Chapter 4

4 Risk and Preparedness Assessments

4.1 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, 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 determine how fires burn.

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

4.1.1 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. Once conditions are capable of sustaining a fire, atmospheric stability and wind speed and direction can have a significant affect 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.

4.1.2 Topography

Fires burning in similar fuel conditions burn dramatically different under different topographic conditions. Topography alters heat transfer and localized weather conditions, which in turn influence 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 lead 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.

Slope also plays a significant roll 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.

4.1.3 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 affect 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, as surface to volume ratio decreases. Fires in large fuels generally burn at a slower rate, but release much more energy, 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.

When burning under a forest canopy, the increased intensities can lead to torching (single trees becoming completely involved) and potentially development of crown fire (fire carried from tree crown to tree crown). 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 determine how fires will burn.

The study of fire behavior recognizes the dramatic and often-unexpected affect small changes in any single component has 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.

4.2 Wildfire Hazards

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 cure out. These factors, combined with annual wind events in late summer, drastically increase the chance a fire start will grow rapidly and resist suppression activities. Furthermore, grain harvest is also occurring at this time. Occasionally, harvesting equipment causes an ignition that can spread into populated areas and timberlands.

4.2.1 Wildfire Ignition Profile

Fire was once an integral function of the majority of ecosystems in southeastern Washington. The seasonal cycling of fire across the landscape was as regular as the July, August and September lightning storms plying across the canyons and mountains. 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 (Johnson 1998). The fires burned from 1 to 47 years apart, with most at 5- to 20-year intervals (Barrett 1979). With infrequent return intervals, plant communities tended to burn more severely and be replaced by vegetation different in composition, structure, and age (Johnson *et al.* 1994). 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 (from fire scars and charcoal deposits) suggest fire has played an important role in shaping the vegetation in the Columbia Basin for thousands of years (Steele *et al.* 1986, Agee 1993).

Detailed records of fire ignitions and extents have been compiled by the larger land management agencies in Asotin County including the Washington Department of Natural Resources and United States Forest Service. Using this data on past fire extents and fire ignition data, the occurrence of wildland fires in the region of Asotin County has been evaluated.

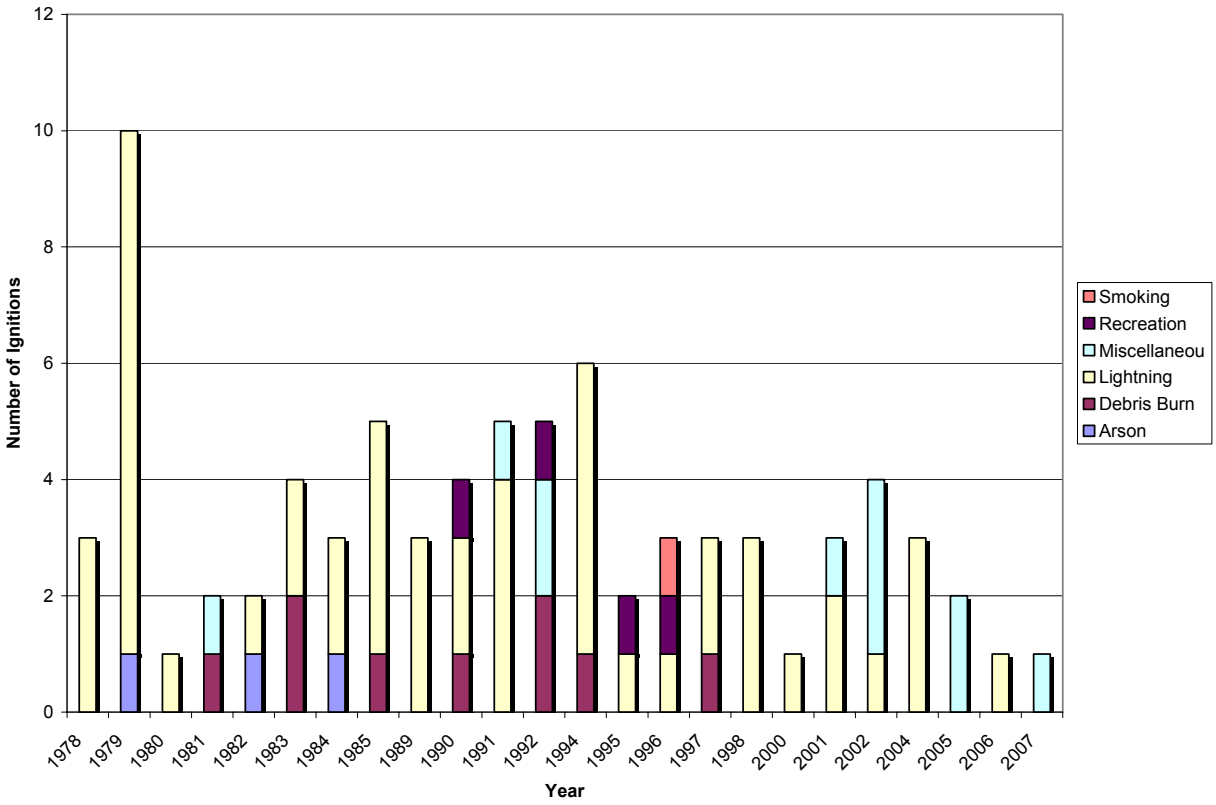
4.2.1.1 Washington Department of Natural Resources

The Washington Department of Natural Resources database of wildfire ignitions includes ignition and extent data from 1978 through 2007 for wildfires responded to by the DNR. An analysis of the DNR reported wildfire ignitions in Asotin County reveals that during this period approximately 5,046 acres burned as a result of 79 wildfire ignitions. Lightning was resulted in the most number of ignitions as well as the highest number of acres burned (Table 4.1).

Table 4.1. Summary of ignitions from Washington DNR database.

Cause	Acres Burned	Percent	Number of Ignitions	Percent
Arson	61	1%	3	4%
Debris Burning	983	19%	9	11%
Lightning	3,768	75%	51	51%
Miscellaneous	129	3%	11	11%
Recreation	105	2%	4	4%
Smoking	0	0%	1	1%
Total	**5,046**	**100%**	**79**	**100%**

Figure 4.1. Wildfire Ignitions recorded by Washington DNR 1978-2007.



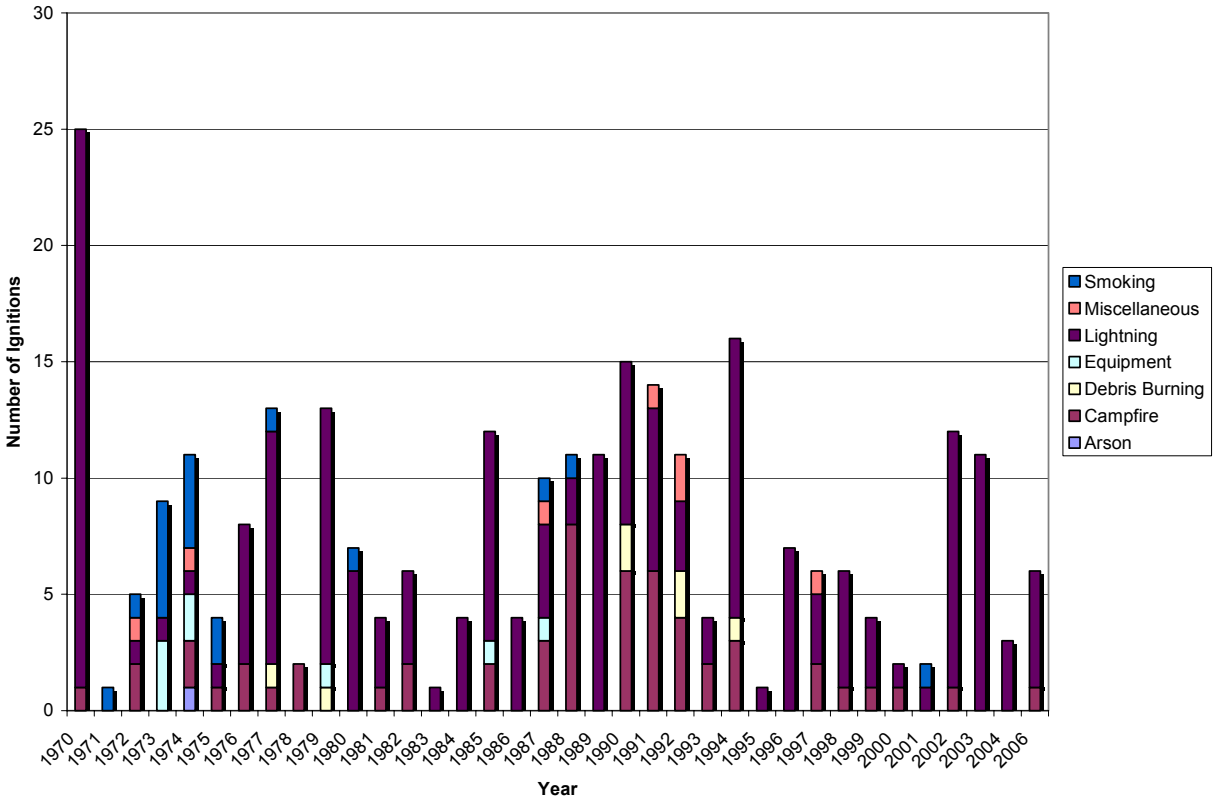
4.2.1.2 U.S. Forest Service

The U.S. Forest Service has maintained an extensive wildfire database for the period of 1970 – 2006 for fires responded to by the Forest Service. According to this database, lightning caused the most ignitions and resulted in the largest number of acres burned.

Table 4.2. Summary of ignitions from U.S. Forest Service database.

Cause	Acres Burned	Percent	Number of Ignitions	Percent
Arson	0	0%	1	0%
Campfire	33	1%	55	20%
Debris Burning	573	11%	7	2%
Equipment	146	3%	8	3%
Lightning	2,773	52%	185	66%
Miscellaneous	1,811	34%	7	2%
Smoking	7	0%	18	6%
Total	**5,344**	**100%**	**281**	**100%**

Figure 4.2. Wildfire Ignitions recorded by U.S. Forest Service 1970 to 2006.



Both databases show that the highest fire risk for both number of ignitions and acres burned is lightning by a significant majority. Debris burning and campfires also result in numerous ignitions and acres burned each year. This data demonstrates that the aggressive initial attack policy employed by both wildfire agencies and local fire agencies keeps most fires from growing over one acre in size. Since most of the wildfires in Asotin County are naturally caused, which

cannot be controlled, a proactive approach to home defensibility and active forest and rangeland fuels management could significantly reduce the number of acres burned and homes and lives threatened.

4.2.2 Wildfire Extent Profile

Across the west, wildfires have been increasing in extent and cost of control. The National Interagency Fire Center (2007) reported over 96,000 wildfires in 2006 which burned a total of 9.9 million acres and cost over $900 million in containment (Table 4.3). Data summaries for 2000 through 2006 are provided and demonstrate the variability of the frequency and extent of wildfires nationally (Table 4.3).

Table 4.3. National Fire Season Summaries.

Statistical Highlights	2000	2001	2002	2003	2004	2005	2006
Number of Fires	122,827	84,079	88,458	85,943	65,461	66,753	96,385
10-year Average ending with indicated year	106,400	105,227	103,519	102,287	96,888	89,859	87,788
Acres Burned	**8,422,237**	**3,555,138**	**6,937,584**	**4,918,088**	**8,097,880**	**8,689,389**	**9,873,745**
10-year Average ending with indicated year	4,083,347	4,288,417	4,786,186	5,075,927	5,450,801	6,158,985	6,511,469
Structures Burned	861	731	2,381	5,781	1,095	--	--
Estimated Cost of Fire Suppression (Federal agencies only)	$1.4 billion	$917 million	$ 1.7 billion	$1.3 billion	$890 million	$875.7 million	--

The National Interagency Fire Center, located in Boise, Idaho, maintains records of fire costs, extent, and related data for the entire nation. Tables 4.4 and 4.5 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.

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

Table 4.4. Total Fires and Acres 1960 - 2006 Nationally.

Year	Fires	Acres	Year	Fires	Acres
2006	96,385	9,873,745	1983	161,649	5,080,553
2005	66,753	8,689,389	1982	174,755	2,382,036
2004	65,461	*8,097,880	1981	249,370	4,814,206
2003	85,943	4,918,088	1980	234,892	5,260,825
2002	88,458	6,937,584	1979	163,196	2,986,826
2001	84,079	3,555,138	1978	218,842	3,910,913
2000	122,827	8,422,237	1977	173,998	3,152,644
1999	93,702	5,661,976	1976	241,699	5,109,926
1998	81,043	2,329,709	1975	134,872	1,791,327
1997	89,517	3,672,616	1974	145,868	2,879,095
1996	115,025	6,701,390	1973	117,957	1,915,273

Table 4.4. Total Fires and Acres 1960 - 2006 Nationally.

Year	Fires	Acres	Year	Fires	Acres
1995	130,019	2,315,730	1972	124,554	2,641,166
1994	114,049	4,724,014	1971	108,398	4,278,472
1993	97,031	2,310,420	1970	121,736	3,278,565
1992	103,830	2,457,665	1969	113,351	6,689,081
1991	116,953	2,237,714	1968	125,371	4,231,996
1990	122,763	5,452,874	1967	125,025	4,658,586
1989	121,714	3,261,732	1966	122,500	4,574,389
1988	154,573	7,398,889	1965	113,684	2,652,112
1987	143,877	4,152,575	1964	116,358	4,197,309
1986	139,980	3,308,133	1963	164,183	7,120,768
1985	133,840	4,434,748	1962	115,345	4,078,894
1984	118,636	2,266,134	1961	98,517	3,036,219
			1960	103,387	4,478,188

** 2004 fires and acres do not include state lands for North Carolina*

(National Interagency Fire Center 2007)

Table 4.5. Suppression Costs for Federal Agencies Nationally.

Year	Bureau of Land Management	Bureau of Indian Affairs	Fish and Wildlife Service	National Park Service	USDA Forest Service	Totals
2006	N/A	N/A	N/A	N/A	$1,501,000,000	**N/A**
2005	$161,403,000	$58,134,000	$10,330,000	$31,846,000	$690,000,000	**$875,713,000**
2004	$ 147,165,000	$ 63,452,000	$ 7,979,000	$ 34,052,000	$ 637,585,000	**$890,233,000**
2003	$151,894,000	$ 96,633,000	$ 9,554,000	$ 44,557,000	$ 1,023,500,000	**$1,326,138,000**
2002	$ 204,666,000	$ 109,035,000	$ 15,245,000	$ 66,094,000	$ 1,266,274,000	**$1,661,314,000**
2001	$ 192,115,00	$ 63,200,000	$ 7,160,000	$ 48,092,000	$ 607,233,000	**$917,800,000**
2000	$180,567,000	$ 93,042,000	$ 9,417,000	$ 53,341,000	$ 1,026,000,000	**$1,362,367,000**
1999	$ 85,724,000	$ 42,183,000	$ 4,500,000	$ 30,061,000	$ 361,000,000	**$523,468,000**
1998	$ 63,177,000	$ 27,366,000	$ 3,800,000	$ 19,183,000	$ 215,000,000	**$328,526,000**
1997	$ 62,470,000	$ 30,916,000	$ 2,000	$ 6,844,000	$ 155,768,000	**$256,000,000**
1996	$ 96,854,000	$ 40,779,000	$ 2,600	$ 19,832,000	$ 521,700,000	**$679,167,600**
1995	$ 56,600,000	$ 36,219,000	$ 1,675,000	$ 21,256,000	$ 224,300,000	**$340,050,000**
1994	$ 98,417,000	$ 49,202,000	$ 3,281,000	$ 16,362,000	$ 678,000,000	**$845,262,000**

(National Interagency Fire Center 2007)

The largest wildfire recorded by both the U.S. Forest Service and the Washington DNR in Asotin County occurred in 1994 and burned over 2,500 acres. Due to recent large fires in adjacent counties as well as the 2007 Rockpile Fire (50,000 acres) and several other smaller fires Asotin County in 2007, local firefighting agencies and residents believe that they are at very high risk to a large wildfire occurrence. Active fuels management programs coupled with public awareness campaigns are a high priority for lessening this risk.

Figure 4.3. Acres burned as recorded by the Washington DNR 1978-2007.

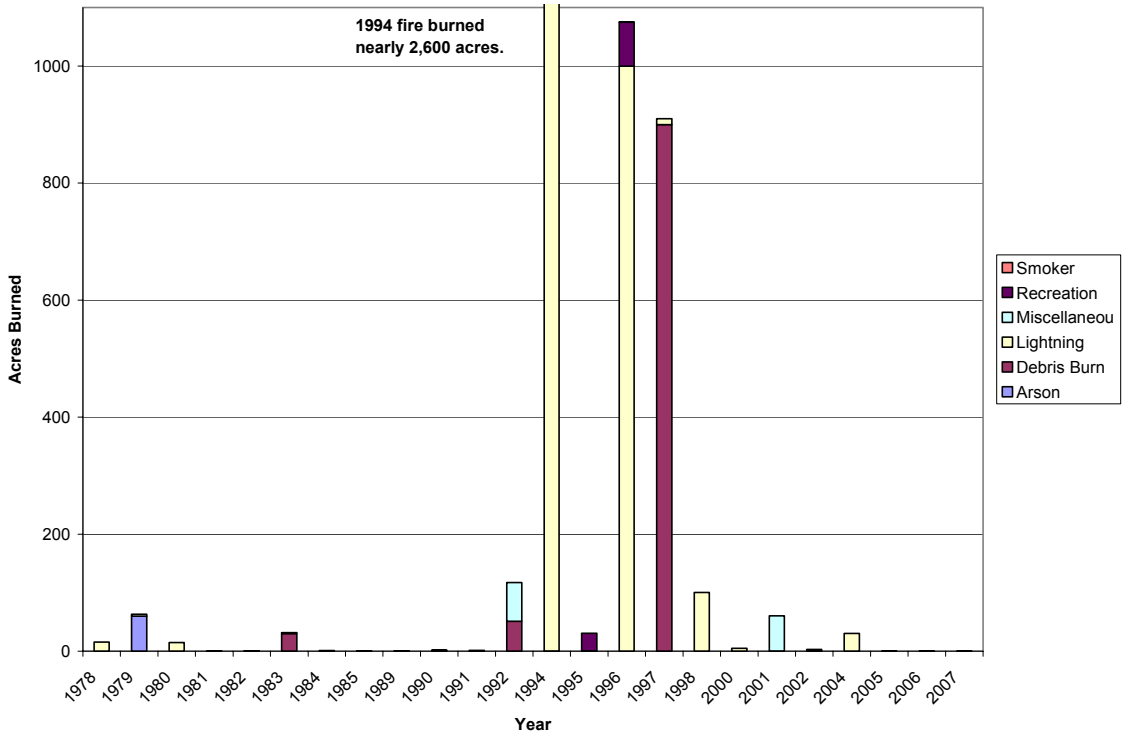
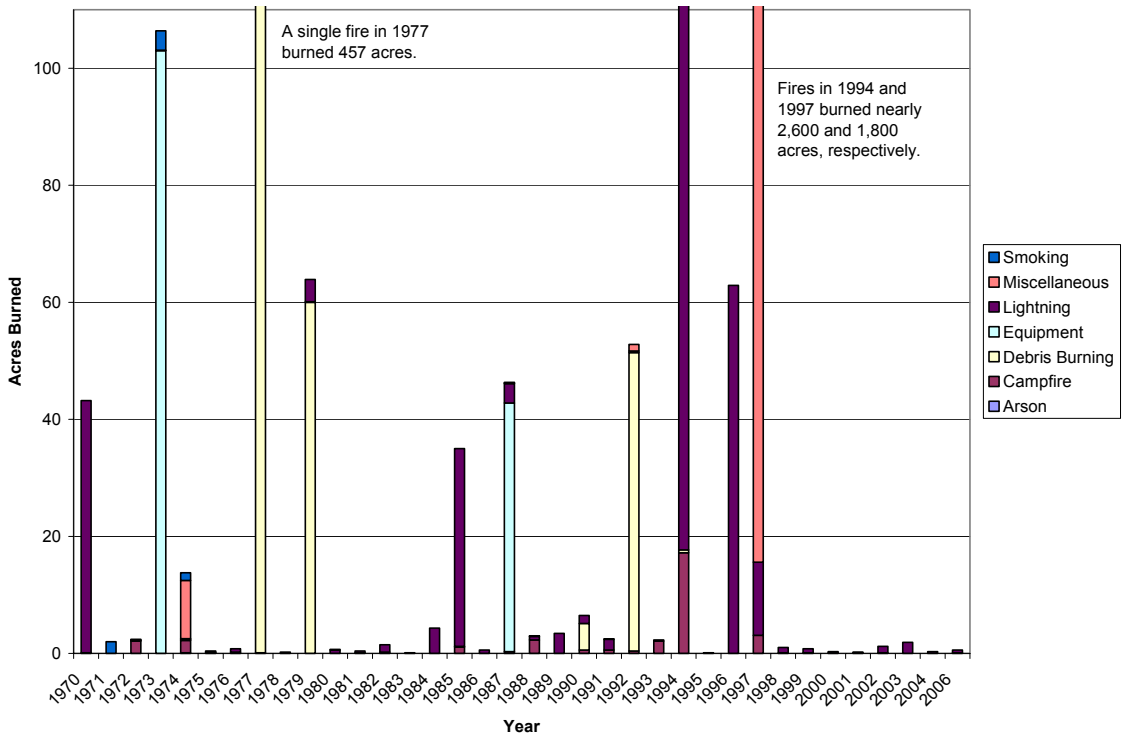


Figure 4.4. Acres Burned as recorded by U.S. Forest Service 1978-2006.



4.3 Wildfire Hazard Assessment

Asotin County and the adjacent counties of Garfield County and Columbia County were analyzed using a variety of techniques, managed on a GIS system (ArcGIS 9.1). Physical features of this region were represented by data layers including roads, streams, soils, elevation, and remotely sensed images. Field visits were conducted by specialists from Northwest Management, Inc., and others. Discussions with area residents and fire control specialists augmented field visits and provided insights to forest health issues and treatment options.

This information was analyzed and combined to develop an assessment of wildland fire risk in the region.

4.3.1 Fire Prone Landscapes

Schlosser *et al.* 2002, developed a methodology to assess the location of fire prone landscapes on forested and non-forested ecosystems in the western US. Northwest Management, Inc. has completed similar assessments on over 40 counties and Indian Reservations in Idaho, Montana, Nevada, Wyoming, Oregon, and Washington to determine fire prone landscape characteristics.

The goal of developing the Fire Prone Landscapes analysis is to make inferences about the relative risk factors across large geographical regions (multiple counties) for wildfire spread. This analysis uses the extent and occurrence of past fires as an indicator of characteristics for a specific area and their propensity to burn in the future. Concisely, if a certain combination of vegetation cover type, canopy closure, aspect, slope, stream and road density have burned with a high occurrence and frequently in the past, then it is reasonable to extrapolate that they will have the same tendency in the future, unless mitigation activities are conducted to reduce this potential.

The analysis for determining those landscapes prone to wildfire utilized a variety of sources.

Digital Elevation: Digital elevation models (DEM) for this project used USGS 10 meter DEM data provided at quarter-quadrangle extents. These were merged together to create a continuous elevation model of the analysis area.

The merged DEM file was used to create two derivative data layers; aspect and slope. Both were created using the spatial analyst extension in ArcGIS 9.1. Aspect data values retained one decimal point accuracy representing the cardinal direction of direct solar radiation, represented in degrees. Slope was recorded in degrees and retained two decimal points accuracy.

Remotely Sensed Images: Landsat 7 Enhanced Thematic Mapper (ETM+) images were used to assess plant cover information and percent of canopy cover. The Landsat ETM+ instrument is an eight-band multi-spectral scanning radiometer capable of providing high-resolution image information of the Earth's surface. It detects spectrally-filtered radiation at visible, near-infrared, short-wave, and thermal infrared frequency bands from the sun-lit Earth. Nominal ground sample distances or "pixel" sizes are 15 meters in the panchromatic band; 30 meters in the 6 visible, near and short-wave infrared bands; and 60 meters in the thermal infrared band.

The satellite orbits the Earth at an altitude of approximately 705 kilometers with a sun-synchronous 98-degree inclination and a descending equatorial crossing time of 10 a.m. daily.

Image spectrometry has great application for monitoring vegetation and biophysical characteristics. Vegetation reflectance often contains information on the vegetation chlorophyll absorption bands in the visible region and the near infrared region. Plant water absorption is easily identified in the middle infrared bands. In addition, exposed soil, rock, and non-vegetative

surfaces are easily separated from vegetation through standard hyper-spectral analysis procedures.

Two Landsat 7 ETM images were obtained to conduct hyper-spectral analysis for this project. The first was obtained in 2004 and the second in 2006. Hyper-spectral analysis procedures followed the conventions used by the Washington Vegetation and Land Cover Classification System, modified from Redmond (1997) and Homer (1998).

Riparian Zones: Riparian zones were derived from stream layers created during the Interior Columbia Basin Ecosystem Management Project (Quigley *et al.* 2001).

Past Fires: Past fire extents represent those locations on the landscape that have previously burned during a wildfire. Past fire extent maps were obtained from a variety of sources for the southeast Washington area including the USDA Forest Service and Washington Department of Natural Resources.

Fire Prone Landscapes: Using the methodology developed by Schlosser *et al.* (2002, 2003, 2004), and refined for this project, the factors detailed above were used to assess the potential for the landscape to burn during the fire season in the case of fire ignition. The entire region was evaluated at a resolution of 10 meters (meaning each pixel on the screen represented a 10 meter square on the ground) to determine the propensity for a particular area (pixel) to burn in the case of a wildfire. The analysis involved creating a linear regression analysis within the GIS program structure to assign a value to each significant variable, pixel-by-pixel. The analysis ranked factors from 0 (little to no risk) to 100 (extremely high risk) based on past fire occurrence.

A map of Fire Prone Landscapes in Asotin County is included in Appendix I.

Table 4.6. Fire Prone Landscape rankings and associated acres in each category for Asotin County.

		3 County Area		Asotin County	
Color Code	Value	Acres	Percent of Total Area	Acres	Percent of County's Area
	0	0	0%	0	0%
	10	23,829	2%	7,401	2%
	20	359,870	25%	58,411	14%
	30	240,048	17%	93,429	23%
	40	272,519	19%	124,420	30%
	50	72,460	5%	34,454	8%
	60	7,332	1%	2,394	1%
	70	33,921	2%	12,580	3%
	80	256,806	18%	56,335	14%
	90	145,985	10%	19,666	5%
	100	14,810	1%	594	0%
	Total	**1,427,579**		**409,682**	

Figure 4.5. Distribution of Fire Prone Landscapes in the 3 County Planning Area.

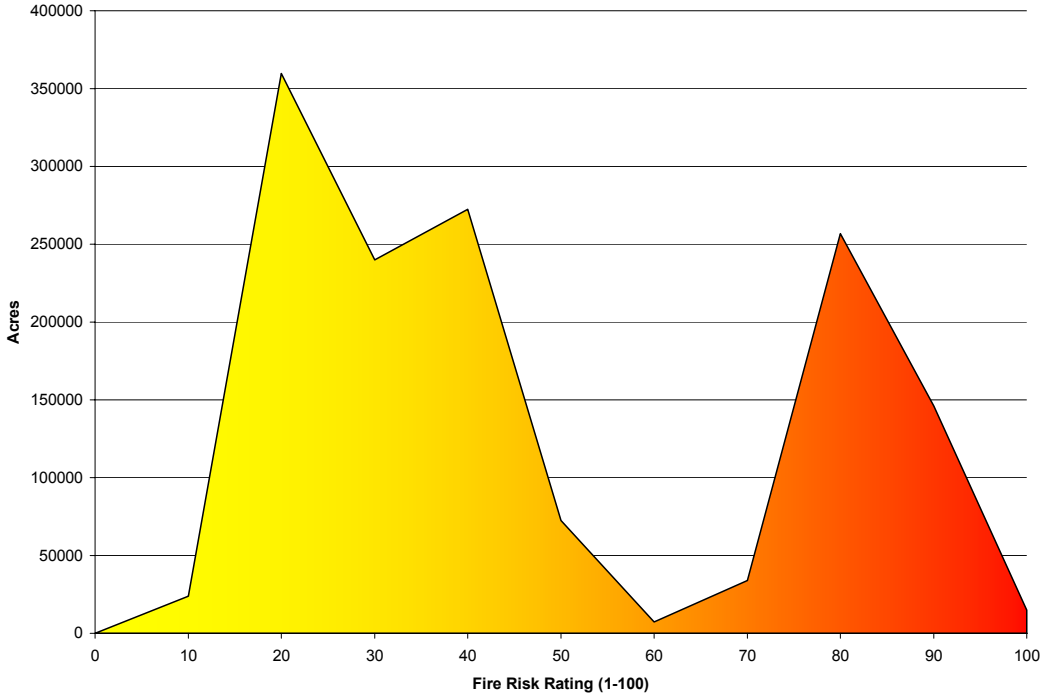
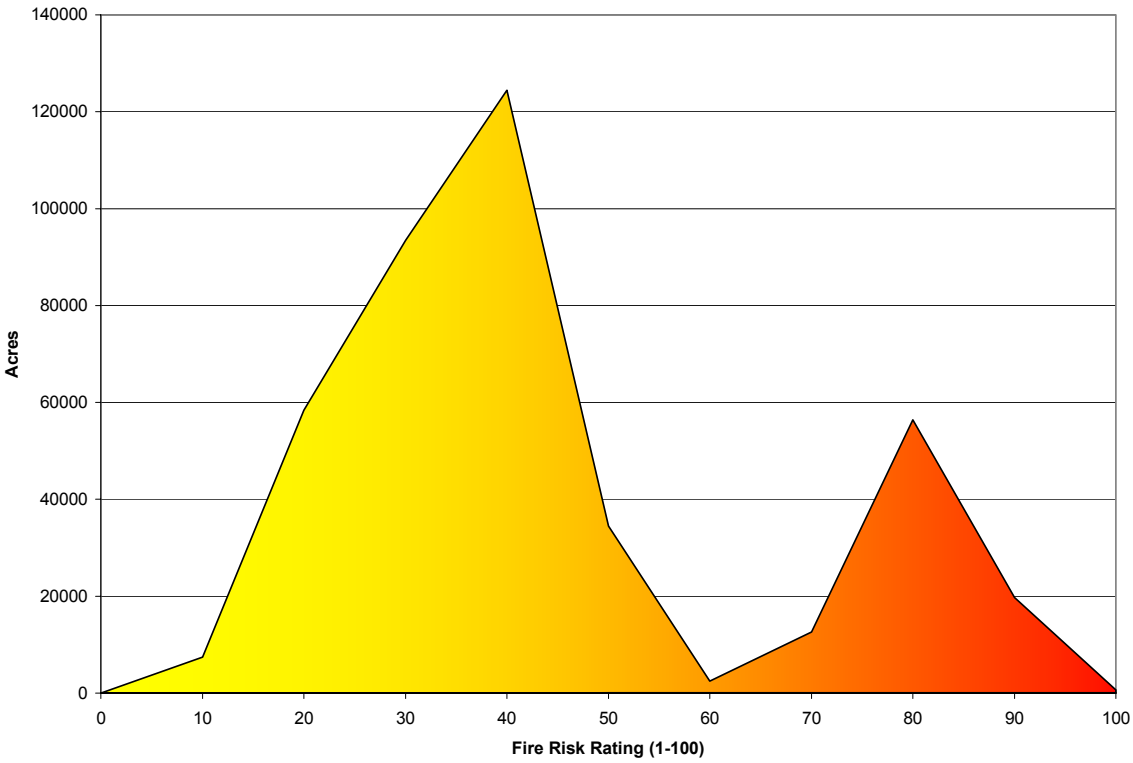


Figure 4.6. Distribution of Fire Prone Landscapes in Asotin County.



The risk category values developed in this analysis should be considered **ordinal data**, that is, while the values presented have a meaningful ranking, they neither have a true zero point nor scale between numbers. Rating in the “40” range is not necessarily twice as “risky” as rating in the “20” range. These category values also do not correspond to a rate of fire spread, a fuel loading indicator, or measurable potential fire intensity. Each of those scales is greatly influenced by weather, seasonal and daily variations in moisture (relative humidity), solar radiation, and other factors. The risk rating presented here serves to identify where certain constant variables are present, aiding in identifying where fires typically spread into the largest fires across the landscape.

4.3.2 Historic Fire Regime

In the fire-adapted ecosystems of Washington, fire is undoubtedly the dominant process in terrestrial systems that constrain vegetation patterns, habitats, and ultimately, species composition. Land managers need to understand historical fire regimes (that is, fire 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.

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. Obviously, historical fire regimes are a critical component for characterizing the historical range of variability in the fire-adapted ecosystems of Washington. 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.

A database of fire history studies in the region 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 the dominant disturbance process that manipulates 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.

4.3.2.1 Historic Fire Function

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.

As scale of application becomes finer these five classes 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.

4.3.2.2 General Limitations

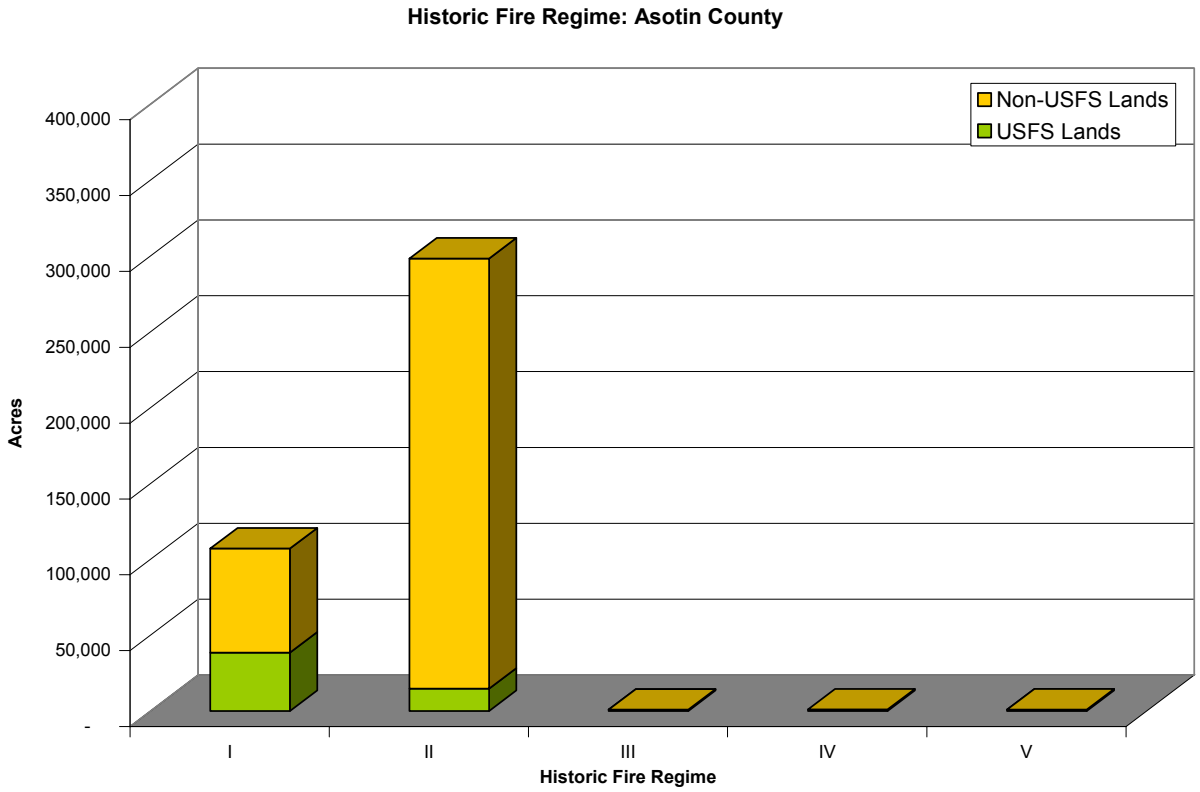
These data were derived using fire history data from a variety of different sources. These data were designed to characterize broad scale patterns of historical fire regimes for use in regional and subregional assessments. Any decisions based on these data should be supported with field verification, especially at scales finer than 1:100,000.

Two data sources have been integrated together to constitute this analysis. The first was generated by the Umatilla National Forest and is based on stand level data used to generate accurate and reliable data. This data is represented for the USFS managed lands in the analysis. The second source of data was generated from coarse scale data estimating potential vegetation and current vegetation types, integrated with historic fire extent parameters. The resolution of this HFR theme is a 1,000 meter cell size, therefore 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). This data is presented for all of the remaining lands in the analysis area and should be used for reference purposes.

Table 4.7. Assessment of Historic Fire Regimes in Asotin County.

		USFS Lands		Rest of County		Combined	
Regime	**Description**	**Acres**	**Percent**	**Acres**	**Percent**	**Acres**	**Percent**
1	0-35 yrs; Low Severity	38,501	24%	68,697	17%	107,199	26%
2	0-35 yrs; Stand Replacement	14,716	9%	283,570	71%	298,287	73%
3	35-100+ yrs; Mixed Severity	925	1%	-	0%	925	0%
4	35-100+ yrs; Stand Replacement	90	0%	969	0%	1,060	0%
5	200+ yrs; Stand Replacement	969	1%	-	0%	969	0%
7	Water	-	0%	1,310	0%	1,310	0%
	Total	**55,202**		**354,547**		**409,749**	

Figure 4.7. Historic Fire Regimes in Asotin County.



A map of the Historic Fire Regimes in Asotin County is included in Appendix I.

4.3.3 Fire Regime Condition Class

A fire regime condition class (FRCC) is a classification of the amount of departure from the natural regime (Hann and Bunnell 2001). Coarse-scale FRCC classes have been defined and mapped by Hardy *et al.* (2001) and Schmidt *et al.* (2001) (FRCC). They include three condition classes for each 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 (FRCC 1), moderate (FRCC 2), and high (FRCC 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 the 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 fire regime condition class. A simplified description of the fire regime condition classes and associated potential risks are presented in Table 4.8. Maps depicting Fire Regime and Condition Class are presented in Appendix I.

Table 4.8. Fire Regime Condition Class Definitions.

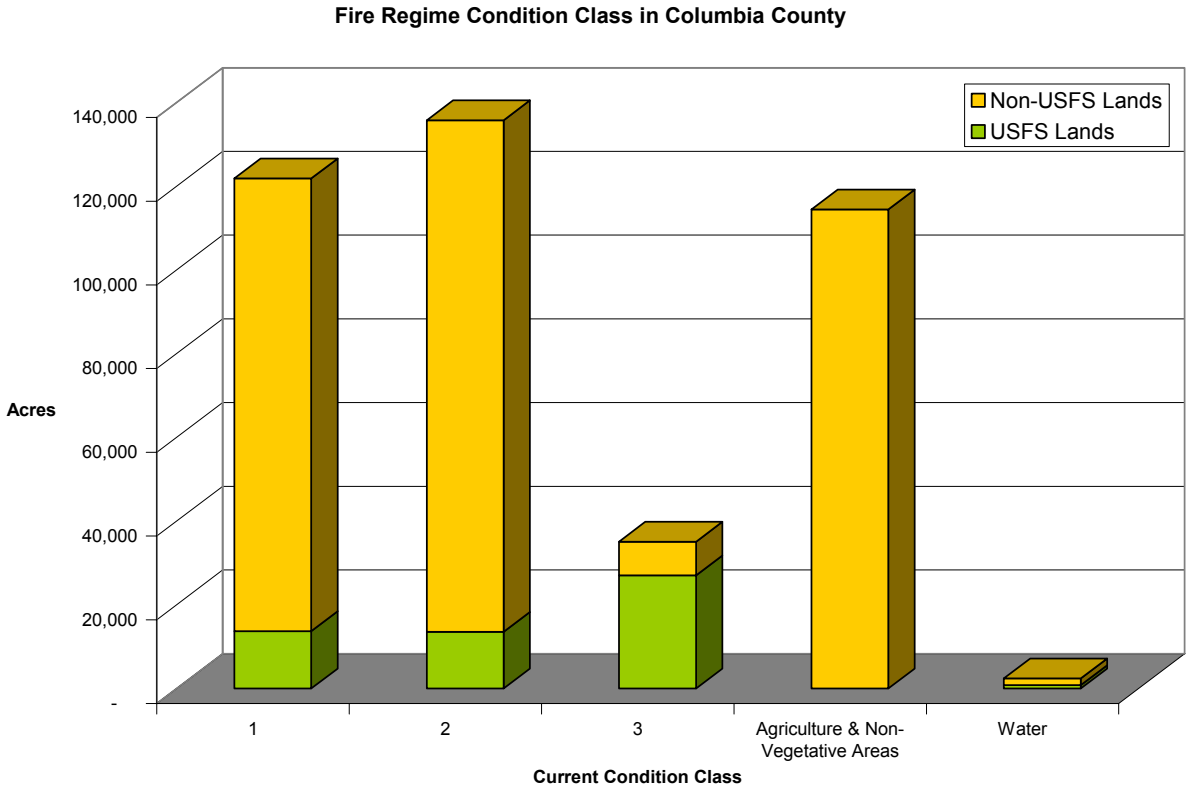
Fire Regime Condition Class	Description	Potential Risks
Condition Class 1	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances 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.

An analysis of Fire Regime Condition Class in Asotin County shows that approximately 30% of the County is in Condition Class 1 (low departure), just about 33% is in Condition Class 2 (moderate departure), with 9% of the area in Condition Class 3 (Table 4.9). Water and agricultural land is considered separately because they cannot be compared to historic fire regimes.

Table 4.9. Assessment of Current Condition Class in Asotin County.

	USFS Lands		Non-USFS Lands		Total	
	Acres	Percent of Area	Acres	Percent of Area	Acres	Percent of Area
Condition Class 1	13,692	25%	108,163	31%	121,855	30%
Condition Class 2	13,555	25%	122,190	34%	135,744	32%
Condition Class 3	27,011	49%	8,087	2%	35,097	9%
Agriculture	-	0%	114,452	33%	114,452	28%
Water	790	1%	1,654	0%	2,445	1%
Total	**55,048**		**354,547**		**409,594**	

Figure 4.8. Fire Regime Condition in Asotin County.



The Asotin County Fire Regime Condition Class Map is included in Appendix I.

4.4 Asotin County Conditions

Asotin County is comprised by three ecologically diverse subregions, 1) the Snake River breaks, 2) agricultural lands, and 3) forestlands. Each possesses a different historic fire function and frequency of fire return.

The Snake River breaks along the northern reaches of the county are prone to frequent but low intensity fires in the steep grass steppe of the region. Generally, these fires are ignited by a combination of human causes and lightning. These areas are relatively easy to access in Asotin

County, but fires spread rapidly uphill where they are often met with resistance to burn from cultivated fields or fire suppression efforts. Given the land use patterns in the region, these fires pose limited risk to structures and people since historically, few homes have been built on this steep and inaccessible terrain. This is changing however, as new homes are being built overlooking the Snake River.

The agricultural lands of the region are plentiful. Dry land farming and livestock grazing dominates the county with cultivation interrupted only by inaccessible finger-draws and human habitation. These lands historically hosted frequent wildfires which burned off the flashy vegetation such as grasses, sagebrush, and rabbitbrush. Currently, fields in active harvest rotation are not at significant risk; however, with the advent of the Conservation Reserve Program, thousands of acres of agricultural fields have much higher than natural fuel loads. Many ranches and farmsteads in Asotin County could be at risk due to the surrounding fuels, particularly those surrounded by CRP or with little defensible space. Fortunately, many landowners recognize the potential fire risk and frequently maintain plowed fuel breaks around structures. In several instances, the presence of livestock grazing around communities or farmsteads has attenuated the fuel risks for that area as well.

The third subregion is the forested lands of Asotin County. These lands represent the most difficult areas to suppress wildfires. Historical records suggest these forestlands are also prone to frequent wildfire occurrence. Vegetation is typically characterized by ponderosa pine, Douglas-fir, western larch, and grand fir forests (along with other species). Topography is flat to steep, with every combination of steepness and aspect possible. Forest health ranges from excellent to diseased or infected (posing larger risks for wildfire control due to dead and dying trees). Ownership of the forestlands in Asotin County is a combination of state, federal, and private landowners. Access ranges from good to poor and communication in the region is limited.

The transition zone between forestland and the riparian vegetation of the major drainages consists of a complex interfingering dependent on localized topographic and climatic conditions. A ponderosa pine and Douglas-fir habitat type typically forms the lower timberline on hills and low mountains. Mixed Douglas-fir, grand fir, lodgepole pine, western red cedar, and western larch forests dominate at mid-elevations elevations, while subalpine fir, lodgepole, and Engelmann spruce occur at higher elevations.

Asotin County is characterized by cold winters and hot, dry summers. Fires in the forest fuel types present throughout the Blue Mountain region have the potential to produce frequent, large and intense fires, resulting in high social and economic costs. This potential has been realized several times over in the last century. Just within the last 20 years Asotin County residents have seen more than three large and damaging wildfires. These events clearly illustrate the mounting urban-interface issue facing Asotin County.

Population growth rates have been steadily increasing throughout the County and the region. The growing appreciation for seclusion has led to significant development in the most accessible forests, especially near Anatone. Frequently, this development is in the dry ponderosa pine – Douglas-fir forest types where grass, needle, and brush surface litter create forest fuel conditions that are at a high propensity for fire occurrence. Human use is strongly correlated with fire frequency, with increasing numbers of fires as use increases. Discarded cigarettes, tire fires, and hot catalytic converters increase the potential for fire starts along roadways. Careless and unsupervised use of fireworks also contributes to unwanted and unexpected wildland fires. Further contributing to ignition sources are the debris burners (burn barrels) and “sport burners” who use fire to rid ditches of weeds and other burnable materials. Farming and logging equipment have also been the source of accidental ignitions. The

increased potential for fire starts and the fire prone landscapes in which homes have been constructed greatly increases the potential for fires in interface areas.

4.5 Asotin County's Wildland-Urban Interface

The Wildland-Urban Interface 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. For Asotin County, the WUI shows the relative concentrations of structures scattered across the county.

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 in the case of wildfires (such as houses). These areas encompass not only the interface (areas immediately adjacent to urban development), but also the continuous slopes that lead directly to a risk to urban developments be it from wildfire, landslides, or floods. Reducing the hazard in the wildland-urban interface requires the efforts of federal, state, and local agencies and private individuals (Norton 2002). "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" (USFS 2001). 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 (USFS 2001). 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 thinned will be less likely to sustain a crown fire that enters or originates within it (Norton 2002).

By reducing hazardous fuel loads, ladder fuels, and tree densities, and creating new and reinforcing defensible space, landowners would 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 (McCoy *et al.* 2001);
- improving defensible space in the immediate areas for suppression efforts in the event of wildland fire.

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;
- **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; and

In addition to these classifications detailed in the Federal Register, four additional classifications of population density have been included 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. The condition of the WUI connects these clusters into a relatively homogenous area.
- **High Density Urban Areas** – those areas generally identified by the population density consistent with the location of larger incorporated cities, however, the boundary is not necessarily set by the location of city boundaries: it is set by very high population densities (more than 15-30 structures per acre or more). Many counties and reservations in the west do not have high density urban areas. Asotin County, Washington, was determined not to have any areas of high density urban based on current (2006) structure locations. However, in the nearby Asotin County, Clarkston, Washington, is representative of a high density urban condition.
- **Infrastructure Area WUI** – those locations where critical and identified infrastructure are located outside of populated regions and may include high tension power line corridors, critical escape or primary access corridors, municipal watersheds, areas immediately adjacent to facilities in the wildland such as radio repeater towers or fire lookouts. These are identified by county or reservation level core teams.
- **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 crossing these unpopulated regions. This classification is not WUI.

In summary, the designations of areas by the Asotin County core team includes:

- High Density Urban Areas: WUI
- Interface Condition: WUI
- Intermix Condition: WUI
- Occluded Condition: Not Present
- Rural Condition: WUI
- Infrastructure Areas: WUI
- Non-WUI Condition: Not WUI, but present in Asotin County

The locations of structures in Asotin County have been mapped and are presented on a variety of maps in this analysis document; specifically in Appendix I. The location of all structures was determined by examining aerial photography. The Farm Services Agency, working with states, counties, tribes, and the state and federal government, have contracted to acquire and make

available NAIP color imagery. These aerial photographs are 1 meter resolution (very high quality), and show land based features with acceptable resolution and quality. County level mosaics were obtained for Asotin, Columbia, and Garfield Counties, and for the adjacent counties, and were used to provide locations for digitized structures in the region.

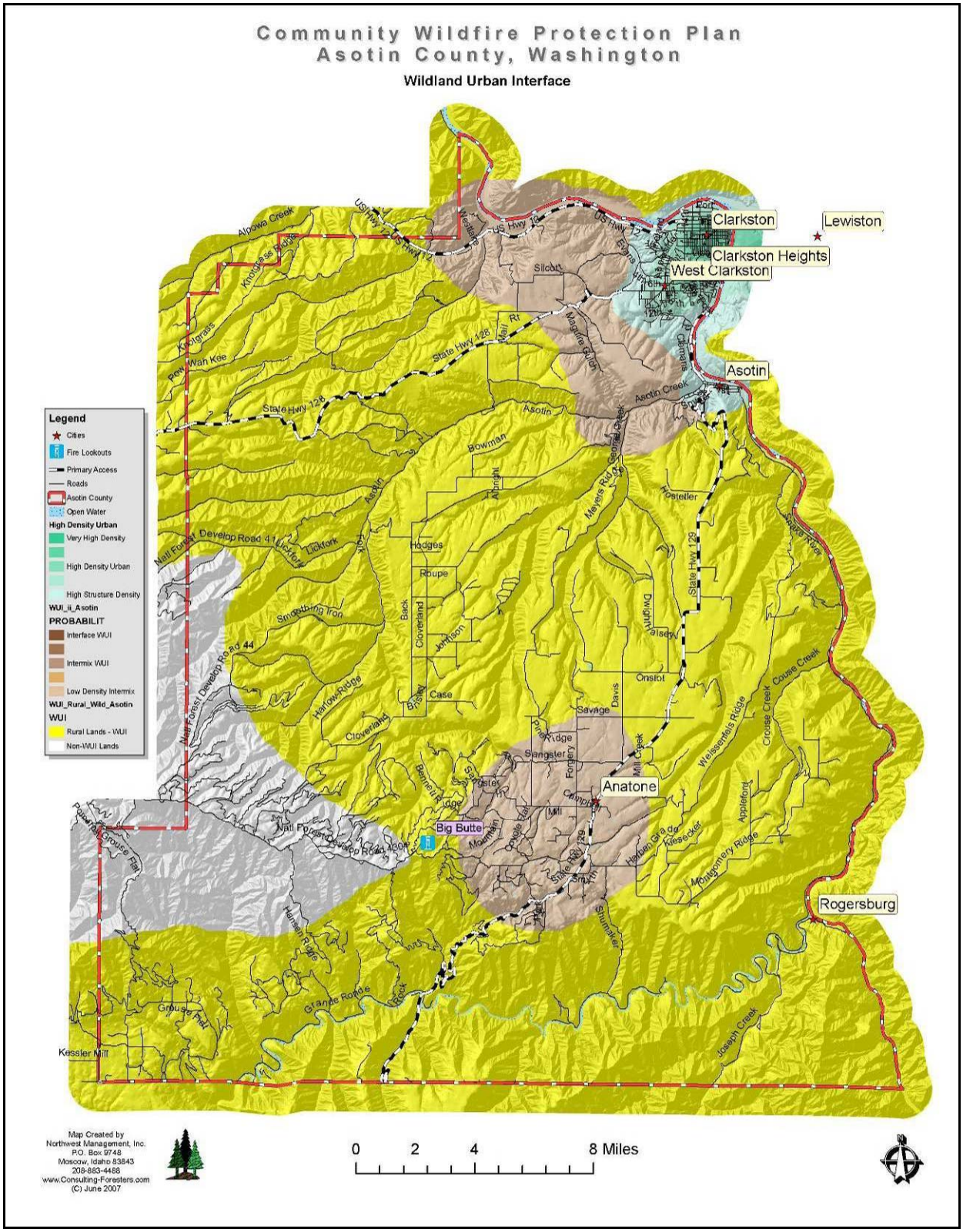
These records were augmented with data collected on hand-held GPS receivers to record the location of structures otherwise obscured from photography.

All structures are represented by a "dot" on the map. No differentiation is made between a garage and a home, or a business and a storage building. The density of structures and their specific locations in this management area are critical in defining where the potential exists for casualty loss in the event of a disaster in the region.

By evaluating this structure density, we can define WUI areas on maps by using mathematical formulae and population density indexes to define the WUI based on where structures are located. The resulting population density indexes create concentric circles showing high density areas of high density urban, 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 high risk landscapes, limiting infrastructure, and other points of concern. The WUI, as defined here, is unbiased, consistent, allows for edge matching with other counties and most important – it addresses all of the county, not just identified communities. 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. This mapping procedure was followed and is presented in the maps included in the Appendix I.

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 Asotin County Community Wildfire Protection Plan core team 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 and local fire districts.

Figure 4.10. Wildland Urban Interface Map in Asotin County.



4.5.1 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). The 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 dependant 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 on top of areas of high current fire risk and then take mitigative actions to reduce the fuels, improve readiness, directly address factors of structure 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 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 forest lands automatically equates to a treatment area. The Forest Service is still obligated to manage according to the Standards and Guides listed in the Umatilla National Forest Land and Resource Management Plan (Forest Plan). The Forest Plan has legal precedence over the WUI designation until such a time that the Forest Plan is revised to reflect updated priorities.

All planning in relation to wildfire mitigation must be taken in light of the existing regulatory and environmental laws in place. This will be determined by the owner of the parcel implementing the treatment. Thus, if proposed activities are to occur on federal lands, then the National Environmental Policy Act (NEPA) will determine environmental protection measures. Similarly, if the proposed action is to occur on state lands or private lands, then the Forest Practices Act and SEPA would govern environmental impacts. We have not diminished private property rights through the development of this document. Environmental protection is inherent to all projects because of the existing regulatory environment in Washington State.

Most treatments may begin with the 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, the 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.

4.6 Asotin County Communities At Risk

Individual community assessments have been completed for all of the populated places in the county. The following summaries include these descriptions and observations. Local place names identified during this plan's development include:

Table 4.10. Asotin County Communities.

Community Name	Planning Description	Vegetative Community	National Register Community At Risk?[1]
Clarkston	City	Agriculture, HDU	No
Clarkston Heights	City	Agriculture, HDU	No
West Clarkston	City	Agriculture, HDU	No
Asotin	City	Rangeland / Breaks	Yes
Anatone	Town	Rangeland / Woodland	Yes
Anatone (Big Butte Lookout)	Named Place	Rangeland/Woodland	Yes
Anatone (West Mt. Residences)	Named Place	Rangeland/Woodland	Yes
Anatone (East Mt. Residences)	Named Place	Rangeland/Woodland	No
Rogersburg	Town	Rangeland / Breaks	No
Cloverland	Named Place / Community	Rangeland / Agriculture	No
Craige	Named Place / Community	Rangeland / Agriculture	No
Grahams Landing	Named Place / Community	Rangeland / Breaks	No
Grande Ronde	Named Place / Community	Rangeland / Breaks	No
Grouse	Named Place / Community	Woodland	No
Hanson Ferry	Named Place / Community	Rangeland / Breaks	No
Jerry	Named Place / Community	Rangeland / Breaks	No
Mountain View	Named Place / Community	Woodland	No
Silcott	Named Place / Community	Rangeland / Breaks	No
Taplin	Named Place / Community	Rangeland / Breaks	No
Theon	Named Place / Community	Rangeland / Agriculture	No

[1]Those communities with a "Yes" in the National Register Community at Risk column are included in the Federal Register, Vol. 66, Number 160, Friday, August 17, 2001, as "Urban Wildland Interface Communities within the vicinity of Federal Lands that are at high risk from wildfires". All of these communities have been evaluated as part of this plan's assessment.

Because the Wildland Urban Interface map for Asotin County was based primarily on population density as described above, all of these communities and the populated areas surrounding them are within the Asotin County Wildland-Urban Interface.

4.7 Communities and Places in Asotin County

Vegetative structure and composition in Asotin County is closely related to elevation, aspect, and precipitation. Relatively mild and dry environments characterize the undulating topography of the region which transitions from the Snake River valley riparian plant communities to the rangeland ecosystems that characterize the vast majority of the land area in Asotin County. Forested communities extend this transition as elevations increases, soils change, and conditions favor forest tree species. Forests contain high fuel accumulations that have the potential to burn at moderate to high intensities. Highly variable topography coupled with dry, windy weather conditions typical of the region is likely to create extreme fire behavior.

The transition between developed agricultural land and timberlands occurs somewhat abruptly, usually along toe slopes or distinct property boundaries. At higher elevation mountainous regions, moisture becomes less limiting due to a combination of higher precipitation and reduced solar radiation. Vegetative patterns shift from forested communities dominated by ponderosa pine, western larch, grand fir, and Douglas-fir at the lower elevations to lodgepole

pine and subalpine fir at the higher elevations. Engelmann spruce is found in moist draws and frost pockets. These forested conditions possess a greater quantity of both dead and down fuels as well as live fuels. Rates of fire spread tend to be lower than those in the grasslands; however, intensities can escalate dramatically, especially under the effect of slope and wind. These conditions can lead to control problems and potentially threaten lives, structures and other valued resources.

As elevation and aspect increase available moisture, forest composition transitions to moister habitat types. Increases in moisture keep forest fuels unavailable to burn for longer periods during the summer. This increases the time between fire events, resulting in varying degrees of fuel accumulation. When these fuels do become available to burn, they typically burn in a mosaic pattern at mid elevations, where accumulations of forest fuels result in either single or group tree torching, and in some instances, short crown fire runs. At the highest elevations, fire events are typically stand replacing, as years of accumulation fuel large, intense wildfires.

Insects and disease can cause widespread mortality of forest stands in a very short amount of time. Mountain pine beetle populations have continued to increase at epidemic levels throughout Washington State; however, mortality increases are most pronounced in Eastern Washington. Ponderosa pine and lodgepole pine seem to be the most affected species at all elevations in Asotin County. The occurrence of Ips beetles, Douglas-fir Bark-beetle, Douglas-fir Tussock Moth, and root disease have also been recorded in Eastern Washington (Washington State Department of Natural Resources 2006). Insects and disease often focus and cause the most mortality in forest stands that are overcrowded or otherwise stressed by drought, recent fires, or other factors. Large areas of dead trees are a significant fire hazard. Oftentimes, dry, dead needles hang on the killed trees for several years making them prime for a potential ignition and subsequent crown fire. Thinning overcrowded stands can help reduce stress on individual trees allowing them to better withstand insect attacks. Planting of appropriate species for the site and continual management can also help ward off future outbreaks.

Many lower elevation forested areas throughout Asotin County are highly valued for their scenic qualities as well as for their proximity to travel corridors. These attributes have led to increased recreational home development and residential home construction in and around forest fuel complexes. The juxtaposition of highly flammable forest types and rapid home development will continue to challenge management of wildland fires in the wildland-urban interface.

4.7.1 Overall Fuels Assessment

The slight to undulating topography and moisture availability across much of Asotin County facilitates extensive farming operations, especially from Anatone north. Agricultural fields infrequently serve to fuel a fire after curing; burning in much the same manner as consistent low grassy fuels. Fires in grass and rangeland fuel types tend to burn at relatively low intensities, with moderate flame lengths and only short-range spotting. Suppression resources are generally quite effective in such fuels. Homes and other improvements can be easily protected from the direct flame contact and radiant heat through adoption of precautionary measures around the structure. Although fires in these fuels may not present the same control problems as those associated with large, high intensity fires in timber fuel types, they can cause significant damage if precautionary measures have not taken place prior to a fire event. Wind driven fires in these short grass fuel types spread rapidly and can be difficult to control. During extreme drought and when pushed by high winds, fires in grassland fuel types can exhibit extreme rates of spread, thwarting suppression efforts.

A patch-work of dry ponderosa pine and Douglas-fir woodlands is located in the southwestern corner of the county. Forest stands in some parts of Asotin County have begun suffering from

forest health issues. In addition, tree regeneration is resulting in multistoried conditions with abundant ladder fuels. During pre-settlement times, much of this area was characterized by low intensity fires due to the relatively light fuel loading, which mostly consisted of small diameter fuels. Frequent, low intensity fires generally kept stands open; free of fire intolerant species and promoted seral species such as ponderosa pine as well as larger diameter fire resistant Douglas-fir. In some areas, low intensity fires stimulated shrubs and grasses, maintaining vigorous browse and forage. The shrub layer could either inhibit or contribute to potential fire behavior, depending on weather and live fuel moisture conditions at the time of the burn.

The region southeast of Anatone is located at the top of a steep canyon dropping into the Grande Ronde River. A mosaic of rangeland and woodlands dominate the area culminating at the top of the canyon where woodlands are dominated by ponderosa pine and Douglas-fir. Many people have purchased small tracts of land in this location and built homes and cabins amongst the trees. Scenic vistas, rolling topography, and close juxtaposition to the national forest and Fields Spring State Park make this area desirable. However, the risk of catastrophic loss from wildfires in this location is significant. Fires igniting anywhere from the Grande Ronde River at the bottom of the canyon to any point up slope has the potential to grow rapidly and become very large by the time it crests the ridge near Anatone. Wildfire mitigation efforts in this area are a high priority.

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

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

4.7.2 Overall Mitigation Activities

There are many specific actions that will help improve the 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 Asotin County are discussed below while area specific mitigation activities are discussed within the individual community 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 be quite effective. Prevention campaigns can take many forms. Traditional “Smokey Bear” type campaigns that spread the message passively through signage can be quite effective. Signs that remind folks of the dangers of careless use of fireworks, burning when windy, and leaving unattended campfires can be quite effective. A fire danger warning sign posted on the north side of Anatone helps 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.

Slightly more active prevention techniques may involve mass media, such as radio or the local newspaper. Fire districts in other counties have contributed to the reduction in human-caused ignitions by running a weekly "run blotter," similar to a police blotter, each week in the paper. The blotter briefly describes the runs of the week and is followed by a "tip of the week" to reduce the threat from wildland and structure fires. The federal government has been a champion of prevention, and could provide ideas for such tips. When fire conditions become high, brief public service messages could warn of the hazards of misuse of fire or any other incendiary device. Such a campaign would require coordination and cooperation with local media outlets. However, the effort is likely to be worth the efforts, costs and risks associated with fighting unwanted fires.

Fire Reporting: The success of the Enhanced – 911 (E-911) emergency reporting system can be measured at the frequency that fire calls route to the county emergency centers. Some wildland firefighting agencies maintain direct Forest Fire Reporting numbers, but the bulk of fire reports go to the Communication Centers.

When a fire call comes into Asotin County E-911 Communication Center, the local fire protection districts are paged out to respond. Then the Communication Center staff calls the appropriate wildland agency (usually WA DNR) and relays the fire report info along with the reporting party's phone number. The Washington State Department of Transportation Headquarters can also be reached at 1-360-705-7000 during the week.

Burn Permits: Washington State Department of Natural Resources is the prime agency issuing burn permits in forested areas of Asotin County. 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.

Asotin County does allow open burning outside the city limits of Clarkston. As part of their standard operating procedures, the Asotin County E-911 Communication Center, who handles the Fire Restriction calls for the Asotin County Sheriff's Office, asks that all burners call the Communication Center business number and report the location and when the burning is complete.

The E-911 Communication Center number is 509-243-2002.

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 Asotin 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 Asotin 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 is 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 Fields Spring State Park and the boat launches along the Snake River bordering with the State of Idaho, or in the surrounding forest and range lands should be kept clean and maintained. In order to mitigate the risk of an escaped campfire, escape proof fire rings and barbeque pits should be installed and maintained. Surface fuel accumulations in nearby forests can also be kept to a minimum by periodically conducting pre-commercial thinning, pruning and limbing, and possibly controlled burns.

Other actions that would reduce the fire hazard would be thinning and pruning timbered areas, creating a fire resistant buffer along roads and power line corridors, and strictly enforcing fire-use regulations. The high tension power lines crisscrossing the county are primary electrical power supplies to much of the state and region; thus, protecting this corridor should be a high priority. Ensuring that the area beneath the line has been cleared of potential high risk fuels and making sure that the buffer between the surrounding forest lands is wide enough to adequately protect the poles as well as the lines is imperative.

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

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

Other Activities: Other specific mitigation activities are likely to include improvement of emergency water supplies and management of trees and 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.

4.7.3 Incorporated Cities

Asotin County possesses two incorporated cities: Clarkston and Asotin. Both are located along the Snake River corridor and are surrounded by native rangelands on the steep slopes, and abundant agriculture where terrain permits. Clarkston is the population center of the County, but Asotin is the county seat.

4.7.3.1 Clarkston

Clarkston assessment area consists of the traditionally known incorporated city as well as the adjacent Clarkston Heights-Vineland area, West Clarkston, and the Clemens Addition south of Clarkston Heights, which is south of Clarkston. There is no noticeable break between the city limits and these developments; thus, for the purposes of this assessment, all of these areas will be considered together.

This area (Clarkston and Asotin) is the only example of High Density Urban WUI designation in the three county planning area. It is characterized by extremely high population densities, integrated structure fire services, and rangeland/agricultural fuels. The Snake River defines the eastern and northern boundary of the city. Lewiston, Idaho, is located due east of Clarkston on the opposite side of the river with a similar high density urban designation. These two cities comprise the largest metropolitan center in the region.

4.7.3.1.1 Fuels Assessment

The risk from structure loss due to a wildfire entering the Clarkston area is minimal. The surrounding Snake River to the north and east (as well as the location of Lewiston to the east), dramatically reduces the risk from a wildfire moving in from these directions.

Rangeland fuels are present along the entire western and southern border of Clarkston. These fuels are primarily grasses and sagebrush all intermixed with agriculture fields. Most of the native vegetation is grazed by livestock. Numerous vacant lots and pasture are scattered throughout the Clarkston urban area, which could aid fire spread depending on management, fuel moisture, and weather. Steep terrain dominated by both native and nonnative grasses and weeds between home sites also poses a potential problem. This type of fuel is very flashy, but typically does not burn with the intensity of a forestland fuel complex. While these fuels do not generally threaten homes in the area, they could ignite debris and wood structures adjacent to the homes (e.g. firewood stacks, decks, stored lumber, or rubbish). In this manner, these scattered lots within the city limits and adjacent to homes can act as a fuse carrying wildfire from the rangeland to homes. The converse is also true, in that a structure fire can spread to adjacent rangeland fuels, which is then carried to neighboring structures or into the rangeland.

Identification of the vacant lots in the area which support rangeland fuels and are on steep slopes, especially those leading to homes perched on the top of ridges, is critical to reducing the wildfire risk in Clarkston.

There are many ornamental trees around homes and within parks maintained within the Clarkston urban area. These hardwoods and softwoods do not pose a substantial wildfire risk in that most are maintained in a green and lush condition for the majority of the fire season.

Clarkston has a low risk of wildfire threatening the city center; however, structure fires within the city have some potential to spread from one structure to another; either carried by radiant heat or spread through common vegetation between structures. This risk is lessened by the presence of an active fire department and fire protection district.

4.7.3.1.2 Ingress-Egress

Access in and out of Clarkston is provided by Highway 12 running east-west. State Highway 183 provides access from the northern end of Clarkston across the Snake River (Red Wolf Crossing) to Whitman County. State Highway 129 (a.k.a. Snake River Road) parallels the Snake River from Clarkston to Asotin; however, this access point is primarily a means for residents in the southern locations to gain access north, as opposed to Clarkston residents escaping to the south. There are several options for access across the Snake River between Clarkston and Lewiston. Clarkston is a major regional transportation hub.

4.7.3.1.3 Infrastructure

There are eight municipal water supply wells located within Clarkston. All of them supply community drinking water and are managed by the Public Utilities District #1 of Asotin County. One of them (well #4, Standby) is an emergency water supply source. The remaining wells are permanent.

Electricity supply to the city is from various locale linked to the hydroelectric grid of the region. In the oldest parts of the city, powerlines supply power to homes and businesses. New construction and new subdivisions in the area tend to have underground power supplies. The removal of the power poles and the hanging wires over the native vegetation is an exceptional improvement to the risk portfolio of the city.

4.7.3.1.4 Fire Protection

The Clarkston Fire Department provides primarily structural fire protection within the city limits of Clarkston. The Asotin County Fire District #1 aids in structural protection and provides wildland protection to Clarkston and the surrounding area (105 square miles). A complete system of fire hydrants is present throughout the city. Access challenges are present where steep driveways or inadequately built bridges are the only ingress/egress points. One way in, one way out streets accessing subdivisions or private homes, particularly in new construction areas, has become a safety issue for both residents and firefighters.

4.7.3.1.5 Potential Mitigation Activities

Because of the moderate level of risk in Clarkston, few potential mitigation activities are recommended at this time. The continued use of the surrounding landscape for active agricultural (not CRP) and livestock grazing will reduce fuel loading and; therefore, the potential fire risk.

In addition, the Clarkston Fire Department and Asotin County Fire District #1 have so far been relatively successful at suppressing wildland fires. The continued support of these services by the community will improve their ability to fight fires effectively.

4.7.3.2 Asotin

Asotin is located along the Snake River, upstream from its confluence with the Clearwater River and Clarkston. The city is bordered by the river to the north and east and rangeland to the west and south. Ornamental hardwoods and softwoods are scattered around homes with native hardwoods prolific along Asotin Creek. The city is clustered along Asotin Creek, the banks of the Snake River, and State Highway 129. There are also several subdivisions and scattered homes up the Asotin Creek drainage, but outside of the city limits.

4.7.3.2.1 Fuels Assessment

The risk from structure loss due to a wildfire entering Asotin is moderate. Rangeland fuels surround this community. Fires in this fuel type have the potential to spread rapidly through the fine fuels, particularly when fanned by high winds. Scattered livestock grazing on the surrounding hillsides has drastically reduced fuel buildups; however, limited access points reduce response times and make suppression efforts difficult.

Asotin has a moderate risk of a wildfire threatening the city center; however, structure fires within the city have some potential to spread from one structure to another; either carried by radiant heat or spread through common vegetation between structures. This risk is lessened by the presence of an active fire protection district housed in Dayton.

One particular area of concern is located along the southern edge of the populated area, south of 4th Street. Here homes are located under ornamental trees with grasses and forbs growing around the structures. The area adjacent to the homes is a rangeland complex of vegetation located at the foot of the hill leading up to State Highway 129. The potential for an accidental human ignition is high. This hillside and subsequent fuels are constantly fanned by river influenced winds (upstream and downstream) and have the potential to move rapidly; thus, threatening homes. Historically, these areas were likely grazed, but this practice has been greatly reduced.

New homes are being built on the ridges surrounding Asotin. These homes are placed among the rangeland fuels with grasses and forbs intermixed with sagebrush. Very little fire protection is afforded as they are perched at or near the top of the ridges with often substandard access. Annual vegetation management is warranted in the areas to reduce the potential risk to life and property.

4.7.3.2.2 Ingress-Egress

Access in and out of Asotin is provided by State Highway 129 running northwest-southeast, and by the Snake River Road beginning in Asotin and paralleling the river south to Rogersburg. Many smaller, graveled access routes tie into these two-lane roads. State Highway 129 from Asotin to Anatone begins by climbing a steep grade with numerous switchbacks in order to gain elevation to the upper plateau from the Snake River. This grade is the primary access route for travel between Asotin and Anatone. The Asotin Creek Road provides access to many homes, farms, and ranches in the Asotin Creek drainage as well as the Cloverland and Meyer Ridge areas.

4.7.3.2.3 Infrastructure

The Asotin Water Department maintains two community water supply points (Well #1 and #2). One is located along the edge of the Snake River, the other is at the intersection of Meador Street and Cleveland Street. Power poles along road rights-of-way supply power to individual homes and businesses. Many poles are older with lines passing through ornamental trees.

New home construction, especially in the southeast corner of the city, is being built with underground power supplies and “firewise” construction principals. Where practiced and maintain, these techniques will serve to enhance the ability of these homes to survive the rangeland fires common in these areas.

4.7.3.2.4 Fire Protection

The city of Asotin is protected by the Asotin Fire Department and has a good coverage of fire hydrants for homes in the city. The Asotin County Fire District #1 provides structural and wildland fire protection in the rural areas surrounding the city.

All of the private lands within the fire protection district have joint jurisdiction with the Washington Department of Natural Resources (DNR). Under joint jurisdiction, it is recognized that the fire district has primary responsibility for structure protection and the DNR will have primary responsibility for wildland fire suppression on state and private lands. The DNR provides wildfire protection during the fire season between April and October with varying degrees of available resources in the early spring and late autumn months. The U.S. Forest Service responds to all wildland fires on their jurisdiction and may also respond to wildland fires on private or state lands based on a closest forces, reciprocal agreement with the DNR when resources are available.

4.7.3.2.5 Potential Mitigation Activities

Asotin possesses many homes densely clustered into the city limits with many new homes being built along the perimeter of the city to the south. This change in housing density poses some challenges for the community's wildfire protection. In terms fuels management for the established homes in Asotin, much of the focus should be on managing the grassland and sagebrush fuels along the southern edge of the city. A combination of field burning when conditions merit with long-term livestock grazing, would effectively lessen the range fire threat for those adjacent homes. Most of the mile long southern border of Asotin could effectively be treated in this manner.

The new construction, much of which is scattered beyond the southern edge of Asotin, warrants individual home site protection. In these cases, a combination of defensible space around the immediate 150 feet of the structure, coupled with access improvements, and firewise building material selection, will improve home's survivability.

4.7.4 Towns

4.7.4.1 Anatone

Anatone is located along State Highway 129 south of Asotin. Anatone is on the upper plateau of Asotin County near 3,600 foot elevation. North and east of Anatone, the landscape is characterized by farm fields and scattered houses. To the south and west the vegetation abruptly changes from agriculture and rangelands to woodlands. These woodlands are a combination of ponderosa pine, grand fir, and Douglas-fir trees with an understory of grasses, forbs, and even sagebrush. South of Anatone, the topography changes dramatically as it drops rapidly into the Grande Ronde River drainage where rangeland is intermixed with woodlands. National forestlands are found due west of Anatone.

Anatone is in an intermix WUI condition because of the concentrated number of homes, businesses, and cabins within the townsite and to the southwest. This "island" of population is likely Asotin County's most significant wildfire risk.

The combination of the vegetative transition from rangeland to woodland and the topographic transformation from high elevation plateau to breaklands leading to the Grande Ronde River presents a potentially problematic situation. This area should be a high priority to receive targeted mitigation efforts.

4.7.4.1.1 Fuels Assessment

The risk from structure loss due to a wildfire entering the Anatone area is high. The transition from rangeland fuels to woodland fuels poses some significant challenges. Agriculture and range fires have the potential to spread rapidly through the grasses, forbs, and sagebrush. Woodland and forestland fires tend to burn more slowly, but with higher intensities.

The topography of this area are equally challenging as winds from the Grande Ronde River canyon can blow uphill and through "chimneys" such as Rattlesnake Creek to fan fast paced fires. In contrast, the upper plateau hosts winds from the north and east which can be high and sustained. These wind patterns intersect in the Anatone area and can cause unique fire weather challenges.

This area possesses challenges from all types of wildfires and weather patterns. Further, recreational use is increasing due to easy access Fields Spring State Park and the National Forest. Wildfire ignitions can come from nature in the form of lightning strikes and from human sources. Although this area has witnessed several fires in the recent past, all of these have been contained as reasonably small fires.

4.7.4.1.2 Ingress-Egress

Access in and out of Anatone is provided by State Highway 129 running northeast-southwest. To the north, this two-lane road provides access to Asotin and then Clarkston. It passes through relatively flat terrain dominated by agricultural fields until it reaches a switchback signaling the drop into the Snake River drainage. From Anatone heading south, State Highway 129 passes over Rattlesnake Pass and begins its drop into the Grande Ronde River canyon. A steep, narrow, switchback dominated two-lane road leading to a river crossing before climbing again on the Oregon side.

Slightly south of Anatone, Montgomery Road provides an alternative access to the Snake River. This one lane gravel road drops into Couse Creek for a rapid decent terminating near Grahams Landing on the Snake River. While this is not a regional access point, many of the local population use this route at least periodically. An additional graveled access route is located on Weissenfels Ridge terminating at Tenmile Creek along the Snake River.

A few scattered access routes are provided to the northwest of Anatone through farm and ranch roads. Some of these roads also provide forest access and eventually even link into roads which access Pomeroy or even Dayton. However, these access routes are seasonal and require an intimate knowledge of open paths.

4.7.4.1.3 Infrastructure

Public water supplies in Anatone are extremely limited. The Asotin County Road Department shop and the Post Office each maintain a well within the townsite.

West of town center, the Blue Mountain Homesites subdivision maintains a transient non-community pair of wells for the homes in that area. In a similar system, the Country Living Court has a single well for resident's use.

Fields Spring State Park also manages two sites for public water supplies, a well and a spring. Both are located within the campground and are transient non-community water supplies.

The remainder of the homes in the area are connected to single family wells gaining their water supply from the local aquifer. There are also numerous privately owned ponds that could be used for suppression (drafting and possibly dipping) during a wildfire.

Power supplies to individual homes and businesses are carried through overhead power lines. The wooden poles supporting this network are in all stages of repair from new to very aged.

4.7.4.1.4 Fire Protection

Anatone has no structural or wildland fire protection from a city or rural fire department. Local fire protection efforts consist of homeowners, farmers, and ranchers with wildfire fighting equipment and tools.

The U.S. Forest Service and Washington DNR respond to all wildland fires within their jurisdictions.

4.7.4.1.5 Potential Mitigation Activities

The Anatone town center is not a primary concern for wildfire protection efforts in the immediate area. The farming practices, access, and nature of the town center preclude the need for targeted mitigation efforts. ponds

Fields Spring State Park does justify a level of wildfire fuels mitigation efforts in order to increase the survivability of the site while providing a reasonable chance for firefighters to succeed in extinguishing ignitions. This state park possesses many forestland type fuels which are combined with single lane access routes. The forest health in the park is good to poor with many trees showing infections from beetle attacks and general decline in forest health. While many people do not favor thinning within parks, that practice would allow park managers to remove the dead and dying trees in favor of increasing overall forest health and thus, its resistance to wildfire control. Structural defensibility techniques would also be beneficial and could be accomplished without compromising the aesthetic value of the park.

The scattered homes and cabins from Fields Spring State Park north to the Blue Mountain Homesites and Country Living Court (and all the structures in between) are in quite a different category of wildfire risk. These homes are located along single or multi-family access routes. Most of those routes are winding dirt roads which pass through scattered woodlands and rangelands. Many structures are located within a forestland fuels complex or at the edge of woodlands and agricultural/rangeland. Fuels are a continuous intermingling of grasses, forbs, trees, and shrubs. A wildfire ignited in this area, and fanned by the crosswinds may be difficult to control, particular when coupled with dry fuel moistures.

For this area, the mitigation activities must begin with treating the areas immediately adjacent to the homes. Within 200 feet of each structure, removal of surface fuels and other risk factors will significantly improve structure defensibility. The relatively wide spacing of the trees in this area reduces the chance for a fire to be carried in the crowns. While individual tree torching may be possible, it is improbable that crown fires would be sustainable.

Thus, it is the recommendation of this section of the Community Wildfire Protection Plan that targeted treatments around the structures in this area be evaluated and implemented. This set of treatments would incorporate both structure defensible space in conjunction with access improvements (fuel mitigation around roads), and linking access with escape route markers in an emergency.

4.7.4.2 Rogersburg

Rogersburg is located along the Snake River upstream from Clarkston and Asotin at the confluence with the Grande Ronde River. The Rogersburg town site is a small area of private land surrounded by Bureau of Land Management and Washington State Department of Fish

and Wildlife holdings. Another group of structures are located west of Rogersburg along the Grande Ronde River. The Rogersburg area is accessed by the Snake River Road via Asotin. A southerly access route is provided by the Joseph Creek Road from Oregon.

The entire Rogersburg area is characterized by the Snake River breaks vegetation type with one side bounded by the Snake River and steep canyon walls in all other directions.

While most structures on the Washington side of the river are located within the town of Rogersburg and up the Grande Ronde River, another group of structures are located on the opposite bank of the Snake River in Nez Perce County, Idaho.

4.7.4.2.1 Fuels Assessment

Rogersburg is characterized by river breaks rangeland vegetation. While a small amount of agricultural lands are present (mainly hay ground), these do not characterize the fuel complex of the area. The breaklands consist of a combination of arid vegetation, early curing, and presence of grasses and sagebrush. Wildfires in this fuel type would tend to spread rapidly uphill with low to moderate intensities except where jackpots of fuel are found such as seen along streams or local drainage corridors.

The risk from structure loss due to a wildfire entering Rogersburg is moderate. While the community is located at the base of the slope and have good access to water, they lack a fire protection organization; thus, even a small or creeping fire could reach the community before suppression help arrives.

4.7.4.2.2 Ingress-Egress

The Rogersburg area is accessed by the Snake River Road via Asotin. A southerly access route is provided by the Joseph Creek Road via Oregon. There are only a couple of local access roads accessing the “upper country” from Rogersburg. One is from Grahams Landing to Anatone via the Montgomery Ridge Road. However, this access point is a significant distance from Rogersburg on the way to Asotin.

4.7.4.2.3 Infrastructure

Public water supplies in Rogersburg are limited. Within the town site, the Rogersburg Addition maintains a public water well system. To the west, the Grande Ronde Ranches community also maintains a transient non-community water well.

Two additional water wells are located downstream along the Snake River. The Dalosto Water System is located above the structures just north of Rogersburg and is a permanent water system. The Beamer’s Landing water well is a transient non-community water system fed by a well. The remainder of the homes in the area are connected to single family wells gaining their water supply from the local aquifer.

Power supplies to individual homes and businesses are carried through overhead power lines. The wooden poles supporting this network are in all stages of repair from new to very aged.

4.7.4.2.4 Fire Protection

Rogersburg has no structural or wildland fire protection from a city or rural fire department. Local fire protection efforts consist of homeowners, farmers, and ranchers with wildfire fighting equipment and tools.

The U.S. Forest Service and Washington DNR respond to all wildland fires within their jurisdictions.

4.7.4.2.5 Potential Mitigation Activities

The Rogersburg town center and the surrounding structures are not a primary concern for wildfire protection efforts in the immediate area. The farming practices, access, and nature of these structures preclude the need for targeted mitigation efforts. Nevertheless, the inclusion of this area into some kind of fire protection service would greatly lessen the risk of wildfire to residents.

Scattered ranch houses and other structures around Rogersburg face the continuing problem of maintaining vegetation in such a way so as to limit the potential for wildfire. For the most part, these structures have been maintained adequately in the past and as long as they continue this trend, they will be defensible in the future.

4.7.5 Communities in Rangeland / Agricultural Environments

Virtually all of the rangeland/agricultural communities and named places in Asotin County face similar challenges related to wildfire control and potential opportunities for fuels mitigation efforts.

Most of the homeowners in the more rural population clusters are challenged by limited access, fine grassy or shrub fuels, and limited structural fire protection resources. Nevertheless, one advantage of living in an agricultural community is that the fuels are easily modified by readily accessible farm implements.

For the most part, natural fuels management in these areas is provided by the presence of agricultural farming and livestock grazing. Where these activities are practiced, the wildfire risk is low. In certain areas, lands are placed in Conservation Reserve Program (CRP) and not farmed or grazed. These fields can, over time, accumulate high concentrations of wildland fuels which can pose a problem for control if ignited.

Structural firefighting resources in the county are limited to the Asotin County Fire District #1 boundaries on the north end of the county. Many farms in the area have basic firefighting equipment, which are used as needed to quickly respond to scattered ignitions from a variety of sources.

The majority of the homes and businesses in Asotin County are considered to be in the Rural WUI condition characterized by scattered homes or small communities with miles between these clusters. Often the most effective wildfire mitigation activity is to develop and maintain a defensible space of at least 200 feet around structures where ignitable vegetation is managed or kept green (watering). Very remote farms and dwellings also benefit from keeping rudimentary suppression equipment as needed to head off wildfire ignitions.

4.7.6 Communities in Woodland / Forest Environments

Virtually all of the forestland communities and named places in Asotin County face similar challenges related to wildfire control and potential opportunities for fuels mitigation efforts.

Most of the homeowners in the rural, forested areas face the challenge of limited access, fine grassy or shrub fuels in combination with heavy forest fuels, and limited structural fire protection resources. Many homes upslope from the Grande Ronde River drainage, the Mountain View area, and the eastern side of Big Butte are characteristic of this condition. From a structure

density standpoint, all of the structures in these areas are located in the Rural WUI Condition meaning there are scattered homes or clusters of homes with miles between the clusters.

Structural firefighting resources for these areas in the county are limited. Some homeowners or state agencies (parks) in the area have basic firefighting equipment, which is used as needed to respond to scattered ignitions. Additional wildfire resources are provided in some areas by the DNR and U.S. Forest Service.

In these areas, often the most effective wildfire mitigation activity is to develop and maintain a home defensibility space of at least 200 feet around structures. Access is also of particular concern as many driveways are narrow, steep, and have low weight tolerances. Targeted mitigation efforts must begin with road widening, fuels management along the roads, and homesite mitigation efforts to reduce the exposure of individual homes due to flammable roofing material, siding, or wooden decks. It is notable that many of the homes in the area have metal roofing and are actively managing fuels around their structures.

The issue of wildfire risk in these communities is very significant to the residents as recent wildfire events have demonstrated. Turning this awareness into action will be critical in the years to come if residents of the region are going to make a lasting change to their risk exposure to wildfire. Local efforts to provide firefighting resources, while well-intentioned, is best applied to receiving wildfire fighting training (Red Card and Blue Card), maintaining basic wildfire fighting resources in each community (200 gallon water tenders and hand tools), and working with local homeowners to mitigate fuels and improve access.

4.8 Firefighting Resources and Capabilities

Fire district personnel are often the first responders during emergencies. In addition to structure fire protection, they are called on during wildland fires, floods, landslides, and other events. There are many individuals in Asotin County serving fire protection departments in various capacities. The following is a summary of the departments and their resources. A map of the fire protection organization's coverage areas is presented in Appendix I

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.

4.8.1 Asotin County Fire District #1

Chief: Noel Hardin
Telephone: 509-758-5181
Address: 2314 Appleside Blvd.
Clarkston, WA 99403

District Summary: Asotin County Fire District # 1 is primarily a volunteer department that protects over 12,500 residents in the unincorporated area of Clarkston, Washington. The District covers just over 105 square miles outside of the 1-square mile city of Clarkston, Washington. This area includes the Highway 12 corridor and the Asotin Creek and George Creek areas. ACFD # 1 has 32 active volunteers, a full time chief and a full time assistant chief operating out of 1 station in the Clarkston Heights. ACFD # 1 works closely with the city of Asotin volunteer Fire Department as they help cover a portion of our district around their city. Through an auto-aid agreement ACFD# 1 responds to all fire emergencies within the City of Asotin. ACFD # 1 is an all risk fire Department, but the majority of our calls center around wildland fires and motor

vehicle accidents. Because of the large wildland area that our district covers, we are very dependent on our mutual aid partners, which include:; City of Lewiston, Idaho, Potlatch Corporation, City of Clarkston Fire Department, Asotin City Fire Department, Garfield County Fire Dist. # 1, Whitman County Fire Dist. # 14, Pullman City Fire, and Moscow, Idaho City Fire.

Priority Areas:

Residential Growth: Most of the residential area is within a five mile radius of our station in the Clarkston Heights. Within the district we are seeing significant growth south and west of the current residential area. It appears the trend will continue those same directions. As the sub-divisions emerge in these areas, our main concern with the county is access and water supply. It continues to be a battle with Asotin County to push developers to meet at least minimal standards for access. There are some 5-acre subdivisions materializing just outside of the residential area. Water supply and access will too continue to be a challenge for those areas.

Communications: Improving emergency communication in the county has been one of the top priorities with funding. Though it has improved, there are still many areas that have little or no communication. The terrain we deal with continues to limit communication in some areas and research is being done for future hill-top repeaters or equipment to enhance radio signals. The other issue with communication is federally mandated changes in technology. If the federal government mandates digital radio frequencies for public safety most of our current equipment would be obsolete. Funding for upgrades will be an issue.

Burn Permit Regulations: Open burning continues to be a problem countywide. There are burning periods within the residential zones. Two months in the spring and two months fall/winter. Outside of the residential areas there are problems with people burning garbage and such. The county commissioners have implemented countywide burn bans during extreme conditions in the summer and have delayed open burning times depending on weather and fuel conditions and the recommendation of the Fire District. This year we have already experienced controlled burns that turned into wildland fires. The District would support some form of burn permits to help educate the public and help with enforcement of proper burning procedures. Asotin County should ultimately consider complete a burn ban within the residential areas.

Other: A major liability problem in the Fire District is the use of civilian volunteers and landowners fighting fires. This has caused some friction between landowners, volunteers and the Fire District. The priority issue is who is liable for these people when they get injured. If the Fire District does not direct them, the Fire District is not liable; however, there have been numerous cases where civilian volunteers or landowners have compromised personnel safety and caused more damage during a fire event. The bottom line on any fire is: Who is ultimately responsible? The Fire District's stand is that they are not going to be responsible for untrained people jeopardizing life and property. Although many landowners have years of experience fighting wildland fires on their property and their neighbor's property, the lack of fire-ground communication has been a key factor in fire operations and close calls. There is also the fire experienced landowner who does not think that a government fire agency can or properly extinguish fires. The lack of understanding of mandated firefighting rules and regulations that fire agencies have to follow can also contribute to that attitude.

Effective Mitigation Strategies: Asotin County Fire District # 1 continues to try and educate the public in protecting their own homes. Though we are not a "Firewise" community, it is that type of message that we are sending to the residents.

We are seeing many high value homes being built in the urban interface areas. The Fire District continues to try and work with Asotin County on water and access issues. This has been a point of contention between the Fire District and the Asotin County. Many times the county has opted to not take the advice of the Fire District and limit fire department access into some sub-divisions. The Fire District bases requirements on local county codes and well as the Washington State adopted International Fire Code. The Fire District continues to ask for at least minimums requirements as stated in the fire code, but that is not what is always approved by the county commission. Strict building and fire codes need to be addressed and enforced county-wide.

Education and Training: Firefighter training is a high priority at ACFD#1. The firefighters train 100 hours per year in all risk categories. The priority in training centers on wildland fires, structure fires and motor vehicle accidents.

Public education is also key. The firefighters attend many public events throughout the year and the goal is to give a fire safe message with any public contact.

We also focus on safety education for local students kindergarten through 6th grade. During fire prevention week the Fire District holds an open house with the priority of helping educate the public on all safety issues within the District and life safety issues within their own homes.

Cooperative Agreements: Our local mutual aid partners include: City of Lewiston, Idaho, Potlatch Corporation, City of Clarkston Fire Department, Asotin City Fire Department, Garfield County Fire Dist. # 1, Whitman County Fire Dist. # 14, Pullman City Fire, and Moscow, Idaho City Fire. We also have cooperative agreements with Washington State DNR and Umatilla National Forest Service. We have great working relationships with all of the above agencies and depend upon them for the success of the district.

Current Resources:

Station #1:

Table 4.11. Current Equipment List for the Asotin County Fire District #1.

Year	Make	Model	Tank Capacity	Pump Capacity
2004	Pierce	CAFS Engine/ all wheel	750 Gallons	1250 GPM
1994	Pierce	Structure Engine	1000 Gallons	1250 GPM
1991	Pierce	Structure Engine	1000 Gallons	1250 GPM
2005	Pierce/Hawk	Wildland 6X6 CAFS Tender	2500 Gallons	500 GPM
1996	Central States	Tender	3000 Gallons	750 GPM
2000	Ford 550 4x4	Type 6	300 Gallons	150 GPM
1989	Ford 350 4x4	Type 6	300 Gallons	150 GPM
1986	Ford 350 4x4	Type 6	300 Gallons	150 GPM
1991	Ford 350	Type 6	200 Gallons	250 GPM
2000	Polaris	ATV 6x6	75 Gallons	
2000	Polaris	ATV 6X6	75 Gallons	
1991	Weldcraft	Fire Boat 21 ft	Unlimited	900 GPM
1962	Jeep 4X4		70 gallons	

The Fire District board is committed to providing up to date tools and apparatus for the fire district personnel. The fire district has been on the leading edge of technology available for

many firefighting needs. The use of CAFS has proven effective in many applications from structure to wildland.

Future Considerations: The fire district will continue to look at the needs of the people within the district. The growth into the urban interface continues to concern the District and they will continue to encourage the Asotin County to provide for safety in the new neighborhoods.

Needs: More public education. There is an attitude that "Grass Fires" are not a real threat. Education around the urban interface in Clarkston and education of public officials will be key to the Fire District success in a proactive approach. Working cooperatively with the Asotin County Commissioners in future development of neighborhoods will be imperative to the Fire District success.

As the population within the district boundary grows, and especially if more land is annexed, a new and/or updated station will be needed to house equipment, personnel, and provide room for training.

4.8.2 City of Clarkston Fire Department

Chief: Steven M. Cooper
Telephone: 509-758-8681
Email: scooper@clarkston.com
Address: 820 5th Street
Clarkston, WA 99403

District Summary: Clarkston Fire Department (CFD) is a combination career/volunteer fire department with 10 full-time EMT/firefighters supporting 24 volunteer EMT/firefighters in the delivery of emergency and non-emergency services within our community/county. This organization provides fire suppression, fire code enforcement and public education for about 7,300 residents of the City of Clarkston and thousands of additional nonresident visitors who shop, work, receive medical care and strive to complete their education within the business districts, medical facilities and educational centers in our community. The same staff provides first response Emergency Medical Services (EMS) to about 20,000 residents and additional nonresident visitors to Asotin, Clarkston and the more heavily populated areas of the County.

The US Census Bureau reports there were 3,414 housing units available in Clarkston at the time the 2000 census was completed. Some of this housing stock is aged and in poorly maintained condition. Some would not satisfy current building code requirements. Appropriate egress windows are not present in all sleeping areas within these residential units.

CFD values the mutual aid agreements we maintain with Asotin Fire Department, Asotin County Fire District 1, Lewiston Fire Department, Moscow and Moscow Rural Fire Departments, Potlatch Corporation Fire Department, Pullman Fire Department and Whitman County Fire District 14. Cooperative efforts of this group make joint training opportunities available that individual departments might not be able to provide otherwise.

Priority Areas:

Residential Growth: Residential growth has been pretty slow within Clarkston. Multi-unit construction will probably constitute much of the residential growth in the near future. Without annexation there is not much open space for residential development within the City.

Communications: Radio communication within the City of Clarkston is very good. The primary dispatch channel and tactical channels satisfy today's needs.

Improving communication capabilities of emergency responders has been a priority in Asotin County over the past few years. Even though repeaters have been added above Asotin and on the Stout Ranch on the north side of the Snake River near Chief Timothy areas, poor or no radio communications continues to poise challenges for responders. Coordination of these ongoing efforts must include the Asotin County Emergency Manager. Additional effort (expenditures) is required to address these shortfalls.

Burn Permit Regulations: Open burning is banned within the City of Clarkston with exceptions for cooking and ceremonial fires. There is no permit process in place.

Other: Landscaping choices along open spaces, especially along the bluffs above the greenbelt along the Snake River includes highly flammable vegetation. Some of this growth is adjacent or under wood decks and eves.

Shake roofs are still present within our community, some along the area described in the preceding paragraph.

A program supporting a public education effort with these residents would be beneficial.

Education and Training: Clarkston Fire Department is heavily involved in fire safety education through public schools. Firefighter visits during fire prevention week assures elementary school students (K through 3) have access to focused training and receives material to take home to their parents. All second grade students in Clarkston and many preschool children and their parents receive public education training during visits to the fire station.

CFD suggests implementation of a coordinated countywide public education program which supports presentations to interested groups who recognize that their property management choices decide their fire safety. Distribution of material through print and electronic media can introduce the same safety concepts to a wider audience. A program should enable property owners to make good landscaping and construction material choices while encouraging creation of defensible spaces around their buildings.

Maintenance of working smoke detectors is important to surviving a fire – especially when residents are sleeping. Continuing to place an emphasis on smoke detectors in public education outreaches is very important.

Developing and maintaining firefighting skills is an ongoing process. Cooperative training efforts help address the introduction of new concepts and incident command skills, however, task level skills are best learned in a setting where reasonable student to instructor ratios are maintained for “hands on learning”. Initial training must be followed with maintenance training. High risk, low frequency incidents require more focused training/preparation then low risk, high frequency incidents because responding to similar incidents frequently allows for “on the job” skills review then correction after an incident.

Cooperative Agreements: Clarkston Fire Department maintains mutual aid agreements with Asotin Fire Department, Asotin County Fire Protection District #1, Lewiston Fire Department, Moscow Fire Department, Moscow Rural Fire District, Potlatch Corporation Fire Department, Pullman Fire Department and Whitman County Fire District #14.

Current Resources:

Station #1:

Table 4.12. Current Equipment List for the City of Clarkston Fire Department.

Year	Make	Model	Tank Capacity	Pump Capacity
2001	Pierce	Saber	750 gallons	1,500 gallons per minute

Table 4.12. Current Equipment List for the City of Clarkston Fire Department.

Year	Make	Model	Tank Capacity	Pump Capacity
1992	Pierce	Lance	750 gallons	1,500 gallons per minute
1990	Ford	F350 Utility Truck	150 gallons	150 gallons per minute
2003	Ford	EMS Rescue Truck	No water tank	No pump capacity
2002	Ford	EMS Rescue Truck	No water tank	No pump capacity

Future Considerations: Maintaining a vital volunteer firefighter force is important to Clarkston Fire Department. NFPA standards identify tasks requiring 15 firefighters to be on scene at a working structure fire, without active and skilled volunteers we could not satisfy that NFPA standard. Retention of our current firefighters (both volunteer and career) and recruitment of qualified candidates will continue to be important efforts for us.

Planning and funding vehicle replacement is very important, especially so because we have such few fire engines. While new technology increases the cost of replacing fire engines the value of foam systems, hydraulic ladder lifts, backing alarms, opticom traffic signal controls and the like enhances the capabilities of fire suppression efforts and safety of responders.

During periods of high call volume, careful coordination of multi-agency resources must occur at the emergency incident level.

Needs: Clarkston Fire Department would benefit from relocation of our station to a more centralized location. An updated building should include better training spaces (for both didactic and hands-on training), improved equipment maintenance workbenches, dormitory space for career and volunteer staffing, better records storage area, ample parking for responding firefighters and added vehicle storage inside temperature controlled apparatus bays.

Grants that could assist in replacement of fire engines would be welcomed. The Utility Truck includes wildland firefighting equipment that will need replacement as time passes – our Department focus is not wildland because there is little open space within the City of Clarkston so help with this cost is important to maintaining this asset.

Staffing is always an important issue, probably not just for our Department but for those that we cooperate with as well. Retention of our current experienced personnel, and recruitment of new personnel when necessary, needs to remain an important focus of ours.

Continued cooperation among emergency response agencies strengthens our response capabilities within the areas we serve. Fire agencies need to maintain the mutual aid agreements and cooperative efforts because increasing numbers of calls and changes in the urban intermix will cause increased dependency upon these agreements unless departments add staffing in their organizations.

Development of reliable fire response capabilities in areas outside those areas already served by Asotin and Clarkston Fire Departments or Asotin County Fire District #1 would protect the buildings, cropland, rangeland and forested areas where no fire protection exists today.

4.8.3 City of Asotin Fire Department

Chief: Dave Weissenfels
Telephone: 509-243-4250 (home) or 509-243-2020 (work)
e-Mail: dweissenfels@co.asotin.wa.us
Address: PO Box 517 Asotin, Washington 99402

District Summary: The department covers approximately 1 square mile, which is roughly the city limits of Asotin.

Current Resources:

Table 4.13. Current Equipment List for the City of Asotin Fire Department.

Year	Make	Model	Tank Capacity (gal)	Pump Capacity (GMP)
1986	GMC	1 ton Crew Brush Truck	300	250
1972	Ford	1 ton Brush Truck	300	250
1991	GMC	Structural Pumper	750	1250
1972	Military	6x6 Water Tender	1200	250

Needs: The department needs a newer brush truck and a command vehicle. The department is also looking for funding to build a new 6 bay station to house equipment.

4.9 Wildland Fire Districts

4.9.1 Fields Spring State Park

Park Manager: Shaun Bristol
Telephone: 509-256-3332
e-Mail: Fields.Spring@parks.wa.gov
Address: PO Box 37 Anatone, Washington 99401

District Summary: State Park personnel are responsible for wildland fire suppression within park boundaries. They may assist with wildland fire suppression if requested by other agencies.

Priority Areas:

Residential Growth: There are 34 structures within the park.

Communication Sites: TDS Telecom, ACSO repeater, WSP repeater, DNR repeater, and Bennett Lumber Co. repeater.

Effective Mitigation Strategies: The Park has ongoing defensible space and shaded fuel break improvements.

Education and Training: Park staff is red carded ICS qualified

Cooperative Agreements: The Park has agreements with the US Forest Service and Washington DNR.

Current Resources:

Table 4.14. Current Equipment List for Fields Spring State Park.

Type	Model	Tank Capacity	Pump Capacity
Trailer	Wildfire Pacific	300 gal	5hp
Slip On	Wildfire Pacific	200 gal	5 hp

Future Considerations: The Park has two Type 6 engines available within one day. The park also has access to two satellite phones and hand tools for 20 people.

4.9.2 Washington Department of Natural Resources

District Manger: Rex Reed, 509.925.0968, rex.reed@dnr.wa.gov
East Klickitat FMO: Wyatt Layton, 509.773.5588, wyatt.layton@dnr.wa.gov
East Klickitat AFMO: Dan Lennon, 509.773.5588, dan.lennon@dnr.wa.gov

Equipment: 2- type 6 engines with 3 fire fighters each

District Summary: The Blue Mountains are part of the Klickitat District Fire Management area. This ranges through out the counties of the southern tier in the State of Washington including Klickitat, Benton, Walla Walla, Columbia, Garfield, and Asotin counties. Fire resources are spread throughout this area due to normal workloads and traditional fire risk occurrence. In the case of additional needs, the DNR has the flexibility to move additional resources into the area. These can be regional resources as well as outside resources brought in for short periods of time.

DNR and USFS work jointly to supply adequate resources for prevention and suppression activities as budgetary limitations dictate.

Residential Growth: Residential growth affects the firefighting capabilities of the DNR from the standpoint of those who purchase properties outside of fire districts and then assume that we automatically protect them. This is not the case. Unless the DNR is receiving forest patrol assessments, the DNR does not assist or take on fire suppression activities. Over time this activity has become more and more scrutinized.

The DNR also has mutual aid agreements with the fire districts to assist them in areas where they have jurisdictional control.

Communications: Communications for the area are handled through the statewide radio system which does have weak areas in the Blue Mountains. Most of the administrative communications is handled through use of the Forest Service Dispatch center in Pendleton; however, the use of state channels communications can be done with CWICC in Wenatchee.

Firefighting Vehicles: Currently the DNR has two type 6 engines assigned to the three Blue Mountain Counties. The overhead assigned to the Blue Mountains come from the DNR's Klickitat Fire Management team, but most of the day to day administration is done via an agreement with the Pomeroy Ranger District.

When fire risks reach a certain level or risk due to weather appear increases, the DNR has the flexibility to move additional resources into the area.

Burn Permit Regulations: On private lands the Washington State Burning Rules are administered unless the counties override them.

Effective Mitigation Strategies: The CWPP process is one of the best forms of mitigation strategies used to educate the communities on risks and assist them in the formulation of goals and objectives suited for their specific area. The DNR can then assist in finding funding sources for mitigation projects.

Education and Training: Education and training is an ongoing process. DNR supplies community support through use of education opportunities such as FIREWISE and also community level assistance as was demonstrated during the School and Columbia Complex incidents. We are also able to supply one-on-one landowner discussions through Stewardship planning as well as forest practices assistance. Cooperation with local agency offices provides for a boarder educational opportunity.

Current Resources: While the DNR maintains two type 6 engines from June 1 –October 1, the resources assigned to the area can change due to fire and weather conditions with additional resources being staged in the area to assist in the suppression needs. This can include additional department overhead personnel, crews, and engines as well as helicopters.

Future Considerations: Currently the regional staff is assessing the potential need of additional fire resources staffed in the area. This is an annual process that provides the region with the best distribution of resources based on the limitations of biannual legislative funding.

Needs: There are areas in Asotin as well as Garfield and Columbia Counties that are not under the protection of a fire district. Many of these areas do not have any form of formal protection through any fire suppression entity. As stated before, the Department's legislated responsibility lies with protection of unimproved forested lands as well as assisting other agencies and local fire districts.

The areas of the counties which are not protected are commonly known as "no-man's land". As with all other fire suppression entities DNR seems to be expected to respond to these fires. In most cases, the Department works cooperatively with other fire suppression agencies to keep all fires small, but there is no assurance that any entity will respond to those "no man's land" incidents if there are no threats to protected lands or if the Department is involved a multiple fire start situation.

The creates a situation where there is a need for the local residents to recognize that they do not have fire protection and that they need to look at their options as to what they can do to provide themselves with adequate protection.

4.9.3 USDA Forest Service

District Summary: The Pomeroy Ranger District and parts of the Walla Walla Ranger District of the Umatilla National Forest extend into portions of Asotin, Columbia, and Garfield Counties. Each district provides for and manages wildland firefighting resources that are available for not only fire on the local district, but anywhere within the broader interagency dispatching system. Each district fire organization is managed by a district Fire Management Officer and a staff of assistants and suppression leaders. The districts are each funded to provide suppression resources from June 1 through October 15.

The districts occupy the northern portion of the Blue Mountains. "The Blues" are popular recreation and hunting areas known for their plateau-like ridges and deep canyons. Surrounded by unforested farmlands, the forested elevations of the Blue Mountains exhibit vegetation patterns typical of fire regimes of forests east of the Cascade Range. Seasonal lightning and dry summer weather sets up conditions for wildland fires.

Residential Growth: Private properties in forested areas of the Blue Mountains are in high demand. What was once deemed a get-away spot for a little hunting cabin is now being developed for year-round residences. Residential and recreational improvements are growing in numbers around the national forest boundary, particularly on the west side of the Blue Mountains in Columbia and Walla Walla Counties. Similar development is occurring in Garfield and Asotin Counties, but somewhat delayed since those areas are farther from population centers. Residential growth is a concern since wildland fuels are continuous with the national forest and provide a fire spread continuum across the landscape.

Communications: The Umatilla National Forest uses a network of FM radio repeaters for communications with field personnel. Each district office and the Pendleton Interagency Communications Center (PICC) have base station radios that can use the forest service repeaters as well as two DNR repeaters.

Overall, the radio communications system is weak. There are many dead spots in the deep canyons and the links between the repeaters, district offices, and PICC are subject to noise and interruptions. Poor radio communications with field personnel can pose a safety hazard for employees and the public when emergencies cannot be accommodated.

Burn Permit Regulations: The Umatilla National Forest does not issue burn permits. It has no jurisdiction over any other property than that under federal ownership within the Umatilla National Forest.

The Umatilla National Forest does permit recreational campfires during periods of the year when it is safe to do so. It also offers safe sites for campfires in developed campgrounds.

Effective Mitigation Strategies: Forest fuel types are typically overstocked and vulnerable to catastrophic fires. The districts each utilize combinations of prescribed fire, harvesting, and mechanical thinning to reduce forest fuel quantities back toward historic levels as funding permits. The backlog of hazard fuels is extensive and resource constraints inherent within a multiuse management mandate may not allow hazard fuel reduction in all areas.

Education and Training: The ranger districts each do some localized fire prevention efforts to remind citizens of fire danger and fire closures. Visitations to schools for fire ecology and fire safety messages have been done in the past. There is little to no funding for prevention education.

Cooperative Agreements: The Umatilla National Forest has a Cooperative Fire Suppression Agreement with the fire protection districts in Asotin, Columbia, and Garfield County. These agreements provide an outline of responsibilities of each agency in relation to the other, methods of assisting each other, and an administrative vehicle for payments and reimbursements to occur. These agreements were instituted in the summer of 2007 and are subject to periodic review and updates.

The DNR and the Pomeroy Ranger District of the Umatilla National Forest have an agreement whereby Pomeroy Ranger District Fire Management provides daily oversight of the two DNR engine crews that operate out of Dayton and Clarkston.

The DNR and the Forest Service operate under two broad agreements called the Master Cooperative Fire Protection Agreement and a Local Annual Operating Plan. Each of these agreements spell out a variety of details that guide how each agency works with each other.

Current Resources:

Numbers of Forest Service vehicles and personnel may vary according to variations in annual funding allocations.

Pomeroy Ranger District
71 West Main
Pomeroy, WA 99347

District Ranger: Monte Fujishin, 509-843-4620, mfujishin@fs.fed.us
FMO: Reed Heckly, 509-843-4630, rheckly@fs.fed.us
AFMO: Mike Frederick (Suppression), 509-843-4632, mfrederick01@fs.fed.us
AFMO: Steve Carlson (Fuels), 509-843-4633, sbcarlson@fs.fed.us

- 3 – type 6 engines with 3 firefighters each.
- 1 – type 7 engine with 2 firefighters.
- 2 – Initial attack handcrew module with 5 firefighters.

Walla Walla Ranger District
1415 W Rose
Walla Walla, WA 99362

District Ranger: Mike Rassbach, 509-522-6293, mrassbach@fs.fed.us
FMO: Brett Thomas, 509-522-6284, bthomas@fs.fed.us
AFMO: Dan Eddy (Suppression), 509-522-6281, dceddy@fs.fed.us
AFMO: Mark Johnson (Fuels), 509-522-6283, markjohnson@fs.fed.us

- 1 – type 4 engine with 3 firefighters

- 2 – type 6 engines with 3 firefighters
- 1 - type 7 engine with 2 firefighters
- 1 – Initial attack handcrew module with 5 firefighters.

Future Considerations: Growth in the numbers of rural developments in Asotin County will add to the fire suppression load. As urban dwellers extend their reach for county property, any subdivision of large properties quickly sells for development. The Asotin County areas of Cloverland and Anatone south to the Grand Rhonde seem likely to experience this kind of development pressure. These areas are in the rain shadow of the Blue Mountains and are very hot and dry during the summer having instances of extreme fire danger. The combination of extreme fire danger and additional rural development is a recipe for more fires with greater losses.

Needs:

No-Man's-Land Suppression Coverage

The Forest Service is frequently expected to respond to fires that are off of national forest. Some of these responses are to properties where uncontrolled fire can spread and threaten national forest, but are not covered by any wildland fire suppression jurisdiction. The costs of those kinds of suppression are absorbed by the Forest Service. However, during periods of multiple ignition events, such as during lightning storms, priority must be given to fires that occur on national forest as intended by the funding direction of Congress. The Forest Service cannot be relied upon to always have resources available to respond to fires in areas outside of national forest.

Also, the mandate of DNR fire protection is also restricted to unimproved forest land, or other state lands covered by agreement. The DNR also cannot be relied upon to always have resources available to respond to fires on private property outside of its jurisdiction.

It is incumbent upon landowners without fire protection services to choose other options of fire protection rather than the Forest Service or DNR, either through forming a Fire Protection District, or some other kind of fire organization.

Pond Development

Water for firefighting resources is a critical resource and water shortages are common. The upper elevations of the Pomeroy and Walla Walla Ranger Districts do not have many opportunities from which to fill engines, tenders, or helicopter buckets. There are opportunities in several areas where topography would allow shallow excavations that would store snowmelt or drainage from springs. Excavation would involve dozer or excavator activity to hollow out a basin, lining it with clay soil or bentonite, making a vehicle ramp for access, and some revegetation around the margins.

Some strategic areas for pond developments are:

- Little Butte
- Hogback Ridge
- Park Ridge
- Pinkhorn Butte
- Mud Springs / Cape Horn
- Malony Mountain
- Eckler Mountain
- Turkey Tail
- Chase Mountain

Some sites to improve are:

- Kelly Camp
- Lewis Creek
- Hardy Ridge Pond
- Clearwater Pond

Wilderness Bill Amendment

Since the Wilderness Act was signed in 1964, the knowledge of vegetation management and fire regimes has progressed tremendously. Many land management agencies and organizations, both representing preservationist and active management thinking, have come to recognize the value of prescribed fire where historic vegetation patterns are sustained by frequent fire occurrences. Prescribed fire programs across the country are increasing. Hazard fuels are being reduced. Fire regimes are being restored to reflect more resilient forests. Prescribed fire is on the rise where it is most appropriate, except in designated wilderness areas.

The language of the Wilderness Act is restrictive in nature and excludes human activities such as prescribed fire. As long as agencies are expected to suppress wildland fire in wilderness, natural fuels will accumulate to high levels that feed high intensity fires which have catastrophic results. A provision for land management agencies to apply prescribed fire in wilderness when appropriate will do more to preserve wilderness values than a policy that continues to prohibit prescribed fire. The Wilderness Act is a congressional invention and requires congress to amend it to allow human activity such as prescribed fire.

Small Diameter Timber Utilization

Much of the hazard fuels that need to be removed from the national forest to restore healthy stands are small diameter sizes that are underutilized and uneconomical at this time. Developing local markets for wood fiber and small diameter timber is a broader economic development issue that would enable the cost-effective removal of wood from the national forest that is now deemed unmerchantable.

4.10 Issues Facing Asotin County Fire Protection

4.10.1 Fuels Risk in Populated Areas

Fire departments and districts in Asotin County have expressed concerns that open or vacant lots and pasture ground within the city limits and other heavily populated areas in the unincorporated County have a high risk of ignition due to uncontrolled vegetation. These lots provide a continuous fuel bed, which supports the spread of fires from one structure to another. County and city policies requiring owners to manage the vegetation on these lots during the fire season would significantly reduce the fire risk to the neighborhood. Management programs could include periodic mowing, herbicide applications, or grazing or more permanent solutions such as spreading gravel or paving.

4.10.2 Accessibility

Fire chiefs throughout the County have identified home accessibility issues as a primary concern in some parts of Asotin County. Many homes and driveways have been constructed without regard to access requirements of large emergency vehicles. Lack of accessibility restricts engagement by fire suppression resources. Enforcement of the International Fire Code,

regarding road and driveway construction standards for fire apparatus would prevent accessibility issues in new developments.

4.10.3 Fires in Conservation Reserve Program Fields

Since the introduction of the Conservation Reserve Program (CRP) by the federal government, many formerly crop producing fields have been allowed to return to native grasses. Conservation Reserve Program 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 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, according to the CRP Handbook, all management must be part of the landowner's Conservation Plan of Operations, which includes burning to reduce the fuel loading, and must be in the best interest of the CRP. Under certain circumstances, burning may be used as a process to enhance or renovate the existing vegetative cover for wildlife, especially if it is overgrown and stagnant. Currently, burning can only be conducted under an approved burn plan by qualified personnel. The Farm Services Agency must issue approval and the Department of Ecology must issue a burn permit for any controlled burning on CRP fields. A map of the Conservation Reserve Program acres in Asotin County is included in Appendix I.

4.10.4 Lack of Fire Protection in Rural Areas

Currently, the communities of Anatone, Cloverland, and Rogersburg and homes in the surrounding areas are unprotected by any formal structural or wildland fire protection district. Approximately 48% of the total land base in Asotin County does not protected by a structural or wildland fire suppression organization. The Washington Department of Natural Resources provides wildland fire protection to timbered land to the south and west and on Washington Department of Fish and Wildlife property (contract agreement). Due to the combination of timber and rangelands, a wildfire could potentially spread to residential areas before suppression resources arrived. A local effort to begin the process of researching potential options for gaining some kind of fire protection in this "no man's land" is being spurred on by recent wildfires in the area. These fires have residents and firefighters alike concerned that the lack of response could lead to even small fires growing into a large, destructive wildfire before any organized suppression effort arrives to help. Furthermore, there are safety, communication, and liability issues when residents are left to fend for themselves or when neighboring fire districts or agencies leave their own jurisdiction to aid the effort.

Although the need for an organized fire suppression tactic in currently unprotected areas is obvious, the solution is not easy. Forming a new district or annexing into the existing Asotin County District #1 will require support (both monetary and social) from citizens as well as additional stations, volunteers, training, equipment, etc. Other options may include contracting with an agency or private organization to provide some level of structural and/or wildland fire protection. Equally important will be the formation of mutual aid agreements with other fire departments and agencies.

At this point, it is the responsibility of the landowners in the unprotected region of Asotin County to lead the effort of researching potential options, garnering local support, and presenting the most desirable option to the County Commissioners.

Figure 4.11. Lewiston Tribune article published on June 21, 2007.

Snake River Road fire damage tops $10,000

By Kerri Sandaine

ASOTIN - Snake River Road residents were still putting out hot spots Wednesday after a grass fire burned hundreds of acres about 20 miles south of here.

The fire appears to have started from embers that escaped a burn pit ringed with concrete blocks, according to a report from the Asotin County Sheriff's Office. No charges are going to be filed against the woman who was burning cardboard boxes in the fire pit before the blaze spread.

Sheriff Ken Bancroft said no burn ban was in place and there was no violation of state law. "It's strictly a civil matter, and the insurance companies will have to deal with it," he said. "It's important to take precautions to keep your property as fire-safe as possible, especially when you live outside the fire district."

The blaze destroyed an old cabin, a flatbed trailer, an entire fence line and several large hay bales at Landrum's Snake River Rendevous, said Janet Hightower, manager of the rental cabins near Buffalo Eddy. Damage is estimated at more than $10,000.

Denny Gallagher, a Snake River road resident, said sprinklers were running Wednesday and neighbors have been watching for flare ups. "From what we can see, about 150 to 200 acres have burned," Gallagher said. "We've got some hot spots but nothing major. Hopefully, the wind won't change direction."

Hightower said the entire hillside behind the cabins is black. "We still have bales of hay burning out here. We've got water on it right now. The property next door has some logs burning. We can still see the smoke from where it's burning on the other side of the hill above us."

The fire was fought by people who live in the area and others who were headed to the beach. Asotin County and city of Asotin firefighters responded to the blaze for a life safety issue, but could not fight the fire because it is outside the district. A woman complained of smoke inhalation, but no one had to be transported by Lewiston and Clarkston medics who responded to the scene.

Asotin County Fire District No. 1 covers 105 square miles, which is roughly a sixth of the county. In the past, there hasn't been enough landowner support to create a fire district in the outlying areas.

"The need for some sort of fire protection is there," said Fire Chief Noel Hardin. "The population is growing up river and around Anatone. To do it right, they'd need equipment, volunteers and a building strategically located in Cloverland, Anatone and up river. The bottom line is it costs money, and people get a little skittish when you say the word tax."

Hardin said landowners in areas that don't have fire protection have some options. "They can look at contracting with an agency that would come out there. Long term, they would need to look at forming their own district or annexing into our fire district. Both of those options would take a lot of work, but they are feasible."

Residents would have to get together and the majority would have to be willing to pay for fire service, Hardin said. Someone would have to spearhead the effort to get the ball rolling.

"We feel sorry for the losses they had up there and wish we could have done more," Hardin said. "It's hard to walk away from a fire that's burning, but when we're that far out of our district, it's a liability issue. We are in a no-win situation when we can't provide the service we're trained to do. It makes everyone feel bad."

4.10.5 Firefighting Agency to Landowner Communications

Recent fires in Asotin as well as Garfield and Columbia Counties have repeatedly raised the issue of the lack of communication between wildland firefighting agencies and/or their incident command teams and local residents. Poor communication with residents has led to difficulty

with evacuations, law enforcement issues, and a negative sentiment towards firefighter personnel from landowners and residents. Additionally, the inability to convey the suppression plan between firefighting agencies and landowner containment efforts has led to safety issues. For example, lives could be threatened if firefighters light a backburn without being aware of the presence of a group of landowners in the targeted area. Working out a communication plan with local landowners could improve this situation. Designated meeting locations and landowner representatives to work with firefighters and relay information between groups may be two potential solutions. Furthermore, setting up a reverse 911 system where landowners are automatically notified of a wildfire near their home, would not only allow for a safer, more organized evacuation if necessary, but would also give landowners and organized firefighting agencies more time to develop an action plan involving all parties.

4.10.6 Landowner Equipment Contracting

Many landowners feel that their farming and ranching equipment as well as knowledge of the region should be better capitalized on by the fire management teams. However, fire management teams believe having untrained persons on a fire, particularly without communication equipment, can lead to safety and liability issues. A cohesive initial attack using both landowner and fire service resources could be more smoothly implemented if landowners went through the proper procedures and minimum training courses to contract their services with the federal or state agencies. This would alleviate much of the communication problem and liability issues as well as improve fire agency's ability to make use of local resources.

4.10.7 Access to Private Property During Wildfires

Access to private property during a wildland fire has become a significant issue for both landowners and firefighters as demonstrated during recent fire events in Asotin County as well as other counties throughout the northwest. While many landowners feel they should have unobstructed access to their property during fires to help with the suppression effort as well as extract any belongings, equipment, etc., many firefighting agencies and organizations feel that not restricting access to unsafe areas based on their professional experience would put people in danger and could even be viewed as negligent.

Substitute Senate Bill 5315, which is intended to begin dealing with this issue, has recently (May 2007) been signed by the Governor of Washington. The Bill says that the Washington Association of Sheriffs and Police Chiefs will convene a work group to develop a model policy for sheriffs regarding residents, landowners, and others in lawful possession and control of land during a wildfire. The policy will include guidance on allowing access, *when safe and appropriate*, to residents, landowners, and others during a wildfire to conduct fire prevention or suppression activities and protect or retrieve any property located in their residences. Until the policy is completed, county sheriffs may establish and maintain a registry of persons authorized to access their land during a wildfire. The sheriff may include in the registry persons who demonstrate ownership of agricultural land or forest land and who possess equipment that may be used for fire prevention or suppression activities. Person included in the registry must be allowed access to their property to conduct fire prevention or suppression activities despite the closure of any state highway, county road, or city street. Residents, landowners, and others in lawful possession and control of land are not liable for unintentional injuries or loss suffered by persons entering upon, or passing through, their land. Additionally, federal, state, and local agencies, and their employees are not liable for any action, or failure to act, when facilitating the access described.

4.10.8 Road Signage and Rural Addressing

The ability to quickly locate a physical address is critical in providing services in any type of emergency response. Accurate road signage and rural addressing is fundamental to assure the safety and security of Asotin County residents. Currently, there are numerous areas throughout the County lacking road signs, rural addresses, or both due to slow replacement, vandalism, or normal wear and tear. Signing and addressing throughout the County needs to be brought up to NFPA code in order to assure visibility and quick location.

4.11 Current Wildfire Mitigation Activities in Asotin County.

4.11.1 Multi-Jurisdictional Mutual Aid Agreements

Currently the cities, towns, fire protection districts, and wildland fire agencies within Asotin County have extensive mutual aid agreements that serve to increase the protection and effectiveness of all Asotin County fire response jurisdictions. Municipal and county fire departments provide mutual aid for each other to the fullest extent possible. The Asotin County Fire District has the opportunity for a suppression agreement with the Washington State Department of Natural Resources. The agreement with the DNR allows for an Asotin County fire district to provide fire protection services to an area within the jurisdiction of the DNR located within the district and for the district to contract with the DNR to assist in fire protection services (on a limited basis) on forest land within the district's jurisdiction. These agreements significantly improve the capabilities and effectiveness of any and all individual fire departments as well as provide assistance to the DNR, F&WS, and USFS wildland fire departments. Not only does this improve the safety of Asotin County residents, structures, infrastructure, and lands, but it also facilitates good interdepartmental working relationships.