Stevens County, Washington

Community Wildfire Protection Plan

Approved by the Stevens County Commissioners

2015 Update

This plan was developed by the Stevens County Community Wildfire Protection Plan steering committee.

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Acknowledgements

This Community Wildfire Protection Plan represents the efforts and cooperation of a number of organizations and agencies working together to improve preparedness for wildfire events while reducing factors of risk.

Stevens County Commissioners
and the employees of Stevens County

Washington State Department of Natural Resources

USDI Bureau of Land Management

USDA Forest Service

USDI Bureau of Indian Affairs

USDI Fish & Wildlife Service

Department of Ecology

Federal Emergency Management Agency

USDI National Park Service

City of Colville

City of Kettle Falls

Town of Northport
Town of Marcus
City of Chewelah
Town of Springdale

Stevens County Fire Districts

American Red Cross

Chewelah Fire Department
Colville Fire Department
Kettle Falls Fire Department
Marcus Fire Department
Northport Fire Department
Springdale Fire Department

Northeast Washington Forestry Coalition

Stevens County Conservation District
&
Local Businesses and Citizens of Stevens County

Copies of this plan can be found at:

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Foreword

The process of developing a Community Wildfire Protection Plan (CWPP) can help a community clarify and refine its priorities for the protection of life, property, and critical infrastructure in the wildland–urban interface on both public and private land. It also can lead community members through valuable discussions regarding management options and implications for the surrounding land base. Local fire service organizations help define issues that may place the county, communities, and/or individual homes at risk. Through the collaboration process, the CWPP steering committee discusses potential solutions, funding opportunities, and regulatory concerns and documents their resulting recommendations in the CWPP. The CWPP planning process also incorporates an element for public outreach. Public involvement in the development of the document not only facilitates public input and recommendations, but also provides an educational opportunity through interaction of local wildfire specialists and an interested public.

The idea for community-based forest planning and prioritization is neither novel nor new. However, the incentive for communities to engage in comprehensive forest planning and prioritization was given new and unprecedented impetus with the enactment of the Healthy Forests Restoration Act (HFRA) in 2003. This landmark legislation includes the first meaningful statutory incentives for the US Forest Service (USFS) and the Bureau of Land Management (BLM) to give consideration to the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects. In order for a community to take full advantage of this new opportunity, it must first prepare a CWPP.

A countywide CWPP steering committee generally makes project recommendations based on the issue causing the wildfire risk, rather than focusing on individual landowners or organizations. Thus, projects are mapped and evaluated without regard for property boundaries, ownership, or current management. Once the CWPP is approved by the Stevens County Commissioners' and the State Forester, the steering committee will begin further refining proposed project boundaries, feasibility, and public outreach as well as seeking funding opportunities.

*The **Stevens County Community Wildfire Protection Plan** is designed to expand on the wildfire chapter of a Multi-Hazard Mitigation Plan. This project was funded by the Washington Department of Natural Resources and the Bureau of Land Management.*

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Chapter 1

Overview of this Plan and its Development

In 2014, the Washington Department of Natural Resources (DNR) and the BLM contracted with Northwest Management Inc. to conduct an in-depth risk assessment for the hazards of wildland fire. Wildfire events occur annually in Stevens County; thus, programs and projects that mitigate the impacts of this hazard is a benefit to the local residents, property, infrastructure, and the economy. In October of 2014, the DNR and BLM met with the CWPP Steering Committee to introduce their plans in updating the CWPP.

This Community Wildfire Protection Plan (CWPP) for Stevens County, Washington, is the result of analyses, professional collaboration, and assessments of wildfire risks and other factors focused on reducing wildfire threats to people, structures, infrastructure, and unique ecosystems in Stevens County. Agencies and organizations that participated in the original planning process, as well as the update, included:

- Sevens Co. F.P.D. #1
- Stevens Co. F.P.D. #3
- Stevens Co. F.P.D. #4
- Stevens Co. F.P.D. #7
- Stevens Co. F.P.D. #10
- Stevens Co. F.P.D. #11
- Stevens Co. F.P.D. #12
- Stevens Co. F.P.D. #13
- City of Chewelah
- City of Marcus
- City of Colville
- Avista Utilities
- Stevens County I.S. Department
- Stevens County Commissioner
- Stevens County GIS
- Stevens County Public Land Advisory Committee
- Stevens Co. Conservation District
- Northeast Washington Forestry Coalition
- Vaagen Brothers
- 49 Degrees North
- Washington State University Extension Office
- Washington Department of Ecology
- Washington Department of Natural Resources
- Bureau of Land Management
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Lake Roosevelt National Recreation Area
- USDA Natural Resource Conservation Service
- Northeast Washington Forestry Coalition

Northwest Management, Inc. of Moscow, Idaho was selected to assist the steering committee by facilitating meetings, leading the assessments, and authoring the document. The project manager from Northwest Management, Inc. was Brad Tucker.

Goals and Guiding Principles

Planning Philosophy and Goals

The goals of the planning process include integration with the National Fire Plan, the Healthy Forests Restoration Act, and the Disaster Mitigation Act. The plan utilizes the best and most appropriate science from all partners as well as local and regional knowledge about wildfire risks and fire behavior while meeting the needs of local citizens and recognizing the significance wildfire can have to the regional economy.

Mission Statement

The Stevens County Community Wildfire Protection Plan is meant to identify wildfire response capability, educate homeowners as to what actions can be taken to reduce the ignitability of structures, and evaluate critical infrastructure throughout the county. To identify prioritized areas for hazardous fuel reduction treatments on Federal, State, and Private land and to build on existing efforts to restore healthy forest conditions within the county. This plan will clarify and refine our priorities for the protection of life, property, critical infrastructure, and identify wildland-urban interface areas.

Vision Statement

Promote a countywide wildfire hazard mitigation concept through leadership, professionalism, and excellence, leading the way to a safe, sustainable Stevens County.

Goals

1. To reduce the area of WUI land burned and losses experienced because of wildfires.
2. Prioritize the protection of people, structures, infrastructure, and unique ecosystems that contribute to our way of life and the sustainability of the local and regional economy.
3. Educate communities about the unique challenges of wildfire in the wildland-urban interface (WUI).
4. Establish mitigation priorities and develop mitigation strategies in Stevens County.
5. Strategically locate and plan fuel reduction projects.
6. Provide recommendations for alternative treatment methods, such as modifying forest stand density, herbicide treatments, fuel reduction techniques, and disposal or removal of treated slash.
7. Meet or exceed the requirements of the National Fire Plan and FEMA for a County-level Wildfire Protection Plan.

United States Government Accountability Office (GAO)

Since 1984, wildland fires have burned an average of more than 850 homes each year in the United States and, because more people are moving into fire-prone areas bordering wildlands, the number of homes at risk is likely to grow. The primary responsibility for ensuring that preventative steps are taken to protect homes lies with homeowners. Although losses from fires made up only 2.2 percent of all insured catastrophic losses from 1991 to 2010[1], fires can result in billions of dollars in damages.

GAO was asked to assess, among other issues, (1) measures that can help protect structures from wildland fires, (2) factors affecting use of protective measures, and (3) the role technology plays in improving firefighting agencies' ability to communicate during wildland fires.

[1] Rocky Mountain Insurance Information Association website at, http://www.rmiia.org/Catastrophes_and_Statistics/Wildfire.asp accessed in November, 2013.

The two most effective measures for protecting structures from wildland fires are: (1) creating and maintaining a buffer, called defensible space, from 30 to 100 feet wide around a structure, where flammable vegetation and other objects are reduced; and (2) using fire-resistant roofs and vents. In addition to roofs and vents, other technologies – such as fire-resistant windows and building materials, surface treatments, sprinklers, and geographic information systems mapping – can help in protecting structures and communities, but they play a secondary role.

Although protective measures are available, many property owners have not adopted them because of the time or expense involved, competing concerns such as aesthetics or privacy, misperceptions about wildland fire risks, and lack of awareness of their shared responsibility for fire protection. Federal, state, and local governments, as well as other organizations, are attempting to increase property owners' use of protective measures through education, direct monetary assistance, and laws requiring such measures. In addition, some insurance companies have begun to direct property owners in high risk areas to take protective steps[2].

State and Federal CWPP Guidelines

This Community Wildfire Protection Plan includes compatibility with FEMA requirements for a Hazard Mitigation Plan, while also adhering to the guidelines proposed in the National Fire Plan, and the Healthy Forests Restoration Act (2003). This Community Wildfire Protection Plan has been prepared in compliance with:

- The National Fire Plan: A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan (December 2006).
- Healthy Forests Restoration Act (2003).
- National Cohesive Wildland Fire Management Strategy (March 2011). The Cohesive Strategy is a collaborative process with active involvement of all levels of government and non-governmental organizations, as well as the public, to seek national, all-lands solutions to wildland fire management issues.
- The Federal Emergency Management Agency's Region 10 guidelines for a Local Hazard Mitigation Plan as defined in 44 CFR parts 201 and 206, and as related to a fire mitigation plan chapter of a Multi-Hazard Mitigation Plan.
- National Association of State Foresters – guidance on identification and prioritizing of treatments between communities (2003).

Update and Review Guidelines[3]

- *Deadlines and Requirements for Regular Plan Reviews and Updates*: In order to apply for a FEMA PDM project grant, Tribal and local governments must have a FEMA-approved mitigation plan. Tribal and local governments must have a FEMA-approved mitigation plan in order to receive HMGP project funding for disasters

[2] United States Government Accountability Office. Technology Assessment – Protecting Structures and Improving Communications during Wildland Fires. Report to Congressional Requesters. GAO-05-380. April 2005.

[3] Federal Emergency Management Agency. Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000. Original Release March, 2004 With revisions November, 2006, June, 2007 & January 2008.

declared on or after November 1, 2004. States and Tribes must have a FEMA-approved Standard or Enhanced Mitigation Plan in order to receive non-emergency Stafford Act assistance (i.e., Public Assistance categories C-G, HMGP, and Fire Management Assistance Grants) for disasters declared on or after November 1, 2004. State mitigation plans must be reviewed and reapproved by FEMA every three years. Local Mitigation Plans must be reviewed and reapproved by FEMA every five years.

- *Plan updates*. In addition to the timelines referenced above, the Rule includes the following paragraphs that pertain directly to the update of State and local plans,
  - ✓ §201.3(b)(5) [FEMA Responsibilities]…Conduct reviews, at least once every three years, of State mitigation activities, plans, and programs to ensure that mitigation commitments are fulfilled….
  - ✓ §201.4(d) Review and updates. [State] Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities and resubmitted for approval…every three years.
  - ✓ §201.6(d) [Local] plans must be reviewed, revised if appropriate, and resubmitted for approval within five years in order to continue to be eligible for…project grant funding.

  Plan updates must demonstrate that progress has been made in the past three years (for State plans), or in the past five years (for local plans), to fulfill commitments outlined in the previously approved plan. This will involve a comprehensive review and evaluation of each section of the plan and a discussion of the results of evaluation and monitoring activities detailed in the Plan Maintenance section of the previously approved plan. FEMA will leave to State discretion, consistent with this plan update guidance, the documentation of progress made. Plan updates may validate the information in the previously approved plan, or may involve a major plan rewrite. In any case, a plan update is NOT an annex to the previously approved plan; it must stand on its own as a complete and current plan.

The objective of combining these complementary guidelines is to facilitate an integrated wildland fire risk assessment, identify pre-hazard mitigation activities, and prioritize activities and efforts to achieve the protection of people, structures, the environment, and significant infrastructure in Stevens County while facilitating new opportunities for pre-disaster mitigation funding and cooperation.

Additional information detailing the state and federal guidelines used in the development of the Stevens County Community Wildfire Protection Plan is included in Appendix 6.

Integration with other Local Planning Documents

During development of this Community Wildfire Protection Plan, several planning and management documents were reviewed in order to avoid conflicting goals and objectives. Existing programs and policies were reviewed in order to identify those that may weaken or enhance the mitigation objectives outlined in this document. The following sections identify and briefly describe some of the existing Stevens County planning documents and ordinances considered during development of this plan.

Stevens County Multi-Hazard Mitigation Plan 2008

The Stevens County Local Hazard Mitigation Plan was developed to meet the requirements of the Disaster Mitigation Act of 2000. The Stevens County Hazard Mitigation Advisory Group was established to make the population, neighborhoods, businesses, and institutions of the County more resistant to the impacts of future disasters. The Advisory Group completed a comprehensive, detailed evaluation of the vulnerabilities of the community to all types of future, natural, technological, and societal hazards in order to identify ways to make the communities of the planning area more resistant to their impacts. The Plan further addresses the mitigation goals and objectives established by the Advisory Group.

Mitigation planning is a dynamic process that can be adjusted when warranted to account for changes in the community and to further refine the information, judgments, and proposals documented in the local mitigation plan. Maintenance of the Hazard Mitigation Plan will included the Advisory Group's activities every five years to monitor implementation of the Plan, to evaluate the effectiveness of implemented mitigation initiatives, to revise and update the Plan to include initiatives proposed within the 5-year period, and to continually strive to engage the community in the planning process.

Stevens County Comprehensive Land Use Plan 2008

The Stevens County Comprehensive Plan (Plan) is a 20-year guide for the future of Stevens County. The Plan provides a framework to support growth, development, and public decision-making in the County. It provides the vision of how residents want the County to grow and evolve over time. It establishes the goals, policies, priorities, and actions that the County will pursue to allow maintenance and enhancement of the quality of life, preservation of the rural character, sustainability of agricultural and natural resource industries, provision of recreational opportunities for residents and visitors, and protection of environmentally sensitive areas.

A comprehensive plan is a document that can benefit private property owners, local businesses, County staff, cities and towns in the County, state and federal agencies, Tribes, community organizations and other interested parties. It is an effective management tool for elected officials, empowers community members to help define the future vision and character of the County, guide development patterns of the County, and provide predictability to property owners regarding the future use and enjoyment of their land.

The Stevens County Comprehensive Plan has been updated throughout 2012 and the most recent edition is the Revised Final Draft that came out in May of 2013. The Stevens County Community Wildfire Protection Plan will be incorporated as a tool for decision makers to further their knowledge of specific high risk areas in order to make more informed decisions on how development should occur in those areas. Although land use designations are expected to be revised, specific recommendations regarding the vulnerability or potential dollar losses of future buildings, infrastructure, and critical facilities is not possible at this time.

Stevens County Hazard Identification and Vulnerability Assessment 2008

The Hazard Identification and Vulnerability Assessment (HIVA) originally dated November 2004, and subsequently updated in 2008, describes natural and technological (human-made) hazards, which can potentially impact the people, economy, environment, and property of Stevens County. It serves as a basis for County-level emergency management programs. It is the foundation of effective emergency management and identifies the hazards that organizations

must mitigate against, prepare for, respond to, and recover from in order to minimize the effects of disasters and emergencies. The HIVA is not a detailed study, but rather a general overview of hazards that can cause emergencies and disasters. The Stevens County Multi Hazard Mitigation Plan is a much more comprehensive approach, is more detailed, and provides specific plans to approach the County's problem areas.

Stevens County Comprehensive Emergency Management Plan (CEMP) 2013

The Comprehensive Emergency Management Plan (CEMP) originally dated December 2003, and most recently updated in 2013, considers the emergencies and disasters likely to occur, as described in the Stevens County Hazard Identification and Vulnerability Assessment, and describes functions and activities necessary to implement the four phases of Emergency Management – mitigation, preparedness, response and recovery. The plan utilizes Emergency Support Functions (ESFs), which identify primary and support agency responsibilities/activities that County and local jurisdictions may need in order to implement all-hazard mitigation. It provides policies, information, recommendations and guidance to assist responsible officials making operational decisions. This plan is more the "who, what, when, where and why" activities in the event of an emergency. ESFs = Transportation; Emergency Communications; Public Works & Engineering; Firefighting; Emergency Management; Mass Care, Housing and Human Services; Resource Support; Public Health & Medical Services; Search & Rescue; Hazardous Materials Response; Agriculture & Natural Resources; Energy; Public Safety, Law Enforcement and Security; Long-Term Community Recovery and Mitigation; External Affairs; and Defense Support to Civil Authorities**.** This plan does not conflict in any way with the Stevens County Community Wildfire Protection Plan Update. CEMP updates will include support of initiatives and action items outlined in the Stevens County Community Wildfire Protection Plan.

Critical Areas and Flood Management Ordinance

This ordinance identifies protected and hazardous areas. Protected areas are fish and wildlife habitat conservation areas, aquifer recharge areas, and wetlands. Hazardous areas are frequently flooded areas, geologically hazardous areas, erosion hazard areas, landslide hazard areas, mine hazard areas, seismic hazard areas, and volcanic hazard areas.

City of Colville Comprehensive Growth Management Plan

The Colville Comprehensive Plan and implementing Zoning and Land Division Ordinances adopted in 1997 clearly states Colville's vision of the future and the process of managing growth that will be followed to achieve it and, to define a coordinated approach to growth and development that will protect the quality of life enjoyed by all residents.

The Colville Comprehensive Growth Management Plan includes information on the history of the city and a description of existing land uses, public facilities and services, housing, and natural resources. The focus of the plan; however, is the goals, standards, and plan maps that will guide the city government's actions over the next twenty years.

City of Colville Hazard Identification and Vulnerability Assessment

The City of Colville has completed a Hazard Identification and Vulnerability Assessment (HIVA), which documents the types of hazards that may reasonably be expected to affect the city. A detailed profile of each hazard and a vulnerability assessment that looks at the number

of people, structures, and critical facilities potentially vulnerable to a hazard event has been compiled. The HIVA is initial step in the emergency management process that leads to mitigation against, preparedness for, response to, and recovery from hazards within the city.

City of Colville Comprehensive Emergency Management Plan

The City of Colville is currently working on the development of a Comprehensive Emergency Management Plan (CEMP). The City of Colville CEMP will define the planned response to emergency situations associated with natural and man-made disasters, technological incidents, and national security emergencies in or affecting the City of Colville. The CEMP will establish a flexible framework to implement the emergency management systems for the City of Colville.

Lake Roosevelt Fire Management Plan 2014

The Lake Roosevelt Fire Management Plan and Environmental Assessment Revision was initiated in 2012. The plan was accepted and signed in February 2015.

Objectives:

The wildland fire management program of a park, carefully guided by resource management objectives, should protect cultural resources and perpetuate the natural resources and their associated processes and systems. The preservation of natural and cultural resources within Lake Roosevelt National Recreation Area (LRNRA) is the fundamental requirement for its continued use and enjoyment by park visitors as a unit of the National Park System.

General resource management goals are outlined in the Park's General Management Plan (2001). The General Management Plan states that a purpose of the area is to "Preserve, conserve, and protect the integrity of natural, cultural, and scenic resources". .

The LRNRA Wildland Fire Management Plan includes the following goals:

1. Provide for firefighter and public safety. This is the first consideration and highest priority when implementing elements of the fire management plan.
2. Develop a systematic approach to dealing with wildland fires as well as the planning and implementation of prescribed fire projects.
3. Promote interagency planning wherever possible.
4. Include rehabilitation techniques and standards that comply with resource management plan objectives and mitigate safety threats.
5. Develop and maintain staff expertise in all aspects of fire management.
6. Prevent, where possible, all wildfires from burning onto adjacent lands.
7. Provide for the continuation of the natural role of fire in the ecosystem through the use of prescribed fires consistent with the protection of life, cultural/natural resources, including air quality, property, and adjacent land values.
8. Mechanically treat fuels, including thinning of trees, in preparation for the use of management-ignited fires or treatment of areas where management ignited fires are not deemed appropriate.
9. Develop a prescribed fire-monitoring plan.

10. Foster informed public participation in fire management activities to enable the park to respond appropriately to the needs of adjacent landowners.
11. Effectively integrate the fire management program into all park activities and operations.

Town of Marcus Comprehensive Growth Management Plan

The Marcus Comprehensive Growth Management Plan and implementing Unified Development Ordinance adopted in 1997 was prepared for two primary reasons:

- to clearly state Marcus' vision of the future and the process that will be followed to achieve it; and,
- to ensure a coordinated approach to growth and development in Stevens County that will protect the quality of life of both urban and rural residents.

The Marcus Comprehensive Growth Management Plan includes information on the history of the town and a description of existing conditions vis-à-vis land use, public facilities and services, housing, shorelines, and natural resources. The focus of the plan, however, is the goals, policies, standards, and plan maps that will guide the town government's actions over the next twenty years.

Lower Kettle River Community Wildfire Protection Plan

The Lower Kettle River area was chosen as one of the first areas for a Community Wildfire Protection Plan in the Colville National Forest area with planning efforts beginning in the summer of 2004. A very active community participated in the planning process as well as Joint Fire Protection District #3 (Ferry County) and #8 (Stevens County), representatives from the U.S. Forest Service and Washington Department of Natural Resources, and private individuals. This CWPP provides an overall view of the watershed and its relationship with fire. It suggests ways the relationship can be improved; individually and as a community. It also provides direction to local agency land managers and concerned landowners who want to work with their neighbors in developing hazardous fuel reduction strategies.

The Lower Kettle River CWPP was finalized in December of 2005. Representative from the core team that worked on the Lower Kettle River CWPP have been invited to the table and are actively participating in the development of the Stevens County Community Wildfire Protection Plan. Specific components of the Lower Kettle River CWPP are being incorporated into the Stevens County CWPP to ensure that the County's Plan smoothly dovetails with the assessments, goals, and mitigation measures outlined in the Lower Kettle River Plan.

Chewelah Community Wildfire Protection Plan

The Chewelah Community Wildfire Protection Plan was developed collaboratively by local citizens, state agencies, and federal agencies starting in the fall of 2003 and progressing through the winter of 2005. The Chewelah area was chosen as one of the first areas for a fire plan in the Colville National Forest. The Chewelah CWPP provides an overall view of the watershed and its relationship with fire. It suggests ways this relationship can be improved and provides direction to local agency land managers and concerned landowners who want to work with their state and federal neighbors in developing fuel reduction strategies. The Chewelah CWPP addresses the main components of wildfire and separates the approximate 150,000-acre project area into twelve strategic planning areas with individual descriptions and recommendations.

The Chewelah CWPP was finalized in 2005. Representatives from the core team that worked on the Chewelah CWPP have been invited to the table and are actively participating in the development of the Stevens County Community Wildfire Protection Plan. Specific components of the Chewelah CWPP are being incorporated into the Stevens County CWPP to ensure that the County's Plan smoothly dovetails with the assessments, goals, and mitigation measures outlined in the Chewelah CWPP.

Spokane Indian Reservation Fire Management Plan 2005

This Fire Management Plan outlines those actions that will be taken by The Bureau of Indian Affairs, Branch of Fire Management, Spokane Agency in meeting the fire management goals for the Spokane Indian Reservation. This plan conforms to all requirements outlined in the BIA's "Guidelines for Fire Management Planning in Indian Country."

The purpose of the Spokane Reservation Fire Management Plan (FMP) is to integrate all national wildland fire management guidance, direction, and activities required to implement national fire policy while achieving the Spokane Indian Reservation's overall resource management objectives.

This Spokane Fire Management Plan is tiered to a number of pre-existing plan documents, including the 2005 Spokane and Kalispel Reservation Wildfire Prevention Plan, the 1995 Spokane Indian Reservation Forest Management Plan 1993-2002, and the Integrated Resource Management Plan for the Spokane Indian Reservation dated February 26 of 1996 (referred to as the IRMP of 1996). The IRMP of 1996 and the 1995 Forest Management Plan are currently in the process of being revised and should be completed by late 2005 or early 2006. Management actions proposed within this Fire Management Plan are based on resource protection guidelines described in the preferred alternative of the IRMP of 1996. However, this Fire Management Plan is dynamic and will reflect changes in resource management direction as defined in the revised IRMP.

The Spokane Indian Reservation Fire Management Plan provides programmatic direction in managing wildland fire on the Spokane Indian Reservation while ensuring protection of the valued cultural and natural resources. The Fire Management Plan is designed to allow the Spokane Agency and its partners to:

- Provide for and improve firefighter and public safety.
- Address fire management strategies and tactics.
- Address values to be protected.
- Educate the communities concerning fire safety, fuels reduction and fire ecology.
- Establish mitigation priorities and develop mitigation strategies.
- Develop a tactical fire response plan.
- Strategically locate and plan fuel reduction projects.
- Reintroduce fire through prescribed burning program.

Little Pend Oreille National Wildlife Refuge Wildland Fire Management Plan

The development of the Little Pend Oreille National Wildlife Refuge Fire Management Plan (FMP) was undertaken both to manage fire in a manner compatible with the purpose of the Refuge, incorporate the latest fire management policy directives (DOI 1995) as delineated in the Federal Wildland Fire Management Policy and Program Review, Final Report- 12/18/95, and satisfy requirements of 910 DM 1-3 and 621 FW 1.1. It also serves to update the existing FMP to meet present U.S. Fish and Wildlife Service policy requirements and refuge management objectives. Service policy requires that all refuges with vegetation capable of sustaining a fire will develop a FMP. In addition, all Service lands using prescribed fire must have an FMP in place.

The FMP includes cooperative efforts in wildland fire and prescribed fire with the Colville National Forest, Washington Department of Natural Resources, and other federal, state, and private wildland fire organizations.

Colville National Forest Management Plan 2005

The Colville National Forest Fire Management Plan (FMP) details fire management strategies and operations for the 1.1 million acre Colville National Forest. The purpose of the Colville National Forest Fire Management Plan is to identify and integrate all wildland fire management guidance, direction, and activities required to implement national fire policy and fire management direction from: *Federal Wildland Fire Management Policy and Program Review – 1995 and 2001; The Interagency Fire Management Plan Template;* the *Forest Service Manual,* and *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10 Year Comprehensive Strategy Implementation Plan.*

The FMP was developed around the Forest fire management program and addresses all aspects of it, including wildland urban interface (WUI), rural fire assistance, prescribed fire, fuels management, prevention, and response to wildland fire or response to unplanned fire. The FMP identifies a fire program that meets identified fire management objectives.

The Forest's annual fire management plan is reviewed, updated, and approved as needed each year to:

- Formally document the Forest's fire program elements, objectives, strategies, and resource considerations based on the Forest land and resource management plan.
- Provide the fire manager specific guidelines for implementing fire-related direction on the ground.
- Interpret strategic land and resource management plan direction into specific fire management direction.
- Set out a specific, detailed fire program that most efficiently meets fire management direction annually, including organization, facilities, equipment, staffing needs, activities, timing, locations, and related costs.

The fire management plan does not document fire management decisions, rather it provides the operational parameters whereby fire managers implement the goals and objectives in the Forest Land and Resource Management Plan or land management decisions. The FMP is a working document and is updated annually or as policy or Land and Resource Management Plans are updated.

Chapter 2

Documenting the Planning Process

Documentation of the planning process, including public involvement, is necessary to meet FEMA's DMA 2000 requirements (44CFR§201.4(c)(1) and §201.6(c)(1)). This section includes a description of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how all of the involved agencies participated.

Description of the Planning Process

The Stevens County Community Wildfire Protection Plan was developed through a collaborative process involving all of the organizations and agencies detailed in Chapter 1 of this document. The planning process included five distinct phases which were in some cases sequential (step 1 then step 2) and in some cases intermixed (step 4 completed throughout the process):

1. **Collection of Data** about the extent and periodicity of the wildfire hazard in and around Stevens County.
2. **Field Observations and Estimations** about risks, location of structures and infrastructure relative to risk areas, access, and potential treatments.
3. **Mapping** of data relevant to pre-wildfire mitigation and treatments, structures, resource values, infrastructure, risk assessments, and related data.
4. **Facilitation of Public Involvement** from the formation of the steering committee to news releases, public meetings, public review of draft documents, and acknowledgement of the final plan by the signatory representatives.
5. **Analysis and Drafting of the Report** to integrate the results of the planning process, provide ample review and integration of committee and public input, and signing of the final document.

The Planning Team

Northwest Management facilitated the Community Wildfire Protection Plan meetings. Stakeholders involved in the meetings included representatives from local communities, Fire Protection Districts, federal and state agencies, and local organizations with an interest in the county's fire safety.

The planning philosophy employed in this project included the open and free sharing of information with interested parties. Information from federal, state, and local agencies was integrated into the database of knowledge used in this project. Meetings with the committee were held throughout the planning process to facilitate a sharing of information between participants. When the public meetings were held, many of the committee members were in attendance and shared their support and experiences and their interpretations of the results.

Multi-Jurisdictional Participation

44 CFR §201.6(a)(3) calls for multi-jurisdictional planning in the development of Hazard Mitigation Plans which impact multiple jurisdictions. In addition to the participation of federal

agencies and other organizations, the following local jurisdictions were actively involved in the development of this Community Wildfire Protection Plan:

- Sevens Co. F.P.D. #1
- Stevens Co. F.P.D. #3
- Stevens Co. F.P.D. #4
- Stevens Co. F.P.D. #7
- Stevens Co. F.P.D. #10
- Stevens Co. F.P.D. #11
- Stevens Co. F.P.D. #12
- Stevens Co. F.P.D. #13
- City of Chewelah
- City of Marcus
- Avista Utilities
- City of Colville
- Stevens County I.S. Department
- Stevens County Commissioner
- Stevens County GIS
- Stevens County Public Land Advisory Committee
- Stevens Co. Conservation District
- Northeast Washington Forestry Coalition
- Vaagen Brothers
- 49 Degrees North
- Washington State University Extension Office

These jurisdictions were represented on the steering committee and in public meetings either directly or through their servicing fire department or district. They participated in the development of hazard profiles, risk assessments, and mitigation measures. The steering committee meetings were the primary venue for authenticating the planning record. However, additional input was gathered from each jurisdiction in the following ways:

- Steering committee leadership visits to local group meetings where planning updates were provided and information was exchanged.
- One-on-one visits between the steering committee leadership and representatives of the participating jurisdictions (e.g. meetings with county councilors, city councilors and mayor, fire district commissioners, and community leaders).
- Written correspondence between the steering committee leadership and each jurisdiction updating the participating representatives on the planning process, making requests for information, and facilitating feedback.

Like other areas of Washington and the United States, Stevens County's human resources have many demands placed on them in terms of time and availability. In Stevens County, elected officials (county and town councilors and mayor) do not serve in a full-time capacity; some of them have other employment and serve the community through a convention of public service. Recognizing this and other time constraints, many of the jurisdictions decided to identify a representative to cooperate on the steering committee and then report back to the remainder of their organization on the process and serve as a conduit between the steering committee and the jurisdiction.

Steering Committee Meetings

The following people participated in steering committee meetings, volunteered time, or responded to elements of the original and update Stevens County Community Wildfire Protection Plan's preparation.

NAME	ORGANIZATION
Steve Parker	Stevens County Commissioner
Don Dashiell	Stevens County Commissioner
Wes McCart	Stevens County Commissioner
Bruce Garcia	Stevens County GIS
Eva Shoemaker-Maffei	Stevens County GIS
Mark Curtis	Stevens County Information Services Director
Russ Larsen	Stevens County Public Lands Advisory Committee
Charlie Kessler	Stevens County Conservation District
Dean Hellie	Stevens County Conservation District
Erik Johansen	Stevens County Information Services
Merrill Ott	Stevens County
Jason Gallagher	Stevens County Fire District #1
Ryan Power	Stevens County Fire District #3 and City of Colville
Tim VanDoren	Stevens County Fire District #4
Les Schneiter	Stevens County Fire District #5
Michael Mace	Stevens County Fire District #7
Don Gardner	Stevens County Fire District #7
Joe Paccerelli	Stevens County Fire District #7
Arlen Alley	Stevens County Fire District #10
Robert Scott Hunt	Stevens County Fire District #11
Ben White	Stevens County Fire District #12
Dan Lester	Stevens County Fire District #12
Jerry Pechin	Stevens County Fire District #13
Tracy Ferrell	City of Chewelah
Dennis Jenson	Town of Marcus
Fran Bolt	Town of Marcus
Melinda Lee	City of Colville
Lloyd McGee	Vaagen Bros & Northeast Washington Forestry Coalition
Dick Dunton	Northeast Washington Forestry Coalition
John Eminger	49 Degrees North
Ron Gray	Avista Utilities
Steve McConnel	WSU Stevens County Extension
Ted Olson	Washington Department of Ecology

- Arne Johnson .....Washington Department of Natural Resources
- Rob Lionberger .....Washington Department of Natural Resources
- Myron Boles.....Washington Department of Natural Resources
- Paul Nelson .....Washington Department of Natural Resources
- Guy Gifford.....Washington Department of Natural Resources
- Bob Hinds .....Washington Department of Natural Resources
- Steve Harris.....Washington Department of Natural Resources
- Steve DeCook .....Washington Department of Natural Resources
- Shane Robson.....U.S. Forest Service
- Dan Brauner .....U.S. Fish and Wildlife Service
- Tonya Neider .....Lake Roosevelt National Recreation Area
- Mike Solheim.....Bureau of Land Management
- Richard Parrish.....Bureau of Land Management
- Bart Ousland .....USDA Natural Resource Conservation Service
- Meghan McEldery .....Northwest Management, Inc.
- Tiana Luke .....Northwest Management, Inc.
- Tera King .....Northwest Management, Inc.
- Brock Purvis.....Northwest Management, Inc.
- Brad Tucker .....Northwest Management, Inc.

Committee Meeting Minutes

Committee meetings were scheduled and held from November, 2014 through April, 2015. These meetings served to facilitate the sharing of information and to review sections of the Stevens County CWPP. Northwest Management, Inc. as well as other planning committee leadership attended the meetings to provide the group with regular updates on the progress of the document and gather any additional information needed to complete the Plan.

Steering committee meeting minutes are included in Appendix 2.

Public Involvement

Public involvement was made a priority from the inception of the project. There were a number of ways that public involvement was sought and facilitated. The idea is to allow members of the public to provide information and seek an active role in protecting their own homes and businesses, and in some cases it may lead to the public becoming more aware of the process without becoming directly involved in the planning.

News Releases

Under the auspices of the steering committee, periodic press releases were submitted to the various print and other news outlets that serve the Stevens County. Informative flyers were also distributed around town and to local offices within the communities by the committee members.

Print Media	Other Media

Statesman Examiner	Local Fire Districts Post Offices Grocery Stores

Figure 2.1. Press Release, November, 2014.

Stevens County Press Release

November 3, 2014

Stevens County Plans to Update Community Wildfire Protection Plan

Working in conjunction with Stevens County, the Washington Department of Natural Resources (DNR), and the Bureau of Land Management (BLM) has launched the process of updating the county-level Community Wildfire Protection Plan (CWPP). Local agencies and organizations in Stevens County have initiated a planning committee to complete CWPP as part of the National Fire Plan, National Cohesive Wildland Fire Management Strategy, and Healthy Forests Restoration Act as authorized by Congress and the White House. The Stevens County CWPP will include risk analyses with predictive models indicating where fires are likely to ignite and how they may impact local communities and the environment. The first meeting is scheduled for November 12th, 2014 at 1:00 pm and will be the first of several monthly meetings. Anyone is welcome to attend these meetings. The first meeting will be held at the Northeast Washington Interagency Communications Center (NEWICC) dispatch room located at 225 S. Silke Road, Colville.

Northwest Management, Inc. has been retained by the DNR and BLM to facilitate meetings, conduct field inspections and interviews, develop vulnerability assessments, and collaborate with the committee to delineate mitigation projects. The planning committee includes representatives from local fire districts, Stevens County, DNR, Forest Service, BLM, and others.

The intention of the project is to conduct an assessment of wildland fire risk in Stevens County and the local communities, then make mitigation recommendations that will not only help prevent wildfire ignitions from occurring, but will also guide decision-makers towards creating a more fire-resistant Stevens County and provide for public wildfire education. Some of the goals of this project are to improve awareness of wildland fire issues locally, identify high fire risk areas and develop strategies to reduce this risk, and improve accessibility of funding assistance to achieve these goals.

The planning committee will be conducting public meetings to discuss preliminary findings and to seek public involvement during the planning process during late winter or early spring of 2015. A notice of the dates and locations of these meetings will be posted in local news outlets. For more information on the Stevens County CWPP or if you're interested in participating on the planning committee, please contact Brad Tucker, Northwest Management, Inc., at 208-883-4488 ext. 123.

Public Meetings

Public meetings were scheduled in strategic locations during the planning process to share information on the Plan, obtain input on the details of the wildfire risk assessments, and discuss potential mitigation treatments. Attendees at the public meetings were asked to give their impressions of the accuracy of the information generated and provide their opinions of potential treatments.

The first meeting was held in Springdale at the Community Center on the 16th of February. Nine citizens and five committee members attended this meeting. The second meeting was held in Northport at the Community Connections Center on the 17th of February. This meeting was attended by thirteen citizens and five committee members. The last meeting was held on February 18th at the Washington DNR Armory Building located in Colville, which was attended by ten citizen and six committee members. The public meeting announcement was sent to the

local newspapers on February 3rd, 2015 and committee members were asked to post the flyer shown in Figure 2.2 around their communities.

Figure 2.2. Public Meeting Flyer February 3rd, 2015.

Documented Review Process

The opportunity to review and comment on this plan has been provided through a number of avenues for the committee members as well as the members of the general public.

During regularly scheduled committee meetings in the fall and winter of 2014-15, the committee met to discuss findings, review mapping and analysis, and provide written comments on draft sections of the document. During the public meetings, attendees observed map analyses and photographic collections, discussed general findings from the community assessments, and made recommendations on potential project areas.

The final draft of the document was prepared after the public meetings and presented to the committee in March for a full committee review. The committee was given fourteen days to provide comments on the plan.

Public Comment Period

A public comment period was conducted from April 4th – May 6th, 2015 to allow members of the general public an opportunity to view the full draft plan and submit comments and any other input to the committee for consideration. A press release was submitted to the Statesman Examiner, Chewelah Independent newspapers and to KCVL AM 1240 radio station on April 1st announcing the comment period, the locations of the Plan for review, and instructions on how to submit comments. Hardcopy drafts were printed and made available at the Chewelah Library, Colville Public Library, Hunters Public Library, Kettle Falls Public Library, Lakeside Community Library, Loon Lake Library, Northport Community Library, and Onion Creek Library Station. An electronic version of the plan was made available on the Stevens County website. We did not receive any major comments during the public review period. We did add one Action Item at the request of the Flowery Trail Community however, to upgrade their water supply system to meet the recommendations of the local fire district.

Figure 2.4. Press Release #3 – Public Review Period, April 1, 2015.

Stevens County

Media Release

From: Steve Harris, Washington Department of Natural Resources
Date: April 1st, 2015
RE: Stevens County Community Wildfire Protection Plan

Stevens County Community Wildfire Protection Plan Available for Public Review

The Stevens County Community Wildfire Protection Plan has been completed in draft form and is available to the public for review and comment at the locations listed below. Electronic copies may be viewed in pdf format at the Stevens County website (http://www.co.stevens.wa.us/). The public review phase of the planning process will be open from April 10th thru May 9th, 2015.

Chewelah Library 307 E. Clay Ave. Chewelah, WA 99109	**Colville Public Library** 195 S. Oak Street Colville, WA 99114
Hunters Public Library 5014 Columbia River Rd. Bldg #11	**Kettle Falls Public Library** 605 Meyers Street Kettle Falls, WA 99141
Lakeside Community Library 6176 Hwy 291 Nine Mile Falls, WA 99026	**Loon Lake Library** 4008 Cedar Street Loon Lake, WA 99148
Northport Community Library 521 Center Ave. Northport, WA 99157	**Onion Creek Library Station** 2191 Clugston-Onion Creek Rd. Colville, WA 99114

The purpose of the Stevens County Community Wildfire Protection Plan (CWPP) is to reduce the impact of wildfire on Stevens County residents, landowners, businesses, communities, local governments, and state and federal agencies while maintaining appropriate emergency response capabilities and sustainable natural resource management policies. The CWPP identifies high risk areas as well as recommend specific projects that may help prevent wildland fires from occurring altogether or, at the least, lessen their impact on residents and property. The CWPP is being developed by a committee of city and county elected officials and departments, local and state emergency response representatives, land managers, conservation district representatives, and others.

The Stevens County CWPP includes a risk analysis at the community level with predictive models for where disasters are likely to occur. This Plan will enable Stevens County and its communities to be eligible for grant dollars to implement the projects and mitigation actions identified by the committee. Although not regulatory, the CWPP will provide valuable information as we plan for the future.

Comments on the CWPP must be submitted to the attention of Brad Tucker, Northwest Management, Inc. at tucker@nmi2.com or mailed to Northwest Management, Inc., PO Box 9748, Moscow, Idaho 83843 by close of business on May 6th, 2015. For more information on the Stevens County CWPP update process, contact Brad Tucker at 208-883-4488 ext. 117.

Continued Public Involvement

Stevens County is dedicated to involving the public directly in review and updates of the Community Wildfire Protection Plan. The Stevens County Commissioners, working through the CWPP steering committee, are responsible for review and update of the Plan as recommended in chapter 6 of this document.

The public will have the opportunity to provide feedback annually on the anniversary of the adoption of this plan, at an open meeting of the steering committee. Copies of the Plan will be catalogued and kept at all of the appropriate agencies in the county. The Plan also includes the address and phone number of Stevens County Emergency Management, who is responsible for keeping track of public comments on the Plan.

A public meeting will also be held as part of each annual evaluation or when deemed necessary by the steering committee. The meetings will provide the public a forum for which they can express concerns, opinions, or ideas about the Plan. The County Department of Emergency Management will be responsible for using county resources to publicize the annual public meetings and maintain public involvement through the webpage and various print and online media outlets.

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Chapter 3

Stevens County Characteristics

Stevens County was named for Washington's first territorial governor, Isaac I. Stevens. When the new Washington territory was formed on March 2, 1853, Stevens applied to President Pierce for the governorship. Pierce selected Stevens for the post which carried with it the title of Superintendent of Indian Affairs.

The Stevens Territory represented an area covering what are now 13 counties in eastern Washington, all of northern Idaho and much of western Montana. Before the advent of white settlement, Kettle Falls on the Columbia River was a gathering place for 14 tribes that fished there for salmon. In 1811, white explorers embarked downriver from Kettle Falls to what became the Fort Colville trading post. Established in 1825, it was the principal outpost for Hudson's Bay Company operations stretching from the Mississippi River to the Cascade Mountains.

Description

Stevens Country is the 5th largest County in the State of Washington covering 2,478 square miles, 237.5 of which is occupied by the Spokane Indian Reservation. Stevens County is bordered on the north by Canada, on the south by the Spokane River, on the east by Pend Oreille County, and on the west by the Columbia River.

Approximately 60% of the land within the County is in private ownership with the remaining 40% owned by the federal government, state government, or the Spokane Tribe. The Spokane Indian Reservation, located in the southern portion of the County, occupies approximately 159,000 acres and is an integral part of the heritage of the County.

Historically, resource based industries – agriculture, forestry, and mining – have been strong drivers of the county's economy. While there are some large/corporate landowners and operators, small, independent farms predominate in terms of total number. Recreation and tourism are significant and growing components of the economy; access to skiing, hunting, fishing, hiking, and other recreational pursuits is fueling the growth of communities and sales of recreational property and homes..

Geography and Climate

Forested highlands, shrub covered hills, and valleys with fertile farmlands comprise Stevens County, which is located north of Spokane along the Canadian border in the east-central part of Washington. Much of Stevens County's western edge borders Lake Roosevelt National Recreation Area which is a ~130 mile long reservoir between Grand Coulee Dam and Northport, Washington. The western and eastern half of the County is comprised of rugged, mountainous terrain, much of which is within the Colville National Forest. A prominent valley separates the western and eastern half of the County. This valley contains the Counties primary travel corridor (HWY-395) as well as most of the County's population. In addition, this area is home to much of the agriculture (farming and ranching) that occurs within the County.

Summers are sunny, warm and dry with some hot days. During 4 or 5 months in the lower elevations extreme highs may be 100°F, while, in the higher elevations 1 or 2 months may reach above 90°F. In winter, minimum temperatures typically range between 18° - 20°F with occasional periods of below 0°F. Normally, precipitation is light in the summer and heaviest in the winter. Valleys and lowlands receive an average of 17 to 19 inches of precipitation; in the mountains, precipitation increases with elevation with the majority occurring as snow. Growing seasons vary from over 180 days in the southwest to less than 80 days in the forested highlands.

Stevens County is a diverse ecosystem with a complex array of vegetation, wildlife, and fisheries that have developed with, and adapted to fire as a natural disturbance process. Nearly a century of wildland fire suppression coupled with past land-use practices (primarily timber harvesting and agriculture) has altered plant community succession and has resulted in dramatic shifts in the fire regimes and species composition. As a result, some forests and rangelands in Stevens County have become more susceptible to large-scale, higher-intensity fires posing a threat to life, property, and natural resources including wildlife and plant populations. High-intensity, stand-replacing fires have the potential to seriously damage soils and native vegetation. In addition, an increase in the number of large, high-intensity fires throughout the nation's forest and rangelands has resulted in significant safety risks to firefighters and higher costs for fire suppression.

Population and Demographics

The 2010 Census established the Stevens County population at 43,531, which is up from 40,066 in 2000. Table 3.1 shows historical changes in population in Stevens County.

Table 3.1. Historical and Current Population by Community.

1960	1970	1980	1990	2000	2010
17,884	17,405	28,979	30,948	40,066	43,531

Since 1980, Stevens County has been steadily growing following several decades of decrease population between 1920 and 1970. Since the 1970's the county's population has grown, on average by nearly 28% per decade.

Of the county's residents, about 11% (4,675) live in Colville, approximately 6% (2,606) live in Chewelah, and roughly 4% (1,597) live in Kettle Falls. The majority of the remaining residents (34,653) are concentrated in unincorporated parts of Stevens County as well as some of the smaller communities such as; Northport, Springdale, and Marcus.

The 2010 Census reported that ethnicity in Stevens County is comprised of 87% white, 6% American Indian, 3% Hispanic, 0.5% African American, <1% Asian, and 3.2% people reporting two or more races. Approximately 50% of residents are female. There are 21,011 housing units (79.3% homeownership rate) in Stevens County.[4]

Land Ownership

A relatively large percentage of the county is publicly owned. The majority of the property is held either as public property or as Indian lands. Private land is becoming more and more expensive as the population grows and more property is developed. This factor combined with

[4] US Census Bureau. State & County QuickFacts. Available online at http://quickfacts.census.gov/qfd/states/53/53065.html Accessed September, 2014.

the mountainous nature of the geography is expected to produce significantly higher demands on privately held land in the future.

Table 3.2. Land Ownership Categories in Stevens County

Entity	Acres	Percent of Total Area
Private	1,007,994	62%
US Forest Service	219,283	13%
WA Department of Natural Resources	159,775	10%
Spokane Tribe of Indians	155,482	10%
US Fish & Wildlife Service	40,604	3%
US Bureau of Land Management	23,312	1%
Water	10,518	<1%
National Park Service	7,084	<1%
WA State Parks	166	<1%
Undetermined	102	<1%
WA Department of Fish and Wildlife	25	<1%
	1,624,345	**100%**

The data used to develop this table was provided by the 2010 BLM database. There may be more accurate information but this table shows general trends, which is sufficient for the purpose of this plan.

Stevens County has approximately 204,874 acres described as agriculture. These lands generally lie in the valley bottoms and are limited in extent because of the soil and topographic restrictions to crop production. Private rangeland is approximately 79,786 acres allowing cattle ranches to be more diverse in areas. Also, Forest Service and Tribal lands are leased for grazing. Stevens County has a total of approximately 1,155,439 acres of different classes of timberland. This is about 70% of the total land mass of the county.

Development Trends

The following section was taken from the Northeast Washington Trends website.[5]

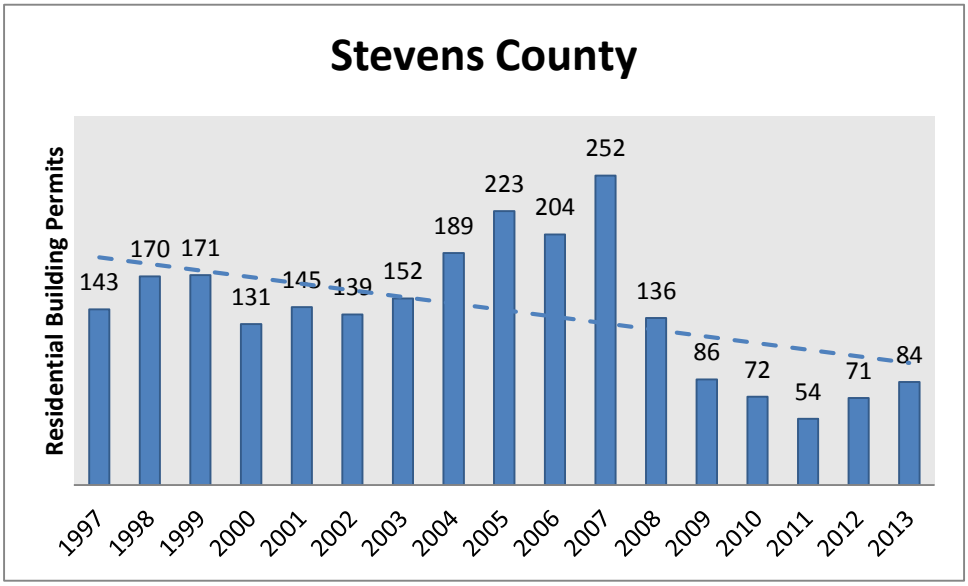
"Residential building permits are an important subset of total construction permits, and hence activity, in a regional economy. An increase in these permits reflects an increase in population growth or a desire by current residents to change their dwelling, usually the most important financial asset of a family or household.

As in the case of general construction, changes in these permits signal the direction of near-term activity to the construction trades and real estate industry. The direction of building permit trends also informs local government about future sales tax revenues, since residential building leads to taxable sales.

Changes in numbers of residential building permits signal the direction of near-term activity to the construction trades and real estate industry. The direction of building permit trends also informs local government about future sales tax revenues, since residential building leads to taxable sales."

[5] Northeast Washington Trends website available at: http://www.northeastwashingtontrends.ewu.edu/hiSpeed/index.cfm. Accessed June, 2014. Provided by Eastern Washington University.

Figure 3.1. Stevens County Building Permits.



During 2013 in Stevens County, the total number of residential building permits issued was 84, decreasing by 41% since 1997 when there were 143.

During 2013, number of residential building permits issued per 1,000 residents in:

- Stevens County was 1.9, decreasing from 3.8 per 1,000 residents in 1997.
- Washington State was 4.9, decreasing from 7.3 per 1,000 residents in 1997.

Natural Resources

Stevens County is a diverse ecosystem with a complex array of vegetation, wildlife, and fisheries that have developed with, and adapted to fire as a natural/man-induced disturbance process. Nearly a century of wildland fire suppression coupled with past land-use practices (primarily agriculture and grazing) has altered plant community succession and has resulted in dramatic shifts in the fire regimes and species composition. As a result, some areas of Stevens County have become more susceptible to large-scale, high-intensity fires posing a threat to life, property, and natural resources including wildlife and plant populations. High-intensity, stand-replacing fires have the potential to seriously damage soils, native vegetation, and fish and wildlife populations. In addition, an increase in the number of large, high-intensity fires throughout the nation's forest and rangelands has resulted in significant safety risks to firefighters and higher costs for fire suppression.

Fish and Wildlife –There are many species of wildlife that inhabit the forested region of northeastern Washington. Some of the species present even rely on this type of ecosystem to survive. Lynx and grizzly bears once heavily populated this region of Washington, however due to habitat loss and overharvest; these populations have been drastically reduced in numbers. There has been a significant effort by federal, state, and private landowners in recent years to increase the available preferred habitat.[6]

[6] Washington Department of Fish and Wildlife website. http://wdfw.wa.gov/ Accessed April, 2013.

Vegetation – Stevens County supports a landscape of primarily forested ecosystem with a mosaic of native steppe and shrub-steppe vegetation. Ponderosa pine occurs on southerly aspects and at lower elevations, while Douglas fir and western larch dominate all other aspects and the higher elevations. Other species that exist at the higher elevations include; Engelmann spruce, alpine fir, and hemlock. Cottonwood trees and deciduous shrubs primarily occur in the riparian areas. The scattered shrubs that occur in patches throughout the county are typically ninebark and snowberry with a bunchgrass cover. Grass cover includes; bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass in areas without dense tree cover, while pinegrass is common under the tree canopy. Cheatgrass occurs where native species are sparse, particularly in disturbed areas, and can increase the length of the fire season in the county because of how quickly this species matures and then cures.

Table 3.3. Vegetative Cover Types in Stevens County.

Land Cover	Acres	Percent of Total Area
Conifer	1,098,553	68%
Exotic Herbaceous	136,386	8%
Grassland	107,544	7%
Shrubland	89,998	6%
Riparian	56,177	3%
Agricultural	45,563	3%
Non-vegetated	44,136	3%
Developed	43,430	3%
Sparsely Vegetated	3,825	<1%
Hardwood	656	<1%
Conifer-Hardwood	53	<1%
Total	**1,626,321**	**100%**

Vegetation in Stevens County is dominated by forestland with a mix of shrubland, grassland, riparian, and some agricultural ecosystems. An evaluation of satellite imagery of the region provides some insight to the composition of the vegetation of the area. The most represented vegetation cover type is conifer forest occurring on nearly 70% of the total acres in the county which is followed by grassland (15% with exotic herbaceous included), shrubland (6%), and riparian (3%) areas.

Hydrology

The Washington Department of Ecology & Water Resources Program is charged with the development of the Washington State Water Plan.[7] Included in the State Water Plan are the statewide water policy plan and component basin and water body plans, which cover specific geographic areas of the state (WDOE 2005). The Washington Department of Ecology has prepared general lithologies of the major ground water flow systems in Washington.

The state may assign or designate beneficial uses for particular Washington water bodies to support. These beneficial uses are identified in section WAC 173-201A-200 of the Washington Surface Water Quality Standards (WQS). These uses include:

[7] Washington Department of Ecology website http://www.ecy.wa.gov/water.html Accessed March, 2014.

- **Aquatic Life Uses:** char; salmonid and trout spawning, rearing, and migration; nonanadromous interior redband trout, and indigenous warm water species
- **Recreational Uses:** primary (swimming) and secondary (boating) contact recreation
- **Water Supply Uses:** domestic, agricultural, and industrial; and stock watering

While there may be competing beneficial uses in streams, federal law requires protection of the most sensitive of these beneficial uses.

A correlation to mass wasting due to the removal of vegetation caused by high intensity wildland fire has been documented. Burned vegetation can result in changes in soil moisture and loss of rooting strength that can result in slope instability, especially on slopes greater than 30%. The greatest watershed impacts from increased sediment will be in the lower gradient, depositional stream reaches.

Of critical importance to Stevens County will be the maintenance of the domestic watershed supplies in the Columbia River, Upper Lake Roosevelt Water Resource Inventory Area (WRIA 61), Middle Lake Roosevelt (WRIA 58), Lower Spokane (WRIA 54), Colville (WRIA 59), Little Spokane (WRIA 55), and Pend Oreille (WRIA 62).

Air Quality

The primary means by which the protection and enhancement of air quality is accomplished is through implementation of National Ambient Air Quality Standards (NAAQS). These standards address six pollutants known to harm human health including ozone, carbon monoxide, particulate matter, sulfur dioxide, lead, and nitrogen oxides.[8]

The Clean Air Act, passed in 1963 and amended in 1977, is the primary legal authority of the U.S. Environmental Protection Agency. The Clean Air Act provides the principal framework for national, state, and local efforts to protect air quality. Under the Clean Air Act, the Organization for Air Quality Protection Standards (OAQPS) is responsible for setting the NAAQS standards for pollutants which are considered harmful to people and the environment. OAQPS is also responsible for ensuring these air quality standards are met, or attained (in cooperation with state, Tribal, and local governments) through national standards and strategies to control pollutant emissions from automobiles, factories, and other sources.[9]

Smoke emissions from fires potentially affect an area and the airsheds that surround it. Climatic conditions affecting air quality in Eastern Washington are governed by a combination of factors. Large-scale influences include latitude, altitude, prevailing hemispheric wind patterns, and mountain barriers. At a smaller scale, topography and vegetation cover also affect air movement patterns. Locally adverse conditions can result from occasional wildland fires in the summer and fall, and prescribed fire and agricultural burning in the spring and fall.

[8] USDA-Forest Service (United States Department of Agriculture, Forest Service). 2000. Incorporating Air Quality Effects of Wildland Fire Management into Forest Plan Revisions – A Desk Guide. April 2000. – Draft.

[9] Louks, B. 2001. Air Quality PM 10 Air Quality Monitoring Point Source Emissions; Point site locations of DEQ/EPA Air monitoring locations with Monitoring type and Pollutant. Idaho Department of Environmental Quality. Feb. 2001. As GIS Data set. Boise, Idaho.

Due principally to local wind patterns, air quality in Stevens County is generally good to excellent, rarely falling below Washington Department of Ecology pollution standards.

Washington Department of Ecology[10]

The Washington Department of Ecology Air Quality Program protects public health and the environment from pollutants caused by vehicles, outdoor and indoor burning, and industry. The DOE oversees permitting for non-forested (i.e. agriculture and rangeland) burning. Stevens County falls under the jurisdiction of the Eastern Regional Office (ERO). The ERO can be reached at: 509-329-3400.

Washington State Smoke Management Plan[11]

The DNR, Department of Ecology (DOE), U.S. Forest Service (USFS), National Park Service (NPS), BLM, U.S Fish and Wildlife Service (USFWS), participating Indian nations, military installations (DOD), and small and large forest landowners have worked together to deal with the effect of outdoor burning on air.

Protection of public health and preservation of the natural attractions of the state are high priorities and can be accomplished along with a limited, but necessary, outdoor burning program. Public health, public safety, and forest health can all be served through the application of the provisions of Washington State law and this plan, and with the willingness of those who do outdoor burning on forest lands to further reduce the negative effects of their burning.

The Washington State Smoke Management Plan pertains to DNR-regulated silvicultural outdoor burning only and does not include agricultural outdoor burning or outdoor burning that occurs on improved property. Although the portion of total outdoor burning covered by this plan is less than 10 percent of the total air pollution in Washington, it remains a significant and visible source.

The purpose of the Washington State Smoke Management Plan is to coordinate and facilitate the statewide regulation of prescribed outdoor burning on lands protected by the DNR and on unimproved, federally-managed forest lands and participating tribal lands. The plan is designed to meet the requirements of the Washington Clean Air Act.

The plan provides regulatory direction, operating procedures, and advisory information regarding the management of smoke and fuels on the forest lands of Washington State. It applies to all persons, landowners, companies, state and federal land management agencies, and others who do outdoor burning in Washington State on lands where the DNR provides fire protection, or where such burning occurs on federally-managed, unimproved forest lands and tribal lands of participating Indian nations in the state.

The Smoke Management Plan does not apply to agricultural outdoor burning and open burning as defined by Washington Administrative Code (WAC) 173-425-030 (1) and (2), nor to burning done "by rule" under WAC 332-24 or on non-forested wildlands (e.g., range lands).

[10] Washington Department of Ecology website http://www.ecy.wa.gov/air.html Accessed March, 2014.

[11] Washington State Department of Natural Resources, Smoke Management Plan 1993. http://www.dnr.wa.gov/Publications/rp_burn_smptoc.pdf Accessed March, 2014.

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Chapter 4

Risk and Preparedness Assessments

Wildland Fire Characteristics

An informed discussion of fire mitigation is not complete until basic concepts that govern fire behavior are understood. In the broadest sense, wildland fire behavior describes how fires burn; the manner in which fuels ignite, how flames develop and how fire spreads across the landscape. The three major physical components that determine fire behavior are the fuels supporting the fire, the topography in which the fire is burning, and the weather and atmospheric conditions during a fire event. At the landscape level, both topography and weather are beyond our control. We are powerless to control winds, temperature, relative humidity, atmospheric instability, slope, aspect, elevation, and landforms. It is beyond our control to alter these conditions, and thus impossible to alter fire behavior through their manipulation. When we attempt to alter how fires burn, we are left with manipulating the third component of the fire environment; fuels which support the fire. By altering fuel loading and fuel continuity across the landscape, we have the best opportunity to control or affect how fires burn.

A brief description of each of the fire environment elements follows in order to illustrate their effect on fire behavior.

Weather

Weather conditions contribute significantly to determining fire behavior. Wind, moisture, temperature, and relative humidity ultimately determine the rates at which fuels dry and vegetation cures, and whether fuel conditions become dry enough to sustain an ignition[12]. Once conditions are capable of sustaining a fire, atmospheric stability and wind speed and direction can have a significant effect on fire behavior. Winds fan fires with oxygen, increasing the rate at which fire spreads across the landscape. Weather is the most unpredictable component governing fire behavior, constantly changing in time and across the landscape.

Topography

Fires burning in similar fuel types, will burn differently under varying topographic conditions. Topography alters heat transfer and localized weather conditions, which in turn influences vegetative growth and resulting fuels. Changes in slope and aspect can have significant influences on how fires burn. Generally speaking, north slopes tend to be cooler, wetter, more productive sites. This can lead to heavy fuel accumulations, with high fuel moistures, later curing of fuels, and lower rates of spread. In contrast, south and west slopes tend to receive more direct sun, and thus have the highest temperatures, lowest soil and fuel moistures, and lightest fuels. The combination of light fuels and dry sites leads to fires that typically display the highest rates of spread. These slopes also tend to be on the windward side of mountains. Thus, these slopes tend to be "available to burn" a greater portion of the year.

[12]NOAA website http://www.nws.noaa.gov/om/wfire.shtml. Accessed on July 30, 2012.

Slope also plays a significant role in fire spread, by allowing preheating of fuels upslope of the burning fire. As slope increases, rate of spread and flame lengths tend to increase. Therefore, we can expect the fastest rates of spread on steep, warm south and west slopes with fuels that are exposed to the wind.[13]

Fuels

Fuel is any material that can ignite and burn. Fuels describe any organic material, dead or alive, found in the fire environment. Grasses, brush, branches, logs, logging slash, forest floor litter, conifer needles, and buildings are all examples. The physical properties and characteristics of fuels govern how fires burn. Fuel loading, size and shape, moisture content, and continuity and arrangement all have an effect on fire behavior. Generally speaking, the smaller and finer the fuels, the faster the potential rate of fire spread. Small fuels such as grass, needle litter and other fuels less than a quarter inch in diameter are most responsible for fire spread. In fact, "fine" fuels, with high surface to volume ratios, are considered the primary carriers of surface fire. This is apparent to anyone who has ever witnessed the speed at which grass fires burn. As fuel size increases, the rate of spread tends to decrease due to a decrease in the surface to volume ratio. Fires in large fuels generally burn at a slower rate, but release much more energy and burn with much greater intensity. This increased energy release, or intensity, makes these fires more difficult to control. Thus, it is much easier to control a fire burning in grass than to control a fire burning in timber.[14]

When burning under a forest canopy, the increased intensities can lead to torching (single trees becoming completely involved) and potential development of crown fires. That is, they release much more energy. Fuels are found in combinations of types, amounts, sizes, shapes, and arrangements. It is the unique combination of these factors, along with the topography and weather, which determines how fires will burn.

The study of fire behavior recognizes the dramatic and often-unexpected effect small changes in any single component have on how fires burn. It is impossible to speak in specific terms when predicting how a fire will burn under any given set of conditions. However, through countless observations and repeated research, some of the principles that govern fire behavior have been identified and are recognized.

Wildfire Hazards

In the 1930s, wildfires consumed an average of 40 to 50 million acres per year in the contiguous United States, according to US Forest Service estimates. By the 1970s, the average acreage burned had been reduced to about 5 million acres per year. Over this time period, fire suppression efforts were dramatically increased and firefighting tactics and equipment became more sophisticated and effective. For the 11 western states, the average acreage burned per year since 1970 has remained relatively constant at about 3.5 million acres per year.

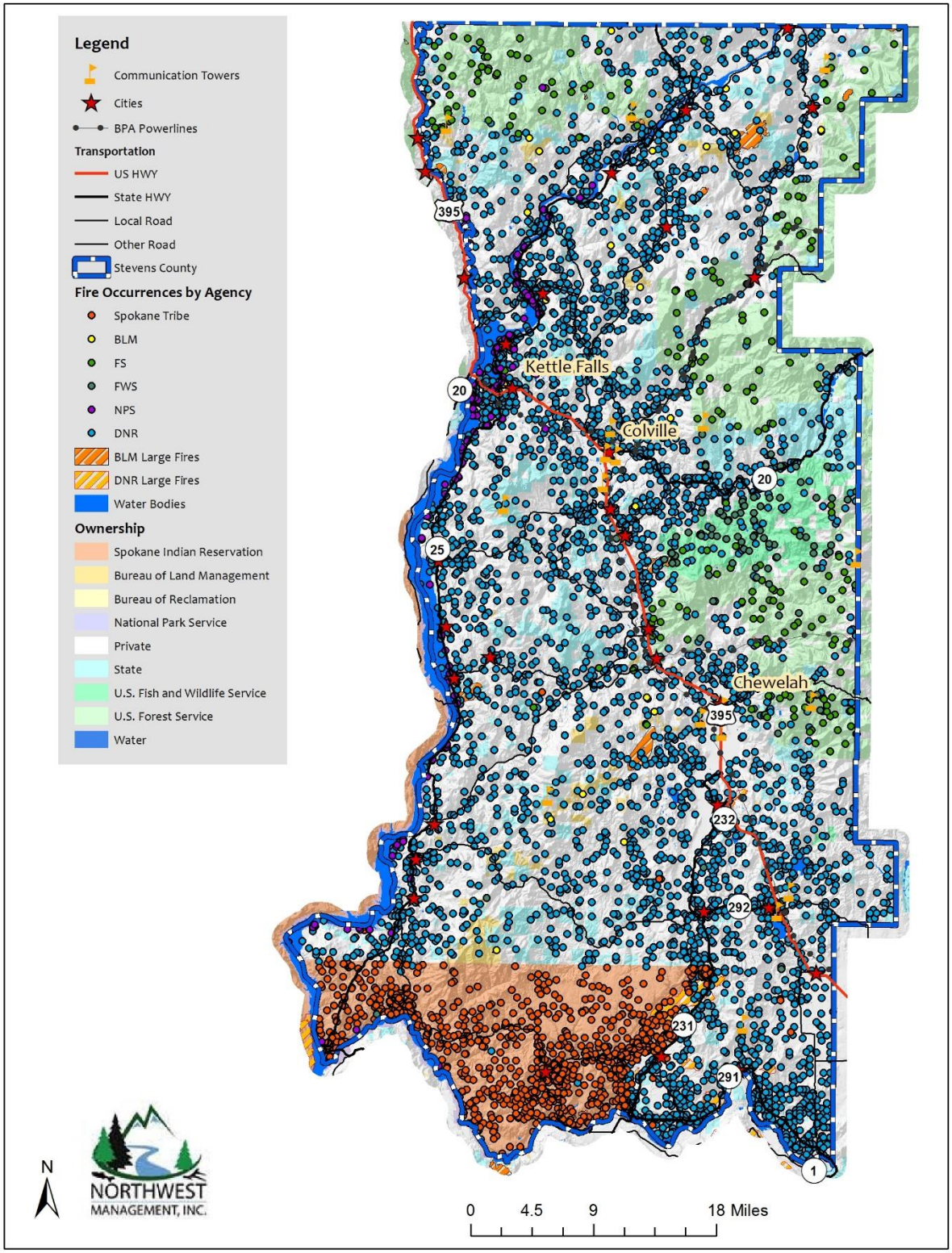
The severity of a fire season can usually be determined in the spring by how much precipitation is received, which in turn determines how much fine fuel growth there is and how long it takes

[13] Auburn University website https://fp.auburn.edu/fire/topos_effect.htm. Accessed on July 30,2012.

[14] Gorte, R. 2009. Congressional Research Service, Wildfire Fuels and Fuel Reduction.

this growth to dry. These factors, combined with annual wind events can drastically increase the chance a fire start will grow and resist suppression activities. Furthermore, recreational activities are typically occurring throughout the months of July, August, and September. Occasionally, these types of human activities cause an ignition that could spread into populated areas and wildlands.

Figure 4.1. Ignition History in Stevens County from 1980-2014.



This map shows both state and federally reported fires (1980-2013) as well as some of the larger wildfires on record from 1973-2013. The Forest Service and Washington DNR appear to respond to the majority of wildland fires that occur throughout the county. The Bureau of Indian Affairs responds to nearly all of the wildland fires that occur in the southwestern portion of the county. The ignitions that occur near communities are likely human caused ignitions resulting from the high amount of use that occurs in those areas. It should be noted that fire data within the county is not standardized across local and federal agencies. Fires that are responded to by the local Fire Protection Districts are not always reported and therefore the above map could be misleading by showing that most wildfires occur on federal ownership while in reality a large majority of wildland fires may occur on private land.

Fire History

Fire was once an integral function within the majority of ecosystems in Washington. The seasonal cycling of fire across most landscapes was as regular as the July, August and September lightning storms plying across eastern Washington. Depending on the plant community composition, structural configuration, and buildup of plant biomass, fire resulted from ignitions with varying intensities and extent across the landscape. Shorter return intervals between fire events often resulted in less dramatic changes in plant composition.[15] These fires burned from 1 to 47 years apart, with most at 5- to 20-year intervals.[16] With infrequent return intervals, plant communities tended to burn more severely and be replaced by vegetation different in composition, structure, and age.[17] Native plant communities in this region developed under the influence of fire, and adaptations to fire are evident at the species, community, and ecosystem levels.

Stevens County's fire history is a mixture of events of varying size, severity, and frequency. In the dry ponderosa pine and Douglas-fir forests dominant in the lower elevations, on south slopes, along the Columbia River, and in much of the southern half of Stevens County, fire regimes have changed from frequent, low-severity fires to less frequent, high severity or stand replacing fires. In the more mesic, mixed conifer forests (grand fir, cedar, hemlock) typical of the higher elevations, on north slopes, and dominating much of the northern half of Stevens County, fires were historically less frequent, but much larger. Fire severity in these landscapes was varied with infrequent stand replacing fires. Local knowledge suggests that Native Americans did frequently burn which played an important role in shaping the vegetation throughout County.

[15] Johnson, C.G. 1998. Vegetation Response after Wildfires in National Forests of Northeastern Oregon. 128 pp.

[16] Barrett, J.W. 1979. Silviculture of ponderosa pine in the Pacific Northwest: the state of our knowledge. USDA Forest Service, General Technical Report PNW-97. Pacific Northwest Forest and Range Experiment Station, Portland, OR. 106 p.

[17] Johnson, C.G.; Clausnitzer, R.R.; Mehringer, P.J.; Oliver, C.D. 1994. Biotic and Abiotic Processes of Eastside Ecosytems: the Effects of Management on Plant and Community Ecology, and on Stand and Landscape Vegetation Dynamics. Gen. Tech. Report PNW-GTR-322. USDA-Forest Service. PNW Research Station. Portland, Oregon. 722pp.

Firestorm in Central Washington almost contained!

July 24, 2014

By Chris Cowbrough
publisher@statesmanexaminer.com

Locally, a blaze last Saturday afternoon sent District No. 6 firefighters to a small fire in dry grass and timber just outside Kettle Falls. Cause of the blaze is unknown. Photo courtesy of Brian Henderson. See more photos in the July 23rd edition of the Statesman-Examiner.

The Northwest is the current epicenter for much of the nation's summer firefighting efforts. Northwest fire officials were tracking more than 17 large fires in Oregon and Washington as of last Saturday.

Wildfires have torched close to 950,000 acres in Washington and Oregon.

Fourteen large fires are burning in Oregon, where more than 555,000 acres are ablaze. Washington has seven large fires with acreage involved approaching 400,000 as of this writing. More than 6,100 firefighters and support personnel have deployed in Oregon, with more on the way. In Washington, as of Sunday, that number was 2,800.

Community steps up for fire victims

July 30, 2014

By Sophia Aldous
sophia@statesmanexaminer.com

There was a need, and the community answered.
That is basically what happened when Kettle Falls Masonic Lodge #130 spread the word that it was collecting donations for victims of the Carlton Complex fire, especially the Twisp and Methow Valley area residents.

According to Mason Junior Warden Gordon Olsen, Masonic District Deputy Nick Pemberton, who lives in the Twisp area, contacted him recently asking for help for the community. Pemberton said donations have been streaming into Pateros, a Central Washington town that lost 30 homes to the fire, but that basic resources for fire victims in the Twisp and Methow Valley were lacking.

"Just stuff that we take for granted, like a bed to sleep on, clothes, blankets, even toilet paper, are just some of the things they need," said Olsen.

The massive Carlton Complex fire has destroyed an estimated 300 homes in north Central Washington, according to the Okanogan County Sheriff's Office.

Lightning started the fire on July 14. Nearly 3,000 people are fighting the fire from the ground and the air.

Several days of rain have helped crews start to get the upper hand on the massive blaze, said to be the worst wildfire in the history of Washington State. The 250,514-acre fire was 60 percent contained on Sunday.

The Kettle Falls Post Office and Colville NAPA Auto Parts volunteered to assist the Kettle Falls Masonic Lodge by acting as designated drop-off spots for donations. Clayton Birch Land Services lent Olsen the trailer to transport goods to Methow Valley Masonic Lodge #240 in Twisp, where they will be distributed.

As of last Friday, Olsen estimated that they had received over 4,000 pounds of goods.
"It started with my neighborhood and grew from there," said Olsen of people's generosity.
"We're just trying to do what we can for people in need."

The plan was for Olsen and a few other volunteers to deliver the goods Tuesday.

"There has been a lot of response from local businesses, churches and individuals doing their part," said Kettle Falls Masonic Lodge Worshipful Master Jim King.

Wildfire Ignition Profile

Detailed records of wildfire ignitions and extents from the DNR and BLM have been analyzed. In interpreting these data, it is important to keep in mind that the information represents only the lands protected by the agency specified and may not include all fires in areas covered only by local fire departments or other agencies.

The State (1970-2013) and Federal (1980-2011) database of wildfire ignitions used in this analysis includes ignition and extent data within their jurisdictions. During this period, the agencies recorded an average of 149 wildfire ignitions per year resulting in an average total burn area of 2,056 acres per year. According to this dataset, the human caused ignitions account for 67% of the wildland fires occurring in Stevens County. However, the highest amount of acres burned (91%) is attributed to the human caused ignitions.

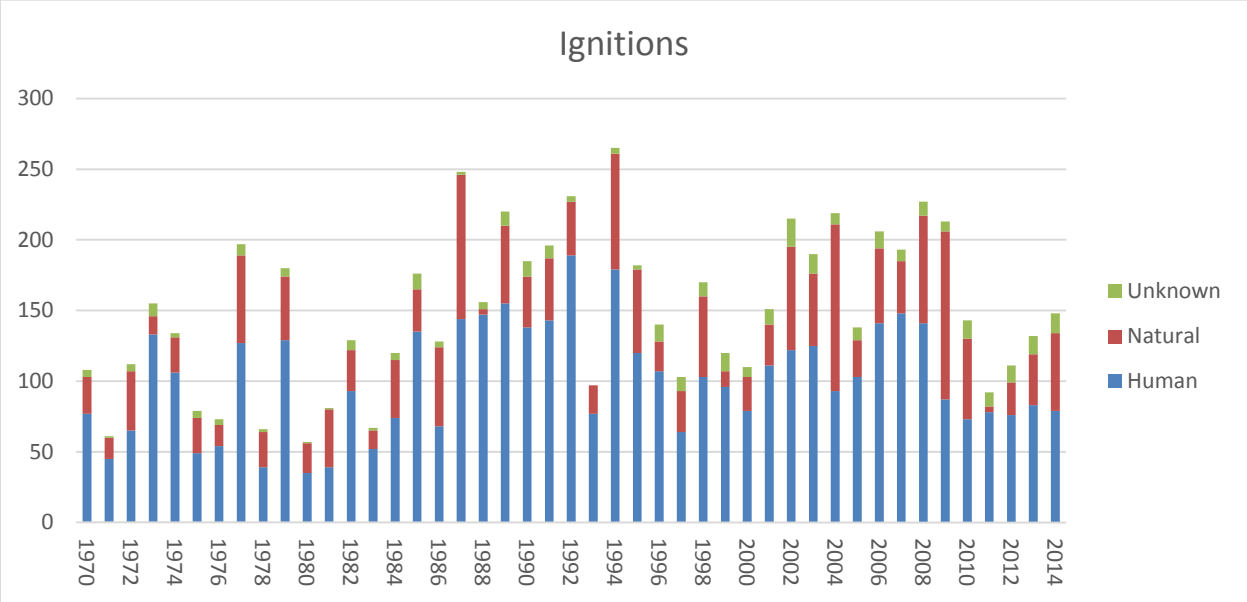
The highest number of ignitions in Stevens County was witnessed in 1994 with 265 separate ignitions. The largest amount of area burned in Stevens County occurred in 2003 with over 22,000 acres being burned in a single year.

Table 4.1. Summary of Cause from State and Federal databases 1972-2012.

General Cause	Number of Ignitions	Percent of Total Ignitions	Acres Burned	Percent of Total Acres
Human-Caused	4,521	67%	83,979	91%
Natural Ignition	1,863	28%	5,261	6%
Unknown	340	5%	3,294	3%
Total	**6,724**	**100%**	**92,534**	**100%**

During this 45 year span, wildland fires burned over 92,534 acres in Stevens County. The human caused ignitions account for 67% of all ignitions reported by state and federal agencies, while natural ignitions make up 28% of the remainder of ignitions that occur in Stevens County. Human caused ignitions burned over 85% more, or nearly 79,000 acres more than naturally ignited fires.

Figure 4.6. Summary of Stevens County State and Federal Ignitions by Cause.



The data reviewed above provides a general picture regarding the level of wildland-urban interface fire risk within Stevens County. There are several reasons why the fire risk may be even higher than suggested above, especially in developing wildland-urban interface areas.

1) Large fires may occur infrequently, but statistically they will occur. One large fire could significantly change the statistics. In other words, 40 years of historical data may be too short to capture large, infrequent wildland fire events.

2) The level of fire hazard depends profoundly on weather patterns. A several year drought period would substantially increase the probability of large wildland fires in Stevens County. For smaller vegetation areas, with grass, brush and small trees, a much shorter drought period of a few months or less would substantially increase the fire hazard.

3) The level of fire hazard in wildland-urban interface areas is likely significantly higher than for wildland areas as a whole due to the greater risk to life and property. The probability of fires starting in interface areas is much higher than in wildland areas because of the higher population density and increased activities. Many fires in the wildland urban interface are not recorded in agency datasets because the local fire department responded and successfully suppressed the ignition without mutual aid assistance from the state or federal agencies.

Wildfire Extent Profile

Across the west, wildfires have been increasing in extent and cost of control. Data summaries for 2005 through 2014 are provided and demonstrate the variability of the frequency and extent of wildfires nationally.

Table 4.2. National Fire Summary.

Statistical Highlights	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Number of Fires	66,753	96,385	85,705	78,979	78,792	71,971	74,126	67,315	47,579	63,212
10-year Average ending with indicated year	89,859	87,788	80,125	79,918	78,549	76,521	80,465	74,912	74,514	73,082
Acres Burned (million acres)	8.7	9.9	9.3	5.3	5.9	3.4	8.7	9.2	4.3	3.6
10-year Average ending with indicated year (million acres)	6.1	6.5	7.0	6.9	6.9	6.5	7.0	7.3	7.2	6.8
Estimated Cost of Fire Suppression (Federal agencies only)	$1.0 billion	$1.93 billion	$1.84 billion	$1.85 billion	$1.24 billion	$1.13 billion	$1.73 billion	$1.9 billion	$1.7 billion	$1.5 billion

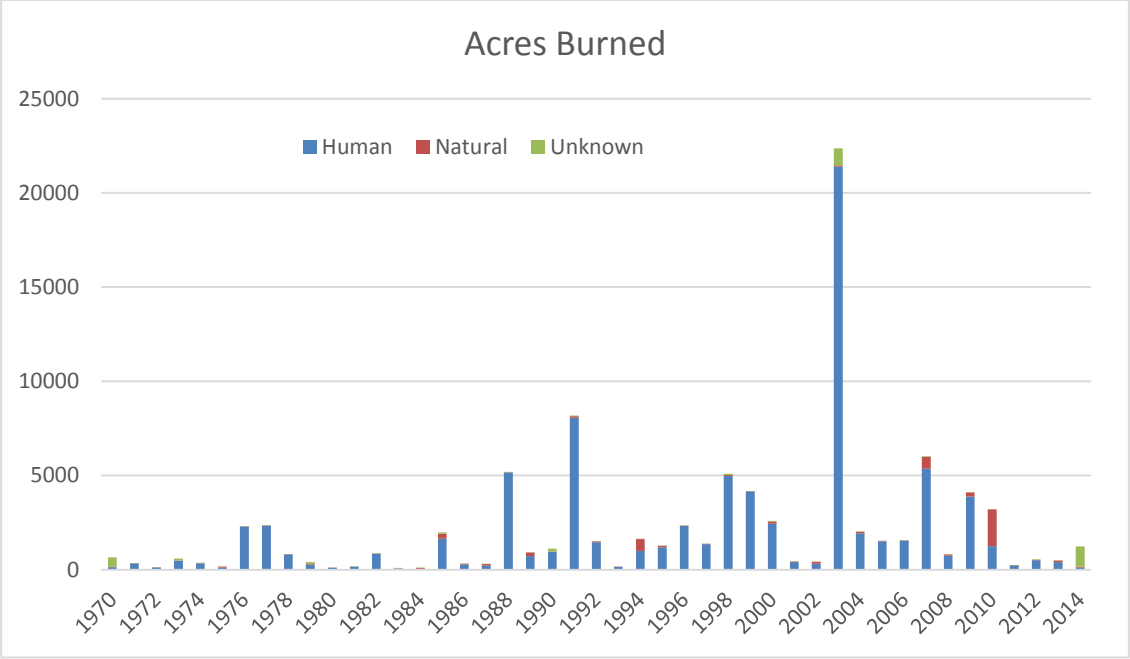
The National Interagency Fire Center maintains records of fire costs, extent, and related data for the entire nation. Tables 4.2 and 4.3 summarize some of the relevant wildland fire data for the nation and some trends that are likely to continue into the future unless targeted fire mitigation efforts are implemented and maintained. According to these data, the total number of fires is trending downward while the total number of acres burned is trending upward. Since 1980 there has been a significant increase in the number of acres burned.[18]

[18] National Interagency Fire Center. 2008. Available online at http://www.nifc.gov/.

Table 4.3. Total Fires and Acres 1980 - 2014 Nationally.					
Year	**Fires**	**Acres**	**Year**	**Fires**	**Acres**
2014	63,212	3,595,613	**1996**	115,025	6,701,390
2013	47,579	4,319,546	**1995**	130,019	2,315,730
2012	67,774	9,326,238	**1994**	114,049	4,724,014
2011	74,126	8,711,367	**1993**	97,031	2,310,420
2010	71,971	3,422,724	**1992**	103,830	2,457,665
2009	78,792	5,921,786	**1991**	116,953	2,237,714
2008	68,594	4,723,810	**1990**	122,763	5,452,874
2007	85,822	9,321,326	**1989**	121,714	3,261,732
2006	96,385	9,873,745	**1988**	154,573	7,398,889
2005	66,753	8,689,389	**1987**	143,877	4,152,575
2004	77,534	6,790,692	**1986**	139,980	3,308,133
2003	85,943	4,918,088	**1985**	133,840	4,434,748
2002	88,458	6,937,584	**1984**	118,636	2,266,134
2001	84,079	3,555,138	**1983**	161,649	5,080,553
2000	122,827	8,422,237	**1982**	174,755	2,382,036
1999	93,702	5,661,976	**1981**	249,370	4,814,206
1998	81,043	2,329,709	**1980**	234,892	5,260,825
1997	89,517	3,672,616			

These statistics are based on end-of-year reports compiled by all wildland fire agencies after each fire season. The agencies include: BLM, Bureau of Indian Affairs, NPS, USFWS, USFS, and all state agencies.

Figure 4.8. Summary of Stevens County State and Federal Acres Burned by Cause.



The fire suppression agencies in Stevens County respond to numerous wildland fires each year, but few of those fires grow to a significant size. According to national statistics, only 2% of all wildland fires escape initial attack. However, that 2% accounts for the majority of fire suppression expenditures and threatens lives, properties, and natural resources. These large fires are characterized by a size and complexity that require special management organizations drawing suppression resources from across the nation. These fires create unique challenges to local communities by their quick development and the scale of their footprint.

Stevens County has experienced high impact wildland fires that have burned structures or infrastructure within their wildland urban interface. Based on field assessments by experts, the fuels for further potentially catastrophic fires remain however, and given an extremely dry summer it is not unimaginable to believe that significant fires will continue to happen in Stevens County. It is important that regional planners as well as local residents understand that threat in order to more effectively prepare for potential wildfire events.

Wildfire Hazard Assessment

Stevens County was analyzed using a variety of models, managed on a Geographic Information System (GIS) system. Physical features of the region including roads, streams, soils, elevation, and remotely sensed images were represented by data layers. Field visits were conducted by specialists from Northwest Management, Inc. and others. Discussions with area residents and local fire suppression professionals augmented field visits and provided insights into forest health issues and treatment options. This information was analyzed and combined to develop an objective assessment of wildland fire risk in the region.

Historic Fire Regime

Historical variability in fire regime is a conservative indicator of ecosystem sustainability, and thus, understanding the natural role of fire in ecosystems is necessary for proper fire management. Fire is one of the dominant processes in terrestrial systems that constrain vegetation patterns, habitats, and ultimately, species composition. Land managers need to understand historical fire regimes, the fire return interval (frequency) and fire severity prior to settlement by Euro-Americans, to be able to define ecologically appropriate goals and objectives for an area. Moreover, managers need spatially explicit knowledge of how historical fire regimes vary across the landscape.

"Natural" fires in Stevens County would have been disproportionately caused by Native Americans. Aboriginal peoples intentionally set fires throughout the region for the purposes of controlling tree and shrub expansion and for the cultivation of select plants. When we describe "natural" in the Range of Natural Variability we are including indigenous peoples as natural disturbance agents and contributors to perceptions of what is "natural".

A primary goal in ecological restoration is often to return an ecosystem to a previously existing condition that no longer is present at the site, under the assumption that the site's current condition is somehow degraded or less desirable than the previous condition and needs improvement

Land managers in Stevens County must determine if the past, Native American influenced condition of the County was necessarily healthier, had a higher level of integrity, and was more sustainable than the current condition. In other words, is "restoration" an appropriate course of action? After a prolonged absence, if fire is reintroduced to these ecosystems the result could be damaging. Fuel loads throughout most of the County today are quite high and most of the County is inhabited by people, homes, and infrastructure. The ecosystem was adapted to fire in the past, but is no longer adapted today, especially in light of the human component.

In the absence of intensive Native American burning, a condition has developed where fire could/should not be reintroduced without some significant alteration of the current ecosystem

structure. This would also require a significant assessment of social acceptance and financial contribution.

Many ecological assessments are enhanced by the characterization of the historical range of variability which helps managers understand: (1) how the driving ecosystem processes vary from site to site; (2) how these processes affected ecosystems in the past; and (3) how these processes might affect the ecosystems of today and the future. Historical fire regimes are a critical component for characterizing the historical range of variability in fire-adapted ecosystems. Furthermore, understanding ecosystem departures provides the necessary context for managing sustainable ecosystems. Land managers need to understand how ecosystem processes and functions have changed prior to developing strategies to maintain or restore sustainable systems. In addition, the concept of departure is a key factor for assessing risks to ecosystem components. For example, the departure from historical fire regimes may serve as a useful proxy for the potential of severe fire effects from an ecological perspective.

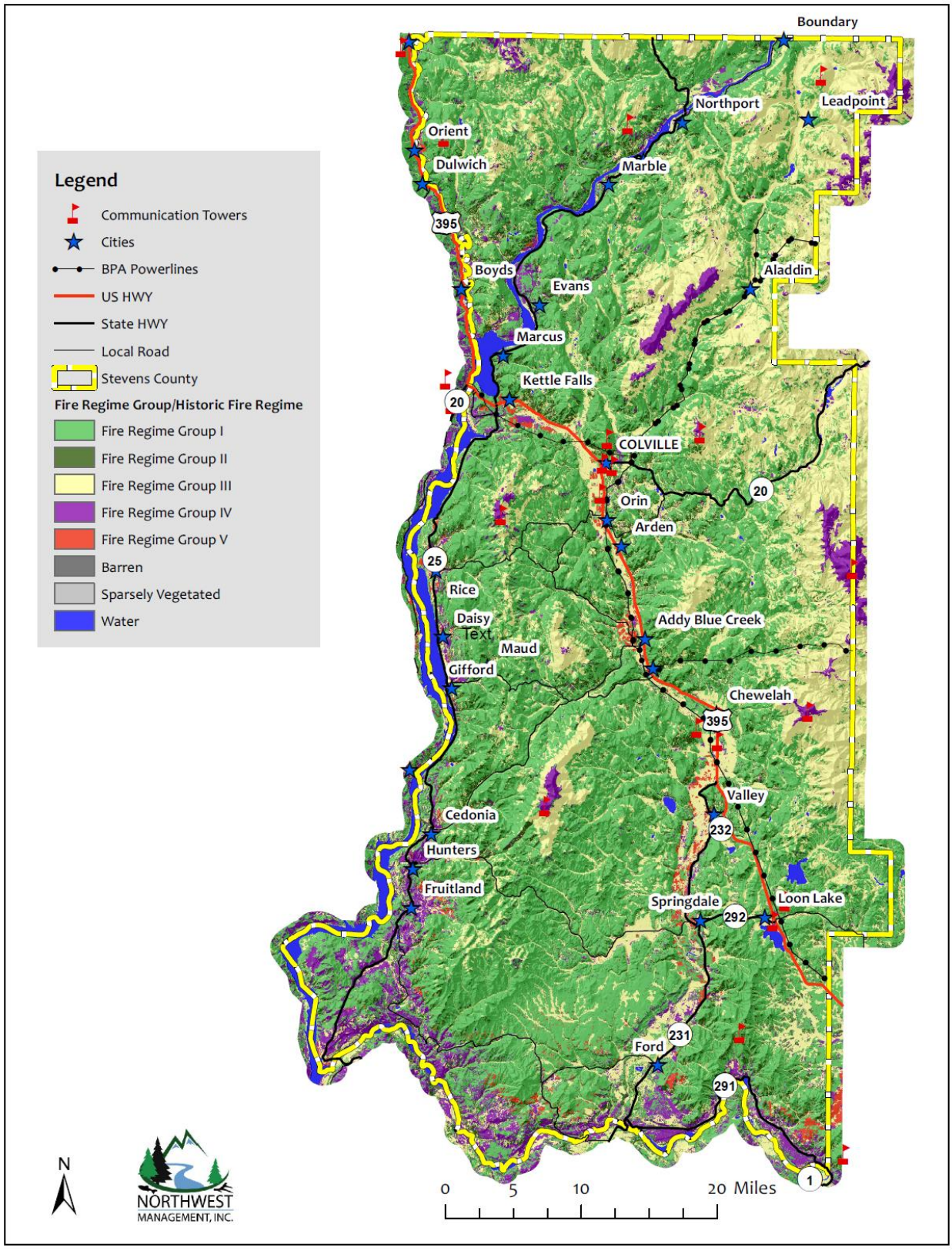
Table 4.4. Historic Fire Regimes in Stevens County.

Historic Fire Regime	Description	Acres	Percent of Total
Fire Regime Group I	<= 35 Year Fire Return Interval, Low and Mixed Severity	880,642	54%
Fire Regime Group II	<= 35 Year Fire Return Interval, Replacement Severity	93,166	6%
Fire Regime Group III	35 - 200 Year Fire Return Interval, Low and Mixed Severity	495,796	30%
Fire Regime Group IV	35 - 200 Year Fire Return Interval, Replacement Severity	101,422	6%
Fire Regime Group V	> 200 Year Fire Return Interval, Any Severity	14,569	<1%
Water	Water	39,706	2%
Barren	Barren	888	<1%
Sparsely Vegetated	Sparsely Vegetated	7	<1%
Unknown	Unknown	126	<1%
	Total	**1,626,322**	**100%**

This model only uses the current vegetation types to determine the historic fire regime. Native Americans reportedly burned throughout the county on a regular basis. The vegetation types were much different pre Euro-American settlement than they are today and believed to be a more grassland dominated landscape. The Historic Fire Regime model suggests that fires in Stevens County historically burned with low to mixed severity fires on both short and long return interval. The longer time between fires allows fuel to build-up, which can burn very intensely when conditions are dry. For this reason, it may be reasonable to assume that a majority of the areas in the County that have been categorized as having a 35 to 200 year return interval with mixed severity fires, could likely be stand replacing fires with the current accumulation of fuels.

A map depicting the historic fire regime as well as additional explanation of how the historic fire regime data was derived is included in Appendix 1 and 3.

Figure 4.10. Historic Fire Regime for Stevens County.



Vegetation Condition Class

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning.[19, 20] Coarse scale definitions for historic fire regimes have been developed by Hardy et al[21] and Schmidt et al[22] and interpreted for fire and fuels management by Hann and Bunnell.

A vegetation condition class (VCC) is a classification of the amount of departure from the historic regime. [23] The three classes are based on low (VCC 1), moderate (VCC 2), and high (VCC 3) departure from the central tendency of the natural (historical) regime.[24,25] The central tendency is a composite estimate of vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated natural disturbances. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside.

An analysis of Vegetation Condition Classes in Stevens County shows that the majority land in the county is considered moderately departed (72%) from its historic fire regime and associated vegetation and fuel characteristics. Approximately 13% has a low departure and less than 9% is considered highly departed.

[19] Agee, J. K. Fire Ecology of the Pacific Northwest forests. Oregon: Island Press. 1993.

[20] Brown. J. K. "Fire regimes and their relevance to ecosystem management." *Proceedings of Society of American Foresters National Convention*. Society of American Foresters. Washington, D.C. 1995. Pp 171-178.

[21] Hardy, C. C., et al. *"Spatial data for national fire planning and fuel management."* International Journal of Wildland Fire. 2001. Pp 353-372.

[22] Schmidt, K. M., et al. *"Development of coarse scale spatial data for wildland fire and fuel management."* General Technical Report, RMRS-GTR-87. U.S. Department of Agriculture, Forest Service. Rocky Mountain Research Station. Fort Collins, Colorado. 2002.

[23] Hann, W. J. and D. L. Bunnell. "Fire and land management planning and implementation across multiple scales." International Journal of Wildland Fire. 2001. Pp 389-403.

[24] Hardy, C. C., et al. *"Spatial data for national fire planning and fuel management."* International Journal of Wildland Fire. 2001. Pp 353-372.

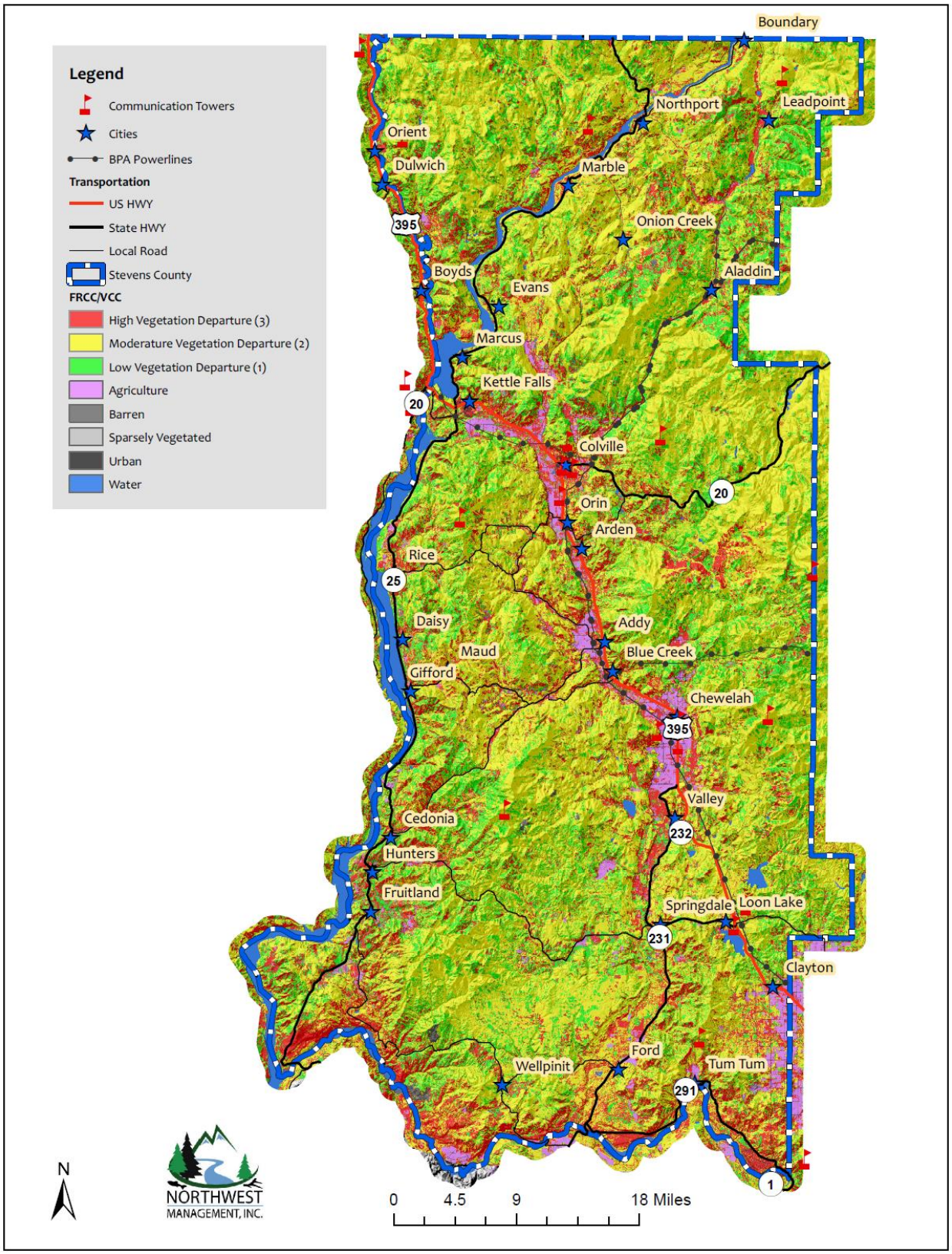
[25] Schmidt, K. M., et al. *"Development of coarse scale spatial data for wildland fire and fuel management."* General Technical Report, RMRS-GTR-87. U.S. Department of Agriculture, Forest Service. Rocky Mountain Research Station. Fort Collins, Colorado. 2002.

Table 4.5. Vegetation Condition Class in Stevens County.			
Vegetation Condition Class	**Description**	**Acres**	**Percent of Total**
Vegetation Condition Class I	Low Vegetation Departure	204,753	13%
Vegetation Condition Class II	Moderate Vegetation Departure	1,177,124	72%
Vegetation Condition Class III	High Vegetation Departure	153,583	9%
Agriculture	Agriculture	34,737	2%
Water	Water	39,706	2%
Urban	Urban	11,451	<1%
Barren	Barren	2,576	<1%
Sparsely Vegetated	Sparsely Vegetated	2,266	<1%
	Total	1,626,322	100%

The current Vegetation Condition Class model shows that much of Stevens County is considered to be moderately departed. A concentration of the highly departed vegetation appears to occur in the southern portion of the county along the Spokane River as well as some slopes within the Colville and Kaniksu National Forests. The combination of invasive grasses (eg. cheatgrass), steep slopes, dry climate, and various shrub species in the southern portion of the county can create extreme fire behavior in those areas. In addition, a majority of the county is dominated by various tree species with a shrub understory consisting of ninebark, snowberry, and other shrub species. The current structure and density of the forested areas in many areas makes it susceptible to health issues from competition, insects, and disease. The current fire severity model suggests that a higher severity fire than historical norms would be expected in these areas.

A map depicting Vegetation Condition Class as well as a more in-depth explanation of VCC is presented in Appendices 1 and 3.

Figure 4.11. Vegetation Condition Class.



Stevens County's Wildland-Urban Interface

The wildland-urban interface (WUI) has gained attention through efforts targeted at wildfire mitigation; however, this analysis technique is also useful when considering other hazards because the concept looks at where people and structures are concentrated in any particular region.

A key component in meeting the underlying need for protection of people and structures is the protection and treatment of hazards in the wildland-urban interface. The wildland-urban interface refers to areas where wildland vegetation meets urban developments or where forest fuels meet urban fuels such as houses. The WUI encompasses not only the interface (areas immediately adjacent to urban development), but also the surrounding vegetation and topography. Reducing the hazard in the wildland-urban interface requires the efforts of federal, state, and local agencies and private individuals.[26] "The role of [most] federal agencies in the wildland-urban interface includes wildland firefighting, hazard fuels reduction, cooperative prevention and education, and technical experience. Structural fire protection [during a wildfire] in the wildland-urban interface is [largely] the responsibility of Tribal, state, and local governments".[27] The role of the federal agencies in Stevens County is and will be much more limited. Property owners share a responsibility to protect their residences and businesses and minimize danger by creating defensible areas around them and taking other measures to minimize the risks to their structures.[28] With treatment, a wildland-urban interface can provide firefighters a defensible area from which to suppress wildland fires or defend communities against other hazard risks. In addition, a wildland-urban interface that is properly treated will be less likely to sustain a crown fire that enters or originates within it. [29]

By reducing hazardous fuel loads, ladder fuels, and tree densities, and creating new and reinforcing existing defensible space, landowners can protect the wildland-urban interface, the biological resources of the management area, and adjacent property owners by:

- Minimizing the potential of high-severity ground or crown fires entering or leaving the area;
- Reducing the potential for firebrands (embers carried by the wind in front of the wildfire) impacting the WUI. Research indicates that flying sparks and embers (firebrands) from a crown fire can ignite additional wildfires as far as 1¼ miles away during periods of extreme fire weather and fire behavior;[30]
- Improving defensible space in the immediate areas for suppression efforts in the event of wildland fire.

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[26] Norton, P. Bear Valley National Wildlife Refuge Fire Hazard Reduction Project: Final Environmental Assessment. Fish and Wildlife Services, Bear Valley Wildlife Refuge. June 20, 2002.

[27] USFS. 2001. United States Department of Agriculture, Forest Service. Wildland Urban Interface. Web page. Date accessed: 25 September 2001. Accessed at: http://www.fs.fed.us/r3/sfe/fire/urbanint.html

[28] USFS. 2001. United States Department of Agriculture, Forest Service. Wildland Urban Interface. Web page. Date accessed: 25 September 2001. Accessed at: http://www.fs.fed.us/r3/sfe/fire/urbanint.html

[29] Norton, P. Bear Valley National Wildlife Refuge Fire Hazard Reduction Project: Final Environmental Assessment. Fish and Wildlife Services, Bear Valley Wildlife Refuge. June 20, 2002.

[30] McCoy, L. K., et all. Cerro Grand Fire Behavior Narrative. 2001.

Three wildland-urban interface conditions have been identified (Federal Register 66(3), January 4, 2001) for use in wildfire control efforts. These include the Interface Condition, Intermix Condition, and Occluded Condition. Descriptions of each are as follows:

- **Interface Condition** – a situation where structures abut wildland fuels. There is a clear line of demarcation between the structures and the wildland fuels along roads or back fences. The development density for an interface condition is usually 3+ structures per acre;
- **Intermix Condition** – a situation where structures are scattered throughout a wildland area. There is no clear line of demarcation; the wildland fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres; and
- **Occluded Condition** – a situation, normally within a city, where structures abut an island of wildland fuels (park or open space). There is a clear line of demarcation between the structures and the wildland fuels along roads and fences. The development density for an occluded condition is usually similar to that found in the interface condition and the occluded area is usually less than 1,000 acres in size.

In addition to these classifications detailed in the Federal Register, Stevens County has included four additional classifications to augment these categories:

- **Rural Condition** – a situation where the scattered small clusters of structures (ranches, farms, resorts, or summer cabins) are exposed to wildland fuels. There may be miles between these clusters.
- **High Density Urban Areas** – those areas generally identified by the population density consistent with the location of incorporated cities, however, the boundary is not necessarily set by the location of city boundaries or urban growth boundaries; it is set by very high population densities (more than 7-10 structures per acre).
- **Non-WUI Condition** – a situation where the above definitions do not apply because of a lack of structures in an area or the absence of critical infrastructure. This classification is not considered part of the wildland urban interface.

In summary, the designation of areas by the Stevens County steering committee includes:

- Interface Condition: WUI
- Intermix Condition: WUI
- Occluded Condition: WUI
- Rural Condition: WUI
- High Density Urban Areas: WUI
- Non-WUI Condition: Not WUI

Stevens County's wildland urban interface (WUI) is mostly based on population density. Relative population density across the county was estimated using a GIS based kernel density population model that uses object locations to produce, through statistical analysis, concentric rings or areas of consistent density. To graphically identify relative population density across the county, structure locations are used as an estimate of population density. The County's 911

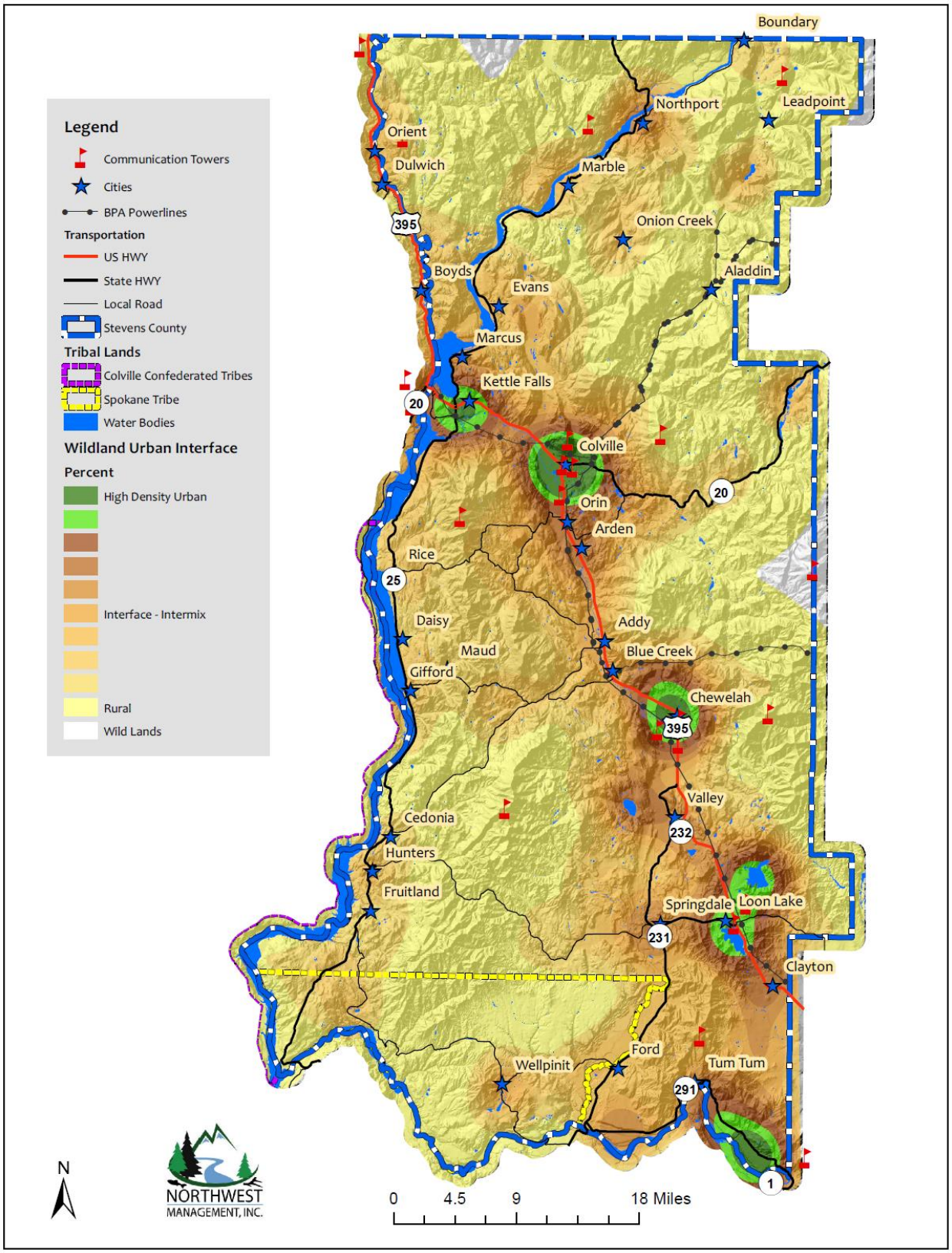
address location database was used to identify structure locations (see Figure 4.1) for the updated WUI designation. The resulting output identified the extent and level of population density throughout the county. The updated map, as seen in Figure 4.12, has an expanded "Rural" delineation when compared to the original WUI designation. This is because the original WUI designation was determined using aerial imagery to mark the location of individual structures by hand using GIS.

By evaluating structure density in this way, WUI areas can be identified on maps by using mathematical formulae and population density indexes. The resulting population density indexes create concentric circles showing high density areas, interface, and intermix condition WUI, as well as rural condition WUI (as defined above). This portion of the analysis allows us to "see" where the highest concentrations of structures are located in reference to relatively high risk landscapes, limiting infrastructure, and other points of concern.

The WUI, as defined here, is unbiased and consistent and most importantly – it addresses all of the county, not just federally identified communities at risk. It is a planning tool showing where homes and businesses are located and the density of those structures leading to identified WUI categories. It can be determined again in the future, using the same criteria, to show how the WUI has changed in response to increasing population densities. It uses a repeatable and reliable analysis process that is unbiased.

The Healthy Forests Restoration Act makes a clear designation that the location of the WUI is at the determination of the county or reservation when a formal and adopted Community Wildfire Protection Plan is in place. It further states that the federal agencies are obligated to use this WUI designation for all Healthy Forests Restoration Act purposes. The Stevens County Community Wildfire Protection Plan steering committee evaluated a variety of different approaches to determining the WUI for the county and selected this approach and has adopted it for these purposes. In addition to a formal WUI map for use with the federal agencies, it is hoped that it will serve as a planning tool for the county, state and federal agencies, and local Fire Protection Districts. A map depicting the Stevens County WUI is included in Appendix 1.

Figure 4.12. Wildland Urban Interface in Stevens County, Washington.



Potential WUI Treatments

The definition and mapping of the WUI is the creation of a planning tool to identify where structures, people, and infrastructure are located in reference to each other. This analysis tool does not include a component of fuels risk. There are a number of reasons to map and analyze these two components separately (population density vs. fire risk analysis). Primary among these reasons is the fact that population growth often occurs independent from changes in fire risk, fuel loading, and infrastructure development. Thus, making the definition of the WUI dependent on all of them would eliminate populated places with a perceived low level of fire risk today, which may in a year become an area at high risk due to forest health issues or other concerns.

By examining these two tools separately, the planner is able to evaluate these layers of information to see where the combination of population density overlays areas of high current relative fire risk and then take mitigative actions to reduce the fuels, improve readiness, directly address factors of structural ignitability, improve initial attack success, mitigate resistance to control factors, or (more often) a combination of many approaches.

It should not be assumed that just because an area is identified as being within the WUI, that it will therefore receive treatments because of this identification alone. Nor should it be implicit that all WUI treatments will be the application of the same prescription. Instead, each location targeted for treatments must be evaluated on its own merits: factors of structural ignitability, access, resistance to control, population density, resources and capabilities of firefighting personnel, and other site specific factors.

It should also not be assumed that WUI designation on national or state forest lands automatically equates to a treatment area. The Forest Service, Bureau of Land Management, and Washington Department of Natural Resources are still obligated to manage lands under their control according to the standards and guides listed in their respective forest or resource management plans (or other management plans). The adopted forest plan has legal precedence over the WUI designation until such a time as the forest plan is revised to reflect updated priorities.

Most treatments may begin with a home evaluation, and the implicit factors of structural ignitability (roofing, siding, deck materials) and vegetation within the treatment area of the structure. However, treatments in the low population areas of rural lands (mapped as yellow) may look closely at access (two ways in and out) and communications through means other than land-based telephones. On the other hand, a subdivision with densely packed homes (mapped as brown – interface areas) surrounded by forests and dense underbrush, may receive more time and effort implementing fuels treatments beyond the immediate home site to reduce the probability of a crown fire entering the subdivision.

Relative Threat Level Mapping

Stevens County recognizes that certain regions of the County have unique risk factors that increase their vulnerability to wildland fire. In an effort to demonstrate these risk factors, the steering committee developed a threat level model analyzing various risk factors on a scale relative to Stevens County specifically.

Risk Categories

Based on analysis of the various modeling tools, existing historical information, and local knowledge, a preliminary assessment of potentially high wildfire risk areas was completed. This assessment prioritized areas that may be at higher risk due to non-native or high fire risk vegetation, fire history profile, high risk fuel models, and/or limited suppression capabilities. This assessment also considered areas that had a high population or other valuable assets requiring protection from the impacts of wildland fires.

Non-native or High Fire Risk Vegetation

Fuel type, or vegetation, plays an important role in determining wildland fire danger. All fuel types can and will burn under the right conditions; however, some fuel types pose more danger than others due to the intensity at which they burn, the horizontal and vertical continuity of burnable material, and firefighters' ability to modify the fuel complex in front of an approaching wildfire. While rangeland or grass fires often spread rapidly, they burn quickly and at a lower intensity than forest fires. Additionally, local farmers and firefighters can often construct fuel breaks with dozers and other equipment relatively quickly. These tactics are not as effective in forested areas or on steep terrain.

Vegetation types that lead to increased wildfire intensity or severity were given a higher threat level rating.

High Risk Fire Behavior

Due to the heavy fuel loads in places, much of the County could experience extreme wildfire behavior characteristics that result in very intense, stand replacing severity fires. On the other hand, much of the agriculture/grassland area will likely experience rapid rates of spread, particularly under the influence of wind.

One of the factors contributing to potentially dangerous fire behavior is the preheating of fuels on steep slopes ahead of the actual flame front. Typically, fires spread very rapidly uphill, particularly in grass fuel types. Hot gases rise in front of the fire along the slope face preheating the upslope vegetation and moving a grass fire up to four times faster with flames twice as long as a fire on level ground. This preheating of fuels, or radiant heat, is capable of igniting combustible materials from distances of 100 feet or more.[31]

Areas with a high potential for extreme fire behavior based on Fire Behavior Analysis Tool modeling and local knowledge were given a higher threat level rating.

[31] "Wildfires and Schools". 2008. National Clearinghouse for Educational Facilities. National Institute of Building Sciences. Available online at http://www.ncef.org/pubs/wildfires.pdf.

Suppression Capabilities

Fire protection in each district in Stevens County is essentially the responsibility of the local fire district. The County has thirteen active Fire Protection Districts with resources available for fire suppression. However, each district is limited to the resources at hand until help from other districts or state or federal agencies can arrive.

One concern for the Fire Protection Districts, is a fire starting on a steep slope which allows it to gain momentum on an upslope run before firefighters can engage due to inaccessibility. Therefore, steeper slopes were weighted higher to account for the more inaccessible parts of the County.

Ignition Potential

Similar to identifying where population centers occur, areas of high ignition potential can be determined. Locating areas where fires frequently originate can help planners identify mitigation techniques for those areas. Mitigation techniques could include; public education, fuels reduction, or patrolling the area. Therefore, these areas were given a higher threat level rating.

Population Centers and Developing Areas

Due to the increased human activity within and surrounding Stevens County communities, these areas are inherently at a higher risk of ignitions.

The perimeter and outskirts of population centers and known developing areas were given a higher threat level rating.

High Protection Value

There are several areas in Stevens County that constitute protection due to their high conservation value such as tribal and other culturally or historically significant sites, recreational areas, and critical infrastructure. Communication towers, travel corridors, and transmission lines are other examples of "High Protection Value" assets that were overlayed onto the final Relative Threat Level map to show where they occur in relation to "high" threat level areas within the County.

Field Assessments

Field assessments were conducted during the week of February 16th in Stevens County. Fuels specialists visited specific areas within the county to verify GIS model output. The field crew also assessed specific areas that local Fire Protection Districts recommended such as; Deep Lake, Deer Creek, Waitts Lake, and the canyons around Tumtum.

Field assessments revealed no major discrepancies with GIS model outputs. No major outbreaks of insects was observed, however that does not mean there is not insect damage within parts of the county that were not visited during the assessments. There are many areas within the county where numerous homes are being built along unidentified/one lane/dead-end roads. Much of the county that is dominated by ponderosa pine has extremely high stem densities in the understory which creates unnatural fuel build-up as well as ladder fuels.

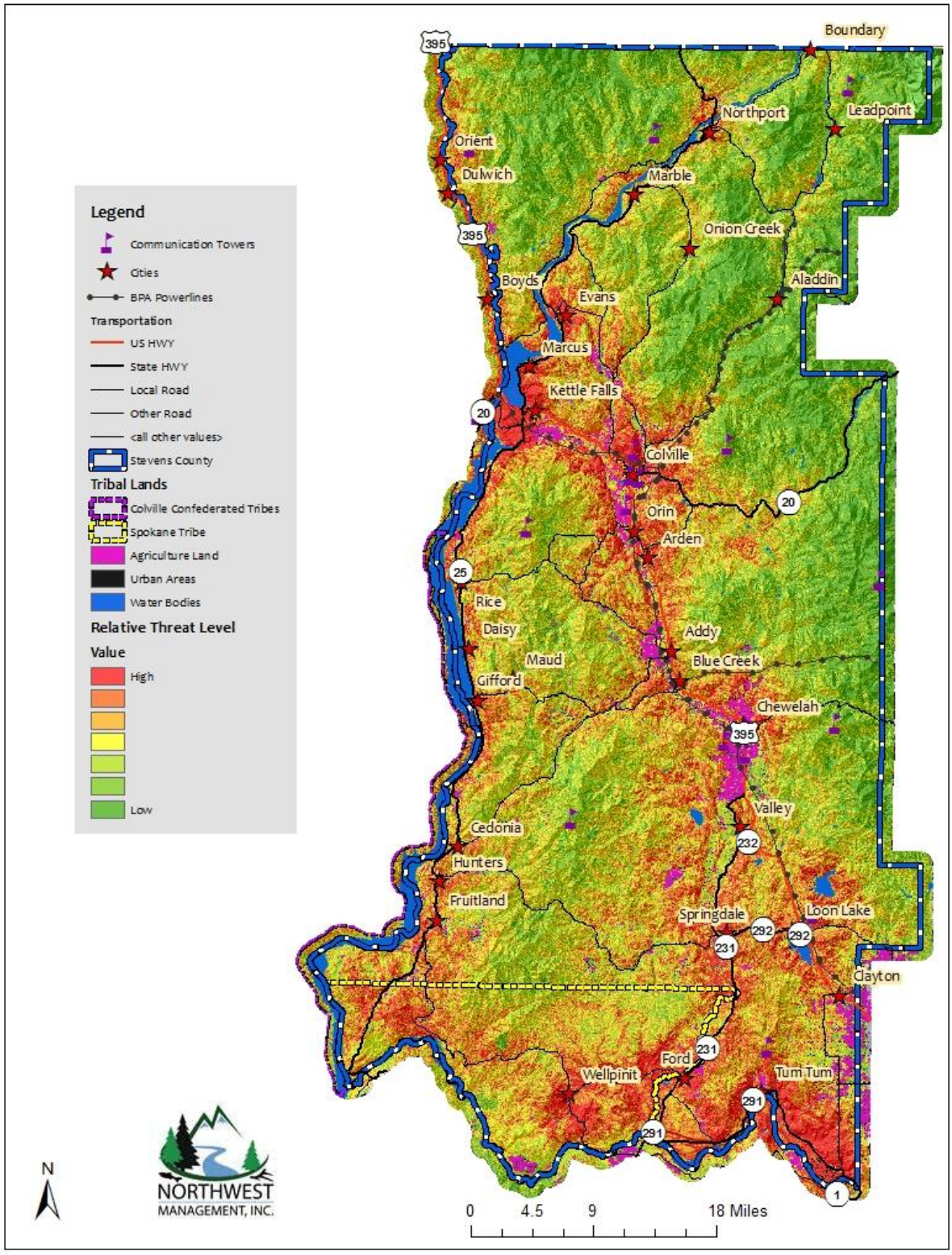
Determination of Relative Threat Level

Following the field assessments, the steering committee began development of the Relative Threat Level model. Risk categories included in the final analysis were slope, aspect, precipitation, fuel models, fire intensity, and population density. The various categories, or layers, were ranked by the committee based on their significance pertaining to causal factors of high wildland fire risk conditions or protection significance. The ranked layers were then analyzed in a geographical information system to produce a cumulative effects map based on the ranking. Following is a brief explanation of the various categories used in the analysis and the general ranking scheme used for each.

- Environmental Factors – slope, aspect and precipitation all can have an enormous impact on the intensity of a wildfire. Therefore, areas with steep slopes, dry aspects, or lesser amounts of precipitation, relative to Stevens County, were given higher threat rankings.
- Vegetation Cover Types – certain vegetation types are known to carry and produce more intense fires than other fuel types. For Stevens County, forest fuel models were given the higher rankings followed by shrub and grass fuel models, and short grass / agriculture.
- Fire Behavior – areas identified by fire behavior modeling as having a high fire intensity were given a higher threat level ranking.
- Populated Areas – these areas were ranked higher due to the presence of human populations, structures, and infrastructure requiring protection from fire.
- Fire Ignition Risk – areas where multiple ignitions have occurred, received a higher threat level ranking.

Each data layer was developed, ranked, and converted to a raster format using ArcGIS 10.2. The data layers were then analyzed in ArcGIS using the Spatial Analyst extension to calculate the cumulative effects of the various threats. This process sums the ranked overlaid values geographically to produce the final map layer. The ranked values were then color coded to show areas of highest threat (red) to lowest threat (green) relative to Stevens County. A map showing the identified Stevens County Relative Threat Level is included in Appendix 1.

Figure 4.13. Relative Threat Level Map for Stevens County.



Overview of Fire Protection System

A majority of the County has a local fire protection district that covers both structural and wildland fire response. The Washington DNR is responsible for wildland fire protection on assessed timbered areas that do not have acceptable fire protection. The USFS and BLM are responsible for wildland fire protection on their respective ownerships.

Local Fire Department and District Summaries

The firefighting resources and capabilities information provided in this section is a summary of information provided by the fire chiefs or representatives of the wildland firefighting agencies listed. Each organization completed a survey with written responses. Their answers to a variety of questions are summarized here. These synopses indicate their perceptions and information summaries.

Appendix 4 contains contact information and a complete available resource list for each of the following fire service organizations.

City of Colville Fire Department

Chief: Joe Hirsch
170 S Oak St.
Colville, WA 99114
509 684-5928
firechief@colville.wa.us

Agreements in place to house SCFD #3 vehicles.

City of Kettle Falls Fire Department

Chief: John Ridlington
415 Larch St
P.O. Box 457
Kettle Falls, WA 99141
509 738-6821

Agreements in place with SCFD #6

City of Chewelah Fire Department

Chief: David Deveau
301 E Clay Ave.
PO BOX 258
Chewelah, WA 99109
509 935-8311
fire@cityofchewelah.org

This is an all-volunteer fire department. It has one station in Chewelah, with one type 1 engine, 2 type 3 engines, and one type 6-brush engine. This fire hall is also STA 43 for SCFD #4. Mutual Aid Agreements are in place with SCFD #4.

Town of Northport Fire Department

Chief: Eric Middlesworth
P.O. Box 177
509 732-6675
Northport, WA 99157
509 732-4450 (City Hall)

Agreements in place with SCFD #11.

Stevens County Fire Protection District #1

District Summary: Stevens Fire #1 protects 375 square miles. It includes the communities of Lake Spokane (Suncrest to Tum Tum), Ford, Twin Mountain, Clayton, Loon Lake, Deer Lake and the City of Springdale (annexed into the district in 1994). The district has eight engines (plus one reserve), 10 brush/medical response vehicles, 7 tenders, one quick attack and six staff vehicles, two jeep plows and one support unit. The district has a career staff consisting of a chief, operations captain, two lieutenants (EMS, Public Education and Prevention), and three firefighters. This staff supports the 60 volunteer EMT/Firefighters. Approximately 59% of the district's firefighters are EMT, 5% are EMT only and 28%Firefighters only and 8% Support. The district has eight stations and a district office in Clayton and a shop and one storage building. Over 60% of the assessed value of the district has hydrants but less than 70% of the land has a water source (hydrants). The district has mountains running through the middle of it with only 4-5 roads cutting through them. The population bases are Lake Spokane, Loon Lake and Deer Lake. The summer population is higher due to recreational opportunities. The year around population is over 12,000. The district averages about 1100 calls a year with about 70% of these being medical calls.

Issues of Concern:

Residential Growth: Development continues to occur in fire-prone landscapes such as; communities in Homestead Canyon, Cummins Canyon, Limekiln area, Ford-Springdale, and between Suncrest to Tum Tum.

Burn Permit Regulations: The fire district does not administer a burn permit system. The fire district has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

During times of the year when DNR burning rules are relaxed, usually early spring and late fall, the fire district is frequently called out to suppress escaped fires started by homeowners burning grass and debris. Escape fire incidents have a negative impact upon the time and patience of volunteer firefighters. The volunteers are willing to help those in genuine need when fire threatens the community due to accidental reasons, but their enthusiasm wanes when their personal lives are interrupted by fires that have escaped due to poor planning or carelessness.

Because of escaped burning incidents, there is a need to develop further cooperation and education between local law enforcement and Fire Chiefs to cooperatively enforce current laws regarding reckless and negligent fire use.

Other: The district needs to begin an apparatus replacement program. The district also needs to replace a couple of stations, specifically Stations 2 & 8. The district needs additional daytime responders.

Cooperative Agreements: The district has agreements with all other Stevens County Fire Districts and departments, all Spokane County Fire Districts and Departments, BIA, National Park Service, Lincoln Fire 4, and the U.S. Forest Service.

Stevens County Fire Protection District #2

Burn Permit Regulations: The fire district does not administer a burn permit system. The fire district has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

During times of the year when DNR burning rules are relaxed, usually early spring and late fall, the fire district is frequently called out to suppress escaped fires started by homeowners burning grass and debris. Escape fire incidents have a negative impact upon the time and patience of volunteer firefighters. The volunteers are willing to help those in genuine need when fire threatens the community due to accidental reasons, but their enthusiasm wanes when their personal lives are interrupted by fires that have escaped due to poor planning or carelessness. Because of escaped burning incidents, there is a need to develop further cooperation and education between local law enforcement and Fire Chiefs to cooperatively enforce current laws regarding reckless and negligent fire use.

Stevens County Fire Protection District #3

District Summary: Stevens County Fire #3 is roughly a 6 mile radius around the city of Colville. The District and the city have a very good relationship in the fact that the district hires the city to fight its fires. Although the district does have 5 fire fighting vehicles of their own, they do not employ firefighters; that is where the city comes in. The city has 32 firefighters that also respond to district fires. The district, back in the mid 1990's, purchased land and buildings adjacent to the existing City of Colville Fire Hall. Because of their relationship, there are 2 district vehicles stored in the city building, and the city has two vehicles stored in the district building, along with two more district trucks. The fifth district truck is stored in a unit just SE of the Colville City limits.

Issues of Concern:

Burn Permit Regulations: The fire district does not administer a burn permit system. The fire district has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

During times of the year when DNR burning rules are relaxed, usually early spring and late fall, the fire district is frequently called out to suppress escaped fires started by homeowners burning

grass and debris. Escape fire incidents have a negative impact upon the time and patience of volunteer firefighters. The volunteers are willing to help those in genuine need when fire threatens the community due to accidental reasons, but their enthusiasm wanes when their personal lives are interrupted by fires that have escaped due to poor planning or carelessness. Because of escaped burning incidents, there is a need to develop further cooperation and education between local law enforcement and Fire Chiefs to cooperatively enforce current laws regarding reckless and negligent fire use.

Cooperative Agreements: Stevens County District #3 has an agreement with all other districts in the county for mutual aid.

Stevens County Fire Protection District #4

District Summary: Stevens County Fire Protection District #4 is located in and around the Colville valley in the southern portion of Stevens County, Washington. The District is approximately 40 miles north of Spokane, Washington which is the second largest city in the state of Washington, and about 60 miles south of the United States/Canada border.

The Colville valley is rarely over a mile wide with steep hills and mountains rising from the sides of the valley. A large portion of the District is located in these hills, valleys, and mountains.

The District was formed about 45 years ago. At that time, it covered an area of about 15 square miles around (not including) the incorporated town of Chewelah, Washington. Since that time it has grown to approximately 120 square miles with a population of over 3,500 citizens. The District is classified by the Washington Survey and Rating Bureau as an ISO Class 8 department with tanker/tender credit.

The District is primarily rural in character, with approximately 65% of the District area in agricultural, wildland, or Wildland Urban Interface and intermix, with hundreds of identified at-risk homes within the intermix. Only about 5% of the area is used for commercial or industrial uses and about 30% of the area is in suburban residential use. The suburban residential areas include two high density lakeside/waterfront recreational areas (Waitts Lake and Jump Off Joe Lake), the small unincorporated town of Valley, Washington and the urban growth area around the city of Chewelah, Washington. The District includes thousands of acres of private forestland for which we provide automatic aid initial attack for the Washington State Department of Natural Resources.

The District also protects critical infrastructure of the state; including one major north/south U.S. highway, one state highway, a north/south interstate rail corridor, two schools, a large interstate, petroleum gas pipeline, and Bonneville Power interstate high tension electrical transmission lines.

In order to fulfill our mission, District #4 utilizes the talents of 45 dedicated volunteers and equipment located in four stations. The District provide fire suppression for structural, wildland, and vehicle fires, along with heavy extrication, low angle and limited technical rescue, ice/water rescue, and first responder emergency medical services at the EMT-B level. On average the District responds to over 300 calls per year..

Issues of Concern:

Residential Growth: Developments in the urban interface continue to place a demand on the fire district, with buildings continuing to be placed in the wildland setting, with the dryer seasons, we are seeing an increase in large fires that put our firefighters, and residential occupants at danger.

Communications: The mountainous topography of Stevens County Fire District # 4 creates numerous areas where radio communication is limited and in some cases impossible. The lack of communications creates major difficulties for the responders within the District.

Burn Permit Regulations: Stevens County Fire District # 4 has always followed the DNR burn regulations, which generally go in to effect on July 1st and continue until October 15th each year. Recently the Stevens County Sheriff Fire Marshall has imposed a burn ban that affects only the residents of Stevens County.

Retention and Recruitment: Locating individuals, training them, and then retaining them for many years of service, are increasingly frustrating staffing issues, for an all-volunteer department.

Cooperative Agreements: The District has a signed a countywide mutual aid agreement, as well as wildland agreements with the USFW and DNR. The District also has an automatic aid agreement with Chewelah Ambulance, and Stevens County Fire District #l.

The District has also signed a fire protection agreement with the Flowery Trail Association for fire protection. This community is now a registered Fire Wise Community and continues to work towards more fuels reduction.

District Needs/Wish List: The District will continue to pursue grant opportunities for upgrading the 1980 class water tenders. There is a great demand for a centrally located main station to cut down our response times. This new station will need living quarters to host 24 hour shifts which will also reduce response times. The District would also like to see increased fuels reduction projects throughout the County as well as encouraging more Fire Wise Communities. A strategically placed radio tower is needed to reduce communication dead zones.

Stevens County Fire Protection District #5

District Summary: Established in 1968, SCFD #5 covers 75 square miles of land area and has a growing population of just over 5,000 people. The department has 38 volunteer firefighters working out of five stations strategically located throughout the large land area covered by the district. Approximately 35 percent of the district is zoned for agriculture and the remainder is sparsely populated forest area. Our district is very mountainous and we are increasingly seeing new homes built in areas previously uninhabited creating a significant wildland urban interface challenge. Highway 395, a NAFTA route, runs the length of the district and is a major traffic corridor for trucking, logging, and hazardous materials transportation to and from eastern British Columbia and eastern Washington State. The Kettle Falls International Railway runs the length of the district transporting hazardous materials into and out of Canada in addition to other cargo. There is an 8" natural gas pipeline carrying 1 million cubic feet of natural gas at a pressure of 480psi throughout the district. Bonneville Power Administration's ultra-high voltage line runs the length of the district and they have a substation at Addy. Avista Utilities also has one of their major regional transmission lines traversing the district.

During the last five years, SCFD #5 has averaged 155 calls per year. 64 % of the calls are medically related, 36 % are fire incidents. The fire calls are broken down to 50 percent structure

fires, 40 percent wildland fires and 10 percent vehicle fires or other miscellaneous calls. The district has four volunteer fire departments immediately adjacent and responds to approximately five mutual aid requests each year. Additionally, SCFD #5 has a solid working relationship with the Northeast Region of the Washington State Department of Natural Resources and works with them on a regular basis when the DNR fire crews are working in the summer months. The fire district continues to see an increase in annual call volume due to the increasing population within the district's boundaries and to the increased traffic on the Highway 395 corridor.

Issues of Concern:

Residential Growth: Residential growth throughout the district is constant. Much of this growth is increasingly farther from the main roads. Driveways that a few years ago had one house, or land that was at one time farm ground or timber land is being subdivided and now has multiple homes, long distances from the county roads. The roads serving these residences are usually difficult if not impossible to traverse with fire apparatus larger than the small brush truck type engines. Several areas have been identified as being of concern: The Dry Creek area continues to grow in population. In addition to the increased number of homes in this area, it is also designated as a high risk area for catastrophic fire because of the terrain, access and housing concentration. The Basin area, and Old CC Road and Grimm Road in the Summit Valley are also areas that are growing in population with the same concerns of terrain, access, and housing density.

Communications: Communication with the dispatch center and within our district boundaries have increased. Due in part to the "narrow banding" of our radio frequencies as mandated by the FCC, we have areas of the district where we have difficulty communicating with the dispatch center and areas where we have difficulty talking "truck to truck". Most of the problems are in the Summit Valley area. Another issue in Summit Valley was a decision by the county to redirect the antenna's on Stanger Mountain. Where we used to be able to communicate well, we are no longer able to activate the repeater on Stranger Mountain. Cell phone service is also nonexistent in the majority of that area.

Another problem with communications is the lack of cooperation between the County dispatch center and the Interagency Fire dispatch Center, made up of State and Federal cooperators. Responding agencies are often unaware that an incident has been dispatched by one or both of the dispatch centers and resources are responding or even on scene before the other dispatch center is aware of the incident and then dispatches it's resources.

Burn Permit Regulations: The fire district does not administer a burn permit system. The fire district has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

During times of the year when DNR burning rules are relaxed, usually early spring and late fall, the fire district is frequently called out to suppress escaped fires started by homeowners burning grass and debris. Escape fire incidents have a negative impact upon the time and patience of volunteer firefighters. The volunteers are willing to help those in genuine need when fire threatens the community due to accidental reasons, but their enthusiasm wanes when their personal lives are interrupted by fires that have escaped due to poor planning or carelessness. The county also has instituted a county wide burn ban through the summer months. The fire

departments are dispatched to all fires that are set during the ban. During this time period, most "burn ban fires" are camp fires, barbecues, or burn barrels. This is primarily a law enforcement issue. None of the fire districts have any law enforcement authority. There is a need to develop further cooperation and education between local law enforcement and Fire Chiefs to cooperatively enforce current laws regarding reckless and negligent fire use.

Cooperative Agreements: Stevens County Fire District 5 has mutual aid agreements with all 11 of the other fire districts in Stevens County. SCFD 5 also has a mutual aid agreement with the Washington State Department of Natural Resources, and with the National Forrest Service, Bureau of Land Management, Bureau of Indian Affairs, and Fish and Wildlife Department through association with the DNR's agreements with those Federal Agencies.

District Needs/Wish List: SCFD 5's strategic plan has identified a need and has implemented a long term plan to continuously update and upgrade the districts Personal Protective Equipment, Apparatus, and firefighting equipment.

Stevens County Fire District 5 has identified a few areas of concern in the Wildland/Urban Interface. One of those areas was identified in the Chewelah Fire Plan as being the area bordering National Forest Service lands in the Immel Road area. In addition there is great concern in the Dry Creek area due to the doubling of residences (over 100 homes on a road approximately 6 miles long) in that area in the last 10 years, the fuel types, topography and only one road into the area. Another area of concern is in the Basin, due to the large increase in new residences as it is becoming the bedroom community for Colville. Parts of Summit Valley, primarily the Old CC Road and Grimm Road areas are also experiencing rapid growth in residences and are areas of heavy fuels, limited access, and steep topography. The district has identified these areas as high risk and is hoping to present community outreach presentations to make the residents aware of the problems presented by the rapid residential growth in the areas. The district also has plans to send out community newsletters addressing these issues. It is hoped that once the community fire plan is written that it will aid the district in this effort.

Other Wildland hazards identified by the district are the large amounts of State and Federal forest land in the district. While the district comprises 75 square miles of privately owned, fire district protected land, that land is in areas surrounding Monumental, Dunn, Stranger, and Addy Mountains.

SCFD 5 has also identified the natural gas pipe line, Bonneville Power's ultra-high voltage line, Avista Utilities high voltage line, Highway 395 and the Railroad line to all be areas of concern that increases risk to the residents of SCFD 5 and increases the number of responses and risk for the Districts volunteers. The rapidly increasing population throughout the District has also increased the number of calls the district responds to and the types of those calls. The District's Strategic Plan is addressing those issues through increasing the numbers of volunteers, improving and acquiring additional equipment, and community education.

Stevens County Fire Protection District #6

Issues of Concern:

Residential Growth: The Gold Edge Mine area is experiencing increased residence building in remote forested areas with low standard private road systems. This is creating some hazardous

wildland/urban interface when mixed with fuel loading and poor access/egress issues. The Mission Ridge, Highland Loop, Pingston Creek area is not within SCFPD 6. The East end of the Greenwood Loop and the Hoffman road area are not within SCFPD 6. The Rickey Canyon Mingo Mountain forest fuel levels are potentially disastrous given the typical summer winds that come up in the afternoon in the Columbia drainage. All of the above areas have active new residential construction.

Communications: Fire department radios need to be reprogrammed to receive north and south frequencies. New radios will be needed to meet narrow band requirements. There are radio frequency blind spots that need to be addressed.

Burn Permit Regulations: The fire district does not administer a burn permit system. The fire district has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

During times of the year when DNR burning rules are relaxed, usually early spring and late fall, the fire district is frequently called out to suppress escaped fires started by homeowners burning grass and debris. Escape fire incidents have a negative impact upon the time and patience of volunteer firefighters. The volunteers are willing to help those in genuine need when fire threatens the community due to accidental reasons, but their enthusiasm wanes when their personal lives are interrupted by fires that have escaped due to poor planning or carelessness. Because of escaped burning incidents, there is a need to develop further cooperation and education between local law enforcement and Fire Chiefs to cooperatively enforce current laws regarding reckless and negligent fire use.

Cooperative Agreements: Stevens County District #6 has an agreement with all other districts in the county for mutual aid.

District Needs/Wish List: Stevens County Fire Protection District will continue to annex surrounding areas as the opportunities arise. The need for satellite stations to adequately cover new areas is being considered. There seems to be a trend toward less farm land and more urban residential areas.

Better control of new access road standards. Emergency water sources as more distant areas acquire coverage. Education of land owners about defensible space. Reduction of forest fuel levels in the more hazardous areas. Updated and complete communications.

Stevens County Fire Protection District #7

District Summary: Stevens County Fire District #7 was formed in 1976; covering eight (8) square miles around the community of Arden, located approximately seven (7) miles south of Colville. Currently the Fire District covers 68 square miles and is in the process of expanding to cover 75 square miles by annexation. The fire district abuts the Little Pend Oreille Wildlife refuge on its north and west boundaries.

This is an all-volunteer district with 38 members. The district has three (3) structure engines, three (3) tenders, 11 wildland/urban interface engines, and three (3) EMS Aid units of which two (2) are transport capable, located in three (3) stations. The district provides EMS First Response with EMT's, and First Responders with more EMS personnel being trained.

Issues of Concern:

Residential Growth: The main area of growth is along the Highway 395 corridor with the area along Highway 20 East seeing an increase in population. Approximately 80% of the structures in the district are in a wildland/urban interface area. With the greatest danger areas being the Little Pend Oreille River valley and the three (3) creek drainages to the east of Old Highway 12 Mile Road.

Burn Permit Regulations: The fire district does not administer a burn permit system. The fire district has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

During times of the year when DNR burning rules are relaxed, usually early spring and late fall, the fire district is frequently called out to suppress escaped fires started by homeowners burning grass and debris. Escape fire incidents have a negative impact upon the time and patience of volunteer firefighters. The volunteers are willing to help those in genuine need when fire threatens the community due to accidental reasons, but their enthusiasm wanes when their personal lives are interrupted by fires that have escaped due to poor planning or carelessness. Because of escaped burning incidents, there is a need to develop further cooperation and education between local law enforcement and Fire Chiefs to cooperatively enforce current laws regarding reckless and negligent fire use.

Other: District #7 is in need of new SCBA and PPE, a 3,000 gallon or higher capacity tender, and a 1,250 gpm or higher capacity Type 1 engine. District #7 would also like to remodel or replace Station 71 and build a training tower.

Cooperative Agreements: The Fire District has mutual aid agreements with all county fire districts, and State agencies such as DNR and WSP.

District Needs/Wish List: The Fire District is in the process of trying to update its vehicles in order to reduce age of District's vehicles and meet the anticipated needs of the Fire District's residents.

Stevens County Joint Fire Protection District #8

District Summary: Joint Fire District #8 (Ferry #3) is an all-volunteer fire department with five stations, which also provides "First Responder" medical assistance.

Issues of Concern:

Burn Permit Regulations: The fire district does not administer a burn permit system. The fire district has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

During times of the year when DNR burning rules are relaxed, usually early spring and late fall, the fire district is frequently called out to suppress escaped fires started by homeowners burning grass and debris. Escape fire incidents have a negative impact upon the time and patience of

volunteer firefighters. The volunteers are willing to help those in genuine need when fire threatens the community due to accidental reasons, but their enthusiasm wanes when their personal lives are interrupted by fires that have escaped due to poor planning or carelessness. Because of escaped burning incidents, there is a need to develop further cooperation and education between local law enforcement and Fire Chiefs to cooperatively enforce current laws regarding reckless and negligent fire use.

Cooperative Agreements: Mutual Aid Agreements are in place between Ferry and Stevens County fire districts, and with the Washington Department of Natural Resources.

Stevens County Fire Protection District #9

District Summary: FPD# 9 has one fire station located in mid district. The station is a 40'X60' building with a 16'X60' overhang. All trucks can be parked in heated space which enables the district to have 5,500 gallons of water on board during winter and summer months. A 1 '/2" water hydrant is located inside the station for refilling during the winter. A drafting access to the lake is available during summer months.

Owners of property on the LPO Lakes range from Full-Time residents, to residents that spend summers at the "lakes" and winters in warmer climates, to individuals that have "week-end" places that are used every week-end to once- in- awhile. There are 45-50 Full-time residents during the summer months. That number drops to about 25 during the winters. The majority of Full-time residents are retired and range in age from 55-80 years old.

Weekend residents are generally younger with children. During the summer months, week-end residents increase the population to over 220. Three very popular USFS campgrounds can raise the "population" to nearly 2,000 during summer week-ends.

Private ground is heavily timbered to the water edge. The majority of structures are located at the water edge. DNR and USFS land surrounding the lakes is heavily timbered, mountainous terrain.

FPD# 9 is a volunteer district with no full time personnel. Presently there are approximately 26 trained volunteers. The district can usually count on 6-10 responders at any given time. Three elected Commissioners provide direction and operating guidelines.

Issues of Concern:

Communications: Due to the location of FPD# 9, Communications are very inadequate. Radio communication is very unreliable with the antiquated equipment we have. No Cell coverage is provided in the area. Hand held radios allow us to communicate with-in the district, but land line is our only means of communicating to dispatch or others. The alarm is presently sounded by E911 calling the siren. We are currently working to secure grant funding to improve our communication abilities.

Burn Permit Regulations: The fire district does not administer a burn permit system. The fire district has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

During times of the year when DNR burning rules are relaxed, usually early spring and late fall, the fire district is frequently called out to suppress escaped fires started by homeowners burning

grass and debris. Escape fire incidents have a negative impact upon the time and patience of volunteer firefighters. The volunteers are willing to help those in genuine need when fire threatens the community due to accidental reasons, but their enthusiasm wanes when their personal lives are interrupted by fires that have escaped due to poor planning or carelessness. Because of escaped burning incidents, there is a need to develop further cooperation and education between local law enforcement and Fire Chiefs to cooperatively enforce current laws regarding reckless and negligent fire use.

Other: Heavy timber throughout the district. Lightning storms are common during summer months. High density of structures in the area. Large number of campers during summer months.

Cooperative Agreements: Agreements in place with USFS, DNR, and FPD# 7

Stevens County Fire Protection District #10

District Summary: The fire district covers a population of 920 and an area of 34 square miles. The fire district covers from Cedar Creek in the north, along Deep Lake-Boundary Rd . and Aladdin Road to Rocky Creek in the south, and west along Aladdin Road to include Black Canyon. During the Black Canyon Fire in 2003, 213 structures in the Black Canyon (9), Aladdin Road (30), Deep Lake-Boundary Road (133), and Cedar Lake (41), areas were assessed and mapped. The Cedar Creek area has since been added.

Issues of Concern:

Burn Permit Regulations: The fire district does not administer a burn permit system. The fire district has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

During times of the year when DNR burning rules are relaxed, usually early spring and late fall, the fire district is frequently called out to suppress escaped fires started by homeowners burning grass and debris. Escape fire incidents have a negative impact upon the time and patience of volunteer firefighters. The volunteers are willing to help those in genuine need when fire threatens the community due to accidental reasons, but their enthusiasm wanes when their personal lives are interrupted by fires that have escaped due to poor planning or carelessness. Because of escaped burning incidents, there is a need to develop further cooperation and education between local law enforcement and Fire Chiefs to cooperatively enforce current laws regarding reckless and negligent fire use.

Stevens County Fire Protection District #11

District Summary: Stevens County Fire Protection District #11 is an all-volunteer department with 25 volunteers. The district is comprised of 100 square miles in northern Stevens County. The Columbia River runs through the district and the northern boundary is the Canadian border. Much of the district is mountainous. Many areas are steep with unpaved roads that can be challenging if not impossible for large fire apparatus to access. During summer the days are long and hot. Lightning strikes can cause numerous wild fires.

The district was voted into existence in 1995. It began training and acquiring vehicles through the Federal Surplus Program in 1998. The volunteers' initial pagers and old bunker gear were recycled from other departments. Today, Fire District 11 has seven operational fire fighting vehicles that are spread out to four locations throughout the district. The District has three buildings at Station 1; a heated garage housing four vehicles, a meeting room/office, and a building that eventually may be a residence for volunteers in an effort to reduce response time. Most of the District's fire fighters have new structure fire and wildfire turnout gear acquired largely through grant funding.

The small municipality of Northport is located within the district but it is not part of the district. Fire District 11 has an auto-aid contract with their fire department for them to respond to all district fires. This decreases response time to the north end of the district especially and provides the district with additional water and personnel. Fire District 11 has no hydrants in the district outside of the Marble Community (and Northport).

Issues of Concern:

Residential Growth: Ideally, all residents would have established "survivable" and/or "defensible" space around their homes. That is not the case at present. Ideally, relatively fire safe ingress and egress from residences (escape routes: more than one way in and out) would help assure the safety of residents in the event of a wildfire. Such is not the case currently and/or is not as certain in some areas due in part to a confusing maze of roads that would make it difficult to exit the area easily in the event of a wildfire. Ideally, the district would have an inventory of all residences within the district in the event of a major wildfire that might be able to be defended by fire service personnel. That is not currently available for the whole district.

Areas within the district that are in most need of improving their ingress and egress (escape routes) due in part due to the high density of residents living along these relatively remote roads are: Quinns Meadow Road, Miller Road, Wynowick Road, Red Tail Way, as well as Mitchell Flats Road, Bodie Mountain Road, Hawks Road, and Flora Road. Roads within the district that should have fuels modified along them by at least eliminating ladder fuels to improve safe access in the event of a wildfire are: Quinns Meadow Road and Miller Road. Quinns Meadow Road is also too narrow for two-way traffic, which would be important in the event of a wildfire to allow residents to leave and firefighting personnel access to the fire at the same time.

Communications: Communications in the District's fire fighting vehicles is satisfactory under most situations. The district's testing of hand held radios that are also pagers to better coordinate initial attack has proved to be disappointing.

Burn Permit Regulations: The Fire District does not administer a burn permit system. The Fire District has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

During times of the year when DNR burning rules are relaxed, usually early spring and late fall, the fire district is frequently called out to suppress escaped fires started by homeowners burning grass and debris. Escape fire incidents have a negative impact upon the time and patience of volunteer firefighters. The volunteers are willing to help those in genuine need when fire threatens the community due to accidental reasons, but their enthusiasm wanes when their

personal lives are interrupted by fires that have escaped due to poor planning or carelessness. Because of escaped burning incidents, there is a need to develop further cooperation and education between local law enforcement and Fire Chiefs to cooperatively enforce current laws regarding reckless and negligent fire use.

Other: The District is always looking for used fire fighting vehicles that are within their budget limitations and government surplus vehicles that might be of use to the district. The District is also limited in where to house additional wildfire and/or structure fire vehicles. The current fire station is filled to capacity (4 vehicles) without altering the structure to accommodate additional resources. Plans are being made to open up one end of the present garage structure that is without an entrance door at Fire Station 1 in order to house two additional vehicles.

Cooperative Agreements: Fire District 11 has agreements with all Stevens County Fire Districts in general and with Stevens County Fire District 10 in particular. The District also has a mutual aid agreement with the Washington State Department of Natural Resources. As mentioned in the Overview, Fire District 11 has an auto-aid contract with the Northport fire department for them to respond to all of Fire District 11 fires.

District Needs/Wish List: Since the concerns of the district regarding residences are largely addressed in the County's Land Services Center Customer Service Bulletin #B-6 entitled Guide for Rural Residential Fire Protection Zones dated 4/4/2006 that is given to building permit applicants, it might be of some significant positive impact if such "guidelines" were made mandatory. Those guidelines address such extremely important items as: road access, defensible space, utilities, building construction, and address signage standards (in order for the residence to be located as efficiently as possible in the event of an emergency). Signage is particularly important within Fire District 11 because many residents live some distance from their mailboxes along a myriad of non-county roads that are common access for many of their neighbors without any signage whatsoever. A minimum standard for signage would be 3-4" reflective light colored letters on a dark background.

Since establishing escape routes and making them known to the residents is a concern for the district in the event of a wildfire, it might be of some benefit to residents to have placards along such escape routes. This is seen as significant at the end of Mitchell Road where a confusing tangle of old roads to the northeast might be difficult to navigate in the event of a wildfire.

As noted previously under "Effective Mitigation Strategies", it is the district's goal to establish smaller fire stations throughout the district where there are volunteers to maintain them. Three such locations are seen as priorities: 1) in the northwest corner of the district (SPA #2), 2) in the northeast corner of the district (SPA #1), 3) and in the south central part of the district where about 60% of the district's residents and a similar percentage of the district's volunteers reside.

Stevens County Fire Protection District #12

District Summary: Stevens County Fire District 12 is 75 square miles in size (48,000 acres) and encompasses 370 households, and serves approximately 1000 full-time residents. The District is bordered on the West by Lake Roosevelt National Recreation Area which swells with thousands of summer recreationists as tourists enjoy the recreational opportunities on the lake. State Highway 25 runs north-south along the river and is a major traffic corridor for trucking, logging, and hazardous materials transportation to and from eastern British Columbia and eastern

Washington State. The District is bordered by Fire District 2 on the south, Fire District 5 on the east, and Fire District 6 on the north. District 12 is responsible for fire protection for two developed NPS campgrounds, two boat ramps, State and County Highway facilities, an elementary school, and an electrical substation. Most of the Fire District consists of forested mountain slopes, rolling farmland, brush land, and many remote and rugged mountain canyons.

Issues of Concern:

Residential Growth: Residents are increasingly choosing to live in difficult to reach, and defend, mountaintop homes. In the winter months, these driveways may be too risky to negotiate with current fire apparatus.

Communications: Due to the rugged topography radio communications are not always possible.

Burn Permit Regulations: The Fire District does not administer a burn permit system. The Fire District has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

During times of the year when DNR burning rules are relaxed, usually early spring and late fall, the Fire District is frequently called out to suppress escaped fires started by homeowners burning grass and debris. Escape fire incidents have a negative impact upon the time and patience of volunteer firefighters. The volunteers are willing to help those in genuine need when fire threatens the community due to accidental reasons, but their enthusiasm wanes when their personal lives are interrupted by fires that have escaped due to poor planning or carelessness. Because of escaped burning incidents, there is a need to develop further cooperation and education between local law enforcement and Fire Chiefs to cooperatively enforce current laws regarding reckless and negligent fire use.

Other: Lack of hydrants in the District limits its ability to supply adequate water resources for wildlands and structure fires. Lake Roosevelt and its boat launches are not available throughout the year due to reservoir level changes.

Recruiting of firefighters is a constant priority due to natural attrition and a lack of younger community members willing to volunteer. The District is constantly attempting to upgrade its vehicles, most of which are Government surplus vehicles, and maintenance is a constant priority.

Due to limited funding, the age and capabilities of our vehicles is a constant concern.

Cooperative Agreements: Mutual Aid agreements exist with all Stevens County Districts, as well as with the DNR, National Park Service, WSP, and the BLM.

District Needs/Wish List:

1. Establish an incident command system/roster for the district and train individuals for their specific tasks for both structure and wild fire situations. This would require individual training plans and group training to practice incident command.
2. Encourage other organizations to establish their own IC system and roster and share with other organizations.

3. Establish a "Red Card" type system for the county so each individual showing up to a "mutual aid" type of incident would have credentials to facilitate assignment by IC.
4. Establish a county-wide IC Team to respond to wildland fires that exceed the capabilities of individual units/districts. (This would probably require team training and some sort of an on-call system).

Stevens County Fire Protection District #13

District Summary: Evans Fire District # 13 is an all-volunteer department. The district encompasses approximately 10 square miles along Hwy 25 north beginning shy of mile marker 88 and north to mile marker 96 and east and west along Bossburg and Evans Cut-Off Roads to just shy of Williams Lake Rd. Many of the secondary roads are steep and unpaved posing a challenge for larger fire apparatus. District # 13 was established in January, 2014 and is in the process of organizing in a previously unprotected area of the county.

Issues of Concern:

Residential Growth: Many residents along the Bossburg and Evans Cut-Off Roads have chosen to live in difficult to reach and defend locations. The upper reaches of China Creek and Bonanza Hill Roads are one-lane and will be difficult to access during winter months. Many of these residences would benefit from more defensible space surrounding their homes. Street address markings displayed at property entrances would aide in locating residents for emergency purposes.

Communications: The district needs base and handheld radios, properly programed. The district is working with FD # 6 and Chewelah Fire Department to obtain excess communications equipment.

Burn Permit Regulations: The fire district does not administer a burn permit system but rather, relies upon a system established by DNR. That system allows outdoor burning under certain times of the year per establishes DNR Rules.

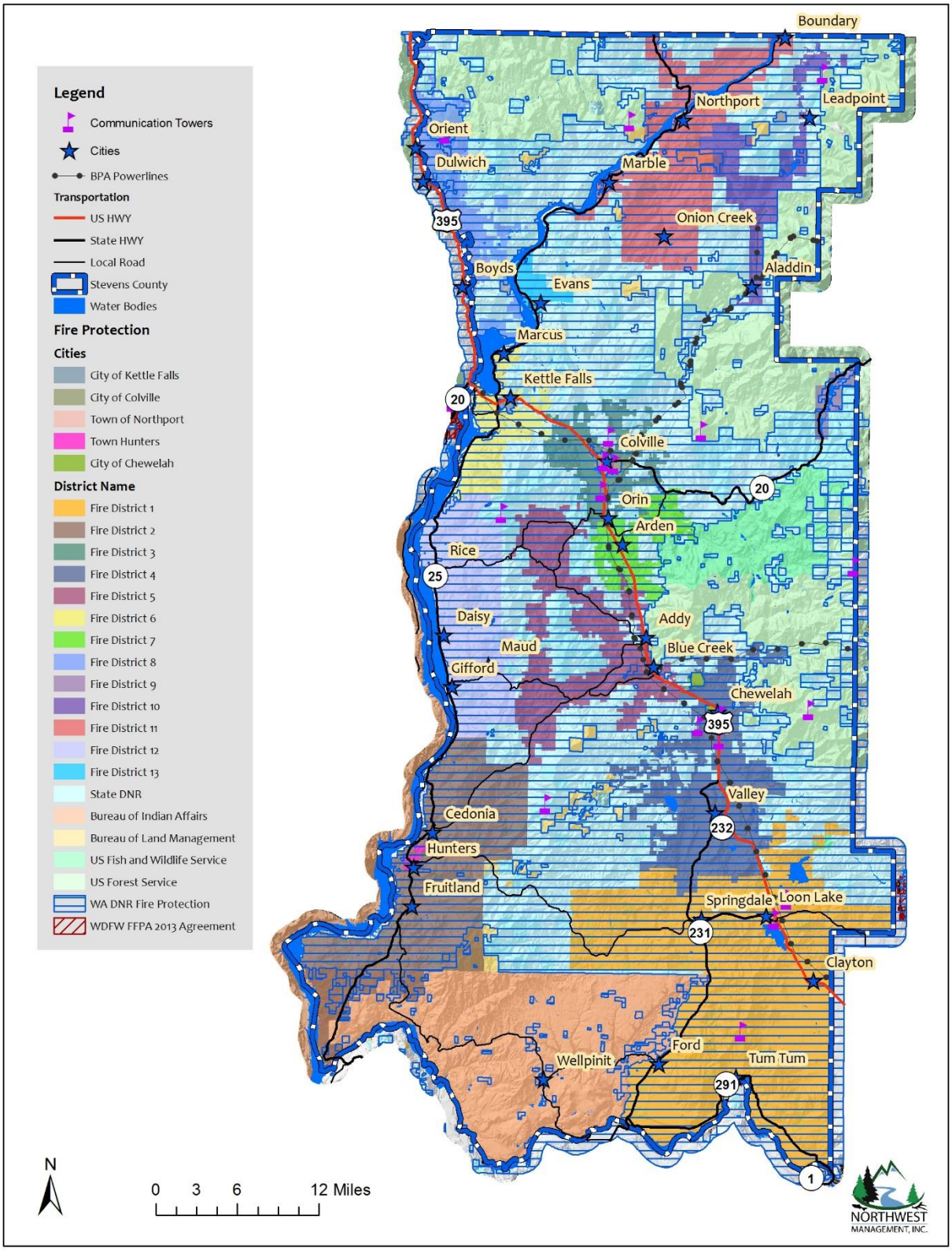
DNR usually allows outdoor burning in early spring and late fall. Stevens County has a county wide burn ban during the summer months which some home owners may ignore. During these periods the district can expect to be called out to suppress fires caused by home owners burning grass and debris without adequate preparation, planning or carelessness.

Other: The district is seeking excess equipment as it has revenue for 2015. The district was formed by election in November 2014, thus its boundaries were not officially set by 01 August. Accordingly, no tax revenue is currently available forcing the district to borrow from future anticipate tax revenue. Recruitment of firefighter is also a priority.

Cooperative Agreements: District # 13 has a first response agreement with Fire District # 6. District # 13 also has a mutual aide agreement with DNR.

District Needs/Wish List: District # 13 is actively seeking to annex surrounding area as many home owners have expressed interest in annexation. The district is seeking excess equipment, property and needs grants for construction of a fire station to be centrally located. The district is also in need of trained volunteers. Evans has one workable hydrant on Hwy 25 N. near miler marker 91. The district need other sources of adequate water.

Figure 4.14. Wildfire Protection Responsibility Map.



Washington Department of Natural Resources

Washington State Department of Natural Resources is the state's largest on-call fire department with employees who fight fire on about 12.7 million acres of non-federal (private, state and tribal) forest land. The DNR has the primary protection responsibilities on private and state forest land throughout Northeast Region in the State of Washington. The DNR may also respond to fires outside of DNR jurisdiction that threaten DNR protection. The DNR provides wildland fire prevention and regulation on private and state forestland. The DNR works cooperatively during suppression operations with the private sector, local protection entities, and other State and Federal agencies. The DNR does not provide formal EMT services. Most DNR employees have first-aid training and some, individually may have had EMT and/or first-responder training.

The Northeast Region Interagency Communications Center (NEWICC) maintains lists of "call when needed" Faller Agreements and Dozer Agreements. Operators are equipped and trained for fire suppression throughout the local districts. Dozer sizes can range from D-4 to D-8.

DNR helicopter(s) are staged at the Omak Airport initially, and later at Colville throughout fire season for initial attack. The helicopter staged at the Omak Airport is usually a Bell 205 with helitack crew.

The Fire Boss (SEAT on pontoons) water scooper is generally staged at Deer Park.

The BIA SEAT has been available to DNR at the Omak Airport for initial attack during recent fire seasons.

Canadian air tankers and lead plane are requested for initial attack when needed.

North Columbia District Summary: North Columbia District provides fire suppression, fire prevention, burning regulation and enforcement on approximately 1.35 million acres of private and state trust land in portions of Stevens, Ferry and Pend Oreille counties. Due to the fact that most state trust land lies within Stevens County, the majority of fire personnel spend most of their time working on projects in Stevens County. In order to ensure adequate fire response, this district has a large staff of seasonal employees and the equipment necessary to support our firefighters.

North Columbia District has eight full time employees. Two of these employees work primarily in the fire program. The district also has 33 seasonal employees that support the fire program. The majority of these individuals are only employed from June 16 to September 15 of any given year. A handful of employees, currently five, are employed for a longer period of time. This period of employment averages April 1 to November 15. Most employees are qualified as wildland firefighters only but a handful of others hold a variety of NWCG qualifications such as single resource boss, task force leader and division supervisor.

The North Columbia work center is located with the region office in Colville, which enables this district to pull permanent staff from the main office to assist with fire as needed.

Arcadia District

The Arcadia District encompasses approximately 2.1 million acres of private and state lands in the counties of Spokane, Stevens, Lincoln and Pend Oreille. Through the "Master Agreement" and "Northwest Compact", this District of the Washington DNR has Mutual Aid Agreements

with 18 rural fire protection districts, the Colville National Forest, the Spokane Indian Agency, The Kalispel Indian Agency, US Fish and Wildlife Service, Bureau of Land Management, the National Park Service, neighboring states, and Canada to provide assistance with fire protection. The Arcadia District boundary includes all of Spokane County, the portion of Lincoln County north of US Hwy 2, the southern portion of Stevens County (south of an east/west line between Deer Lake and Hunters divide), and the portion of Pend Oreille County that is south and east of Highway 20 and Sullivan Lake.

Special features within the district include the Cities of Spokane and Spokane Valley, the Kalispel Indian Reservation, Spokane Indian Reservation, Turnbull National Wildlife Refuge, Mt. Spokane State Park, Riverside State Park, Lake Roosevelt National Recreation Area, and portions of the Colville National Forest.

The Arcadia District fire program staff totals 39-41 individuals, including 4 permanent employees, 4 career-seasonal Forest Wardens (who work up to nine months each year), and 33 seasonal employees on staff from roughly June thru September. Within the District, an additional 8-10 permanent employees work in other programs but assist in the fire program during the summer as needed. Fire qualifications for the aforementioned employees included; Type 3, 4, and 5 Incident Commanders, Type 1 and 2 Operations Section Chief, Division Supervisors, Task Force Leaders/Strike Team Leaders, Safety Officer, Single Resource Bosses, Fire Investigators, and the ability to staff other support positions such as Finance, Planning, Public Information Officer, and Logistics. Arcadia utilizes a "home guard" approach in that, the seasonal engine drivers park their assigned engines at their residence within their assigned geographic portion of the district.

The DNR maintains a fleet of Type 2 helicopters to provide 5/day coverage during the summer months. These are based out of Ellensburg, but moved throughout the state as needed during the summer months. In times of high fire danger there is often a helicopter staged at Colville and occasionally at Deer Park. There is an Air Attack platform (fixed-wing) is also available during the summer months at the Deer Park Airport.

****NOTE: Washington DNR does not respond to structure fires.****

Bureau of Land Management

Spokane District Mission Statement: The mission of the Spokane District is to share our unique capability and interest in sustaining the full diversity of natural and cultural landscapes across Washington State and invite their discovery and use. This includes protecting the natural resources, such as water for fish and wildlife; preserving environmental and cultural values on the lands they manage; providing for multiple uses, that include some commercial activities; and enhancing opportunities for safe and enjoyable outdoor recreation. The Spokane District also assesses energy and mineral resources and works to ensure that their development is in the best interest of the public. Another major responsibility is to ensure consideration of Tribal interests and administration the Department of Interior's trust responsibilities for American Indian Reservation communities.

District Summary: Up through the 1970's, BLM's policy was to divest ownership of all federal public (BLM) lands in the state of Washington. But in 1980, at the height of the Sage Brush Rebellion (a social movement to give control over federal lands to the states and local authorities), Washington voted to have the public lands remain under federal ownership and management. In the 1980 general election, the state put a measure on the ballot asking voters if the state constitution should "be amended to provide that the state no longer disclaim all rights to unappropriated federal public lands." Approximately 60% of the people and the majority in every county voted no, signaling to BLM that there was strong support for continued federal management of the public lands in the state.

In response to this vote, the Director of BLM approved a proposal by the District to begin a process of consolidating the scattered BLM lands around the state. Today the Spokane District BLM manages over 425,000 acres across eastern Washington for multiple uses, providing wildfire protection, suppression, support, and training for the BLM managed lands and other federal/state/county agencies.

The Spokane District Fire Management Program currently consists of two type six wildland engines (300 gallons) with two full time Engine Captains, four engine crew members, one ten person hand crew, one Fuels Technician, Seasonal Dispatcher, Fire Operations Specialist (FOS), Assistant Fire Management Officer (AFMO), and a Fire Management Officer (FMO). The hand crew is stationed in Spokane at the District office and the two Type 6 engines are in Wenatchee at the field office. There are approximately 16 other specialist (staff) from across the district that assist the Fire Management Program in wildland and/or prescribed fire efforts. With the District's scattered ownership pattern, the engines are usually on scene after initial attack forces have arrived. Our engines and personnel are available for off District and out of state fire assignments that aide in support, training, and experience.

Cooperative Agreements: The Spokane District BLM has Coop agreements with the Colville National Forest, the Okanogan-Wenatchee National Forest, US Fish and Wildlife Service, WA DNR, Spokane County FDs #3, 4, 9, 10, Spokane Valley FD, Benton County FD #1, Chelan County FDs #1, 3, 6, Douglas FDs #2, 3, 5, 15, Franklin County FD #3, Grant County FD #5, 13, and Yakima County FDs #4, 5.

USDI Bureau of Indian Affairs

Ownership Summary: The Spokane Agency BIA Fire Management is responsible for wildland fire protection, for the entire Spokane Reservation which is located in the southern part of Stevens County. There is only one duty station located in the town of Wellpinit WA. . We currently have 10 ten full time employees and 4 career-seasonal, we hire 3-6 seasonal every year, and three personnel for the lookout towers. Our primary concern/responsibility is to protect life, trust lands/all land within or threaten the reservation and tribal resources. We are capable of handling most Type *3* wildland incidents. We have mutual aid with Stevens County Fire District 2, Spokane Tribal Volunteer Fire Department, and Washington State DNR.

Issues of Concern:

Residential Growth: There is one new housing development on the reservation just within the last five years located near Ford, WA. We can expect a lot more homes to go up in the next ten years. The area of concern is the wildland-urban interface a majority of the entire homes on the reservation fall under this category.

Communications: Communication on the reservation are good with a few black holes which are easily mitigated with human repeater or using the Lookout Towers as a relay to dispatch.

Burn Permit Regulations: Burning permits may be issued upon request, by the persons authorized by the Fire Management Officer (FMO). Currently, the authorized individuals are the Dispatcher, Fire Prevention Officer, and the Cache Manager. At the discretion of the Fire Management Officer, the site of the burn permit may be inspected prior to approval. During periods of high fire danger restrictions and/or shutdowns may be placed on burning by the Fire Management Officer.

Cooperative Agreements: There is 3 mutual aid agreements, one with the Spokane Tribal volunteer Fire Department, Stevens county fire district 1 & 2, and the Washington State Department of Natural Resources. These agencies are able to help us out instrumental when it comes to structure protection during wildland fires because our program is gear to fight wildland fires and we don't have the proper training to do structure protection.

Needs: The Bureau of Indian Affairs fire programs budgets have been declining for the last few years and it is not going to let up any time soon. There is a demand on training because of the of the 2009 deadline set forth by the government for incumbents to become qualified in the 13 key positions. The agency has four positions right now that fall under the key position. With all the budget cuts we have had to rely on the Tribal Forestry & Tribal DNR and our local cooperators to help out and support Fire Management on a lot of suppression activities. Another possibility is getting a contract helicopter to help us and our local cooperators with wildfire suppression.

US Fish and Wildlife Service

Ownership Summary: The Refuge was established on May 2, 1939 to protect and provide a breeding ground for migratory birds and other wildlife. The Little Pend Oreille is a 40,198 acre National Wildlife Refuge located 13 miles SE of Colville. It has an elevation range of 1,800 on the west and 5,600' on the eastern part of the Refuge.

Issues of Concern:

Residential Growth: Houses being built on the west and north boundaries of Refuge, and along the Little Pend Oreille River corridor.

Refuge Summary: The Little Pend Oreille National Wildlife Refuge is part of the Inland Northwest National Wildlife Refuge Complex that comprises LPO, Turnbull and Kootenai National Wildlife Refuges. The Refuge Fire Management Program consists of two type six engine, with two career-seasonal Engine Captains and three seasonal engine crew members, a Fire Management Officer stationed at Turnbull NWR, and a full-time Wildland Fire Operations Specialist stationed at the LPO. Prescribed fire is used as a tool for the re-introduction of fire into our forests, leaving them less susceptible to devastating wildfires. The U.S. Fish and Wildlife Service manages fire to conserve, protect and enhance fish, wildlife, plants and their habitats while protecting Service facilities, neighboring lands and surrounding communities.

Cooperative Agreements: The Little Pend Oreille NWR has National agreements with the Dept. of the Interior, the Dept. of Agriculture and with the Washington State Dept. of Natural Resources. Ongoing work on agreements with local fire districts.

USDA Forest Service Colville National Forest

District Summary: The Three Rivers Ranger District manages national forest lands throughout Stevens County from southeast of Chewelah up to the Canadian border.

The Ranger District is managed by a District Ranger in Kettle Falls with a staff of 30 permanent employees (20 full time and 10 seasonal.) Approximately 40 additional seasonal employees are hired during the summer months at the peak of field season.

The Fire and Fuels Management Program at the district includes three full time employees: a district fire management officer (FMO), an assistant FMO, and a fuels planner (whom covers planning responsibilities for the Republic Ranger District as well). The District also has eight additional permanent employees (seasonal), and up to seventeen temporary employees during the summer months. The District staffs two Type VI engines (300 gallons) and a 10-person fire crew.

The national forest is managed according to a multiple-use mandate which attempts to balance a number of land uses, including timber harvest, grazing, recreational pursuits, and mining; while simultaneously maintaining suitable wildlife habitat, clean water, and visually appealing vistas in a sustainable way.

Issues of Concern:

Residential Growth: The national forests are experiencing rural development along the national forest boundary in areas that were previously managed as private grazing or timber land. This is impacting management on the national forest since neighboring residents can be resistant to change in their "backyards", and planned forest activities may represent a 'change.'

A priority for the Forest Service is doing vegetation management treatments on national forest system lands where natural fuels may threaten private improvements in the event of a wildfire. Working with private landowners to resolve issues of road access and to ease boundary concerns will be a critical step to achieve hazard fuel treatment activities.

It also will be vital to continue to work with our partners, such as Washington DNR's Landowner Assistance Program, to facilitate and gain further community support for cross boundary, hazardous fuel treatments.

Communications: The Colville National Forest is served by a network of solar/propane-powered mountaintop radio repeaters through which field coordination and fire dispatching is accomplished. However, interagency fire responses require shared radio frequencies to facilitate a coordinated fire response. Maintaining cooperative frequency agreements between all the fire-fighting agencies; local, state, and federal; could use additional planning and coordination.

Burn Permit Regulations: The Colville National Forest uses prescribed fire for a variety of purposes: increase forest resiliency, hazardous fuels reduction, site prep for tree regeneration, enhancement of grazing conditions and wildlife habitat. Burning permits are issued by the Washington State Department of Natural Resources.

Cooperative Agreements: The Pacific Northwest Region of the Forest Service has entered into an agreement with the Washington DNR for cooperative fire control efforts. This agreement

states that the DNR will be the primary administrative contact when incidents involve a mix of agencies that include local fire districts when situations of pay and reimbursement develop. The Colville National Forest is striving to develop direct agreements with local fire districts to support fires solely on national forest system lands.

The Colville National Forest has an agreement with the Spokane District of the Bureau of Land Management to provide fire suppression on BLM lands within predetermined areas in the vicinity of national forest lands.

As part of their working agreement, the Colville National Forest and the DNR have drawn up what is known as the Reciprocal Agreement. The "Recip Agreement" defines a protocol for closest-forces dispatching to areas where each agency may mutually respond to fires, and outlines how to share the benefits from weather forecasting services, fire detection flights, air tankers and helicopters.

The Forest also has working agreements with the US Fish and Wildlife Service (specifically Little Pend Oreille Wildlife Refuge) and the National Park Service (Lake Roosevelt National Recreation Area) that utilizes the closest-forces dispatching protocols.

Needs: The Three Rivers Ranger District has had difficulty with adequate storage space for its fire equipment, personnel, and fire engines. Fire cache remodeling has been approved and designed. The District is awaiting budget allocation to accomplish the fire cache remodeling job. In the interim the District is utilizing two large storage containers on site for equipment and supplies, are utilizing a smaller, cache building for fire gear storage and a 'meeting' room.

National Park Service Lake Roosevelt National Recreation Area

Lake Roosevelt National Recreation Area Purpose: The purpose of Lake Roosevelt National Recreation Area is to provide opportunities for diverse, safe, quality, outdoor recreational experiences for the public; to preserve, conserve, and protect the integrity of natural, cultural, and scenic resources; and to provide opportunities to enhance public appreciation and understanding about the area's significant resources.

Park Summary: In 1946 the Secretary of the Interior, by his approval of an agreement between the Bureau of Reclamation, the Bureau of Indian Affairs, and the National Park Service (NPS), designated the NPS as the manager for Coulee Dam National Recreation Area. The area included Franklin D. Roosevelt Lake, the Reservoir formed behind Grand Coulee Dam, and the "freeboard" lands that were purchased at and above the 1310' elevation. Through over 50 years of changes, including a name change to Lake Roosevelt National Recreation Area (LRNRA) in 1997, the NPS now manages approximately 47,438 acres of the 81,389 acres of total water surface, associated shoreline, and 12,936 acres of the 19,196 acres of total freeboard land. In 1990, two adjacent Native American Tribes were included in the Lake Roosevelt Cooperative Management Agreement. The Colville Confederated Tribe and the Spokane Tribe of Indians manage the remaining water surface and freeboard land. LRNRA consists of land in Stevens County, Ferry County, Lincoln County, and headquarters in Grant County.

Vegetation at Lake Roosevelt National Recreation Area includes at least three fire-prone ecosystems, these being steppe (semi-arid grassland), shrub/steppe, and ponderosa pine forest. The current Fire Management Plan signed in 2015 designates an additional 54 ladder fuel reduction treatment areas.

Lake Roosevelt National Recreation Area Fire Management Program is managed by North Cascades National Park. LRNRA initial attack is primarily provided by the Washington State Department of Natural Resources through NEWICC dispatch center. North Cascades/ Lake Roosevelt NRA Fire Management Personnel respond to extended attack fires when they are available and may be available to assist with initial attack if they are on duty and within the vicinity. North Cascades/ Lake Roosevelt NRA Fire Management Program personnel are scattered throughout northern Washington. The Fire Management Officer is headquartered in Winthrop &/or Marblemount WA, the Assistant Fire Management Officer (Fire) is headquartered in Marblemount, and the Assistant Fire Management Officer (Fuels) is headquartered in Coulee Dam. The Fuels Crew Leader is headquartered in Marblemount, but spends the majority of his time with the crew in Kettle Falls. The Fire Crew Leader is headquartered in Marblemount but typically spends July, August, and September in Stehekin.

Agreements, Arrangements & Operating Plans:

- Master Cooperative Wildland Fire Management & Stafford Act Response Agreement with Dept. of Interior, Dept. of Agriculture, Bureau of Land Management, Bureau of Indian Affairs, United States Fish & Wildlife Service, and Washington State Department of Natural Resources.
- Eastern Washington Local Operating Plan with USFS- Colville, Okanogan & Wenatchee National Forests; BIA-Colville, Spokane & Yakama Agencies; NPS-

North Cascades Complex & Lake Roosevelt NRA; Spokane District BLM; USFWS-Mid-Columbia River, Inland Northwest Complexes; and WA DNR-Northeast, Southeast Regions.

- Interagency agreements exist for fuels & fire management work with Okanogan and Wenatchee NF, Mount Baker Snoqualmie NF, and Boise BLM.
- Interpark Operating Agreement between North Cascades Complex & LRNRA for fire management.
- Wildfire Response & Border Arrangement, between Northwest U.S. Wildland fire agencies (state & federal) and British Columbia Ministry of Forests, Canada Border Services Agency, & U.S. Customs & Border Protection

Fire Protection Issues

The following sections provide a brief overview of the many difficult issues currently challenging Stevens County in providing wildland fire safety to citizens. These issues were discussed at length both during the committee process and at several of the public meetings. In most cases, the committee has developed action items (Chapter 6) that are intended to begin the process of effectively mitigating these issues.

Address Signage

The ability to quickly locate a physical address is critical in providing services in any type of emergency response. Accurate road address and address signage is fundamental to ensuring the safety and security Stevens County residents. Currently, there are numerous areas throughout the county lacking road signs, address markers, or both. Signage throughout the County needs to be updated in order to assure visibility and quick location by emergency responders.

Coordination with State and Federal Agencies

There has been improvement in communications between local fire departments and the public land management agencies due to the new coordinated Dispatch Center. Communications between local, state, and federal firefighting agencies could always be improved however.

Urban and Suburban Growth

One challenge Stevens County faces is the large number of houses in the urban/rural fringe. Since the 1970s, a segment of Washington's growing population has expanded further into traditional rural or resource lands. The “interface” between urban and suburban areas and the resource lands created by this expansion has produced a significant increase in threats to life and property from fires and has pushed existing fire protection systems beyond original or current design or capability. Stevens County has a low number of Firewise Communities; therefore, there are many property owners within the interface that are not aware of the problems and threats they face. Furthermore, human activities increase the incidence of fire ignition and potential damage.

It is one of the goals of the Stevens County CWPP to help educate the public on the ramifications of living in the wildland-urban interface, including their responsibilities as landowners to reduce the fire risk on their property and to provide safe access to their property for all emergency personnel and equipment. Homeowners building in a high fire risk area must understand how to make their properties more fire resistant using proven firesafe construction and landscaping techniques and they must have a realistic understanding of the capability of local fire service organizations to defend their property.

Rural Fire Protection

People moving from urban areas to the more rural parts of Stevens County, frequently have high expectations for structural fire protection services. Often, new residents do not realize that the services provided are not the same as in an urban area. The diversity and amount of equipment and the number of personnel can be substantially limited in rural areas. Fire protection may rely more on the landowner's personal initiative to take measures to protect his or her property. Furthermore, subdivisions on steep slopes and the greater number of homes exceeding 3,000 square feet are also factors challenging fire service organizations. In the future, public education and awareness may play a greater role in rural or interface areas. Great improvements in fire protection techniques are being made to adapt to large, rapidly spreading fires that threaten large numbers of homes in interface areas.

There are also large portions of the population within Stevens County that are not located within a Fire District. Many of these folks do not know that they would not be provided structural protection in the event of a fire. These residents need to be educated regarding their lack of fire protection service and encouraged to incorporate into an existing District where possible.

Summer Recreation

The wide variety of recreational opportunities within the county creates a population influx during the summer months that puts significant stresses on the local Fire Districts to provide protection. These Fire Districts are often minimally staffed with volunteer firefighters who are working with surplus equipment that may not be suitable for this influx.

Debris Burning

Local burning of yard debris is highly regulated in Stevens County. Permit burns in Stevens County are based on DNR cycle, while burn bans are a locally based decision determined by fuel moistures (see Fire District Summaries for more information on burning). Some people still burn outside of the designated time frame, and escaped debris fires impose a very high fire risk to neighboring properties and residents. It is likely that regulating this type of burning will always be a challenge for local authorities and fire departments; however, improved public education regarding the County's burning regulations and permit system as well as potential risk factors would be beneficial.

Pre-planning in High Risk Areas

Although conducting home, community, and road defensible space projects is a very effective way to reduce the fire risk to communities in Stevens County, recommended projects cannot all occur immediately and many will take several years to complete. Thus, developing pre-planning guidelines specifying which and how local fire agencies and departments will respond to specific areas is very beneficial. These response plans should include assessments of the structures, topography, fuels, available evacuation routes, available resources, response times, communications, water resource availability, and any other factors specific to an area. All of these plans should be available to the local fire departments as well as dispatch personnel.

Volunteer Firefighter Recruitment

The rural fire departments in Stevens County are predominantly dependent on volunteer firefighters. Each district spends a considerable amount of time and resources training and equipping each volunteer, with the hope that they will continue to volunteer their services to the department for at least several years. One problem that all volunteer-based departments encounter is the diminishing number of new recruits. As populations continue to rise and more and more people build homes in high fire risk areas, the number of capable volunteers has gone down. In particular, many departments have difficulty maintaining volunteers available during regular work day hours (8am to 5pm).

One of the goals of this CWPP is to assist local fire departments and districts with the recruitment of new volunteers and retention of trained firefighters. This is a very difficult task, particularly in small, rural communities that have a limited pool; however, providing departments with funding for training, safety equipment, advertising, and possibly incentive programs will help draw more local citizens into the fire organizations.

Communication

There are several communication issues being addressed in Stevens County. Many of the emergency responders have identified areas of poor reception for both radios and cell phones. The lack of communication between responders as well as with central dispatch significantly impairs responders' ability to effectively and efficiently do their job as well as lessens their safety. In addition, Stevens County would need approval from Canada to install additional communication towers due to the shared border.

On a smaller scale, many subdivisions or unincorporated population centers have identified the need to improve emergency communication between residents. In an emergency situation, there is no existing way of notifying each resident in an area of the potential danger, the need for evacuation, etc. Many groups of homeowners have begun to establish phone trees and contact lists in order to communicate information at the individual scale; however, this is not being done in all of the high wildfire risk areas within the County.

Communication is a central issue for the planning committee; thus, numerous recommendations targeting the improvement of communications infrastructure, equipment, and pre-planning have been made.

Water Resources

One issue that is common the need to develop additional water resources in several rural areas. Developing water supply resources such as cisterns, dry hydrants, drafting sites, and/or dipping locations ahead of an incident is considered a force multiplier and can be critical for successful suppression of fires. Pre-developed water resources can be strategically located to cut refilling turnaround times in half or more, which saves valuable time for both structural and wildland fire suppression efforts.

Invasive Species

Fire behavior and fire regimes have been altered due to the proliferation of cheatgrass (*Bromus tectorum*) and other invasive species. Cheatgrass invades disturbed open sites and can dominate an area. Cheatgrass ripens and cures much earlier in the season when compared with native species, thus extending the fire season.[32] According to some statistical analysis, cheatgrass dominated ranges are about 500 times more likely to burn than a native species dominated range.[33] Fire return intervals in steppe and shrub-steppe fuel types, pre-European settlement was typically between 32 and 70 years.[34] In certain Great Basin rangelands, the fire return interval is now less than 5 years on rangelands dominated by cheatgrass.[35]

Public Wildfire Awareness

As the potential fire risk in the wildland-urban interface continues to increase, it is clear that fire service organizations cannot be solely responsible for protection of lives, structures, infrastructure, ecosystems, and all of the intrinsic values that go along with living in rural areas. Public awareness of the wildland fire risks as well as homeowner accountability for the risk on their own property is paramount to protection of all the resources in the wildland-urban interface.

[32] Pellant, Mike. 1996. Cheatgrass: The Invader That Won the West. Idaho State Office: Bureau of Land Management. 23p.

[33] Platt, K.; Jackman, E.R. 1946. The cheatgrass problem in Oregon. Extension Bull. 668. Corvallis, OR: Oregon State College. 48 p.

[34] Wright, H.A.; Neuenschwander, L.F.; Britton, C.M. 1979. The role and use of fire in sagebrush and pinyon juniper plant communities: a state-of-the-art review. Gen. Tech. Rep. INT-58. Ogden UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 48 p.

[35] Pellant, Mike. 1990. Unpublished data on file at: U.S. Department of Interior, Bureau of Land Management, Idaho State Office, Boise, ID.

The continued development of mechanisms and partnerships to increase public awareness regarding wildfire risks and promoting "do it yourself" mitigation actions is a primary goal of the CWPP steering committee as well as many of the individual organizations participating on the committee.

Current Wildfire Mitigation Activities

Many of the county's fire departments and agencies are actively working on public education and homeowner responsibility by visiting neighborhoods and schools to explain fire hazards to citizens. Often, they hand deliver informative brochures and encourage homeowners to have their driveways clearly marked with their addresses to ensure more rapid and accurate response to calls and better access.

Firewise

"Over the past century, America's population has nearly tripled, with much of the growth flowing into traditionally natural areas. These serene, beautiful settings are attracting more residents every year. This trend has created an extremely complex landscape that has come to be known as the wildland/ urban interface: a set of conditions under which a wildland fire reaches beyond trees, brush, and other natural fuels to ignite homes and their immediate surroundings. Consequently, in nearly all areas of the country, the wildland/urban interface can provide conditions favorable for the spread of wildfires and ongoing threats to homes and people. Many individuals move into these picturesque landscapes with urban expectations. They may not recognize wildfire hazards or might assume that the fire department will be able to save their home if a wildfire ignites. However, when an extreme wildfire spreads, it can simultaneously expose dozens — sometimes hundreds — of homes to potential ignition. In cases such as this, firefighters do not have the resources to defend every home. Homeowners who take proactive steps to reduce their homes' vulnerability have a far greater chance of having their homes withstand a wildfire. The nation's federal and state land management agencies and local fire departments have joined together to empower homeowners with the knowledge and tools to protect their homes through the National Firewise Communities Program. Firewise Communities is designed to encourage local solutions for wildfire safety by involving firefighters, homeowners, community leaders, planners, developers, and others in efforts to design, build, and maintain homes and properties that are safely compatible with the natural environment. The best Firewise approach involves a series of practical steps that help individuals and community groups to work together to protect themselves and their properties from the hazard of wildfire. Using at least one element of a Firewise program and adding other elements over time will reduce a homeowner's and a community's vulnerability to fire in the wildland/urban interface. Wildland fires are a natural process. Making your home compatible with nature can help save your home and, ultimately, your entire community during a wildfire."[36]

[36] http://www.firewise.org/Information/Who-is-this-or/Homeowners/~/media/Firewise/Files/Pdfs/Booklets%20and%20Brochures/BrochureCommunitiesCompatibleNature.pdf. Accessed June, 2012.

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Chapter 5

Landscape Risk Assessments

Stevens County is located in northeastern Washington. The county encompasses approximately 2,541 square miles and has an elevation range of about 1,300 feet to over 7,000 feet above sea level. Public land is managed primarily by the US Forest Service (13%) and other federal (4%) agencies. Nearly 10% of Stevens County is Spokane Indian Reservation which is controlled by the Spokane Tribe of Indians. Private land ownership accounts for approximately the majority of land in Stevens County at nearly 63% of the land in Stevens County. Federal lands are managed by the U.S, Forest service, National Park Service, Bureau of Land Management, and the Bureau of Reclamation. Stevens, the fifth largest county in the state, is bordered on the west by Ferry County, to the south by Lincoln and Spokane Counties, to the east by Spokane and Pend Oreille Counties, and to the north by Canada. Stevens County lies within the mountainous area on the fringe of the Okanogan Highlands, a region formed by great ice sheets during the Pleistocene Epoch. As the ice sheets retreated to the north, lakes formed in the valleys of the Columbia and Pend Oreille Rivers. Along the Canadian boundary, terrace deposits indicate lake levels 2,000 feet above current sea level. Melt waters filled these lakes with sand, silt, and clay.[37] Forested areas and areas with steppe vegetation provide diverse wildlife habitat in the county. The rugged Selkirk Mountain Range covers much of the eastern portion of the county. The Columbia and Kettle Rivers run along much of the western boundary while the Spokane River runs the entire southern boundary. The high fuel loads, steep slopes, and low summer precipitation results in an environment that is potentially very prone to wildland fire.

Cover vegetation and wildland fuels exhibited across the county have been influenced by massive geologic events during the Pleistocene era that scoured and shifted the earth's surface leaving areas of deep rich soil interspersed with rocky canyons and deep valleys. In addition to the geological transformation of the land, wildland fuels vary within a localized area based on slope, aspect, elevation, management practices, and past disturbances. Geological events and other factors have created distinct landscapes that exhibit different fuel characteristics and wildfire concerns.

In order to facilitate a mutual understanding of wildfire risks specific to commonly known areas in the county, the landscape-level wildfire risk assessments in the following sections are based on two predominant landscapes types that exhibit distinct terrain and wildland fuels. The two landscapes identified for the assessments are: rangelands and forestlands. These landscapes, although intermixed in some areas, exhibit specific fire behavior, fuel types, suppression challenges, and mitigation recommendations that make them unique from a planning perspective.

Overall Fuels Assessment

The Okanogan Highlands are a patch-work of dry Douglas-fir and ponderosa pine forests that, in many areas, have become overstocked, resulting in multistoried conditions with abundant ladder fuels. During pre-settlement times, much of this area was characterized by low intensity fires due to the relatively light fuel loading, which mostly consisted of small diameter fuels. Frequent,

[37] Washington State Department of Natural Resources website found at: http://www.dnr.wa.gov/researchscience/topics/geologyofwashington/pages/okanogan.aspx. Accessed July 1, 2014.

low intensity fires generally kept stands open; free of fire intolerant species and maintained seral species such as ponderosa pine as well as larger diameter fire resistant Douglas-fir. In some areas, low intensity fires stimulated shrubs and grasses, maintaining vigorous browse and forage. The shrub layer could either inhibit or contribute to potential fire behavior, depending on weather and live fuel moisture conditions at the time of the burn.

In general, large fires that start in the Okanogan Highlands start high in elevation and move downhill. As fires move down in elevation, they encounter drier and flashier fuels in the lower elevations. Rolling embers and spot fires are a common method of downhill fire spread. Spot fires ignited on slopes trigger uphill runs that throw more spot fires, expanding the downward fire progression. Modifying fuels to reduce the likelihood of torching and crowning trees will in turn reduce the likelihood of spot fires.

Increased activities by pathogens will continue to increase levels of dead and down fuel, as host trees succumb to insect attack and stand level mortality increases. Overstocked, multi-layered stands and the abundance of ladder fuels lead to horizontal and vertical fuel continuity. These conditions, combined with an arid and often windy environment, can encourage the development of a stand replacing fire. These fires can burn with very high intensities and generate large flame lengths and fire brands that can be lofted long distances. Such fires present significant control problems for suppression resources, often developing into large, destructive wildland fires.

A probability that needs to be planned for is the likelihood of extended spot fires. Large fires may easily produce spot fires from ½ to 2 miles away from the main fire. How fire suppression forces respond to spot fires is largely dependent upon the fuels in which they ignite. Stands of timber that are managed for fire resilience are much less likely to sustain torching and crowning behavior that produces more spot fires. The objective of fuel reduction thinning is to change the fuels in a way that will moderate potential fire behavior. If fire intensity can be moderated by vegetation treatments, then ground and air firefighting resources can be much more effective.

Areas that have recently burned will be at low risk of wildfires starting and spreading for several years because fine fuels were consumed. However, the overall reduction in hazardous fuels in these areas is minimal, particularly in dry Douglas-fir and ponderosa pine forests which were dense, multi-storied stands prior to wildfire. Dense stands of snags will become heavy dead and down branches and logs within 10-20 years. Fine fuels will return to these sites as understory species re-establish and these fuels combined with the accumulated large fuels will provide the opportunity for severe fire in 20-30 years after the initial wildfire.

Ingress-Egress

U.S. Highway 395 passes through Stevens County from the southeast to the northwest. State Highway 25 follows the eastern shore of the Columbia River and Lake Roosevelt from Fort Spokane to Northport before continuing on to Canada. State Highway 20 is the main east/west access through the county. This route travels west across the Selkirk Mountains before passing through the County Seat of Colville and continuing west into Ferry County.

There are several secondary roads that provide ingress and egress throughout the county including; Flowery Trail road, Addy-Gifford road, Cedonia-Addy road, Springdale-Hunters road, and Aladdin road among others. These roads provide critical ingress/egress routes for citizens throughout the county. County roads as well as Forest Service roads are well distributed throughout most of the county. In remote rural areas, county roads often change from a paved or

maintained gravel surface to unimproved primitive roads making access possible only during certain times of the year. Limited access within remote areas and a lack of maintenance on existing travel routes, increases fire suppression response time and has a direct effect on fire spread leading to increased fire size and destructive potential.

There are numerous bridges throughout Stevens County. Bridge load rating signs are mostly in place for the existing bridges and do not impose a limitation to access for firefighting equipment. There is one Ferry operated by WSDOT that access Stevens County, which crosses Lake Roosevelt near Gifford.

Infrastructure

Residents who live in population centers have municipal water systems, which include a network of public fire hydrants. New development is required by the International Fire Code to have hydrant placement in their development plan. Subdivisions and development outside municipal boundaries typically rely on community water systems or multiple-home well systems.

Above ground, high voltage transmission lines cross the planning area in many directions in corridors cleared of most vegetation, which provides for a defensible space around the power line infrastructure and may provide a control point for fire suppression, if well maintained. There is one major power supply line that provides electricity to the entire county. The line follows US Highway 395 from Kettle Falls through Loon Lake and ultimately out of the County towards Deer Park.

Local public electrical utility lines are both above and below ground traveling through back yards and along roads and highways. Many of these lines are exposed to damage from falling trees and branches. Power and communications may be cut to some of these during a wildfire event.

Cell phone service is well-established in the more populated parts of the county; however there are significant dead zones throughout much of the county. There are several communication sites throughout the county. These sites can be extremely vulnerable to wildland fire due to the need to be located on high points.

Fire Protection

All of the private lands within the thirteen fire protection districts of Stevens County have joint jurisdiction with the Washington Department of Natural Resources (DNR). Under joint jurisdiction, it is recognized that the Fire District has primary responsibility for structure protection and the DNR will have primary responsibility for wildland fire suppression on state and private lands. Local Fire Districts however, generally provide initial attack on most fires within the County with the DNR, BLM, USFS, or NPS relieving the District if extended attack si required. The DNR provides wildfire protection during fire season between April and October with varying degrees of available resources in the early spring and late autumn months. The DNR has primary responsibility for wildland fire suppression on LRNRA through an operating plan. U.S. Forest Service and Bureau of Land Management will respond to all wildland fires on their respective jurisdictions and may also respond to wildland fires on private or state lands based on a closest forces, reciprocal agreement with the DNR when resources are available.

Overall Mitigation Activities

There are many specific actions that will help improve safety in a particular area; however, there are also many potential mitigation activities that apply to all residents and all fuel types. General mitigation activities that apply to all of Stevens County are discussed below while area-specific mitigation activities are discussed within the individual landscape assessments.

The safest, easiest, and most economical way to mitigate unwanted fires is to stop them before they start. Generally, prevention actions attempt to prevent human-caused fires. Campaigns designed to reduce the number and sources of ignitions can take many forms. Traditional "Smokey Bear" type campaigns that spread the message passively through signage can be quite effective. Signs that remind people of the dangers of careless use of fireworks, burning when windy and leaving unattended campfires have been effective. Fire danger warning signs posted along access routes remind residents and visitors of the current conditions. It's impossible to say just how effective such efforts actually are; however, the low costs associated with posting of a few signs is inconsequential compared to the potential cost of fighting a fire.

Burn Permits: Washington State Department of Natural Resources is the primary agency issuing burn permits throughout Ferry County. The Washington DNR burn permits regulate silvicultural burning. Washington Department of Ecology (DOE) is the primary agency issuing burn permits for improved property and agricultural lands. All DOE burn permits are subject to fire restrictions in place with WA DNR & local Fire Protection Districts. Washington DNR has a general burning period referred to as "Rule Burn" wherein a written burn permit is not required in low to some moderate fire dangers.

The timeframes for the Rule Burn are from October 16th to June 30th. Washington DNR allows for Rule Burns to be ten foot (10') piles of forest, yard, and garden debris. From July 1st to October 15th if Rule Burns are allowed, they are limited to four foot (4') piles.

Defensible Space: Effective mitigation strategies begin with public awareness campaigns designed to educate homeowners of the risks associated with living in a flammable environment. Residents of Stevens County must be made aware that home defensibility starts with the homeowner. Once a fire has started and is moving toward a structure or other valued resources, the probability of that structure surviving is largely dependent on the structural and landscaping characteristics of the home. "Living with Fire, A Guide for the Homeowner" is an excellent tool for educating homeowners as to the steps to take in order to create an effective defensible space. Residents of Stevens County should be encouraged to work with local fire departments and fire management agencies within the county to complete individual home site evaluations. Home defensibility steps should be enacted based on the results of these evaluations. Beyond the homes, forest management efforts must be considered to slow the approach of a fire that threatens a community.

Evacuation Plans: Development of community evacuation plans are necessary to assure an orderly evacuation in the event of a threatening wildland fire. Designation and posting of escape routes would reduce chaos and escape times for fleeing residents. Community safety zones should also be established in the event of compromised evacuations. Efforts should be made to educate homeowners through existing homeowners associations or creation of such organizations to act as conduits for this information.

Accessibility: Also of vital importance is the accessibility of the homes to emergency apparatus. If a home cannot be protected safely, firefighting resources will not jeopardize lives to protect a structure. Thus, the fate of the home will largely be determined by homeowner actions prior to the event. In many cases, homes' survivability can be greatly enhanced by following a few simple guidelines to increase accessibility such as widening or pruning driveways and creating a turnaround area for large vehicles.

Fuels Reduction: Recreational facilities near communities, along the Kettle River, Columbia River, Franklin D. Roosevelt Lake, or in the surrounding forest lands should be kept clean and maintained. In order to mitigate the risk of an escaped campfire, escape proof fire rings and barbeque pits should be installed and maintained. Surface fuel accumulations in forests and shrubland can be kept to a minimum by periodically conducting pre-commercial thinning, clearing, pruning and limbing, and possibly controlled burns. Other actions that would reduce the fire hazard would be creating a fire resistant buffer along roads and power line corridors and strictly enforcing fire-use regulations.

Emergency Response: Once a fire has started, how much and how large it burns is often dependent on the availability of suppression resources. In most cases, rural fire departments are the first to respond and have the best opportunity to halt the spread of a wildland fire. For many districts, the ability to reach these suppression objectives is largely dependent on the availability of functional resources and trained individuals. Increasing the capacity of departments through funding and equipment acquisition can improve response times and subsequently reduce the potential for resource loss.

Rural Addressing: In order to assure a quick and efficient response to an event, emergency responders need to know specifically where emergency services are needed. Continued improvement and updating of the rural addressing system is necessary to maximize the effectiveness of a response.

Other Activities: Other specific mitigation activities are likely to include improvement of emergency water supplies, access routes, and management of vegetation along roads and power line right-of-ways. Furthermore, building codes should be revised to provide for more fire-conscious construction techniques such as using fire resistant siding, roofing, and decking in high risk areas.

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Shrub/Steppe Landscape Risk Assessment

The shrub/steppe landscape is intermittent throughout the forested areas of Stevens County, however, shrub/steppe dominates the western and southern peripheries of the County. Landownership in the steppe landscape is mixed with private, Bureau of Land Management, Forest Service, National Park Service, and scattered Washington Department of Natural Resources. The communities of Cedonia, Hunters, and Gifford fall within this landscape type. Other rural development found throughout the steppe landscape includes individual homes and ranches, and small subdivisions. New development occurs primarily near communities, along major roads, and particularly in the southeast corner of the County. Recently, most of the pressure for multi-housing subdivisions has occurred in close proximity to Long Lake. In nearly all developed areas, structures are in close proximity to vegetation that becomes a significant fire risk at certain times of the year.

Wildfire Potential

Fires in grass and rangeland fuel types tend to burn at relatively low intensities, with moderate flame lengths and only short-range spotting. Suppression resources are generally quite effective in such fuels. Homes and other improvements can be easily protected from the direct flame contact and radiant heat through adoption of precautionary measures around the structure. Although fires in these fuels may not present the same control problems as those associated with large, high intensity fires in timber fuel types, they can cause significant damage if precautionary measures have not taken place prior to a fire event. Wind driven fires in these short grass fuel types spread rapidly and can be difficult to control. During extreme drought and pushed by high winds, fires in grassland fuel types can exhibit extreme rates of spread, thwarting suppression efforts.

Wildfire risk in the shrub/steppe landscape is at its highest during late summer and fall when grasses are cured and daily temperatures are at their highest. Wet years can be misleading in that it can lead the public to believe the fire danger is low, when in-fact grass and forbs will become more robust due to the abundance of moisture than in dry years and when these fuels do dry, there is more fuel available to burn. Fuel types associated with the steppe landscape are generally easier to extinguish, given that firefighting crews can access the fire front. However, a wind-driven fire in steppe fuels would produce a rapidly advancing, but variable intensity fire that could provide landowners in the fire's path little warning.

Potential Mitigation Activities

Mitigation measures needed in the steppe landscape include maintaining a defensible space around structures and access routes that lie adjacent to wildland fuels. Around structures, this includes maintaining a green space, mowing weeds and other fuels away from outbuildings, pruning and/or thinning larger trees, using fire resistant construction materials, and locating propane tanks, fuel tanks and firewood away from structures. Roads and driveways accessing rural residents may or may not have adequate road widths and turnouts for firefighting equipment depending on when the residences were constructed. Performing road inventories in high risk areas to document and map their access limitations will improve firefighting response time and identify areas in need of enhancement. Primitive or abandoned roads that provide key access to remote areas should also be maintained in such a way that enables access for emergency equipment so that response times can be minimized. Roads can be made more fire

resistant by frequently mowing along the edges or spraying weeds to reduce the fuels. Aggressive initial attack on fires occurring along travel routes will help ensure that these ignitions do not spread to nearby home sites. Designing a plan to help firefighters control fires in wildlands that lie adjacent to communities would significantly lessen a fire's potential of destruction of homes. Mitigation associated with this situation might include installing fuel breaks or plowing a fire resistant buffer zone around communities and along predesigned areas to tie into existing natural or manmade barriers or implementing a prescribed burning program during less risky times of the year.

Forest Landscape Risk Assessment

The forest landscape is dominant throughout Stevens County, especially the higher elevations and draws where moisture is more abundant. Landownership in the forest landscape is primarily U.S. Forest Service with a mix of Bureau of Land Management, Washington Department of Natural Resources, National Park Service, and scattered private ownership. Although there are few major population centers (Marcus, Northport, and Sprindale) that occur within this landscape, there are other rural developments and individual homes found throughout the forest landscape. Recently, new development has slowed throughout the county. In nearly all developed areas, structures are in close proximity to vegetation that becomes a significant fire risk at certain times of the year.

Wildfire Potential

The forest landscape has a moderate to high wildfire potential due to a characteristically high occurrence of ground fuels mixed with ladder fuels, sloping terrain and somewhat limited precipitation during summer months. Large expanses of forests provide a continuous fuel bed that could, if ignited, threaten structures and infrastructure under extreme weather conditions. A wind-driven fire in dry, native fuel complexes on variable terrain produces a rapidly advancing, very intense fire with large flame lengths, which enables spotting ahead of the fire front.

Wildfire risk in the forest landscape is at its highest during summer and fall when daily temperatures are high and relative humidity is low. Fires burning in fuel types associated with this landscape would be expected to burn more intensely with larger flame lengths due to the greater availability of fuels. Fires in this fuel type are harder to extinguish completely due to the dense duff layer and heavier fuels (100 and 1000 hour fuels) which often leads to hold-over fires that may reemerge at a later date causing additional fire starts. Insect and disease has affected some areas within Stevens County, particularly pine beetle, which increases the amount of dead and down material available to burn. Additionally, there is a large number of forested acres throughout the county that have been affected by a general lack of management. Lack of management can lead to overcrowding of trees, which causes the trees to be stressed and leaves them susceptible to disease, drought, and insects. Overcrowding (or overstocking) can also make the forests prone to canopy (or crown) fires.

Potential Mitigation Activities

Mitigation measures needed in the forest landscape include maintaining a defensible space around structures and access routes that lie adjacent to wildland fuels. This includes maintaining a green or plowed space, mowing weeds and other fuels away from outbuildings, pruning and/or thinning larger trees, using fire resistant construction materials, and locating propane tanks and firewood away from structures. Conducting ‘firewise’ or ‘fire adapted communities’ (FAC) workshops would enable landowners’ to be proactive with wildland fire mitigation on their own properties as well as in their communities. Roads and driveways that access rural development need to be kept clear of encroaching fuels to allow escape and access by emergency equipment. Performing road inventories and home assessments in high risk areas and documenting and mapping their access limitations will improve firefighting response time and identify areas in need of improvement. Primitive or abandoned roads that provide key access to remote areas should be maintained to allow access for emergency equipment so that emergency response times are minimized. It is important that private landowners work in conjunction with each other

and public land agencies (e.g. USFS, BLM, and DNR) when conducting forest health and fuel reduction projects to achieve the greatest benefit.

Agricultural Landscape Risk Assessment

The agricultural landscape is widespread across Stevens County. Stevens County main crops are hay and wheat. Most of these crops are vulnerable to wildland fire at certain times of the year. The agriculture landscape is the predominant cover vegetation and fuel type around many of the communities throughout the county. Interspersed throughout this landscape are stream channels and rangeland areas. Landownership in the agricultural landscape is predominantly private. The major populated centers within this landscape type include Colville and Chewelah. Other rural development found throughout the agricultural landscape includes individual farms, small subdivisions, railroad sidings and grain elevators. Development is widely distributed. New development occurs primarily near communities and along major roads. Occasionally farmland is subdivided between family members for new home sites or for development of new farming facilities. Most of the pressure for multi-housing subdivisions occurs in close proximity to existing towns. In nearly all developed areas, structures are in close proximity to vegetation that becomes a significant fire risk at certain times of the year.

Wildfire Potential

Wildfire potential in the agricultural landscape is moderate in the rural farmland and moderate to high in the shrubby draws and waterways, pastures, and scattered patches of timber. Virtually all of the populated areas within the agricultural landscape face similar challenges related to wildfire control and opportunities for fuels mitigation efforts. Farming and ranching activities have the potential to increase the risk of a human-caused ignition. Large expanses of crops, CRP, rangeland or pasture provide areas of continuous fuels that may threaten homes and farmsteads. Under extreme weather conditions, escaped fires in these fuels could threaten individual homes or a town site; however, this type of fire is usually quickly controlled. Clearings and fuel breaks disrupt a slow moving wildfire enabling suppression before a fire can ignite heavier fuels. High winds increase the rate of fire spread and intensity of crop and rangeland fires. It is imperative that homeowners implement fire mitigation measures to protect their structures and families prior to a wildfire event in these areas.

Wildfire risk in the agricultural landscape is at its highest during late summer and fall when crops are cured and daily temperatures are at their highest. A wind-driven fire in agricultural fuels or dry native fuel complexes would produce a rapidly advancing, but variable intensity fire. Fires burning in some types of unharvested fields would be expected to burn more intensely with larger flame lengths due to the greater availability of fuels resulting from the higher productivity of the vegetation. Fields enrolled in the CRP or set aside for wildlife habitat can burn very intensely due to an increased amount of fuel build-up from previous years' growth. Fires in these types of fuels are harder to extinguish completely due to the dense duff layer, often leading to hold over fires that may reemerge at a later date causing additional fire starts.

The relative threat level in this agricultural area increases in July and August because of significant wildfire hazard. Relative humidity is usually lower during this time, afternoon winds tend to increase, and the standing grain is cured to the point where it readily ignites. The ripened wheat, hot daytime temperatures, and erratic winds can produce extreme fire behavior and long flame lengths which can easily spread to adjacent rangelands or CRP/SAFE fields. These fires tend to burn very quickly and intensely.

Potential Mitigation Activities

Mitigation measures needed in the agricultural landscape include maintaining a defensible space around structures and access routes that lie adjacent to annual crops and other wildland fuels. Around structures, this includes maintaining a green or plowed space, mowing weeds and other fuels away from outbuildings, pruning and/or thinning larger trees, using fire resistant construction materials, and locating propane tanks, fuel tanks and firewood away from structures. Roads and driveways accessing rural residents may or may not have adequate road widths and turnouts for firefighting equipment depending on when the residences were constructed. Performing road inventories in high risk areas to document and map their access limitations will improve firefighting response time and identify areas in need of enhancement. Primitive or abandoned roads that provide key access to remote areas should also be maintained in such a way that enables access for emergency equipment so that response times can be minimized. Roads can be made more fire resistant by frequently mowing along the edges or spraying weeds to reduce the fuels. Aggressive initial attack on fires occurring along travel routes will help ensure that these ignitions do not spread to nearby home sites. Designing a plan to help firefighters control fires in CRP lands that lie adjacent to agricultural crops would significantly lessen a fire's potential of escaping to the higher value resource. Mitigation associated with this situation might include installing fuel breaks or plowing a fire resistant buffer zone around fields and along predesigned areas to tie into existing natural or manmade barriers or implementing a prescribed burning program during less risky times of the year.

Maintaining developed drafting sites, increasing access to water from irrigation facilities, and developing other water resources throughout the agricultural landscape will increase the effectiveness and efficiency of emergency response during a wildfire.

Chapter 6

Mitigation Recommendations

Critical to implementation of this Community Wildfire Protection Plan are the identification and implementation of an integrated schedule of action items targeted at achieving a reduction in the number of human caused fires and the impact of wildland fires in Stevens County. This section of the plan identifies and prioritizes potential mitigation actions, including treatments that can be implemented in the county to pursue that goal. As there are many land management agencies and thousands of private landowners in Stevens County, it is reasonable to expect that differing schedules of adoption will be made and varying degrees of compliance will be observed across various ownerships.

The primary land management agencies in Stevens County, specifically the Bureau of Land Management, USDA Forest Service, and WA Department of Natural Resources are participants in this planning process and have contributed to its development. Where available, their schedule of land treatments have been considered in this planning process to better facilitate a correlation between their identified planning efforts and the efforts of Stevens County.

Stevens County encourages the building of disaster resistance in normal day-to-day operations. By implementing plan activities through existing programs and resources; the cost of mitigation is often a small portion of the overall cost of a project's implementation.

All risk assessments were made based on the conditions existing during 2015. Therefore, the recommendations in this section have been made in light of those conditions. However, the components of risk and the preparedness of the county's resources are not static. It will be necessary to fine-tune this plan's recommendations regularly to adjust for changes in the components of risk, population density changes, infrastructure modifications, and other factors.

Maintenance and Monitoring

As part of the policy of Stevens County, the Community Wildfire Protection Plan will be reviewed at least annually at special meetings of the CWPP steering committee, open to the public and involving all municipalities/jurisdictions, where action items, priorities, budgets, and modifications can be made or confirmed. Amendments to the plan should be documented and attached to the formal plan as an amendment. Re-evaluation of this plan should be made on the 5th anniversary of its acceptance, and every 5-year period following.

Prioritization of Mitigation Activities

The action items recommended in this chapter were prioritized through a group discussion and voting process. The action items in Tables 6.1 – 6.5, as well as the specific project areas that are listed in Table 6.6, are ranked as "High", "Moderate", or "Low" priorities for Stevens County as a whole. The CWPP committee does not want to restrict funding to only those projects that are high priority because what may be a high priority for a specific community may not be a high priority at the county level. Regardless, the project may be just what the community needs to

mitigate disaster. The flexibility to fund a variety of diverse projects based on varying criteria is a necessity for a functional mitigation program at the county and community level.

Policy and Planning Efforts

Wildfire mitigation efforts must be supported by a set of policies and regulations at the county level that maintain a solid foundation for safety and consistency. The recommendations enumerated here serve that purpose. Because these items are regulatory in nature, they will not necessarily be accompanied by cost estimates. These recommendations are policy related and therefore are recommendations to the appropriate elected officials; debate and formulation of alternatives will serve to make these recommendations suitable and appropriate.

Table 6.1. Action Items in Safety and Policy.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline
6.1.a: Encourage the use of firesafe building materials in high-risk WUI areas on existing structures and new construction.	**CWPP Goal #1,2, & 3** High	**Lead:** County Commissioner's Office **Support:** Stevens County Fire Districts #1-13, and city fire departments..	On-going
6.1.b: Begin distributing "Code of the West" pamphlets with building permit requests.	**CWPP Goal #1,2, & 3** Medium	**Lead:** County Building Department **Support:** County Commissioners and incorporated cities of Colville, Chewelah, Kettle Falls, Marcus, Springdale, and Northport.	On-going
6.1.c: Rural signage (road signs & house numbers) improvements across the County.	**CWPP Goal #1,2, & 4** High	**Lead:** County Public Works **Support:** County Planning Department, County Commissioners, and Stevens County Fire Districts 1-13.	On-going
6.1.d: Encourage new home and business construction to install underground power lines.	**CWPP Goal #1,2, & 3** High	**Lead:** County Planning Department **Support:** County Commissioner's Office, Stevens County Public Utilities District, and utilities companies.	On-going
6.1.e: Incorporate the Stevens County Community Wildfire Protection Plan into the Stevens County Comprehensive Plan, where applicable.	**CWPP Goal #1 & 2** High	**Lead:** Stevens County Commissioners **Support:** Stevens County Planning Department.	On-going

6.1.f: Strongly encourage fire-safe development of rural subdivisions (see FIREWISE or similar programs for specific recommendations).	**CWPP Goal #1,2, & 3** High	**Lead:** County Planning Department **Support:** County Commissioner's Office, County Building Department, Stevens County Fire Districts #1-13, city fire departments, developers, and interested residents.	On-going
6.1.g: Encourage adherence of Washington Building Codes and International Fire Codes countywide to address substandard construction practices and access issues outside the incorporated city limits.	**CWPP Goal #1,2, & 3** High	**Lead:** County Land Services **Support:** Stevens County Land Services, Public Works, and Stevens County Fire Districts #1-13.	On-going
6.1.h: Encourage land management agencies to implement a fuels reduction program at recreational or high use areas and trailheads.	**CWPP Goal #1,2,3, & 4** High	**Lead:** County Commissioners **Support:** County Land Services, incorporated cities of Colville, Chewelah, Kettle Falls, Marcus, Springdale, and Northport, USFS, DNR, BLM, FWS, NPS, Spokane Indian Reservation, and Stevens County Fire Districts #1-13, and city fire departments.	On-going
6.1.i: Preplan for evacuation/emergency access to the Kelly Hill area during the Hedlund Bridge closure period.		**Lead:** County Emergency Manager **Support:** Stevens County Public Works, and Stevens County Joint Fire District #8.	Completed

Fire Prevention and Education Projects

The protection of people and structures will be tied together closely because the loss of life in the event of a wildland fire is generally linked to a person who could not, or did not, flee a structure threatened by a wildfire or to a firefighter combating that fire. Many of the recommendations in this section involve education and increasing wildfire awareness among Stevens County residents.

Residents and policy makers of Stevens County should recognize certain factors that exist today, the absence of which would lead to increased risk of wildland fires in Stevens County. The items listed below should be acknowledged and recognized for their contributions to the reduction of wildland fire risks:

Forest and Shrub/Steppe Management has a significant impact on the fuel composition and structure in Stevens County. The forest and shrub/steppe management programs of the BLM, USFS, WADNR and numerous private landowners in the region have led to a reduction of wildland fuels. Furthermore, forest and shrub/steppe systems are dynamic and will never be completely free from risk. Treated areas will need repeated treatments to reduce the risk to acceptable levels in the long term.

Table 6.2. Action Items for Fire Prevention, Education, and Mitigation.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline
6.2.a: Implementation of youth and adult wildfire educational programs.	**CWPP Goal #1,2, & 3** High	Cooperative effort including: DNR, State and Private Forestry Offices, BLM, USDA Forest Service, Local School Districts, Spokane Indian Reservation, Stevens County Conservation District, NGOs, Local Fire District and Departments, and Incorporated cities	On-going
6.2.b: Conduct wildfire risk assessments of homes in identified strategic planning areas.	**CWPP Goal #1,2,3,4, & 5** High	**Lead:** Washington DNR **Support:** County Commissioner's, USFS, NPS, local community organizations, Stevens County Fire Districts #1-13, Northeast Washington Forestry Coalition, and city fire departments.	On-going
6.2.c: Home site defensible space treatments in proposed project areas.	**CWPP Goal #1,2,4, & 5** High	**Lead:** Washington DNR **Support:** County Commissioner's, USFS, NPS, local community organizations, Stevens County Fire Districts #1-13, Northeast Washington Forestry Coalition, and city fire departments.	On-going

Table 6.2. Action Items for Fire Prevention, Education, and Mitigation.			
Action Item	**Goals Addressed (see page 4)**	**Responsible Organization**	**Timeline**
6.2.d: Community defensible zone treatments in proposed project areas.	**CWPP Goal #1,2,4, & 5** Medium	**Lead:** Washington DNR **Support:** County Commissioner's, USFS, NPS, local community organizations, Stevens County Fire Districts #1-13, Northeast Washington Forestry Coalition, and city fire departments.	On-going
6.2.e: Maintenance of home site defensible space treatments.	**CWPP Goal #1,2,4, & 5** Medium	**Lead:** Washington DNR **Support:** County Commissioner's, USFS, NPS, local community organizations, Stevens County Fire Districts #1-13, Northeast Washington Forestry Coalition, and city fire departments.	On-going

Infrastructure Enhancements

Critical infrastructure refers to the communications, transportation, power lines, and water supply that service a region or a surrounding area. All of these components are important to northeastern Washington and to Stevens County specifically. These networks are, by definition, a part of the wildland urban interface in the protection of people, structures, infrastructure, and unique ecosystems. Without supporting infrastructure, a community's structures may be protected, but the economy and way of life lost. As such, a variety of components will be considered here in terms of management philosophy, potential policy recommendations, and mitigation recommendations.

There are many roads throughout the county that are important to keep open to allow for alternate escape routes for citizens and firefighting personnel. The following list is not necessarily all inclusive but does include roads that connect through large areas and provide alternate escape routes. These are needed by the County to assist in the County's role of providing for public safety.

Table 6.3. Action Items for Infrastructure Enhancement.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline
6.3.a: Post "Emergency Evacuation Route" signs along the identified primary and secondary access routes..	**CWPP Goal #1,2,3, & 6** Medium	**Lead:** County Sheriff's Office **Support:** County Public Works, County Commissioner's, Stevens County Fire Districts #1-13, and city fire departments.	On-going
6.3.b: Create and maintain defensible space around critical infrastructure including, but not limited to communication sites, community shelters, government buildings (city, County, State, and federal), petroleum storage sites, hospitals, water storage sites, and PUD Service Stations.	**CWPP Goal #1,2,4, & 5** High	**Lead:** County Sheriff's Office and Washington DNR **Support:** County Commissioners, incorporated cities of Colville, Chewelah, Kettle Falls, Marcus, Springdale, and Northport, Spokane Indian Reservation, Stevens County Public Utilities District, and various facility/utility owners.	On-going
6.3.c: Indentify and indicate safety zones and/or rally points for evacuees.	**CWPP Goal #1,2,3,4, & 6** High	**Lead:** County Sheriff's Office **Support:** County Commissioner's, DNR, USFS, Stevens County Fire Districts #1-13, and city fire departments.	2017

Table 6.3. Action Items for Infrastructure Enhancement.			
Action Item	**Goals Addressed (see page 4)**	**Responsible Organization**	**Timeline**
6.3.d: Access improvements of bridges, cattle guards, culverts, and limiting road surfaces.	**CWPP Goal #1,2,4, & 6** High	**Lead:** County Public Works **Support:** County Fire Districts, County Commissioners, State of Washington (Lands and Transportation), USFS, DNR, Spokane Indian Reservation, and private landowners.	On-going
6.3.e: Access improvements through roadside fuels management throughout the county.	**CWPP Goal #1,2,4, & 6** Medium	**Lead:** County Commissioners **Support:** County Public Works, State of Washington (Lands and Transportation), USFS, DNR, Spokane Indian Reservation, NPS, and private landowners.	On-going
6.3.f: Individual Fire Districts to identify access issues and recommend improvements through roadside fuels management and/or other mitigation actions (e.g. bridge and culvert replacement).	**CWPP Goal #1,2,4, & 6** Medium	**Lead:** County Fire Districts **Support:** County Public Works, State of Washington (Lands and Transportation), USFS, DNR, Spokane Indian Reservation, NPS, and private landowners.	On-going
6.3.g: Improve communications capability throughout the County**.**	**CWPP Goal #1,2,4, & 6** Medium	**Lead:** County Sheriff's Office **Support:** National Park Service, Bureau of Indian Affairs, Washington DNR, and County Fire Districts.	On-going
6.3.h: Maintain existing loop roads throughout the county that mitigate one-way-in/one-way out to prevent entrapment.	**CWPP Goal #1,2,4, & 6** Medium	**Lead:** County Road Department **Support:** BLM, DNR, BIA, US Forest Service, and private landowners.	On-going
6.3.i: Upgrade the water supply system of the Flowery Trail Community to meet recommendations of the local Fire Protection District.	**CWPP Goal #1,2,4, & 6** Medium	**Lead:** Flowery Trail Community **Support:** local Fire Protection District and DNR.	2017

Resource and Capability Enhancements

There are a number of resource and capability enhancements identified by the rural and wildland firefighting districts in Stevens County. All of the needs identified by the districts are in line with increasing the ability to respond to emergencies and are fully supported by the CWPP steering committee.

The implementation of each action item will rely on either the isolated efforts of the rural Fire Protection Districts or a concerted effort by the county to achieve equitable enhancements across all of the districts. Given historic trends, individual departments competing against neighboring departments for grant monies and equipment will not necessarily achieve countywide equity.

Table 6.4 Action Items for Resource and Capability Enhancements

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline
6.4.a: Enhance radio availability in each district, link in to existing dispatch, improve range within the region, and conversion to consistent standard of radio types.	**CWPP Goal #1,2,4, & 6** High	**Lead:** County Sheriff's Office **Support:** County Commissioner's, USFS, DNR, Spokane Indian Reservation, local community organizations, Stevens County Fire Districts #1-13, and city fire departments.	On-going
6.4.b: Recruitment and retention of volunteer firefighters.	**CWPP Goal #1,2,4, & 6** High	**Lead:** Stevens County Fire Districts #1-13, and city fire departments. **Support:** County Commissioners, Wildland fire agencies working with a broad base of County citizenry.	On-going
6.4.c: Establish and map onsite water sources such as hydrants or underground storage tanks and drafting or dipping sites.	**CWPP Goal #1,2,4, & 6** High	**Lead:** County GIS Department **Support:** County Commissioner's Office, USFS, DNR, Stevens County Fire Districts #1-13, and city fire departments.	Some Districts have completed. On-going

Table 6.4 Action Items for Resource and Capability Enhancements			
Action Item	**Goals Addressed (see page 4)**	**Responsible Organization**	**Timeline**
6.4.d: Increase training and capabilities of firefighters.	**CWPP Goal #1,2, & 4** High	**Lead:** Local community organizations, Washington DNR, Stevens County Fire Districts #1-13, and city fire departments. **Support:** County Emergency Manager, DNR, BLM, and USFS for wildland training opportunities and with the State Fire Marshall's Office for structural firefighting training.	On-going
6.4.e: Improve safety equipment and personal protective equipment for all Fire Districts in Stevens County.	**CWPP Goal #1,2, & 4** High	**Lead:** County Fire Districts **Support:** County Commissioner's, USFS, DNR, local community organizations, and city fire departments.	On-going
6.4.f: Support the maintenance and/or enhancement of state and federal firefighting programs (training and equipment) resources in Stevens County.	**CWPP Goal #1, 2, & 4** High	**Lead:** County Fire Districts **Support:** County Commissioners, DNR, NPS, and city fire departments.	On-going
6.4.g: Support the acquisition of new and updated rolling stock and other equipment for each fire district or department in Stevens County.	**CWPP Goal #1,2, & 4** High	**Lead:** Stevens County Fire Districts #1-13, DNR, and city fire departments.	On-going
6.4.h: Facility, land, and basic equipment for an additional station near the center of Fire District #12's response area.	**CWPP Goal #1,2, & 4** Medium	**Lead:** Stevens County Fire District #12	In progress
6.4.i: Facility, land, and basic equipment for three additional satellite stations in Fire District #11's response area.	**CWPP Goal #1,2, & 4** High	**Lead:** Stevens County Fire District #11	On-going
6.4.j: Obtain funding to replace or remodel Stevens County Fire District #7's Station 71.	**CWPP Goal #1,2, & 4** High	**Lead:** Stevens County Fire District #7	Partial completion 2017

Table 6.4 Action Items for Resource and Capability Enhancements			
Action Item	**Goals Addressed (see page 4)**	**Responsible Organization**	**Timeline**
6.4.k: Obtain funding to build a firefighter training tower in Stevens County Fire District #7.	**CWPP Goal #1,2, & 4** Low	**Lead:** Stevens County Fire District #7	2020
6.4.l: Facility, land, and basic equipment for an additional station near the center of Fire District #13's response area.	**CWPP Goal #1,2, & 4** High	**Lead:** Stevens County Fire District #13	2017

Proposed Project Areas

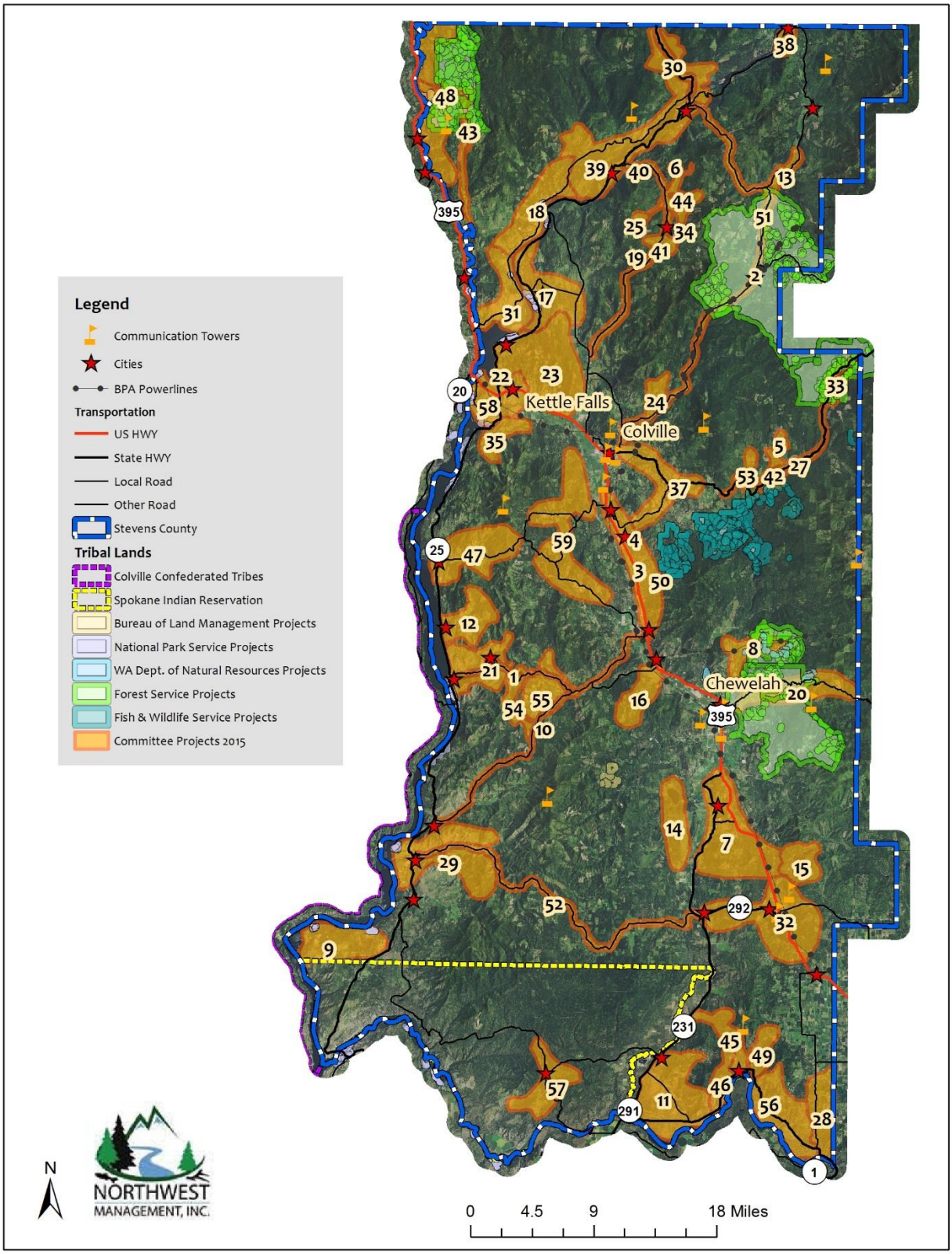
The following project areas were identified by the CWPP steering committee and from citizens' recommendations during the public meetings. Most of the sites were visited during the field assessment phase. The areas where these projects are located were noted as having multiple factors contributing to the potential wildfire risk to residents, homes, infrastructure, and the ecosystem. Treatments within the project areas will be site specific, but will likely include homeowner education, creation of a wildfire defensible space around structures, fuels reduction, and access corridor improvements. All work on private property will be performed with consent of, and in cooperation with the property owners. Specific site conditions may call for other types of fuels reduction and fire mitigation techniques as well. Defensible space projects may include, but are not limited to commercial or pre-commercial thinning, pruning, brush removal, chipping, prescribed burning, installation of greenbelts or shaded fuel breaks, and general forest and range health improvements.

Table 6.5 Project Areas.

ID #	Project Name	# of Acres	Address Points	Priority
1	Addy-Gifford Roadside Fuels Treatment	2,683	77	High
2	Aladdin Roadside Fuels Treatment	10,897	259	High
3	Arden Fuels Reduction	11,878	592	High
4	Arden Butte Roadside Fuels Treatment	162	21	High
5	Black Lake Home Defensible Space	711	39	High
6	Bodie Mountain Roadside Fuels Treatment	987	35	High
7	Bulldog Fuels Reduction	18,480	523	High
8	Burnt Valley Home Defensible Space	5,314	112	High
9	Camp Nayborly Home Defensible Space	9,343	129	High
10	Cedonia-Addy Roadside Fuels Treatment	4,941	115	High
11	Corkscrew Canyon Home Defensible Space	6,212	126	High
12	Daisy Home Defensible Space	6,511	97	High
13	Deep Lake Home Defensible Space	2,081	155	High
14	Deer Creek Home Defensible Space	6,829	409	High
15	Deer Lake Home Defensible Space	4,785	1,105	High
16	Dry Creek Home Defensible Space/Roadside Fuels Treatment	5,699/1,385	143/83	High
17	Evans Fuels Reduction	11,078	303	High
18	Flat Creek Fuels Reduction	10,395	84	High
19	Flora Road Roadside Fuels Treatment	174	9	High
20	Flowery Trail Home Defensible Space	9,405	130	High
21	Gifford Home Defensible Space	9,054	132	High
22	Gold Heights Roadside Fuels Treatment	1,056	25	High
23	Gold Heights-Pingston Creek Defensible Space	19,527	331	High
24	Gulches Home Defensible Space	2,844	140	High

Table 6.5 Project Areas.				
ID #	**Project Name**	**# of Acres**	**Address Points**	**Priority**
25	Hawks Home Defensible Space	887	19	High
26	Hawks Road Roadside Fuels Treatment	710	25	High
27	Highway 20 East Roadside Fuels Treatment	5,115	197	High
28	Homestead Canyon Home Defensible Space	7,309	253	High
29	Hunters Home Defensible Space	15,494	187	High
30	Highway 25 North Roadside Fuels Treatment	2,105	42	High
31	Kelly Hill Fuels Reduction	8,667	78	High
32	Loon Lake Home Defensible Space	18,717	1,545	High
33	LPO Lakes Home Defensible Space	2,991	206	High
34	Miller Road Roadside Fuels Treatment	305	10	High
35	Mingo Mountain Home Defensible Space	3,866	87	High
36	Moran Creek Road Roadside Fuels Treatment	75	10	High
37	Narcisse Home Defensible Space	10,118	448	High
38	North Stone Mountain Way Defensible Space	1,699	26	High
39	Northport Home Defensible Space	27,726	635	High
40	Onion Creek Road Roadside Fuels Treatment	5,856	124	High
41	Onion Creek South Defensible Space	2,139	69	High
42	Park Rapids Home Defensible Space	3,218	81	High
43	Pierre Lake Home Defensible Space/Roadside Fuels Treatment	13,145/2,605	100/31	High
44	Quinns Meadow Home Defensible Space/Roadside Fuels Treatment	3,815/254	103/12	High
45	Rail Canyon Home Defensible Space	4,241	136	High
46	Red Lake Defensible Space	3,523	38	High
47	Rice Home Defensible Space	11,680	174	High
48	Sand Creek Home Defensible Space/Roadside Fuels Treatment	2,204/1,024	37/29	High
49	Scott Valley Home Defensible Space	3,239	173	High
50	Slide Creek Road Home Defensible Space	103	9	High
51	South Deep Home Defensible Space	1,544	32	High
52	Springdale-Hunters Road Roadside Fuels Treatment	8,073	222	High
53	Squaw Creek Home Defensible Space	1,907	32	High
54	Stranger Creek Home Defensible Space	3,081	45	High
55	Summit Valley Home Defensible Space	7,715	174	High
56	Suncrest Defensible Space	11,062	2,227	High
57	Wellpinit Home Defensible Space	7,630	274	High
58	West Kettle Falls Home Defensible Space	8,138	1,349	High
59	West Side Fuels Reduction	18,143	459	High

Figure 6.1. Map of Proposed Projects.



Due to the scale of this map, the National Park Service projects around Lake Roosevelt National Recreation Area (LRNRA) in Stevens County do not show up in Figure 6.1. It should be noted that the National Park Service has identified 835 acres of continuing fuels treatments, as well as an additional 1,735 acres of newly identified fuels treatments throughout the LRNRA in Stevens County. It should also be mentioned here, that the identified agency (State and Federal) projects shown in Figure 6.1 are not proposed, but rather in progress/on-going or completed.

The steering committee does not want to restrict funding to only those projects that are high priority because what may be a high priority for a specific community may not be a high priority at the county or agency level. Regardless, the project may be just what the community needs to mitigate disaster. The flexibility to fund a variety of diverse projects based on varying criteria, landowner participation, and available dollars is a necessity for a functional mitigation program at the county and community level.

The Washington Department of Natural Resources, Bureau of Land Management, United States Forest Service, Conservation District, and/or individual Fire Protection Districts may take the lead on implementation of many of these projects; however, project boundaries were purposely drawn without regard to land ownership in order to capture the full breadth of the potential wildland fire risk. Coordination and participation by numerous landowners will be required for the successful implementation of the identified projects. A map of the Proposed Project Areas is included in Appendix 1.

Regional Land Management Recommendations

Wildfires will continue to ignite and burn depending on the weather conditions and other factors enumerated earlier. However, active land management that modifies fuels, promotes healthy shrubland and grassland conditions, and promotes the use of natural resources (consumptive and non-consumptive) will ensure that these lands have value to society and the local region. The Washington DNR, Washington Department of Fish and Wildlife Service, BLM, USFS, private forest landowners, and all other landowners in the region should be encouraged to actively manage their wildland-urban interface lands in a manner consistent with reducing fuels and wildfire risks.

Control Invasive Weeds

Non-native or invasive plants have been spreading across the western United States since Euro-Americans began settling the region. With the aid of grazing livestock and human disturbance, some non-native species have spread over vast areas and can out-compete many native species. This change in vegetation regime often comes with secondary impacts such as an increase fire frequency or fire intensity, as well as many other impacts.

There are many methods that can be utilized to control non-native species from spreading. The size of the outbreak and the species involved will determine the most effective method to control the outbreak. Small outbreaks of non-native plants can often be pulled by hand and disposed of before the plant goes to seed. Mowing, spraying, and even biological (insect) methods can be employed to control larger outbreaks. Regardless of the method, timing is often very important and a quality plan will ensure the treatment is successful.

Control Insects and Disease

Insects and diseases have been a common occurrence within forests and shrublands throughout the western U.S. for millennia. In the past, these impacts generally occurred in specific locations and would eventually 'run their course', often times benefiting the ecosystem by creating natural openings in the forest. Currently, our forests are unhealthy due to a variety of reasons and are subject to outbreaks of insect and/or disease over much larger areas than historically normal. These large outbreaks lead to severe impacts because it leaves the forest susceptible to stand replacing wildland fires.

Having a healthy forest or shrubland is the first, and most effective, step in combating the effect of insect or disease outbreaks. Insecticide can be sprayed over affected areas to eradicate harmful insects. Pheromones can be used, on a smaller scale, to deter certain species of insects from attacking an individual tree.

Mechanically Thin Forests

Many of the forests throughout the western U.S. have become overstocked and stagnant. There are numerous reasons to explain why this is, but regardless of the reason, it is widely accepted that some management is required. Overstocking leads to numerous other health issues including susceptibility to insects, disease, and drought.

Individual trees are marked for harvest by a professional forester in stands of timber that have been identified as overstocked. The trees are cut by hand or with a machine and then they are processed and hauled to a mill. The slash created from the logging activity is often piled and burned or chipped and taken to a biomass facility. The result is a stand of timber that is less dense which allows the remaining trees to have access to more resources (water, sunlight, and nutrients) than there was pre-harvest, creating a healthier forest that is more resistant to insect and disease outbreaks.

Reintroduce Fire to the Ecosystem

Fire has been removed from the system for several decades because it was once seen as destroyer of our nation's natural resources.[38] This exclusion has resulted in an unnatural build-up of fuel that, when fire does occur, has higher potential to be a stand replacing event.[39] The lack of wildland fires has also changed the species composition that historically occurred in many areas by allowing fire intolerant species to dominate or co-dominate the canopy.

Reintroducing wildland fire can be accomplished in multiple ways. The first and most obvious is to simply conduct prescribed burns. Another way is to manually collect downed woody debris and either removing it from the site or to pile it for burning. Chipping or mulching is yet another method that mimics the effects of fire by reducing large amounts of fuel into small chips that decompose more rapidly than a large diameter log would. These are just a few suggestions of how to reintroduce fire or mimic the effects of fire.

[38] Pyne SJ (1982) Fire in America: A cultural History of Wildland and Rural Fire (Cycle of Fire). Seattle: University of Washington Press.

[39] Dennis C. Odion, Et. Al. 2014. Examining Historical and Current Mixed-Severity Fire Regimes in Ponderosa Pine and Mixed-Conifer Forests of Western North America. DOI: 10.1371/journal.pone.0087852.

"Today, livestock grazing is being rediscovered and honed as a viable and effective tool to address contemporary vegetation management challenges, like controlling invasive exotic weeds, reducing fire risk in the wildland-urban interface, and finding chemical-free ways to control weeds in organic agriculture." [43]

Targeted Livestock Grazing

Livestock grazing, particularly cattle, has been a long standing tradition in the rangelands of central Washington. Historically, ranchers were able to make agreements with state and federal land managers to expand their grazing operations on public ground for mutual benefit. In the last 30 years, this practice has been limited due to liability issues, environmental concerns, and litigation. Additionally, where federal grazing allotments are still available, the restrictions on timing are often inappropriate and/or too inflexible for the objectives of reducing fuel loads (i.e. wildfire risk), eradicating noxious and invasive species, and restoring native grass and sagebrush communities.

Most rangeland ecologists agree that in ***site-specific*** situations, livestock can be used as a tool to lower fire risk by reducing the amount, height, and distribution of fuel. Livestock can also be used to manage invasive weeds in some cases and even to improve wildlife habitat.

Targeted grazing can indeed reduce the amount, height, and distribution of fuel on a specific rangeland area, potentially decreasing the spread and size of wildfires under normal burning conditions. By definition, "Targeted grazing is the application of a specific kind of livestock at a determined season, duration, and intensity to accomplish defined vegetation or landscape goals."[40]

There are many factors to consider regarding the use of livestock for reducing the amount, height, and continuity of herbaceous cover (especially cheatgrass) in site-specific situations:

- During the spring, cheatgrass is palatable and high in nutritional value before the seed hardens. Repeated intensive grazing (two or three times) at select locations during early growth can reduce the seed crop that year, as well as the standing biomass. In areas where desirable perennial species are also present, the intensive grazing of cheatgrass must be balanced with the growth needs of desired plants that managers and producers want to increase.
- Late fall or winter grazing of cheatgrass-dominated areas, complemented with protein supplement for livestock, should also be considered. After the unpalatable seeds have all dropped, cheatgrass is a suitable source of energy, but low in protein. Strategic intensive grazing of key areas can reduce carry-over biomass that would provide fuel during the next fire season. Late fall grazing can also target any fall-germinating cheatgrass before

[40] Karen Launchbaugh, Walker, J. Targeted Grazing – A New Paradigm for Livestock Management. University of Idaho. Accessed online October, 2014 at: http://www.webpages.uidaho.edu/rx-grazing/handbook/Chapter_1_Targeted_Grazing.pdf.

winter dormancy, thus reducing the vigor of these plants the following spring. Fall/winter grazing when desirable perennial grasses are dormant and their seeds have already dropped, results in minimal impact to these species and therefore can be conducted with minimal adverse impact to rangeland health in many areas.

- The Bureau of Land Management (BLM) in some locations has an active "green-strip" program designed to reduce fire size and spread in key areas. Obviously, livestock can be used to maintain such green-strips to reduce the fine fuels (grasses) and control the spread of fire.
- The concept of "brown-strips" refers to areas where one or more treatments (prescribed fire, mechanical thinning, herbicide, and/or grazing) are used to reduce shrub cover, releasing the native perennial grasses. These grassy areas are preferred by cattle, which can then be grazed to reduce herbaceous fuels. This method leaves "brown-strips" when the stubble dries out in mid-summer, serving as fuel breaks to control the spread of wildfire. Where appropriate, protein-supplemented cows or sheep could be used to intensively graze and create brown-strips (e.g. along fences) to reduce the spread of fires during or after years of excess fuel build-up.
- Targeted grazing for the management of herbaceous fuels often requires a high level of livestock management, especially appropriate timing, as well as grazing intensity and frequency. In order to meet prescription specifications, operators often use herders, portable fencing, and/or dogs to ensure pastures are grazed to specification before the livestock are moved. Other expenses may include feed supplements, guardian dogs and/or night enclosures for protection from predators, water supply portability, mobile living quarters, and grazing animal transport. Targeted grazing is a business whose providers must earn a profit. Therefore, land management agencies need the option of contracting such jobs to willing producers and paying them for the ecosystem service rendered. This payment approach is already being implemented in some private and agency-managed areas to a limited extent, primarily for control of invasive perennial weeds. The use of and payment for prescription livestock grazing as a tool has substantial potential in the immediate and foreseeable future for managing vegetation in site-specific situations.
- In general, and less intensively, livestock can be used strategically by controlling the timing and duration of grazing in prioritized pastures where reduction of desirable perennial grass cover is needed for fire reduction purposes. Strategic locations could be grazed annually to reduce fuel loads and continuity at specific locations. Rotation of locations across years prevents overgrazing of any one area but confers the benefits of fuel load reductions to much larger landscapes. Even moderate grazing and trampling can reduce fuels and slow fire spread.[41]

[41] McAdoo, Kent, et al. "Northeastern Nevada Wildfires 2006: Part 2 – Can Livestock Grazing be Used to Reduce Wildfires?" University of Nevada Cooperative Extension. Fact Sheet-07-21. Available online at http://www.unce.unr.edu/publications/files/nr/2007/fs0721.pdf. Accessed June 2011.

Dormant season grazing of perennial grasses has also been reported to aid in seedling recruitment. Some seeds require scarification before they will germinate. That can be accomplished by passage through the digestive tract or by hoof action on the seed. Hoof action can also press the seed into the ground and compress the soil around it, i.e. preparing a beneficial seed bed. These processes can also reasonably be expected to provide some benefit to the exotic annual grasses. These grasses; however, appear to succeed very well without that assistance. One can speculate that the perennial grasses would demonstrate a greater response to these effects and thus would gain some edge in the struggle for dominance with the exotic annuals. If those annuals were also grazed in the early spring before the perennials started or during fall germination events, or both, it is likely the annuals would have less vigor and produce less seed which would detract from their ability to out compete the perennials.[42] While the exact details of how the perennials benefit from dormant season grazing are not fully understood, Agricultural Research Service research in Nevada has reported success in decreasing annual grass dominance.

"The role of grazing as a tool for fuel management is generally supported, but it should be cautiously evaluated on a case-by-case basis because fire potential is influenced by interactions among several ecosystem variables."[43] Targeted grazing can reduce wildfire risk in specific areas. The targeted grazing strategies discussed above all require a very flexible adaptive management approach by both land management agencies and targeted grazing providers. Managers must determine objectives, then select and implement the appropriate livestock grazing prescription, monitor accomplishments, and make adjustments as needed.[44]

"The role of grazing as a tool for fuel management is generally supported, but it should be cautiously evaluated on a case-by-case basis because fire potential is influenced by interactions among several ecosystem variables."[46]

Many local residents feel that livestock grazing is a more desirable tool for managing wildland fire risk on both private and public lands because it poses less risk than prescribed burning, is less expensive than chemical applications, can be managed effectively for the long-term, and it benefits a large sector of the local economy.

[42] Schmelzer, L., Perryman, B. L., Conley, K., Wuliji, T., Bruce, L. B., Piper, K. 2008. *"Fall grazing to reduce cheatgrass fuel loads"*. Society for Range Management 2008.

[43] Fuhlendorf, S. D., D. D. Briske, and F. E. Smeins. 2001. Herbaceaous vegetation change in variable rangeland environments: the relative contribution of grazing and climatic variability. Applied Vegetation Science 4: 177-188.

[44] McAdoo, Kent, et al. "Northeastern Nevada Wildfires 2006: Part 2 – Can Livestock Grazing be Used to Reduce Wildfires?" University of Nevada Cooperative Extension. Fact Sheet-07-21. Available online at http://www.unce.unr.edu/publications/files/nr/2007/fs0721.pdf. Accessed June 2011.

Chapter 7

Supporting Information

List of Tables

List of Figures

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Signature Pages

The content of this plan has been agreed upon by the Stevens County Board of Commissioners, Washington Department of Natural Resources (DNR), and the county's fire departments/districts. The plan will be revised and updated as stated in the section titled, Monitoring and Monitoring. The contents, vision, mission and goals of this plan will become a part of any operation plan of the agencies represented below:

Stevens County Commissioners

10-6-2015

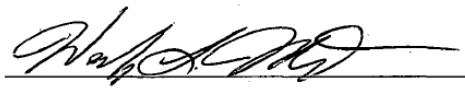
Steve Parker, Chair — **Date**

Stevens County Commissioner District #3

10-6-2015

Don Dashiell, Vice Chair — **Date**

Stevens County Commissioner District #2



10-6-2015

Wes McCart — **Date**

Stevens County Commissioner District #1

Signatures of Participation by Stevens County Fire Protection Districts and Departments

This Community Wildfire Protection Plan and all of its components identified herein were developed in close cooperation with the participating entities listed. These members of the CWPP steering committee formally recommended that this document be adopted by the Stevens County Commissioners.

Stevens County Fire Protection District #1 — Date: 5-22-15

Stevens County Fire Protection District #2 — Date: 5/22/15

Stevens County Fire Protection District #3 — Date: 12/19/15

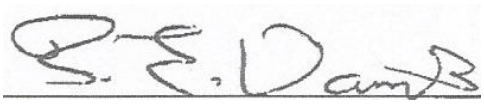
Stevens County Fire Protection District #4 — Date: 12/5/15

Stevens County Fire Protection District #5 — Date: 5/22/15

Stevens County Fire Protection District #6 — Date: 5/22/15

Stevens County Fire Protection District #7 — Date: 12/5/15

Stevens County Fire Protection District #8 — Date: 12/5/15



5-22-15

Stevens County Fire Protection District #9 Date

12-9-15

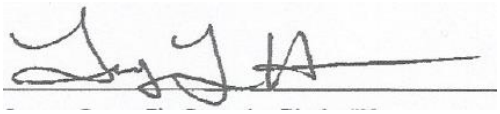
Stevens County Fire Protection District #10 Date

5-22-2015

Stevens County Fire Protection District #11 Date

12-15-15

Stevens County Fire Protection District #12 Date



12/4/2015

Stevens County Fire Protection District #13 Date

Signatures of Participation by other Stevens County CWPP Steering Committee Entities

This Community Wildfire Protection Plan and all of its components identified herein were developed in close cooperation with the participating entities listed. These members of the CWPP steering committee formally recommended that this document be adopted by the Stevens County Commissioners.

State Forester & Policy Director for the Office of the Commissioner of Public Lands, Washington State Department of Natural Resources

1/8/2016

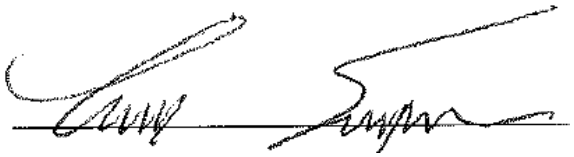
Date

Lindsey Babcock, Border Resource Manager

Spokane District Bureau of Land Management

6/24/2015

Date



Tim Sampson, Fire Management Officer

Colville National Forest

5/20/15

Date

Dee Townsend, Fire Management Officer

Lake Roosevelt National Recreation Area

12-15-2015

Date

United States Fish and Wildlife Service

May 28, 2015

Date

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