a certain extent. Examples include: K-Bar Ranch and Rogue River Ranch, timber and agricultural lands, dry wells at tribal housing.

Previous Occurrence/History

Since time immemorial, natural drought cycles have shaped the Tribe's lands and efforts to cultivate them. However, as drought becomes more frequent and severe, the impacts have forced the Tribe to address them through mitigation actions and cultivate more drought-tolerant crops. Prolonged drought can impact the availability of first foods that play an important role to the Tribe.

Historical drought on tribal properties is unknown. Therefore, the following recent recorded droughts have been included having occurred in close proximity to tribal assets are described below:

- 2017 Ranked Abnormally dry by United States Department of Agriculture (USDA) National Drought Mitigation Center
- 2015 Determination of a State of Drought Emergency

Drought animations over time are available at: http://droughtmonitor.unl.edu/Maps/Animations.aspx

See Appendix E-3 for more detail.

Drought

Potential Impacts from Future Climate Conditions

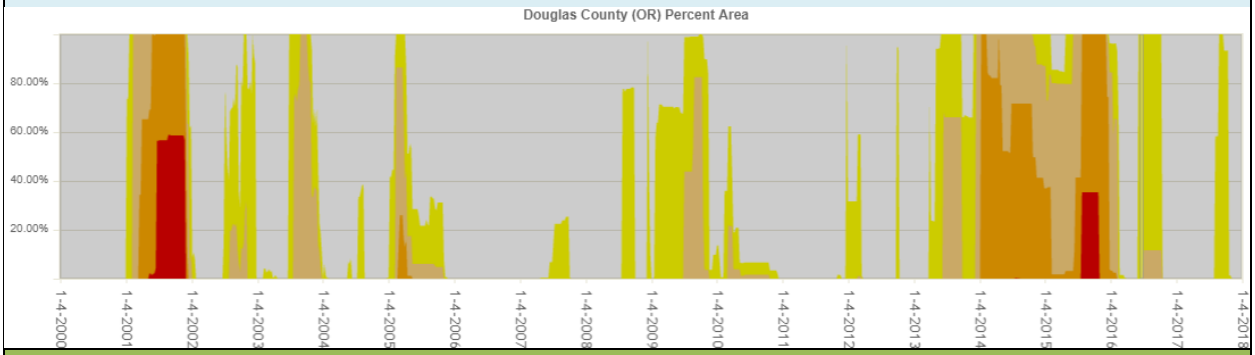
- Decreased snow pack
- Longer, hotter, and dryer summers
- Availability of first foods and habitat

Extent and Probability

Southwest Oregon counties, where the Cow Creek Tribe primarily reside is at a somewhat higher risk for drought than much of the rest of western Oregon.

As the graph below indicates, there have been two periods of extreme drought within Douglas County over the past 15 years. During a six-month period in 2001, over 50% of the County's area was marked by D3 to D4 droughts (the most intense forms of drought). Additionally, from early 2013 through 2016, almost all areas of the county were under some form of drought or abnormally dry.

Future Probability Trend – Based on potential decreases in annual snow pack and increases in the frequency and magnitude of pro-longed heat, the Tribe may be impacted by an **increase** in the probability of future droughts.



Cascading Impacts

- Communications disruptions
- Heat-borne diseases
- Water quality impacts
- Crop/wildfire/forestry loss
- Utility failure
- Production loss

Drought

Vulnerability

Measuring vulnerability to drought is extremely hard in a region where little data exists, but it can be assumed that all tribal properties are at risk of being exposed to drought impacts. With major timber, crop, and livestock holdings, the Tribe stands to be moderately impacted if drought trends continue to increase. In an attempt to mitigate such losses, the Tribe has begun considering the cultivation of more drought-resistant crops. The graphic below presents the percentage of Douglas County land in the various stages of drought over time.

Drought poses the most significant vulnerability concerns to the Tribe's agricultural outputs which include hay and wheat. According to current Chicago Mercantile Exchange Futures Pricing, the current market value for hay is $170-225 per ton, and $4.2175 per bushel of wheat. A drought leading to the decimation of these outputs could lead to economic losses of $1 million per year. In addition, a drought that led to the die-off of the Tribe's cattle could lead to economic losses up to $4 million per year (Live Commodity Market Value on Dec. 7, 2017).

Recent Development Trends

- **Cultural:** The availability of first foods is heavily dependent on meteorological conditions. Recent drought extents have placed additional stress on the cultivation of many first foods. In addition to first foods, other cultural materials used for making traditional regalia and ceremonial natural and cultural resources are impacted. (Increased vulnerability)
- **Economic:** The Tribe's economic interests' vulnerabilities are both increasing and decreasing due to the presence of drought. While drought is damaging the Tribe's ability to cultivate certain crops, it has also pushed the Tribe to consider cultivating more drought-resistant crops such as olives. (Decreased/Increased vulnerability)
- **Land Use:** The Tribe's upward trend in land ownership increases the overall demand on water, which has an indirect relationship with drought. (Increased vulnerability)

See Appendix E-5 for maps.

4.5.5 Flooding

Flooding

Probability	Magnitude	Onset	Duration	Frequency	Average	Rank
4.17	3.08	3.42	2.58	3.75	3.40	5

Hazard Description

A flood is the temporary inundation of land that is normally dry. It is a natural event for rivers and streams to overflow from river channels into adjacent floodplains. Floodplains are lowlands areas adjacent to rivers and lakes that are subject to regular flooding. Most floodplains are mapped by FEMA for their Flood Insurance Rate Maps (FIRMs) as part of the National Flood Insurance Program (NFIP). FEMA defines several types of floodplains:

- A 100-year flood zone is an area that is subject to a 1% chance of flooding annually, whereas
- A 500-year flood zone has a 0.2% chance of flooding annually.

Floods may result from a variety of sources, including natural causes such as high intensity or long duration of rain or snow, rapid spring snowmelt, or ice jams inhibiting a river's flow. Man-made hazards such as dam failures are also a concern in the Tribe. Various types of floods can have different risk levels associated with them. The highest risk flood event is a flash flood because of the low predictability, rapid development, and high water flow rates associated with them. These floods are often associated with intense weather such as unexpected large rainstorms, and large thunderstorms. However, historically, flash floods pose a low likelihood within the region.

Location

Riverside properties along the Umpqua River and Canyon Creek are most frequently impacted by floods. In addition, Medford Ranch, Round Prairie, Bar Park, and Jordan Creek have seen repetitive flooding and creekside erosion.

Previous Occurrence/History

Comprehensive historical flooding on tribal properties is unknown. Therefore, the following recent floods occurring in approximation with tribal properties have been included:

- 24 established recorded floods have occurred between 1861 and 2017.
- The flood of 1996 caused $2 million in reported damages to the county and private property.
- The flood of 1964 cost $131 million in damages (in today's dollars).

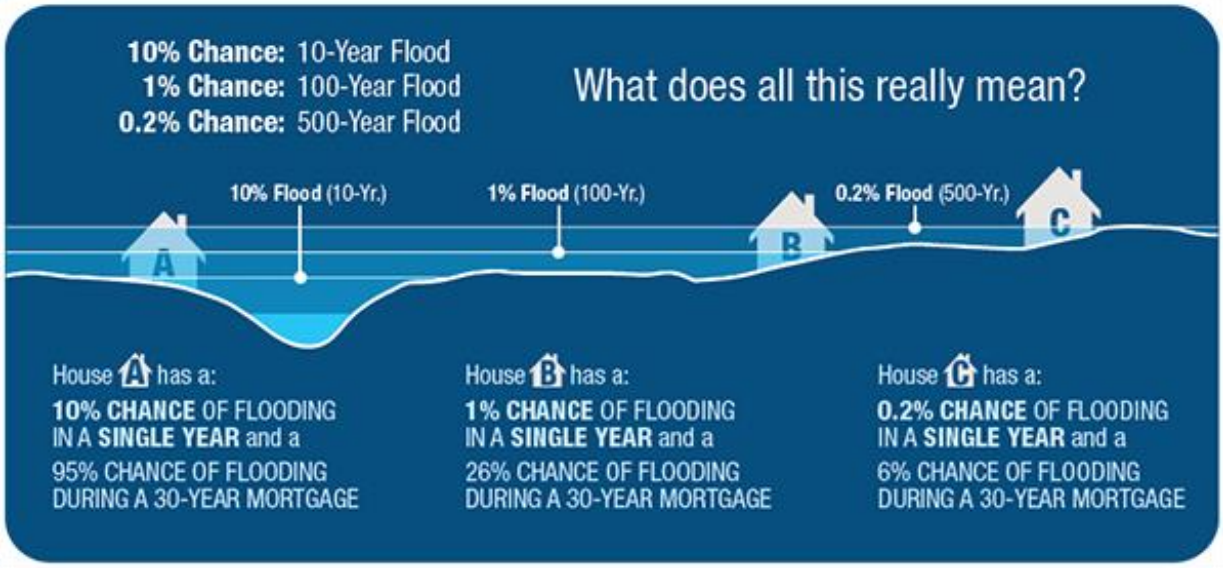
Previous flooding has led to significant natural and cultural issues at the Tribe's fish acclimation pond. High stream flows have required increased infrastructure (pipes and pump systems) to be put into place and have routinely required the Tribe to release fry from holding tanks too early, leading to increased mortality.

See Appendix E-3 for more detail.

Potential Impacts from Future Climate Conditions

- Increased high intensity precipitation events in winter months
- Increased intensity of winter storms
- Changing flood regimes and return patterns

Flooding



Source: https://www.bulldogadjusters.com/types-of-claims/water-damage/floods/

Extent and Probability

Severe floods may result in serious injuries and fatalities as well as damage to public facilities and private property. Extent of flooding can be determined by the height of river flows in comparison to flood stages determined by United State Geological Survey (USGS) stream gauges located throughout the area. It can also be measured by past damages of flooding.

The region experiences some flooding twice a year at minimum, while larger floods occur once a decade and major flood events occurring every 30-50 years.

Many tribal properties are in zones that have no FIRMs available. Therefore, official estimates included in this risk assessment may rely on incomplete information. In addition, the Tribe has not formally mapped the footprints of all tribal properties and estimates cannot verify whether structures are within identified floodplains.

Future Probability Trend – Based on potential increase in high-intensity precipitation events and increased development trends (resulting in additional impervious surfaces and storm water runoff), the Tribe may be impacted by an **increase** in the probability of future floods.

Cascading Impacts

- Landslides, washouts, and erosion
- Degraded water quality
- Damage to fisheries
- Increase in traffic accidents
- Communications disruptions

Flooding

Vulnerability

The majority of flooding in the vicinity of tribal properties results in the washout or flooding of roadways. However, many tribal properties have experienced intermittent flooding and are within mapped floodplains. It should be noted that the Tribe has conducted studies and determined that the FEMA floodplains in the area are outdated and identify a number of properties as within the floodplain, despite the fact that they are not. The Tribe purchases flood insurance on two properties documented as being within the floodplain.

- Thirty-one tribal properties are at least partially within the 100-year floodplain (purchase value of $114,367,964)
- Twenty-nine tribal properties are at least partially within the 500-year floodplain (purchase value of $109,874,632)

Recent Development Trends

- **Cultural:** Potential flooding vulnerability has increased with changing weather patterns, but the Tribe has also outlined mitigation actions in the past five years to decrease this vulnerability. One such example is Action 14 outlined in Section 6.5 of the HMP, which was crafted to minimize vulnerability to the Tribe's fish acclimation pond. (Increased/Decreased vulnerability)
- **Economic:** The Tribe has implemented RiskMAP studies alongside FEMA to better understand flood patterns in the Rogue River vicinity, which has helped to support the Tribe's continued agricultural practices at the Rogue River Ranch. (Decreased vulnerability)
- **Land Use:** No new acquisition areas are located in known floodplains. (Unchanged vulnerability)

Future Land Use

- No new acquisition areas are located in known floodplains.

See Appendix E-1 for full Risk Exposure Tables and E-5 for additional maps.

November 19, 1996—Flooding on the Calapooya River (Photo courtesy of Douglas County Department of Public Works)

4.5.6 Earthquake

Earthquake

Probability	Magnitude	Onset	Duration	Frequency		Average	Rank
2.50	4.83	4.75	3.58	1.17		3.37	6

Hazard Description

An earthquake is the movement of the earth's surface following a tectonic shift. This can be caused by dislocation or volcanic eruption. While it is difficult to predict when an earthquake will happen, they do often reoccur along the same fault zones, meaning we know where they are most likely to occur. The Tribe is most likely to be impacted by one of three types of earthquakes: Shallow zone, Cascadia Subduction Zone (CSZ), and Deep zone. Earthquakes are one of the Tribe's greatest concerns due to its magnitude but the relatively low probability brought down its ranking. A worst-case scenario is posed by the CSZ, which is capable of unleashing a massive 9.0 magnitude (M) earthquake, resulting in numerous casualties and economic damages throughout the Pacific Northwest. Damage to infrastructure could be extreme, extending the recovery process and posing additional challenges to the Tribe.

Location

The CSZ, where the Juan De Fuca plate slides underneath the North American plate poses a great risk to the Tribe and all communities in the Pacific Northwest. A large earthquake would cause significant impacts to all tribal properties with a structure, and liquefaction may pose a risk to properties without a structure (though the liquefaction risk in the area is graded as moderate). The region is also subject to smaller, crustal quakes near the Roseburg area.

Earthquake

Previous Occurrence/History

While no written or oral histories have been located of the Tribe's experience following the 1700 CSZ earthquake, other tribe's in the area have illustrated the vast impact the event had on life. Thousands of earthquakes have occurred in Oregon, but very few have caused significant damage to the area. The following notable earthquakes impacted tribal lands or would likely have an impact if they were to occur today:

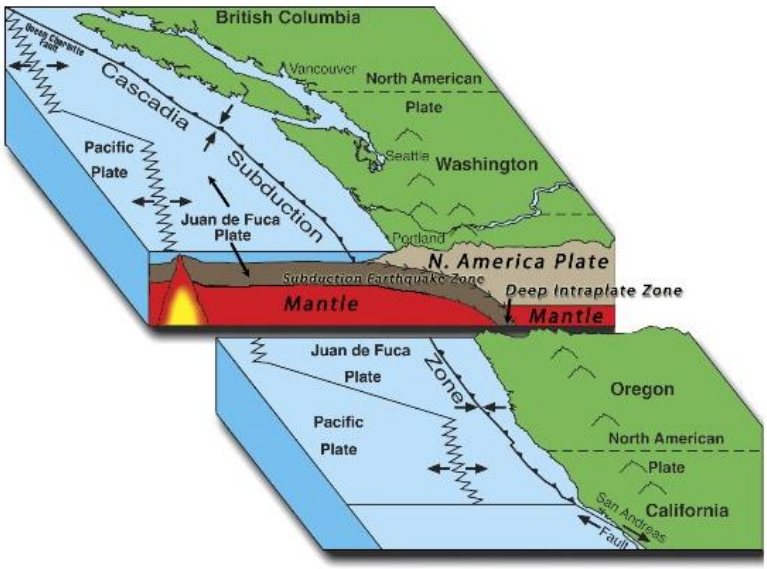
- 1700, Cascadia Subduction Zone, M 9.0
- 1910, Oregon, M 6.8
- 1993, Klamath Falls, M 6.0
- 2002, Mt. Hood, M 4.5
- 2003, Blanco Fracture Zone, M 6.3
- 2004, Offshore Oregon, M 4.9

See *Appendix E-3 for more details.*

Potential Impacts from Future Climate Conditions

Future climate conditions are unlikely to have any effect on earthquake magnitude, severity, or probability.

Cascadia Subduction Zone



Source: Oregon Office of Emergency Management, http://www.oregon.gov/oem/hazardsprep/Pages/Cascadia-Subduction-Zone.aspx

Earthquake

Extent and Probability

The USGS estimates the Umpqua Valley would experience peak ground accelerations of 30-40% gravity. This peak acceleration has a 2% probability of exceedance in 50 years.

A CSZ earthquake has a recurrence interval of 500 to 600 years, with gaps as little as 200 years and as great as 1,000 years. Estimates vary, but some state there is a 17-20% chance of a M 8.0 or greater in the next 50 years.

Future Probability Trend – Future weather and development trends play no known role in the probability of future earthquake events. However, both may play a role in the magnitude of earthquake impacts.

Cascading Impacts

- Landslides
- Tsunamis (unlikely to directly impact Tribe, but may be the recipient of evacuating populations)
- Utility failure
- Infrastructure failure
- Conflagration
- Food, water, medical supply shortages
- Economic disruption

Earthquake

Vulnerability

Property

A CSZ earthquake would cause immense structural damage throughout the region. One existing mechanism working to mitigate these impacts is the fact that the majority of the Tribe's structures were constructed after 1980 and are thus built to a higher standard of structural integrity, as Oregon building standards were codified in 1974 (DOGAMI). The peak ground acceleration caused by a CSZ earthquake is relatively uniform, with the majority of tribal properties experiencing approximately 0.20-0.25 acceleration. Liquefaction, in which once solid ground becomes saturated with groundwater, is also a concern following such a massive earthquake. Fortunately, the majority of land has low susceptibility to liquefaction in the area. On average, tribal properties expect to experience a 1.5 on a scale of 0-5 likelihood to experience liquefaction (low to very low). Nonetheless, several tribal properties are likely to experience a moderate (3) risk of liquefaction, and one property (Rogue River Ranch) actually experiences the highest risk on the 0-5 scale.

Recent Development Trends

- **Cultural:** The relationship between natural phenomena like earthquakes and cultural sites have not changed in recent history. (Unchanged vulnerability)
- **Economic:** The Tribe has outlined mitigation actions to address earthquake and cascading impacts. Nonetheless, additional economic holdings increase the potential dollar valuation of damages caused by a catastrophic earthquake. (Increased vulnerability)
- **Land Use:** New building and asset construction have been developed to higher standards to withstand the potential impacts of an earthquake. (Decreased vulnerability)

See Appendix E-1 for full Risk Exposure Tables and E-5 for additional maps.

4.5.7 Landslide

Landslide

Probability	Magnitude	Onset	Duration	Frequency		Average	Rank
4.08	2.92	3.92	2.50	3.00		3.28	7

Hazard Description

Landslides (or mass movement) are caused by a combination of geological and climatological conditions. A landslide is the movement of a mass of rock, earth, or debris down a slope. Landslides may be small or very large and can move at slow to very high speeds. They can be initiated by storms, earthquakes, fires, volcanic eruptions, and human modification of the land. The factors that directly cause a landslide include one or a combination of the following:

- Change in slope gradient or increased weight through development
- Shocks and vibrations
- Change in water content
- Weathering of rocks
- Removal of (for example, by wildfire or through grading) or change in the type of vegetation covering slopes

Landslides are a common hazard in western Oregon because of the wet climate and rugged terrain (Oregon Department of Forestry 2012).

Previous Occurrence/History

Landslides occur relatively frequently in Douglas County and the Tribe's ancestral territory. DOGAMI has compiled and mapped landslide incidents. DOGAMI data for historic landslides within tribal areas are shown on Figure E-5. As shown on the figure, the locations of previously identified landslides tend to be clustered. The North Umpqua Highway (Route 138) corridor, in particular, is subject to frequent landslides, as are locations along the I-5 corridor, particularly west of Myrtle Creek.

DOGAMI has identified most of the Tribe's ancestral territory as having a moderate to high risk of landslides. Areas where a slide has previously occurred have been identified as very high risk areas, and occur near Jackson Creek east of the town of Myrtle Creek (Oregon DOGAMI n.d.b). Noted previous landslide occurrences have had relatively minor impacts on the Tribe's way of life. However, there are records of landslides destroying roads and damaging infrastructure, cutting off access to cultural and economic places of significance. Many Tribal properties can only be accessed through Bureau of Land Management roads. Historically, delayed or absent responses to slides have affected the Tribe's ability to access lands.

See Appendix E-3 for additional detail.

Potential Impacts from Future Climate Conditions

- Increased intense precipitation events leading to increased water content on hillsides
- Increased drought and fire risk combined with intense precipitation to lead to slope instability

Landslide

Extent and Probability

Western Douglas County, parts of western Lane County, and the majority of Coos County are in the Tyee Core area, a region subject to increased risk of shallow, rapidly moving landslides. The Tyee Core area includes coastal watersheds from the Siuslaw watershed south to the Coquille watershed and the part of the Umpqua watershed north of Highway 42 and west of Interstate 5. Tribal properties experience different forms of land movement any given year, while the probability of larger landslides is difficult to predict.

The Douglas County Natural Hazards Mitigation Plan estimates that large scale landslides are likely to occur every 35-75 years, making it a moderate probability hazard.

Future Probability Trend – Based on potential increases in drought and wildfires, as well as potentially higher intensity precipitation events, the Tribe may be impacted by an **increase** in the probability of future landslides. In addition, as the Tribe increases its land ownership and development, landslides may pose a greater risk on disturbed soils.

Cascading Impacts

- Utility failure
- Economic loss
- Water quality impacts
- Transportation accidents

Landslide

Vulnerability

In general, landslide hazard areas occur where the land has certain characteristics that contribute to the risk of mass movement of material, such as:

- A slope greater than 15%
- Subject to landslide activity or movement within the last 10,000 years
- Undercut banks caused by erosion through stream or wave activity
- Excavated areas creating steep slopes or undercut banks
- Excavated areas topped with fill material
- Steep channels that direct surface runoff
- The presence or potential for snow avalanches
- The presence of an alluvial fan, indicating vulnerability to flows of debris or sediments
- The presence of impermeable soils, such as silt or clay, which are mixed with granular soils such as sand and gravel

The Douglas County Natural Hazards Mitigation Plan estimates that areas in which the Tribe owns lands are likely to see 1-10% of assets affected.

Property

- 13 tribal properties have historical landslide deposits on them
- 54 tribal properties contain portions of the highest susceptibility to landslides (Classes 8, 9, and 10)

Recent Development Trends

- **Cultural:** Erosion and increased sedimentation at sites like the fish acclimation pond can have devastating impacts for the Tribe, but these trends have not changed over the past five years. (Unchanged vulnerability)
- **Economic:** The Tribe relies heavily on access roads to access timberlands that are prone to washouts. However, the overall vulnerability of these access roads is unchanged. (Unchanged vulnerability)
- **Land Use:** The Tribe's upward trend in land ownership and development increases the overall vulnerability of landslides. (Increased vulnerability)

See Appendix E-1 for full Risk Exposure Tables and E-5 for additional maps.

4.5.8 Winter Storm

Winter Storm

Probability	Magnitude	Onset	Duration	Frequency		Average	Rank
3.67	2.63	2.92	2.67	3.08		2.99	8

Hazard Description

Severe winter storms can produce rain, freezing rain, ice, snow, cold temperatures and wind. Severe winter storms affecting Douglas County and the Cow Creek Tribe Ancestral Territory lands typically originate in the Gulf of Alaska and the central Pacific Ocean and are most common between October and March. The Umpqua Valley and other river valleys east of the Coast Range are somewhat sheltered from storms coming off the Pacific (Taylor and Bartlett 1993a). The amount of precipitation a location receives during winter storms largely depends on elevation, with areas at higher elevations receiving more precipitation (over 120 inches annually in some places). The driest areas are at the lowest valley elevations, which may receive less than 20 inches of precipitation per year. While situated in the rain shadow of the Coast Range, the Umpqua Valley receives most of its annual precipitation between October and March (Taylor and Bartlett 1993a).

This separation from the coast also results in greater temperature extremes. During the summer, southwestern Oregon is generally the warmest part of the state while winter temperatures can see low temperatures of 32 degrees Fahrenheit or below on an average of twenty days during the month of January (Taylor and Bartlett 1993a). During La Niña weather years, the Tribe's ancestral territory is likely to receive additional snowfall.

Location

All tribal properties can be affected by winter storms, but the higher elevation areas are exposed to the more damaging impacts of winter storms. As a general rule, the higher the elevation, the lower the temperature potential. Many tribal members live at higher elevations, meaning individuals will require greater support during winter storms. Winter storms have caused the Tribal Government and Clinic to develop contingencies for operations and required the use of tribal funds to develop "just in time" communications systems to relay office closures and delays with employees.

Previous Occurrence/History

The Tribe is unaware of any specific winter storm events that have caused damage or disruption to properties. However, recent winter storms have posed increased strain on operations through increased welfare checks, inability to access tribal assets, and decreased workforce. Recent winter storms occurring in Douglas County and resulting in FEMA major disaster declarations include:

- DR 4258 – 17 Feb 2016
- DR 4055 – 2 Mar 2012
- DR 1956 – 17 Feb 2011
- DR 1632 – 20 March 2006

See Appendix E-3 for more details.

Winter Storm

Potential Impacts from Future Climate Conditions

- Potential for warmer, wetter winters
- Potential decrease in snow events, but increase in ice events

Extent and Probability

Severe freezes, when daily high temperatures remain below freezing for five or more days, occur on average every three to five years in Douglas County. While snow falls nearly every winter in the region, severe or prolonged snow storms occur less frequently in Douglas County and occur more often in the eastern part of the county (Taylor and Bartlett 1993a; Douglas County Planning Department et al. 2009). Winter storm weather is common in the winter, but typically lasts a short time; ice storms (sleet and freezing rain) likewise are typically brief events.

Winter storms may be more extreme during La Niña weather years, such as the 1996 flooding associated with the 1996-1997 La Niña pattern.

Future Probability Trend – The impact of changing weather patterns may have an impact on the probability of future winter storm events. Based on potential decreases in annual snow pack and increases in the frequency and magnitude of drought and heat, it would seem the Tribe may be impacted by a **decrease** in the probability of future winter storms. However, it is also possible that changing weather patterns could result in an increased likelihood of precipitation during sub-zero temperatures, resulting in an **increase** in the probability of winter storms.

Cascading Impacts

- Human health risks (i.e., respiratory illness)
- Vehicular accidents
- Hypothermia
- House fires
- Utility failure
- Agricultural die-off

Winter Storm

Vulnerability

The Tribe's primary vulnerability from severe weather is from power outages and impairment of transportation. Because nearly all social and economic activity is dependent on transportation, snow can have a serious impact. Road closures and hazardous conditions can delay or prevent emergency vehicles from responding to calls. Vehicle accidents rise among those who try to drive. Power outages can result from physical damage to electrical infrastructure as a result of ice or snow or increases in demand beyond the capacity of the electrical system. Power outages may disrupt businesses, especially facilities without back-up generators, potentially increasing the economic impact of severe winter weather events. Tribal elders or tribal members who are isolated or have disabilities may be more vulnerable, especially those that may be trapped in their homes from power failures, heavy snow and ice, and debris from falling trees and power lines. Power losses during winter storms have resulted in deaths from carbon monoxide poisoning if people attempt to keep warm by lighting charcoal fires or operating backup generators indoors.

Snow storms also slow the local economy, but there is a debate about whether these slowdowns cause permanent revenue losses. Productivity and sales may decline but often accelerate after a storm. Some permanent effects may occur if some areas in the region are accessible and some are not. For example, visitors to the Seven Feathers Casino Resort may choose to visit another casino if driving conditions are hazardous in Douglas County. For workers, snow can be a hardship, especially for those who lack benefits and vacation time. For local governments, responding to snowstorms can be a major unbudgeted expense. Some have even had to issue emergency bonds to cover snowstorm recovery costs.

Recent Development Trends

- **Cultural:** Winter storms pose no new risk to cultural resources. (Unchanged vulnerability)
- **Economic:** The Tribe has improved their ability to access and operate economic interests during winter storms. (Decreased vulnerability)
- **Land Use:** The Tribe's upward trend in land ownership increases the overall strain on responding to winter storm impacts at various locations. (Increased vulnerability)

4.5.9 Active Threat

Active Threat

Probability	Magnitude	Onset	Duration	Frequency	Average	Rank
2.33	4.67	5.00	1.33	1.42	2.95	9

Hazard Description

An active threat is any situation that presents an immediate and ongoing danger to the safety of people in the community. In addition to individuals using firearms, other types of weapons and erratic behavior can create active threat situations.

Location

Any populated tribal property can be impacted by active threat. These areas include, but are not limited to, shopping structures, Seven Feathers Casino, clinics, schools, government offices and buildings, and tribal housing. The Tribe maintains an active threat procedure and employs security personnel at the Seven Feathers Casino.

Previous Occurrence/History

While there have not been any recent active threat events that have directly impacted the Tribe, the 1 Oct 2015 – Umpqua Community College Shooting had an indirect effect on many tribal members and required the Tribe to use resources in support of the event.

Potential Impacts from Future Climate Conditions

There are no direct connections between active threat and future climate conditions.

Extent and Probability

With no existing records of recent active threat directly impacting the Tribe, it is difficult to estimate the extent or probability of its occurrence. Nonetheless, it can be deduced that active threat could affect all areas in Roseburg; government facilities and schools may be most likely targeted.

Future Probability Trend – Future weather conditions have no direct connections to active threats. However, increased development and urbanization have the potential to **increase** the probability of a future active threat.

Cascading Impacts

- Long term trauma and mental health issues
- Political and social divisions

Active Threat

Vulnerability

No estimates are available to determine potential losses associated with active threat. However, we can assume that if an active threat were to be directed at the Tribe, schools and government buildings would likely be a top target. Active threats could have an impact on the community in the following ways: loss of human life, damage to buildings and structures, temporary displacement during the threat and/or investigation, stress on medical and security services, loss of hospitality business during the event, and an increased need for emergency services and funding.

Recent Development Trends

- **Cultural:** Active threats pose no new risk to cultural resources. (Unchanged vulnerability)
- **Economic:** Active threats pose no new risk to economic interests, but the Tribe has increased security presence and training and key facilities including the casino. (Decreased vulnerability)
- **Land Use:** Active threats pose no new risk to land use. (Unchanged vulnerability)

4.5.10 Emerging Infectious Disease

Emerging Infectious Disease

Probability	Magnitude	Onset	Duration	Frequency		Average	Rank
2.33	3.83	3.75	3.25	1.58		2.95	9

Hazard Description

Although chronic disease has placed a lasting strain on the healthcare system, acute infectious diseases are a greater immediate threat to the system's capacity. Infectious diseases may be caused by pathogenic bacteria, viruses, fungi, or parasites, and many are characterized by symptoms such as fever, diarrhea, fatigue, muscle aches, coughing and other respiratory symptoms, and rashes (Mayo Foundation for Medical Education and Research 2017). Infectious disease outbreak has the potential to paralyze socioeconomic activity and critical government functions. Various acute disease concerns are discussed below.

- Some diseases, such as Salmonella and E. coli infections, can be spread quickly through food and water sources. Though these diseases are treatable they can lead to severe symptoms or death if not addressed quickly. Containing the spread of these diseases requires identifying and addressing the source of contamination of the food or water supply and communicating risks and safety measures to the public.
- Diseases spread through animal vectors (i.e., living organisms that can transmit infectious diseases) are constantly evolving, and diseases that were previously unknown to affect humans may evolve the ability to infect human hosts. For example, West Nile virus is an emerging pandemic that has affected communities across the country. West Nile is transmitted through mosquito bites and can be spread to birds, horses, and humans, causing severe symptoms or death.
- Diseases that affect livestock, such as West Nile virus or mad cow, aside from their potential to infect humans, can rapidly spread through livestock flocks or herds, sometimes requiring entire flocks/herds to be put down and causing significant financial hardship (Note: these diseases are discussed in greater detail within the biosecurity risk assessment; see Section 4.5.14).

Many potentially devastating diseases are spread through physical contact, ingestion, insect bites, and inhalation. Airborne diseases and those spread through physical contact pose higher risks to the community because they are difficult to isolate and control. Diseases such as influenza, pertussis, tuberculosis, and meningitis are spread by these pathways and pose a significant threat to communities.

Previous Occurrence/History

The Tribe's history is characterized by the impact of infectious disease as the result of exposure to new pathogens from settlers Infectious disease impacted the community at multiple times throughout the twentieth-century related to influenza outbreaks. Additional recent outbreaks identified by the CDC include: Ebola virus, avian influenza; H1N1 influenza.

Emerging Infectious Disease

Potential Impacts from Future Climate Conditions

- Changing weather patterns resulting in changing disease outbreak patterns

Extent and Probability

Although it is impossible to predict the next infectious disease outbreak, history shows that outbreaks are not uncommon and can devastate communities. Infectious diseases can affect the Tribe's entire population. Diseases may also infect livestock herds and can potentially be communicated from animal vectors to humans. Recent medical advancements increase our ability to counteract such outbreaks and limit their extent, but additional concerns related to diseases building resistance to drugs is an ongoing concern.

Future Probability Trend – Based on potential changing weather patterns, the Tribe may be impacted by an **increase** in the probability of emerging infectious disease.

Cascading Impacts

- Loss of revenues – fear of infection or lack of workforce availability
- Disease mutations
- Social unrest
- Transportation route closures and supply chain disruption
- Lack of food, water, and medical resources

Vulnerability

Epidemic and pandemic diseases have been known to spread quickly throughout communities. Many tribal activities are centered out of the Roseburg area, and many diseases spread through close contact, meaning highly populated areas are more prone to widespread outbreaks. It is worth noting that despite Roseburg's relative size, it is still considered a rural community, decreasing the likelihood of a widespread outbreak in comparison to a metropolitan area.

The rural nature of the community also presents a key vulnerability. Healthcare resources and hospitals are in short supply and would likely become overburdened quite quickly following a disease outbreak. The Tribe maintains a Health and Wellness Center for members, which serves as a key resource to the community. A most likely scenario involves a case in which a small pocket of a vulnerable population become infected. However, a worst case scenario could hit the community much harder and exhaust all available healthcare resources.

Recent Development Trends

Due to the degradation of local public health emergency preparedness capability and disease tracking and reporting, the Tribe's overall vulnerability has increased for tribal members and clinic patients.

- **Cultural:** Emerging infectious disease continues to pose limited vulnerability to cultural resources, but many cultural resources are housed at Tribal buildings and access to these sites may be degraded during a contagious outbreak. (Unchanged vulnerability)
- **Economic:** Emerging infectious disease poses no new vulnerability to economic interests. (Unchanged vulnerability)
- **Land Use:** Emerging infectious disease poses no new vulnerability. (Unchanged vulnerability)

4.5.11 Cyberattack

Cyberattack

Probability	Magnitude	Onset	Duration	Frequency	Average	Rank
2.83	3.08	3.92	2.58	2.17	2.92	11

Hazard Description

Cyberattacks are usually initiated from a computer against a website, a computer system, or an individual computer that compromises the confidentiality, integrity, and/or the availability of the computer or information stored on it. There are several different types of attacks, but the most common are malware, phishing, password attacks, and ransomware. Malware is defined as a malicious code that steals data or destroys something on the computer. Phishing attacks are sent via email and ask users to click on a link and/or enter personal information. Password attacks are when a third-party tries to gain access into a system by cracking a user's password. Ransomware is a type of malware that prevents or limits users from accessing their system, either by locking the system's screen or by locking the user's files unless a random is paid.

Location

Any computer system or individual computer could be exposed to potential cyberattacks. Some of these include utility control systems, security systems, backup servers, government computers, and data centers.

Previous Occurrence/History

There have been no recent occurrences of cyberattacks impacting the Tribe. However, trends suggest that governments and economic enterprises are being targeted at a greater frequency. Examples of recent global cyberattacks include:

- Equifax data breach – 2017
- WannaCry ransomeware attack – 12 May 2017
- State-sponsored malware attacks

Potential Impacts from Future Climate Conditions

There are no direct connections between cyberattacks and future climate conditions.

Extent and Probability

With no existing records of consequential cyberattacks impacting the Tribe, it is difficult to estimate the extent or probability of its occurrence. Nonetheless, it can be deduced that cyberattacks could affect all areas in Roseburg. Compromised or loss of personal and sensitive information could be a direct result of cyberattacks.

Future Probability Trend – Future weather conditions have no direct connections to cyberattacks. However, increased development and use of technology have the potential to **increase** the probability of a future cyberattack.

Cyberattack

Cascading Impacts

- Economic impacts
- Brand damage
- Litigation costs

Vulnerability

It cannot be determined which agencies or businesses are most likely to be targeted. However, we can assume that government agencies, utility control systems, businesses, data centers, banks, hospitals and medical centers, and schools are especially vulnerable because of the personal and sensitive information they hold.

Recent Development Trends

- **Cultural:** Cyberattacks pose no new risks to cultural resources. (Unchanged vulnerability)
- **Economic:** The Tribe's increased economic holdings may increase the likelihood of being a target of malicious cyberattacks. (Increased vulnerability)
- **Land Use:** The Tribe's upward trend in land ownership poses no new risks by cyberattacks. (Unchanged vulnerability)

4.5.12 Windstorm

Windstorm

Probability	Magnitude	Onset	Duration	Frequency		Average	Rank
2.83	2.92	3.83	1.33	2.83		2.75	12

Hazard Description

A windstorm is a short duration event involving straight-line winds and/or gusts in excess of 50 miles per hour (mph). Windstorms can affect areas of Douglas County and the Cow Creek Tribe with significant tree stands, as well as areas with exposed property, major infrastructure, and above ground utility lines. Windstorms can result in collapsed or damaged buildings, damaged or blocked roads and bridges, damaged traffic signals, and uprooted and/or knocked down trees. Windstorms are most common from October to March, which is why they are often associated with winter storms.

Location

All county and tribal properties and structures can be affected by windstorms. Properties with infrastructures, utilities, and tree stands can have more damaging impacts during windstorms, especially in coastal areas where winds speeds can reach 40 to 60 mph during the winter months.

Previous Occurrence/History

Recent windstorms occurring in Douglas County resulting in major damage include:

- 1-4 Dec 2007 – "Great Coastal Gale" Windstorm
- 14 Dec 2006 – "Hanukkah Eve" Windstorm
- 7 Feb 2002 – "South Valley Surprise" Windstorm
- 11 Dec 1995 – Windstorm
- 13-14 Nov 1981 – Windstorm

These windstorms have caused damage to tribal structures and housing, restricted access to tribal lands, and required increased strain on the government's operations.

Potential Impacts from Future Climate Conditions

- Warmer winters, which can change meteorological patterns
- More severe and extreme weather patterns and phenomenon

Extent and Probability

Mountainous areas of Douglas County experience higher winds than other areas. However, windstorms can occur anywhere throughout the area. Windstorms can damage buildings, structures, utilities, and tree stands, which can cause millions of dollars' worth of damage.

Future Probability Trend – Future weather conditions have the potential to lead to an increase in severe and extreme weather patterns, leading to an **increase** in the probability of a windstorm. In addition, increased development has the potential to expose more assets to the impacts of windstorms.

See Appendix E-1 for full Risk Exposure Tables and E-5 for additional maps.

Windstorm

Cascading Impacts

- Human health risks (i.e. respiratory illness)
- Utility failures
- Fuel loading for potential forest fires
- Landslides from downed trees
- Transportation issues

Vulnerability

The Tribe's primary vulnerability from severe windstorms are power outages and impairment of transportation. Because nearly all social and economic activity is dependent on transportation, damage from windstorms can have a serious impact. Road closures and hazardous conditions can delay or prevent emergency vehicles from responding to calls. Vehicle accidents rise among those who try to drive. Power outages can result from physical damage to electrical infrastructure as a result of downed trees and blown debris. Power outages may disrupt businesses, especially facilities without back-up generators, potentially increasing the economic impact of severe windstorms.

Recent Development Trends

- **Cultural:** Windstorms pose no new risks to cultural resources. (Unchanged vulnerability)
- **Economic:** Windstorms pose no new risks to economic interests. (Unchanged vulnerability)
- **Land Use:** The Tribe's newly conveyed land may be at increased risk of windstorms. (Increased vulnerability)

4.5.13 Domestic Terrorism

Domestic Terrorism

Probability	Magnitude	Onset	Duration	Frequency		Average	Rank
2.08	3.33	4.42	2.25	1.42		2.70	13

Hazard Description

Domestic terrorism involves violence against the civilian population or infrastructure of a nation—often but not always by citizens of that nation and often with the intent to intimidate, coerce, or influence national policy.

Location

Any populated tribal property can be impacted by domestic terrorism. These areas include, but are not limited to, shopping structures, Seven Feathers Casino, businesses, hospitals, schools, government offices and buildings, and tribal housing.

Previous Occurrence/History

- 1 October 2015 – Umpqua Community College shooting
- 2 January 2001 – Arson at Superior Lumber Company

Potential Impacts from Future Climate Conditions

There are no direct connections between active threat and future climate conditions.

Extent and Probability

With no existing records of consequential domestic terrorism impacting the Tribe, it is difficult to estimate the extent or probability of its occurrence. Nonetheless, given recent history of this hazard, it can be deduced that domestic terrorism is most likely to target government facilities and schools.

Future Probability Trend – Future weather conditions have no direct connections to domestic terrorism. However, increased development and urbanization have the potential to **increase** the probability of a future domestic terrorism event.

Cascading Impacts

- Long term trauma and mental health issues
- Political and social divisions

Domestic Terrorism

Vulnerability

No estimates are available to determine potential losses associated with domestic terrorism. However, we can assume that if a domestic terrorism incident were to be directed at the Tribe, schools and government buildings would likely be a top target. Domestic terrorism could have an impact on the community in the following ways: loss of human life, damage to buildings and structures, temporary displacement during the incident and/or investigation, stress on medical and security services, loss of hospitality business during the event, and an increased need for emergency services and funding.

- **Cultural:** Domestic terrorism poses no new risk to cultural resources. (Unchanged vulnerability)
- **Economic:** Domestic terrorism poses no new risk to economic interests, but the Tribe has increased security presence and training and key facilities including the casino. (Decreased vulnerability)
- **Land Use:** Domestic terrorism poses no new risk to land use. (Unchanged vulnerability)

4.5.14 Biosecurity

Biosecurity

Probability	Magnitude	Onset	Duration	Frequency		Average	Rank
2.50	2.75	2.75	3.00	2.17		2.63	14

Hazard Description

Biosecurity involves the risk of transmission of infectious diseases and infestations in humans, crops, tree stands, fisheries, and livestock. Various concerns for biosecurity are discussed below.

- Diseases that affect livestock and fisheries, such as foot and mouth disease or Bine Spongiform Encephalopathy, aside from their potential to infect humans, can rapidly spread through livestock flocks or herds, sometimes requiring entire flocks/herds to be put down and causing significant financial hardship.
- Diseases that affect tree stands and other crops, such as Swiss needle cast or laminated root rot, can spread easily through insects and same-species trees. The result could be a loss of harvest and downed trees during storms, which could cause significant financial hardship.
- Infestation of insects, parasites, and other pests can affect human health, livestock, fisheries, and crops. Many insects carry diseases and can easily transmit those diseases to a host. Infestation can cause many problems, such as loss of revenue from crops and livestock, financial hardships, human diseases, and water contamination.

Location

K-Bar Ranch, Rogue River Ranch, and the Tribe's timber holdings are most at risk of a biosecurity event.

Previous Occurrence/History

Biosecurity poses a significant risk to the Tribe's agricultural holdings. The 2014 "Mad Cow Disease" scare in Texas led to an almost instantaneous decrease in the value of the Tribe's cattle. As a leading economic driver for the Tribe, this posed the risk of harming their ability to provide support to members and the surrounding community. Additional recent examples of biosecurity scares include:

- Sudden Oak Death – 2017
- Bark beetles in Douglas-firs, native pines, oaks, and madrones
- Twig weevils in small trees
- Phomopsis fungus during summer droughts
- Epizootic hemorrhagic disease in whitetail and blacktail deer
- Apple maggots
- Small broomrape infestation to crops
- Blue green algae blooms during summer months

Biosecurity

Potential Impacts from Future Climate Conditions

Agriculture and fisheries are highly dependent on the climate. Increases in temperature and carbon dioxide can increase or decrease crop yield. Changes in the frequency and severity of droughts and floods could pose challenges and threaten crop yields and food safety.

Warmer water temperatures disrupt many fish species ecosystems. This could include a decrease in dissolved oxygen levels in water, which can kill fish populations.

Overall, future climate conditions could make it more difficult to grow crops, raise animals and fish, and harvest timber.

Extent and Probability

Douglas County and tribal lands are at risk for biosecurity impacts. Any cropland, farm, tree stand, fishery, or forest is at risk of infestation and infectious disease. Diseases usually spread more easily during periods of drought, which Southwest Oregon has been experiencing more of over the past several decades.

Future Probability Trend – Based on potential changing weather patterns, additional bacteria and disease hosts may be able to thrive, the Tribe may be impacted by an **increase** in the probability of biosecurity events.

Cascading Impacts

- Fire hazards
- Loss of economic development
- Impacts on groundwater and air quality
- Impacts on local businesses
- Financial hardships

Biosecurity

Vulnerability

Measuring vulnerability to biosecurity risks is extremely difficult in a region where little data exists. With major timber, crop, and livestock holdings, the Tribe stands to be moderately impacted if an infestation or disease affects the area.

Drought poses the most significant vulnerability concerns to the Tribe's agricultural outputs which include hay and wheat. According to current Chicago Mercantile Exchange Futures Pricing, the current market value for hay is $170-225 per ton, and $4.2175 per bushel of wheat. A drought leading to the decimation of these outputs could lead to economic losses of $1 million per year. In addition, a drought that led to the die-off of the Tribe's cattle could lead to economic losses up to $4 million per year (Live Commodity Market Value on Dec. 7, 2017).

Risks related to biosecurity would be felt nearly entirely within the agricultural holdings. Similar to drought, losses may include the following:

- According to NASDAQ and the USDA, the current market value (Dec. 5, 2017) for hay is $170-225 per ton, and $4.2175 per bushel of wheat. A biosecurity event leading to the decimation of these outputs could lead to economic losses of $1 million per year.
- In addition, die-off of the Tribe's cattle could lead to economic losses up to $4 million per year (Live Commodity Market Value on Dec. 7, 2017).

Future Development Trends

- **Cultural:** Biosecurity threats such as crop die offs have increased over time, leading to first foods becoming endangered. (Increased vulnerability)
- **Economic:** Biosecurity threats such as crop die offs have increased overtime, leading to greater vulnerability of economic interests including agricultural assets and cattle. (Increased vulnerability)
- **Land Use:** Biosecurity threats pose no new risk to land use. (Unchanged vulnerability)

4.5.15 Social Unrest

Social Unrest

Probability	Magnitude	Onset	Duration	Frequency	Average	Rank
2.00	3.17	1.83	2.75	1.58	2.27	17

Hazard Description

Social unrest generally falls into three categories: civil disorder (often seen as rioting), protests and civil disobedience (associated with freedom of speech and generally used to bring a voice to an issue), or striking (an organized stoppage of work to grant concessions). More frequently seen in large, urban population areas, social unrest can lead to numerous long-term impacts.

Location

No tribal property holding areas are exposed to large likelihood of social unrest, but those in and around Roseburg are more likely to experience social unrest.

Previous Occurrence/History

- Malheur National Wildlife Refuge occupation – Jan 2, 2016

Potential Impacts from Future Climate Conditions

There are no direct connections between social unrest and future climate conditions.

Extent and Probability

With no existing records of consequential social unrest impacting the Tribe, it is difficult to estimate the extent or probability of its occurrence. Nonetheless, it can be deduced that social unrest could affect all areas in Roseburg; government facilities may be most likely to be targeted. In line with similar locations, social unrest may result in damaged and stolen property, potential injuries, and transportation issues.

Future Probability Trend – Future weather conditions have no direct connections to social unrest. However, increased development and urbanization have the potential to **increase** the probability and extent of a future social unrest event, due to threatened development of adjacent tribal ancestral areas.

Cascading Impacts

- Utility failure
- Transportation accidents and closed routes
- Repair and restoration costs
- Increased health and mental health needs

Social Unrest

Vulnerability

The Umpqua Valley is noted for its rural environment. It is not likely that widespread social unrest is to occur in the area, but recent experiences such as the Malheur National Wildlife Refuge occupation suggest that even rural areas are at some risk of violence.

No estimates are available to determine potential losses associated with social unrest. However, we can assume that if social unrest were to be directed at the Tribe, government buildings would likely be a top target. These structures, including tribal enterprises, are valued at over $115,000,000.

- **Cultural:** Social unrest poses no new risk to cultural resources. (Unchanged vulnerability)
- **Economic:** Social unrest poses no new risk to economic interests, but the Tribe has increased security presence and training and key facilities including the casino. (Decreased vulnerability)
- **Land Use:** Social unrest poses no new risk to land use. (Unchanged vulnerability)

4.6 Vulnerability Assessment

A vulnerability assessment estimates the extent of exposure that may result from specific hazard events of a given intensity in the HMP's planning area. The assessment provides quantitative and qualitative data to identify and prioritize mitigation actions (identified in Chapter 6). According to the DMA 2000, the vulnerability assessment should include:

- A summary of the Tribe's vulnerability to each hazard;
- Identification of types and numbers of properties, buildings, infrastructure, and critical facilities in the identified hazard areas; and
- Estimate of the potential dollar losses to vulnerable structures and the methodology used to provide the estimate.

To improve the readability of the HMP, vulnerability assessments have been incorporated into each hazard profile within Section 4.5 and supported by further documentation in Appendix E.

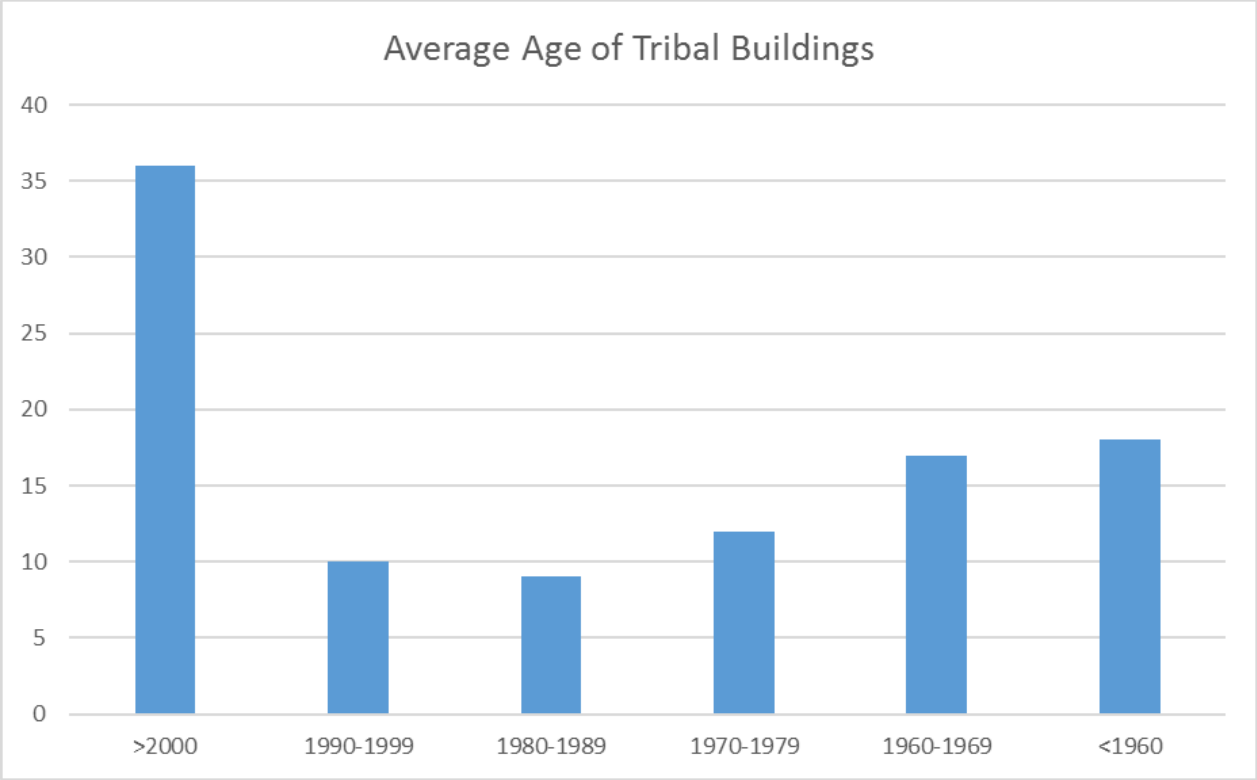
4.6.1 Identifying Critical Infrastructure

As a reservation-less tribe (prior to conveyance land received in early 2018), the identification of critical infrastructure is somewhat complicated by the fact that the Tribe does not own, manage, or maintain a great deal of the infrastructure surrounding and supporting tribal holdings. The Tribe relies heavily on its partners to support the restoration of critical infrastructure and services, but does not have jurisdiction over their restoration. Many of these pieces of critical infrastructure can be found within the updated Douglas County Natural Hazards Mitigation Plan. In addition, GIS data from the Tribe's GIS program was used to inform the vulnerability assessment. Section 4.4 provides the datasets used to identify and map potential vulnerability to tribal properties.

4.6.2 Asset Inventory

Tribal assets that may be affected by hazards include the tribal member population, properties, culturally significant areas, and utilities and infrastructure. The purchase value of tribal assets totals approximately $169,285,958. The Tribe manages and/or maintains 233 structures varying from tribal housing to government offices to tribal enterprises. Of these 233 structures, 102 have an identified date of construction. Table 4-5 below illustrates the average age of tribal buildings and indicates that many of the Tribe's buildings are relatively new.

Table 4-5 Average Age of Tribal Buildings



Source: Cow Creek Tribal GIS Data

Refer to Appendix F for a detailed asset inventory.

4.6.3 Data Limitations

Due to a lack of data, numerous risk assessments relied on limited and/or qualitative analyses of risk. The risk assessments provided within this section used the best available data and methodologies to estimate risk. However, large gaps exist within the available datasets and that impacted the ability to provide, with full certainty, accurate estimations of several hazard concerns.

The Tribe has only recently begun incorporating hazard mitigation planning into their mapping capabilities and, therefore, some pertinent gaps may be missing within the available asset inventory. These may include:

- **Building Footprints:** The lack of building footprints decreases the Tribe's ability to document precisely where buildings are located within their given property outline. Many buildings have been identified but are represented as point files and not polygons. For example, the point in the analysis may have been outside of a mapped floodplain, but in reality, the buildings footprint does extend into the floodplain. To address this issue, the Tribe has taken the conservative approach of documenting the vulnerability of any structure in which the property is within a mapped hazard area.
- **Cultural Sites:** Cultural sites are documented and mapped internally by the Tribe. However, given the high importance of these sites and sensitivity to their significance, the Tribe does not wish to make their whereabouts known within the HMP. Nonetheless, the Tribe's cultural resources team is consulted during all projects that may interact with culturally significant sites to ensure their protection is established within each work plan.
- **Tribal Infrastructure (including pipes and cables):** Tribal infrastructure has also not been integrated into GIS files. Therefore, the vulnerability to tribal infrastructure is addressed more generally throughout this section.

4.6.4 Repetitive Loss Properties

The Tribe does not participate in the NFIP. The majority of tribal properties are located outside of mapped floodplains. Due to the fact that the Tribe does not participate in NFIP, the Tribe does not maintain a repetitive loss property inventory that meets the Repetitive Loss or Severe Repetitive Loss criteria.

4.6.5 Exposure Assessment

Impacts associated with mappable hazards are indicated in the risk assessments identified in Section 4.5 and Appendix E.

Note: Not all considered hazards can be mapped for vulnerability. Those risk assessments that cannot be mapped have qualitative data associated within their relative section.

4.7 Land Use and Development Trends

FEMA	**D1.** Was the plan revised to reflect changes in development? (Requirement §201.7(d)(3))

The Tribe has no formal zoning or other land use regulations. The MPT has outlined a mitigation action to develop a comprehensive land use master plan, to be initiated in 2018. The Tribe continues to purchase additional properties and expand their total land holdings. However, no potential developments are actively being considered in known hazard areas. The Tribe's newly conveyed land

may be vulnerable to key hazards outlined in the HMP, and this will be the focus of future planning efforts. In addition, the vulnerability sub-section of each hazard profile in Section 4.5 outlines recent development trends to illustrate ways in which vulnerability may have changed over the past five years. Vulnerability changes have been measured for cultural resources, economic interests, and land use trends. Each measure has been identified as having an increased, decreased, or unchanged vulnerability. Table 4-6 provides a snapshot of how vulnerability has changed since development of the 2012 HMP.

Table 4-6 Recent Development Trends

Hazard	Cultural	Economic	Land Use
Fire	=	=	+
Utility Failure	=	-	+
Hazardous Materials Incident	+	=	=
Drought	+	+/-	+
Flooding	+/-	-	=
Earthquake	=	+	-
Landslide	=	=	+
Winter Storm	=	-	+
Active Threat	=	-	=
Emerging Infectious Disease	=	=	=
Cyberattack	=	+	=
Windstorm	=	=	+
Domestic Terrorism	=	-	=
Biosecurity	+	+	=
Social Unrest	=	-	=

+ Increased vulnerability
- Decreased vulnerability
+/- Increased vulnerability, but actions taken to decrease vulnerability
= Unchanged vulnerability

5. CAPABILITY ASSESSMENT

Chapter 5 identifies the Tribe's existing mitigation capabilities. These are the plans and policies, programs, and projects that are currently in place to reduce the Tribe's vulnerability to hazards. It also includes key mitigation accomplishments that have been completed since the last plan update in 2012. As mitigation actions identified in the Tribe's mitigation strategy (Chapter 6) are completed, they become new mitigation capabilities.

FEMA	**C1.** Does the plan include a discussion of the tribal government's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including an evaluation of tribal laws and regulations related to hazard mitigation as well as to development in hazard-prone areas? (Requirement §201.7(c)(3)(iv))

5.1 General

The Tribe will implement its mitigation strategy through a number of internal and external capabilities. These human, financial, and regulatory capabilities form the baseline for the Tribe's ability to reduce known risks.

MPT Meeting Deliverable

5.2 Human and Technical Resources

Table 5-1 describes the Tribe's human and technical capabilities to engage in and improve mitigation planning and program implementation.

Table 5-1 Human and Technical Resources Integrated with Hazard Mitigation

Resource	Department	Tasks and Activities Integrated into Mitigation Planning
Government Operations Officer	Government Office	Ensure mitigation program is incorporated into the Tribe's daily business
Director of Emergency Management	Government Office	Oversee mitigation program and encourage integration of mitigation planning into all tribal activities
Housing Director	Tribal Housing	Manage construction and repair of tribal homes and properties
Natural Resources Manager	Natural Resources Department	Manage natural resources within the Tribe's properties
Utilities Manager	UIUC	Repair and maintain tribal infrastructure
Enterprises Manager	Umpqua Indian Development Corporation	Integrate risk reduction into tribal economic development corporations
Grants Management Team	Accounting Department	Manage grant applications and project budgets for tribal programs
GIS Manager	Natural Resources Department	Integrate hazard data into mapping capabilities of the Tribe
Ranch Manager	K Bar Ranches	Manage tribal ranches and reduce risks to tribal agricultural interests

Table 5-1 Human and Technical Resources Integrated with Hazard Mitigation

Resource	Department	Tasks and Activities Integrated into Mitigation Planning
Cultural Resources Manager	Cultural Resources Department	Integrate risk reduction into protection of tribal cultural resources
WERP Manager	Natural Resources Department	Integrate risk reduction into tribal efforts toward conservation, restoration, and utilization of water, fisheries, and environmental resources
Other		
Planners or engineers	Government Office; Project Planning Team	Integrate risk assessments and mitigation tactics into ongoing tribal projects
Construction professionals	UIUC	Manage structural mitigation activities for utility services
Hazardous Materials Planning	Douglas County Local Emergency Planning Committee	Develop capacity for local jurisdictions to prepare for and respond to hazardous materials incidents

CAPABILITY HIGHLIGHT

The Tribe's Director of Emergency Management is housed under the Government Office. Instituted in 2012, the Director of Emergency Management has been tasked with developing a Tribe-wide emergency management program and facilitated the inclusion of emergency management into the workings of all tribal departments. The Director of Emergency Management will serve as the lead for the Tribe's hazard mitigation program and serves on FEMA's HMA External Stakeholders Working Group.

5.3 Financial Resources

FEMA

C2. Does the plan include a discussion of tribal funding sources for hazard mitigation projects and identify current and potential sources of Federal, tribal, or private funding to implement mitigation activities? (Requirement §201.7(c)(3)(iv and v))

The Tribe maintains many fiscal and financial resources to support its mitigation program. Table 5-2 identifies specific resources accessible for use.

Table 5-2 Accessible Financial Resources

Financial Resource	Accessible?
Community Development Block Grants	Yes
Capital Improvement Project Funding	Yes
Insurance	Yes, general liability and business line insurance
User fees for utility services	Yes through UIUC service
Incur debt	Yes
State-sponsored grant programs	Yes

Table 5-3 identifies current and potential sources of funding to implement identified mitigation actions contained within the HMP. As a federally recognized tribe, the Cow Creek Tribe can access funding directly through the federal government. In addition, funding is also available from the State of Oregon and potentially through Douglas County.

Table 5-3 Financial Resources Integrated with Hazard Mitigation

Funding Source	Fund Administrator	Description
Cow Creek Tribe		
Government Fund	Government Office	Funding available for mitigation efforts supporting government-wide projects and activities.
Economic Development Fund	Government Office	Funding available for mitigation efforts supporting the Tribe's economic enterprises.
Department Funding	Specific Departments	Funding available for mitigation efforts of a specific department.
Federal		
Pre-Disaster Mitigation Program	FEMA	Provides funding to develop hazard mitigation plans and implement mitigation actions contained within.
Hazard Mitigation Grant Program	FEMA	Post-disaster funds to hazard reduction projects impacted by recent disasters.
Flood Mitigation Assistance Program	FEMA	Provides funds for flood mitigation on buildings that carry flood insurance and have been damaged by floods.
Community Development Block Grant Program	U.S. Department of Housing and Urban Development/Oregon Business Development Department	Funds projects that benefit low- and moderate-income communities, prevent or eliminate slums or blight, or meet urgent community development needs posing a serious and immediate threat to community health or welfare.
Emergency Management Performance Grants Program	FEMA/Oregon Emergency Management	Provides funding to states for local or tribal planning, operations, acquisition of equipment, training, exercises, and construction and renovation projects.
Flood Mitigation Assistance	FEMA/Oregon Emergency Management	Provides funding to support development of the flood hazard portion of state and local mitigation plans and up to 100% of the cost of eligible mitigation activities. This funding is only available to communities participating in the NFIP.
Earthquake State Assistance Program	National Earthquake Hazards Reduction Program Interagency Coordinating Committee	Funds activities including seismic mitigation plans; seismic safety inspections of critical structures and lifelines; updates of building codes, zoning codes, and ordinances; and earthquake awareness and education.
National Fire Plan	U.S. Forest Service/ Oregon Department of Forestry	Provides funding opportunities for local wildland-urban interface planning, prevention, and mitigation projects, including fuels reduction work, education and prevention projects, community planning, and alternative uses of fuels.
Risk Mapping, Assessing, and Planning	FEMA	Provides funding and technical support for hazard studies, flood mapping products, risk assessment tools, mitigation and planning, and outreach and support.
State		

Table 5-3 Financial Resources Integrated with Hazard Mitigation

Funding Source	Fund Administrator	Description
Conservation Reserve Program	USDA Farm Service Agency and Natural Resource Conservation Service	Retires eligible cropland from agricultural production and plans the land with permanent grass cover to reduce wind erosion and dust hazards.
DOGAMI partnership with the USGS National Landslide Hazard Program	USGS/DOGAMI	Creates inventory maps and databases of existing deep-seated landslides, predictive hazard maps, and susceptibility maps and provides technical assistance in using this information.
Oregon Coastal Management Program	Oregon Coastal Management Program	Provides financial assistance to coastal local governments for planning capacity and special projects.
Oregon Department of Fish and Wildlife (ODFW) Habitat Resources Program - Riparian Lands Tax Incentive	ODFW	Tax incentive to property owners for improving or maintaining qualifying riparian lands within 100 feet of streams.
Oregon Seismic Rehabilitation Grant Program	Business Oregon	Provides grant funds for improving seismic safety of public schools and emergency response facilities.
Oregon State General Fund	Oregon State Legislature	Oregon State General Fund money is used to pay the labor costs of state employees working to support statewide and local hazard mitigation activities and as non-federal cost share for federally funded projects.
Other		
Community Planning Assistance Teams	American Planners Association Foundation	Provides pro bono technical assistance for planning frameworks or community vision plans for communities needing extra assistance. Local governments are responsible for travel costs.

5.4 Legal and Regulatory Resources

Table 5-4 describes the legal and regulatory capabilities, including plans, policies, and programs that have integrated hazard mitigation principles into their operations.

Table 5-4 Legal and Regulatory Resources Integrated with Hazard Mitigation

Capability Type	Capability	Description	Key Accomplishments (2012-2018)	Hazard Mitigated
Plans	Natural Resources Department Strategic Plan (2015-2020)	Outlines a strategic direction to outline priorities and goals for the Natural Resources Department.	▪ Incorporation of WERP Program	All Natural Hazards

Table 5-4 Legal and Regulatory Resources Integrated with Hazard Mitigation

Capability Type	Capability	Description	Key Accomplishments (2012-2018)	Hazard Mitigated
	Tribal Emergency Operations Plan	Outlines roles and responsibilities of tribal government in mitigating potential hazards.	▪ Hiring of a Director of Emergency Management ▪ Incorporation of emergency planning into tribal operations	All
	Cow Creek Irrigation Water Reservoir Main Dam and Auxiliary Dam Emergency Action Plan	Describes the Tribe's response actions in the event of a dam breach.	▪ Draft plan developed in 2017	Flooding, Utility Failure
	Douglas County Hazard Mitigation Plan	Profiles hazards throughout the County, assesses risks, and outlines potential mitigation actions.	▪ Collaboration between County and Tribe	All
	Douglas County CWPP	Prescribes the Community's approach to protect against wildfires.	▪ Collaboration between County and Tribe	Wildfire
	State of Oregon Hazard Mitigation Plan	Profiles hazards throughout the State, assesses risks, and outlines potential mitigation actions.	▪ Collaboration between State and Tribe	All
	ODOT District 7 Winter Operations	Outlines ODOT's approach to responding to the demands on Oregon's roadways within winter months.	▪ Collaboration between ODOT and Tribe	Winter Storms, Landslides, Flooding
	Oregon Fuel Management Plan	Prescribes the State's approach to plan and prepare for, respond to, and recover from severe fuel shortages.	▪ Collaboration between Oregon Department of Energy and Tribe	Utility Failure
Policies	Local Operating Plan/Agreement with Douglas Forest Protection Association	Increased capability and capacity through partnership.	▪ Signed into agreement	Wildfire
Programs	Mutual Aid Agreements		▪ Increased capacity and capability through partnership	All
	Water and Environmental Resources Program	Coordinate and manage all tribal activities pertaining to the conservation, restoration, and utilization of water, fisheries, and environmental resources.	▪ Initial development of fish acclimation pond mitigation projects	All Natural Hazards

Table 5-4 Legal and Regulatory Resources Integrated with Hazard Mitigation

Capability Type	Capability	Description	Key Accomplishments (2012-2018)	Hazard Mitigated
	Northwest Tribal Emergency Management Council	Support tribal participation on homeland security and emergency management preparedness efforts.	▪ Joined the consortium	All
	Oregon Tribal Preparedness Coalition	Statewide coalition support between the emergency managers for all nine tribes in Oregon.	▪ Joined the coalition (2012)	All
	BOLD Continuity of Operations (COOP) Planning	The Tribe has access to a statewide contract to procure COOP plan development.	▪ Statewide contract initiated in 2017	All

5.5 FEMA Funded Hazard Mitigation Projects

The Tribe has not received funding for any hazard mitigation projects to date. The 2012 plan represented the Tribe's first hazard mitigation plan and a key component to this update is the development and implementation of a functioning hazard mitigation program that seeks project funding for key projects. Table 5-5 outlines potential funding sources available to the Tribe with a FEMA approved HMP.

Table 5-5 Mitigation Plan Requirement for Governments Applying for Certain FEMA Grants

Enabling Legislation	FEMA Assistance Program	Is a Mitigation Plan Required?	
		State / Tribal Applicant	Tribal / Local Sub applicant
Stafford Act	Individual Assistance (IA)	No	No
	Public Assistance (PA) Categories A and B (e.g., debris removal, emergency protective measures)	No	No
	Public Assistance (PA) Categories C through G (e.g., repairs to damaged infrastructure, publically owned buildings)	Yes	No
	Fire Mitigation Assistance Grants (FMAG)	Yes	No
	Hazard Mitigation Grant Program (HMGP)planning grant	Yes	No
	Hazard Mitigation Grant Program (HMGP) project grant	Yes	Yes
	Pre-Disaster Mitigation (PDM) planning grant	No	No
	Pre-Disaster Mitigation (PDM) project grant	Yes	Yes
National Flood Insurance Act	Flood Mitigation Assistance (FMA) planning grant	Yes	No
	Flood Mitigation Assistance (FMA) project grant	Yes	Yes

5.6 Continuity of Operations Planning

Continuity of government and continuity of operations (COOP) planning is an integral piece to any mitigation program. Ensuring the Tribe has the ability to operate following an incident immediately mitigates the magnitude of many hazards. The Tribe participated in a statewide effort to improve COOP capabilities and has identified additional COOP efforts for 2018.

5.7 Coordination with Community Partners

Being a Tribe without a reservation has required the Tribe to work alongside their community partners to address issues as they arise. Many of these community partners participated in the HMP update process and collaborate with the Tribe on an ongoing basis.

- **Education**
  - Roseburg School District
  - Umpqua Community College
  - South Umpqua School Districts
  - Numerous additional school districts in Southern Oregon
- **Business and Industry**
  - Local Chambers of Commerce
- **Healthcare**
  - Mercy Medical Center
  - Douglas County Public Health Network
- **Private Utilities**
  - Douglas Electric
  - Pacific Power
- **Transportation**
  - Oregon Department of Transportation

5.8 National Flood Insurance Program Participation

FEMA	**C2.** Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.7(c)(3))

The previous HMP stated that the Tribe would take steps toward participating in the NFIP. Initial steps were taken by the Tribe to join NFIP. However, financial implications and jurisdictional issues have led to the Tribe abandoning such efforts. At this time, the Tribe has no plans to join NFIP. The Tribe purchases flood insurance for only two of its properties.

5.9 Integration of Mitigation into Existing Planning Mechanisms

Integration of the principles of mitigation into the Tribe's daily operations and ongoing planning activities is a priority of the Tribe's mitigation program. These activities will support:

- Raising awareness of the importance of hazard mitigation for the whole community;
- Facilitating an understanding that hazard mitigation is not just an 'emergency services' function and building ownership of mitigation activities across the organization;
- Reduction in duplication or contradiction between tribal plans; and
- Maximization of planning resources through linked or integrated planning efforts.

The Tribe is encouraged to consider integration actions into planning mechanisms including:

- Budget decision-making;
- Building and zoning ordinances and decision-making;
- Emergency planning mechanisms; and
- Economic developing planning and decision-making.

5.9.1 Existing Plans

FEMA	**C6.** Does the Plan describe a process by which the tribal government will incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate? (Requirement §201.7(c)(4)(iii))

The following existing plans provide ongoing opportunity for integration of hazard mitigation and the County will work with plan owners and stakeholders to consider hazard mitigation data and principles when these plans are updated.

The **Cow Creek Band of Umpqua Tribe of Indians Emergency Operations Plan (2016)** provides an all-hazard approach to responding to emergencies and disasters in the tribal planning area. The plan integrates concepts from all phases of emergency management including mitigation and prevention, preparedness, response and recovery. The plan includes the following hazard mitigation strategies:

- Integrate with statewide and local-level hazard mitigation plans;
- Address accessing mitigation grant and insurance programs;
- Prioritize the prevention and mitigation of major property damage; and
- Utilize the recovery period to institute and invest in mitigation strategies.

The **Natural Resources Department Strategic Plan (2015-2020)** will be updated in the coming years and will include the following hazard mitigation strategies:

- Integrate goals and objectives outlined in the HMP;
- Address mitigation actions outlined in which the Natural Resources Department is the lead agency;
- Development of Future Land Use Map that incorporates hazard areas outlined in the HMP;
- Prioritize the prevention and mitigation of damage associated with Natural Resources Department-managed lands.

The **Integrated Resource Management Plan** will integrate the following hazard mitigation strategies:

- Insure effective access to tribal resources through access control mechanisms and pre-location of resources; and
- Prioritize the refilling of resources required for mitigation activities.

5.9.2 Future Planning

The Tribe is also determined to integrate mitigation planning into future efforts. One of the Tribe's next major endeavors is to begin developing and implementing consistent land use policies for all future tribal development. The Tribe will also begin the update process for their internal Integrated Resource Management Plan, which will support the adequate deployment of resources to proper channels. Additional integration of mitigation strategies will vary from project to project, but all future planning will consider the following:

- Develop Tribe-wide Continuity of Operations and Business Continuity Plans with an emphasis on risks and human capabilities to minimize their impacts;
- Consider the implications of future development on hazard risks and risk reduction requirements;
- Integrate risk assessments into tribal decision-making processes;
- Continued tribal member input into the decision-making process; and
- Incorporate the mitigation actions outlined in the HMP into future planning.

A major congressional decision that impacted the Tribe at the end of the HMP planning process was the passage of the Western Oregon Tribal Fairness Act, which conveys over 17,000 acres of land previously administered by the BLM into the hands of the Tribe. This change will require a proper understanding of risks present on the land (which will be included in an appendix to the HMP in the future), require memorandums of understanding with the federal government, and require inventorying and surveying of natural and cultural resources present on the lands.

6. MITIGATION STRATEGY

6.1 General

Chapter 6 describes the Tribe's mitigation strategy which is the primary focus of the Tribe's mitigation planning efforts. This strategy represents the blueprint for the approach chosen by the Tribe to reduce or prevent losses flowing from hazards identified in the Section 4.

The strategy is made up of three main required components: mitigation goals and objectives, mitigation actions, and a mitigation action plan for implementation (see Figure 6-1). These components provide the framework to identify, prioritize, and implement actions to reduce risk from hazards.

Figure 6-1 Mitigation Strategy Process

6.2 Mitigation Goals

FEMA	**C3.** Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.7(c)(3)(i))

Mitigation goals are intended to represent what the Tribe seeks to achieve through mitigation plan implementation. The goals are general guidelines and provide a framework for identifying more detailed objectives and actions. The MPT reviewed the goals and objectives from the 2012 plan update and refined them for the 2018 update to reflect the Tribe's continually improving emergency management program. Goals that focus on protection of natural and cultural resources and collaborative and integrated mitigation planning were added.

MPT Meeting Deliverable

The Tribe has identified the following goals for the 2018 update of the Cow Creek Tribe HMP:

- **GOAL 1:** Honor tribal sovereignty.
- **GOAL 2:** Protect tribal properties and resources as well as those that are not tangible, including cultural resources.
- **GOAL 3:** Identify risks and execute the most powerful actions to mitigate those risks.
- **GOAL 4:** Collaborate across multiple levels of government and with local partners.
- **GOAL 5:** Consider the potential unforeseen impacts of mitigation actions and their impact on the land.

6.3 Mitigation Actions

FEMA	**C4.** Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for the [Cow Creek Band of Umpqua Tribe of Indians] being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure ? (Requirement §201.7(c)(3)(ii))

A mitigation action is a specific action, project, activity, or process taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. Implementation of mitigation actions helps achieve the Tribe's mitigation goals and reduce vulnerability to threats and hazards identified in the plan. Mitigation plan regulations require the Tribe to identify and analyze a comprehensive range of specific mitigation actions and projects to reduce the impacts identified in the Tribe's risk assessment.

6.3.1 Review of 2012 Hazard Mitigation Actions

As part of the mitigation strategy update, all mitigation actions identified in the 2012 plan were evaluated to determine what the status of the action was and whether any ongoing or incomplete actions should be included as actions in the 2018 plan update. The MPT worked through each previous action during MPT Meeting #1 to document steps taken to fulfill the action.

See Table 6-6 for an overview of the status of all actions from the 2012 plan update.

6.3.2 Identification and Analysis of Mitigation Actions

In order to achieve the mitigation goals identified above, the Tribe has identified a comprehensive series of mitigation objectives and supporting actions that are focused on reducing vulnerability and maximizing loss reduction. The actions can typically be broken out into the following types of activities which are indicated in Table 6-1:

- **Plans and Regulations**: Regulatory actions or planning processes that reduce vulnerability to hazards.
- **Infrastructure/Capital Project**: Actions that involve modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area.
- **Natural Systems Protection**: Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems.
- **Education and Awareness**: Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them.
- **Preparedness and Response**: Actions that protect people and property during and immediately after a hazard or hazard event.

Table 6-1 2018 Mitigation Actions by Group

Mitigation Group	Related Mitigation Actions
Plans and Regulations	2, 3, 5, 6, 7, 8, 9, 10, 12, 14
Infrastructure/Capital Project	1, 2, 3, 4, 7, 14, 15, 16
Natural System Protection	1, 2, 3, 5, 16
Education and Awareness	7, 11, 12, 13
Preparedness and Response	1, 5, 7, 12, 13

All mitigation actions identified in the plan are addressed in the mitigation implementation plan provided in section 6.5. The actions include both interim- and long-term strategies for reducing vulnerability to hazard and are characterized as such in the 'life of action' column of the implementation plan.

6.3.3 2018 Mitigation Actions by Hazard

All mitigation actions identified in the plan address at least one priority hazard outlined in Chapter 4 of the HMP. Table 6-2 indicates which mitigation actions address which hazards.

Table 6-2 2018 Mitigation Actions by Hazard

Hazard*	Related Mitigation Actions
All Hazards	6, 9, 12, 13, 15
Active Threat (Intentional Violence)	7
Biosecurity	5, 11
Cyber Attack	*See All Hazard Mitigation Actions
Domestic Terrorism	5, 7, 11
Drought	4, 10, 16
Earthquakes	14
Emerging Infectious Diseases	5, 11
Fires	1, 2, 3, 10

Table 6-2 2018 Mitigation Actions by Hazard

Hazard*	Related Mitigation Actions
Flooding	1, 2, 3, 4, 10, 16
Hazardous Materials Incidents	5, 8, 11, 16
Landslides	1, 2, 3, 10
Snow and Ice Storms	*See All Hazard Mitigation Actions
Social Unrest	7, 11,
Transportation Incidents	*See All Hazard Mitigation Actions
Utility Failure	1, 4, 10, 11, 16
Windstorms	*See All Hazard Mitigation Actions

6.4 Evaluating and Prioritizing Mitigation Actions

Once mitigation actions were identified, the MPT during MPT Meeting #3, and other key stakeholders went through the exercise of evaluating and prioritizing each action to determine which actions are most suitable for the Tribe to implement. A mitigation action worksheet was developed for each action that included the following information:

Description of the Action	***Specific*** – Target a specific area for improvement. ***Measurable*** – Quantify or at least suggest an indicator of progress. ***Assignable*** – Specify who will do it. ***Realistic*** – State what results can be achieved realistically, given available resources. ***Time-related*** – Specify when the result(s) can be achieved.
Action Status	***New*** – The action is new and will be included for the first time in the 2018 plan update. ***Existing*** – The action was implemented prior to the 2018 plan update, but is ongoing and additional or ongoing action is required for completion. ***Complete*** – The action has been completed.
Type of Action	***Plans and Regulations*** ***Infrastructure/Capital Project*** ***Natural Systems Protection*** ***Education and Awareness*** ***Preparedness and Response***
Lead and supporting departments	***Tribal agencies*** ***Local or County agencies*** ***Others***
Timeline for Implementation and Expected Life of the Action	***Less than 1 year*** ***1 to 3 years*** ***3 to 5 years***
Other	Hazards Addressed by the Action Anticipated Cost and Funding Source Mitigation Goals Supported by the Action

A complete mitigation implementation plan is provided in Table 6-5.

See Appendix D-1 for a sample worksheet, Appendix D-2 for worksheet instructions, and Appendix D-3 completed worksheets for all actions identified in the plan.

6.4.1 Maximizing Loss Reduction

The Tribe's mitigation strategy is directed by the mitigation goals identified in Section 6.2. However, equally important, the Tribe seeks to prioritize actions that lead to the greatest return on investment. The ultimate goal of this plan is to maximize loss reduction, and this perspective is baked into the Tribe's mitigation strategy.

6.4.2 STAPLEE Analysis

In addition to the information noted above, each action was self-evaluated using STAPLEE criteria as described in Table 6-3. Evaluators were asked to rate each STAPLEE criteria to come up with a total score that determined the relative suitability of each action.

Table 6-3 STAPLEE Criteria

STAPLEE Criteria	Evaluation Rating
S: Is it Socially acceptable?	Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0
T: Is it Technically feasible and potentially successful?	
A: Does the responsible agency/department have the Administrative capacity to execute this action?	
P: Is it Politically acceptable?	
L: Is there Legal authority to implement?	
E: Is it Economically beneficial?	
E: Will the project have either a neutral or positive impact on the natural Environment? (score a 3 if positive impact, 2 if neutral impact)	
Will historic structures or key cultural resources be saved or protected?	
Could it be implemented quickly?	

6.4.3 Mitigation Effectiveness Analysis

In addition to the STAPLEE analysis, MPT members were asked to rate the effectiveness of each action as described in Table 6-4.

Table 6-4 Mitigation Effectiveness Criteria

Mitigation Effectiveness Criteria	Evaluation Rating
Will the implemented action result in protection of cultural resources?	High = 5 Medium = 3 Low = 1
Will the implemented action result in lives saved?	High = 5 Medium = 3 Low = 1
Will the implemented action result in a reduction of disaster damage?	High = 5 Medium = 3 Low = 1

MPT members were asked during the MPT Meeting #4 to prioritize the actions based on the STAPLEE and mitigation effectiveness score. Eleven members participated in the activity and their averaged scores are reflected in the mitigation implementation table to follow (see Table 6-5). The combined STAPLEE and mitigation effectiveness score for each mitigation action identified in this plan will serve as one of the tools the Tribe uses in prioritizing what mitigation actions it wishes to pursue during the next planning cycle. Of course, actions may also become a higher priority based on available funding, emerging hazards, or because they align with priorities identified in other planning efforts.

STAPLEE scores can range from a low of 0 to a high of 27. Mitigation effectiveness scores can run from a low of 3 to a high of 15. Combined, mitigation actions can score within a range of 3 to 42 points.

FEMA regulations do not require a formal cost-benefit analysis for hazard mitigation plans; however, a formal cost-benefit analysis of mitigation measures is required in order to be approved for Hazard Mitigation Grant Program funding. Therefore, a more formal cost-benefit analysis will be conducted as a component of any future mitigation grant applications.

6.4.4 Mitigation Action Case Study

To ensure effective implementation of prioritized mitigation actions, MPT members were asked a number of targeted questions to determine benefits and costs, roles and responsibilities, phases, and timelines for the successful completion of a sample project.

The MPT elected to take a deeper dive into a mitigation action devoted to performing a culvert inventory study and replacement of aging culverts. The following summary highlights the discussions held by MPT members.

Project: Culvert Inventory Study and Replacement of Aging Culverts
Problem Addressed: Protection of potentially washed out roadways and culverts, provide additional stability, preservation of access (stream protection and resource movement).
Co-Benefits: Improved timber operations; continued access to lands for hunting, timber and agricultural purposes; sediment control and improved water quality.
Estimated Costs: Study would be handled internally through department-specific funding; repair of culverts could vary from $10,000 to $250,000, depending on site needs. Other Associated Costs: Riparian restoration work; culvert vs. stream repair variations.
Potential Funding: Environmental Protection Agency 319 Funding; BIA Road Funds
Additional Factors to Consider: Agreements with BLM for access on non-tribal lands; determination of water source start and end points; consideration of future conditions; future development needs
Associated Activities: 1. Identify and geotag locations of culverts (ongoing with Umpqua BFAT, to begin in early 2018) 2. Form agreements with BLM and BIA 3. Determine peak seasonal flow 4. Utilize previous survey findings (Umpqua BFAT studies on Cow and Elk Creeks) 5. Identify prioritized locations 6. Prioritize repairs 7. Engineering design phase 8. Partner agency involvement 9. Construction 10. Maintenance 11. Monitoring plan to ensure long-term viability
Measuring Success: The project has ongoing tasks such as changing priorities and ongoing maintenance. Initial project viewed as success when all currently known culverts have been studied.
Coordinating Agency: Government Office
Lead Agencies: Natural Resources Department/Timber Operations (stream work); UIUC (road work)
Supporting Agencies: ▪ Fisheries: Financial support, performance of survey and monitoring work ▪ BIA/EPA: Financial and regulatory support ▪ BLM: Coordination of use on federal lands ▪ Cultural Resources: Conduct reviews for ground disturbing activities associated with project
Existing Groups to Support Project: ▪ Partnerships for Umpqua River: technical assistance and data support ▪ Soil and water conservation districts: technical assistance ▪ Watershed Council: technical assistance
Project Phases: 1. Desktop analyses and determination of stream crossings – early 2018 2. Development of initial inventory connected to GIS data – mid 2018 3. Develop report and determine priorities – late 2018 to early 2019 4. Construction of new culverts – mid 2019 5. Reassessment of culverts – annual update 6. Additional assessments – ongoing

Other: The Tribe should be able to identify best practices and lessons learned. High priority for staying in touch with other stakeholders to ensure our projects are considering what other partners and landowners are doing. Proper coordination. Calculating the in-kind benefit that we provide and documenting how our work benefits those upstream and downstream. Community benefit outlined.

6.5 2018-2022 Mitigation Implementation Plan

FEMA	**C5.** Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by [the Cow Creek Band of Umpqua Tribe of Indians]? (Requirement §201.7(c)(3)(iii))

The mitigation implementation plan lays the groundwork for how the mitigation plan will be incorporated into existing planning mechanisms and how the mitigation actions will be prioritized, implemented, and administered by the Tribe. The implementation plan includes both short-term strategies that focus on planning and assessment activities, and long-term strategies that will result in ongoing capability or structural projects to reduce vulnerability to hazards.

See Appendix B for Mitigation Action Worksheet instructions and completed Mitigation Action Worksheets for each action listed in Table 6-5.

Table 6-5 2018-2023 Mitigation Implementation Plan

Action No.	Mitigation Action	Action Status	Type of Action	Goals Supported	Lead Department	Supporting Departments	Timeline	Hazards Addressed	Anticipated Cost	Funding Available?	Funding Source	STAPLEE Score	Mitigation Effectiveness Score	TOTAL SCORE	Priority
1	Construct heliponds to support fire suppression and flood prevention.	New	Infrastructure/Capital Project; Natural Systems Protection; Preparedness and Response	1-5	Natural Resources/Timber	WERP; ODFW; Cultural Resources; UIUC; DFPA	1-3 years	Fire; Flood; Landslides; Utility Failure	$500,000	Anticipated	In-kind donation; Cost sharing with DFPA	20	13	33	High
2	Perform a culvert inventory study including road hazard inventory and replace aging culverts	Existing	Plans and Regulations; Infrastructure/Capital Projects; Natural Systems Protection	1-5	Natural Resources/Timber	Fisheries; UIUC; BIA; USFS; Cultural Resources	< 1 Year; Ongoing	Fire; Flood; Landslides	$10,000 to $250,000 per site	Anticipated	BIA grants	21	11	32	High
3	Perform bank stabilization at Rogue River Ranch	Existing	Infrastructure/Capital Projects	1-5	K-Bar Ranch	Natural Resources; Emergency Management; PCSRF; National Oceanic and Atmospheric Administration; RR Watershed Council; Cultural Resources	1-3 years	Flood; Utility Failure; Landslides; Drought	$100,000 to $500,000	Anticipated	OWEB; PCSRF; U.S. Army Corps of Engineers; FEMA; BOR; National Oceanic and Atmospheric Administration grants	21	10	31	Medium
4	Develop Bio Hazard Security Plan and Protocols	New	Plans and Regulations; Natural Systems Protection; Preparedness and Response	1-5	K-Bar Ranch; Natural Resources	Emergency Management; Oregon Department of Agriculture; USDA; Farm Service; NRCS	1-3 years	Emerging Infectious Disease; HazMat Incidents; Terrorism; Biosecurity	Internal funding	Yes	Existing budget	21	11	32	High
5	Develop Communication Loss Prevention Plan	Existing	Plans and Regulations	1-5	Information Technology; Emergency Management	All tribal departments	3-5 years	All Hazards	$40,000	Yes	Existing budget; FEMA grants	21	11	33	High

Table 6-5 2018-2023 Mitigation Implementation Plan

Action No.	Mitigation Action	Action Status	Type of Action	Goals Supported	Lead Department	Supporting Departments	Timeline	Hazards Addressed	Anticipated Cost	Funding Available?	Funding Source	STAPLEE Score	Mitigation Effectiveness Score	TOTAL SCORE	Priority
6	Perform active assailant security study	Existing	Plans and Regulations; Infrastructure/Capital Project; Education and Awareness; Preparedness and Response	1-3	Emergency Management; UIUC; Facilities; Security	Sheriff's Office	<1 year	Active Threat; Social Unrest; Terrorism	Minimal	Yes	Existing budget	22	10	31	Medium
7	Perform hazardous materials commodity flow study	New	Plans and Regulations	1-5	Emergency Management/LEPC	Utilities	1-3 years	HazMat Incidents	$35,000	Yes	Existing budget	21	8	28	Low
8	Develop an access control plan	Existing	Plans and Regulations	1-4	Natural Resources	Emergency Management; Legal; UIUC; Sheriff's Office; Security	1-3 years	All Hazards	$250,000	Anticipated	Homeland Security grants	20	11	34	High
9	Develop a Master Land Use Plan and hire a Land Use Planner	Existing	Plans and Regulations	1-5	Natural Resources; Legal; tribal Leadership	Housing; Utilities; Emergency Management; K-Bar Ranch	1-3 years	Fire; Flood; Landslides; Utility Failure; Drought	Unknown	Yes	Existing budget/grants	23	11	34	High
10	Perform communicable disease awareness outreach	Existing	Education and Awareness	1-5	Health and Wellness Center; Emergency Management	Communications; County Health Department; Umpqua Pubic Health Network	1-3 years	Social Unrest; Emerging Infectious Disease; HazMat Incident; Utility Failure; Terrorism; Biosecurity	$25,000 to $50,000	Yes	IHS grant	23	11	32	High
11	Develop tribal-wide hazard outreach and education program, specifically for at-risk populations	Existing	Plans and Regulations; Education and Awareness; Preparedness and Response	1, 2, and 4	Government Office; Emergency Management	All Departments	1-3 years	All Hazards	$50,000	Yes	Existing budget/grants	22	11	33	High
12	Perform seismic study of prioritized tribal facilities	New	Plans and Regulations; Infrastructure/Capital Projects	1-5	Government Office; Facilities; UIDC; Utilities	Business Oregon; DOGAMI	3-5 years	Earthquakes	$150,000	No	Seismic Rehabilitation Grant	22	12	33	High
13	Construct electrical substation for south county properties to mitigate utility failures	New	Infrastructure/Capital Projects	1-5	UIUC	Bonneville Power Authority; PP+L; Legal; Natural Resources; Cultural Resources	3-5 years	All Hazards	$2 million	Anticipated	Grants	19	7	27	Low
14	Retrofit or replace acclimation pond to reduce vulnerability to flood and support fish habitat	Existing	Infrastructure/Capital Projects; Natural Systems Protection	1-5	WERP Program; Natural Resources; Cultural Resources	UIUC; Emergency Management; Maintenance; ODFW; OSU; UFA	3-5 years	Flood; HazMat Incidents; Utility Failure; Drought	$50,000	Anticipated	Existing budget/grants	22	10	31	Medium

Table 6-6 Status of 2012 Mitigation Actions

Action No.	Mitigation Action	Action Status	Timeline	Goals Supported	Lead Department	Supporting Departments	Hazards Addressed	Anticipated Cost	Funding Available?	Funding Source	STAPLEE Score	Mitigation Effectiveness Score	TOTAL SCORE	Priority
12-1	Plan for redundancy of tribal resources and facilities through COOP planning	Ongoing	1-3 years	1-5	Emergency Management	Natural Resources; WERP; ODFW; Cultural Resources; UIUC; DFPA	All Hazards	$50,000	Anticipated	FEMA HMGP Grant, State grants, internal funding	21	11	32	High
12-2	Continue to plan and build tribal structure to highest standards and, if possible, to keep such structures out of known hazard areas.	Ongoing	1-3 years	1-5	Natural Resources	Emergency Management; UIUC	All Hazards	Minimal cost anticipated	Yes	Internal funding	19	13	32	High
12-3	Develop and maintain an emergency management program and overall tribal EOP.	Completed	N/A	1-5	Emergency Management	Government Operations	All Hazards	Unknown	Yes	Internal funding	22	13	35	High
12-4	Become a member community of FEMA's National Flood Insurance Program.	Cancelled	N/A	1-5	Natural Resources; Emergency Management	Government Operations	Flooding	$25,000	Yes	Internal funding	18	13	31	Medium
12-5	Maintain flood and earthquake insurance coverage for existing tribal facilities and housing which are located within a known hazard area, with future evaluation whether it remains prudent to maintain said insurance (cost/benefit ratio).	Ongoing	1-3 years	1-5	Natural Resources; Accounting	GIS; Emergency Management	Flooding; Earthquakes	Unknown	Anticipated	Internal funding	21	11	32	High
12-6	Identify tribal elders and other vulnerable populations so mitigation and disaster assistance can be prioritized.	Ongoing	1-3 years	1-5	Emergency Management; Health and Wellness Center	Cultural Resources	All Hazards	Minimal cost anticipated	Yes	Internal funding	15	13	28	Low
12-7	Educate members of the tribal community and tribal employees regarding importance of personal and/or family preparedness, for natural disasters and/or terrorism to aid in self-reliance during a disaster or event.	Ongoing	1-3 years	1-5	Emergency Management; Health and Wellness Center	Cultural Resources	All Hazards	Minimal cost anticipated	Yes	Internal funding	19	9	28	Low
12-8	Develop hazard awareness and emergency information for tribal employees, guests, and tourists.	Completed	N/A	1-5	Emergency Management; Health and Wellness Center	Cultural Resources	All Hazards	Minimal cost anticipated	Yes	Internal funding	19	9	28	Low
12-9	Conduct drills and tests of mitigation and emergency system developed.	Completed/Ongoing	N/A	1-5	Emergency Management	Government Operations; UIUC; Natural Resources; Health and Wellness Center	All Hazards	$10,000 to $50,000	Yes	FEMA HMGP Grants	17	13	30	Medium
12-10	Continue to coordinate with city, county, and state in mitigation efforts.	Completed/Ongoing	N/A	1-5	Emergency Management; Government Operations; UIUC	Natural Resources	All Hazards	Minimal cost anticipated	Yes	Internal funding	17	7	24	Low
12-11	Support state and county mitigation actions and exercises.	Completed/Ongoing	N/A	1-5	Emergency Management	Government Operations	All Hazards	Minimal costs anticipated	Yes	FEMA HMGP Grants	17	7	24	Low

7. PROGRAM IMPLEMENTATION

Chapter 7 provides an overview of the overall strategy for plan maintenance and outlines the method and schedule for monitoring, updating, and evaluating the plan. The chapter also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

The Cow Creek Tribe HMP is intended to be a "living" document that will help inform all interested parties about the Cow Creek Tribe's hazard mitigation policies and projects. It will be reviewed and updated on a regular basis. The mitigation strategy identified will act as a guide for tribal departments in determining projects for which to seek FEMA assistance and other mitigation funds from outside sources.

7.1 Plan Adoption

FEMA	**E2.** Does the Plan include documentation that the plan has been formally adopted by the [Cow Creek Band of Umpqua Tribe of Indians Tribal Board of Directors]? (Requirement §201.7(c)(5))

44 CFR §201.7(c)(5) requires that the Cow Creek Tribe HMP be formally adopted by the Tribal Board of Directors, which formally adopted the 2018 update of the Cow Creek Tribe HMP on May 9, 2018.

This plan was approved by FEMA on May 4, 2018.

See the front matter of this plan for adoption and approval materials.

7.2 Plan Update and Review

FEMA	**A6.** Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.7(c)(4)(i))

7.2.1 Annual Review

The Director of Emergency Management is responsible for coordinating annual review of the Cow Creek Tribe HMP and making appropriate revisions. On an annual basis, the Director of Emergency Management will convene the MPT to conduct a comprehensive review of the plan to ensure that all information is current. The review and update process follows:

The MPT will meet to consider:

- Progress made on plan recommendations during the previous 12 months;
- Mitigation accomplishments in projects, programs, and policies;
- Actual losses avoided by implementation of mitigation actions;
- Emerging disaster damage trends and repetitive losses;

- Identification of new mitigation needs;
- Cancellation of planned initiatives, and the justification for doing so; and
- Changes in membership to the MPT.

The Director of Emergency Management will request input from other departments and outside entities not represented on the MPT on issues listed above. A special effort will be made to gather information on non-capital projects and programs important to mitigation.

7.2.2 Following a Major Disaster

Within a reasonable period after a major disaster warranting a Presidential Disaster Declaration, and as determined necessary for a smaller event, the Director of Emergency Management will convene the MPT. Because recovery is a long process and the full impact of a disaster may not be known for many months, this initial meeting may be followed by additional meetings over time.

The annual update process described above will also be used following a major disaster. However, post-disaster deliberations will also consider the following:

- "Lessons Learned" from the disaster and what new initiatives should be added to the plan to help reduce the likelihood of similar damage in the future;
- Follow-up needed on items relevant to mitigation from any after-action reports produced by the Tribe; and
- Integration of mitigation into the recovery process and coordination with tribal recovery planning efforts.

7.2.3 Formal Plan Update

Every five years, the plan will be re-submitted for adoption to the Tribal Board of Directors. Prior to this, the Director of Emergency Management will use the following process to make sure that all relevant parties are involved:

- Conduct regular reviews of the plan as described above and incorporate feedback from those reviews into the planning document;
- Conduct public engagement activities and initiate meetings with identified groups of interested parties and outside organizations to gain input and feedback;
- Integrate relevant feedback and circulate revised plan to MPT for approval;
- Submit plan to the Tribal Board of Directors for adoption by resolution;
- Submit the revised plan to FEMA.

It is anticipated that the next full update of this plan will take place in 2023 for the planning period of 2023 through 2028.

7.3 Monitoring Project Implementation

FEMA	**C7.** Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.7(c)(4)(ii))

Mitigation projects and project closeouts will be monitored and updated through the use of the quarterly reporting forms for FEMA-funded projects, provided by FEMA Region X. The Tribe's Contract Specialist will ensure project reporting is completed within specified timeframes. The Mitigation Project Progress Report will be requested annually by the Emergency Management Director to determine progress made to-date and track final closeout tasks. The Tribe will comply with all applicable Federal statutes and regulations in effect with respect to the periods which it receives grant funding, in compliance with 44 CFR 13.11(c).

7.3.1 Grant Management Process

The Tribe implements a comprehensive grant management process to ensure compliance with all applicable grant requirements. The grant management process involves all key governmental entities including the Tribe's Contract Specialist, Budget Accountant, Government Operations Officer, Chief Executive Officer, Board of Directors, Legal Counsel, and the appropriate program managers. The Tribe's internal grant management process is as follows:

1. Appropriate program managers complete grant application and submit to Contract Specialist and Budget Accountant for review of budget and appropriate requirements.
2. Grant application is submitted to Legal Counsel for review and approval.
3. Government Operations Officer and/or CEO approve of grant application.
4. Board of Directors adopts resolution to approve grant application for submittal.
5. Grant application is submitted to funding entity (e.g., FEMA).
6. Upon grant award, contract is signed by appropriate parties within the Tribe and funding entity.
7. Grant funds and compliance requirements are uploaded to Tribe's fund management and grant management software, which produces a checklist of requirements to be reviewed monthly.
8. Grant fund spending is reviewed monthly or bi-monthly (depending on grant requirements), spending is reviewed and signed off on by program managers and CEO.
9. Contract Specialist oversees compliance of grant award to ensure funds are spent properly and ensure grant deadlines are met.
10. Project closeouts vary depending upon grant requirements (the Tribe is often managing over 45 grants at any given time), but in general, closeout tasks include:
    a. Program managers receive monthly reminder of closeout tasks aligned with 425 Quarterly Federal Financial Reports.
    b. Contract Specialist provides proof that expenses have been paid at closeout.

c. CEO submits letter detailing how compliance has been met, accompanied by any necessary attachments and deliverables.

The Tribe also maintains an extensive process to respond to audits. Office of Management and Budget Circular A-133 audits are performed annually. Through this process, new awards are reviewed to ensure compliance has been met and funding use aligns with the Tribe's accounting records.

7.3.2 Mitigation Action Status and Tracking Loss Reduction

All departments are tasked with tracking the ongoing status of those mitigation actions for which they are the lead. Departments should track the following:

- Project progress including status of project funding and ongoing needs;
- Actual losses mitigated by project implementation; and
- Project needs that may be addressed in the next mitigation planning cycle.

Refer to H for a sample Mitigation Action Plan Annual Progress Report.

7.4 Incorporation of Existing Planning Mechanisms

As part of the Director of Emergency Manager's day-to-day plan monitoring efforts, they will coordinate with departments that have jurisdiction over mitigation action implementation areas to incorporate the plan into standard policies and procedures as well as long-term planning documents and budgets.

Short-term governmental operation changes that address and consider hazard mitigation may include updates to job descriptions, work plans, site reviews, and staff training. Long-term changes may include revisions to existing comprehensive plans, capital improvement plans, zoning and building codes, permitting, and other planning tools.

The Director of Emergency Management will also work with departments to include mitigation projects in annual budgets, rather than relying solely upon grant programs, and integrate hazard mitigation in future land use and strategic planning.

Refer to Section 5.9 for more information on the incorporation of mitigation planning into existing plans.

7.5 Continued Public Involvement

FEMA	**A5.** Is there discussion of how the [Cow Creek Band of Umpqua Tribe of Indians] will continue public participation in the plan maintenance process? (Requirement §201.7(c)(4)(iii))

Public involvement is a key component of the plan implementation and update process. As described above, the Tribe will prepare and make available via the internet an Annual Mitigation Status Report providing an update on the implementation of the current mitigation plan. This report, along with

specific reports for each mitigation measure being implemented and all stakeholder comments received, will be assessed to make improvements in the plan update released every five years.

In addition to the ongoing input collected and compiled throughout implementation of the previous plan, the MPT, as mentioned above, will review aspects of the draft update plan. Comments received from the public will also be considered and incorporated where appropriate into annual updates of the plan.

Tribal members will also be engaged on an ongoing basis through outreach at tribal events and activities to ensure participation is incorporated outside of the five-year plan update process.