Douglas County, Washington

Community Wildfire Protection Plan

2012 Leahy Fire

Approved by the

Douglas County Commissioners

December 2013

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.

South Douglas Conservation District

F.P.D. #3, #4, #8, #15

US Army Corps of Engineers®

To obtain copies of this plan contact:

Douglas County Fire District No. 2
377 Eastmont Ave
East Wenatchee, WA 98802
509-884-6671

Table of Contents

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 Community Wildfire Protection Plan (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 Douglas County Commissioner's 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 **Douglas County Community Wildfire Protection Plan** expands on the wildfire chapter of the Douglas County Hazard Mitigation Plan updated in 2012. This project was funded by the South Douglas Conservation District and the Bureau of Land Management.*

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Chapter 1

Overview of this Plan and its Development

In 2012, the Bureau of Land Management contracted with Northwest Management Inc. to conduct an in-depth risk assessment for the hazards of wildland fire. Wildfire events occur almost annually in Douglas 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 December of 2012, the Bureau of Land Management met with the newly formed Steering Committee to introduce their plans in developing a wildland fire risk assessment and the opportunity to meld that plan into a Community Wildfire Protection Plan.

This Community Wildfire Protection Plan (CWPP) for Douglas 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 Douglas County. Agencies and organizations that participated in the planning process included:

- Douglas County Fire District #1
- Douglas County Fire District #2
- Douglas County Fire District #3
- Douglas County Fire District #5
- Douglas County Fire District #8
- Douglas County Fire District #15
- Douglas County Department of Emergency Management
- Foster Creek Conservation District
- South Douglas Conservation District
- Cascadia Conservation District
- Washington State Department of Transportation
- Washington State Conservation Commission
- Washington Department of Fish and Wildlife
- U.S. Bureau of Reclamation
- U.S. Army Corp of Engineers
- Bureau of Land Management
- National Park Service

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

To make Douglas County residents, communities, state agencies, local and federal governments, and businesses less vulnerable to the negative effects of wildland fires through the effective administration of wildfire hazard mitigation grant programs, hazard risk assessments, wise and efficient fuels treatments, and a coordinated approach to mitigation policy through federal, state, regional, and local planning efforts. To also provide a plan that will not diminish the Private Property Rights of land/asset owners within Douglas County.

Vision Statement

Our combined focus will be the protection of people, structures, infrastructure, livestock, state and federally listed species, and unique ecosystems that contribute to our way of life and the growth and sustainability of the local and regional economy through education, training, support, and planning.

Goals

1. To protect people, structures, infrastructure, state and federally listed species, and unique ecosystems that contribute to our way of life and the sustainability of the local and regional economy.
2. Educate citizens about the unique challenges of wildfire preparedness in the County through the introduction of the Firewise program and encourage communities to pursue becoming Firewise.
3. Determine areas at risk of wildfire and establish/prioritize mitigation projects, without regard to ownership, and recommend both conventional and alternative treatment methods to protect people, homes, infrastructure, state and federal listed species, and natural resources throughout Douglas County.
4. Improve the ability of the County Fire Protection Districts to provide fire protection for the residents of Douglas County through improved resources and training.

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.

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 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).

The objective of combining these complementary guidelines is to facilitate an integrated wildland fire risk assessment, identify pre-hazard mitigation activities, and prioritize activities

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

[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.

and efforts to achieve the protection of people, structures, the environment, and significant infrastructure in Douglas 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 Douglas 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 Douglas County planning documents and ordinances considered during development of this plan.

Douglas County Hazard Mitigation Plan

As a requirement to receive certain types of federal non-emergency disaster assistance, including funding for hazard mitigation projects, Douglas County and the cities and towns of Bridgeport, Coulee dam, East Wenatchee, Mansfield, Rock Island, and Waterville are required to develop and maintain an up-to-date local hazard mitigation plan. The jointly updated Douglas County Hazard Mitigation Plan was approved by FEMA on March 30, 2012. The Federal Government requires that Hazard mitigation plans be updated every five years.

Douglas County Comprehensive Plan

The Countywide Comprehensive Plan is the guiding document that establishes the vision for growth and development in the County. The goals and policies of the plan create the framework for designating properties into comprehensive plan map designations and their correlating zoning districts.

This CWPP will "dove-tail" with the County's Comprehensive Plan during its development and implementation to ensure that the goals and objectives of each are integrated. This planning effort is intended to be compatible with the goals and objectives of the County's Comprehensive Plan.

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 Douglas 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 Douglas 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:

- Douglas County
- Waterville
- Mansfield
- East Wenatchee
- Foster Creek Conservation District
- South Douglas Conservation District
- Cascadia Conservation District
- Douglas Co. Sheriff's Office/EM
- Douglas County F.D. #1
- Douglas County F.D. #2
- Douglas County F.D. #3
- Douglas County F.D. #5
- Douglas County F.D. #8
- Washington State Fish and Wildlife
- Washington State Department of Transportation
- Washington Department of Natural Resources

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, Douglas County's human resources have many demands placed on them in terms of time and availability. In Douglas 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 Douglas County Community Wildfire Protection Plan's preparation.

NAME	ORGANIZATION
Steve Jenkins	Douglas Co. Commissioner
Dale Jordan	Douglas Co. Fire District #1
Dave Baker	Douglas Co. Fire District #2
Dale Rinker	Douglas Co. Fire District #3
Tyler Caille	Douglas Co. Fire District #5
John Pease	Douglas Co. Fire District #5 / Douglas Co. Road
Sharon Davis	Douglas Co. Fire District #8
Don Rushton	Douglas Co. Fire District #8
Mike Dingle	Douglas Co. Sheriff's Office/EM
Carol Cowling	South Douglas Conservation District
Lee Hemmer	Foster Creek Conservation District
Kate Koenig	Cascadia Conservation District
Wayne Rice	WS Department of Transportation
Bill Eller	Washington State Conservation Commission
Dan Peterson	Washington State Fish & Wildlife
Joe Weeks	Washington Department of Natural Resources
Richard Parrish	Bureau of Land Management
Mike Solheim	Bureau of Land Management
Erik Ellis	Bureau of Land Management
Chris Sheridan	Bureau of Land Management
Sarah Wilkinson	U.S. Army Corp of Engineers
Michael S. Lesky	U.S. Bureau of Reclamation
John Fretwell	Bureau of Reclamation
Tonya Neider	Lake Roosevelt NRA
Brad Tucker	Northwest Management, Inc.
Tera King	Northwest Management, Inc.
Vaiden Bloch	Northwest Management, Inc.

Committee Meeting Minutes

Committee meetings were scheduled and held from December, 2012 through June, 2013. These meetings served to facilitate the sharing of information and to lay the groundwork for the Douglas 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 online news outlets that serve the Douglas County. Informative flyers were also distributed around town and to local offices within the communities by the committee members.

Print Media	Other Media
Wenatchee World	Local Fire Protection Districts
Douglas County Empire Press	Post Offices
The Star	Grocery Stores
Quad City Herald	Radio
Chelan Mirror	

Figure 2.1. Press Release, December, 2012.

Douglas County Press Release

December 10, 2012

Douglas County Plans to Assess Wildfire Risk

Working in conjunction with Douglas County, the Bureau of Land Management (BLM) has launched the process of developing a county-level wildland fire risk assessment. Local agencies and organizations in Douglas County have initiated a planning committee to complete the risk assessment as the first step in the ultimate development of a Douglas County Wildfire Protection Plan as part of the National Fire Plan and Healthy Forests Restoration Act. The Douglas County Wildland Fire Risk Assessment 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 December 18th, 2012 and will be the first of several monthly meetings.

Northwest Management, Inc. has been retained by the Bureau of Land Management 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 Protection Districts, Douglas County, Washington Department of Natural Resources, Forest Service, Bureau of Land Management, and others.

The intention of the project is to conduct an assessment of wildland fire risk in Douglas 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 Douglas 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 in the planning process in the spring of 2013. A notice of the dates and locations of these meetings will be posted in local news outlets. For more information on the Douglas County Wildland Fire Risk Assessment or if you're interested in participating on the planning committee, please contact Brad Tucker, Northwest Management, Inc., at 208-883-4488 ext 123 or Richard Parrish, Bureau of Land Management, at 509-536-1226.

Public Meetings

Public meetings were scheduled in strategic locations during the wildfire risk assessment phase of 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 schedule of public meetings in Douglas County included two locations; the first was held in Mansfield, WA and the second in East Wenatchee, WA. The first public meeting was attended by seven individuals on the committee and two from the general public. The second public meeting was only attended by four committee members and therefore was not conducted. The public meeting announcement was sent to the local newspapers on April 22nd and committee members were asked to post the flyer shown in Figure 2.2 around their communities.

Figure 2.2. Public Meeting Flyer April, 2013

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 late winter and spring of 2013, 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 first draft of the document was prepared after the public meetings and presented to the committee in June for a full committee review. The committee was given two months to provide comments to the plan.

Public Comment Period

A public comment period was conducted from September 20th – October 18th, 2013 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 Wenatchee World, Empire Press, and The Star newspapers on September 13th announcing the comment period, the locations of the Plan for review, and instructions on how to submit comments. A County Commissioner announced the public review period on his Tuesday radio program over the course of a few weeks. Hardcopy drafts were printed and made available at Douglas County Transportation & Land Services, Douglas County Courthouse, South Douglas Conservation District, Mansfield Post Office, Bridgeport Post Office, Grand Coulee Post Office, and Douglas County Fire Protection District 2 East Wenatchee Station for their open house. An electronic version of the plan was made available on Northwest Management's website. The committee did not receive any comments.

Figure 2.4. Press Release #3 – Public Comment Period, September, 2013

Douglas County

Media Release

From: Carol Cowling, South Douglas Conservation District
Date: September 13, 2013
RE: Douglas County Community Wildfire Protection Plan

Douglas County Community Wildfire Protection Plan Available for Public Review

The Douglas 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 http://www.consulting-foresters.com/?id=clients. The public review phase of the planning process will be open from September 20th, 2013 thru October 18th, 2013.

Douglas County Transportation & Land Services

140 19th Street NW, Suite A
East Wenatchee, Washington 98802

Douglas County Courthouse

203 South Rainer
Waterville, WA 98858

The purpose of the Douglas County Community Wildfire Protection Plan (CWPP) is to reduce the impact of wildfire on Douglas 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, highway district representatives, and others. The Douglas County CWPP includes a risk analysis at the community level with predictive models for where disasters are likely to occur. This Plan will enable Douglas 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 October 18th, 2013. For more information on the Douglas County CWPP update process, contact Brad Tucker at 208-883-4488 ext. 123.

Continued Public Involvement

Douglas County is dedicated to involving the public directly in review and updates of the Community Wildfire Protection Plan and Wildfire Risk Assessment. The Douglas 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 Douglas 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 its 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

Douglas County Characteristics

The following section was attained from the Douglas County website (http://www.douglascountywa.net/about.asp).

Douglas County was created in 1883 and named after U.S. Senator Steven Douglas of Illinois who was the chairman of the U.S. Commission on Territories when the Territory of Washington was created. Waterville was designated the County Seat in 1886 and the current Courthouse was initially constructed in 1905.

Douglas County is located near the geographic center of Washington. The Columbia River binds it on the north, the west and the south. Grant County, formerly a part of Douglas County, is on the east. Douglas County is geographically diverse with elevations ranging from 600 feet above sea level near the Columbia River to more than 4,000 feet on Badger Mountain. Basalt rock outcrops and glacial erratics can be found in close proximity to fertile farmland. Irrigated orchard lands are located primarily in the lower elevations while dryland farming dominates the upland areas. Shrub-steppe areas and areas with forest vegetation provide diverse wildlife habitat throughout the county.

With an area of 1,820 square miles, Douglas County ranks 17 in size of Washington's 39 counties. The estimated 2004 population is 34,427 providing a population density of 17.9 persons per square mile. The State of Washington Office of Financial Management categorizes 77.2% of the population of Douglas County as white and 17% of the population is identified as being of Spanish origin. In 2000 there were an estimated 2.76 persons per household in Douglas County with a median household income of $38,464.

Douglas County has six incorporated communities including the Town of Coulee Dam, which is located in three separate counties with a portion in Douglas County, Grant County and Okanogan County. The lowland areas of the County contain three of the incorporated communities, Bridgeport on the northwest border and East Wenatchee and Rock Island to the southwest. Mansfield and Waterville, the county seat, are the two oldest communities in the County and are situated on the plateau. In addition to these incorporated cities and towns, there are concentrations of population in historical settlement areas. Withrow and Douglas are communities located on the plateau, the Orondo area is somewhat north of East Wenatchee along the Columbia River, and Palisades is a settlement area located approximately 10 miles northeast of SR 28 in the Moses Coulee area.

Description

The following section has been summarized from the Douglas County Countywide Comprehensive Plan.[3]

Douglas County is on the western edge of the extensive Columbia Plateau formed by the extrusion of lava throughout much of Eastern Washington during the Eocene, Miocene and

[3] Douglas County Countywide Comprehensive Plan. http://www.douglascountywa.net/departments/tls/growth/pdf/RuralPlan_05-19-09.pdf . Accessed April, 2013.

Pliocene epochs. The region was warped into the form of broad basins, some of which were formed by locally steeper folding and by faulting. During the Pleistocene or glacial epoch, the sub-basins accumulated deposits of clay, silt, sand and gravel. Some of the deposits left by the glaciers are more conspicuous. The gigantic blocks of basalt called haystack rocks (some of which are larger than a good sized house) were transported by glaciers and dropped in an area known as a terminal moraine, which marks the end of the glaciers' southward journey.

There are two major drainage basins that handle the surface water runoff for the County, both of which deposit directly into the Columbia River. The Foster Creek drainage basin covers the northern portion of the County and outlets near Chief Joseph Dam at Bridgeport. The Moses Coulee drainage is much larger and drains the majority of the County, with its mouth 7 miles south of Rock Island.

Geography and Climate

The following section has been summarized from the Douglas County Countywide Comprehensive Plan.[4]

Douglas County is located on the Columbia Plateau, which was created by lava flows hundreds of feet thick, modified by glacial action and scoured by repeated floods during the Miocene and Pliocene eras. This fairly level, rough topography is called the Channeled Scablands and includes features such as plateaus, buttes, and channels. Channels are made up of outwash terraces, bars, loess islands and basins. The plateaus contain circular mounds of loess (biscuits) surrounded by cobble-size fragments of basalt. Soils generally consist of silt loams with varying amounts of rock or gravel, and basaltic rock outcroppings. Generally, the soils along on the northern-most end of the county are derived from the local parent material, which includes granite and basalt, covered by and mixed with imported material, which includes glacial, fluvial, and wind-deposited material. The topsoil layers are most often very thin and vulnerable (WDFW 2006).

Douglas County's topography ranges from lowland areas along the Columbia River corridor to a high point on Badger Mountain with an approximate elevation of 4100 feet, but it is, for the most part, a mildly rolling plateau. Besides being surrounded by water, the County has several streams and lakes that provide a range of recreational opportunities.

The climate of Douglas County is influenced by elevation, topography, distance and direction from the ocean, prevailing westerly winds and the position and intensity of the high and low pressure centers in the western Pacific Ocean. Temperature ranges can vary noticeably between the lowland river corridor areas and the plateau, but they generally average between 25 degrees in January, to 85 degrees in the summer months. Average annual precipitation ranges from 8 to 12 inches, with the heaviest precipitation occurring during the winter months.

Population and Demographics

The 2010 Census established the Douglas County population at 38,431, which is up from 32,603 in 2000. Table 3.1 shows historical changes in population in Douglas County.

[4] Douglas County Countywide Comprehensive Plan. http://www.douglascountywa.net/departments/tls/growth/pdf/RuralPlan_05-19-09.pdf . Accessed April, 2013.

Table 3.1. Historical and Current Population by Community.					
1960	**1970**	**1980**	**1990**	**2000**	**2010**
14,890	16,787	22,144	26,205	32,603	38,431

Since 1890, Douglas County has been steadily growing with the exception of a nearly 20% decrease in the 1920's. Since the 1960's the county's population has grown, on average by nearly 24%.

Of the county's residents, about 34% (13,190) live in East Wenatchee. Waterville (the County Seat) has 1,138 residents and Bridgeport has 2,409 residents. The majority of the remaining residents (28,788) are concentrated in unincorporated parts of Douglas County as well as some of the smaller communities such as Mansfield.

The 2010 Census reported that ethnicity in Douglas County is comprised of 94% white (of which, 29% are persons of Hispanic or Latino Origin), 1.8% American Indian, 0.7% African American, 1% Asian, and 2.2% people reporting two or more races. Approximately 50% of residents are male. There are 16,187 occupied housing units (71.9% homeownership rate) in Douglas County.[5]

Land Ownership

The majority of ownership within Douglas County appears to be private. Federal ownerships account for less than 5% of the land base with the Bureau of Land Management contributing the largest federal portion with over 50,000 acres. Approximately 10% of Douglas County is State owned land.

Table 3.2. Land Ownership Categories in Douglas County		
Entity	**Acres**	**Percent of Total Area**
Private	998,176	84%
State	101,425.8	9%
BLM	53,712.7	4.5%
State Fish & Wildlife	16,365.9	1%
Water	11,620.6	<1%
Federal	1,668.5	<1%
State Parks	224.8	<1%
FWS	165.7	<1%
	1,183,360	**100%**

The data used to develop this table was provided by the 2010 BLM database. Local government property (i.e. County) is likely under the Private ownership category. There may be more accurate information but this table shows general trends, which is sufficient for the purpose of this plan.

The predominant land use in Douglas County is agriculture, in the form of dryland grain crops (including some in CRP), rangeland livestock grazing and irrigated orchard farming. Irrigated agriculture activities are located in the Moses Coulee area, and along the Columbia River

[5] US Census Bureau. State & County QuickFacts. Available online at http://quickfacts.census.gov/qfd/states/53/53017.html. Accessed April 2013.

corridor. Dryland wheat, other grain crops, and livestock production are primarily located on the plateau area.

Development Trends

This section was summarized from the Douglas County Countywide Comprehensive Plan.

Douglas County has a wide range of rural and agricultural land uses, which are generally characterized by low density development patterns and scattered, more intense development in key geographical locations. Development activities are comprised of small unincorporated rural communities, farms, rangeland, forested areas, isolated rural commercial and industrial development and regionally important recreation areas that have limited services and very low rural densities. Over the past thirty-five years, there has been an increase in recreationally oriented residential developments outside of established urban areas. It is the intent of the comprehensive plan to recognize the traditional uses and development patterns and to ensure that they will be maintained in a manner consistent with County goals. The rural element seeks to protect the rural character of the County by reducing the inappropriate conversion of undeveloped land into sprawling, low-density development and assuring the protection of the natural environment, historic properties and rural lifestyles. The ways in which rural character will be accommodated will be different than in the past, primarily through encouraging cluster developments, revitalization of the existing rural service centers, master planned resorts and other low impact development that minimizes impacts to resources valued by the community. This strategy will continue to promote the agricultural uses that are vital to the County's economic base and support the rural aspects of Douglas County. [6]

Natural Resources

Douglas 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 Douglas 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 shrub / steppe region of central Washington. Some of the species present even rely on this type of ecosystem to survive. Sage grouse, Columbian sharp tailed grouse, and Columbian pygmy rabbit once heavily populated this region of Washington, however due to habitat loss; these populations have been drastically reduced in numbers and largely been genetically isolated from other populations. There has been a significant effort by federal, state, and private landowners in recent years to

[6] Douglas County Countywide Comprehensive Plan. http://www.douglascountywa.net/departments/tls/growth/pdf/RuralPlan_05-19-09.pdf . Accessed April, 2013.

increase the available preferred habitat through Conservation Reserve Program and incorporating higher grazing standards throughout the region.[7]

Vegetation – The Columbia Basin supports a complex landscape of native steppe and shrubsteppe vegetation composed of; scattered shrubs, typically sagebrush species or bitterbrush with a bunchgrass cover, usually bluebunch wheatgrass, Idaho fescue or needlegrasses, scablands (shallow rocky soils) that support specialized vegetation dominated by stiff sagebrush, one of several bushy buckwheats, and short bunchgrasses, and land largely converted to agricultural use or rangeland dominated by exotic plants or native vegetation tolerant of persistent land use.[8]

Table 3.3. Vegetative Cover Types in Douglas County.

Land Cover	Acres	Percent of Total Area
Conifer-Hardwood	0.8	< 1%
Sparsely Vegetated	33.5	< 1%
Riparian	5,502.5	< 1%
Conifer	10,835.5	< 1%
Non-vegetated	21,419.0	2%
Exotic Herbaceous	30,395.5	3%
Developed	38,260.6	3%
Grassland	139,674.6	12%
Shrubland	462,370.5	39%
Agricultural	474,867.5	40%
Total	**1,183,360.0**	**100%**

Vegetation in Douglas County is a mix of shrubland, grassland, agricultural, and some riparian ecosystems. An evaluation of satellite imagery of the region provides some insight to the composition of the vegetation of the area. The most represented vegetated cover type is agriculture followed by shrubland then grassland areas.

Hydrology

The Washington Department of Ecology & Water Resources Program is charged with the development of the Washington State Water Plan. 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:

- **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

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

[8] A Riparian Vegetation Classification of the Columbia Basin, Washington. http://www1.dnr.wa.gov/nhp/refdesk/pubs/columbiarip.pdf Accessed May, 2013

- **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 Douglas County will be the maintenance of the domestic watershed supplies in the Columbia River, Grand Coulee Watershed (WRIA 42), Foster Creek (WRIA 50), and Moses Coulee (WRIA 44).

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.[9]

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.[10]

Smoke emissions from fires potentially affect an area and the airsheds that surround it. Climatic conditions affecting air quality in 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.

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

Washington Department of Ecology

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. Douglas

[9] 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.

[10] 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.

County falls under the jurisdiction of the Central Regional Office (CRO). The CRO can be reached at: 509-575-2490.

Washington State Smoke Management Plan

The Department of Natural Resources (DNR), Department of Ecology (DOE), U.S. Forest Service (USDA), National Park Service (NPS), Bureau of Land Management (BLM), U.S Fish and Wildlife Service (USDI), 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).

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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[11]. 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.

[11]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.[12]

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.[13]

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.

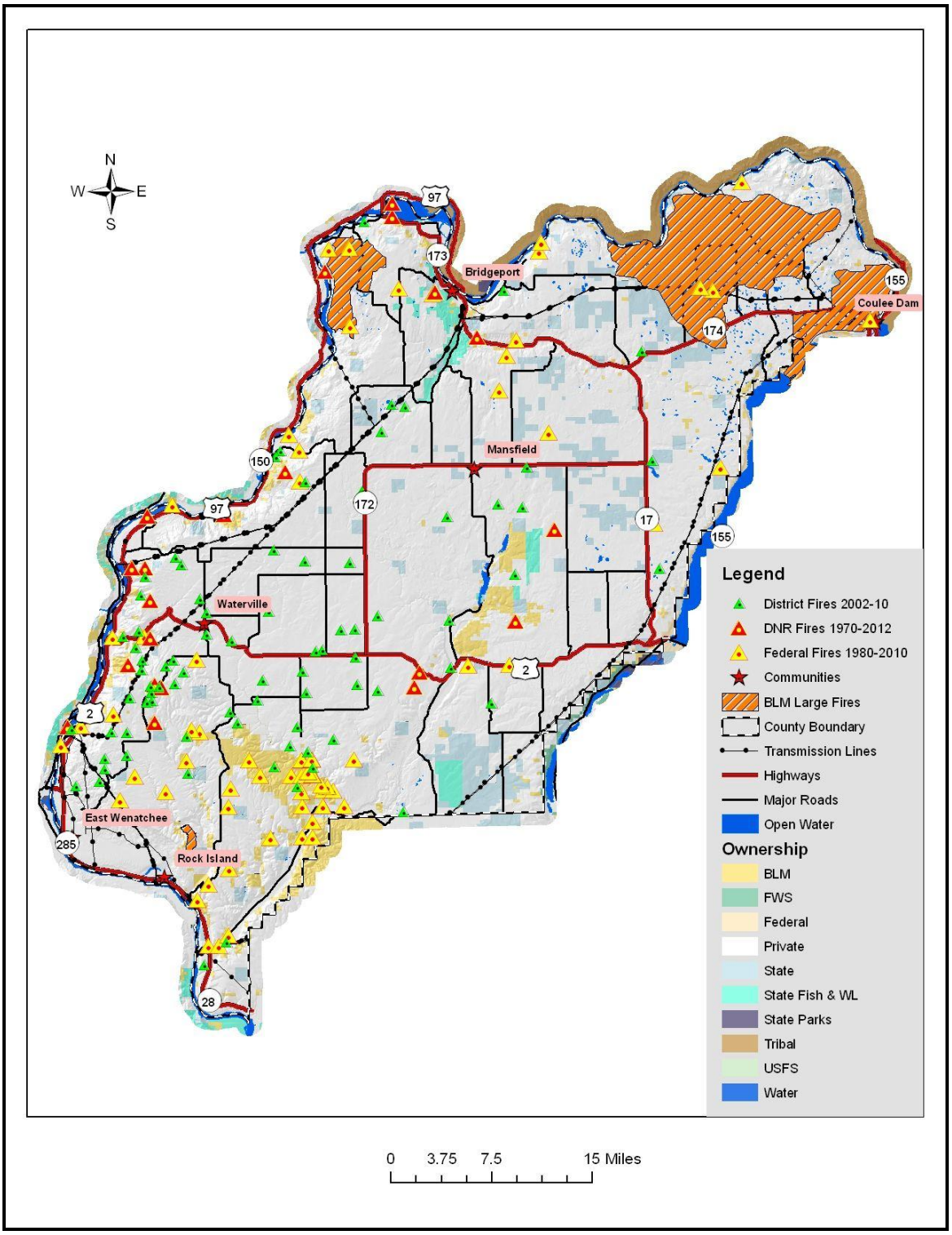
The severity of a fire season can usually be determined in the spring by how much precipitation is received, which in turn determines how much fine fuel growth there is and how long it takes this growth to dry. These factors, combined with annual wind events can drastically increase the

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

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

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 Douglas County from 1970-2012.



This map shows both state and federally reported fires (1970-2012) as well as a majority of the wildfires that the local Fire Protection Districts responded to (2002-2013). The federal fires (indicated by yellow triangles) appear to be located primarily on BLM property and are likely human caused ignitions resulting from the high amount of recreation 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 infact a large majority of wildland fires 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 western 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.[14] These fires burned from 1 to 47 years apart, with most at 5- to 20-year intervals.[15] With infrequent return intervals, plant communities tended to burn more severely and be replaced by vegetation different in composition, structure, and age.[16] 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.

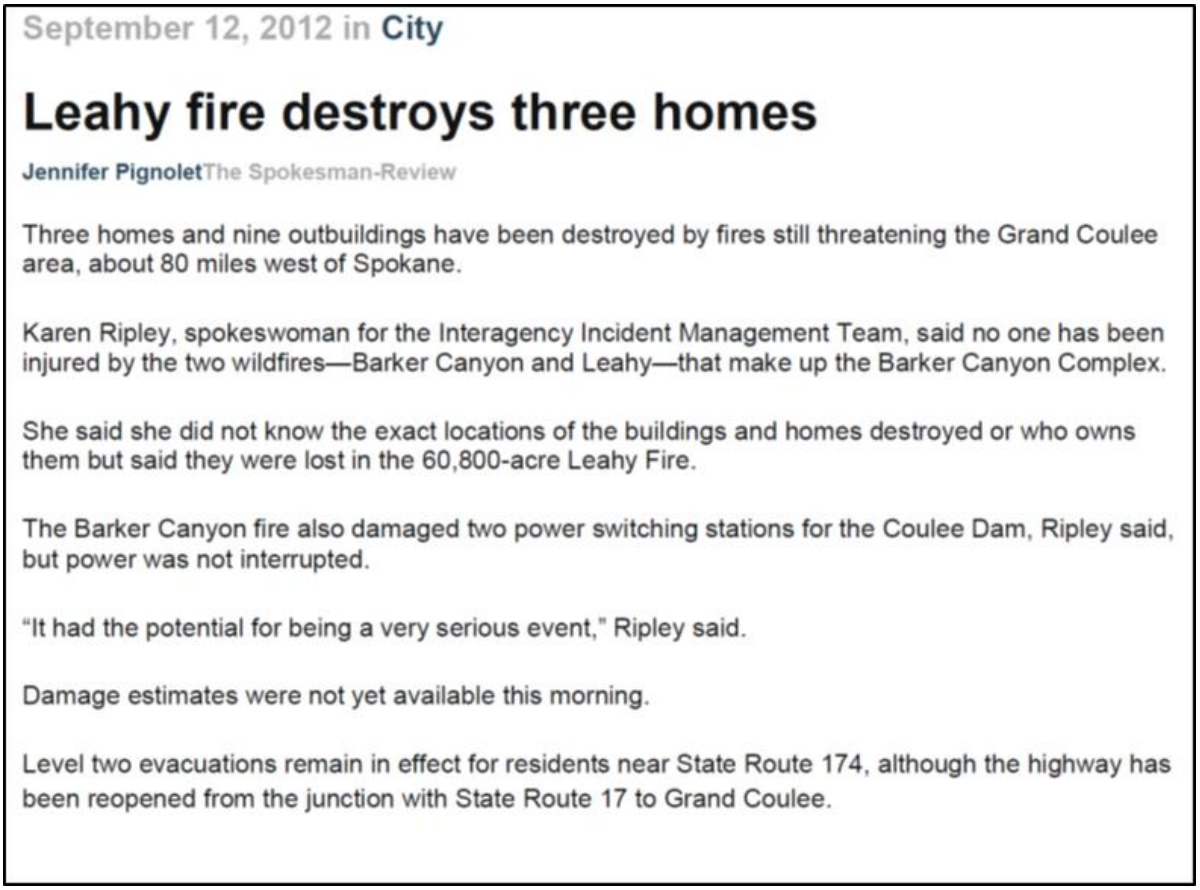
Fire history data for Douglas County is largely unknown. Local knowledge suggests that Native Americans did frequently burn which played an important role in shaping the vegetation throughout County. The Bureau of Land Management is helping to fund future research targeted at identifying the fire history in central Washington through fire scars and charcoal deposits. Although this data is not available for the development of this document, it should be available for the five year update of this plan.

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

[15] 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.

[16] 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.

Figure 4.2. Leahy Fire - September, 2012.[17]



September 12, 2012 in City

Leahy fire destroys three homes

Jennifer Pignolet The Spokesman-Review

Three homes and nine outbuildings have been destroyed by fires still threatening the Grand Coulee area, about 80 miles west of Spokane.

Karen Ripley, spokeswoman for the Interagency Incident Management Team, said no one has been injured by the two wildfires—Barker Canyon and Leahy—that make up the Barker Canyon Complex.

She said she did not know the exact locations of the buildings and homes destroyed or who owns them but said they were lost in the 60,800-acre Leahy Fire.

The Barker Canyon fire also damaged two power switching stations for the Coulee Dam, Ripley said, but power was not interrupted.

"It had the potential for being a very serious event," Ripley said.

Damage estimates were not yet available this morning.

Level two evacuations remain in effect for residents near State Route 174, although the highway has been reopened from the junction with State Route 17 to Grand Coulee.

[17] http://www.spokesman.com/stories/2012/sep/12/leahy-fire-destroys-three-homes/. Accessed December, 2012.

Figure 4.3. Road A Fire, 2012. [18]

State attacks central Washington wildfires

The Associated Press

MANSFIELD, Douglas County — A half dozen people have been evacuated from three homes threatened by a grass and brush fire burning three miles south of here, according to Deputy State Fire Marshal Bill Slosson.

The fire broke out Sunday and has burned about 2,000 acres, including some wheat.

It's one of two fires burning in Douglas County. Slosson says about a dozen firefighters have been dispatched today and a management team of about 20 people is setting up a command post at Mansfield High School.

The other fire, which also started yesterday, is about 15 miles northwest of Mansfield and has burned about 75 acres. It threatens 25 homes, but none has been evacuated.

Slosson says a little rain overnight may have helped the situation.

McNeil Canyon Fire – July 15, 2012

The fire burned in grass and sage 15 miles NW of Mansfield by Beebe Bridge. The cause of the fire is unknown. The fire was approximately 75 acres before being contained. There were approximately 25 homes threatened with no evacuations however.

Mobilization specialists from the Fire Protection Bureau ordered five strike teams, and a Type 3 Incident Management Team to supplement the resources already fighting the fire

The State Emergency Operations Center (EOC) at Camp Murray had to be activated to Phase II, to coordinate state assistance for the Douglas County Complex Fire. Personnel from the Office of the State Fire Marshal were on scene to coordinate dispatch of resources, and other personnel with staff the State EOC.

[18] http://blogs.seattletimes.com/today/2012/07/state-attacks-central-washington-wildfires/. Accessed March, 2013

Figure 4.4. The Associated Press, 2008.[19]

Central Washington brush fire grows overnight, 300 people evacuated

Brisk winds fanned a wildfire across some 7.8 square miles of sagebrush, threatening several dozen homes and leading authorities to evacuate as many as 300 people.

The fire, pushed by 25 mph winds with higher gusts, was burning in Grant and Douglas counties in central Washington. State firefighters were mobilized late Tuesday night to help about 100 area firefighters after the flames had burned across 5,000 acres, local officials said.

State Highway 28 in the area was closed about four hours Tuesday night because of smoke, then was reopened shortly after midnight Wednesday, according to the state Transportation Department.

Dispatchers at state and county emergency management said no new information on the fire was available before daybreak Wednesday.

As of late Tuesday night the blaze was threatening a dozen homes on Stuhlmiller Road, where it was first reported, as well as about a dozen houses in Trinidad, a hamlet about five miles west of here, said Sam Lorenz, Grant County emergency management director. Another 30-40 mobile homes could be in danger, he said.

Undersheriff John Turley said he heard about 20 homes were threatened. He added that he doubted there was a threat to any of the roughly 300 residences and condominiums in the Crescent Bar area near the Columbia River.

Many of those evacuated from their homes were sent to a greenbelt area at the south end of a Crescent Bar-area small golf course, and a shelter was opened at Quincy High School, Lorenz said.

No injuries were reported. The fire damaged a home in Trinidad before firefighters extinguish those flames, Lorenz said. An older barn also burned.

The fire was reported about 6 p.m. Tuesday. The cause was not immediately known.

Turley estimated the blaze was about 20 percent contained late Tuesday night.

-The Associated Press

Following the fires in 2012, concerned citizens wrote letters to various firefighting agencies expressing their concerns. Two of these letters are included below. Names have been removed from these letters for privacy reasons, but otherwise unedited.

[19] http://blog.oregonlive.com/breakingnews/2008/07/central_washington_brush_fire.html. Accessed March, 2013.

Figure 4.5. Concerned Citizen Letters

I live on a farm in North Douglas County. My forest is between 15" and 10'. Yes that is right. Wheat, native grasses and sage brush make up our farm. Yes I live in a desert. What I want to visit with you about today is wild land fires in my neck of the woods. I do not come here to condemn anyone but to hopefully fix something that is very broken. As many of you know Douglas County lost about 100,000 acres to fire last year. Needless to say we were shaken to the core.

I'm going to begin my story about 6 or 7 years ago. As I said earlier my family raises dryland wheat and have several thousand acres of pasture. The average rainfall is 8-9 inches a year. One of our combines started a fire in the wheat field and it started spreading fast toward our homes. Up until this incident when you saw smoke you stopped what you were doing, grabbed a shovel, some water and headed to the fire. For all my 50 years on the farm this was the way we fought fire. No catastrophic fires or fatal injuries. Our goal was to put the fire out as soon as possible and in doing so, save our wheat and pasture, our lively hood. Well back to my story! Evidently new rules had been put in place and we were told we could not fight the fire on our own farm. My son was ordered by the local fire chief to get back or he would be arrested. Needless to say that did not go over well. Thankfully the wind was calm and the fire was put down quickly. We had tractors, disks, shovels and men, but no! That has now been changed to allow the landowner to fight fire on his own land but not on the neighbors.

I have spent many hours talking to landowners all across the county and neighboring counties who have been harmed by fires in the last several years. I had a meeting with Senator Parlette and State Fire Marshall Paul Pearce to discuss these same issues. I believe one of the main conclusions that came out of that meeting was when the fires go State Mob and the firefighters and ICs come (1. They do not see the value in our dry arid land and (2. They were not trained in dryland wild fire fighting.

As you can imagine I also heard a lot of horror stories about how the landowners were treated and in most part ignored. Every one of them was appreciative of the help we were to receive. I'm sure you were greeted with smiles and handshakes, but one by one they were told to get out, that you did not need our help, just get out of our way and then ignored. As we stepped back the fires grew, while commands changed and meeting were held. Firefighters continued to arrive from all corners of our state but were parked waiting for the meetings to get over so they would know what to do, all the while watching the fires grow and get out of control.

One story I was told there were several trucks and firefighters parked on a road watching the fire burn. One of the local volunteers came upon them and ask them what they were doing. They said they were told to come to this point and await orders. He told them that they needed to move as the fire was about to jump the road and they were in danger. About that time a helicopter showed up and dumped water on the fire putting it out or the trucks and firefighters would have been harmed. Again they were not helping to put out the fire but awaiting orders.

There was a farm home lost because no one would go down the road to fight it. They thought it was a dead end road when in fact it had two routes out. They only need to ask the landowners and they would have advised them. We are the ones who know the topography, access routes, choke points and wind. Just ask!!!!

A group of farmers got together and hired a cat to help put down fire lines but the Highway was closed and they would not let the truck through.

Another story- Fire had burned one side of a field and pasture. A day or two later the fire came back on the other side and was threatening the field which had hay bales and a hay stack in it. While the landowner and his family battled franticly to save the winter feed for his cows, several fire trucks and fireman set across the road again watching because their orders were to not cross the road. Isn't the goal to put the fire out?

Why bring so many trucks and firefighters in if you are not going to use them. Most did not use the water they brought until it was time to go home and they used the water to clean their trucks!

To whom it may concern,

On August 1, 2012 at 4pm, I arrived at the top of Central Ferry Canyon to investigate what now is known as the "Crane Road Fire2012". I discovered a stuck water truck. Upon further inspection, it was discovered that a bull-dozer was removed from a nearby fire line to tow the stuck water truck as it was desperately needed on the front line. I photographed the bull-dozer next to the struck truck, sitting idle. Later, I was told by my neighbor, that when the dozer was nearly ready to tow the water truck to enable both to quickly get back to the front line, the State Incident Commander (SIC) arrived, shut down the entire operation, including preventing the bull dozer to return to the front line.

Neighbors claimed the fire most likely could have been contained at that point, but instead of containment, the fire was allowed to progress without resources. He went on to say the SIC demanded a local big rig tow company be called to assist the struck water truck. The towing company arrived on scene only to recommend that the bull dozer sitting next to the stuck water truck be used as it would be the safest way to pull the truck out.

Neighbors claimed the water truck was later assisted by the bull dozer (originally as the local fire fighters and landowners were doing before the SIC arrived), but by that time the fire had progressed towards Wells Dam and my property at Cold Springs Basin. I spoke with many people throughout the evening and over the next few days. I find it unbelievable the events that transpired during the "Crane Road Fire of 2012".

What are locals to do when the supposed (expected) logical State Fire Professionals show up on scene only to stop all firefighting to have a meeting at the Brewster School and then exhibit illogical behavior, lack of experience, disrespect for locals, disrespect for our land and unnecessary stress for all involved?

The last remaining Homesteads and Schools of Dyer Hill have been erased forever, along with severe damage to decades of habitat restoration and preservation. All unnecessary in my opinion.

I hope that a plan for future fires involves provisions to retain some involvement and control at the local level. Also, with all the technical equipment available today, perhaps it is time to outfit all State Fire Commanders with dash cameras and other personal recording devices as to stop the atrocity that happened during the Crane Road Fire 2012 from ever happening again, and to provide accountability, making sure the State Fire Commanders have the best interest of the local area as their foremost priority.

Here is a list of complaints from landowners and not in any order.

1. Change of commands takes too long and fire gets away.

2. Too much staging.

3. Folks that come to fight the fire have no dryland Wild fire training.

4. Use the landowner for information. Believe it or not we know where the choke points are, how wind works on particular draws and the access points. ASK!!!!!!!!

5. Don't know how to use backfires on dry land brush fires.

6. Don't put fire lines on ground that already burned.

7. Figure out how to use the locals

8. Send firefighters not so many chiefs. Use local chiefs.

9. Need to talk to landowners

10. We would be most appreciative if you would just come and put the fire out!

11. Many feel it has turned into camping for dollars.

12. Listen to landowner's advice, they know the area best!

13. Communications sketchy. We need a cell tower up on northern Douglas County.

14 .Hold meetings at night not during prime firefighting time in the morning.

Positives

1. Firefighters very friendly especially when ranchers were looking for cattle

2. Get landowners contact information

I believe another issue is when we go State Mob and all of you come in to set up the command center and fight the fire you don't see the "VALUE OF THE LAND AND VALUE TO US". The dry barren land is our lively hood.. We raise dryland wheat and dryland pasture for our cattle. The wheat stubble is added nutrients to the soil as well as holding the snow in the winter. Also dryland pasture is winter feed for our cattle. This is a huge resource to Douglas County. When we call you in we expect you to jump in and fight the fire and put it out. Goal should be to but fire out quickly.

I have traveled here to help not tear down. I hope you take what I have said from my heart and work on making it better. If I can be of any help please let me know.

Thank you for listening to me.

Wildfire Ignition Profile

Detailed records of wildfire ignitions and extents from the Washington Department of Natural Resources (DNR) and Bureau of Land Management (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 DNR (1970-2012) and BLM (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 less than 1 wildfire ignition per year resulting in an average total burn area of 1,230 acres per year. According to this dataset, the vast majority of fires occurring in Douglas County are human caused; however, naturally ignited/unknown caused fires do occur.

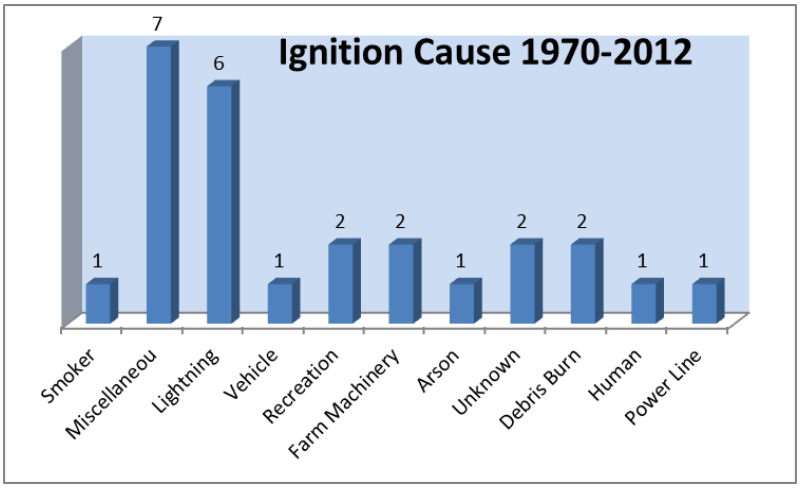
The highest number of ignitions in Douglas County was witnessed in 2008 with 6 separate ignitions, which also contributed to the greatest number of acres burned in a single year with over 36,000 acres being burned. This does not include the fires that occurred during the summer of 2012 that were caused by lightning strikes and burned approximately 100,000 acres in Douglas and Okanogan Counties.

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

General Cause	Number of Ignitions	Percent of Total Ignitions	Acres Burned	Percent of Total Acres
Human-Caused	11	41%	27,760	55%
Natural Ignition	7	26%	5,497	11%
Unknown	9	33%	17,248	34%
Total	**27**	**100%**	**50,505**	**100%**

Based on the agencies' combined datasets specific to Douglas County, there is an upward trend in both the number of ignitions and acres burned per year since 1970. The upward trends could be attributed to a higher amount of people moving to more rural areas of Douglas County. Another contributing factor could be the spread of invasive species. It should be noted that a majority of the wildland fires occurring in Douglas County are not reported at the State or Federal level, therefore a separate analysis of fire history at the Fire District level is warranted.

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



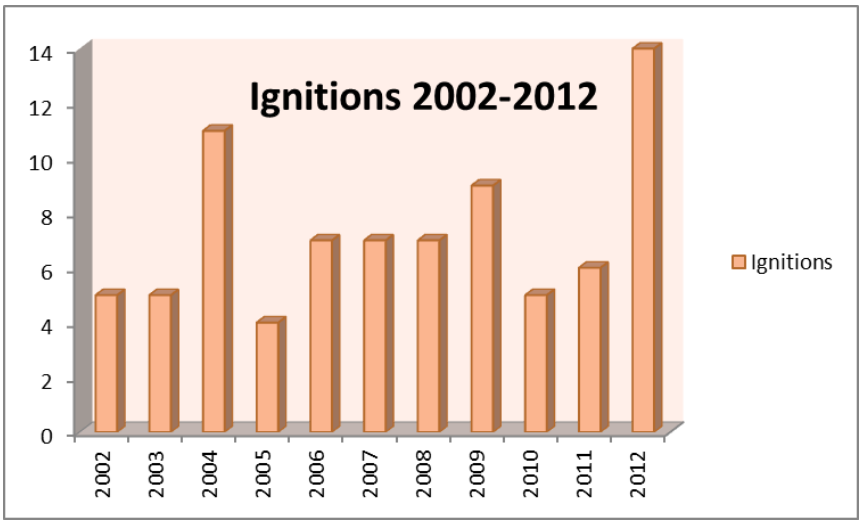
The data reviewed above provides a general picture regarding the level of wildland-urban interface fire risk within Douglas County. There are several reasons why the fire risk may be even higher than suggested above, especially in developing wildland-urban interface areas.

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 Douglas 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.

Figure 4.7. Summary of Douglas County Fire Protection District Recorded Ignitions



Wildfire Extent Profile

Across the west, wildfires have been increasing in extent and cost of control. Data summaries for 2003 through 2012 are provided and demonstrate the variability of the frequency and extent of wildfires nationally.

Statistical Highlights	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Number of Fires	85,943	77,534	66,753	96,385	85,705	78,979	78,792	71,971	74,126	67,315
10-year Average ending with indicated year	101,575	100,466	89,859	87,788	80,125	79,918	78,549	76,521	80,465	74,912
Acres Burned (million acres)	4.9	6.8	8.7	9.9	9.3	5.3	5.9	3.4	8.7	9.2
10-year Average ending with indicated year (million acres)	4.7	4.9	6.1	6.5	7.0	6.9	6.9	6.5	7.0	7.3
Structures Burned	5,781	1,095	--	--	--	--	--	--	--	--
Estimated Cost of Fire Suppression (Federal agencies only)	$1.3 billion	$1.0 billion	$9.8 million	$1.93 billion	$1.84 billion	$1.85 billion	$1.24 billion	$1.13 billion	$1.73 billion	$1.9 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.[20]

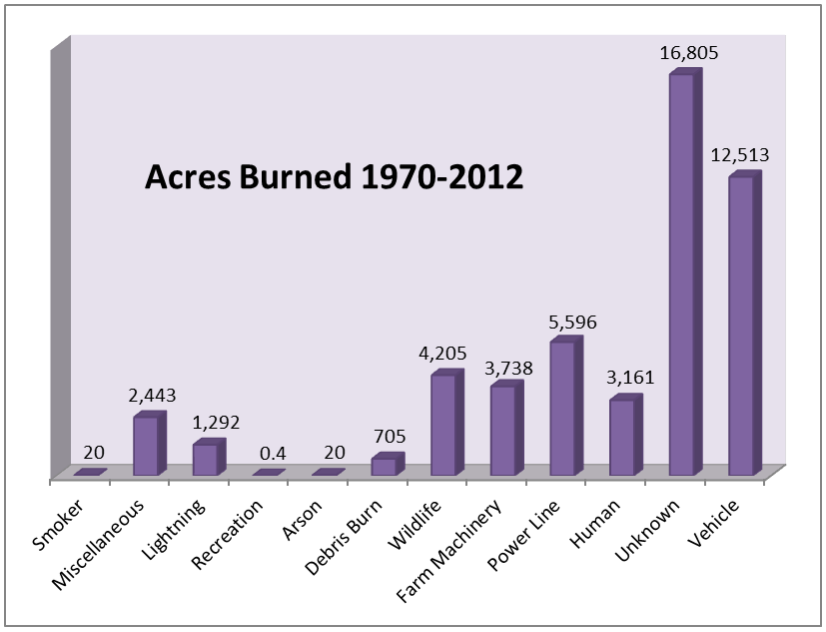
Table 4.2. Total Fires and Acres 1980 - 2010 Nationally.

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

These statistics are based on end-of-year reports compiled by all wildland fire agencies after each fire season. The agencies include: Bureau of Land Management, Bureau of Indian Affairs, National Park Service, US Fish and Wildlife Service, Forest Service, and all state agencies.

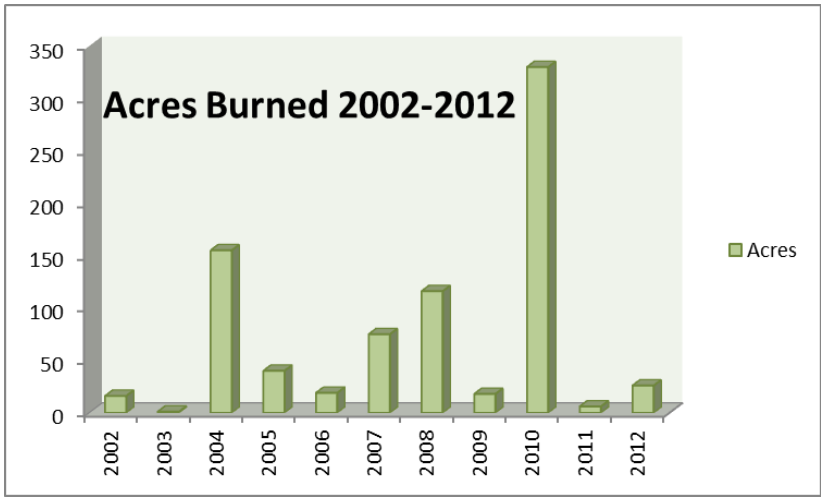
[20] National Interagency Fire Center. 2008. Available online at http://www.nifc.gov/.

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



The fire suppression agencies in Douglas 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.

Figure 4.9. Summary of Douglas County Fire Protection District Recorded Acres Burned



Douglas 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 Douglas 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

Douglas 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 Douglas 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 Douglas 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.

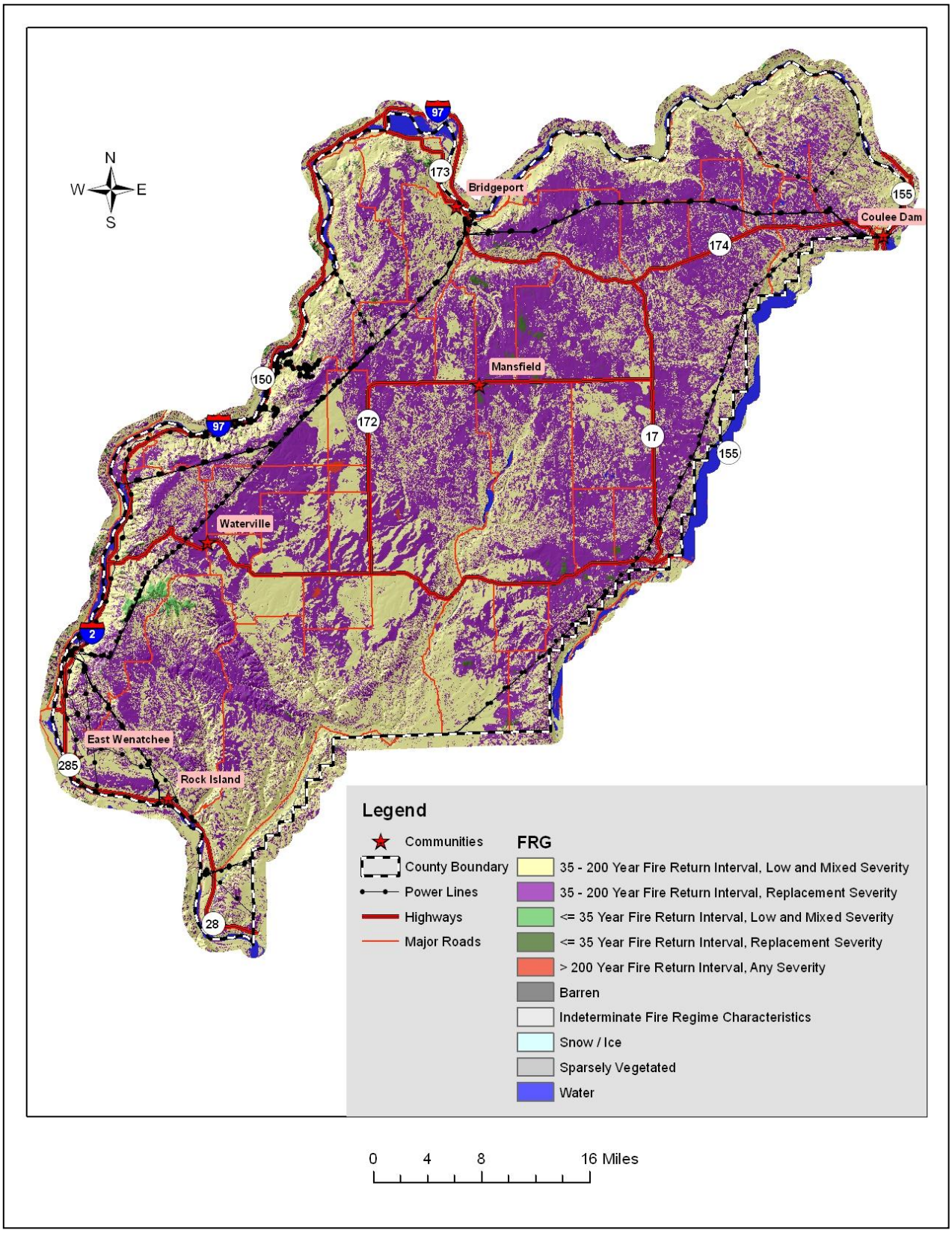
Table 4.3. Historic Fire Regimes in Douglas County.

Historic Fire Regime	Description	Acres	Percent of Total
Fire Regime Group I	<= 35 Year Fire Return Interval, Low and Mixed Severity	3,050	<1%
Fire Regime Group II	<= 35 Year Fire Return Interval, Replacement Severity	5,963	<1%
Fire Regime Group III	35 - 200 Year Fire Return Interval, Low and Mixed Severity	572,118	48%
Fire Regime Group IV	35 - 200 Year Fire Return Interval, Replacement Severity	574,189	49%
Fire Regime Group V	> 200 Year Fire Return Interval, Any Severity	6,567	<1%
Water	Water	18,703	2%
Barren	Barren	2,716	<1%
Sparsely Vegetated	Sparsely Vegetated	33	<1%
Indeterminate Fire Regime Characteristics	Indeterminate Fire Regime Characteristics	21	<1%
	Total	**1,183,360**	**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 Douglas County historically burned with mixed severity fires on a longer 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 Douglas 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.[21, 22] Coarse scale definitions for historic fire regimes have been developed by Hardy et al[23] and Schmidt et al[24] 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. [25] 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.[26,27] 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 Douglas County shows that the majority land in the county that has not been converted to agriculture (40%) is considered highly departed (28%) from its historic fire regime and associated vegetation and fuel characteristics. Approximately 19% has a low departure and less than 7% is considered moderately departed.

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

[22] 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.

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

[24] 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.

[25] 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.

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

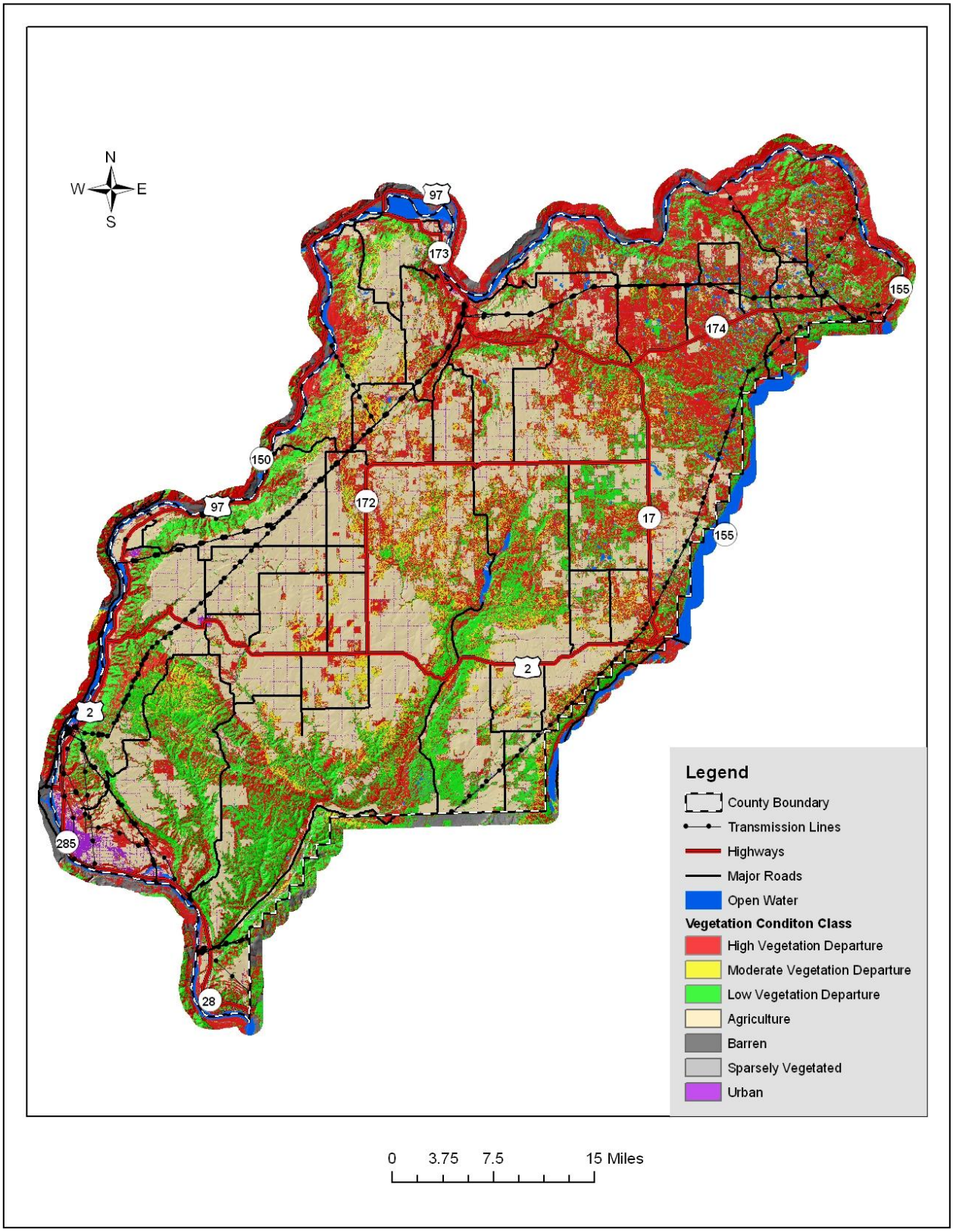
[27] Schmidt, K. M., et al. *"Development of coarse scale spatial data for wildland fire and fuel management."* General Technical Report, RMRS-GTR-87. U.S. Department of Agriculture, Forest Service. Rocky Mountain Research Station. Fort Collins, Colorado. 2002.

Table 4.4. Vegetation Condition Class in Douglas County.			
Vegetation Condition Class	**Description**	**Acres**	**Percent of Total**
Vegetation Condition Class I	Low Vegetation Departure	228,702	19%
Vegetation Condition Class II	Moderate Vegetation Departure	84,563	7%
Vegetation Condition Class III	High Vegetation Departure	335,557	28%
Agriculture	Agriculture	474,855	40%
Water	Water	18,730	2%
Urban	Urban	38,210	3%
Barren	Barren	2,708	<1%
Sparsely Vegetated	Sparsely Vegetated	34	<1%
	Total	1,183,360	100%

The current Vegetation Condition Class model shows that much of Douglas County is considered to be highly departed. A concentration of the highly departed vegetation appears to occur in the northeast corner of the county where vast amounts of Conservation Reserve Program land exists. In addition, a majority of the county is dominated by various shrub species with a grass understory consisting of bluebunch wheatgrass, Idaho fescue, and other grass species. The current structure and density of the shrublands 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.



Douglas 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.[28] "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".[29] The role of the federal agencies in Douglas 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.[30] 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. [31]

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;[32]
- Improving defensible space in the immediate areas for suppression efforts in the event of wildland fire.

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[28] 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.

[29] 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

[30] 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

[31] 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.

[32] 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, Douglas 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 Douglas 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, not present in Douglas County

Douglas 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. Aerial photography was used to identify structure locations in 2013 using 2009 and 2011 NAIP imagery and Douglas

County's cadastral data. The resulting output identified the extent and level of population density throughout the county.

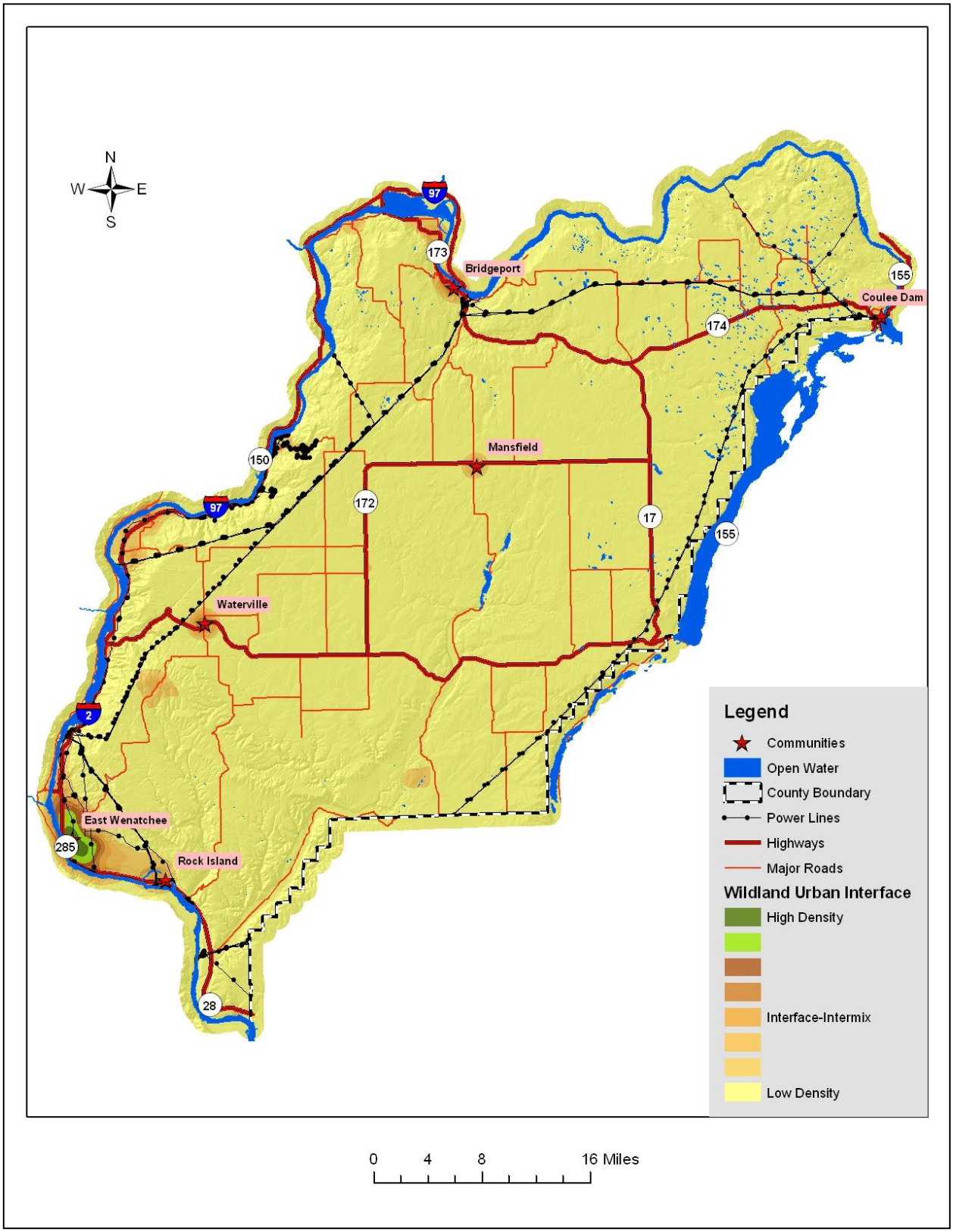
In addition, the Douglas County Steering Committee determined that the entire County should be classified under WUI designation due to the rapid rates of spread that commonly occur within the County.

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 Douglas 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 Douglas County WUI is included in Appendix 1.

Figure 4.12. Wildland Urban Interface in Douglas 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

Douglas 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 Douglas 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.[33]

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. Based on local

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

knowledge, the grass fuel model was given a higher intensity level than it normally would receive. Fires burning in this fuel type can spread rapidly. Grass fires can generally be controlled relatively easy assuming that response time is quick.

Suppression Capabilities

Fire protection in each district in Douglas County is essentially the responsibility of the local fire district. The County has seven 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.

Population Centers and Developing Areas

Due to the increased human activity within and surrounding Douglas 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 Douglas 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, switchyards, 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

Based on the preliminary review of the risk categories, high risk areas were identified and mapped. Field assessment of these areas were conducted in April and included guided tours of Banks Lake, Slack Canyon, Sagebrush Flat, Badger Mountain as well as tours of several of the communities in combination with interviews with local residents in identified high risk areas. Fire control and mitigation specialists conducted thorough field assessment to evaluate the accuracy of the models and other data, assess the extent of risk and hazardous fuels, and develop specific hazardous fuels treatment project plans. Additionally, experts from the local Fire Protection Districts, the Bureau of Land Management, and Douglas County were consulted in order to address specific areas of concern and document local wildfire suppression operational tactics.

Determination of Relative Threat Level

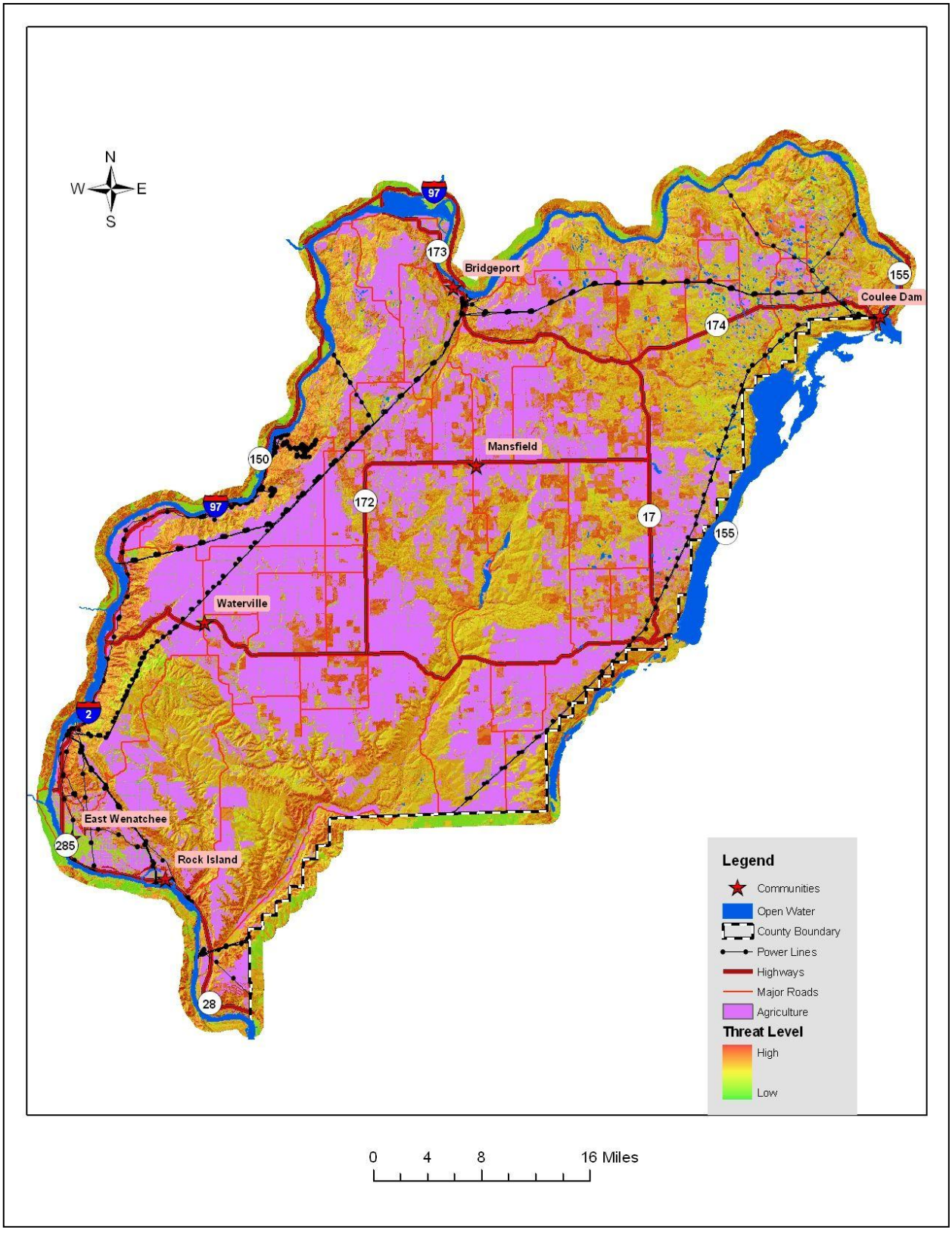
Following the field assessments, the steering committee began development of the Relative Threat Level model. Risk categories included in the final analysis were slope, aspect,

precipitation, fuel models, rate of spread, 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 Douglas 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 Douglas County, shrub and grass fuel models were given the higher rankings followed by short grass / agriculture, and forest types (shrub understory) fuel models.
- Fire Behavior – areas identified by fire behavior modeling as having high rate of spread potential or 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.
- Critical Infrastructure – areas or assets that cannot be replaced or afford special wildfire protection such as critical infrastructure, cultural or historic sites, and recreational areas were overlayed onto the Relative Threat Level Map to show those areas where critical infrastructure is most at risk. This allows land managers to focus mitigation efforts in those identified areas.

Each data layer was developed, ranked, and converted to a raster format using ArcGIS 9.3. 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 Douglas County. A map showing the identified Douglas County Relative Threat Level is included in Appendix 1.

Figure 4.13. Relative Threat Level Map for Douglas 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. Due to the lack of DNR resources in Douglas County, the DNR maintains an agreement with Douglas County to provide initial attack for the first 12 hours of the operational period.

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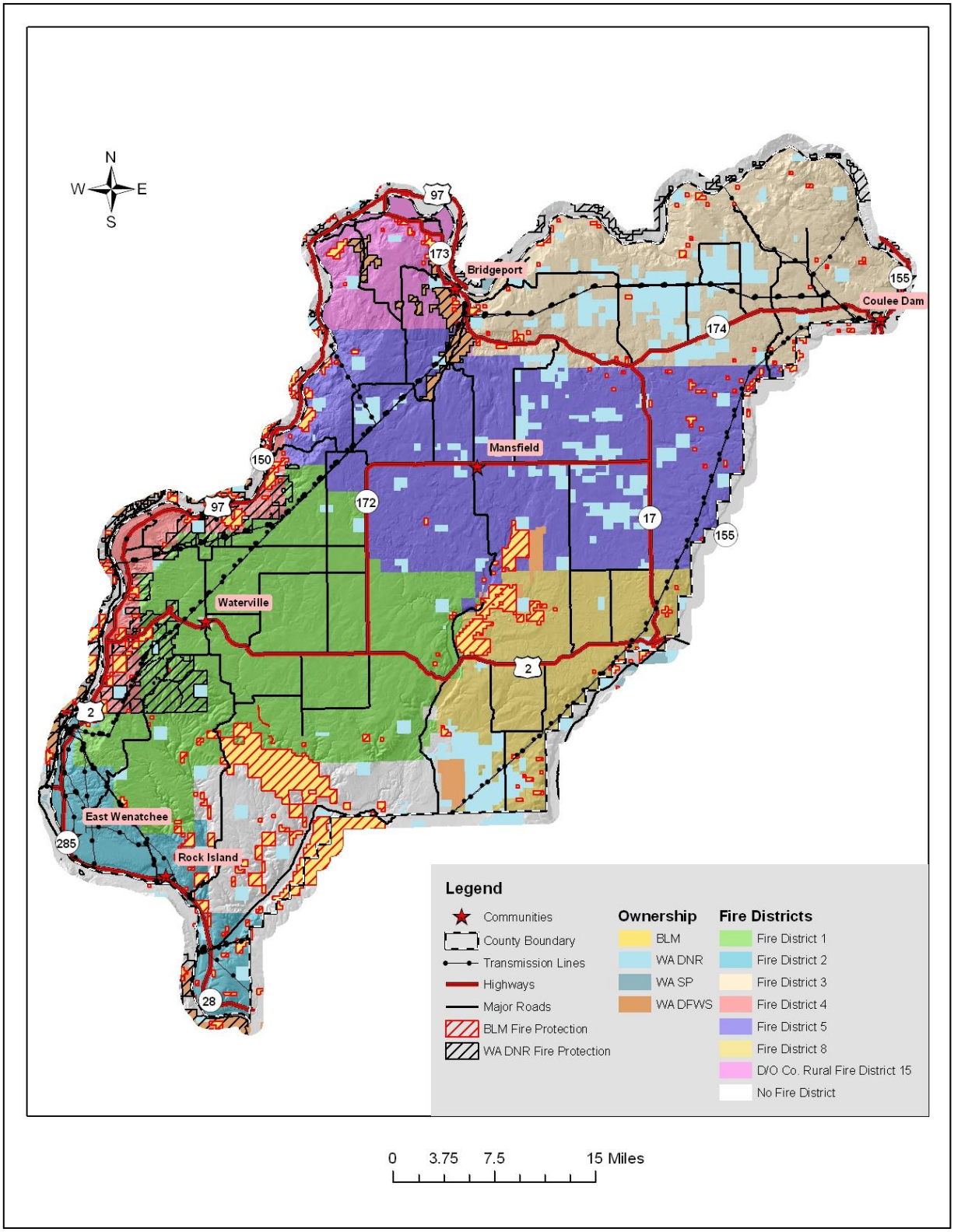
Figure 4.14. Wildfire Protection Responsibility Map.



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

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.

Douglas County Fire District #1

District Summary:

Douglas County Fire District #1 is located in central Douglas County. District #1 is nearly 500 square miles in size. The Town of Waterville is provided fire protection under contract.

Fire District #1 responds to approximately 80 calls for service per year. Calls include; wildland fires, structure fires, vehicle accidents, and other incidents. There is a significant hazard when fighting wildland fires due to the topography, the crops grown, and the dry weather conditions common to the area.

Issues of Concern:

Residential Growth: There has been significant growth in some of the areas of the District. The most noticeable is the areas located on Badger Mountain, and Pine Canyon. Numerous subdivisions, as well as individual homes, are being developed in these wildland urban interface areas which increase the calls for service. This growth also presents a greater potential for a large interface fire that may involve many homes and structures requiring protection.

Communications: The topography along with low call volumes has presented problems with reliable communications between the District and RiverCom (dispatch).

Burn Permit Regulations: The District does not have regulations for burn permits however there is a County Wide Burn Ban from June 1 to October 1 each year.

Other: The District is staffed by volunteers. The District is always looking for new members and has an increasing problem of finding and retaining members.

Cooperative Agreements:

The District has a Contract with DNR to supply the initial response to fire on DNR protected lands. The Fire District is also a signing party to the Chelan-Douglas County Mutual Aid Agreement. The District also participates in the Statewide Fire Mobilizations Plan.

District Needs/Wish List:

The District is looking into ways to meet future needs including, communications, water supply, community programs, and equipment upgrades.

Douglas County Fire District #2

District Summary:

Douglas County Fire District #2 became a fire district in 1942 and was initially formed to serve the area immediately surrounding the city of East Wenatchee. The town of Rock Island and the city of East Wenatchee contracted for fire protection until they annexed into the Fire District (Rock Island in 1981 and East Wenatchee in 1988). Today, operating out of three fire stations, the Fire District protects a population of 27,500 in over 100 square miles of incorporated and unincorporated land in Douglas County, Washington. The department is comprised of 12 career firefighters, over 40 dedicated volunteer fire fighters, and 3 administrative support personnel.

The District responds to approximately 1400 calls a year from emergency medical calls to commercial structure fires. While wildland fires in the District can cover 2000 to 3000 acres in an afternoon due to the flashy fuels. The District also has mutual aid agreements that can put District #2 firefighters and equipment in a timber fuel type. Both fuel types, and those in between, represent a significant hazard during the dry summer season.

Issues of Concern:

Residential Growth: Individual and small subdivision developments continue to increase the number of occupied structures in flashy fuel (e.g. grass lands, sagebrush, etc.) areas. These types of developments increase the demand for services from the District. Rapid fire progression of these types of fuels pose a risk to residents and responders.

Communications: The topography and infrastructure of Douglas County creates somewhat of a challenge for radio communications. Strategic placement of repeaters is required to maintain clear communications with the two County dispatch centers. Some of the outer lying areas do not have radio or cellular communications.

Burn Permit Regulations: Burning is regulated by the Department of Ecology located in Yakima, Washington. Anyone wishing to burn must obtain a permit from the DOE and then they may burn only on approved burning days.

Cooperative Agreements:

The Fire District also is a signing party to the Chelan-Douglas County Mutual Aid Agreement and also participates in the Statewide Fire Mobilization Plan. The Fire District is also working to complete an agreement with the Bureau of Land Management (BLM) for response to fires on BLM lands within and adjoining the District's boundaries.

District Needs/Wish List:

Recent external and internal audits of the District's current and future operations revealed a need to expand the facilities and staffing levels. Historically, the District has witnessed an increase each year in the call volume. The expansion and/or remodel of the District's three stations will allow for increased resident firefighters and the storage of needed apparatus and equipment.

Douglas County Fire District #3

District Summary:

Our District is at the far North end of Douglas County between Grand Coulee Dam and Chief Joseph Dam and consists of 328 square miles of rugged terrain that has limited access with only two main state highways.

Issues of Concern:

Residential Growth: As in most rural areas we are experiencing more & more urban growth every year. That is putting more demands on our small all-volunteer District.

Communications: Do to the rugged terrain and the steep canyons in the district communications are always a challenge.

Burn Permit Regulations: The District does not have regulations for burn permits however there is a County Wide Burn Ban from June 1 to October 1 each year.

Other: Because of the Districts limited budget we are not able to afford outside contract resources to help when district resources are unable to gain access the fire.

Cooperative Agreements: District #3 has mutual aid agreement's with the departments and districts in Chelan And Douglas Counties. Agreement with BLM And Washington State Mobilization Plan.

Douglas County Fire District #5

District Summary:

Douglas County Fire District #5 is located in Central Washington half way between Seattle and Spokane. The district is approximately 540 square miles with a population base of 1000 residents, half of which are either over 65 years of age or below the poverty level. The District is an all-risk fire department which also operates a BLS ambulance service. We have varying terrain from wheat fields, to rugged canyons, and small townships. District #5 is close to two major hydroelectric dams, Grand Coulee Dam and Chief Joseph Dam. The District has twenty-six miles of State Route 172 and twenty miles of State Route 17, which is a major North/South highway running from the Canadian Border to Interstate 90, passing through the District.

The Fire District is staffed predominantly by volunteer firefighters. The Fire District operates primarily out of the main fire station located in Mansfield. The Fire District also has a second fire station location near Mile Marker 110 on State Route 17. The Fire District also posts seasonal brush trucks at volunteer's residences located throughout the district's boundaries. The fire district operates a variety of land-based vehicles and also has a snowmobile rescue unit for winter time rescue needs.

The Fire District typically responds to approximately 150 calls for service per year within the fire district. The majority of these calls for service are either requests for emergency medical services (EMS) or wildland fire responses.

Issues of Concern:

Residential Growth: The Fire District continues to grow as some individual and small subdivisions are developed. Most of the new subdivision developments are occurring in the McNeil Canyon area which creates a wildland urban interface concern, with regards to wildland fire due to the heavy fuel loading in the canyon. The increased development within the McNeil Canyon area creates an increased demand for services from the fire district.

Communications: The Fire District receives communications support through RiverCom 911 Dispatch Center. RiverCom continues to expand the available repeaters to the north end of Douglas County which has increased Fire District #5 communication abilities. Commercial cell service is still very limited in areas of the District which makes it difficult for citizens, with only cellular service, to report fires.

Burn Permit Regulations: Open burning within Fire District #5 falls within the county wide burn resolution which is governed by the Douglas County Board of County Commissioners. Open burning is closed from June 1st to October 1st of every year and can be extended by the county commissioner's depending on the fall fire conditions. Burning is not allowed within the urban growth boundary areas of Douglas County which includes the Town of Mansfield for Fire District #5. The only burning allowed, with the Town of Mansfield urban growth boundary, is for "recreational" fires which are three-feet in diameter or less. Fire District #5 does not issue any burning permits. Anyone conducting agricultural burns within Fire District #5 is required to obtain the necessary burn permit through the Department of Ecology.

Other: As a volunteer-staffed fire district, the community's demographics impact the ability to recruit and retain new firefighters. As the population ages, willing and able volunteers become increasingly more difficult to find.

Cooperative Agreements:

The Fire District currently has a fire suppression agreement with the Washington State Department of Fish and Wildlife (WFDW) for response to certain lands located within the District's boundaries. The Fire District also is a signing party to the Chelan-Douglas County Mutual Aid Agreement and also participates in the Statewide Fire Mobilization Plan. The Fire District is also working to complete an agreement with the Bureau of Land Management (BLM) for response to fires on BLM lands within and adjoining the District's boundaries.

District Needs/Wish List:

Fire District #5 is continuing to explore options for the recruitment and retention of firefighters for the district. The Fire District is also to a point where building expansion is needing to be addressed at the main station located in Mansfield along with a possible satellite station being built somewhere in the McNeil Canyon area. The Fire District continues to explore all options for equipment upgrades. The fire district needs to locate and secure funding for a new interface wildland engine, within the next five years, to help support the continuing growth in the McNeil Canyon area.

Douglas County Fire District #8

District Summary:

Fire District #8 is located in the southeast corner of Douglas County and encompasses approximately 200 square miles. District #8 consists of a very rural setting with farms and ranches dotting the landscape. Predominate land use is agriculture in the form of dryland grain crops. Some land previously managed as agriculture has been enrolled in programs such as CRP and SAFE and have been seeded to native grasses. Shrub-steppe habitat is widespread in District #8 and lies between the Moses Coulee and Grand Coulee. Some areas are quite rocky and rugged with few roads which results in poor access to some areas. There is one main east-west highway and one north-south highway through the district. Fire District #8 contracts with Coulee City (nearest town) for firefighting assistance because the district does not have enough volunteer firefighters or equipment for the area. This association has worked extremely well and a great working relationship has been maintained. Firefighters who live in the district keep district fire trucks at their farms which is very beneficial for the district. Local landowners with their large tractors & discs are also extremely valuable assets who can disc an area adjacent to a burning field to either slow or stop a fire from advancing. These farmers, working in conjunction with the firefighters, have stopped many wildfires from consuming valuable habitat and crops.

Issues of Concern:

Communications: This has always been an issue in District #8 due mostly to the topography, but in 2013 the district switched to narrowband radios and also the 800 mhz system. The hope is that this will improve communications with both Grant County and other Districts in Douglas County, but it remains unknown. Cell phone service is spotty but can be useful during fire season.

Other: As with most districts, District #8 is dependent on volunteer firefighters. Suitable help can be quite scarce at certain times of the year.

Cooperative Agreements:

Fire District #8 has Mutual Aid Agreements with adjacent districts.

District Needs/Wish List:

Funding to acquire new or replacement equipment, updated mapping capabilities, cooperation and information from government agencies concerning resource issues.

Douglas County Fire District #15

District Summary:

Fire District #15 covers 230 square miles in two counties (Okanogan and Douglas). Within those two counties Fire District #15 covers a population of over 4,000. The area is mostly agricultural in nature with apple, pears, cherries and wheat. Also Fire District #15 has a vast diversity of low income minority agricultural workers, mostly Hispanic. During the peak harvest months, August through November, the population of the district could double in numbers. The District also covers a wide range of topography, from grass/sagebrush to dense timber.

The district operates four stations: Brewster, Pateros, Methow and Rocky Butte on the Bridgeport Bar. The District provides coverage for the Cities of Brewster, Pateros, and Bridgeport. The district responds to over 120 calls a year covering brush fires, structure fires, vehicle fires and vehicle accidents. The district also owns and operates an ambulance service that employees 4 EMT-I's and an EMS Supervisor, who is also an EMT-l.

Fire District #15 has a paid District Fire Chief and over 60 volunteers. All our firefighters are red card qualified. Along with that the District has several who are Crew Boss and Engine Boss qualified.

Priority Areas:

Residential Growth: The Alta Lake, Methow, and French Creek areas have had a big growth of new homes over the past two to three years. The District needs to improve fire service to those areas as well as Brewster, Pateros and Bridgeport Bar areas. The Alta Lake area has a State Park as well as a popular golf course with a motel, both of which has increased our call volume to those areas. The closest station to the Alta Lake area is 3-4 miles away in Pateros. The Alta Lake area should be covered more efficiently with a station and equipment assigned to the area.

Communications: The District needs to improve our communications in the Methow area as well as the areas of our district surrounding Bridgeport. The topography in these areas makes it difficult to get good signal from the current repeater sites. The District is dispatched by Okanogan County's Sheriff's Office Communications Center/Dispatch (911) for both counties.

Burn Permit Regulations: The City of Brewster has a burn permit requirement and the cost is $30.00 and is good from Oct 1 – Apr 30. The district has no permit process in place at this time.

District Needs:

A training facility, either within the district or somewhere within in the County, is necessary for volunteers to get good quality training without having the burden and costs of traveling out of the area, especially now with the proposed new LIVE fire training requirements.

A fire station and equipment (Class A Engine) in the Alta Lake and Methow areas to improve the current overcrowding conditions. Improve communications with repeaters in dead areas. Retention and recruitment of volunteers is a major problem. The District is always in need of volunteer firefighters and EMS.

Update contracts with neighboring agencies. Developing contingency plans for the urban interface areas of the district. The District needs to continue to improve relationships with the cities (Brewster, Pateros, and Bridgeport).

Washington Department of Natural Resources

District Summary: The Washington Department of Natural Resources (DNR) is the largest on-call fire department in the State with 1,200 permanent and temporary employees that fight fire on more than 12 million acres of private and state-owned forest lands. The DNR's fire protection and safety equipment requirements help local Fire Protection Districts respond to wildfires. The DNR also works with the National Weather Service to provide the fire weather forecasts and fire precaution levels that firefighters, landowners, forest industry rely on.

The Washington DNR does not have resources directly assigned to Douglas County. The DNR's Northwest Region has 8-10 Type 5 and 6 initial attack engines staffed and available during the fire season in addition to air resources. These resources as well as others statewide are available to Douglas County as they are available.

Cooperative Agreements in Douglas County: .

****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, Assistant Fire Management Officer (AFMO), and a Fire Management Officer (FMO). The hand crew and one engine is stationed in Spokane at the District office and the other 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, 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, 6, Douglas FDs #2, 4, 5, 15, Franklin County FD #5, Grant County FD #5, Lincoln County FDs #1, 7, and Yakima County FDs #4, 5.

Fire Protection Issues

The following sections provide a brief overview of the many difficult issues currently challenging Douglas 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 Douglas 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 is currently little to no communication between local fire departments and the federal agencies. This presents a problem when there is confusion on who has initial attack responsibilities on federal lands and what restrictions are imposed by the jurisdictional agency responsible for fire protection.

Urban and Suburban Growth

One challenge Douglas 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. Douglas 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 Douglas 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 mainland urban areas to the more rural parts of Douglas 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.

Debris Burning

Local burning of yard debris is highly regulated in Douglas County. Permit burns in Douglas 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 Douglas 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.

Protection of Grouse Species

The Washington Department of Fish and Wildlife (WDFW), in cooperation with the BLM and the Colville Confederated Tribes, are actively working on the reestablishment of both Columbian sharp-tailed grouse and greater sage-grouse in Douglas County. Declining populations and distribution of the species in Washington have resulted in serious concerns for their long-term conservation status.

The CWPP planning committee has considered that some of the proposed fuels treatments recommended in this document may disturb the habitat of both sage-grouse and sharp-tailed grouse populations in Douglas County. The protection of these species must be balanced with the need to reduce the wildland fire hazards. The committee agreed that the implementation of fuels reduction projects in potential grouse habitat sites should consider methods that alleviate undue stress on the birds. The planning committee believes that the removal of small portions of grouse habitat in strategic areas may serve as a way to protect larger acreages of habitat from loss due to wildfire. However, every effort should be made to conserve important grouse habitat whenever possible.

Conservation Reserve Program Fields

Since the introduction of the CRP by the federal government, many formerly crop producing fields have been allowed to return to native grasses. CRP fields are creating a new fire concern all over the west. As thick grasses are allowed to grow naturally year after year, dense mats of dead plant material begin to buildup. Due to the availability of a continuous fuel bed, fires in CRP fields tend to burn very intensely with large flame lengths that often times jump roads or other barriers, particularly under the influence of wind. Many landowners and fire personnel are researching allowable management techniques to deal with this increasing problem.

Currently, large blocks of land as well as scattered parcels in Douglas County are enrolled in the CRP program. Hundreds of acres of continuous higher fuel concentrations as well as limited access to these areas have significantly increased the potential wildfire risk in these areas. Many CRP landowners are willing to conduct hazardous fuel reduction treatments to lessen the fire risk; however, they are often limited by the regulations of the CRP program.

Due to the difficulties involved with conducting fuel reduction projects on CRP land as well as the enormity of the task in Douglas County, the CWPP committee has recommended disking fuel breaks adjacent to CRP land wherever possible. The goal is to lower the intensity of a wind-driven CRP fire before it threatens homes and other resources.

Volunteer Firefighter Recruitment

The rural fire departments in Douglas 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 Douglas 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.

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.

Another communication issue that was identified during the public meetings is the ability of wildfire suppression teams to tap the local knowledge of many of the area residents, particularly the larger landowners. There are a handful of local landowners that could be an excellent resource advisor regarding the condition of county and private roads, access points, fuel conditions, etc.

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

Nearly every fire district involved in this planning process indicated 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.

The CWPP planning committee has identified mapping of additional water resources as a priority action item in this document.

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.[34] According to some statistical analysis, cheatgrass dominated ranges are about 500 times more likely to burn than a native species dominated range.[35] Fire return intervals in steppe and shrub-steppe fuel types, pre-European settlement was

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

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

typically between 32 and 70 years.[36] In certain Great Basin rangelands, the fire return interval is now less than 5 years on rangelands dominated by cheatgrass.[37]

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.

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

[36] 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.

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

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 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."[38]

[Remainder of page intentionally left blank.]

[38] 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

Douglas County is located in central Washington. The county encompasses approximately 1,820 square miles and has an elevation range of 600 to 4,000 feet above sea level. Land is owned primarily by private individuals but the state of Washington and the federal government also have some ownership within the County. Federal lands are managed by the Bureau of Land Management, and the Bureau of Reclamation. State lands include parcels managed by the Washington Department of Natural Resources and Washington Department of Fish and Wildlife. Douglas, the seventeenth largest county in the state, is bordered on the west by Chelan County, to the south by Kittitas County, to the east by Grant County, and to the north by Okanogan County. Douglas County lies within the channeled scablands of the Columbia Basin, a region formed by ice age flooding and wind blown volcanic ash. Basalt rock outcrops and glacial erratics can be found in close proximity to fertile farmland. Irrigated orchard lands are located primarily in the lower elevations while dryland farming dominates the upland areas. Forested areas and areas with steppe shrub vegetation provide diverse wildlife habitat in the county. Along the northern boundary the topography becomes steep as it plunges into wide valleys formed by the Columbia River. The mild climate, abundance of sunshine and low annual precipitation results in an environment that is potentially very prone to wildland fire. Although much of the native grasslands have been converted for agricultural purposes, there are many areas of native vegetation and fallow farm land that cures early in the summer and remains combustible until winter. If ignited, these areas burn rapidly, potentially threatening people, homes, and other valued resources.

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 four predominant landscapes types that exhibit distinct terrain and wildland fuels. The four landscapes identified for the assessments are: agricultural lands, channeled scablands, river breaks and riparian areas. 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 gentle terrain that dominates Douglas County facilitates extensive farming and ranching operations. Agricultural fields occasionally serve to fuel a fire after curing; burning in much the same manner as short to tall grassy fuels. Fires in grass and rangeland fuel types tend to burn at relatively moderate intensity with moderate flame lengths, rapid rate of spread, and short-range spotting. Common suppression techniques and resources are generally quite effective in this fuel

type. Homes and other improvements can be easily protected from direct flame contact and radiant heat through adoption of precautionary measures around structures.

Rangelands with a significant shrub component will have much higher fuel loads with greater spotting potential than grass and agricultural fuels. Although fires in agricultural and rangeland fuels may not present the same control problems as those associated with large, high intensity fires in timber, they can cause significant damage if precautionary measures have not been taken prior to a fire event. Wind driven fires in these fuel types spread rapidly and can be difficult to control. During extreme drought and when pushed by high winds, fires in agricultural and rangeland fuels can exhibit extreme rates of spread, which complicates suppression efforts.

Woodland fuels are mostly present in the canyons, river breaks on sloping terrain less favorable to clearing for agricultural development, and on Badger Mountain. A patchwork of ponderosa pine and Douglas-fir stands occupy sheltered areas on favorable soil where moisture is not a limiting factor. Wooded areas tend to be on steep terrain intermingled with grass and shrubs providing an abundance of ladder fuels which lead to horizontal and vertical fuel continuity. These factors, combined with arid and windy conditions characteristic of the river valleys in the region, can result in high intensity fires with large flame length and fire brands that may spot long distances. Such fires present significant control problems for suppression resources and often results in large wildland fires.

Development is rapidly occurring along the Columbia River breaks on the west side of the county. Many people have purchased small tracts of land in this location and built dwellings amongst the shrubland. Scenic vistas and rolling topography with close proximity to East Wenatchee, Wenatchee, and the Columbia River make this area desirable. However, the risk of catastrophic loss from wildfires in this area is significant. Fires igniting along the bottom of the canyon have the potential to grow at a greater rate of speed on the steeper slopes and rapidly advance to higher elevations. Fire suppression efforts that minimize loss of life and structures in this area are largely dependent upon access, availability and timing of equipment, prior fuels mitigation activities, and public awareness.

Riparian areas in arid environments often have a higher amount of fuel loading due to the relatively abundant water supply. Vegetation tends to be more abundant and robust in these areas. Fuel loading often compounds year after year as new growth replaces old growth. Deciduous trees and shrubs are common along waterways and contribute to on the ground fuel loads as they lose their leaves every year. Riparian areas experience a higher amount of recreation use due to various outdoor opportunities (fishing, camping, swimming, etc.). The increased activity may lead to unusually high amounts of ignitions.

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 Douglas 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 in forested areas of Douglas 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 Douglas 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 Douglas 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 such as campgrounds and boat launches along Banks Lake 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.

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.

Agricultural Landscape Risk Assessment

The agricultural landscape is widespread across Douglas County. Douglas County is the fifth highest wheat and apple producing county in the state. Other crops include cherries, barley, and hay as well as extensive areas of fallow land set aside in the CRP (Conservation Reserve Program). 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 throughout the county particularly in the central portion of the county. Interspersed throughout this landscape are stream channels and rocky scabland areas. Landownership in the agricultural landscape is predominantly private with many sections owned by the State of Washington and scattered federal holdings. The major populated centers within this landscape type include Waterville and Mansfield. 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 scabland. 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 Waterville Plateau in Douglas County is a mosaic of dryland agriculture, CRP/SAFE (State Acres for Wildlife Enhancements) acres and shrub steppe. A majority of the farmers use a production practice called summer fallow to allow soil moisture to increase by leaving fields fallow for a full crop year. This allows the wheat producers to rotate half their cropland each year: one year it's planted to wheat and then next year it lies fallow. 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. Summer fallow fields act as a natural barrier during these wildfires so if, and when, the fire reaches these areas, it will burn itself out or the fire slows enough that it is easily controlled. Irrigated Ag Lands, consisting of mostly orchards are located primarily in the lower elevations of the County near the Columbia River and have been given a much lower threat level than the Dryland Agriculture.

Ingress-Egress

U.S. Highway 2 and State Routes 28 and 174 are the primary emergency access routes traveling east to west through the county. State Routes 17 and 97 are the primary access routes running north and south. County roads as well as rural ranch access roads are well distributed throughout most of the county often following section lines or circumnavigating the multitude of draws and canyons. 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 a few bridges in the agricultural landscape of Douglas County. Bridge load rating signs are mostly in place for the existing bridges and do not impose a limitation to access for firefighting equipment.

Local public electrical and telephone utility lines travel both above and below ground along roads and highways with limited exposure to failure during a wildfire event. Cell phone service is well-established in most parts of the county with only limited dead zones.

Infrastructure

Urban residents throughout most of agricultural landscape area have municipal water systems, which includes 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. 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.

Public utility lines travel both above and below ground along roads and cross-country to remote facilities. Many irrigation systems and wells rely on above ground power lines for electricity. These power poles pass through areas of dense wildland fuels that could be destroyed or compromised in the event of a wildfire. Cell phone service is well established in most parts of the county with only limited dead zones.

Fire Protection

The agricultural landscape type is present in all of the Fire Protection Districts in Douglas County. The Fire Protection Districts provide structural fire protection as well as wildland fire protection. Mutual aid agreements between Fire Protection Districts supplement wildland fire protection when needed. The DNR does not provide structural fire suppression, but does provide wildfire protection on non-forested land that threatens DNR-protected lands. The BLM provides wildfire protection on their ownership within Douglas County and will assist neighboring Fire Protection Districts when available. BLM also does not provide structural fire suppression.

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.

Channeled Scablands Landscape Risk Assessment

The channeled scablands are a dominant landscape in Douglas County. This unique geological feature was created by ice age floods that swept across eastern Washington and down the Columbia River Plateau periodically during the Pleistocene era. The massive erosion caused by the flood events scoured the landscape down to the underlying basalt creating vast areas of rocky cliffs, river valleys, channel ways and pothole lakes. Typical vegetation found throughout this landscape is grass, mixed shrub and sagebrush with areas of wetlands, cultivated crops, and CRP fields. The channeled scablands landscape prevails in the central, southern and northeastern portions of the county and along the major waterways of Moses Coulee and Slack Canyon. Landownership is predominantly private with large acreages owned by the State of Washington Fish & Wildlife and the Bureau of Land Management. State ownership includes school sections 16 and 36, and the Sagebrush Flat Wildlife Area managed by the Washington Department of Fish and Wildlife. BLM ownership includes large continuous holdings of rangeland with campgrounds, and other recreation areas and interpretive sites. Private landownership includes cattle ranches and in holdings of cultivated farmland and CRP fields. Major population centers within the channeled scabland landscape include Palisades and the Rimrock subdivision. New development occurs primarily near communities and along major roads. Most of the pressure for multi-housing subdivisions occurs in close proximity to the towns. Rural development is widely dispersed consisting primarily of isolated ranching headquarters, home sites, irrigation systems, and developed springs or wells. 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 channeled scablands landscape has a moderate to high wildfire potential due to a characteristically high occurrence of shrubby fuels mixed with grass, sloping terrain and somewhat limited access. Large expanses of open rangeland or pasture provide a continuous fuel bed that could, if ignited, threaten structures and infrastructure under extreme weather conditions. Cattle grazing will often reduce fine, flashy fuels reducing a fire's rate of spread; however, high winds increase the rate of fire spread and intensity of rangeland fires. 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 channeled scablands landscape is at its highest during summer and fall when daily temperatures are high and relative humidity is low. 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. Fields enrolled in conservation programs or managed for wildlife habitat, can burn very intensely due to an increased amount of fuel

build-up from previous years' growth. Fires in this fuel type are harder to extinguish completely due to the dense duff layer, which often leads to hold-over fires that may reemerge at a later date causing additional fire starts.

Ingress-Egress

U.S. Highway 2 and State Routes 28 and 174 are the primary emergency access routes traveling east to west through the county. State Routes 17 and 97 are the primary access routes running north and south. County roads as well as rural ranch access roads are well distributed throughout most of the channeled scablands often following section lines or traversing the multitude of draws and drainage ways. 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.

Infrastructure

Residents living in the populated centers and most subdivisions surrounding the towns have access to municipal water supply systems with public fire hydrants. Outside these areas, development relies on individual, co-op, or multiple-home well systems. Creeks, ponds, and developed drafting areas provide water sources for emergency fire suppression in the rural areas to a limited extent. Irrigation systems are capable of providing additional water supply for suppression equipment on a limited basis. Additional water resources distributed and documented throughout the agricultural landscape are needed to provide water for fire suppression.

Public utility lines travel both above and below ground along roads and cross-country to remote facilities. Many irrigation systems and wells rely on above ground power lines for electricity. These power poles pass through areas of dense wildland fuels that could be destroyed or compromised in the event of a wildfire. Cell phone service is well established in most parts of the county with only limited dead zones.

Fire Protection

The channeled scablands landscape type is present in Fire Protection Districts 1, 2, 3, 5, and 8. The Fire Protection Districts provide structural fire protection as well as wildland fire protection. Mutual aid agreements between Fire Protection Districts supplement the wildland fire protection response when needed. The DNR does not provide structural fire suppression, but it does provide wildfire protection on non-forested land that threatens DNR-protected lands. BLM provides wildfire protection on their lands within Douglas County and will assist neighboring Fire Protection Districts when available. BLM also does not provide structural fire suppression.

Potential Mitigation Activities

Mitigation measures needed in the channeled scabland landscape include maintaining a defensible space around structures and access routes that lie adjacent to 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 and firewood away from structures. Roads and driveways accessing rural development need to be kept clear of encroaching fuels to allow escape and access by emergency equipment. Performing road inventories 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. Designing a plan to help firefighters control fires in conservation lands and wildlife habitat areas will significantly lessen a fire's potential of escaping to other areas. Mitigation associated with this situation might include managed grazing in designated fuel reduction areas, creating fuel breaks, and implementing a prescribed burning program during less risky times of the year.

Additional mitigation activities include installing more water storage sites, improving water access from irrigation facilities, and developing other water resources throughout the landscape. This will increase the effectiveness and efficiency of emergency response during a wildfire.

River Breaks Risk Assessment

The River Breaks landscape encompasses an area along the western boundary of Douglas County from the county line near Coulee Dam to Rock Island. This area is predominantly shrub-steppe grassland on steep broken terrain and escarpments sloping into the eastern shore of the Columbia River. Shrub-steppe grasslands are a mixed plant community consisting of bunch-grasses, forbs, and a variety of shrubs including big sage brush, rabbit brush, and antelope brush. Some soil types within this area support isolated pockets of Douglas-fir and ponderosa pine forest, but the area is dominated by shrub and grassland from the agricultural fields at the top of the breaks to the water's edge of the Columbia River. Landownership in this area is mostly privately held parcels with several sections owned by the Bureau of Land Management and the State of Washington. Major population clusters include Bridgeport, Brewster, Rock Island, East Wenatchee, and Orondo, as well as the subdivisions near McNeil Canyon and Sand Canyon roads. Subdivision of land for recreational and home site development is widespread along the river. In nearly all developed areas, structures are in close proximity to vegetation on steep slopes that become a significant fire risk at certain times of the year.

Wildfire Potential

Wildfire potential in the western river breaks landscape is high due to past fire exclusion, steep broken terrain and the introduction of invasive grasses. Prior to settlement, the historic fire regime consisted of small, relatively frequent fires that created a mosaic or patchwork of shrubs mixed with discontinuous areas of bunchgrass. Recent introduction of organized fire suppression along with cattle grazing and land development for agriculture have disrupted this fire regime, allowing wide spread establishment of fire-intolerant sagebrush and invasive grasses. This heavy buildup of brush species over vast acres indicates that future fires will be more frequent with higher intensities and cover larger areas than in the past. High intensity fires in large expanses of continuous fuels may 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 capable of widespread damage. High wildfire risk in the western river breaks landscape typically lasts from late March to mid October.

Ingress-Egress

U.S. Highway 2 and State Routes 28 and 174 are the primary emergency access routes traveling east to west through the county. State Routes 17 and 97 are the primary access routes running north and south. The steep topography of the River Breaks greatly limits access to the bottom or top of the slopes. There are no roads along the River Breaks between McNeil Canyon and

Brewster and from Bridgeport to Coulee Dam. 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.

Many private homes and subdivisions are accessed via unimproved, single-lane roads accessible only by small emergency vehicles. Often, access roads and driveways are steep and/or lined with wildland fuels that can limit or prohibit safe access during a wildfire. Many of these roads have only one way in and one way out and lack adequate turnout and turn-around areas for emergency vehicles. The inability of emergency resources to safely access structures reduces or may even eliminate suppression response. Most of the roads in newer subdivisions have been designed to accommodate emergency vehicles with either loop roads or cul-de-sacs with wide turning radii and easily negotiable grades, which are better-suited to all types of emergency response equipment.

Infrastructure

Residents living in the populated centers and most subdivisions surrounding the towns have access to municipal water supply systems with public fire hydrants. Outside these areas, development relies on individual, co-op, or multiple-home well systems. Creeks, ponds, and developed drafting areas provide water sources for emergency fire suppression in the rural areas to a limited extent. Irrigation systems are capable of providing additional water supply for suppression equipment on a limited basis. Additional water resources distributed and documented throughout the agricultural landscape are needed to provide water for fire suppression.

Public utility lines travel both above and below ground along roads and cross-country to remote facilities. Many irrigation systems and wells rely on above ground power lines for electricity. These power poles pass through areas of dense wildland fuels that could be destroyed or compromised in the event of a wildfire. Cell phone service is well established in most parts of the county with only limited dead zones.

Fire Protection

The channeled scablands landscape type is present all of the Douglas County Fire Protection Districts except #8. The Fire Protection Districts provide structural fire protection as well as wildland fire protection. Mutual aid agreements between Fire Protection Districts supplement the wildland fire protection response when needed. The DNR does not provide structural fire suppression, but it does provide wildfire protection on non-forested land that threatens DNR-protected lands. BLM provides wildfire protection on their lands within Douglas County and will assist neighboring Fire Protection Districts when available. BLM also does not provide structural fire suppression.

Potential Mitigation Activities

The grass and sagebrush fuels in this landscape are very conducive to rapidly spreading surface fires. During a wildfire event, families in threatened structures would have very little time to protect their homes and evacuate. Therefore, it is very important that a defensible space is maintained around structures prior to an ignition. Keeping a clean and green yard and using fire resistant construction materials will help reduce the risk of loss to fire. Homeowners along the Columbia River should be even more vigilant about maintaining a fuel break between their homes and the shoreline as fires caused by recreational use on the reservoir could start at any time with little warning or chance for suppression by the fire department. The use of campfires,

fireworks, and other potential ignition sources should be highly regulated during the fire season, especially in areas adjacent to structures and development. Using escape-proof fire rings and BBQ pits at recreational areas, limiting off-road vehicle use to designated trails, and restricting fireworks will help reduce the potential for an ignition.

Riparian Areas Risk Assessment

The Riparian landscape occurs in small to large drainages throughout the County. These areas produce high densities of shrubs and grass with scattered deciduous trees due to the relative abundance of water. Upslope from the waterway, vegetation generally resorts back to typical shrub-steppe fuel type that dominates much of the County. Landownership in this area is mostly privately held parcels with several sections owned by the Bureau of Land Management and the State of Washington. These areas are generally low in population but one major population cluster is Palisades.

Wildfire Potential

The riparian area landscape has a moderate to high wildfire potential due to a characteristically high fuel load occurrence, terrain that can exhibit a chimney effect, high recreation use, and somewhat limited access. The steep walls contribute to rapid rates of spread by funneling fire up canyon. The high amount of fuel loading, coupled with the chimney effect, could create very intense fires.

Wildfire risk in the riparian area landscape is at its highest during summer and fall when daily temperatures are high and relative humidity is low. Fires burning in some types of riparian vegetation would be expected to burn more intensely with larger flame lengths due to the greater availability of fuels. Some riparian areas occur within narrow walls that would increase the intensity of a wildfire. These areas are not easily accessible which would compound the difficulties during fire suppression efforts. Most firefighters learn early that these areas are dangerous to attempt fighting fires due to the unpredictability of fire within narrow canyons.

Ingress-Egress

U.S. Highway 2 and State Routes 28 and 174 are the primary emergency access routes traveling east to west through the county. State Routes 17 and 97 are the primary access routes running north and south. The steep topography of the riparian areas greatly limits access to the bottom or top of the slopes. The road in Slack Canyon is a one-way in one-way out road due to a landslide that covered the road. 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.

Infrastructure

Unimproved campsites as well as interpretive signs are common in these areas providing recreational users with information and areas to camp. The interpretive signs can assist land managers with educating the public about the risk of wildfire and how to minimize the risk. Providing campers with fire rings keeps fires contained to specific sites and reduces the risk of an escape.

Creeks, ponds, and developed drafting areas provide water sources for emergency fire suppression in the rural areas to a limited extent. Irrigation systems are capable of providing additional water supply for suppression equipment on a limited basis. Additional water resources distributed and documented throughout the agricultural landscape are needed to provide water for fire suppression.

Public utility lines travel both above and below ground along roads and cross-country to remote facilities. Many irrigation systems and wells rely on above ground power lines for electricity. These power poles pass through areas of dense wildland fuels that could be destroyed or compromised in the event of a wildfire. Cell phone service is well established in most parts of the county with only limited dead zones.

Fire Protection

The riparian area landscape type is present all of the Douglas County Fire Protection Districts. The Fire Protection Districts provide structural fire protection as well as wildland fire protection. Mutual aid agreements between Fire Protection Districts supplement the wildland fire protection response when needed. The DNR does not provide structural fire suppression, but it does provide wildfire protection on non-forested land that threatens DNR-protected lands. BLM provides wildfire protection on their lands within Douglas County and will assist neighboring Fire Protection Districts when available. BLM also does not provide structural fire suppression.

Potential Mitigation Activities

The high fuel loading and the narrow canyons are very conducive to rapidly spreading surface fires. During a wildfire event, recreationists would have very little time to evacuate. Therefore, it is very important to educate the public on the dangers of wildfires. The use of campfires, fireworks, and other potential ignition sources should be highly regulated during the fire season, especially in areas adjacent to structures and development. Using escape-proof fire rings and BBQ pits at recreational areas, limiting off-road vehicle use to designated trails, and restricting fireworks will help reduce the potential for an ignition.

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 Douglas 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 Douglas 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 Douglas County, specifically the USDI Bureau of Land Management, Bureau of Reclamation, 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 Douglas County.

Douglas 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 2013. 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 Douglas 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 are ranked as "High", "Moderate", or "Low" priorities for Douglas 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: Distribute Firewise-type educational brochures with building permit applications.	**CWPP Goal #1, 2, & 4** High	**Lead:** South Douglas Conservation District **Support:** Transportation Land Services	6 months
6.1.b: Establish a committee to work with the Farm Service Agency on feasible solutions for reducing the wildland fire risk associated with land enrolled in the Conservation Reserve Program and SAFE.	**CWPP Goal #1, 2, & 3** Moderate	**Lead:** CWPP Subcommittee **Support:** Douglas County Board of Commissioners	Ongoing
6.1.c: Continue to work with developers and private landowners to enhance road layout and adherence to accepted road standards that will improve emergency services' accessibility as well as provide for better road connectivity.	**CWPP Goal #1, 2, & 4** High	**Lead:** Transportation Land Services **Support:** Douglas County Fire Protection Districts	2 years
6.1.d: Develop a local contact list of individuals that could be used in an advisory capacity to fire suppression teams.	**CWPP Goal #1, 3, & 4** High	**Lead:** Douglas County Fire Protection Districts **Support:** Grand Coulee & Chief Joseph Dams, BLM	2 years
6.1.e: Continue to encourage local residents to develop pre-emergency communication plans including a Reverse 911 system or phone trees and contact lists.	**CWPP Goal #1 & 2** High	**Lead** Douglas County Fire Protection Districts **Support:** Rivercom, Douglas County Commissioners	3 years
6.1.f: Obtain the materials and funding to complete and implement the Douglas County Livestock Evacuation Plan.	**CWPP Goal #1** High	**Lead:** Cattlemans' Association **Support:** Emergency Response Veterinarian	2 year

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 Douglas County residents.

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

Shrub/Steppe Management has a significant impact on the fuel composition and structure in Douglas County. The shrub/steppe management programs of the BLM, BOR, WADNR and numerous private landowners in the region have led to a reduction of wildland fuels. Furthermore, 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, & 4** High	**Lead:** South Douglas Conservation District **Support:** Douglas County Fire Protection Districts and local schools	1year
6.2.b: Prepare for wildfire events in high risk areas by conducting home site risk assessments and developing area-specific "Response Plans" to include participation by all affected jurisdictions and landowners.	**CWPP Goal #1, 2, 3, & 4** High	**Lead:** South Douglas Conservation District **Support:** Douglas County Fire Protection Districts	2 years
6.2.c: Work with area homeowner's associations to foster cooperative approach to fire protection and awareness and identify mitigation needs.	**CWPP Goal #1, 2, 3, & 4** High	**Lead:** South Douglas Conservation District **Support:** Douglas County Fire Protection Districts	2 years
6.2.d: Work with WSU Extension, Master Gardeners, and other existing programs to offer firewise landscaping clinics to assist property owners in maintaining fire-resistant defensible space around structures.	**CWPP Goal #1, 2, 3, & 4** Moderate	**Lead:** South Douglas Conservation District **Support:** Spokane Master Gardeners and WSU Extension	Ongoing
6.2.e: Distribute educational information regarding construction in high risk wildfire areas with building permits throughout the County.	**CWPP Goal #1, 2, & 4** High	**Lead:** South Douglas Conservation District **Support:** Transportation Land Services	1 year

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

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline
6.2.f: Develop a Douglas County fire prevention coop to provide a continuing public wildfire education program and better capture defensible space and prevention teachable moments.	**CWPP Goal #1, 2, & 4** High	**Lead:** South Douglas Conservation District **Support:** Douglas County Fire Protection Districts, WSU Extension, and BLM	1 year
6.2.g: Develop a forest and range public education program to encourage healthy management of natural resources on private property.	**CWPP Goal #1, 2, & 4** High	**Lead:** South Douglas Conservation District **Support:** Douglas County Fire Protection Districts, WSU Extension, and BLM	1 year
6.2.h: Explore creating a grant funded fire prevention position for Douglas County.	**CWPP Goal #1, 2, 3, & 4** High	**Lead:** South Douglas Conservation District **Support:** Douglas County Fire Protection Districts, WSU Extension, and BLM	2 years
6.2.i: Training and certification for Douglas County Fire Protection Districts staff to provide better protection for Douglas County residents.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire Protection Districts **Support:** BLM	Ongoing
6.2.j: Improve departmental capability by establishing a program to increase the retention and recruitment of volunteer firefighters.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire Protection Districts **Support:** BLM	Ongoing
6.2.k: Fund a grant writing position or provide current Douglas County staff to write grants.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire Protection Districts **Support:** Douglas County Commissioners	1 year
6.2.l: Review building codes and revise to meet Firewise standards as needed**.**	**CWPP Goal #1 & 4** Low	**Lead:** Planning Commission **Support:** County Commissioners	5 years
6.2.m: Continue meeting as a CWPP Steering Committee to plan mitigation efforts and rehabilitation efforts within Douglas County.	**CWPP Goal #1,2,3 & 4** Moderate	**Lead:** Fire Protection Districts **Support:** BLM, WA DFW, BOR, WA DNR, Conservation District, County Emergency Management	Ongoing

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 central Washington and to Douglas 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.

Table 6.3 Action Items for Infrastructure Enhancement

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline
6.3.a: Inventory, map, and sign all potential evacuation routes and procedures countywide and educate the public on use.	**CWPP Goal #1 & 2** High	**Lead:** Douglas County Fire Protection Districts **Support:** Douglas County GIS Analyst	3 years
6.3.b: Map, develop GIS database, and provide signage for onsite water sources such as hydrants, underground storage tanks, and drafting or dipping sites on all ownerships across the county.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire Protection Districts **Support:** Douglas County GIS Analyst	1 year
6.3.c: Develop a cache of road barriers and temporary evacuation signage that will be placed strategically throughout the County to be used during emergencies.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire Protection Districts **Support:** Douglas County Sheriff's Office	1 year
6.3.d: Develop a program to encourage landowners to put up reflective address signage on their drive to allow firefighters to better locate residences.	**CWPP Goal #1, 2, & 4** High	**Lead:** Transportation Land Services **Support:** Douglas County Fire Protection Districts, Rivercom, BLM	1 year
6.3.e: Develop a program to replace worn out road signage with new reflective road signs to allow firefighters to easily navigate to a wildfire.	**CWPP Goal #1 & 4** High	**Lead:** Transportation Land Services **Support:** Douglas County Fire Protection Districts, Rivercom, BLM	1 year
6.3.f: Increase the cellular coverage throughout the County to increase communications.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Commissioners **Support:** Planning Commission	5 years
6.3.g: Obtain funding for GIS pens/software from Adapx which would allow field notes and GIS data to be directly available to Emergency Management teams located offsite.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Sheriff's Office **Support:** Douglas County GIS analyst	1 year

Resource and Capability Enhancements

There are a number of resource and capability enhancements identified by the rural and wildland firefighting districts in Douglas 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: Improve departmental capability by establishing a program to increase the retention and recruitment of volunteer firefighters.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire Protection Districts **Support:** Washington DNR, BLM, and Grand Coulee Dam	Ongoing
6.4.b: Update personal protective equipment for all Fire Protection Districts in Douglas County.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire Protection Districts **Support:** Washington DNR, BLM, and Grand Coulee Dam	Ongoing
6.4.c: Enhance radio availability in each district, link to existing dispatch, improve range within the region, and convert to a consistent standard of radio types.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire Protection Districts **Support:** Rivercom	3 years
6.4.d: Obtain funding to support the Douglas County Command Trailer which would include annual maintenance.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Sheriff's Office **Support:** Douglas County Fire Protection Districts, Chief joseph and Grand Coulee Dams	1 year / Ongoing
6.4.e: Obtain monitors for hazardous materials, air quality, and hazmat kits to protect citizens should a wildland fire burn into areas were such things are stored.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire Protection Districts **Support:** Washington DNR, BLM, and Grand Coulee Dam	2 years
6.4.f: Obtain quality GPS units for mapping fire perimeters for Fire Protection Districts #1, #2, #3, #5, and #8.	**CWPP Goal #1 & 4** Moderate	**Lead:** Douglas County Fire Protection Districts **Support:** Washington DNR, BLM, and Grand Coulee Dam	1 year
6.4.g: Obtain a UTV with water spraying capabilities for Fire Protection Districts #3 and #5 to access areas of a fire that a full sized engine could not.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire Protection Districts **Support:** Washington DNR, BLM, and Grand Coulee Dam	2 years

Table 6.4 Action Items for Resource and Capability Enhancements

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline
6.4.h: Obtain slip tanks for landowners to put in their pickups which will reduce response times.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire Protection Districts **Support:** Washington DNR, BLM	Ongoing
6.3.i: Douglas County Fire District #5 needs to expand the main station to allow for increased resident firefighters and apparatus storage.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire District #5 **Support:** Douglas County Commissioners	3 years
6.3.j: Build a satellite station near McNeil Canyon for Douglas County Fire District #5 to provide a more rapid emergency response for residents.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire District #5 **Support:** Douglas County Commissioners	3 years
6.3.k: New wildland urban interface engine for Fire District #5.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire District #5 **Support:** Douglas County Commissioners	5 years
6.3.l: Expand all Douglas County Fire District #2 facilities (3 stations) to allow for increased resident firefighters and storage of apparatus.	**CWPP Goal #1 & 4** High	**Lead:** Douglas County Fire District #2 **Support:** Douglas County Commissioners	3 years

Proposed Project Areas

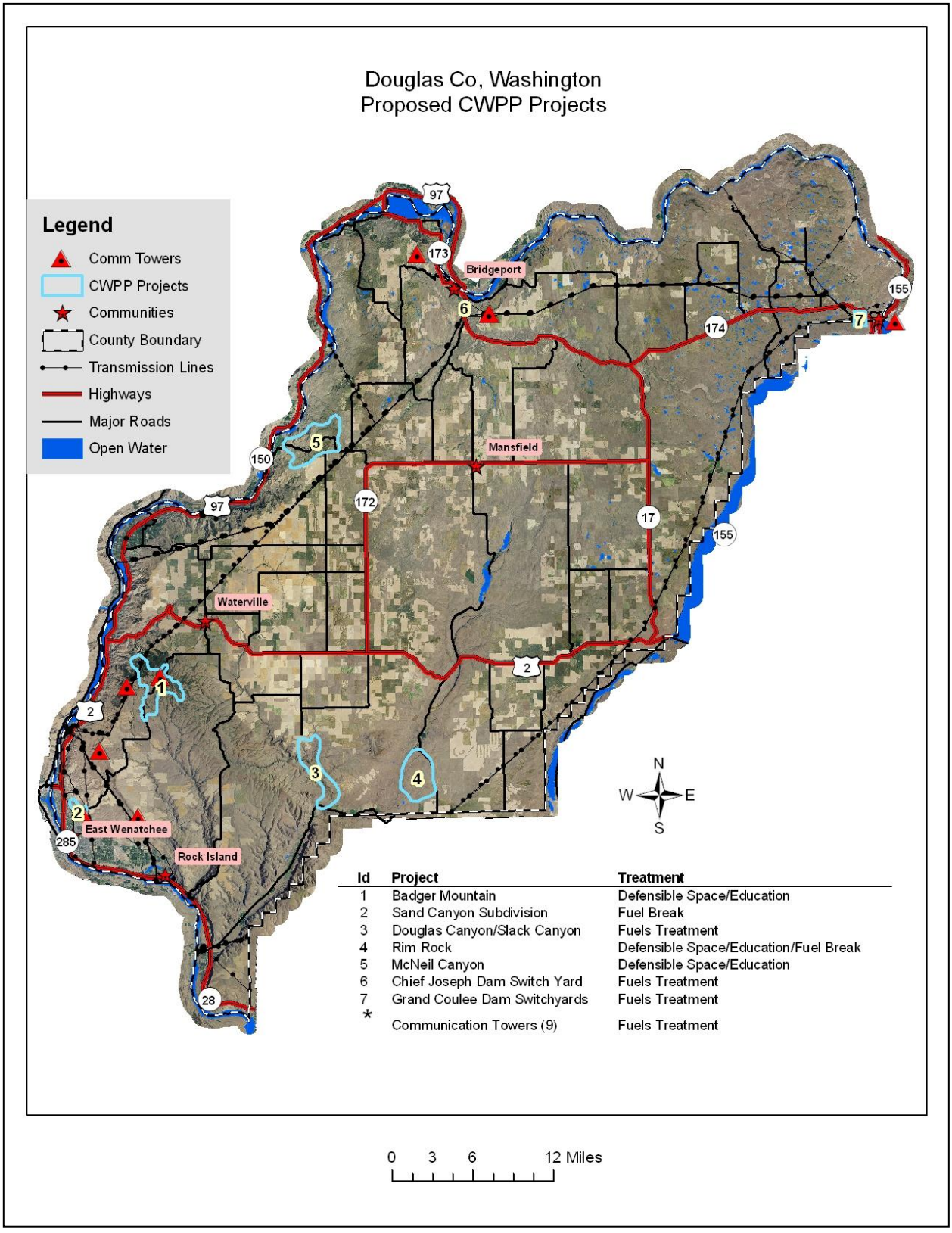
The following project areas were identified by the CWPP steering committee and from citizens' recommendations during the public meetings. Most of the sites were visited during the field assessment phase. The areas where these projects are located were noted as having multiple factors contributing to 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. Proposed 5- Year Fuels Reduction Project Areas.				
Map Id#	**Project Name**	**# of Acres**	**# of Structures**	**Priority**
1	Badger Mountain - Defensible Space, Education	4,793	391	High
2	Sand Canyon - Defensible Space, Education	648	846	High
3	Douglas Canyon/Slack Canyon – Fuels Treatment, Education	4,140	4	Moderate
4	Rim Rock – Defensible Space, Education, Roadside Fuels Treatments	4,758	151	High
5	McNeil Canyon – Defensible Space, Education	5,710	120	High
6	Chief Joseph Dam Switch Yard – Defensible Space	189	1	High
7	Grand Coulee Dam Switchyards, Defensible Space	660	1	High
8	Dyer Hill Comm Site, Defensible Space	5-15	1	High
9	Ski Badger Comm Site, Defensible Space	5-15	1	High
10	Clark Badger Comm Site, Defensible Space	5-15	1	High
11	Pearl Comm Site, Defensible Space	5-15	1	High
12	Coulee Dam Comm Site, Defensible Space	5-15	1	High
13	Upper Badger Comm Site, Defensible Space	5-15	1	High
14	Lower Badger Comm Site, Defensible Space	5-15	1	High
15	Moses Stool Comm Site, Defensible Space	5-15	1	High
16	Fancher Water Tower, Defensible Space	5-15	1	High

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, 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.

Figure 6.1. Map of Proposed Projects.



Id	Project	Treatment
1	Badger Mountain	Defensible Space/Education
2	Sand Canyon Subdivision	Fuel Break
3	Douglas Canyon/Slack Canyon	Fuels Treatment
4	Rim Rock	Defensible Space/Education/Fuel Break
5	McNeil Canyon	Defensible Space/Education
6	Chief Joseph Dam Switch Yard	Fuels Treatment
7	Grand Coulee Dam Switchyards	Fuels Treatment
*	Communication Towers (9)	Fuels Treatment

Representative Fuels Treatment Project Prescriptions

The following project areas were identified during the field assessments and interviews as potentially having several factors contributing to high wildfire risk as well as being representative of the types of projects likely to be pursued for grant funding. The intent is that these project prescriptions be as site specific as possible, but serve as templates for writing prescriptions for similar projects throughout the County. These projects/templates will aid land stewards in applying for grants specific to their property. The chosen project areas do not reflect the highest priority projects identified by the steering committee, but were written for communities with a high level of existing interest in implementation.

- Badger Mountain is a heavily populated community that exists in the Wildland Urban Interface. The vegetation that exists throughout the community consists of a dense forest with a sagebrush understory. Many communities throughout the County face similar issues.
- The Chief Joseph Dam Switchyard project may be interchangeable with the Grand Coulee Dam Switchyard. This facility is a highly valuable critical infrastructure that provides much of the west with hydro-electric power as well as irrigation to many of the area farms. This facility is surrounded by dense stands of shrubs and grasses.
- Upper Badger Mountain Communication Site is located within the Badger Mountain community. This communication site is surrounded by shrub and grasses. Sites such as this one are scattered throughout the County and are essential to communicate during emergencies.

The project areas were identified without regard for landownership boundaries; thus, site-specific prescriptions will require coordination and approval by the various landowners. The following descriptions provide as much detail as possible regarding the objectives, prescription, and unique nature of each project; however, exact acreages and site plans will be determined after consultation with the affected landowners. The prescriptions described in the following projects may be modified to suit other similar projects, for example the Badger Mountain project may apply to the McNeil Canyon community. Contact your local fire department or Firewise representative for assistance in developing goals and prescriptions specific to your project.

Badger Mountain

This is the highest point in Douglas County. Badger Mountain has a relatively high density of Douglas fir and ponderosa pine trees when compared to the entire County. There is a substantial understory consisting of sagebrush, bitterbrush, and bunchgrasses. Cheatgrass does occur in some places in the community due to the high amount of disturbance. Some locations have tree canopies so dense that there is little understory, however there is large amounts of heavy slash on the forest floor in these areas. Reducing the ladder fuels and tree densities

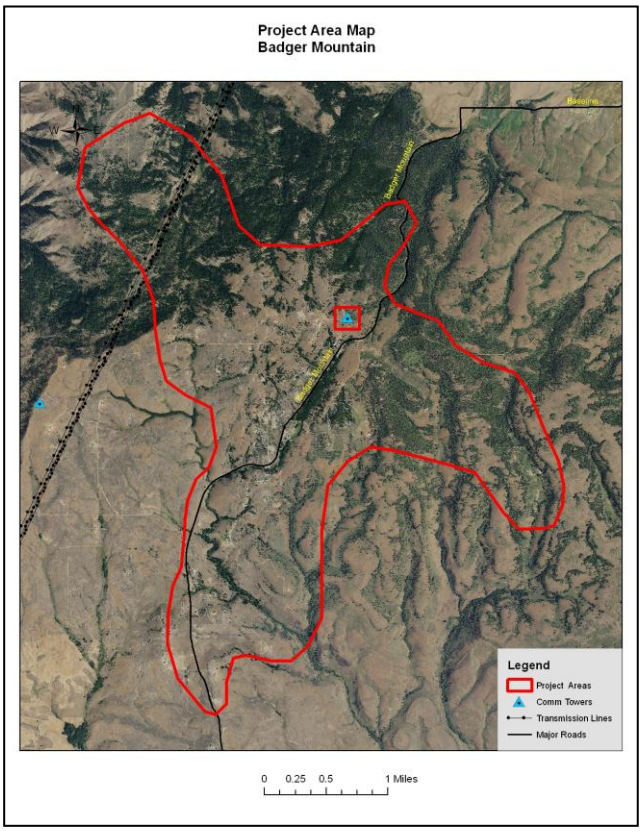
would be one priority in this project area.

Nearly four hundred homes exist within the boundaries of the Badger Mountain Project Area. Some of the homeowners use their property simply as a vacation property, but many are used as permanent residences. Many homes are within close proximity of dense forest or shrub cover. A second priority for this project area would include educating the homeowners to protect their homes through sound defensible space practices. Defensible space would help protect homes in the event of a wildland fire and conversely, would keep a structure fire from becoming wildland fire.

Badger Mountain road is the primary access route and is located in the western portion of this community. This road connects Waterville with East Wenatchee and should be completely paved after 2013 summer. There are numerous secondary roads that crisscross throughout the community. Many of the secondary roads are private single lane dirt roads in poor condition that dead-end at homes.

Project Prescription

Homeowners should manage their property with Firewise principles in mind. This means that structures should have a non-combustible material around the perimeter and extending out three to five feet from the structure. Trees and shrubs, thirty feet out from the structure, should be heavily thinned (15 feet between crowns for trees and 2.5 times a shrub's height between shrubs), and trees should be pruned to ten feet.



Roadside fuels could be treated to create fuel breaks throughout the community. This would also enable fire apparatus to gain access to structures if needed. This would be achieved through a thirty foot 'buffer' in addition to the road width. This could be accomplished on one side of the road or split to do fifteen feet on each side of the road. Roadside treatments should include thinning trees and shrubs to the same standards as mentioned above. Ladder fuels should be removed to prevent fires from getting into the canopy. Pruning is recommended where warranted.

Education is often the most critical part in protecting a community such as Badger Mountain. Often times, having a trained individual perform a home assessment for a homeowner is sufficient. The home assessment determines a score which tells the homeowner the level of risk their property would face in the event of a wildland fire. The

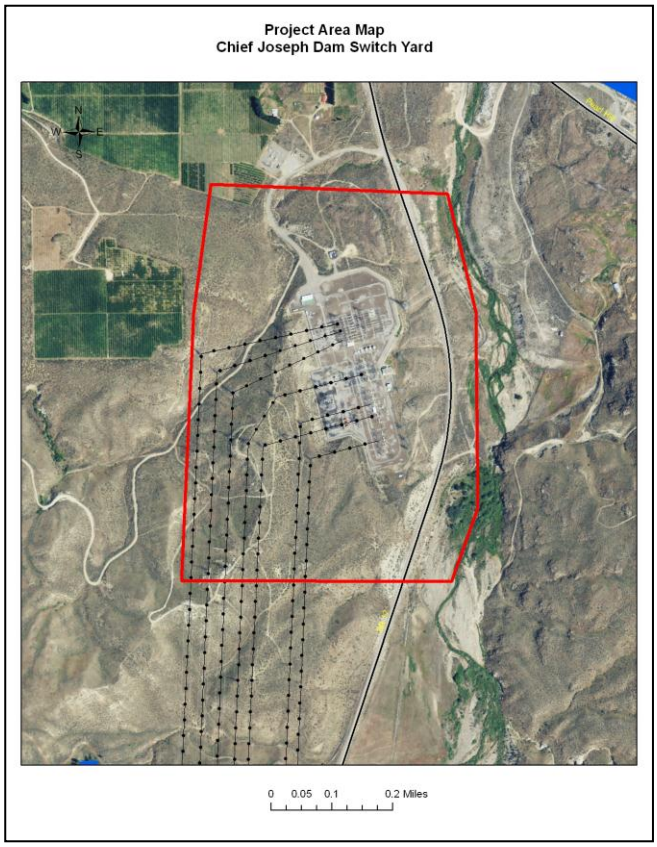
trained individual would then provide advice on how to minimize the risks identified in the home assessment.

A community workshop is another form of education that would benefit the Badger Mountain community. The workshop would be scheduled for a weekend to allow as many people to attend as possible. Free lunch and fire safe plants are a great way to get people to attend. Experts from BLM, USFS, WA DNR, conservation districts, weed boards, consultants, and any others would attend to provide the homeowners with advice.

Selecting a property to be a 'demo' for other properties can also be a useful tool in educating a community. The demo property should be in a highly visible location and the property owner should be extremely motivated to maintain the property and provide encouragement to neighbors. Homeowners are often reluctant to cut down any trees because they want it to look natural and not like a clearcut. Providing these homeowners with a property that allows them to visualize what their property will look like often gets them over that hurdle.

Chief Joseph Dam Switchyards

Chief Joseph Dam, constructed by the Corps of Engineers, is on the Columbia River in north-central Douglas County and is a key structure in the comprehensive development of the Columbia River Basin. Storage water from the reservoir and power revenues assist in paying for irrigation features, and are necessary for present and future irrigation development of the area.[39]



The switchyard for Chief Joseph Dam is located south of Bridgeport, Washington along highway 17. The switchyard collects the electricity that is produced from the dam, and transfers it to the necessary supply lines for distribution. The equipment located at the switchyard is highly critical and could be locally catastrophic if it were damaged by a wildland fire.

A mixture of shrubs and grass surround the switchyard. These fuel types can create high intensity fires that quickly spread through the landscape. Dense smoke can cause transmission lines to arc which can create spotting by lighting ground vegetation on fire and can be a hazard to wildland firefighters. Smoke near high-voltage lines can arc to ground over a finite distance. This distance is increased in the presence of flames and smoke. At times, arcing can occur between

[39] Bureau of Reclamation website. http://www.usbr.gov/projects/Project.jsp?proj_Name=Chief%20Joseph%20Dam%20Project. Accessed August, 2013.

conductors in the presence of fire and smoke, instead of between conductor and the ground.[40] This was witnessed as recently as 2012 during the Barker Canyon fire, when "firefighters observed several ground arcs as well as arcing across transformers in the switchyards" quoted from a BLM firefighter that was present during this fire event.

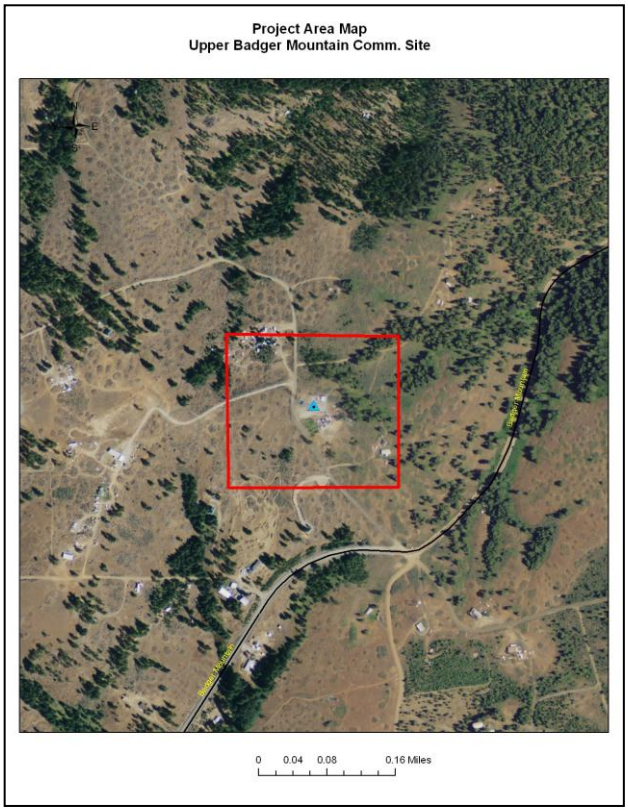
Project Prescription

Creating a buffer here would be the primary objective. A two hundred foot wide strip, or greater, around the perimeter of the switchyard is recommended. The inner thirty to fifty feet will be disked annually to create a noncombustible perimeter. The next one hundred feet, all shrubs should be removed and native grasses should be encouraged. The shrubs in the remainder of the treatment area would be thinned to a distance equal to, or greater than 2.5 times the shrub height. Herbicide should be applied to shrub stumps shortly after they have been cut to reduce the amount of regrowth, thus limiting the amount of future maintenance.

Outside of this two hundred foot buffer, grazing should be encouraged to reduce fuel loading at minimum cost. The area surrounding the switchyard should be monitored annually for invasive species.

Upper Communication Site

This is the highest point in Douglas County. Badger Mountain has a relatively high density of Douglas fir and ponderosa pine trees when compared to the entire County. There is a substantial understory consisting of sagebrush, bitterbrush, and bunchgrasses. Cheatgrass does occur in some places in the community due to the high amount of disturbance. Some locations have tree canopies so dense that there is little understory, however there is large amounts of heavy slash on the forest floor in these areas. Reducing the ladder fuels and tree densities would be one priority in this project area.



The Upper Badger Mountain Communication Site is located on Mule Deer road about two tenths of a mile from Badger Mountain road. The site is at an elevation of approximately 4,100 feet. The site occurs on the fringe of the forested area and is primarily surrounded by dense shrubs and grass.

Project Prescription

Reducing the fuels here would be the primary objective. A five to ten acre treatment area placed strategically around the Communication Site should be sufficient. Two concentric rings within the treatment area would allow for different management severities. The first ring would extend

[40] http://www.exponent.com/wildland_fires/. Accessed August, 2013

two hundred feet out from the communication towers. This inner ring would be mowed with a brush-hog (or equivalent) annually. The outer ring would encompass the remainder of the treatment area. Shrubs in the outer ring would be thinned to a distance equal to or greater than 2.5 times the shrub height. Herbicide should be applied to shrub stumps shortly after they have been cut to reduce the amount of regrowth, thus limiting the amount of future maintenance.

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, private forest landowners, and all agricultural 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.

Targeted Livestock Grazing

Livestock grazing, particularly cattle grazing, 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" or "prescribed" grazing is the use of an appropriate kind of livestock at a specified time, duration, and intensity to accomplish a specific vegetation management goal.

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 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.

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.[43]

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] 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

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List of Figures

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Signature Pages

This Douglas County Community Wildfire Protection Plan has been developed in cooperation and collaboration with representatives of the following organizations and agencies.

Douglas County Commissioners

Ken Stanton
Douglas County Commissioner District #1

11-26-13
Date

Dale Snyder
Douglas County Commissioner District #2

11-26-13
Date

Steve Jenkins
Douglas County Commissioner District #3

11-24-13
Date

Dayna Prewitt
Clerk of the Board

11/26/13
Date

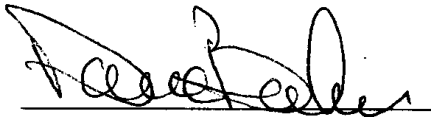
Signatures of Participation by Douglas County Fire Protection Districts and Departments

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 Douglas County Commissioners.

11/19/2013

Dale Jordan, Chief
Douglas County Fire District #1

Date



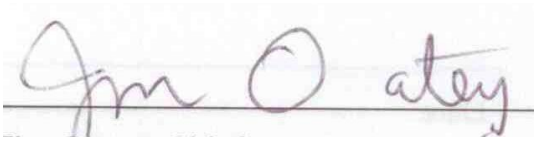
11/19/13

Dave Baker, Chief
Douglas County Fire District #2

Date

Dale Rinker, Chief
Douglas County Fire District #3

Date



11/20/13

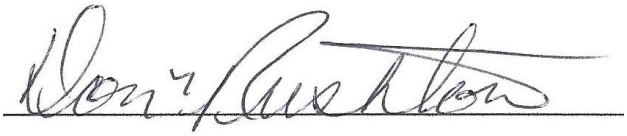
Jim Oatey, Chief
Douglas County Fire District #4

Date

11/19/13

Tyler Caille, Chief
Douglas County Fire District #5

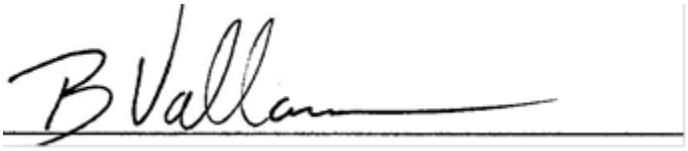
Date



12-3-13

Don Rushton, Chief
Douglas County Fire District #8

Date



Dec. 5, 2013

Bill Valance, Chief
Douglas / Okanogan Counties Fire District #15

Date

Signatures of Participation by other Douglas 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 Douglas County Commissioners.

12-6-13

Jeff Kuck, Supervisor
South Douglas Conservation District

Date

Lee B Hemmer V.P.

11/22/2013

Lee Hemmer, Vice Chair
Foster Creek Conservation District

Date

11/25/13

Harvey Gjesdal, Sheriff
Douglas County

Date

December 5th, 2013

Joe Weeks, Landowner Assistance Coordinator
Southeast Region Washington State Department of Natural Resources

Date

1/9/14

Aaron Everett, Deputy Supervisor,
Forest Practices and Federal Relations, State Forester, Washington State Department of Natural Resources

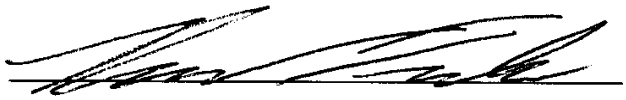
Date

Linda Coates-Markle

12/2/13

Linda Coates-Markle, Wenatchee Field Manager
Spokane District Bureau of Land Management

Date



11/22/2013

Brad Tucker, Project Co-Manager
Northwest Management, Inc.

Date

This plan was developed by Northwest Management, Inc. under contract with the Bureau of Land Management and South Douglas Conservation District.

Citation of this work:

Tucker, Brad and V. Bloch. *Lead Authors.* 2013 Douglas County, Washington Community Wildfire Protection Plan. Northwest Management, Inc., Moscow, Idaho. Pp 106.

Tucker, Brad and V. Bloch. *Lead Authors.* 2013 Douglas County, Washington Community Wildfire Protection Plan Appendices. Northwest Management, Inc., Moscow, Idaho. Pp 65.

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PO Box 9748
Moscow ID 83843

208-883-4488 Telephone
208-883-1098 Fax
NWManage@consulting-foresters.com
http://www.Consulting-Foresters.com/

Douglas County, Washington

Community Wildfire Protection Plan

Appendices

Approved by the

Douglas County Commissioners December, 2013

Douglas County Fire District #2

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.

South Douglas Conservation District

F.P.D. #3, #4, #8, #15

To obtain copies of this plan contact:

Douglas County Fire District No. 2

377 Eastmont Ave
East Wenatchee, WA 98802
509-884-6671

Table of Contents

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Appendix 1

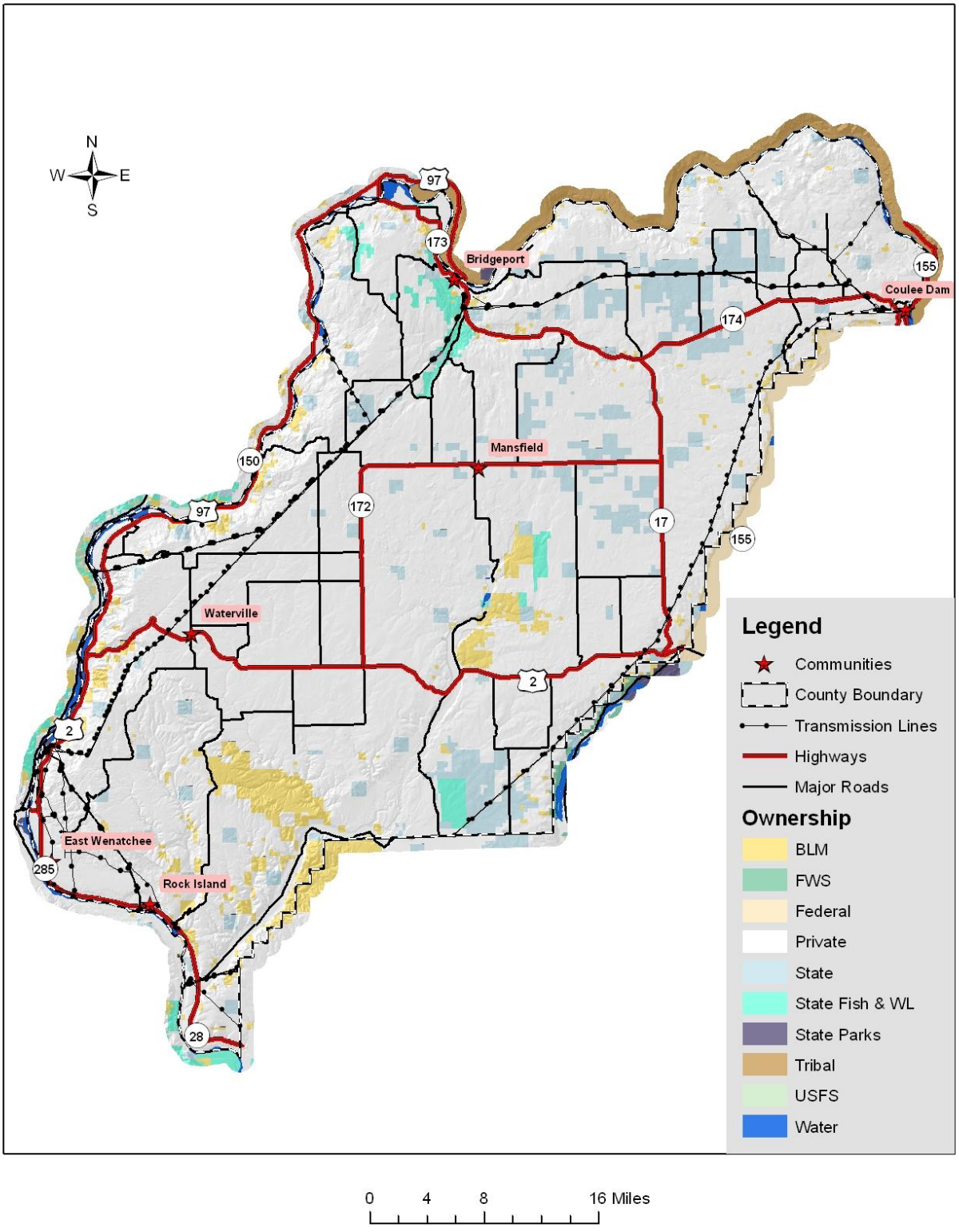
Mapping Products

Northwest Management, Inc.

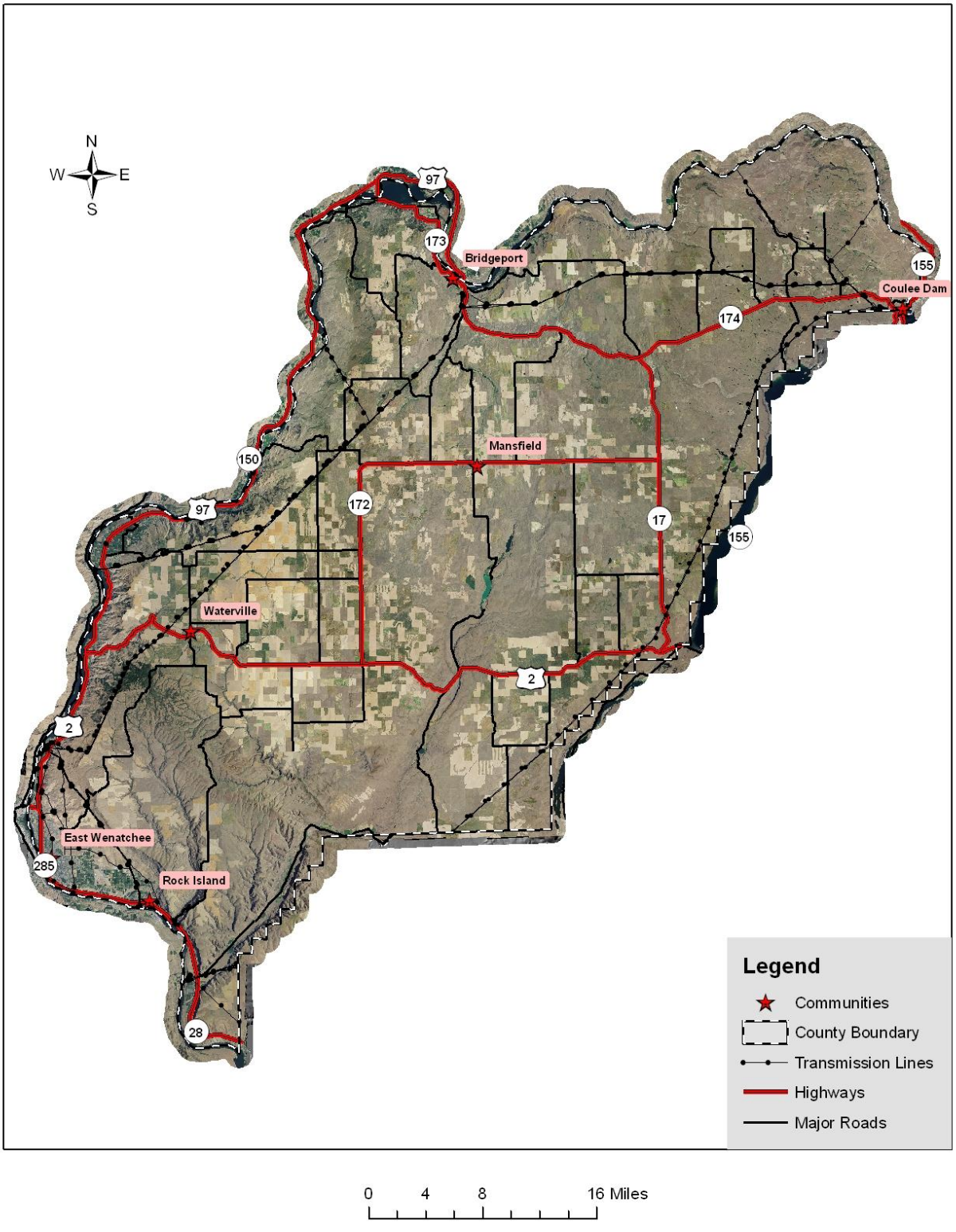
233 East Palouse River Dr.
P.O. Box 9748
Moscow, ID 83843
208-883-4488
www.Consulting-Foresters.com

The information on the following maps was derived from digital databases held by Northwest Management, Inc. Care was taken in the creation of these maps, but all maps are provided "as is" with no warranty or guarantees. Northwest Management, Inc. cannot accept any responsibility for errors, omissions, or positional accuracy, and therefore, there are no warranties accompanying this product. Although information from land surveys may have been used in the creation of this product, in no way does this product represent or constitute a land survey. Users are cautioned to field verify information on this product before making any decisions.

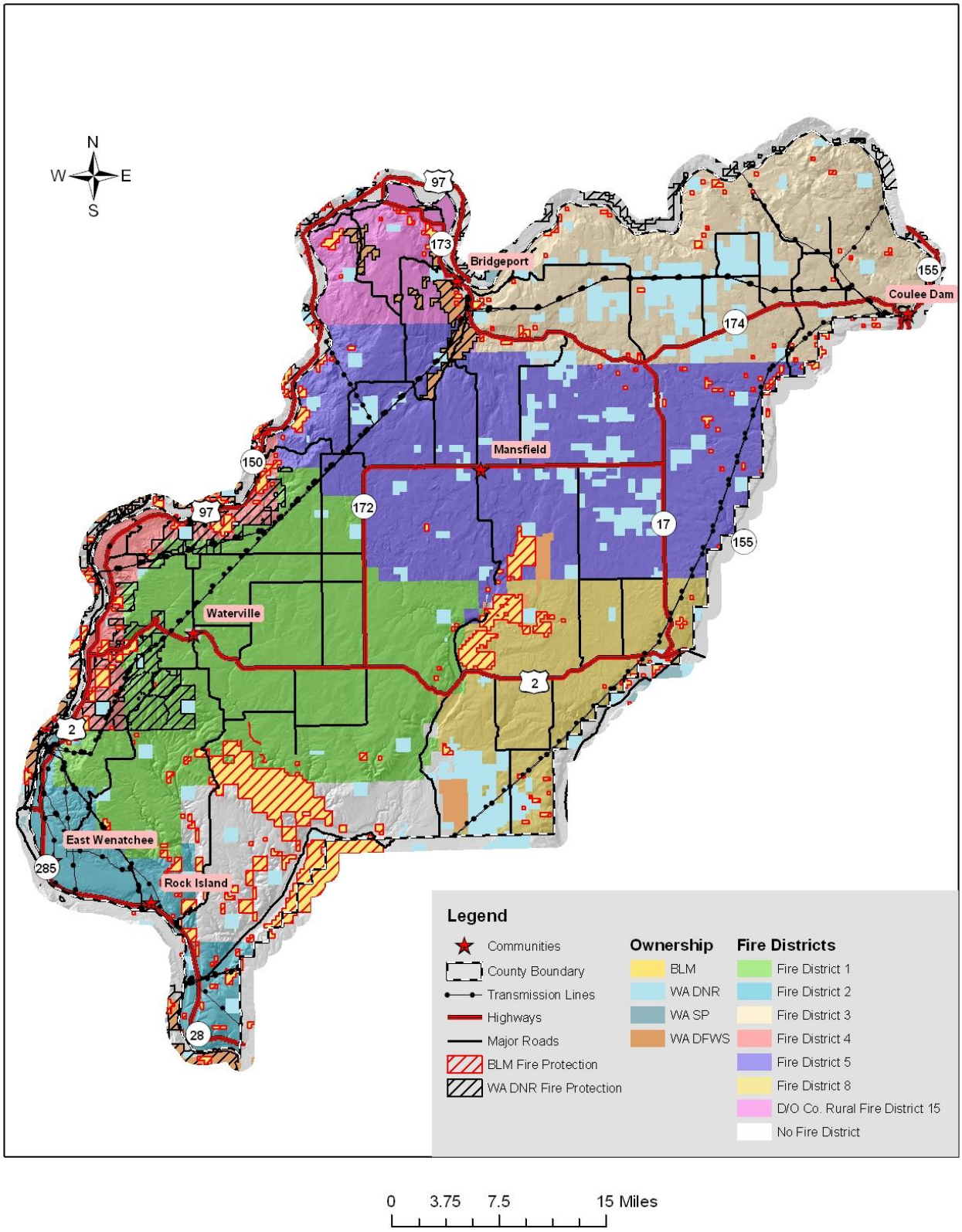
Land Ownership Map



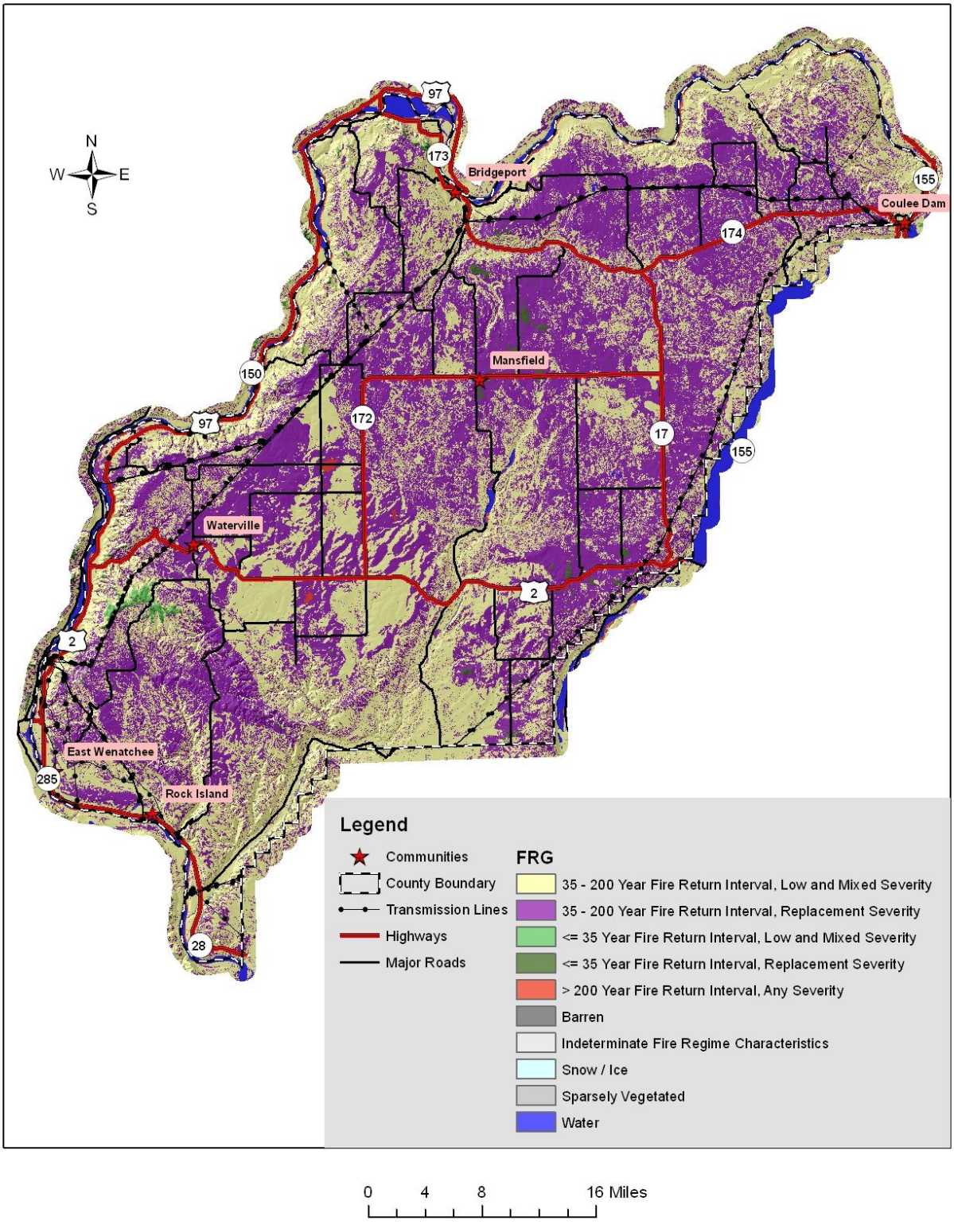
Aerial Imagery



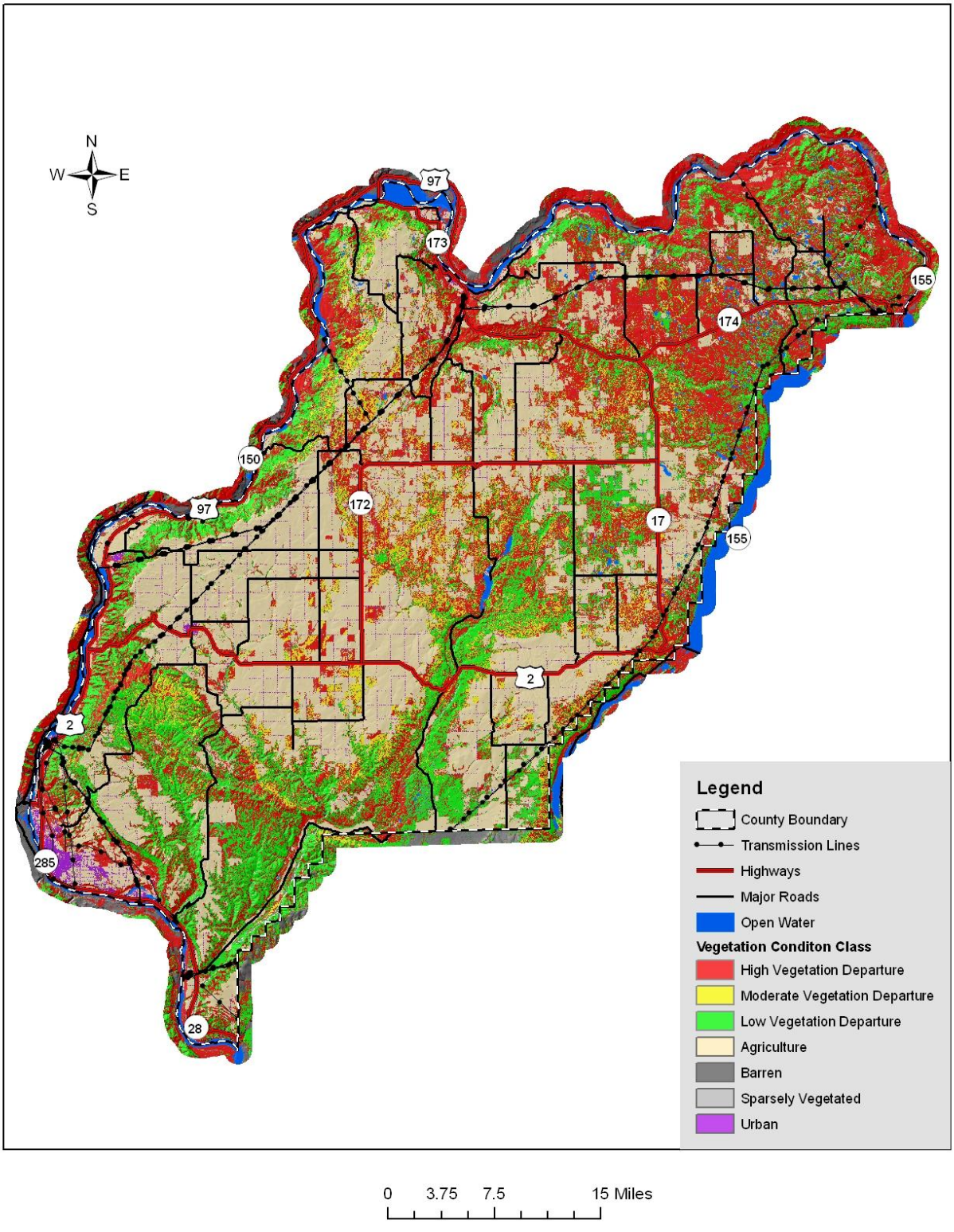
Fire Protection Boundary Map



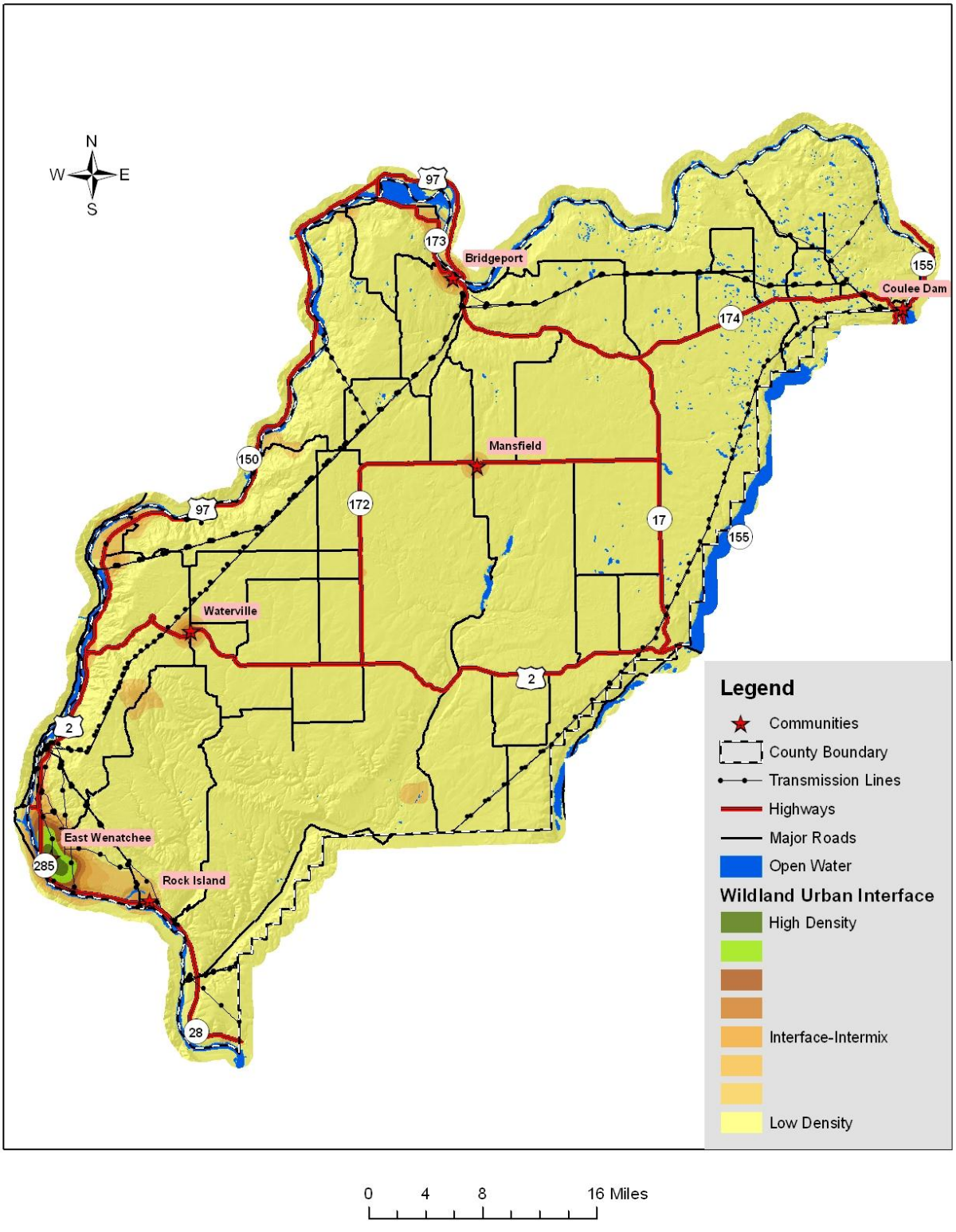
Historic Fire Regime Map



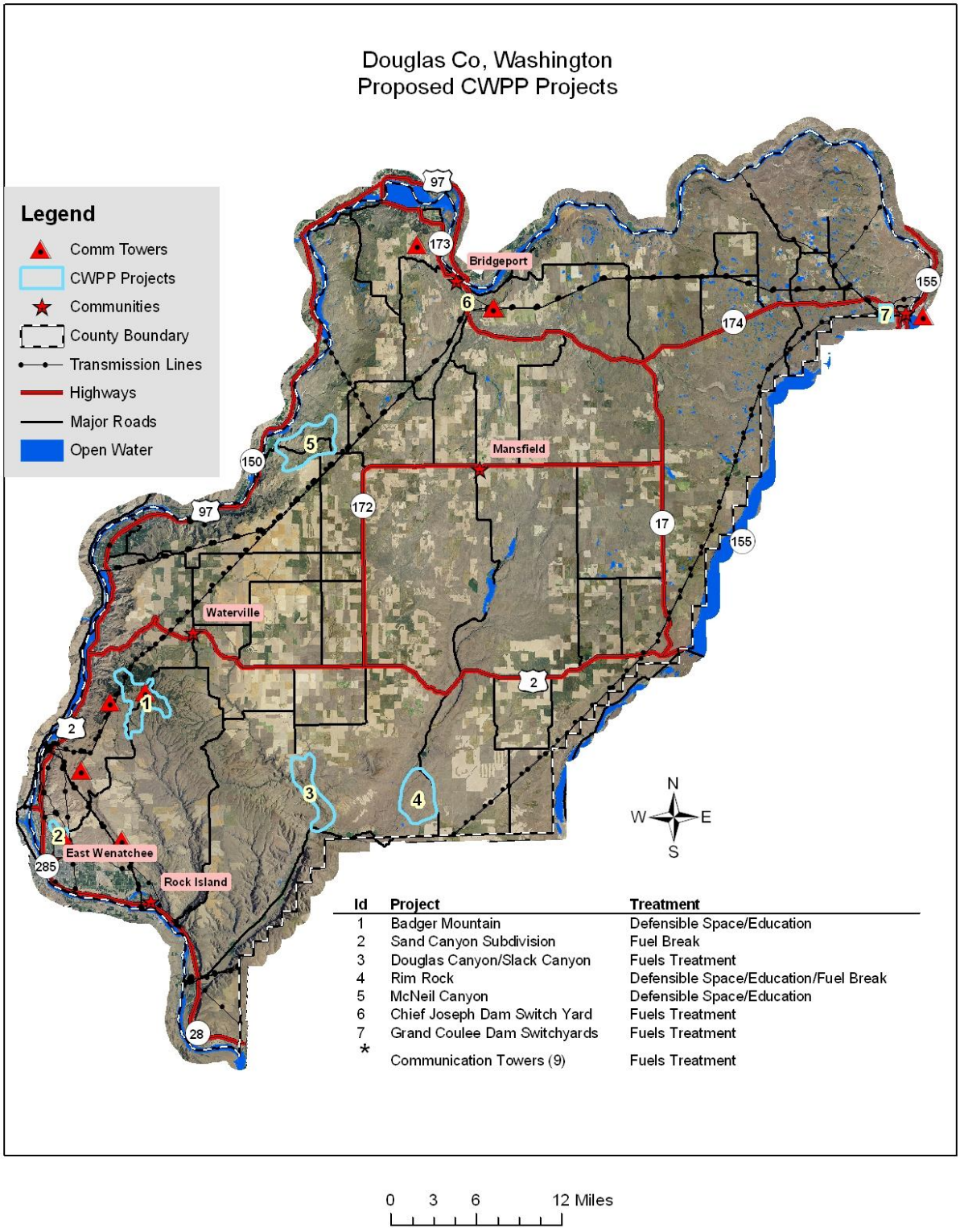
Vegetation Condition Class Map



Wildland Urban Interface Map

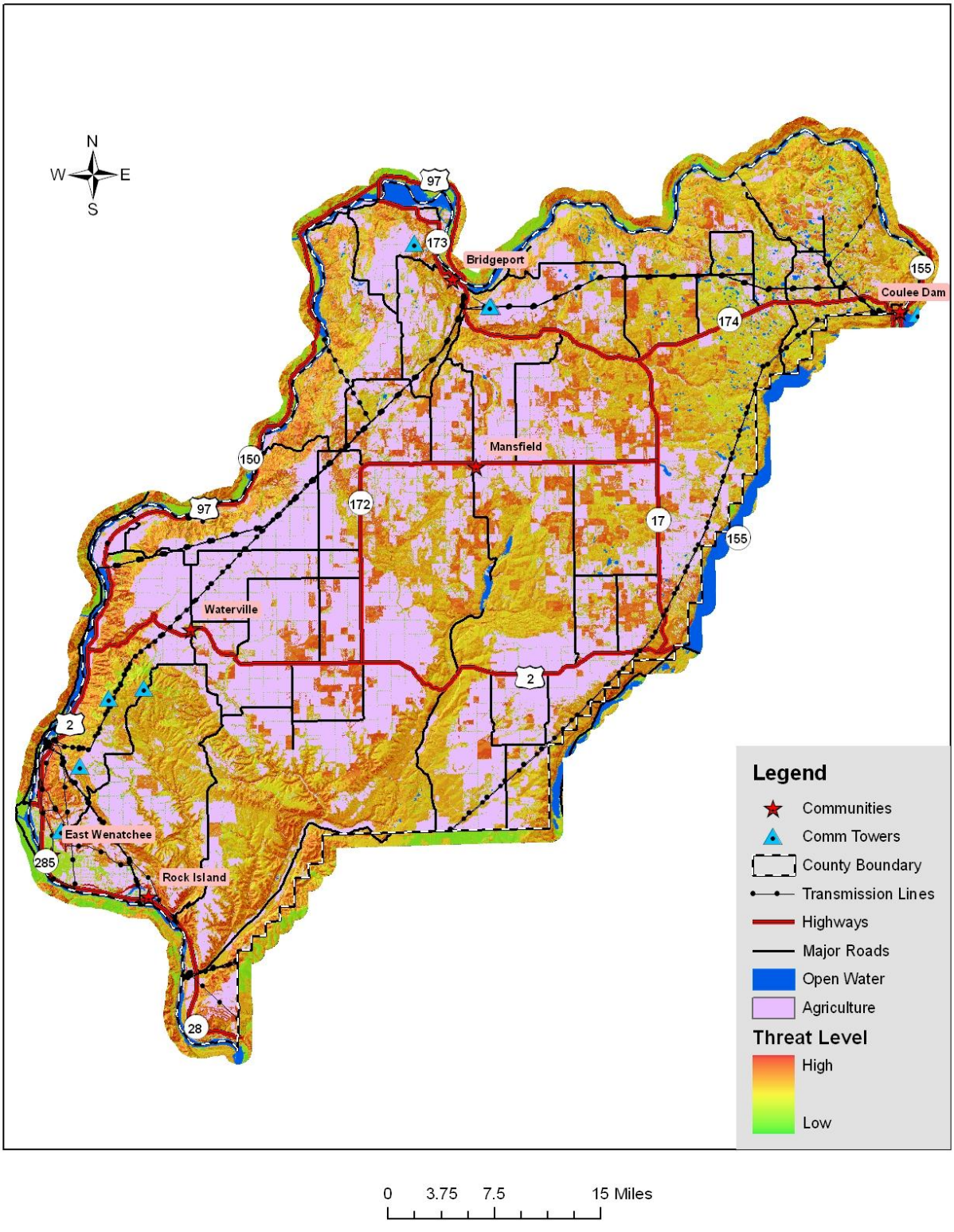


Proposed Treatment Area Map



Id	Project	Treatment
1	Badger Mountain	Defensible Space/Education
2	Sand Canyon Subdivision	Fuel Break
3	Douglas Canyon/Slack Canyon	Fuels Treatment
4	Rim Rock	Defensible Space/Education/Fuel Break
5	McNeil Canyon	Defensible Space/Education
6	Chief Joseph Dam Switch Yard	Fuels Treatment
7	Grand Coulee Dam Switchyards	Fuels Treatment
*	Communication Towers (9)	Fuels Treatment

Relative Threat Level Map



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Appendix 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 appendix includes the minutes taken at planning committee meetings, a record of published articles regarding the CWPP, and the presentation given at local public meetings.

Planning Committee Meeting Minutes

December 18th, 2012 – Mansfield Fire Station

Attendance:

Richard Parrish, BLM Spokane District	Sarah Willcinson, USACE Chief Joseph Dam
Mike Solheim, BLM Spokane District	Tyler Caille, Douglas County Fire #5
Erik Ellis, BLM Wenatchee Field Office	Michael S. Lesky, U.S. Bureau of Reclamation
Dan Peterson, WA. State Fish & Wildlife	Dale Rinker, Douglas County Fire #3
Lee Hemmer, Foster Creek Conservation District	Steve Jenkins, Douglas County
Sharon Davis, Douglas County Fire #8	Brad Tucker, Northwest Management, Inc.

Introduction:

Richard Parrish introduced the project and the BLM's hope that the committee will roll the Risk Assessment into a CWPP. Individuals introduced themselves. NMI passed around handouts.

Agenda Item #1 – NMI Presentation:

Brad gave a brief background of the process and explained the purpose of the Risk Assessment. Richard and Brad explained the benefits for the committee to roll the process into a Community Wildfire Protection Plan. Brad made a general request for committee members to send NMI relevant data (GIS, projects, plans, fire history, etc.)

Agenda Item #2– Risk Assessments:

Brad passed out an outline of a Risk Assessment to give committee members an idea of what would be included in this document. Brad also provided one copy of a CWPP so the committee may see what the difference between a Wildfire Risk Assessment and a CWPP.

Agenda Item #3 – Map Products:

Brad went over the preliminary maps and asked that the committee review them for accuracy and to draw potential projects/high risk areas.

Agenda Item #4 – Public Involvement:

The committee had a brief discussion on public involvement. Richard Parrish may have to amend NMI's contract to include two additional meetings.

Agenda Item #5 – Meeting Schedule:

Brad advised the committee on a rough timeline for the project.

1. Next meeting will be held on January 15th, 6 pm, Fire District 5
2. Field assessments in March.
3. Public meetings and committee meeting in April.
4. First draft in early May with the public review in mid-late May.

5. Final draft ready for committee review early June followed by County Approval.

Other Stuff:

Richard emphasized the BLM's wish that the committee pursue the development of a CWPP. Richard also asked for a volunteer to chair the CWPP committee. The committee asked that NMI provide an example of a completed CWPP and a quote from NMI to write the CWPP. NMI will set up a dropbox for sharing information with committee members.

Adjournment:

The Douglas County Risk Assessment steering committee meeting was adjourned at 8:00 p.m. The next meeting will be held January 15 at 6:00 pm.

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January 15th, 2013 – Mansfield Fire Station

Attendance:

Don Rushton, Douglas County Fire #8	Sarah Wilkinson, USACE Chief Joseph Dam
Mike Solheim, BLM Spokane District	Tyler Caille, Douglas County Fire #5
Erik Ellis, BLM Wenatchee Field Office	Michael S. Lesky, U.S. Bureau of Reclamation
Dan Peterson, WA. State Fish & Wildlife	Dale Rinker, Douglas County Fire #3
Lee Hemmer, Foster Creek Conservation District	Carol Cowling, South Douglas Conservation District
Sharon Davis, Douglas County Fire #8	Brad Tucker, Northwest Management, Inc.
John Fretwell, Douglas County Fire #8	Tera King, Northwest Management, Inc.
Wayne Rice, WS DOT	Vaiden Bloch, Northwest Management, Inc.
Bill Eller, Washington State Conservation Commission	Dave Baker, Douglas County Fire #2
John Pease, Douglas County Fire #5	Chris Sheridan, BLM
Kate Koenig, Cascadia Conservation District	

Agenda Item #1 – Old Business:

Individuals in the group were asked to introduce themselves. Brad asked if the group has made a decision about turning the Wildfire Risk Assessment into a complete Community Wildfire Protection Plan. No one had herd what the decision was and the Commissioners were not present.

Agenda Item #2– Threat Level Map:

Brad passed out the first few sections of the Wildfire Risk Assessment to give committee members something to review. Vaiden from Northwest Management gave a brief presentation of how the Relative Threat Level map is developed. The hope is that this will allow the committee to begin thinking about what "layers" they would like to include in the Douglas County Relative Threat Level map. This map is used to determine areas within the County that are at higher risk which will focus mitigation efforts in those areas.

Agenda Item #3 – Review Maps:

Maps were laid out on the tables and the committee spent a large amount of the meeting looking at the various maps that NMI has created to date. Committee members drew on the maps to identify potential areas at risk, high recreation activity, critical infrastructure, and special wildlife habitat.

Agenda Item #4 – Determination of Potential Assessment Areas:

Using the maps, and the committee comments, NMI will begin to identify potential areas to perform field assessments.

Agenda Item #5 – Meeting Schedule:

Next meeting will be on February 19th, at the Douglas County Fire District #5 in Mansfield. The meeting will be at 6:00 pm.

Adjournment:

The Douglas County Risk Assessment steering committee meeting was adjourned at 7:30 p.m. The next meeting will be held February 19 at 6:00 pm.

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February 19th, 2013 – Mansfield Fire Station

Attendance:

Tonya Neider, Lake Roosevelt NRA	Sarah Wilkinson, USACE Chief Joseph Dam
Mike Solheim, BLM Spokane District	Tyler Caille, Douglas County Fire #5
Erik Ellis, BLM Wenatchee Field Office	Dale Jordan, Douglas County Fire #1
Dan Peterson, WA. State Fish & Wildlife	Dale Rinker, Douglas County Fire #3
Mike Dingle, Douglas County Sheriff's Office	Carol Cowling, South Douglas Conservation District
Sharon Davis, Douglas County Fire #8	Brad Tucker, Northwest Management, Inc.
Steve Jenkins, Douglas County	Richard Parrish, BLM Spokane District
Kate Koenig, Cascadia Conservation District	

Agenda Item #1 – Old Business:

Individuals in the group were asked to introduce themselves. Steve Jenkins explained that there will be funding available in April for the committee to apply for to complete the Community Wildfire Protection Plan. Mansfield, or possibly Waterville, will have to apply on behalf of the committee.

Brad passed out the newest version of the County's Relative Threat Level Map with most of the comments from the previous meeting incorporated into the map. There was a lengthy discussion about what the map 'means' and what should be included in the map. Some of the changes will include:

- ✓ Remove vegetation layer, slope, and aspect.
- ✓ Add Fire Behavior models (which will make up for removing the vegetation, slope, and aspect layers).
- ✓ Include the area between the County boundary and Banks Lake in the models.
- ✓ Change the color scheme so the blue lake and low threat are differentiated.
- ✓ Remove fire districts, transmission lines, etc. (these layers will be placed on the final map).

NMI will provide a new version to the committee before the next meeting so they may review it ahead of time.

Agenda Item #2– Fire History:

Brad was able to get fire history data for Douglas County from 1994 thru 2008. Brad was advised to call the State Fire Marshall's Office directly for the most recent information. There is some information from a federal database for Douglas County. Local knowledge of fire locations (sizes and years if possible) was requested to add validity to the federal and state databases.

Agenda Item #3 – Fire Districts:

Brad told the committee that he would email a district survey to each of the County's Fire Districts to fill out. The surveys will help NMI to gain a better understanding of what each district has, needs, and issues are.

Agenda Item #4 – Field Assessments:

The field assessments will be used to 'ground truth' the Relative Threat Level Map, and any Fuel Model maps. NMI used the comments from the previous meeting to identify some specific areas to look at during the field assessments which include but not limited to:

- Jameson Lake
- Banks Lake shoreline
- Slack Canyon
- Switchyards
- Badger Mountain
- CRP Concentrations

- Crown Vista Point
- Any Others?

NMI plans to do the field assessments in March (weather dependent). We may be able to do some of the assessments next month regardless of weather, but a majority will have to be completed after the snow has melted. If there are any areas not mentioned above that anyone thinks we should investigate, please email or call Brad tucker@nmi2.com (208)-883-4488 ext.123. Also if anyone would like to tag along or provide guide services that would be welcome as well.

Adjournment:

The Douglas County Risk Assessment steering committee meeting was adjourned at 8:00 p.m. The next meeting will be held March 19 at 6:00 pm.

[Remainder of page intentionally left blank.]

March 19th, 2013 – Mansfield Fire Station

Attendance:

Richard Parrish, BLM Spokane District	Sarah Wilkinson, USACE Chief Joseph Dam
Mike Solheim, BLM Spokane District	Dale Jordan, Douglas Co. Fire District #1
Carol Cowling, South Douglas Conservation District	Michael S. Lesky, U.S. Bureau of Reclamation
Dan Peterson, WA. State Fish & Wildlife	Brad Tucker, Northwest Management, Inc.
Lee Hemmer, Foster Creek Conservation District	Sharon Davis, Douglas County Fire #8

Agenda Item #1 – Old Business:

Brad reminded the committee to identify location, acres, and date (year) of fires within the last 10 years. This is important in determining the fire history and wildland fire potential for Douglas County. Some committee members marked locations on the map at the close of the meeting and two Fire Districts to mark fire locations on and bring to the next meeting.

Agenda Item #2– Review Draft Assessment:

The committee reviewed the rough draft of the Wildfire Risk Assessment. The committee discussed the fire history of Douglas County including Native American burning as well as past vegetation types. Brad requested that the committee identify the locations, approximate acres, and year of fires over the past 10 years.

The committee asked NMI to contact FSA for trend data regarding CRP and SAFEACRES land within Douglas County.

NMI will work with the BLM and DNR to refine the fire district map and identify possible 'No-Man's Land'.

The committee decided to place the entire County within the WUI coverage. NMI will include a paragraph in the document that justifies this choice.

NMI will work with the BLM to refine the Relative Threat Level Map regarding Ag lands. Originally we ran the Ag lands as a short grass in the fire behavior models. The committee expressed concern that wheat does not burn like a short grass. Given the annual variability of where Ag lands may occur, it was determined that the Ag in the Relative Threat Map would be identified as simply Ag and not be categorized as fuel model. A paragraph would then be added to the document describing the risks of the Ag lands regarding wildfire within Douglas County.

Access to some parts of the County was identified as a concern. Most of the limited access areas occur in the steeper portions of the County therefore, NMI will assign a heavier weight rating for steeper slopes, which should make steep slopes show as higher risk on the final Relative Threat Level Map. This, in conjunction with a narrative, will hopefully address the access issues.

Agenda Item #3 – Public Meetings:

The public meetings will occur two weeks after the next committee meeting. The dates for the public meetings are set at April 30th and May 1st. They will be evening meetings, one will be held in Mansfield and the second will be held in East Wenatchee. NMI will work to find a specific location for each meeting and set the times. Once this occurs, NMI will inform the committee and begin contacting various news outlets to inform the public.

Agenda Item #4 – Field Assessments:

Field Assessments will occur during the week of April 15th. If anyone would like to accompany NMI during the field assessments or have an area that you would like us to look at, email Brad at tucker@nmi2.com.

Agenda Item #5 – Meeting Schedule:

Next meeting will be held on April 16th, 6 pm, Fire District 5

Adjournment:

The Douglas County Risk Assessment steering committee meeting was adjourned at 8:00 p.m.

[Remainder of page intentionally left blank.]

April 16th, 2013 – Mansfield Fire Station

Attendance:

Richard Parrish, BLM Spokane District	Sarah Wilkinson, USACE Chief Joseph Dam
Mike Solheim, BLM Spokane District	Dale Rinker, Douglas Co. Fire District #3
Carol Cowling, South Douglas Conservation District	Michael S. Lesky, U.S. Bureau of Reclamation
Dan Peterson, WA. State Fish & Wildlife	Brad Tucker, Northwest Management, Inc.
Steve Jenkins, Douglas County	Doug Miller, Douglas Co. Fire District #2
Vaiden Bloch, Northwest Management, Inc.	Erik Ellis, BLM Wenatchee Field Office

Agenda Item #1 – Old Business:

The County decided to fund the Community Wildfire Protection Plan through Fire District #5. That being said this will no longer be referred to as a Wildfire Risk Assessment, it will be a CWPP. Brad reminded the committee to identify location, acres, and date (year) of fires within the last 10 years. We also went over the update Relative Threat Level Map and the decision to include the entire County within WUI designation. Everyone at the meeting seemed pleased with the new Relative Threat Level map.

Agenda Item #2– Mission & Goals Statements:

Brad emailed examples of mission and goals statements prior to the meeting, and asked that the committee be thinking about these for the next meeting.

Agenda Item #3 – Fire District Surveys & Resource List:

Brad requested that each fire district, and any government agencies that may provide fire protection in Douglas County, provide NMI with a brief summary of their district and also a resource list of their equipment. Please email these to Brad as you get them finished.

Agenda Item #4 – Possible Fuels Reduction Projects:

Brad handed out an example of a proposed project list from another County, and suggested that committee members be thinking about areas that fuels reduction or defensible space projects (or other wildland fire mitigation projects) could be conducted. This list will be included in the CWPP and once it is developed, the committee will prioritize the projects. This list is intended to guide land managers in determining where to focus when awarded funding.

Agenda Item #5 – Action Items:

Brad introduced action items to the committee and handed out an example from another County. This will be a large part of the next meeting in May. Action Items cover a large variety of needs from education and policy, to equipment needs. If something is listed as an Action Item, it is eligible for grant funding.

Agenda Item #6-- Field Assessments:

NMI informed the committee of the field assessment schedule. Doug Miller will fly Vaiden over the southern portion of the County while Brad will meet with Dale Jordan to tour Badger Mtn. and other parts of the Waterville area. Then Brad and Vaiden will meet with Mike Lesky to tour Jameson Lake, Banks Lake, and the Grand Coulee areas. On Thursday Brad and Vaiden will meet with Chris Sheridan and Erik Ellis of the BLM to tour the lower end of Moses Coulee, Pygmy rabbit protection area, Douglas creek, and rehabilitated acquisition areas.

Agenda Item #7-- Public Meetings:

Public meetings have been scheduled: April 30th Mansfield Senior Center 6pm, May 1st East Wenatchee PUD 6pm

Adjournment:

The Douglas County CWPP steering committee meeting was adjourned at 8:00 p.m. The next meeting will occur on May 21st at 6pm, Mansfield Fire Station.

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May 21st, 2013 – Mansfield Fire Station

Attendance:

Richard Parrish, BLM Spokane District	Sharon Davis, Douglas Co. F.D. #8
Brad Tucker, Northwest Management	Lee Hemmer, Foster Creek Conservation District
Carol Cowling, South Douglas Conservation District	Michael S. Lesky, U.S. Bureau of Reclamation
Dan Peterson, WA. Department of Fish & Wildlife	Brad Tucker, Northwest Management, Inc.
Noel Winegeart, WA. Department of Fish & Wildlife	Mike Dingle, Douglas Co. Sheriff's Office EM
Kate Koenig, Cascadia Conservation District	Erik Ellis, BLM Wenatchee Field Office
Dale Cavriere, USBR-GCPO	John Fretwell, USBR-GCPO-Fire

Agenda Item #1 – Old Business:

The South Douglas Conservation District decided to fund the CWPP because they already had some grant funding to apply to the project.

Brad provided the committee with a summary of how the field assessments went. The field assessments supported what the maps show. There is a need for defensible space projects in communities throughout the County, which would include public education.

Agenda Item #2– Mission & Goals Statements:

The committee worked through some examples of goals statements and developed a list that Brad will send out for everyone to review in the next few days.

Agenda Item #3 – Action Items:

The committee also developed a list of Action Items that will be included in the document. This list of items include things such as; education, policy, infrastructure, prevention, and resource enhancements. Action Items are meant to provide a prioritized list of actions/items that the County will benefit from completing with regard to wildland fires. Action Items are also eligible for grant funding so it is important that the committee list any reasonable actions.

Brad will contact the Fire Districts that were not present to determine if they need any resource enhancements for their district.

Agenda Item #4 – Next Meeting:

The next meeting will occur on June 18th at 6pm, Mansfield Fire Station.

Adjournment:

The Douglas County CWPP steering committee meeting was adjourned at 8:00 p.m.

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June 18th, 2013 – Mansfield Fire Station

Attendance:

Mike Solheim, BLM Spokane District	Erik Ellis, BLM Wenatchee Field Office
Dale Cavriere, USBR-GCPO	Lee Hemmer, Foster Creek Conservation District
Joe Weeks, Washington DNR	Michael S. Lesky, U.S. Bureau of Reclamation
Dan Peterson, WA. Department of Fish & Wildlife	Brad Tucker, Northwest Management, Inc.
Tyler Caille, Douglas Co. Fire District #5	Mike Dingle, Douglas Co. Sheriff's Office EM

Agenda Item #1 – Old Business:

NMI is still waiting on some of the Fire Districts surveys and resource list. Brad will send each district a reminder.

NMI still needs some logos

NMI sent out the Mission & Goals Statements prior to this meeting. Brad asked if there were any revisions or comments from the committee, there were none.

The committee reviewed the Action Items that were developed at the previous meeting. General edits were made to a few of the Action Items. Action Items that were added are:

- Review building codes and revise to meet Firewise Standards as needed.
- Increase cell coverage within the Count to improve communications.
- Purchase slip-tanks for landowners who want them to decrease response times.
- Develop a multi-jurisdictional committee to plan future mitigation and rehab efforts within the County.

Agenda Item #2– Partial Draft (Ch. 1-3 &6):

The committee reviewed the first three chapters of the Plan which contain general information about the Plan and the Process to develop and document it as well as Douglas County Characteristics. Chapter 6 contains all of the Action Items as well as proposed projects.

Agenda Item #3 – Proposed Projects and Rankings:

The committee also developed a list of Propose Projects that will be included in the document. The Proposed Project list is used as a guidance tool for land stewards. These projects were developed without regard to ownership. This list includes:

Badger Mountain	McNeil Canyon
Sand Canyon	Chief Joseph Dam Switchyard
Douglas Canyon/Slack Canyon	Grand Coulee Dam Switchyards
Rimrock	Communication Towers throughout County

Agenda Item #4 – Public Review Locations:

The committee determined that the final draft should be put on the County website and hardcopies at the TLS, Courthouse, and Post Offices for the public to access for review. The committee asked Brad to contact Steve Jenkins for his recommendation on how long the public should have to review the document.

Adjournment:

The Douglas County CWPP steering committee meeting was adjourned at 8:00 p.m. No future meetings are scheduled at this time. We may have a conference call once the draft is finalized. NMI will have to get signatures at some point as well but may be able to do that through emails.

[Remainder of page intentionally left blank.]

Public Meeting Presentation

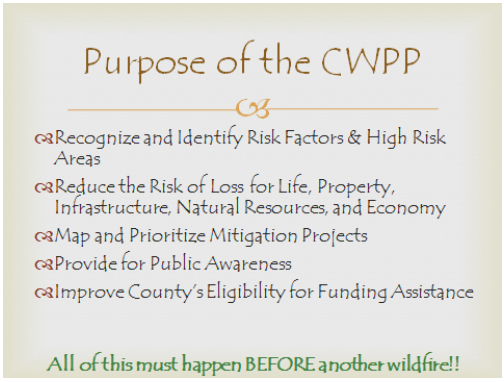
The following slideshow was presented at each of the public meetings by Tera King of Northwest Management, Inc. In addition, where possible, a fire district or other planning committee representative opened the meeting with a brief introduction.

Slide 1

Slide 2

Slide 3

Slide 4



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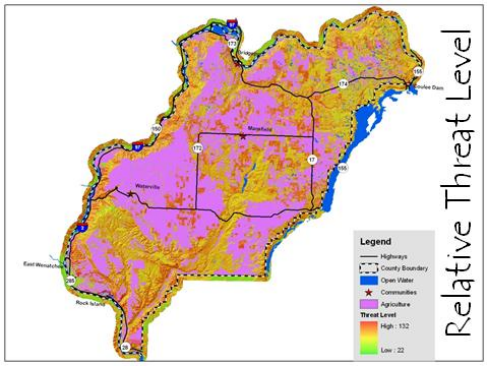

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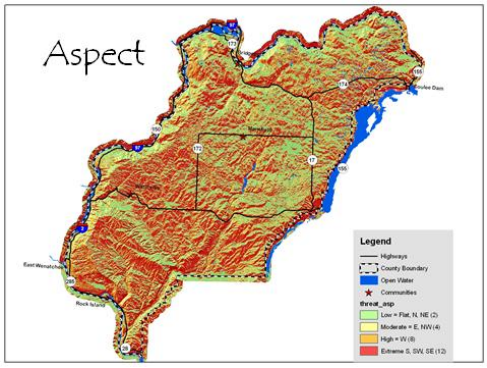

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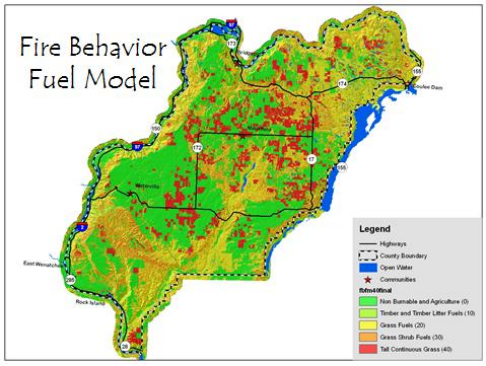

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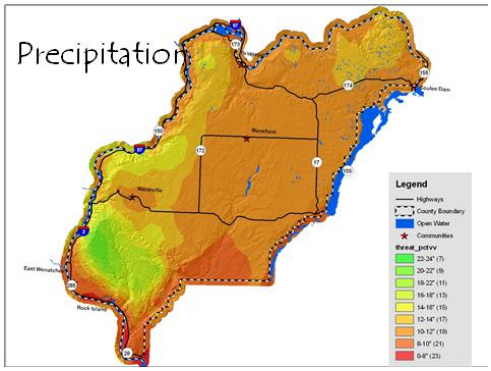

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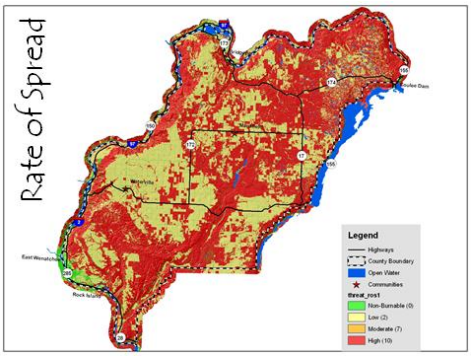

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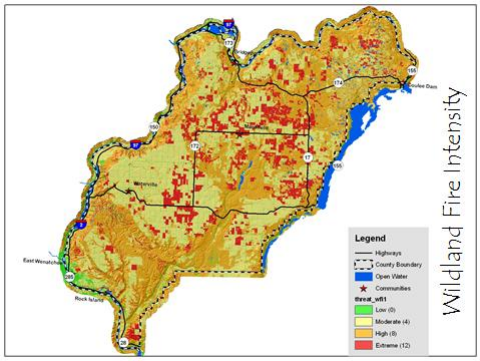

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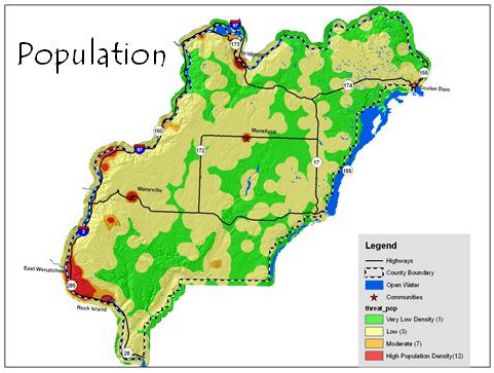
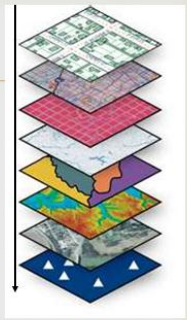


Slide 15

Process all layers in GIS to determine Cumulative Effects



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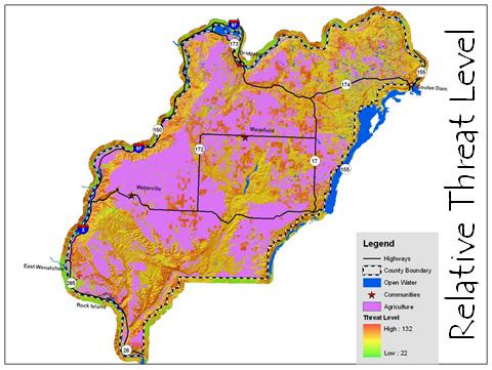
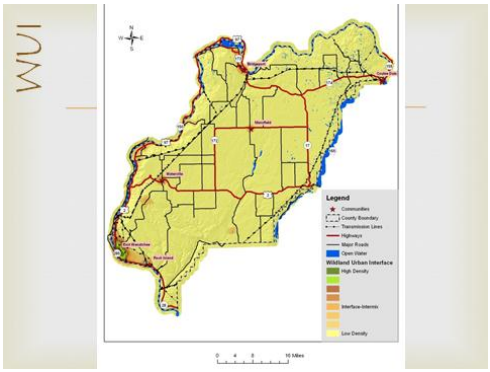


Slide 17

...the Wildland/Urban Interface Fire

Slide 18



Slide 19

Protect Your Own

Slide 20

Defensible Space

Slide 21

Preparedness

- Emergency Services
- City and Rural Fire Protection
- Wildland Fire Protection
- Local Government
- Local Organizations

Slide 22

Types of Projects

- Defensible Space
  - Thinning, pruning, construction materials, etc.
- Roadside Fuels Treatments
- Access Issues
  - Bridges, turnouts, ingress/egress, etc.
- Emergency Response Needs
  - Training, equipment, recruitment, etc.
- Policy Issues
  - WUI building codes, public education, etc.
- Pre-planning Efforts in High Risk Areas
  - Evacuation routes, safety zones, etc.

Slide 23

Slide 24

Slide 25

Slide 26

Public Comments

There were no comments made by the public regarding this Community Wildfire Protection Plan.

Appendix 3

Risk Analysis Models

Historic Fire Regime

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995). Coarse-scale definitions for natural (historical) fire regimes have been developed by Hardy et al. (2001) and Schmidt et al. (2002) and interpreted for fire and fuels management by Hann and Bunnell (2001). The five natural (historical) fire regimes are classified based on average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation. These five regimes include: I – 0-35 year frequency and low (surface fires most common) to mixed severity (less than 75% of the dominant overstory vegetation replaced); II – 0-35 year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced); III – 35-100+ year frequency and mixed severity (less than 75% of the dominant overstory vegetation replaced); IV – 35-100+ year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced); V – 200+ year frequency and high (stand replacement) severity.

A database of fire history studies in Washington was used to develop modeling rules for predicting historical fire regimes (HFRs). Tabular fire-history data and spatial data was stratified into ecoregions, potential natural vegetation types (PNVs), slope classes, and aspect classes to derive rule sets which were then modeled spatially. Expert opinion was substituted for a stratum when empirical data was not available.

Fire is one of the dominant disturbance processes that manipulate vegetation patterns in Washington. The HFR data were prepared to supplement other data necessary to assess integrated risks and opportunities at regional and subregional scales. The HFR theme was derived specifically to estimate an index of the relative change of a disturbance process, and the subsequent patterns of vegetation composition and structure.

These data were derived using fire history data from a variety of different sources. These data were designed to characterize broad scale patterns of historical fire regimes for use in regional and subregional assessments. Any decisions based on these data should be supported with field verification, especially at scales finer than 1:100,000. Because the resolution of the HFR theme is 30 meter cell size, the expected accuracy does not warrant their use for analyses of areas smaller than about 10,000 acres (for example, assessments that typically require 1:24,000 data).

Vegetation Condition Class

Vegetation Condition Class (VCC) is an interagency, standardized tool for determining the degree of departure from reference condition vegetation, fuels, and disturbance regimes. Assessing VCC can help guide management objectives and set priorities for treatments.

As scale of application becomes finer the five historic fire regimes may be defined with more detail, or any one class may be split into finer classes, but the hierarchy to the coarse scale definitions should be retained. Coarse-scale VCC classes have been defined and mapped by Hardy et al. (2001) and Schmidt et al. (2001). They include three condition classes for each

historic fire regime. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. This departure results in changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g. insect and diseased mortality, grazing, and drought). There are no wildland vegetation and fuel conditions or wildland fire situations that do not fit within one of the three classes.

The three classes are based on low (VCC 1), moderate (VCC 2), and high (VCC 3) departure from the central tendency of the natural (historical) regime (Hann and Bunnell 2001, Hardy et al. 2001, Schmidt et al. 2002). The central tendency is a composite estimate of vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated natural disturbances. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside.

Characteristic vegetation and fuel conditions are considered to be those that occurred within the natural (historical) fire regime. Uncharacteristic conditions are considered to be those that did not occur within the natural (historical) fire regime, such as invasive species (e.g. weeds, insects, and diseases), "high graded" forest composition and structure (e.g. large trees removed in a frequent surface fire regime), or repeated annual grazing that maintains grassy fuels across relatively large areas at levels that will not carry a surface fire.

Determination of amount of departure is based on comparison of a composite measure of fire regime attributes (vegetation characteristics; fuel composition; fire frequency, severity and pattern) to the central tendency of the natural (historical) fire regime. The amount of departure is then classified to determine the vegetation condition class. A simplified description of the fire regime condition classes and associated potential risks follow.

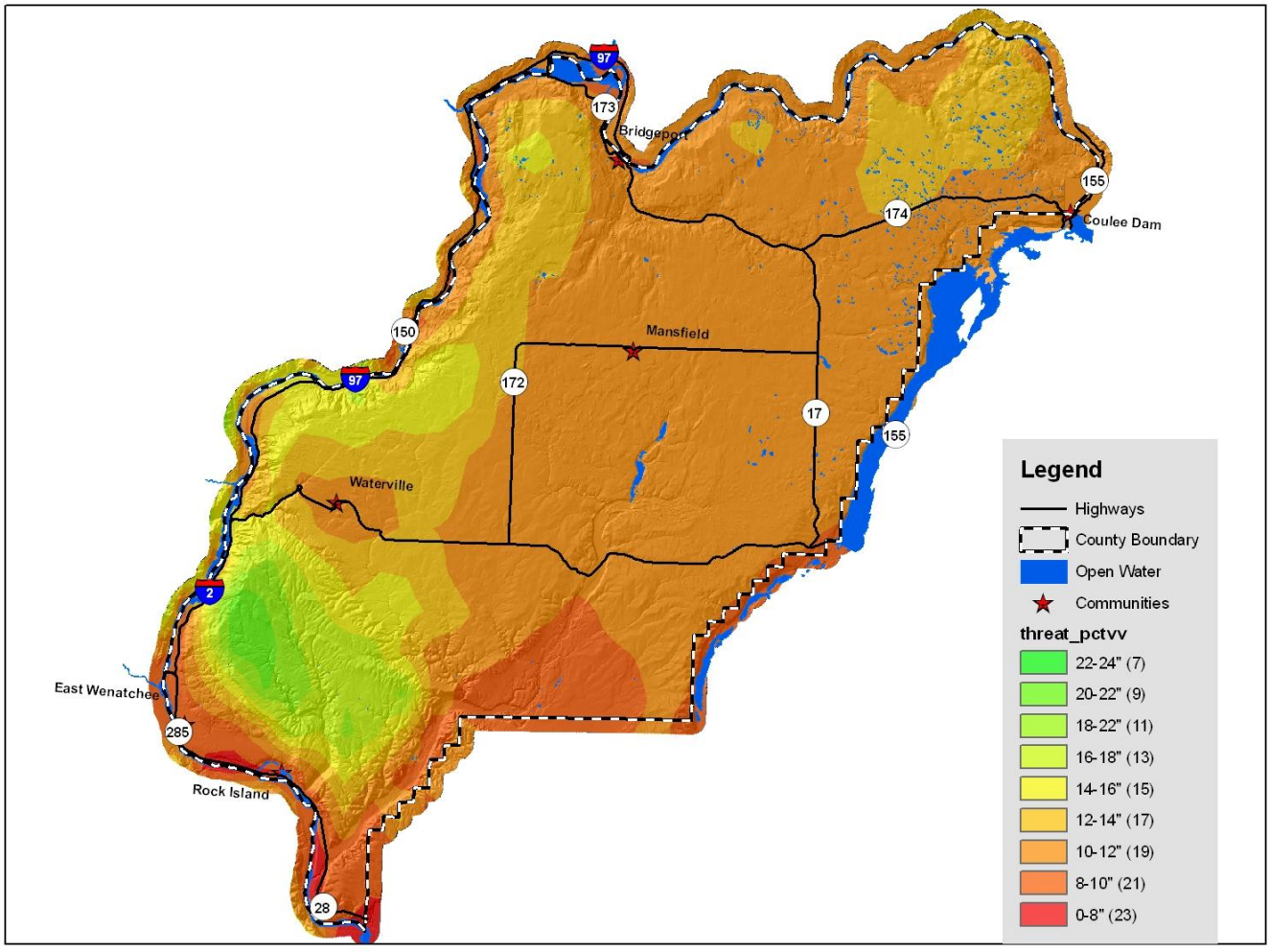
Vegetation Condition Class	Description	Potential Risks
Condition Class 1	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and other types of management that do not mimic the natural fire regime and associated vegetation and fuel characteristics. Composition and structure of vegetation and fuels are similar to the natural (historical) regime. Risk of loss of key ecosystem components (e.g., native species, large trees, and soil) is low.
Condition Class 2	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). Composition and structure of vegetation and fuel are moderately altered. Uncharacteristic conditions range from low to moderate. Risk of loss of key ecosystem components is moderate.
Condition Class 3	High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are highly departed (more or less severe). Composition and structure of vegetation and fuel are highly altered. Uncharacteristic conditions range from moderate to high. Risk of loss of key ecosystem components is high.

Relative Threat Level

Development of a Threat Level map for the Douglas County CWPP involved geographically developing and ranking the various threat categories identified by the CWPP Committee. Threat categories identified for the analysis include Slope, Aspect, Fire Behavior Fuel Model, Predicted Flam Length Class, Precipitation Levels, Predicted Rate of Fire Spread, Predicted Wild Fire Intensity and Population Density. The various data sets for each threat or condition were developed and ranked based on their significance pertaining to wildfire. The various ranked layers were then analyzed in a geographical information system to produce a cumulative effects map based on the ranking. Following is a brief explanation of the various threats identified for the analysis, and the general value ranking scheme used for each. The Relative Threat Level Map is found on page 9 of the appendices of the CWPP document.

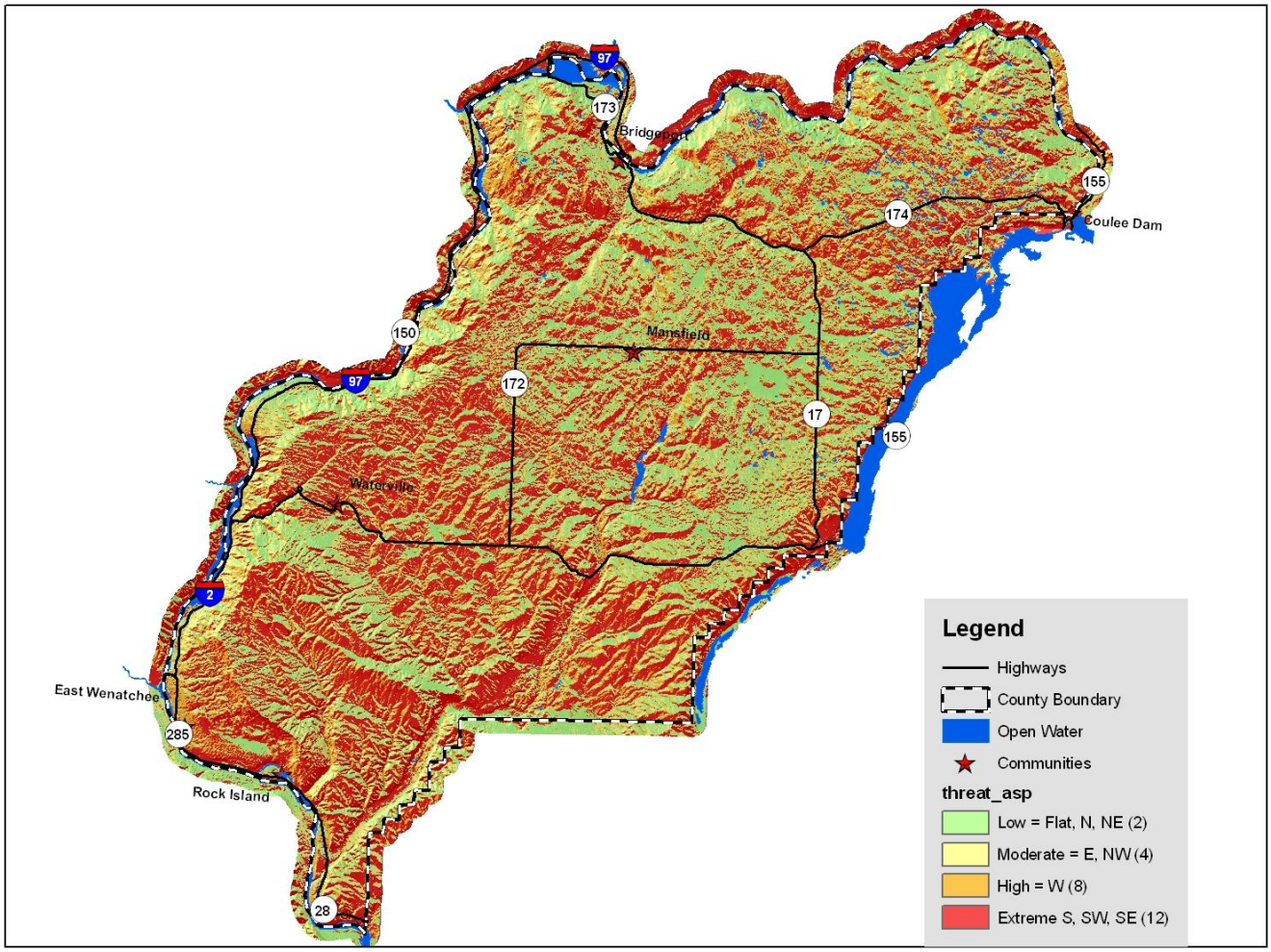
Precipitation

A GIS precipitation data layer developed by the USDA/NRCS – National Cartography & Geospatial Center, was used to identify average precipitation across Douglas County. The dataset provides derived average annual precipitation in polygon contour format according to a model using point precipitation and elevation data for the 30 year period of 1971-2000. Precipitation plays a role in wildfire threat; areas of lower precipitation are more likely to exhibit a higher threat than high precipitation areas. For the threat level analysis, a precipitation layer value was derived using the average for the range of values, multiplied by two, and subtracting the range value. This gives an inverse value relationship indicating that increased precipitation has a decreased threat level. The threat level range is between 7 and 23 with low precipitation areas exhibiting the high threat level value, and high precipitation area the low value.



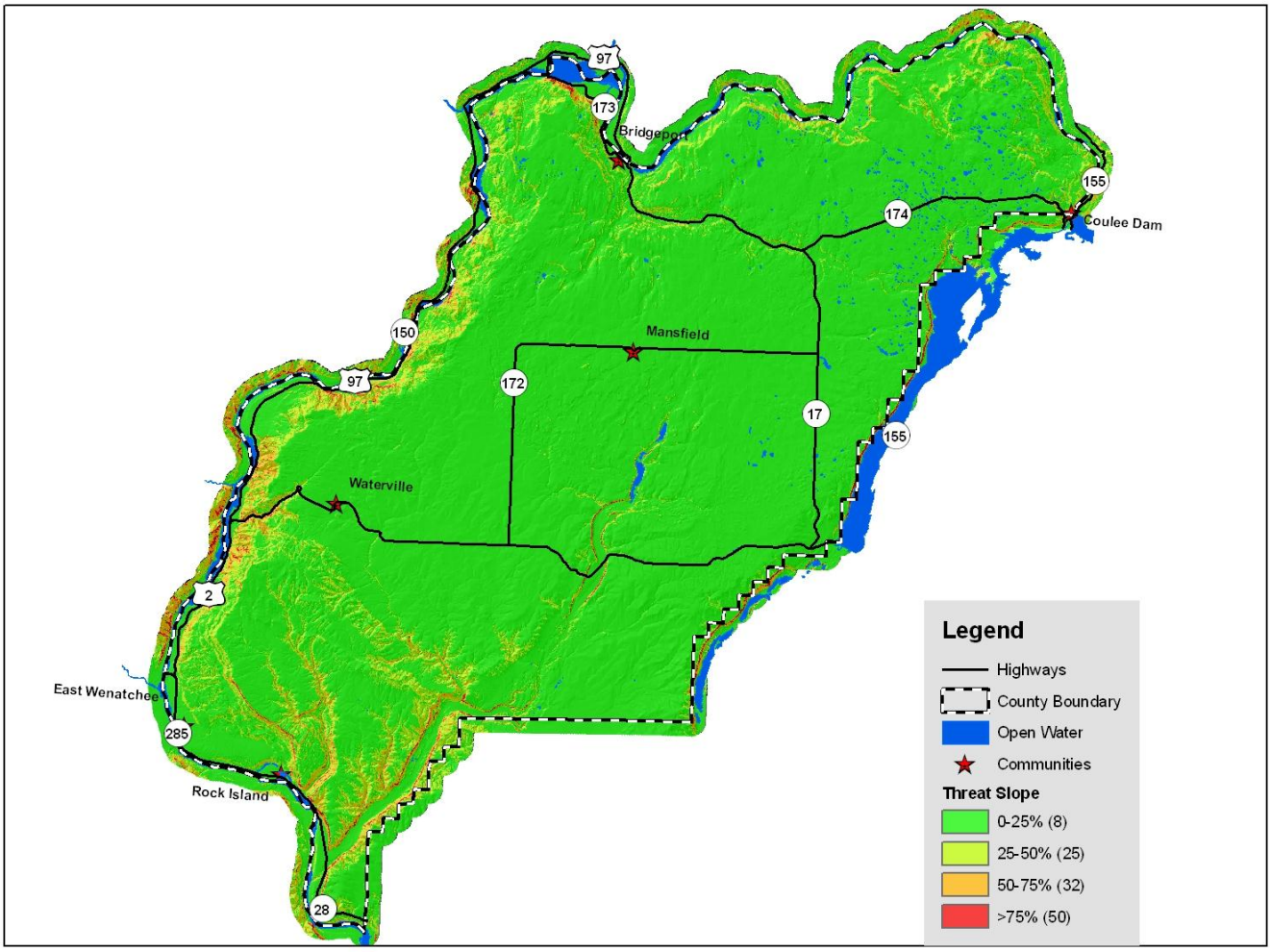
Aspect

An aspect raster data layer was created in ArcGIS using the Spatial Analyst extension and a 10 meter digital elevation model. Data processing in ArcGIS assigns an aspect value from 0-359^{o} to each pixel to represent compass azimuths. These azimuths were interpreted and given a treat value based on their relative contribution to wildfire behavior. In general, the southerly and westerly aspects have a higher threat level than the easterly and northerly aspects. Based on this, the raster values were classified into 4 aspect threat levels and assigned a threat value. The aspects Flat, North and Northeast were assigned a value of 2 for low, East and Northwest were assigned a value of 4 for moderate, West was assigned a value of 8 for high, and Southwest, South and Southeast were assigned a value of 12 for extreme aspect threat level.



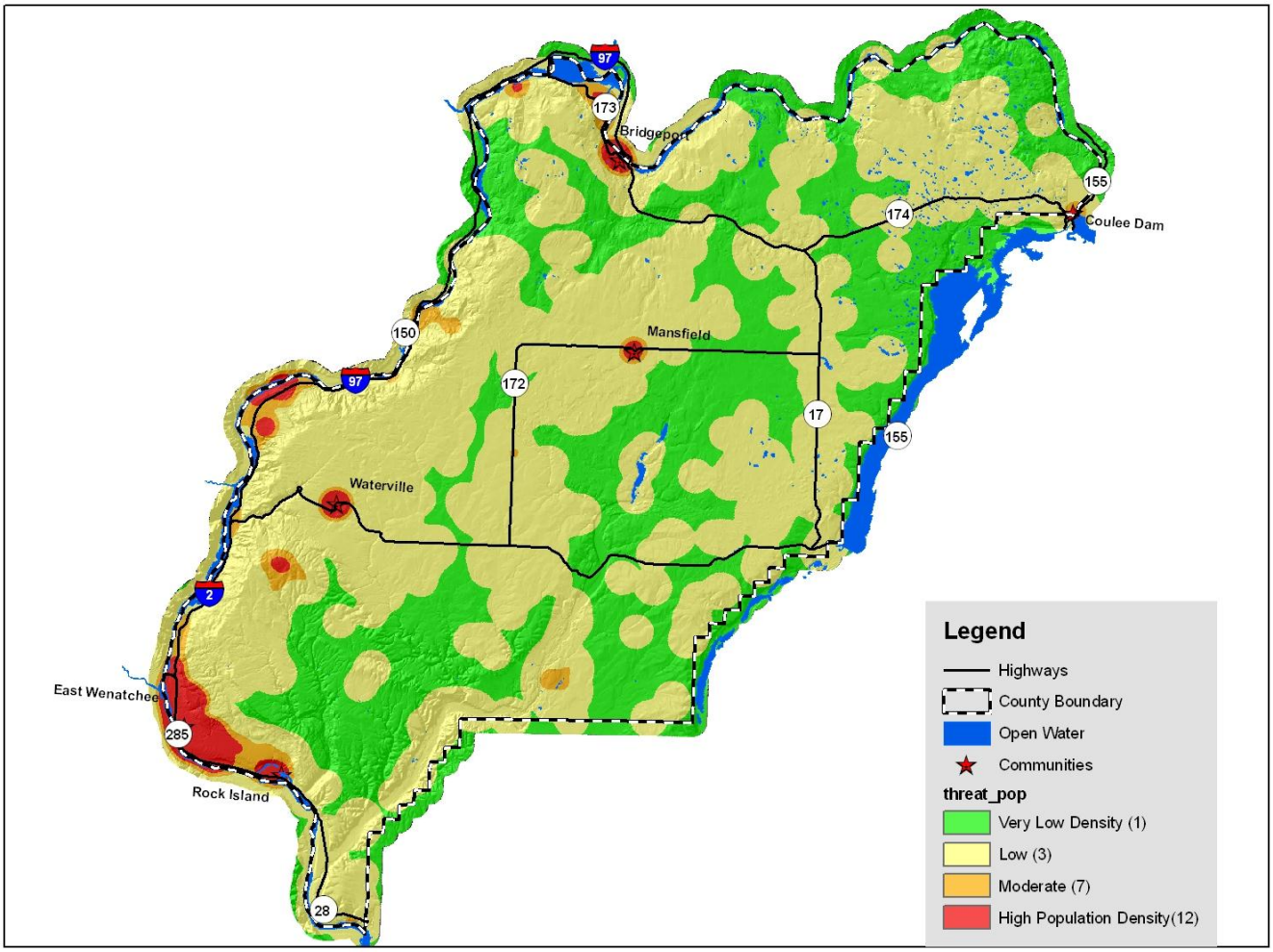
Slope

A slope raster data layer was created in ArcGIS using the Spatial Analyst extension and a 10 meter digital elevation model. Data processing in ArcGIS assigns a slope value in percent for each pixel. Once created, the slope model was classified into 4 groups, Low, Moderate, High and Extreme for final analysis. From a wildfire stand point, the treat from fire increases with increased slope. For this analysis, 0-25% slope was assigned a value of 8 for low threat, 25-50% slope a value of 25 for moderate threat, 50-75% slope a value of 32 for high threat, and greater than 75% slope a value of 50 for extreme threat.



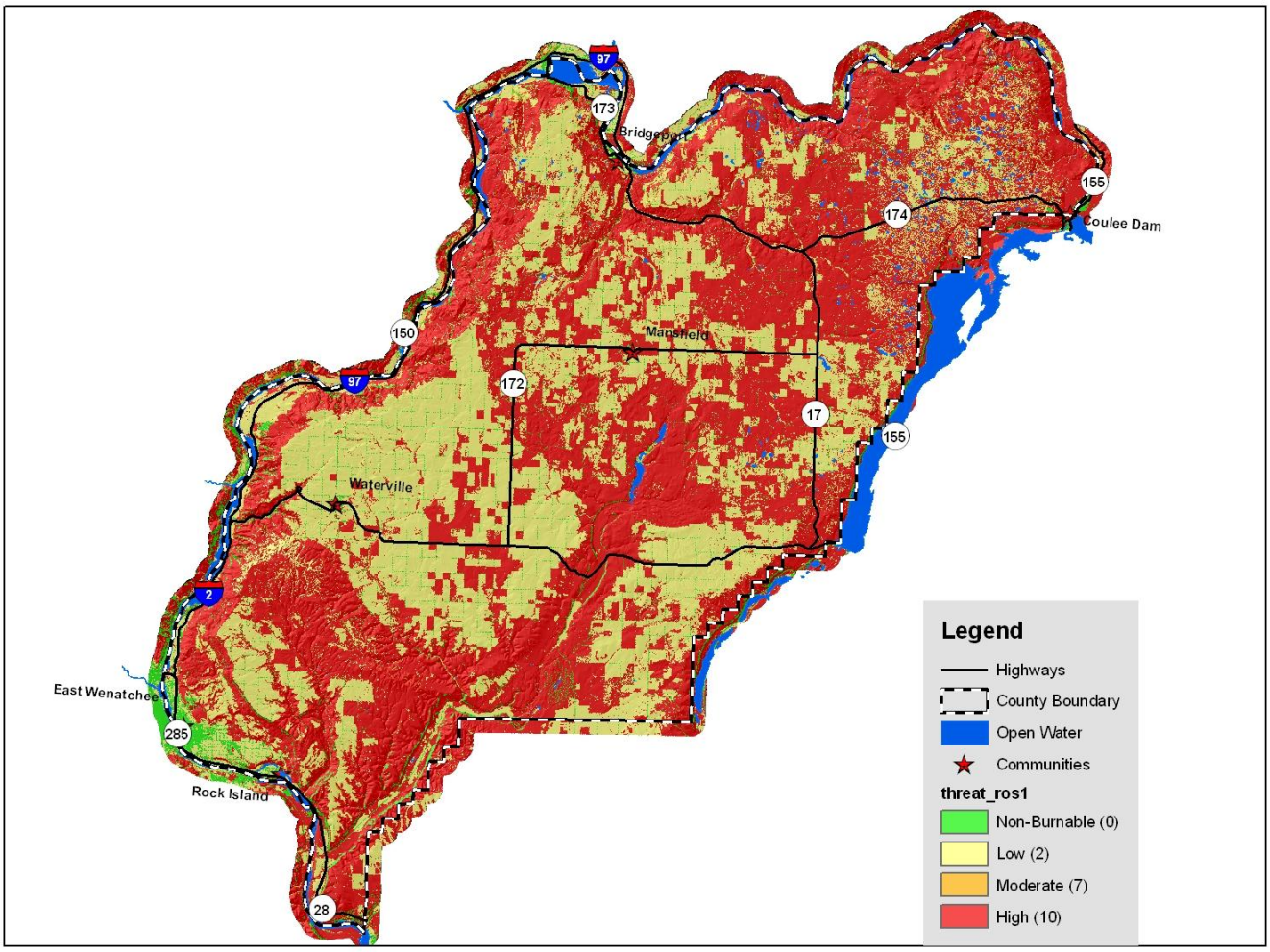
Population

Population density plays a role in Douglas County wildfire threat. Most wildfires in the county are man caused. To represent this in a threat level analysis, population density across the county was mapped using a Kernel density model based on structure point locations. The output from this analysis produces contour polygons of equal population density across the landscape. The contour polygon data set was then reclassified into four categories and assigned a population threat level value. The assigned threat level values represent the relative threat caused by population density and the increased risk of fire being man caused as population increases. The four values used are 1 for very low population density, 3, 7 and 12 for high density.



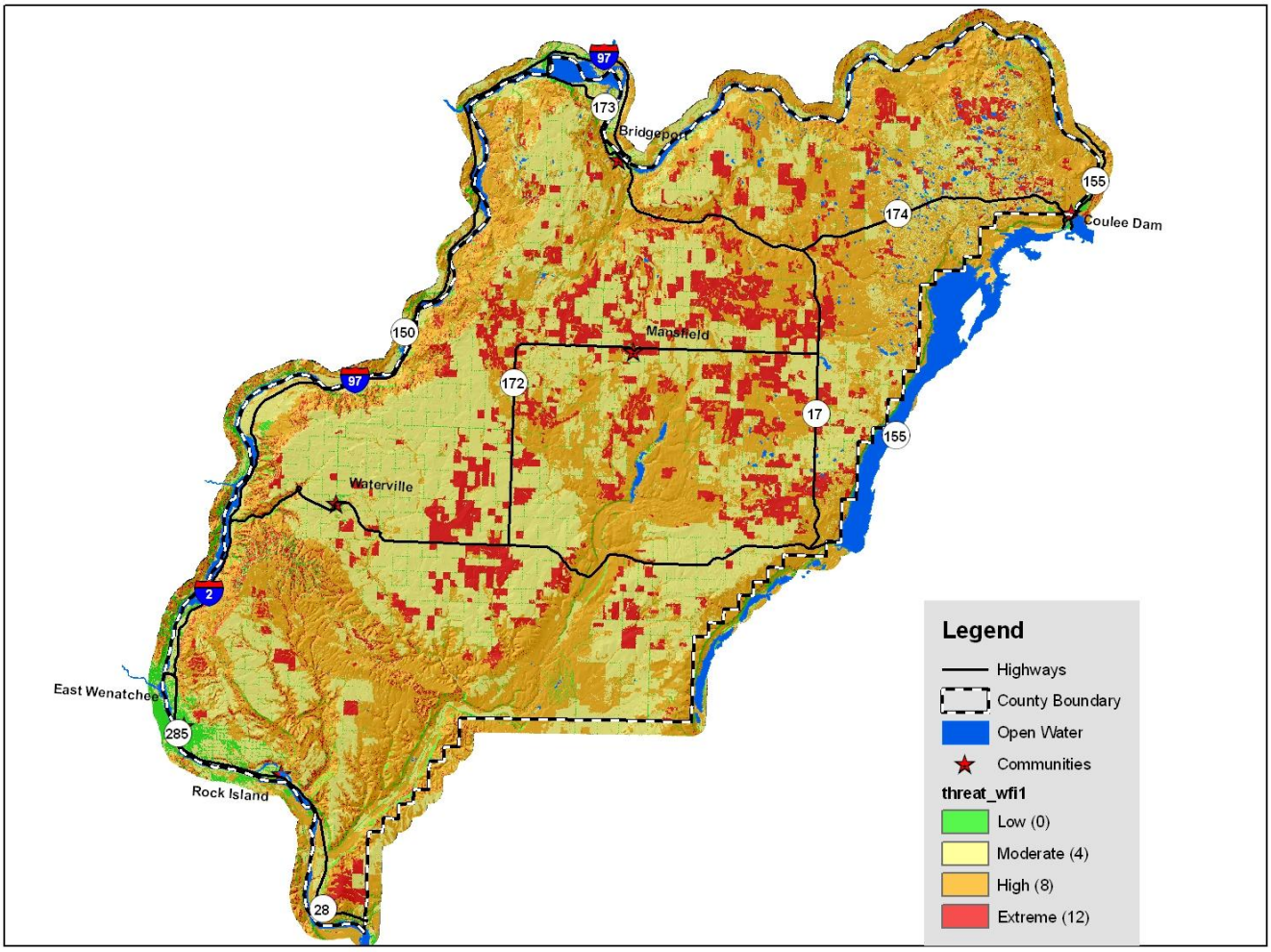
Rate of Spread

Output data from the Fire Behavior Assessment Tool (FBAT) was used to predict Rate of Spread (ROS). Rate of Spread is a derived metric that classifies areas into four classes representing non-burnable low (0<ROS<5.5 ft/min), moderate (5.5ft/min< ROS< 55ft/min) and high spread rates (>55 ft/min ROS). Predicted ROS outputs from the FBAT model were reclassified to incorporate a threat level value. A value of 0 was assigned to the non-burnable ROS, 2 to the low ROS, 7 to the moderate ROS, and 10 to the high ROS.



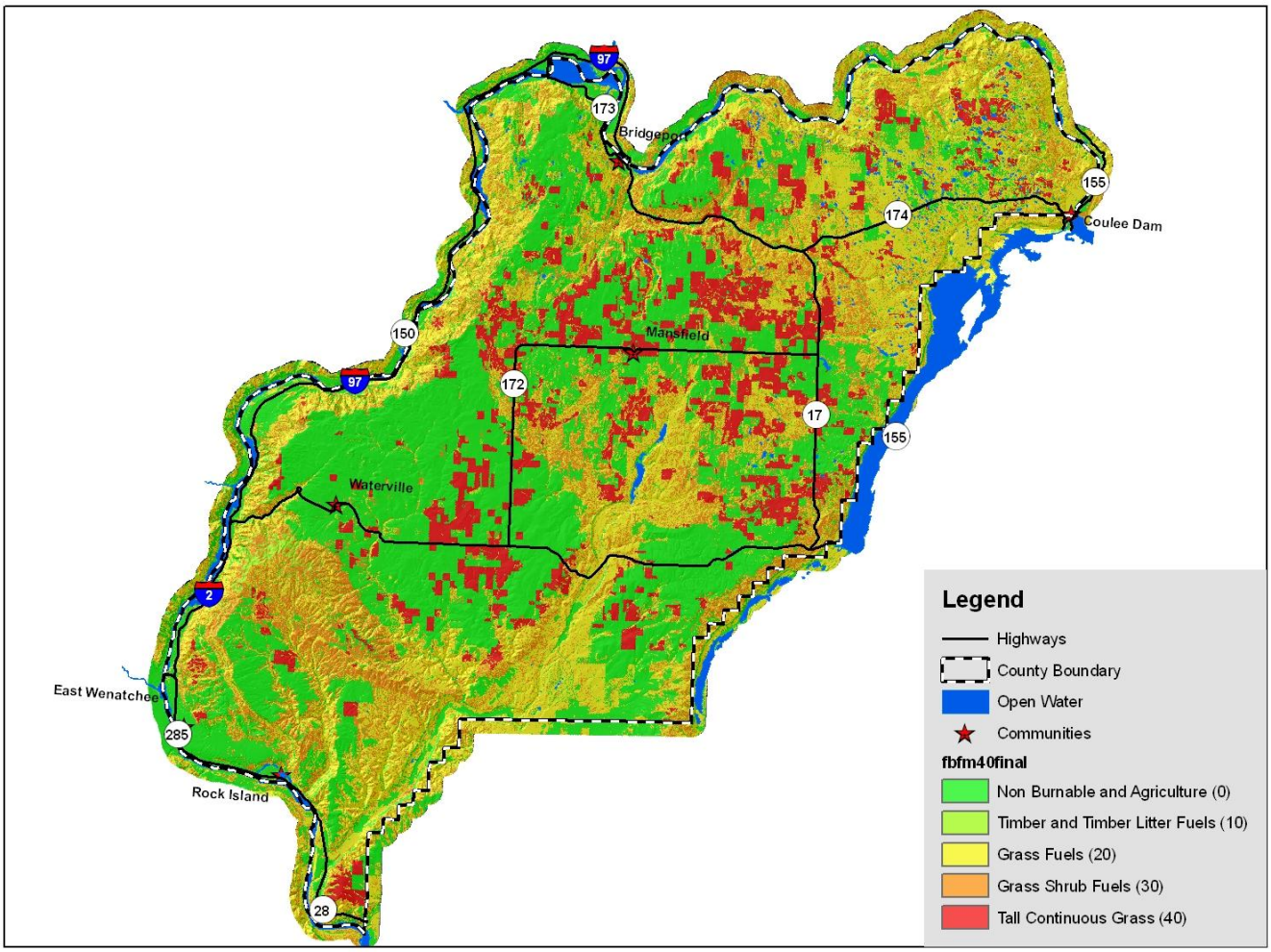
Wildland Fire Intensity

Output data from the Fire Behavior Assessment Tool (FBAT) was used to predict Wildland Fire Intensity (WFI). Wildland Fire Intensity is a derived metric that facilitates communication about and interpretation of fireline intensity. It is analogous to the logarithmic Richter scale used to measure the magnitude of earthquakes. For threat level analysis, the predicted WFI outputs from the FBAT model were classified into four categories, (Low, Moderate, High and Extreme) and given threat level values from 0-40 with a 10 fold increase in treat value between threat levels.



Fire Behavior Fuel Model

Scott and Burgan's 40 Fire Behavior Fuel Model was used in the threat level analysis to provide wildfire fuels information. For this analysis, the variety of fuels present in Douglas County that were depicted in the fuels layer were grouped into 5 threat level value categories based on perceived relative contribution to wildfire threat. The following ranking was used in the analysis. Agricultural areas were assigned a value of 0, timber fuels were assigned a value of 10, grasslands were assigned a value of 20, mixed shrub and grass were assigned a value of 30, and tall grass and CRP fields were assigned a value of 40. The values given the categories are meant to represent the role various surface fuels contribute to overall wildfire threat in Douglas County.



Each data layer was developed, ranked and converted to a raster format using ArcGIS 9.3.1. The ten data layers were analyzed in ArcGIS using the Spatial Analyst extension to calculate their cumulative effects. This process sums the ranked overlaid values geographically at the pixel level to produce a draft overall threat map layer. The draft layer had many areas of mixed pixel classification. To clean up and create a final output the draft data set was reprocessed in ArcGIS Spatial Analyst using the Majority Filter and Boundary Clean tools. This process cleaned and generalized areas of the data layer by grouping areas of scattered and mixed pixelization into areas of uniform pixelization. Values in the cleaned version were then grouped into four categories based on the summed value and color coded to produce the final threat map layer. The final layer show areas of highest threat using red, to lowest threat using purple (see threat level map). Areas with the highest values are the areas of concern based on the threats identified and values used. Varying results will occur by adjusting the threat value with in a particular layer, or omitting layers from the analysis. All threat values used in this analysis are based on discussion with committee members, documentation and general wildfire behavior characteristics. Adjusting or varying threat level values may result in a different final threat level in a particular geographic area.

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Appendix 4

Fire Services Information

Douglas County Fire District #1:	Chief: Dale Jordan Telephone: (509)-669-5570 E-Mail: dalej@amerion.com Address: PO Box 34, Waterville, WA 98858
Douglas County Fire District #2:	Chief: Dave Baker Telephone: (509)-884-6671 E-Mail: dave@douglasfire2.org Address: 377 Eastmont Ave, East Wenatchee, WA 98802
Douglas County Fire District #3:	Chief: Dale Rinker Telephone: (509)- 633-1420 Email: dcfd2301@cuonlinenow.com Address: 1333 Washington 174, Grand Coulee, WA 99133
Douglas County Fire District #4:	Chief: Jim Oatey Telephone: (509)-789-2941 Address: 13984 State Route 2, Orondo, WA 98843
Douglas County Fire District #5:	Chief: Tyler I. Caille Telephone: (509)-683-1114 E-Mail: dcfd5@nwi.net Address: 138 Main Street, PO BOX 326, Mansfield, WA 98830
Douglas County Fire District #8:	Chief: Don Rushton E-Mail: fire8@genext.net OR couleecityfire@hotmail.com Address: 1105 RD 1 NE Coulee City, WA 99115
Douglas County Fire District #15:	Chief: Bill Valance Telephone: (509)-689-0216 Address: 412 W. Indian Ave, Brewster, WA 98812

Bureau of Land Management	Spokane District District FMO: Dennis Strange Telephone: 509-536-1237 Address: 1103 N. Fancher, Spokane Valley, WA 99212

Washington State Department of Natural Resources	Southeast Region Fire Unit Forester: Telephone: Address:

Fire Services Resource List

	Type	Resource	Gallons	Drive	Vehicle or License #	Specifications	Location
Douglas County Fire District #1	3	International	1200	4x4	Brush 211	Wildland Engine	Waterville
	3	Ford	500	4x4	Brush 212	Wildland Engine	Waterville
	3	International	500	4x4	Brush 213	Wildland Engine	Withrow
	6	Ford	300	4x4	Brush 214	Wildland Engine	Badger Mt.
	6	Ford	300	4x4	Brush 215	Wildland Engine	Badger Mt.
	6	Ford	300	4x4	Brush 216	Wildland Engine	Waterville
	3	Dodge	500	4x4	Brush 217	Wildland Engine	Waterville
	6	Ford	300	4x4	Brush 218	Wildland Engine	Waterville
	7	J D Gator	65	4x4	Brush 219	Wildland Engine	Waterville
	2	Ford	3000	2	Tender 211	Tender Rated Pumper	Waterville
	1	Rosenbauer	1000	2	Engine 211	Pumper	Waterville
	Utility	Ford		4x4	Command 21	Command Vehicle	Waterville
Douglas County Fire District #2	6	Ford F350	300	4 X 4	Brush 223	Wildland Engine	Rock Island
	6	Ford F350	300	4 X 4	Brush 222	Wildland Engine	E. Wenatchee
	3	International	1200	4 X 4	Brush 221	Wildland Engine	E. Wenatchee
	6	Ford F550	450	4 X 4	Brush 224	Wildland Engine	E. Wenatchee
	2	Kenworth	2500	Rear Tandem	Tender 221	Water Tender	E. Wenatchee
	Utility	Ford F250	0	4 X 4	U221	Command Pick Up	E. Wenatchee
	Utility	GMC 2500	0	4 X 4	C221B	Command Pick Up	E. Wenatchee
	Utility	Ford F150	0	4 X 4	C221A	Command Pick Up	E. Wenatchee
	Utility	GMC Suburban	0	4 X 4	C221	Command Vehicle	E. Wenatchee
	2	GMC / American	1800	6 X 6	T222H	Water Tender / Wildland	E. Wenatchee

	Type	Resource	Gallons	Drive	Vehicle or License #	Specifications	Location
Douglas County Fire District #5	1	Structure Engine	2500	2X4	E-251	Foam, 1250 GPM	Station 251
	2	Structure Engine	750	4X4	E-252	Foam, 750 GPM	Station 251
	3	Wildland Engine	500	4X4	B-251	Foam, 125 GPM	Station 251
	6	Wildland Engine	300	4X4	B-252	125 GPM	Station 252
	5	Wildland Engine	400	4X4	B-253	Foam, 125 GPM	Station 251
	6	Wildland Engine	300	4X4	B-254	Foam, 125 GPM	Station 251
	6	Wildland Engine	250	4X4	B-255	Foam, 125 GPM	McNeil Canyon
	3/TT	Interface Engine	1200	4X4	B-256	Foam, 300 GPM	Station 251
	6	Wildland Engine	300	4X4	B-257	Foam, 125 GPM	Station 252
	6	Wildland Engine	300	4X4	B-258	Foam, 125 GPM	Station 252
	6	Wildland Engine	300	4X4	B-259	125 GPM	Station 251/Tanneberg Ranch
	N/A	Utility/Support	N/A	2X4	U-251		Station 251
	2	Water Tender	1800	2X4	T-251	500 GPM	Station 251
	2	Water Tender	1200	4X4	T-252	125 GPM	Station 252
	1	Water Tender	5000	2X4	T-253	300 GPM	Station 251
	2	Water Tender	3000	2X4	T-254	300 GPM	Station 251
	N/A	Ambulance-BLS	No	4X4	A-251		Station 251
	N/A	Ambulance-BLS	No	2X4	A-252		Station 251
	N/A	Command Vehicle	N/A	4X4	C-25		2501 Residence
Douglas County Fire District #8	Type 6	Brush Truck	300	4X4			
	Type 6	Brush Truck	300	4X4			
	Type 3	Brush Truck	700	4X4			
	Type 1	Tender	5000				
	Type 1	Tender	5000				
	Type 2	Tender	1500				

	Type	Resource	Gallons	Drive	Vehicle or License #	Specifications	Location
Douglas County Fire District #15	Type 6	Dodge 3500	300	4X4	Brush1521	Wildland Engine	Brewster
	Type 6	Dodge 3500	300	4X4	Brush1522	Wildland Engine	Brewster
	Type 6	Dodge 3500	300	4X4	Brush1523	Wildland Engine	Brewster
	Type 3	International	1000	4X4	Brush1541	Wildland Engine	Rocky Butte
	Type 6	Dodge 3500	300	4X4	Brush1511	Wildland Engine	Pateros
	Type 6	Chev 3500	200	4X4	Brush1512	Wildland Engine	Pateros
	Type 6	Dodge 3500	300	4X4	Brush1531	Wildland Engine	Methow
	Type 1	International	1000	4X4	Engine1531	Urban Interface structure engine	Methow
	Type 3	International	1000	4X4	Engine1511	Urban Interface structure engine	Pateros
	Type 2	Ford L9000	3000		Tender1521	Water Tender	Brewster
	Type 2	Ford	3000		Tender1531	Water Tender	Methow
	Type 1	Peterbuilt	4000		Tender1511	Water Tender	Pateros
BLM	Type 6	Wildland Engine	300	4x4	E-6696		Spokane
	Type 6	Wildland Engine	300	4x4	E-6695		Wenatchee
	Type 2	Handcrew		4x4	C-6201	10-person handcrew	Spokane
	ICT3	Command Vehicle					Spokane
Washington Department of Natural Resources	Type 5				WA-NWS-E5-462 H5S-4198		
	Type 5				WA-NWS-E5-463 H5S-5230		
	Type 5				WA-NWS-E5-465 H5S-5232		
	Type 5			4 X 4	WA-NWS-E5X-541 H4S-0007		
	Type 5			4 X 4	WA-NWS-E5X-542 H4S-0022		
	Type 5			4 X 4	WA-NWS-E6X-543 H4S-0010		
	Type 5				WA-NWS-E5-566 H5S-088		
	Type 6			4X 4	WA-NWS-E6X-421 A1S-4540		
	Type 6			4 X 4	WA-NWS-E6X-523 A1S-4259 w/ tow hitch		
	Type 5				WA-NWS-E5-563 H5S-4197		
	Type 5				WA-NWS-E5-564 H5S-4199		
	Type 5				WA-NWS-E5-565 H5S-072		

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Appendix 5

State and Federal CWPP Guidance

National Fire Plan

The National Fire Plan (NFP) was developed by the U.S. Departments of Interior and Agriculture and their land management agencies in August 2000, following a landmark wildland fire season, with the intent of actively responding to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity for the future. The NFP addresses five key points: Firefighting, Rehabilitation, Hazardous Fuels Reduction, Community Assistance, and Accountability. The National Fire Plan continues to provide invaluable technical, financial, and resource guidance and support for wildland fire management across the United States. Together, the USDA Forest Service and the Department of the Interior are working to successfully implement the key points outlined in the National Fire Plan.

This Community Wildfire Protection Plan fulfills the National Fire Plan's 10-Year Comprehensive Strategy Implementation Plan (WFLC 2006). The projects and activities recommended under this plan are in addition to other federal, state, and private / corporate forest and rangeland management activities. The implementation plan does not alter, diminish, or expand the existing jurisdiction, statutory and regulatory responsibilities and authorities or budget processes of participating federal and state agencies.

The NFP goals of this Community Wildfire Protection Plan include:

1. Improve Fire Prevention and Suppression
2. Reduce Hazardous Fuels
3. Restoration and Post-Fire Recovery of Fire-Adapted Ecosystems
4. Promote Community Assistance

By endorsing this implementation plan, all signed parties agree that reducing the threat of wildland fire to people, communities, and ecosystems will require:

- Maintaining firefighter and public safety continuing as the highest priority.
- Communities and individuals in the wildland-urban interface to initiate personal stewardship and volunteer actions that will reduce wildland fire risks.
- A sustained, long-term and cost-effective investment of resources by all public and private parties, recognizing overall budget parameters affecting federal, state, county, and local governments.
- A unified effort to implement the collaborative framework called for in the strategy in a manner that ensures timely decisions at each level.
- Accountability for measuring and monitoring performance and outcomes, and a commitment to factoring findings into future decision making activities.
- The achievement of national goals through action at the local level with particular attention to the unique needs of cross-boundary efforts and the importance of funding on-the-ground activities.

- Management activities, both in the wildland-urban interface and in at-risk areas across the broader landscape.
- Active forestland management, including thinning that produces commercial or pre-commercial products, biomass removal and utilization, prescribed fire and other fuels reduction activities to simultaneously meet long-term ecological, economic, and community objectives.

The National Fire Plan identifies a three-tiered organizational structure including 1) the local level, 2) state/regional and tribal level, and 3) the national level. This plan adheres to the collaboration and outcomes consistent with a local level plan. Local level collaboration involves participants with direct responsibility for management decisions affecting public and/or private land and resources, fire protection responsibilities, or good working knowledge and interest in local resources. Participants in this planning process include local representatives from federal and state agencies, local governments, landowners and other stakeholders, and community-based groups with a demonstrated commitment to achieving the strategy's four goals. Existing resource advisory committees, watershed councils, or other collaborative entities may serve to achieve coordination at this level. Local involvement, expected to be broadly represented, is a primary source of planning, project prioritization, and resource allocation and coordination. The role of the private citizen should not be underestimated as all phases of risk assessment, mitigation, and project implementation are greatly facilitated by their involvement.

National Cohesive Wildland Fire Management Strategy

The Federal Land Assistance, Management and Enhancement Act of 2009 (the FLAME Act) was signed by the President in November 2009. The Act states, in part, "Not later than one year after the date of the enactment, the Secretary of the Interior and Secretary of Agriculture shall submit to Congress a report that contains a cohesive wildfire management strategy." The FLAME Act directs that a cohesive strategy be developed addressing seven specific topic areas ranging from how best to allocate fire budgets at the Federal level to assessing risk to communities, and prioritizing hazardous fuels project funds. The FLAME Act is the catalyst for bringing fire leadership at all levels together and prompting a new approach to how wildland fire is managed. This new approach will guide the development of a national cohesive strategy that paves the way for developing a national wildland fire management policy.

The Cohesive Strategy is a collaborative process with active involvement of all levels of government and non-governmental organizations, as well as the public, to seek national, all-lands solutions to wildland fire management issues.

The Cohesive Strategy is being implemented in three phases, allowing stakeholders to systematically develop a dynamic approach to planning for, responding to, and recovering from wildland fire incidents. This phased approach is designed to promote dialogue between national, regional and local leadership.

National Association of State Foresters

This plan is written with the intent to provide decision makers (elected and appointed officials) the information they need to prioritize projects across the entire county. These decisions may be made by the Board of Commissioners or other elected body or through the recommendations of ad hoc groups tasked with making prioritized lists of communities at risk as well as project areas. It is not necessary to rank communities or projects numerically, although that is one approach.

Rather, it may be possible to rank them categorically (high priority set, medium priority set, and so forth) and still accomplish the goals and objectives set forth in this planning document.

The following was prepared by the National Association of State Foresters (NASF), June 27, 2003, and is included here as a reference for the identification and prioritizing of treatments between communities.

Purpose: To provide national, uniform guidance for implementing the provisions of the "Collaborative Fuels Treatment" Memorandum of Understanding (MOU), and to satisfy the requirements of Task e, Goal 4 of the Implementation Plan for the 10-Year Comprehensive Strategy.

Intent: The intent is to establish broad, nationally compatible standards for identifying and prioritizing communities at risk, while allowing for maximum flexibility at the state and regional level. Three basic premises are:

- Include all lands and all ownerships.
- Use a collaborative process that is consistent with the complexity of land ownership patterns, resource management issues, and the number of interested stakeholders.
- Set priorities by evaluating projects, not by ranking communities.

The National Association of State Foresters (NASF) set forth the following guidelines in the Final Draft Concept Paper; Communities at Risk, December 2, 2002.

Task: Develop a definition for "communities at risk" and a process for prioritizing them, per the Implementation Plan for the 10-Year Comprehensive Strategy (Goal 4.e.). In addition, this definition will form the foundation for the NASF commitment to annually identify priority fuels reduction and ecosystem restoration projects in the proposed MOU with the federal agencies (section C.2 (b)).

Conceptual Approach

1. NASF fully supports the definition of the Wildland Urban Interface (WUI) previously published in the Federal Register. Further, proximity to federal lands should not be a consideration. The WUI is a set of conditions that exists on, or near, areas of wildland fuels nationwide, regardless of land ownership.
2. Communities at risk (or, alternately, landscapes of similar risk) should be identified on a state-by-state basis with the involvement of all agencies with wildland fire protection responsibilities: state, local, tribal, and federal.
3. It is neither reasonable nor feasible to attempt to prioritize communities on a rank order basis. Rather, communities (or landscapes) should be sorted into three, broad categories or zones of risk: high, medium, and low. Each state, in collaboration with its local partners, will develop the specific criteria it will use to sort communities or landscapes into the three categories. NASF recommends using the publication "Wildland/Urban Interface Fire Hazard Assessment Methodology" developed by the National Wildland/Urban Interface Fire Protection Program (circa 1998) as a reference guide. (This program, which has since evolved into the Firewise Program, is under the oversight of the National Wildfire Coordinating Group (NWCG)). At a minimum, states should consider the following factors when assessing the relative degree of exposure each community (landscape) faces.
    - **Risk:** Using historic fire occurrence records and other factors, assess the anticipated probability of a wildfire ignition.

- **Hazard:** Assess the fuel conditions surrounding the community using a methodology such as fire condition class, or [other] process.
- **Values Protected:** Evaluate the human values associated with the community or landscape, such as homes, businesses, and community infrastructure (e.g. water systems, utilities, transportation systems, critical care facilities, schools, manufacturing and industrial sites, and high value commercial timber lands).
- **Protection Capabilities:** Assess the wildland fire protection capabilities of the agencies and local fire departments with jurisdiction.

4. Prioritize by project not by community. Annually prioritize projects within each state using the collaborative process defined in the national, interagency MOUs, "For the Development of a Collaborative Fuels Treatment Program." Assign the highest priorities to projects that will provide the greatest benefits either on the landscape or to communities. Attempt to properly sequence treatments on the landscape by working first around and within communities, and then moving further out into the surrounding landscape. This will require:

    - First, focusing on the zone of highest overall risk but considering projects in all zones. Identify a set of projects that will effectively reduce the level of risk to communities within the zone.
    - Second, determining the community's willingness and readiness to actively participate in an identified project.
    - Third, determining the willingness and ability of the owner of the surrounding land to undertake, and maintain, a complementary project.
    - Last, setting priorities by looking for projects that best meet the three criteria above. It is important to note that projects with the greatest potential to reduce risk to communities and the landscape may not be those in the highest risk zone, particularly if either the community or the surrounding landowner is not willing or able to actively participate.

5. It is important, and necessary, that we be able to demonstrate a local level of accomplishment that justifies to Congress the value of continuing the current level of appropriations for the National Fire Plan. Although appealing to appropriators and others, it is not likely that many communities (if any) will ever be removed from the list of communities at risk. Even after treatment, all communities will remain at some, albeit reduced, level of risk. However, by using a science-based system for measuring relative risk, we can likely show that, after treatment (or a series of treatments); communities are at "*reduced risk."*

Using the concept described above, the NASF believes it is possible to accurately assess the relative risk that communities face from wildland fire. Recognizing that the condition of the vegetation (fuel) on the landscape is dynamic, assessments and re-assessments must be done on a state-by-state basis, using a process that allows for the integration of local knowledge, conditions, and circumstances, with science-based national guidelines. We must remember that it is not only important to lower the risk to communities, but once the risk has been reduced, to maintain those communities at a reduced risk.

Further, it is essential that both the assessment process and the prioritization of projects be done collaboratively, with all local agencies with fire protection jurisdiction taking an active role.

Healthy Forests Restoration Act

On December 3, 2003, President Bush signed into law the Healthy Forests Restoration Act of 2003 to reduce the threat of destructive wildfires while upholding environmental standards and encouraging early public input during review and planning processes. The legislation is based on sound science and helps further the President's Healthy Forests Initiative pledge to care for America's forests and rangelands, reduce the risk of catastrophic fire to communities, help save the lives of firefighters and citizens, and protect threatened and endangered species.

The Healthy Forests Restoration Act (HFRA) seeks to:

- Strengthens public participation in developing high priority projects;
- Reduces the complexity of environmental analysis allowing federal land agencies to use the best science available to actively manage land under their protection;
- Creates a pre-decisional objections process encouraging early public participation in project planning; and
- Issues clear guidance for court action challenging HFRA projects.

The Douglas County Community Wildfire Protection Plan was developed to adhere to the principles of the HFRA while providing recommendations consistent with the policy document. This should assist the federal land management agencies with implementing wildfire mitigation projects in Douglas County that incorporate public involvement and the input from a wide spectrum of fire and emergency services providers in the region.

Federal Emergency Management Agency Philosophy

Effective November 1, 2004, a hazard mitigation plan approved by the Federal Emergency Management Agency (FEMA) is required for Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM) eligibility. The HMGP and PDM programs provide funding, through state emergency management agencies, to support local mitigation planning and projects to reduce potential disaster damages.

The local hazard mitigation plan requirements for HMGP and PDM eligibility are based on the Disaster Mitigation Act (DMA) of 2000, which amended the Stafford Disaster Relief Act to promote an integrated, cost effective approach to mitigation. Local hazard mitigation plans must meet the minimum requirements of the Stafford Act-Section 322, as outlined in the criteria contained in 44 CFR Part 201. The plan criteria cover the planning process, risk assessment, mitigation strategy, plan maintenance, and adoption requirements.

FEMA only reviews a local hazard mitigation plan submitted through the appropriate State Hazard Mitigation Officer (SHMO). FEMA reviews the final version of a plan prior to local adoption to determine if the plan meets the criteria, but FEMA will not approve it prior to adoption.

A FEMA designed plan is evaluated on its adherence to a variety of criteria.

- Adoption by the Local Governing Body
- Multi-jurisdictional Plan Adoption
- Multi-jurisdictional Planning Participation
- Documentation of Planning Process
- Identifying Hazards
- Profiling Hazard Events

- Assessing Vulnerability: Identifying Assets
- Assessing Vulnerability: Estimating Potential Losses
- Assessing Vulnerability: Analyzing Development Trends
- Multi-jurisdictional Risk Assessment
- Local Hazard Mitigation Goals
- Identification and Analysis of Mitigation Measures
- Implementation of Mitigation Measures
- Multi-jurisdictional Mitigation Strategy
- Monitoring, Evaluating, and Updating the Plan
- Implementation through Existing Programs
- Continued Public Involvement

Appendix 6

Potential CWPP Project Funding Sources

Assistance to Firefighters Grant

http://www.rkb.mipt.org/contentdetail.cfm?content_id=44122
To provide direct assistance, on a competitive basis, to fire departments of a State or tribal nation for the purpose of protecting the health and safety of the public and firefighting personnel against fire and fire-related hazards.

Buffer Zone Protection Program (BZPP)

http://www.rkb.mipt.org/contentdetail.cfm?content_id=135490
The FY 2006 BZPP provides funds to build capabilities at the state and local levels to prevent and protect against terrorist incidents primarily done through planning and equipment acquisition.

Chemical Sector Buffer Zone Protection Program (Chem-BZPP)

http://www.rkb.mipt.org/contentdetail.cfm?content_id=135466
The Chem-BZPP, provides funds to build capabilities at the State and local levels through planning and equipment acquisition.

Citizen Corps

http://www.rkb.mipt.org/contentdetail.cfm?content_id=56829
The purpose of the Citizen Corps Program is to supplement and assist State and local efforts to expand Citizen Corps. This includes Community Emergency Response Team (CERT) training, establishing Citizen Corps Councils, and supporting oversight and outreach..

Citizen Corps Support Program

http://www.rkb.mipt.org/contentdetail.cfm?content_id=135192
Support the mission to engage everyone in America in hometown security through the establishment and sustainment of Citizen Corps Councils throughout the United States and territories.

Commercial Equipment Direct Assistance Program (CEDAP) FY2006 Description and Application

http://www.rkb.mipt.org/contentdetail.cfm?content_id=83219
To ensure that law enforcement and emergency responder agencies, departments, and task forces can acquire, through direct assistance, the specialized equipment and training they require to meet their homeland security mission.

Community Disaster Loans

http://www.rkb.mipt.org/contentdetail.cfm?content_id=44126
To provide loans subject to Congressional loan authority, to any local government that has suffered substantial loss of tax and other revenue in an area in which the President designates a major disaster exists. The funds can only be used to maintain ...

Disposal of Federal Surplus Real Property

http://www.rkb.mipt.org/contentdetail.cfm?content_id=43990
To dispose of surplus real property by lease, permits, sale, exchange, or donation.

Emergency Management Institute (EMI) Independent Study Program

http://www.rkb.mipt.org/contentdetail.cfm?content_id=44100
To enhance public and selected audience knowledge of emergency management practices among State, local and tribal government managers in response to emergencies and disasters. The program currently consists of 32 courses. They include IS-1, Emergency ....

Emergency Management Institute (EMI) Resident Educational Program

http://www.rkb.mipt.org/contentdetail.cfm?content_id=44102
To improve emergency management practices among State, local and tribal government managers, and Federal officials as well, in response to emergencies and disasters. Programs embody the Comprehensive Emergency Management System by unifying the ....

Emergency Management Institute Training Assistance

http://www.rkb.mipt.org/contentdetail.cfm?content_id=44098
To defray travel and per diem expenses of State, local and tribal emergency management personnel who attend training courses conducted by the Emergency Management Institute, at the Emmitsburg, Maryland facility; Bluemont, Virginia facility; and ....

Fire Management Assistance Grant

http://www.rkb.mipt.org/contentdetail.cfm?content_id=44124
To provide grants to states, Indian tribal governments and local governments for the mitigation, management and control of any fire burning on publicly (nonfederal) or privately owned forest or grassland that threatens such destruction as would ....

Hazard Mitigation Grant Program

http://www.rkb.mipt.org/contentdetail.cfm?content_id=44130
To provide states and local governments financial assistance to implement measures that will permanently reduce or eliminate future damages and losses from natural hazards through safer building practices and improving existing structures and ....

Hazardous Materials Planning and Training

http://www.rkb.mipt.org/contentdetail.cfm?content_id=133349
Hazmat Planning and Training grants to state, territory and native American Tribal grantees.

Homeland Defense Equipment Reuse Program - HDER

http://www.rkb.mipt.org/contentdetail.cfm?content_id=83222
The goal of the HDER Program is to provide excess radiological detection instrumentation and other equipment, as well as training and long-term technical support, at no cost to emergency Responder agencies nationwide.

Homeland Security Grant Program (HSGP)

http://www.rkb.mipt.org/contentdetail.cfm?content_id=118605
Through the DHS National Preparedness Directorate, State and local organizations will receive approximately $2.5 billion in grant funding to build capabilities that enhance homeland security.

Interagency National Fire Plan Community Assistance

www.nwfireplan.gov
This grant provides a collaborative process for awarding funds to hazardous fuels reduction projects on non-federal land in the Wildland-Urban Interface. Eligible projects must be adjacent to Federal Land and identified in a Community Wildfire Protection Plan (CWPP) completed by February 6, 2009. Collaborated CWPP projects must implement fuels treatments in the wildland-urban interface.

National Fire Academy Educational Program/Harvard Fellowship Grant

http://www.rkb.mipt.org/contentdetail.cfm?content_id=133343
Each fellowship enables a senior fire executive to attend and participate in the three-week "Senior Executives in State & Local Government Program" course that is held twice each year at Harvard University.

National Fire Academy Training Assistance

http://www.rkb.mipt.org/contentdetail.cfm?content_id=44104
To provide travel stipends to students attending Academy courses.

Pre-Disaster Mitigation Program

http://www.rkb.mipt.org/contentdetail.cfm?content_id=102626
The PDM program will provide funds to states, territories, Indian tribal governments, and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event.

Rural Fire Assistance (RFA)

http://www.rkb.mipt.org/contentdetail.cfm?content_id=97736
The RFA program provides cost-share grants for equipment, training, and fire prevention and mitigation activities for those rural/Volunteer fire departments (RFDs) that protect rural communities.

Staffing of Adequate Fire and Emergency Response (SAFER) Grant Program

http://www.rkb.mipt.org/contentdetail.cfm?content_id=133340
The purpose of the Staffing for Adequate Fire and Emergency Response (SAFER) grants is to help fire departments increase their cadre of firefighters.

State Fire Assistance Wildland Urban Interface Hazard Mitigation Grants

http://egov.oregon.gov/ODF/FIRE/grantopps.shtml
Funds are provided to reduce the threat of fire in the wildland urban interface including hazard mitigation, fuels and risk reduction, and information and education programs for homeowners and communities. This is a competitive grant process among the 17 western states and Pacific Island Territories.

Volunteer Fire Department Assistance

http://egov.oregon.gov/ODF/FIRE/grantopps.shtml
Provides financial assistance to volunteer fire departments for organizing, training, and equipping rural fire districts.

Western States Fire Managers Wildland Urban Interface Grant Program

http://www.oregon.gov/ODF/FIRE/docs/PREV/CriteriaandInstructions.pdf
The focus of much of this funding is mitigating risk in Wildland Urban Interface (WUI) areas. In the West, the State Fire Assistance (SFA) funding is available and awarded through a competitive process with emphasis on hazard fuel reduction, information and education, and community and homeowner action. This portion of the National Fire Plan was developed to assist interface communities manage the unique hazards they find around them. Long-term solutions to interface challenges require informing and educating people who live in these areas about what they and their local organizations can do to mitigate these hazards.

Wildland-Urban Interface Community and Rural Fire Assistance

http://www.rkb.mipt.org/contentdetail.cfm?content_id=43914
To implement the National Fire Plan and assist communities at risk from catastrophic wildland fires by providing assistance in the following areas: Provide community programs that develop local capability including; assessment and planning.

Appendix 7

Additional Information

Glossary of Terms

Biological Assessment - Information document prepared by or under the direction of the federal agency in compliance with U.S. Fish and Wildlife standards. The document analyzes potential effects of the proposed action on listed and proposed threatened and endangered species and proposed critical habitat that may be present in the action area.

Backfiring - When attack of a wildfire is indirect, intentionally setting fire to fuels inside the control line to contain a spreading fire. Backfiring provides a wider defensible perimeter, and may be further employed to change the force of the convection column.

Blackline - Denotes a condition where the fireline has been established by removal of burnable fuels.

Burning Out - When attack is direct, intentionally setting fire to fuels inside the control line to strengthen the line. Burning out is almost always done by the crew boss as a part of line construction; the control line is considered incomplete unless there is no fuel between the fire and the line.

British Thermal Unit (Btu) - A unit of energy used globally in the power, steam generation, and heating and air conditioning industries. In North America, Btu is used to describe the heat value (energy content) of fuels, and also to describe the power of heating and cooling systems, such as furnaces, stoves, barbecue grills, and air conditioners.

Contingency Plans - Provide for the timely recognition of approaching critical fire situations and for timely decisions establishing priorities to resolve those situations.

Control Line - An inclusive term for all constructed or natural fire barriers and treated fire edge used to control a fire.

Crew - An organized group of firefighters under the leadership of a crew boss or other designated official.

Crown Fire - A fire that advances from tree top to tree top more or less independently of the surface fire. Sometimes crown fires are classed as either running or dependent, to distinguish the degree of independence from the surface fire.

Defensible Space - The area within the perimeter of a parcel, development, neighborhood or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching wildfire or defense against encroaching wildfires or escaping structures fires. The perimeter as used in this definition is the area encompassing the parcel or parcels proposed for construction and or development, excluding the physical structure itself. The establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures characterize the area.

Disturbance - An event which affects the successional development of a plant community (examples: fire, insects, windthrow, and timber harvest).

Diversity - The relative distribution and abundance of different plant and animal communities as well as species within an area.

Duff - The partially decomposed organic material of the forest floor beneath the litter of freshly fallen twigs, needles, and leaves.

Ecosystem - An interacting system of interdependent organisms and the physical set of conditions upon which they are dependent and by which they are influenced.

Environmental Impact Statement (EIS) - According to the National Environmental Policy Act, whenever the US Federal Government takes a "major Federal action significantly affecting the quality of the human environment" it must first consider the environmental impact in a document called an Environmental Impact Statement.

Exotic Plant Species - Plant species that are introduced and not native to the area.

Fire Adapted Ecosystem - An arrangement of populations that have made long-term genetic changes in response to the presence of fire in the environment.

Fire Behavior - The manner in which a fire reacts to the influences of fuel, weather, and topography.

Fire Behavior Forecast - Fire behavior predictions prepared for each shift by a fire behavior analyst to meet planning needs of the fire overhead organization. The forecast interprets fire calculations made, describes expected fire behavior by areas of the fire with special emphasis on personnel safety, and identifies hazards due to fire for ground and aircraft activities.

Fire Behavior Prediction Model - A set of mathematical equations that can be used to predict certain aspects of fire behavior when provided with an assessment of fuel and environmental conditions.

Fire Danger - A general term used to express an assessment of fixed and variable factors such as fire risk, fuels, weather, and topography which influence whether fires will start, spread, and do damage; also the degree of control difficulty to be expected.

Fire Ecology - The scientific study of fire's effects on the environment, the interrelationships of plants, and the animals that live in such habitats.

Fire Exclusion - The disruption of a characteristic pattern of fire intensity and occurrence (primarily through fire suppression).

Fire Intensity Level - The rate of heat release (BTU/second) per unit of fire front. Four foot flame lengths or less are generally associated with low intensity burns and four to six foot flame lengths generally correspond to "moderate" intensity fire behavior. High intensity flame lengths are usually greater than eight feet and pose multiple control problems.

Fire Prone Landscapes – The expression of an area's propensity to burn in a wildfire based on common denominators such as plant cover type, canopy closure, aspect, slope, road density, stream density, wind patterns, position on the hillside, and other factors.

Fireline - A loose term for any cleared strip used in control of a fire. That portion of a control line from which flammable materials have been removed by scraping or digging down to the mineral soil.

Fire Management - The integration of fire protection, prescribed fire and fire ecology into land use planning, administration, decision making, and other land management activities.

Fire Management Plan (FMP) - A strategic plan that defines a program to manage wildland and prescribed fires and documents the fire management program in the approved land use plan. This plan is supplemented by operational procedures such as preparedness, preplanned dispatch, burn plans, and prevention. The fire implementation schedule that documents the fire management program in the approved forest plan alternative.

Fire Management Unit (FMU) - Any land management area definable by objectives, topographic features, access, values-to-be-protected, political boundaries, fuel types, or major fire regimes, etc., that set it apart from management characteristics of an adjacent unit. FMU's are delineated in FMP's. These units may have dominant management objectives and preselected strategies assigned to accomplish these objectives.

Fire Occurrence - The number of wildland fires started in a given area over a given period of time. (Usually expressed as number per million acres.)

Fire Prevention - An active program in conjunction with other agencies to protect human life, prevent modification of the ecosystem by human-caused wildfires, and prevent damage to cultural resources or physical facilities. Activities directed at reducing fire occurrence, including public education, law enforcement, personal contact, and reduction of fire risks and hazards.

Fire Regime - The fire pattern across the landscape, characterized by occurrence interval and relative intensity. Fire regimes result from a unique combination of climate and vegetation. Fire regimes exist on a continuum from short-interval, low-intensity (stand maintenance) fires to long-interval, high-intensity (stand replacement) fires.

Fire Retardant - Any substance that by chemical or physical action reduces flareability of combustibles.

Fire Return Interval - The number of years between two successive fires documented in a designated area.

Fire Risk - The potential that a wildfire will start and spread as determined by the presence and activities of causative agents.

Fire Severity - The effects of fire on resources displayed in terms of benefit or loss.

Fire Use – The management of naturally ignited fires to accomplish specific prestated resource management objectives in predefined geographic areas.

Flashy Fuel - Quick drying twigs, needles, and grasses that are easily ignited and burn rapidly.

Forb - Any broad-leaved herbaceous plant that is not a grass, especially one that grows in a prairie or meadow

Fuel - The materials which are burned in a fire: duff, litter, grass, dead branchwood, snags, logs, etc.

Fuel Break - A natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled.

Fuel Loading - Amount of dead and live fuel present on a particular site at a given time; the percentage of it available for combustion changes with the season.

Fuel Model - Characterization of the different types of wildland fuels (trees, brush, grass, etc.) and their arrangement, used to predict fire behavior.

Fuel Type - An identifiable association of fuel elements of distinctive species; form, size, arrangement, or other characteristics, that will cause a predictable rate of fire spread or difficulty of control, under specified weather conditions.

Fuels Management - Manipulation or reduction of fuels to meet protection and management objectives, while preserving and enhancing environmental quality.

Gap Analysis Program (GAP) - Regional assessments of the conservation status of native vertebrate species and natural land cover types and to facilitate the application of this information to land management activities. This is accomplished through the following five objectives:

1. Map the land cover of the United States.
2. Map predicted distributions of vertebrate species for the U.S.
3. Document the representation of vertebrate species and land cover types in areas managed for the long-term maintenance of biodiversity.
4. Provide this information to the public and those entities charged with land use research, policy, planning, and management.
5. Build institutional cooperation in the application of this information to state and regional management activities.

Habitat - A place that provides seasonal or year-round food, water, shelter, and other environmental conditions for an organism, community, or population of plants or animals.

Habitat Type - A group of habitats that have strongly marked and readily defined similarities that when defined by its predominant or indicator species incites a general description of the area; *e.q. a ponderosa pine habitat type*.

Heavy Fuels - Fuels of a large diameter, such as snags, logs, and large limbwood, which ignite and are consumed more slowly than flashy fuels.

Hydrophobic - Resistance to wetting exhibited by some soils also called water repellency. The phenomena may occur naturally or may be fire-induced. It may be determined by water drop penetration time, equilibrium liquid-contact angles, solid-air surface tension indices, or the characterization of dynamic wetting angles during infiltration.

Human-Caused Fires - Refers to fires ignited accidentally (from campfires, equipment, debris burning, or smoking) and by arsonists; does not include fires ignited intentionally by fire management personnel to fulfill approved, documented management objectives (prescribed fires).

Intensity - The rate of heat energy released during combustion per unit length of fire edge.

Inversion - Atmospheric condition in which temperature increases with altitude.

Ladder Fuels - Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees with relative ease. They help initiate and assure the continuation of crowning.

Landsat Imagery - Land remote sensing, the collection of data which can be processed into imagery of surface features of the Earth from an unclassified satellite or satellites.

Landscape - All the natural features such as grasslands, hills, forest, and water, which distinguish one part of the earth's surface from another part; usually that portion of land which the eye can comprehend in a single view, including all its natural characteristics.

Lethal - Relating to or causing death.

Lethal Fires - A descriptor of fire response and effect in forested ecosystems of high-severity or severe fire that burns through the overstory and understory. These fires typically consume large woody surface fuels and may consume the entire duff layer, essentially destroying the stand.

Litter - The top layer of the forest floor composed of loose debris, including dead sticks, branches, twigs, and recently fallen leaves or needles, little altered in structure by decomposition.

Mitigation - Actions to avoid, minimize, reduce, eliminate, replace, or rectify the impact of a management practice.

Monitoring Team - Two or more individuals sent to a fire to observe, measure, and report its behavior, its effect on resources, and its adherence to or deviation from its prescription.

National Environmental Policy Act (NEPA) - An act establishing a national policy to encourage productive and enjoyable harmony between humans and their environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humankind; to enrich the understanding of important ecological systems and natural resources; and to establish a Council on Environmental Quality.

National Fire Management Analysis System (NFMAS) - The fire management analysis process, which provides input to forest planning and forest and regional fire program development and budgeting.

Native - Indigenous; living naturally within a given area.

Natural Ignition - A wildland fire ignited by a natural event such as lightning or volcanoes.

Noncommercial Thinning - Thinning by fire or mechanical methods of pre-commercial or commercial size timber, without recovering value, to meet state forest practice standards relating to the protection/enhancement of adjacent forest or other resource values.

Notice of Availability - A notice published in the Federal Register stating that an EIS has been prepared and is available for review and comment (for draft) and identifying where copies are available.

Notice of Intent - A notice published in the Federal Register stating that an Environmental Impact Statement (EIS) will be prepared and considered. This notice will describe the proposed action and possible alternatives and the proposed scoping process. It will also provide contact information for questions about the proposed action and EIS.

Noxious Weeds - Rapidly spreading plants that have been designated "noxious" by law which can cause a variety of major ecological impacts to both agricultural and wildlands.

Planned Ignition - A wildland fire ignited by management actions to meet specific objectives.

Prescribed Fire - Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

Prescription - A set of measurable criteria that guides the selection of appropriate management strategies and actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Programmatic Biological Assessment - Assesses the effects of fire management programs on federally listed species, not the individual projects that are implemented under these programs. A determination of effect on listed species is made for the programs, which is a valid assessment of the potential effects of the projects completed under these programs, if the projects are consistent with the design criteria and monitoring and reporting requirement contained in the project description and summaries.

Reburn - Subsequent burning of an area in which fire has previously burned but has left flareable light fuels that ignites when burning conditions are more favorable.

Road Density - The volume of roads in a given area (mile/square mile).

Scoping - Identifying at an early stage the significant environmental issues deserving of study and de-emphasizing insignificant issues, narrowing the scope of the environmental analysis accordingly.

Seral - Refers to the stages that plant communities go through during succession. Developmental stages have characteristic structure and plant species composition.

Serotinous - Storage of coniferous seeds in closed cones in the canopy of the tree. Serotinous cones of lodgepole pine do not open until subjected to temperatures of 113 to 122 degrees Fahrenheit causing the melting of the resin bond that seals the cone scales.

Stand Replacing Fire - A fire that kills most or all of a stand.

Surface Fire - Fire which moves through duff, litter, woody dead and down and standing shrubs, as opposed to a crown fire.

Watershed - The region draining into a river, river system, or body of water.

Wetline - Denotes a condition where the fireline has been established by wetting down the vegetation.

Wildland Fire - Any non-structure fire, other than prescribed fire, that occurs in the wildland.

Wildland Fire Implementation Plan (WFIP) - A progressively developed assessment and operational management plan that documents the analysis and selection of strategies and describes the appropriate management response for a wildland fire being managed for resource benefits. A full WFIP consists of three stages. Different levels of completion may occur for differing management strategies (e.q., fires managed for resource benefits will have two-three stages of the WFIP completed while some fires that receive a suppression response may only have a portion of Stage I completed).

Wildland Fire Use - The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in predefined geographic areas outlined in FMP's. Operational management is described in the WFIP. Wildland fire use is not to be confused with "fire use," which is a broader term encompassing more than just wildland fires.

Wildland Fire Use for Resource Benefit (WFURB) - A wildland fire ignited by a natural process (lightning), under specific conditions, relating to an acceptable range of fire behavior and managed to achieve specific resource objectives.

Wildland-Urban Interface (WUI) - For purposes of this plan, the wildland-urban interface is located defined in Section 4.5. In general, it is the area where structures and other human development meet or intermingle with undeveloped wildland.

General Mitigation Strategies

There are many actions that will help improve safety in a particular area; there are also many mitigation activities that can apply to all residents and all fuel types. General mitigation activities that apply to all of Douglas County are discussed below while area-specific mitigation activities are discussed within the strategic planning area assessments.

Prevention. 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 be quite effective and can take many forms.

Limiting Use. The issues associated with debris burning during certain times of the year are difficult to negotiate and enforce. However, there are significant risks associated with the use of fire adjacent to expanses of flammable vegetation under certain scenarios. Fire departments typically observe the State of Washington closed fire season between July 1st to September 30th. During this time, an individual seeking to conduct an open burn of any type shall obtain a permit to prescribe the conditions under which the burn can be conducted and the resources that need to be on hand to suppress the fire. Although this is a statewide regulation, compliance and enforcement has been variable between fire districts.

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

Evacuation. Development of community evacuation plans is necessary and critical to assure an orderly evacuation in the event of a threatening wildland fire. Designation and posting of escape routes would reduce chaos and escape times for fleeing residents. Community safety zones should also be established in the event safe evacuation is impossible and 'sheltering in place' becomes the better option.

Access. Also of vital importance is the accessibility of homes to emergency apparatus. The fate of a home will often be determined by homeowner actions prior to the event. A few simple guidelines such as widening or pruning along driveways and creating a turnaround area for large vehicles, can greatly enhance home survivability.

Facility Maintenance. Recreational facilities near communities or in the surrounding forests such as parks or natural areas should be kept clean and maintained. In order to mitigate the risk of an escaped campfire, escape-resistant fire rings and barbeque pits should be installed and maintained. In some cases, restricting campfires during dry periods may be necessary. Surface fuel accumulations in nearby forests can also be kept to a minimum by periodically conducting pre-commercial thinning, pruning and limbing, and possibly controlled burns.

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

Development Standards. County, city, and even fire district policies can be updated or revised to provide for more fire conscious techniques such as using fire resistant construction materials; improving roads, and establishing permanent water resources.

Other Mitigation. Other actions to reduce fire hazards are thinning and pruning timbered areas, creating a fire resistant buffer along roads and power line corridors, and strictly enforcing fire-use regulations. Ensuring that areas beneath power lines have been cleared of potential high risk fuels and making sure that the buffer between the surrounding lands is wide enough to adequately protect the poles as well as the lines is imperative.

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