

Chapter 4: Risk and Preparedness Assessments

4 Overview

In this chapter, we cover the countywide risk evaluations conducted as a part of this analysis, by first introducing wildland fire characteristics and wildfire hazards, summarizing the hazard in Idaho County, and then discussing Communities at Risk. Following this general overview, we discuss risk evaluations for each rangeland and forestland community in Idaho County. Following, we list firefighting resources and capabilities for the County's fire departments, and wildland fire districts. We conclude with the issues facing Idaho County fire protection, success stories, and lessons learned.

4.1 Countywide Risk Evaluations

4.1.1.1 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, the topography in which the fire is burning, and the weather and atmospheric conditions during a fire event. At the landscape level, both topography and weather are beyond our control. We are powerless to control winds, temperature, relative humidity, atmospheric instability, slope, aspect, elevation, and landforms. It is beyond our control to alter these conditions, and thus impossible to alter fire behavior through their manipulation. When we attempt to alter how fires burn, we can manipulate the third component of the fire environment, the 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, particularly within the Wildland-Urban Interface.

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

4.1.1.2 Weather

Weather conditions contribute significantly to 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 effect on fire behavior. Winds fan fires with oxygen, increasing the rate at which fire spreads across the landscape. Weather is the most unpredictable component governing fire behavior, constantly changing in time and across the landscape.

Weather can also be a major factor after a fire. Often, the soils in a burned over area become hydrophobic following an intense fire; therefore, heavy rains or winter melt off before the vegetation has a chance to recover can lead to flooding, erosion, and landslides. The effects of these post-fire disturbances are sometimes more damaging than the fire itself.

4.1.1.3 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. North slopes tend to be cooler, wetter, more productive sites leading 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 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 role in fire spread, by allowing preheating of fuels upslope of the burning fire. As slope increases, rate of spread and flame lengths tend to increase. Therefore, we can expect fast rates of spread on steep, warm south and west slopes with fuels that are exposed to the wind. Steep slopes also play a factor in fires spreading downhill due to rolling debris or down slope winds. Steady nighttime down slope and down canyon winds coupled with the mid-slope thermal belt conditions also contribute to fire spread.

4.1.1.4 Fuels

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

When burning under a forest canopy, the increased intensities can lead to torching (single trees becoming completely involved) and potential development of crown fire. 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 effects small changes in any single component have on how fires burn. It is impossible to speak in specific terms when predicting how a fire will burn under any given set of conditions. However, through countless observations and repeated research, the principles that govern fire behavior have been identified and are recognized.

4.1.1.5 Wildfire Hazard within Idaho County

The planning team assessed wildfire hazard, the potential for the landscape to burn during the fire season in the event of a fire ignition, for Idaho County using a number of different tools managed in a Geographic Information System (GIS), as discussed in this section. Initially, wildfire ignitions are displayed to show the quantity of fires that have occurred in Idaho County. Next, the amount of area burned by wildfire in Idaho County, and also nationally, is discussed. Fire prone landscapes are then discussed, which helps assess the potential for the landscape to burn during the fire season in the event of a fire ignition. Then, fire regimes are discussed to display the amount of departure from the natural regime, important in determining the natural role fire plays in the Idaho County ecosystems. Fire severity is discussed next, to display the potential severity in which fires could burn within the County. Finally,

the fuel model descriptions are displayed to assist the reader in understanding the on-site evaluations for the communities of Idaho County.

4.1.1.6 **Wildfire Ignitions**

Fire was once an integral function of the majority of ecosystems in Idaho. 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 one 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).

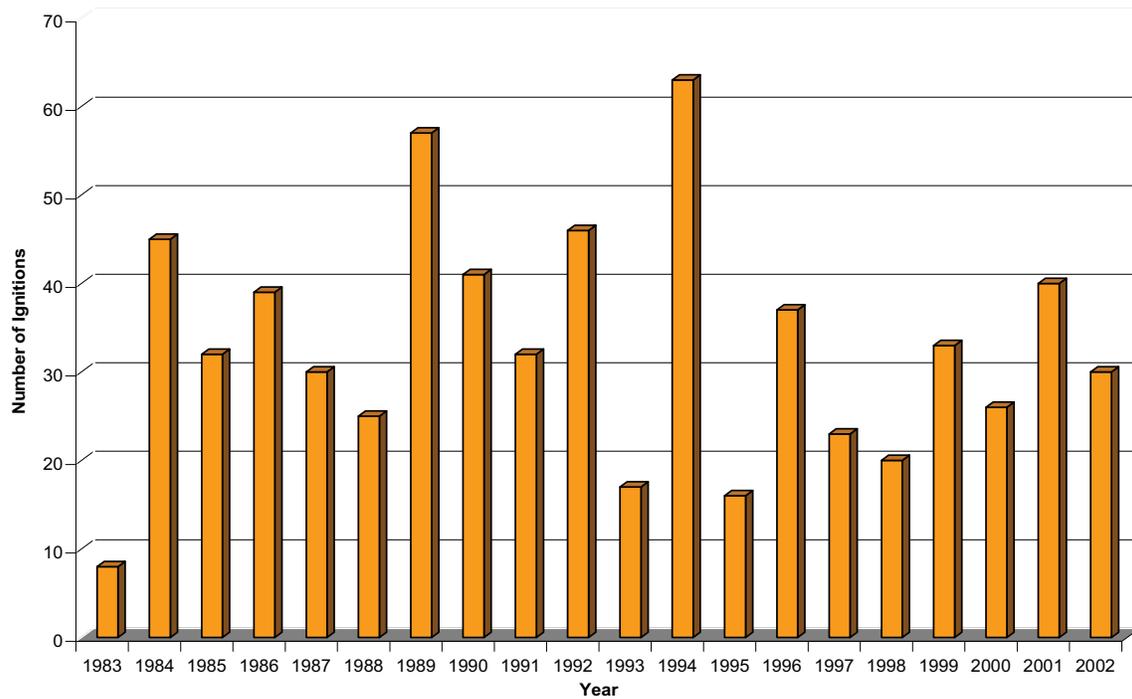
Detailed records of fire ignition and extent have been compiled by the Idaho Department of Lands, and the USDA Forest Service dating back over the past 50 years.

The Idaho Department of Lands maintains a database of wildfire ignitions (1983-2002) in Idaho for those areas where they provide primary wildfire suppression services. An analysis of this data reveals that approximately 660 wildfires have been ignited during this period (Table 4-1, Figure 4-1) burning approximately 43,500 acres. Lightning caused ignitions accounted for approximately 59% of all ignitions.

Table 4-1. Wildfire Ignitions from the Idaho Department of Lands Database 1983-2002.

General Cause	Number of Ignitions	Percent of Total Ignitions (%)	Acres Burned	Cost of Fire Control
Lightning	391	59	40,038	\$11,118,866.18
Campfire	15	2	88	\$14,440.69
Smoking	7	1	2	\$1,347.04
Debris Burning	88	13	883	\$299,996.07
Arson	33	5	488	\$171,857.30
Equipment Use	56	8	405	\$118,822.37
Children	8	1	214	\$40,558.50
Miscellaneous	62	9	1,365	\$586,783.40
Totals	660	100	43,483	\$12,352,671.55

Figure 4-1. Idaho County Wildfire Ignitions from the Idaho Department of Lands Dataset.



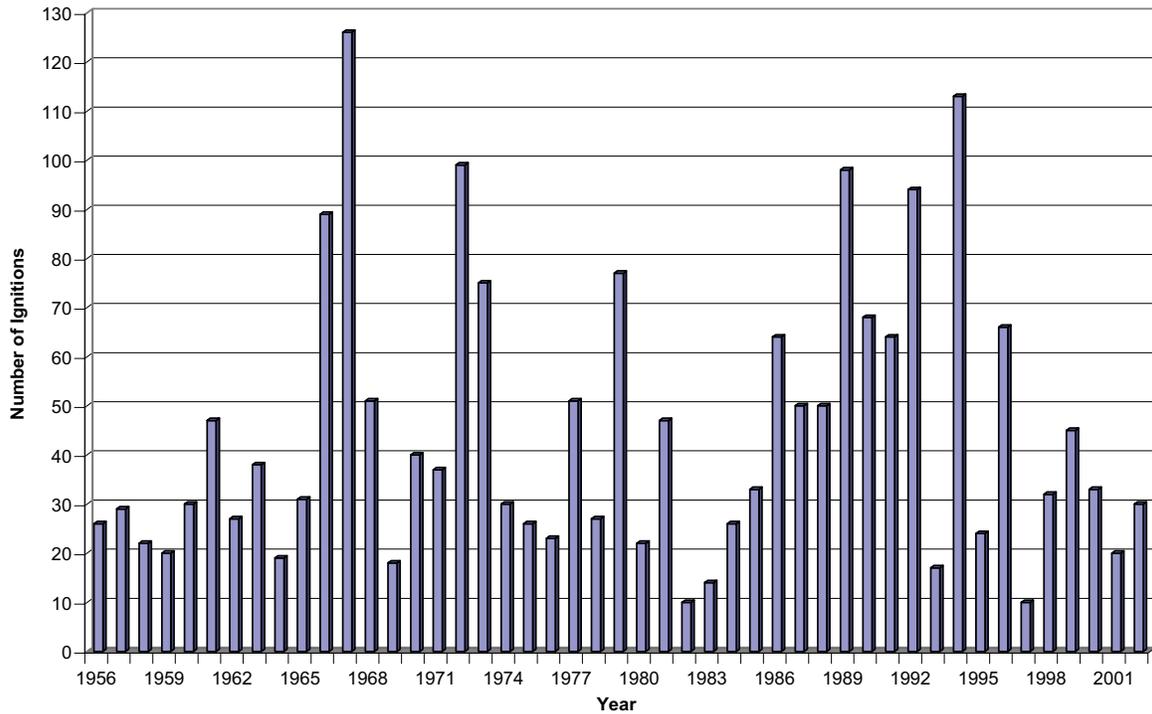
The Idaho Department of Lands dataset is a tabular dataset that does not include specific geographic data on the exact location of the ignitions, but it does include the fire’s name. This data is provided in Appendix II.

The Payette National Forest manages the USDA Forest Service system lands in the southern areas of Idaho County. The Payette National Forest has maintained detailed fire ignition and extent data dating back to 1956. Their record keeping includes the location of ignitions, extent of wildfires, and the cause of the ignition. An analysis of this data indicates that 2,088 wildfire ignitions have burned approximately 588,409 acres in Idaho County over this period of time (Table 4-2 and Figure 4-2). Approximately 90% of these ignitions were caused by lightning.

Table 4-2. Summary of Wildfire Ignitions in Idaho County from the Payette National Forest Database 1956-2002.

General Cause	Number of Ignitions	Percent of Total Ignitions (%)	Acres Burned
Lightning	1,870	90	573,837
Campfire	14	1	2,409
Smoking	34	2	3,106
Debris Burning	108	5	62
Arson	24	1	909
Equipment Use	6	0	905
Children	4	0	4
Miscellaneous	28	1	7,176
Total	2,088	100	588,409

Figure 4-2. Idaho County Wildfire Ignitions on the Payette National Forest.

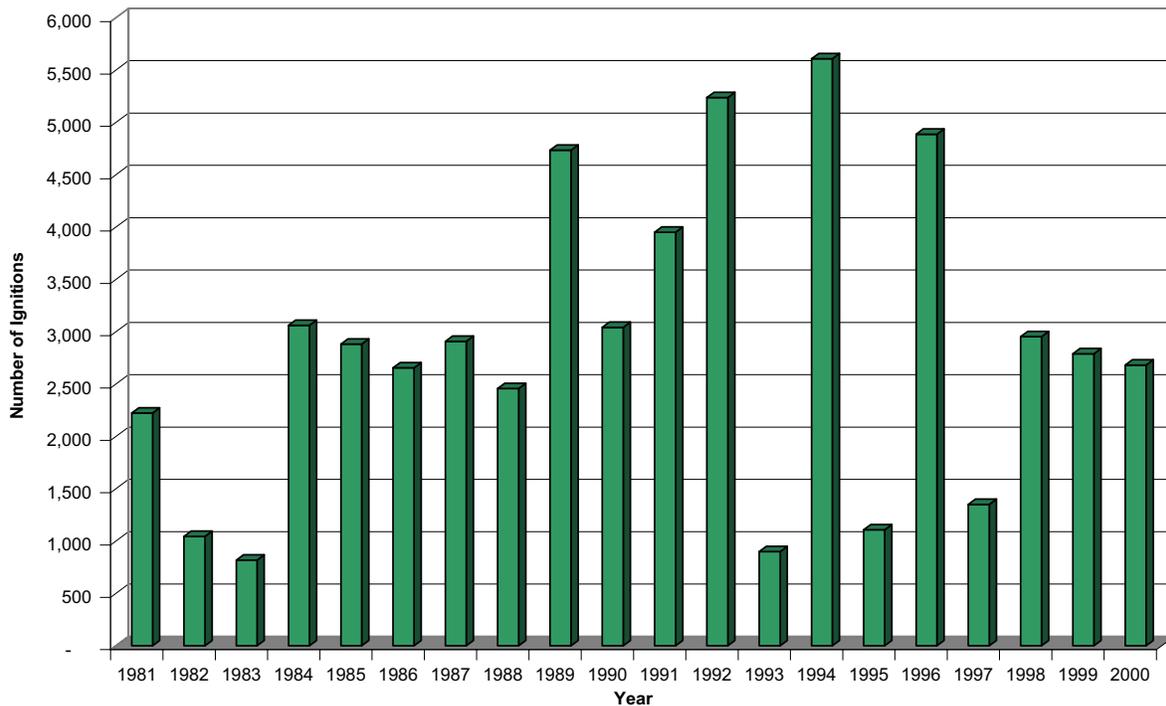


The Clearwater and Nez Perce National Forests manage the USDA Forest Service system lands in the central and northern areas of Idaho County. The Clearwater and Nez Perce National Forests have maintained detailed fire ignition and extent data dating back to 1981. Their record keeping includes the location of ignitions, extent of wildfires, and the cause of the ignition (in three categories). An analysis of this data indicates that 57,285 wildfire ignitions have burned approximately 4.7 million acres in these regions from 1981 to 2000 (Table 4-3 and Figure 4-3). Approximately 90% of these ignitions were caused by lightning.

Table 4-3. Summary of Wildfire Ignitions in Idaho County on the Clearwater and Nez Perce National Forests 1981-2000.

General Cause	Number of Ignitions	Percent of Total Ignitions (%)	Acres Burned
Lightning	51,129	89	4,333,455
Human Caused	6,075	11	372,909
Other	81	0	47,700
Total	57,285	100	4,754,064

Figure 4-3. Idaho County Wildfire Ignitions on the Clearwater and Nez Perce National Forests.



4.1.1.7 Wildfire Area Profile

IDAHO COUNTY SUMMARY

Many very large fires, growing to over 200,000 acres, have burned in North Central Idaho, including Idaho County (Appendix II). Tables 4-1, 4-2, and 4-3, above, detail the number of acres burned for Idaho Department of Lands and the USDA Forest Service administrative lands.

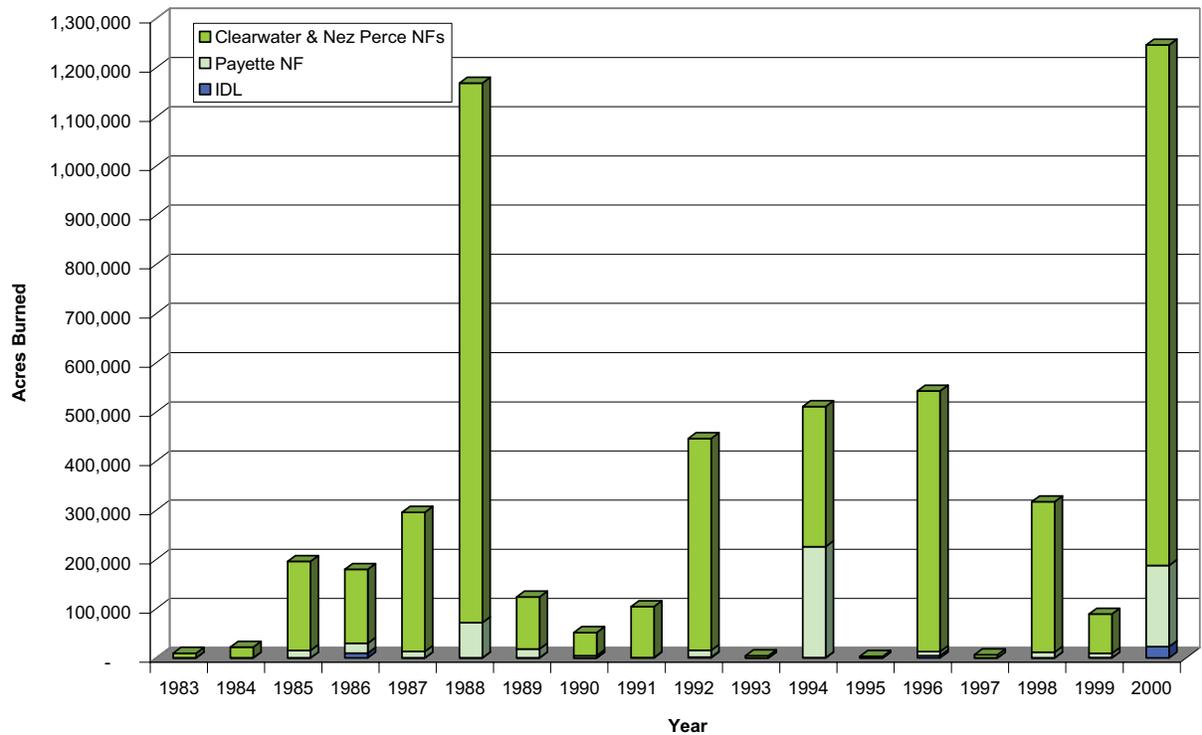
Table 4-4 and Figure 4-4, below, show the number of acres burned for the periods indicated. The data shows the largest wildfire losses on the Clearwater and Nez Perce National Forests, however, it should be recognized that these two National Forests protect the vast majority of lands in the County. The largest number of acres burned in the county during this period occurred in 1988 (1,169,000 acres) and in 2000 (1,246,436 acres). Data is not available from the Idaho Department of Lands prior to 1983, and it has not been provided from the Clearwater and Nez Perce National Forests for the periods prior to 1981 or after 2000.

Table 4-4. Wildfire Acres Burned in Idaho County by Protection Area 1981-2002.

Year	Idaho Department of Lands (acres)	Payette National Forest (acres)	Clearwater & Nez Perce National Forests (acres)	Total (acres)
1981	N/A	71	50,926	50,996
1982	N/A	15	401	416
1983	31	315	9,243	9,589
1984	364	4	21,568	21,936
1985	139	14,962	181,218	196,319

Year	Idaho Department of Lands (acres)	Payette National Forest (acres)	Clearwater & Nez Perce National Forests (acres)	Total (acres)
1986	9,618	20,115	150,483	180,215
1987	56	13,034	283,097	296,187
1988	28	71,769	1,097,205	1,169,002
1989	330	17,915	105,728	123,973
1990	155	4,550	46,936	51,640
1991	790	73	103,504	104,366
1992	1,636	13,850	430,771	446,257
1993	31	4	4,559	4,593
1994	685	225,702	284,833	511,220
1995	110	70	2,919	3,098
1996	4,829	8,134	529,605	542,569
1997	34	54	6,443	6,531
1998	148	11,196	306,379	317,722
1999	583	8,780	79,660	89,023
2000	22,741	165,110	1,058,586	1,246,436
2001	307	29	N/A	336
2002	868	62	N/A	930

Figure 4-4. Wildfire Acres Burned in Idaho County from 1983 to 2000 for Idaho Department of Lands and USDA Forest Service Administrative Lands.



NATIONAL SUMMARY

The National Interagency Fire Center, located in Boise, Idaho, maintains records of fire costs, extent, and related data for the entire nation. Across the west, wildfires have been increasing in extent and cost of control. The National Interagency Fire Center (2005) reported over 77,500 wildfires in 2004 that burned a total of 6.7 million acres and cost \$890 million in containment (Table 4-5). Data summaries for 2000 through 2004 are provided and demonstrate the variability of the frequency and extent of wildfires nationally (Table 4-5). It is important to note that the ten-year average number of acres burned reported each year has been increasing constantly since 2000.

Table 4-5. National Fire Season Summaries 2000-2004.

Statistical Highlights	2000	2001	2002	2003	2004
Number of Fires	122,827	84,079	88,458	85,943	77,534
10-year Average (ending with indicated year)	106,393	106,400	103,112	101,575	100,466
Acres Burned	8,422,237	3,555,138	6,937,584	4,918,088	6,790,692
10-year Average (ending with indicated year)	3,786,411	4,083,347	4,215,089	4,663,081	4,923,848
Structures Burned	861	731	2,381	5,781	1,095
Estimated Cost of Fire Suppression (Federal agencies only)	\$1.3 billion	\$917 million	\$1.6 billion	\$1.3 billion	\$890 million

The following national statistics (Tables 4-6 and 4-7) 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 (National Interagency Fire Center 2004). The agencies include the USDI Bureau of Land Management, USDI Bureau of Indian Affairs, USDI National Park Service, USDI Fish and Wildlife Service, USDA Forest Service, and all State Lands.

Table 4-6. National Fire Numbers and Acres 1960-2004.

Year	Fires	Acres	Year	Fires	Acres
2004	77,534	* 6,790,692	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
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

Year	Fires	Acres	Year	Fires	Acres
1985	133,840	4,434,748	1962	115,345	4,078,894
1984	118,636	2,266,134	1961	98,517	3,036,219
1983	161,649	5,080,553	1960	103,387	4,478,188
1982	174,755	2,382,036			

Table 4-7. National Suppression Costs for Federal Agencies (National Interagency Fire Center 2005).

Year	Bureau of Land Management	Bureau of Indian Affairs	Fish and Wildlife Service	National Park Service	USDA Forest Service	Totals
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	\$ 192,115,000	\$ 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

Tables 4-3 through 4-7 summarize relevant local and national wildland fire data, and show trends that are likely to continue into the future in Idaho County unless targeted fire mitigation efforts are implemented and maintained.

4.1.1.8 **Fire Prone Landscapes**

METHODOLOGY FOR ASSESSING FIRE PRONE LANDSCAPES

The methodology for assessing wildfire hazard followed Schlosser *et al.* (2002). Physical features of the region were represented by data layers including roads, streams, soils, elevation, and remotely sensed images from the Landsat 7 ETM+ satellite. 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. The specialists then used the gathered information to analyze and develop an assessment of wildland fire risk in the region.

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, including digital elevation, remotely sensed images, riparian zones, wind direction, past fires, and finally, fire prone landscapes.

Digital Elevation

Digital elevation models (DEM) used for this project were 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 8.2. 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 1998 and the second in 2002. Hyper-spectral analysis procedures followed the conventions used by the Idaho 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).

Wind Direction

Wind direction and speed data detailed by monthly averages was used in this project to better ascertain certain fire behavior characteristics common to large fire events. These data are spatially gridded Average Monthly Wind Directions in Idaho. The coverage was created from data summarized from 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 North Central Idaho area including the USDA Forest Service Nez Perce and Clearwater National Forests and the Idaho Department of Lands.

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 event of a fire ignition. Specifically, the entire region was evaluated at a resolution of ten meters (meaning each pixel on the screen represented a ten 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 zero (little to no risk) to 100 (extremely high risk) based on past fire occurrence.

RESULTS FOR ASSESSING FIRE PRONE LANDSCAPES

The maximum rating score for Idaho County was 97 and the minimum was 23. Figures 4-5 and 4-6 display the results of this analysis.

The maps depicting these risk categories display yellow as the lowest risk and red as the highest with values between a constant gradient from yellow to orange to red (Table 4-8). While large maps (16 square feet) have been provided as part of this analysis, smaller size maps are presented in Appendix I.

Table 4-8. Fire Prone Landscape Rankings and Associated Acres in Each Category for Idaho County.

Color Code	Value	Total Acres	Percent of Total Area (%)
	0	0	0
	10	0	0
	20	15,127	0.3
	30	140,503	3
	40	132,082	2
	50	325,117	6
	60	1,556,617	29
	70	2,766,670	51
	80	497,385	9
	90	1,883	0.03
	100	1	<0.01

Figure 4-5. Fire Prone Landscapes in Idaho County, Idaho.

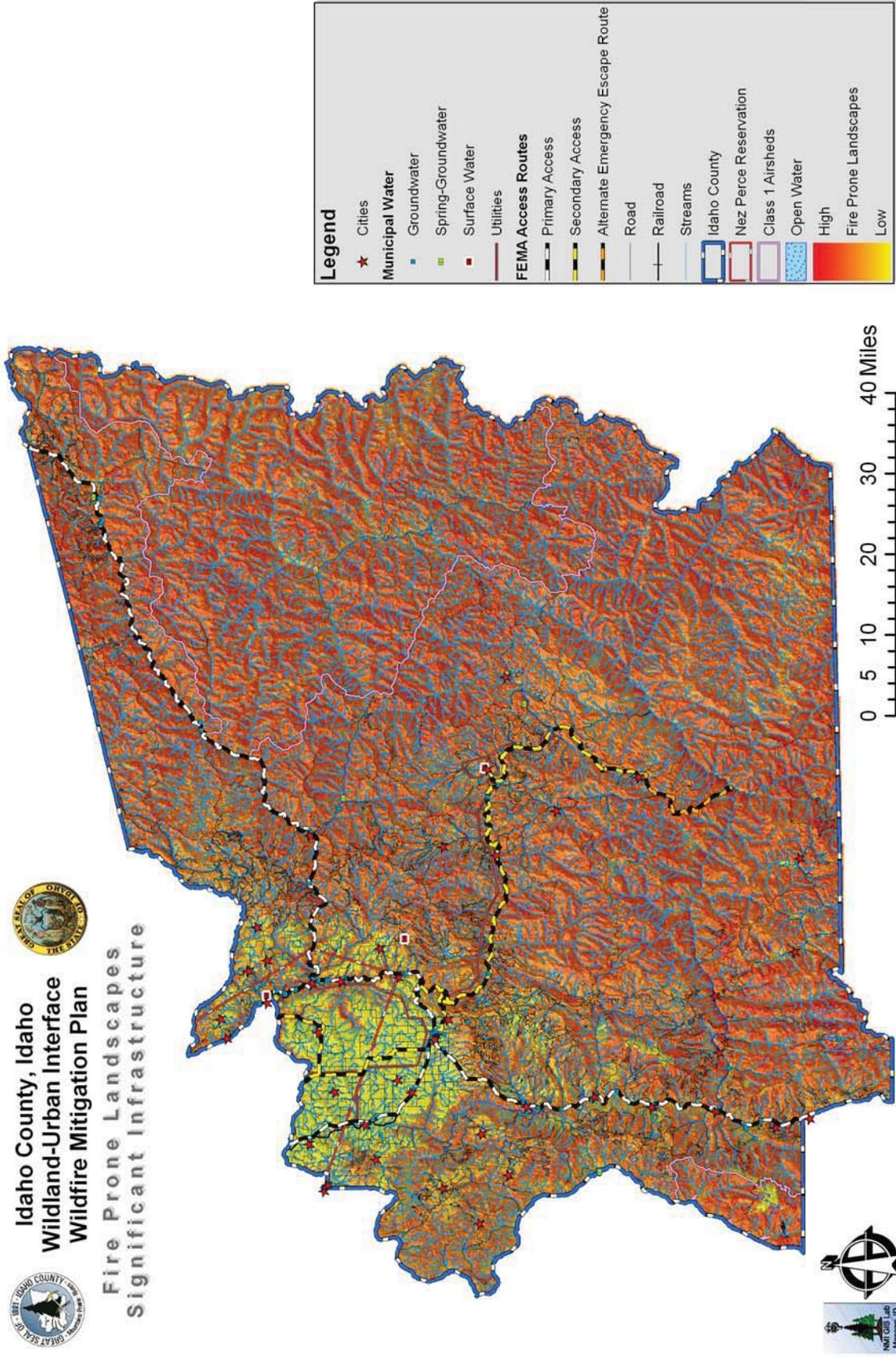
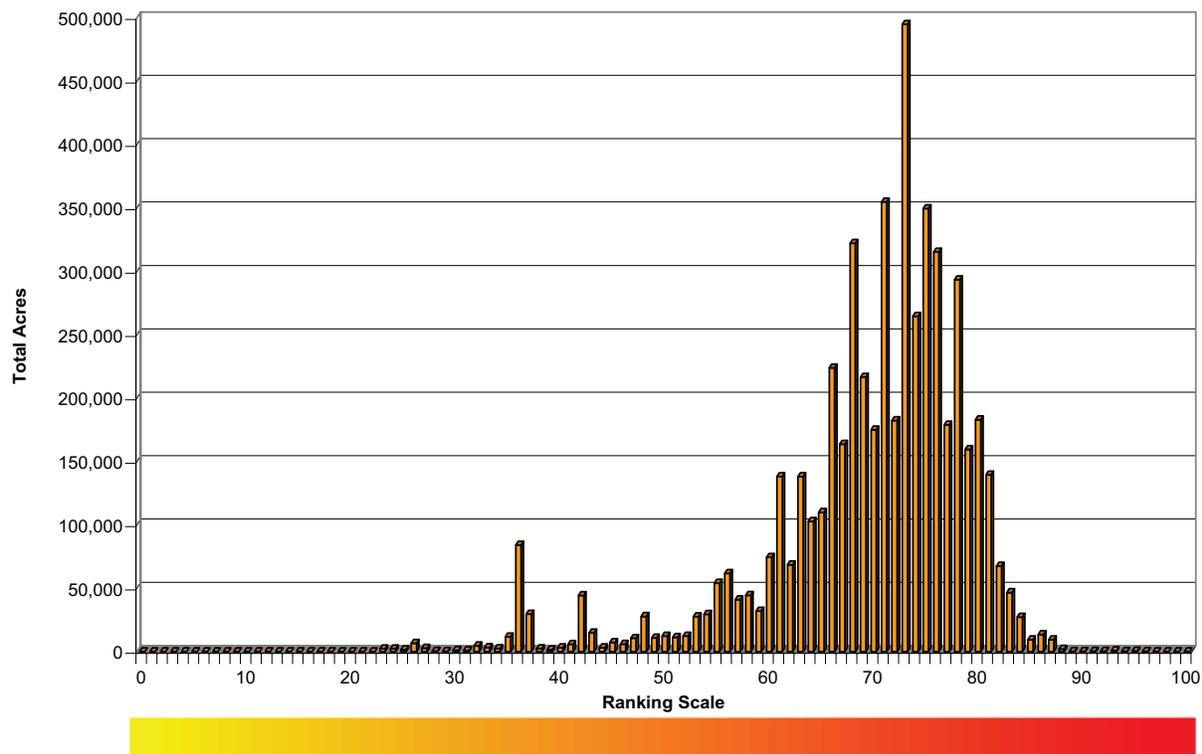


Figure 4-6. Distribution of Fire Prone Landscapes in Idaho County by Fire Prone Landscape Ranking.



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.

4.1.1.9 *Fire Regimes*

4.1.1.9.1 **Historic Fire Regime**

In the fire-adapted ecosystems of Idaho, fire is undoubtedly the dominant process in terrestrial systems that constrains vegetation patterns, habitats, and ultimately, species composition. Land managers can use historical fire regimes (that is, fire frequency and fire severity prior to settlement by Euro-Americans) to define ecologically appropriate goals and objectives for an area using 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 Idaho. 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.

METHODOLOGY FOR ASSESSING HISTORIC FIRE REGIMES

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 were 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 Idaho. The HFR data were prepared to supplement other data necessary to assess integrated risks and opportunities at regional and sub regional 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.

However, with this description in place, it should be noted that returning sites to natural historic fire regimes is not always ecologically or socially desirable, especially in stand replacing regimes located within the Wildland-Urban Interface where homes and significant infrastructure are located. In these areas, reducing the intensity of wildfires through mechanical treatments and prescribed fire may achieve the desired reduction of risk to people and structures, infrastructure, and community resources.

General Limitations

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

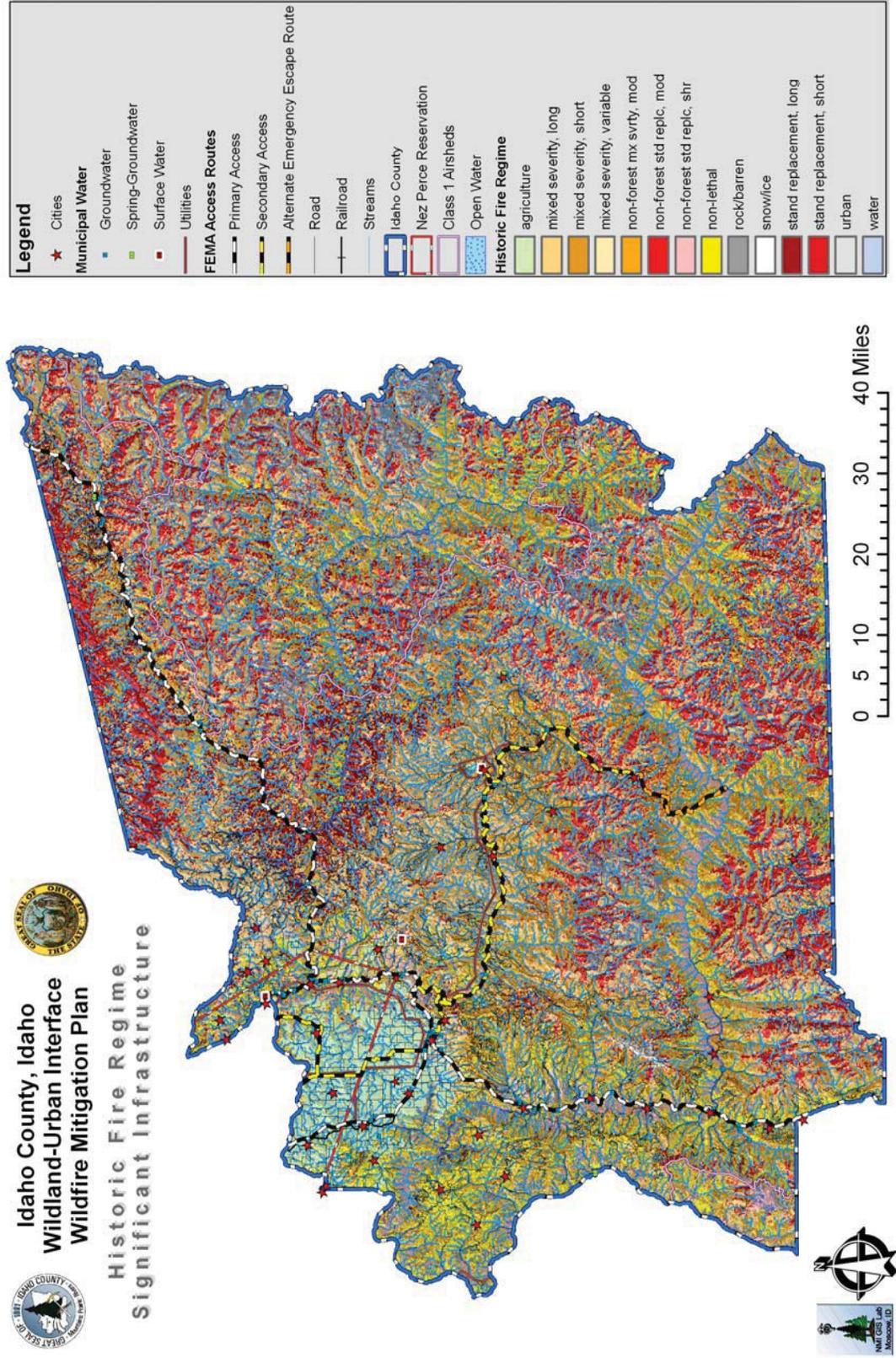
RESULTS FOR ASSESSING HISTORIC FIRE REGIMES

Results of this analysis are displayed in Table 4-9 and Figure 4-7. Of note, the historic fire regime covering the most area is the mixed-severity, long return interval.

Table 4-9. Natural Historic Fire Regimes in Idaho County, Idaho.

Natural Historic Fire Regime	Acres	Percent of Area
Non-lethal Fires	609,803	11%
Mixed severity, short return interval	968,468	18%
Mixed severity, long return interval	1,838,897	34%
Stand replacement, short return interval	878,492	16%
Stand replacement, long return interval	323,183	6%
Non-forest stand replacement, short return interval	210,702	4%
Non-forest mixed severity, moderate return interval	25,306	1%
Non-forest stand replacement, moderate return interval	25,668	1%
Agriculture	201,170	4%
Rock / barren	286,084	5%
Urban	1,667	0%
Water	15,902	0

Figure 4-7. Historic Fire Regimes in Idaho County, Idaho.



4.1.1.9.2 Fire Regime Condition Class

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995).

METHODOLOGY FOR ASSESSING FIRE REGIME CONDITION CLASS

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.

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 disease 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). Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside this range.

Characteristic vegetation and fuel conditions are considered 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), forest composition and structure in which large trees have been removed by timber harvest 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 4-10. Maps depicting Fire Regime and Condition Class are presented in Appendix I.

Table 4-10. 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.

RESULTS FOR ASSESSING FIRE REGIME CONDITION CLASS

An analysis of Fire Regime Condition Class in Idaho County shows that approximately 43% of the County is in Condition Class 1 (low departure), about 24% is in Condition Class 2 (moderate departure), with 23% of the area in Condition Class 3 (Table 4-11). Condition Class was not assessed for agriculture, rock/barren, urban, water, or other areas without information. See Appendix I for maps of Fire Regime and Conditions Class.

Table 4-11. Fire Regime Condition Class by Area in Idaho County.

Rating		Acres	Percent of Area
Condition Class			
1	Low departure	2,328,842	43%
2	Moderate departure	1,326,225	24%
3	High departure	1,255,008	23%
Other Areas			
Agriculture		201,170	4%
Rock / barren		286,084	5%
Urban		1,667	0.03%
Water		15,902	0.3%
No Information		19,847	0.4%

4.1.1.10 **Fire Severity**

Current fire severity (CFS) is an estimate of the *relative* fire severity if a fire were to burn a site under its current state of vegetation. In other words, how much of the overstory would be removed if a fire were to burn today. The USDA Forest Service (Flathead National Forest) recommends not modeling *absolute* values of fire severity, as there are too many variables that influence fire effects at any given time (for example, temperature, humidity, fuel moisture, slope, wind speed, wind direction).

Fire is a dominant disturbance process in the Northern Rockies. The likely effect of fire upon vegetation (i.e., current fire severity) is critical information for understanding the subsequent fire effects upon wildlife habitats, water quality, and the timing of runoff. There have been many reports of how fire suppression and timber harvest have affected vegetation patterns, fuels, and fire behavior. The USDA Forest Service researchers from the Flathead National Forest derived the current fire severity theme explicitly to compare with the historical fire regime theme to evaluate how fire severity has changed since Euro-American settlement (that is, to derive fire-regime condition class).

METHODOLOGY FOR ASSESSING FIRE SEVERITY

The characterization of likely fire severity was based upon historic fire regimes, potential natural vegetation, cover type, size class, and canopy cover with respect to slope and aspect. Each cover type was assigned a qualitative rating of fire tolerance based upon likely species composition and the relative resistance of each species to fire. The USDA Forest Service researchers defined three broad classes of fire tolerance: high tolerance (<20 percent post-fire mortality); moderate tolerance (20 to 80 percent mortality); and low tolerance (>80 percent mortality). We would expect that fires would be less severe within cover types comprised by species that have a high tolerance to fire (for example, western larch and ponderosa pine). Conversely, fires would likely burn more severely within cover types comprised by species having a low tolerance to fire (for example grand fir and subalpine fir). Data assignments were based upon our collective experience in the field, as well as stand structure characteristics reported in the fire-history literature. For example, if they estimated that a fire would remove less than 20 percent of the overstory, the current fire severity would be assigned to the non-lethal class (that is, NL). However, if they expected fire to remove more than 80 percent of the overstory, the current fire severity was assigned to a stand replacement class (that is, SR or SR3).

General Limitations

These data were designed to characterize broad scale patterns of estimated fire severity for use in regional and sub regional assessments. Any decisions based on these data should be supported with field verification, especially at scales finer than 1:100,000. Although the resolution of the CFS theme is 90 meter cell size, the expected accuracy does not warrant their use for analyses of areas smaller than about 10,000 acres (for example, assessments that typically require 1:24,000 data).

The current fire severity rule-set was developed for an "average burn day" for the specific vegetation types in our area. Any user of these data should familiarize themselves with the rule sets to understand better our estimate of current fire severity.

RESULTS FOR ASSESSING FIRE SEVERITY

Table 4-12 displays the predicted fire severity area in Idaho County for each fire severity class. Appendix I contains a map of these predicted fire severities.

Table 4-12. Predicted Fire Severity Area in Idaho County by Fire Severity Class.

	Predicted Fire Severity Class	Acres	Percent of Area
1	Non-Lethal	37,083	1%
2	Mixed Severity, Short	115,821	2%
3	Mixed Severity, Long	1,887,945	35%
4	Mixed Severity, Variable	49,395	1%
5	Stand Replacement	2,557,489	47%
6	Non-Forest Stand Replacement, Short	209,971	4%
7	Non-Forest Mixed Severity, Moderate	25,010	0%
8	Non-Forest Stand Replacement, Moderate	25,663	0%
10	Agriculture	201,130	4%
11	Rock/Barren	286,027	5%
13	Urban	1,667	0%
14	Water	15,899	0%
15	No Information	20,566	1%

4.1.1.11 **Fuel Model Descriptions**

Anderson (1982) developed a categorical guide for determining fuel models to facilitate the linkage between fuels and fire behavior. These 13 fuel models, grouped into four basic groups: grass, chaparral and shrub, timber, and slash, provide the basis for communicating fuel conditions and evaluating fire risk.

The following is a brief description of each of the most frequently occurring fire behavior fuel models in Idaho County.

Grass Group

Fire Behavior Fuel Model 1 - Fire spread is governed by the very fine, porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass. Very little timber or shrubs are present.

Fire Behavior Fuel Model 2 - Fire spread is primarily through cured or nearly cured grass where timber or shrubs cover one to two-thirds of the open area. These are surface fires that may increase in intensity as they hit pockets of other litter.

Fire Behavior Fuel Model 3 - Fires in this grass group display the highest rates of spread and fire intensity under the influence of wind. Approximately one-third or more of the stand is dead or nearly dead.

Shrub Group

Fire Behavior Fuel Model 4 - Fire intensity and fast spreading fires involve the foliage and live and dead fine woody material in the crowns of a nearly continuous secondary over story. Stands of mature shrubs six feet tall or more are typical candidates. Besides flammable foliage, dead woody material in the stands contributes significantly to the fire intensity. A deep litter layer may also hamper suppression efforts.

Fire Behavior Fuel Model 5 - Fire is generally carried by surface fuels that are made up of litter cast by the shrubs and grasses or forbs in the understory. Fires are generally not very intense because the fuels are light and shrubs are young with little dead material. Young green stands with little dead wood would qualify.

Fire Behavior Fuel Model 6 - Fires carry through the shrub layer where the foliage is more flammable than Fuel Model 5, but requires moderate winds greater than eight miles per hour.

Fire Behavior Fuel Model 7 - Fires burn through the surface and shrub strata with equal ease and can occur at higher dead fuel mixtures because of the flammability of live foliage and other live material.

Timber Group

Fire Behavior Fuel Model 8 - Slow burning ground fuels with low flame lengths are generally the case, although the fire may encounter small “jackpots” of heavier concentrations of fuels that can flare up. Only under severe weather conditions do the fuels pose a threat. Closed canopy stands of short-needled conifers or hardwoods that have leafed out support fire in the compact litter layer. This layer is mostly twigs, needles, and leaves.

Fire Behavior Fuel Model 9 - Fires run through the surface faster than in Fuel Model 8 and have a longer flame length. Both long-needle pine and hardwood stands are typical. Concentrations of dead, down woody material will cause possible torching, spotting, and crowning of trees.

Fire Behavior Fuel Model 10 - Fires burn in the surface and ground fuels with greater intensity than the other timber litter types. A result of over maturing and natural events create a large load of heavy down, dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more likely to occur, leading to potential fire control difficulties.

Slash Group

Fire Behavior Fuel Model 11 - Fires are fairly active in the slash and herbaceous material intermixed with the slash. Fuel loads are light and often shaded. Light partial cuts or thinning operations in conifer or hardwood stands. Clear-cut operations generally produce more slash than is typical of this fuel model.

Fire Behavior Fuel Model 12 - Rapidly spreading fires with high intensities capable of generating fire brands can occur. When fire starts, it is generally sustained until a fuel break or changes in conditions occur. Fuels generally total less than 35 tons per acre and are well distributed. Heavily thinned conifer stands, clear cuts, and medium to heavy partial cuts are of this model.

Fire Behavior Fuel Model 13 - Fire is generally carried by a continuous layer of slash. Large quantities of material three inches and greater is present. Fires spread quickly through the fine fuels and intensity builds up as the large fuels begin burning. Active flaming is present for a sustained period of time and firebrands may be generated. This contributes to spotting as weather conditions become more severe. Clear cuts are depicted where the slash load is dominated by the greater than three inch fuel size, but may also be represented by a “red slash” type where the needles are still attached because of high intensity of the fuel type.

METHODOLOGY FOR ASSESSING FUEL MODELS

There are a number of ways to estimate fuel models in forest and rangeland conditions. The field personnel from Northwest Management, Inc. evaluated fuel models for communities and other areas of

Idaho County by making ocular estimates of fuel models they observed. In an intense evaluation, actual sampling would have been employed to determine fuel models and fuel loading.

RESULTS FOR ASSESSING FUEL MODELS

Fire control and evaluation specialists, as well as hazard mitigation consultants, evaluated the communities of Idaho County to determine the extent of risk and characteristics of hazardous fuels in the Wildland-Urban Interface, and one measurement of this determination was fuel models. The on-site evaluations have been summarized in written narratives described below for each community.

4.1.1.12 Summary of Wildfire Hazard within Idaho County

Idaho County is characterized by moderate to cold winters and warm, dry summers. Although relatively infrequent, fires in the forest fuel types present throughout much of the County have the potential to result in large, intense fires, resulting in high social and economic costs. This potential was realized in the summer of 2000 when several homes were threatened by wildfire in the Burnt Flats Fire east of the community of White Bird, and again in 2007 when the Poe Cabin Fire crossed over a ridgeline that separates the Snake and Salmon River Canyons, spilling into the headwaters of the Deer Creek drainage. Within ten minutes, the fire had traveled two miles, as embers were cast in front of the main fire front. Eight homes were overrun by a high intensity wildfire within minutes. Homeowners were forced to flee with little or no evacuation warning. Some became trapped because sections of the escape route were engulfed by flames. Other residents waited out the storm at a designated safety zone; many were left wondering if their homes would survive. After the main fire passed, residents of the Deer Creek drainage returned home to find that the majority of structures had survived, primarily due to homeowner's implementing treatments that made their homes "Fire Wise." These events clearly illustrate the mounting urban-interface issue facing Idaho County.

Population growth rates have been greatest in the western portion of the County around Grangeville, Cottonwood, Kamiah, and Riggins with development sprawling along the river corridors and towards bedroom communities such as Mount Idaho, Burgdorf, Keuterville, and White Bird. The growing appreciation for seclusion has led to significant development in many of the lower elevation forests. 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 and "sport burners" who use fire to rid ditches of weeds and other burnable materials. 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.

Fire departments within Idaho County have reported a general increase in the number of fires within the County. Although there have been only a few homes lost to wildland fires in the recent past, the potential is growing. Fire departments feel as though pure luck has been on the side of many homeowners, as more and more fires seem to be controlled at the doorstep of residents' homes. It is quite probable that homes will eventually be lost to wildland fire. However, there are a number of actions that can be taken now that can decrease the probability that these events will occur.

4.1.1.13 Vegetation Associations and Risk

Idaho County is comprised of three ecological sub regions, the Camas Prairie in the northwestern corner of the County, the arid Snake and Salmon River canyon lands, and the vast forestlands of the Clearwater

and Salmon Mountains. The community risk evaluations found in the next sections are divided into two categories, (1) rangelands, which comprise the Camas Prairie’s, and Snake and Salmon Rivers’ communities, and (2) forestlands, which comprise the Clearwater and Salmon Mountains’ communities.

RANGELANDS

The combination of deep and productive soils make the Camas Prairie well suited to growth of both grassland and forest vegetation. The relatively arid meadow-steppe ecosystem of the Camas Prairie (part of the Palouse prairie bioregion) is dominated by bluebunch wheatgrass, Idaho fescue, and a plethora of wildflowers including Blue Camas for which the prairie was named. Over the course of the past century, most of the native meadow-steppe grasslands have been converted to agriculture fields producing winter wheat, canola, bluegrass, alfalfa, peas, and many other crops.

FORESTLANDS

Coniferous woodlands associated with the National Forests and wilderness areas cover the majority of the county. The transition zone between forest and meadow-steppe or river break lands vegetation consists of a complex inter-twining of vegetation 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, and western larch forests dominate at middle elevations, while subalpine fire, lodgepole, and Engelmann spruce occur at higher elevations. Western red cedar and Engelmann spruce commonly grow in moist draws and frost pockets.

4.1.1.14 Communities at Risk

Individual community assessments have been completed for all of the populated places in Idaho County listed in Table 4-13. The summaries in the next section include descriptions and observations for these areas. Of note, twenty of the twenty four communities in Idaho County are considered “Communities at Risk”, urban wildland interface communities near Federal lands that are at high risk from wildfire [Federal Register Volume 66 (160)].

Table 4-13. Idaho County Communities.

Community Name	Planning Description	Vegetative Community	National Register Community at Risk?
Burgdorf	Community	Forestland	No
Clearwater	Community	Forestland/Rangeland	Yes
Cottonwood	City	Rangeland	Yes
Dixie	Community	Forestland	Yes
Elk City	Community	Forestland	Yes
Fenn	Community	Rangeland	Yes
Ferdinand	City	Rangeland	Yes
Grangeville	City	Rangeland	Yes
Greencreek	Community	Rangeland	Yes
Harpster	Community	Forestland	Yes
Kamiah	City	Forestland/Rangeland	Yes
Keuterville	Community	Forestland/Rangeland	Yes
Kooskia	City	Forestland/Rangeland	Yes
Lowell	Community	Forestland	Yes
Lucile	Community	Rangeland	No
Mount Idaho	Community	Forestland/Rangeland	Yes
Pollock	Community	Rangeland	Yes

Community Name	Planning Description	Vegetative Community	National Register Community at Risk?
Riggins	City	Rangeland	Yes
Slate Creek	Community	Rangeland	No
Stites	City	Forestland/Rangeland	Yes
Syringa	Community	Forestland	No
Warren	Community	Forestland	Yes
White Bird	City	Rangeland	Yes
Woodland	Community	Forestland/Rangeland	Yes

4.2 Rangeland Communities' Risk Evaluations in Idaho County

This section provides wildland fire risk evaluations for the rangeland communities located in Idaho County by discussing general rangeland vegetative associations, the overall rangeland fuels assessment, and finally displaying individual community assessments.

4.2.1 Vegetative Associations

There are two distinct types of rangeland in Idaho County. Communities on the Camas Prairie (northwestern region) lie in the fertile vegetative ecosystem known as the "Palouse prairie" community. Smaller grassland areas exist near Woodland, on many of the slopes north of the Middle Fork of the Clearwater River near Kooskia, along many of the ridges east of Stites, and around the communities of Clearwater and Tahoe Ridge/Big Cedar. These areas are also very fertile and are typically used for pasture or hay crops. Communities surrounded by the rangeland ecosystem of the Salmon River canyon including Pollock, Riggins, Lucile, Slate Creek, and White Bird are vastly different from the upland rangeland ecosystems. The slopes of the Salmon River canyon are typically very steep and dry. Idaho fescue and other bunch grasses and forbs grow abundantly; however, there is little other vegetation. Weed infestations (cheat grass, yellow star thistle, etc) are also common in much of the canyon break lands. Short shrubs and stunted ponderosa pine grow in draws and at the higher elevations. Livestock grazing is the primary land use; however, irrigated agricultural fields have been developed on flat benches near the river.

The Palouse Prairie Bioregion is widespread over much of eastern Washington, northern Idaho, and western Montana. These areas are typically characterized by rolling hills, deep soils, and a mild climate. One hundred fifty years ago, the typical vegetation consisted of perennial bunchgrasses, which grew in tufts or clumps, accompanied by many different kinds of "wildflowers." Together, the grasses and flowers gave the appearance (in spring and early summer at least) of a lush meadow. This type of vegetation occurs in relatively moist environments, where the climate is almost wet enough to support the growth of trees. The principal bunchgrasses were Idaho fescue, bluebunch wheatgrass, and prairie june grass. Short shrubs, especially snowberry and wild rose, were common. Mosses and lichens were an important but inconspicuous feature.

Agricultural practices surrounding rangeland communities within Idaho County have created a patchwork of green, lush vegetation and cured rangeland. This pattern is particularly apparent around Cottonwood, Ferdinand, and Grangeville. Cultivation has also broken fuel continuity in areas surrounding Kamiah, Kooskia, and White Bird. Although this patchwork helps to break the continuity of fuels, during the growing season or under severe weather conditions, many agricultural fields have the potential to burn very intensely.

Before the development of agriculture and other land uses, the Palouse Prairie Bioregion and the Salmon River break lands had a rich fire history, with relatively frequent fires. The last decade has seen the increase in the occurrence of cheat grass, yellow starthistle, and several other invasive species. Cheat grass and yellow star thistle are exotic species that are able to out-compete native bunchgrasses and forbs. Both of these exotics respond well to soil disturbance and are found in abundance along roadsides, driveways, new construction areas, and in recently burned areas. Over time, vegetative species compositions on many native grasslands have shifted toward these fire prone species, particularly in high use areas where disturbance is common.

4.2.2 Overall Fuels Assessment

Fuels throughout the entire rangeland community in Idaho County are fairly consistent, dominated by grasslands, cultivated fields, and in a number of instances weeds. Areas dominated by grass can be

described as Fuel Models 1, 2, and 3 (FM1, FM2, and FM3). Fires in these fuel types tend to spread rapidly, but burn at relatively low intensity. Wild or cultivated grains that have not been harvested can burn more intensely, especially under severe weather conditions. Where grasses become less consistent, wind is needed to push fires through the bunchgrass.

The majority of homes and structures within and surrounding communities on the Camas Prairie and along the Salmon River are at low to moderate risk of loss to wildland fire. The prevalence of grasses and agricultural crops pose a low threat to homes surrounded by these fuels. However, there are a number of individual homes that are at much higher risk to wildland fire loss in the area largely due to use of highly ignitable materials in home construction, location of the home on a steep slope or within heavy fuels, and the lack of defensible space surrounding the home. Several subdivisions located in the grasslands near the Clearwater River drainages have a higher risk factor due to the steeper slopes and lack of a defensible space. Home defensibility practices can dramatically increase the probability of home survivability. The amount of fuel modification necessary will depend on the specific attributes of the site. Considering the high spread rates typical in these fuel types, homes need to be protected prior to fire ignitions, as there is little time to defend a home in advance of a grass and range fire.

4.2.3 Individual Community Assessments

Cottonwood and Keuterville

The town of Cottonwood is located on the Camas Prairie upland along U.S. Highway 95 between Fenn and Ferdinand. The town is surrounded by cultivated agriculture and hay ground. Keuterville lies four miles to the west of Cottonwood at the edge of the timberline. Cottonwood Butte is a 5,730 foot knob rising just north of Keuterville and west of Cottonwood. The Butte creates a rain shadow resulting in drier conditions on the east slope.

FIRE POTENTIAL

Fuels Assessment

There is very little native vegetation remaining near these prairie ecosystem communities. The native Camas Prairie plant community has been almost exclusively replaced by agriculture and pasture lands. A few patches of native species, such as big bluestem, blue camas, shooting star, and lupines, can be found sporadically along fence lines or in non-tillable corners. The remnant prairie grasslands historically burned at relatively frequent intervals, but generally were lower intensity fires. The agricultural fields currently dominating the landscape become very dry during the summer months. These cured grasses can be very flammable, especially under extreme weather conditions, such as drought or wind. In the event of an uncontrolled wildfire, these light fuels would tend to support very fast moving, yet lower intensity fires. However, modification of the vegetation around structures can be done quickly with available farm equipment and is usually effective in controlling wildfire.

The forestland abutting Keuterville along its west side is composed of primarily ponderosa pine, Douglas-fir, grand fir, and western larch. Many privately owned parcels in this area have been thinned, which generally reduces the risk of intense wildfire. Due to the gentle topography and recent harvest operations, this forestland does not pose a high risk to nearby structures; however, homes that lack a defensible space and are directly adjacent to dense timber fuels have an increased risk of loss to fire.

The Salmon River canyon is approximately four miles south of Keuterville. The break lands on the north side of the drainage are dominated by cured grasses with stringers of ponderosa pine in draws. Fires along the river have the potential to spread very rapidly upslope towards the community as the Maloney Creek Fire in 2000 demonstrated. Due to the development of agricultural fields south of Keuterville, it is unlikely that the wildfire would reach the community before being controlled. However, individual homes in this area and in nearby timbered areas could be threatened. Fast response by emergency personnel would be critical in this situation.

Ignition Profile

Although lightning events are common in Idaho County, the communities of Cottonwood and Keuterville are more prone to human caused ignitions than lightning strikes due to the flat topography and agricultural development. Annual field burning, debris fires, and vehicle use are much more common ignition sources. Stubble fires seldom escape landowner's boundaries; however, there are a few such incidents each year. These fires are generally easily suppressed by modifying the vegetation and homes are rarely threatened.

Vehicle use on- and off-road is also a significant source of ignitions. Not only do sparks from vehicles ignite fuels along roadways, but fires are also commonly started by vehicles driving through dry fields or on unimproved trails. Grain trucks, ATV's, and pickups are used regularly in farming operations.

INGRESS-EGRESS

U.S. Highway 95 is the primary travel route across the Camas Prairie. This two-lane highway passes alongside the community of Cottonwood. Keuterville is accessed by traveling west from Cottonwood on the Keuterville Road. This is also a well-maintained, paved, two-lane route. Both of these roadways are abutted by agricultural or pasturelands that are at low risk of experiencing a wildland fire. There are several secondary routes crossing the area that may serve as potential escape routes depending on the location of the fire. Typically, these roads are also at low fire risk due to the lack of flat topography and native vegetation.

INFRASTRUCTURE

The communities of Cottonwood and Keuterville depend on municipal well systems as well as personal or multiple home well systems. Most farmers in this area do not irrigate so supplementary wells for agricultural purposes are not usually necessary. However, several ranchers use surface runoff or small springs to provide water for livestock. These water resources would not likely be seriously affected by a rangeland fire.

The Grangeville Line of the Camas Prairie Railroad traveling from Spalding through Cottonwood has recently been abandoned. This line historically transported grain, lumber, fertilizer, and other products to and from Camas Prairie markets.

FIRE PROTECTION

The Cottonwood Volunteer Fire Department provides structural protection for residents. The USDI Bureau of Land Management and the Craig Mountain Idaho Department of Lands would respond to wildland fires in this area.

COMMUNITY ASSESSMENT

Residents in the Cottonwood-Keuterville area have low risk of experiencing a wildland fire due to the extensive agricultural development. Nevertheless, in the event of wildfire, the light fuels would likely support a very fast-moving rangeland fire. Therefore, it is imperative that homeowners implement fire mitigation measures to protect their structures and families prior to such an event.

Homes located in timbered areas west of Keuterville have an increased risk of loss to wildfire, although recent harvesting operation practices have decreased this risk. Many homeowners in this area also maintain a defensible space by watering lawns and mowing grass and weeds near structures.

The primary fire risk is associated with the abundance of human activity and the use of machinery near dry, flashy fuels. The receptive nature of these fuels increases the likelihood of a fire start. Most homeowners maintain an adequate defensible space around structures by watering their yards or mowing grass and weeds.

MITIGATION ACTIVITIES

Creating a fuel break along timbered sections of the Uptmor-Gehring Road would drastically decrease the likelihood of a fire approaching from the Salmon River canyon threatening the community. Homeowners in this area should also maintain a well groomed and green defensible space in order to ensure that their structures and families are protected from wildland fire.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Fenn, Greencreek, Winona, and Ferdinand

The communities of Fenn, Greencreek, Winona, and Ferdinand are located on the Camas Prairie in the northwestern portion of Idaho County. Farming and ranching drives the economy in these small towns. Agricultural fields surround the city centers and extend for several miles in all directions. This area is almost entirely privately owned and there are very few trees and little native prairie grasslands dotting the relatively even landscape. U.S. Highway 95 passes directly through Fenn and Ferdinand and is the main method of transporting the grains, canola, peas, and other crops that are grown in the area. Greencreek, Winona, and Ferdinand are encompassed by the Nez Perce Indian Reservation.

FIRE POTENTIAL

Fuels Assessment

There is very little native vegetation remaining near these prairie ecosystem communities. The native Camas Prairie plant community has been almost exclusively replaced by agriculture and pasture lands. A few patches of native species, such as big bluestem, blue camas, shooting star, and lupines, can be found sporadically along fence lines or in non-tillable corners. The remnant prairie grasslands historically burned at relatively frequent intervals, but generally were lower intensity fires. The agricultural fields currently dominating the landscape become very dry during the summer months. These cured grasses can be very flammable, especially under extreme weather conditions, such as drought or wind. In the event of an uncontrolled wildfire, these light fuels would tend to support very fast moving, yet lower intensity fires. However, modification of the vegetation around structures can be done quickly with available farm equipment and is usually effective in controlling wildfire.

Ignition Profile

Although lightning events are common in Idaho County, the communities of Fenn, Greencreek, Winona, and Ferdinand are more prone to human caused ignitions than lightning strikes due to the flat topography and agricultural development. Annual field burning, debris fires, and vehicle use are much more common ignition sources. Stubble fires seldom escape landowner's boundaries; however, there are a few incidences each year. These fires are generally easily suppressed by modifying the vegetation and homes are rarely threatened.

Vehicle use on- and off-road is also a significant source of ignitions. Not only do sparks from vehicles ignite fuels along roadways, but also fires are commonly started by vehicles driving through dry fields or on unimproved trails. Grain trucks, ATV's, and pickups are used regularly in farming operations.

INGRESS-EGRESS

U.S. Highway 95 is the primary travel route across the Camas Prairie. This two-lane highway passes through the communities of Fenn and Ferdinand. Winona is located along State Route 162 between Nez Perce and Kamiah. Greencreek is accessed by Greencreek Road, a paved two-lane short-cut between U.S. 95 and Power line Road. All of these roadways are abutted by agricultural or pasturelands that are at low risk of experiencing a wildland fire. There are several secondary routes crossing the area that may serve as potential escape routes depending on the location of the fire. Typically, these roads are also at low fire risk due to the lack of flat topography and native vegetation.

INFRASTRUCTURE

Residents of Fenn, Greencreek, Winona, and Ferdinand either are connected to a municipal well or have drilled personal wells. Most farmers in this area do not irrigate so supplementary wells for agricultural purposes are not usually necessary; however, several ranchers use surface runoff or small springs to provide water for livestock. These water resources would not likely be seriously affected by a rangeland fire.

The Grangeville Line of the Camas Prairie Railroad traveling from Spalding through Ferdinand and Fenn to Grangeville has recently been abandoned. This line historically transported grain, lumber, fertilizer, and other products to and from Camas Prairie markets.

FIRE PROTECTION

The Ferdinand Volunteer Fire Department is responsible for structural protection around the community of Ferdinand. Structures in Fenn are protected by the Grangeville Rural Fire District. The Cottonwood Volunteer Fire Department provides structural protection for residents of Greencreek, and the Kamiah Fire Department would be dispatched for structural fires in the Winona area. Due to the many rural farms and ranches, these departments typically have good mutual aid relationships in order to provide the best service possible and to provide back up for each other.

COMMUNITY ASSESSMENT

Residents in the Fenn-Greencreek-Winona-Ferdinand area have low risk of experiencing a wildland fire due to the extensive agricultural development. Nevertheless, in the event of wildfire, the light fuels would likely support a very fast-moving rangeland fire. Therefore, it is imperative that homeowners implement fire mitigation measures to protect their structures and families prior to such an event.

The primary fire risk is associated with the abundance of human activity and the use of machinery near dry, flashy fuels. The receptive nature of these fuels increases the likelihood of a fire start. Most homeowners maintain an adequate defensible space around structures by watering their yards or mowing grass and weeds.

MITIGATION ACTIVITIES

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for recommended mitigation.

Grangeville

The community of Grangeville is located on the Camas Prairie at approximately 3,300 feet elevation. The surrounding area is primarily farmland to the north, east, and west, with relatively flat terrain to rolling hills. Vegetation is predominantly agricultural in nature interspersed with uncultivated grasslands and isolated open ponderosa pine stands. To the south, terrain slopes upward to just over 6,000 feet within five miles of town. Vegetation quickly changes from the open grasslands of the Camas Prairie to dry-site Ponderosa Pine and Douglas-fir stands to denser stands of mixed conifer on the north-facing slopes. Drainages are predominantly moister site spruce/fir stands.

The Crimson Ridge Subdivision and Bear Den RV Park are new developments being constructed along U.S. Highway 95 and Fish Hatchery Road west of town. At completion, Crimson Ridge will encompass 80 new home sites. Additional home sites are also being developed south of Bear Den RV Park along Fish Hatchery Road. Other subdivisions include Meadow Grass Acres, The Vineyards, and Golden Hills.

FIRE POTENTIAL

Fuels Assessment

There is very little native vegetation remaining near this prairie ecosystem community. The native Camas Prairie plant community has been almost exclusively replaced by agriculture and pasture lands. A few patches of native species, such as big bluestem, blue camas, shooting star, and lupines, can be found sporadically along fence lines or in non-tillable corners. The remnant prairie grasslands historically burned at relatively frequent intervals, but generally were lower intensity fires. The agricultural fields currently dominating the landscape become very dry during the summer months. These cured grasses can be very flammable, especially under extreme weather conditions, such as drought or high winds. In the event of an uncontrolled wildfire, these light fuels would tend to support very fast moving, yet lower intensity fires. However, modification of the vegetation around structures can be done quickly with available farm equipment and is usually effective in controlling wildfire.

Ignition Profile

Both natural and human caused ignitions occur around the community of Grangeville. The community center is more prone to human caused ignitions than lightning strikes due to the flat topography and agricultural development; however, lightning strikes occur frequently in the state and federal forestlands to the south and east of the population center. Annual field burning, debris fires, and vehicle use are more common ignition sources. Stubble fires seldom escape landowner's boundaries; however, there are a few such incidents each year. These fires are generally easily suppressed by modifying the vegetation and homes are rarely threatened.

Vehicle use on- and off-road is also a significant source of ignitions. Not only do sparks from vehicles ignite fuels along roadways, but also fires are commonly started by vehicles driving through dry fields or on unimproved trails. Grain trucks, ATV's, and pickups are used regularly in farming operations.

INGRESS-EGRESS

U.S. Highway 95 and State Route 13 are the primary access routes to and from Grangeville. Both routes are two-lane, paved highways. There are also several paved or gravel secondary routes extending into the lower risk Camas Prairie grasslands that could serve as potential escape routes including Rock Pit Road and Tolo Lake Road. All of these roadways are abutted by agricultural or pasturelands that are at low risk of experiencing a wildland fire.

INFRASTRUCTURE

Residents of Grangeville depend on the Three Mile Creek Watershed for most of the water resources; however, homeowners outside of the city limits typically have drilled personal wells. Most farmers in this area do not irrigate so supplementary wells for agricultural purposes are not usually necessary; however, several ranchers use surface runoff or small springs to provide water for livestock. Ground water resources would not likely be seriously affected by wildland fire.

The Three Mile Creek Watershed, located three miles directly south of Grangeville, consists of ponderosa pine and Douglas-fir stands. Much of this drainage has been logged over the years with little subsequent management. There are several acres of dense pine and fir regeneration stands intermixed with multi-layered stands of Douglas-fir, pine, and western larch. These slopes are of moderate to high concern for potential crown fire spread leading up to the High Camp Loop Road, where communications facilities are at risk as well as to private homes on either side of this drainage. Potential impacts of a large stand-replacing fire in this area could negatively affect the community of Grangeville via potential flooding, erosion, and degradation of water quality.

FIRE PROTECTION

The Grangeville Rural Fire District is responsible for structural fire protection in this area, while the USDA Forest Service, the Idaho Department of Lands, and the USDI Bureau of Land Management provide wildland fire protection.

COMMUNITY ASSESSMENT

Residents of the Grangeville area have low to moderate risk of experiencing a wildland fire due to the extensive agricultural development. Nevertheless, in the event of wildfire, the light fuels would likely support a very fast-moving rangeland fire. Therefore, it is imperative that homeowners implement fire mitigation measures to protect their structures and families prior to such an event.

The new Crimson Ridge Subdivision and Bear Den RV Park developments currently under construction in Grangeville are located between the city center and the Grangeville Country Club along Highway 95. This area is at low risk of wildfire due to the surrounding prairie vegetation and pasture ground. Meadow Grass Acres north of Grangeville and The Vineyards are also at low risk of wildfire. As more development occurs in this area, the fire risk will likely be reduced further. Nevertheless, fire ignitions are highly correlated with population density; more people typically means more human caused fire starts. There is currently a gap in fire coverage between the Harpster Fire District and the Grangeville Rural Fire District. This results in the Golden Hills Subdivision area being without structural protection.

As the community grows, more and more homes are also being built in the wildland urban interface, particularly south and southwest of town. Many of these new homes abut forest-type fuels and are accessed by one-way in and one-way out driveways, which dramatically increases the likelihood of loss of life or property in the event of a wildland fire. These homes and other buildings are at much higher risk of experiencing a fire.

The primary fire risk is associated with the abundance of human activity and the use of machinery near dry, flashy fuels. The receptive nature of these fuels increases the likelihood of a fire start. Most homeowners maintain an adequate defensible space around structures by watering their yards or mowing grass and weeds.

MITIGATION ACTIVITIES

The Three Mile Creek Watershed should be a high priority for fire mitigation treatments due to the dependence of the community on the water resources produced by this facility.

New developments in the wildland urban interface should be regulated by building codes that protect residents from the effects of wildfire. Ensuring that there are adequate water resources available for emergency use and that new roads and driveways are accessible to emergency apparatus will become increasingly important as the community expands.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Pollock

The community of Pollock is a very small town located along U.S. 95 adjacent to the Little Salmon River. The relatively recent development of a homeowner's association on the west bank of the Little Salmon River has resulted in a concentration of homes in this area. These homes are scattered throughout the rangeland fuels that dominate these steep break lands. There are also several structures and ranches associated with the Diamond Springs Subdivision, the Rapid River Fish Hatchery, and the Whitewater Wilderness Ranch located near Pollock on the Rapid River Road.

FIRE POTENTIAL

Fuels Assessment

The rangeland vegetation dominating the town site is typical of the Salmon River canyon consisting of cured grasses. Historically, this area was actively grazed by livestock, which significantly reduced the amount of fine fuels. However, as more homes are built, grazed land is continually reduced. Fires in rangeland fuels typically burn at low intensities, but spread very rapidly, especially under the influence of up canyon winds.

Along the upper breaks on the west side of the river, the landscape is dominated by relatively open ponderosa pine and Douglas-fir stands with a grass understory. These forest fuels will typically experience surface fires in mild years, but have the potential to spread to crowns when fuel moisture is low and winds are high. Ladder fuels in interface areas have increased due to current fire suppression policies. This can lead to more severe fire behavior, especially on steeper slopes.

Ignition Profile

Both natural and human caused ignitions occur around the community of Pollock. The community center is more prone to human caused ignitions than lightning strikes due to its location in the bottom of the drainage and nearby water resources; however, lightning strikes occur frequently in the forested lands on upper slopes and along the canyon rim. Annual field burning, debris fires, and vehicle use are more common ignition sources. On gentler slopes, rangeland fires in this area can be relatively easy to suppress by modifying the vegetation; however, on the steeper slopes fire suppression becomes much more difficult and hazardous.

Vehicle use on- and off-road is also a significant source of ignitions. Not only do sparks from vehicles ignite fuels along roadways, but fires are also commonly started by vehicles driving through dry fields or on unimproved trails.

INGRESS-EGRESS

U.S. Highway 95 is the main access into Pollock. This two-lane highway provides rapid egress both to the north and south. Although there are numerous gravel secondary roads in the area, none are thru roads accessing safe locations. The lack of an alternate escape route increases the fire hazard.

The Rapid River Road is the sole access route into the Diamond Springs Subdivision and the Rapid River Fish Hatchery. This well-maintained gravel route has turnouts and a turnaround area at the end. Several homes and the Whitewater Wilderness Ranch are accessed via narrow secondary roads that may limit access by emergency vehicles.

INFRASTRUCTURE

Residents in the Pollock area have personal wells. These water resources would not likely be severely affected by wildland fire.

FIRE PROTECTION

The Salmon River Volunteer Fire Department maintains stations on Rapid River Road and Whitewater Wilderness Ranch to provide structural fire protection in this area. The USDA Forest Service is responsible for wildland fire protection.

COMMUNITY ASSESSMENT

Residents of the Pollock area have moderate risk of experiencing a wildland fire due to the lack of an alternate escape route, dry, flashy fuels, and steep slopes rising from the river canyon. Therefore, it is imperative that homeowners implement fire mitigation measures to protect their structures and families prior to such an event.

The Whitewater Wilderness Ranch, Diamond Springs Subdivision, and the Rapid River Fish Hatchery all exhibit risk factors that increase their vulnerability to wildfire. Homes and other structures along the Rapid River Road sit in the small valley created by Rapid River. In the event of a fire, the valley walls may funnel hot fumes and gases as well as cause extreme fire behaviors. Additionally, the Rapid River Road is the sole access route for residents in this area. Residents fortunately do have easy access to water resources.

Many homes in this area are accessed by one-way in and one-way out driveways. It is difficult for emergency response personnel to protect these homes safely; therefore, it is more likely that homes with this characteristic will experience loss of life or property in the event of a wildland fire.

Homes located on mid or upper slopes are in danger of becoming threatened by rangeland fire spreading rapidly up slope. These homes generally have poor access and would be difficult to protect in a wildfire situation. The receptive nature of the fuels in this area increases the likelihood of a fire start. Residences exhibiting these traits have an increased fire risk. However, most homeowners maintain a defensible space around structures by watering their yards and mowing grass and weeds.

MITIGATION ACTIVITIES

Residents of Pollock and the surrounding area 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.

Grazing generally works positively towards reducing the fine fuels in the vegetation types surrounding Pollock, particularly in rangeland areas and open forest stands with grass and brush in the understory. Many landowners already graze livestock in areas that would otherwise be more susceptible to carrying a wildland fire. Grazing is a relatively inexpensive fire mitigation tool that typically works very well with little negative impact on the land.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Riggins

The community of Riggins is located at the intersection of the Main Salmon and the Little Salmon Rivers. Drainages coming off the western slope of the Salmon River canyon have become rural residential areas. There are several homes and small ranches leading up to the Nez Perce National Forest boundary on the Race Creek Road, Bean Creek Road, Kessler Creek Road, and the Seven Devils Road (Squaw Creek and Papoose Creek).

The economy of this small roadside community is almost completely dependent on the flow of tourists' dollars. As the "Whitewater Capital of the World", Riggins is a bustling metropolis throughout the rafting and kayaking seasons. This area is also popular for its fishing and camping opportunities.

FIRE POTENTIAL

Fuels Assessment

The rangeland vegetation dominating the town site is typically of the Salmon River canyon consisting of cured grasses and patches of sage brush. Scattered ponderosa pine grows in many of the shallow draws where the soil moisture is slightly higher, particularly on the east side of the river. Several hardwood species can also be found along the narrow banks of the Little Salmon. The slopes rising from the city center are actively grazed by livestock and wildlife, which helps to reduce the fine fuel loads. Fires in rangeland fuels typically burn at low intensities, but spread very rapidly, especially under the influence of up canyon winds.

Along the upper breaks on the west side of the river, land is dominated by forest cover intermixed with rangelands. These habitat types will experience ground fires under normal fire conditions, but have the potential to spread to crowns when fuel moisture is low and winds are high. Ladder fuels are present in the interface between the range lands and the forest lands, which increases the likelihood of a torching and crowning wildfire. The dry nature of the vegetation combined with steep canyon slopes makes this area very susceptible to rapidly spreading rangeland fires.

Ignition Profile

Both natural and human caused ignitions occur around the community of Riggins. The community center is more prone to human caused ignitions than lightning strikes due to its location in the bottom of the drainage and nearby water resources; however, lightning strikes occur frequently in the forested lands on upper slopes and along the canyon rim. Debris or campfires and vehicle use are more common ignition sources. On gentler slopes rangeland fires in this area can be relatively easy to suppress by modifying the vegetation; however, on the steeper slopes fire suppression becomes much more difficult and hazardous.

Vehicle use on- and off-road is also a significant source of ignitions. Not only do sparks from vehicles ignite fuels along roadways, but fires are also commonly started by vehicles driving through dry fields or on unimproved trails.

INGRESS-EGRESS

U.S. Highway 95 is the main access into Riggins. This two-lane highway provides rapid egress both to the north and south. Although it dead ends several miles up the Main Salmon River, the Salmon River Road is highly trafficked. Boaters, anglers, rafters, and residents use this narrow corridor excessively. The gravel/paved, single-lane roadway follows the river's contours eastward crossing several light duty bridges along the way. There are only a few turnouts, no guard rails, and bridges are inadequately signed. This road is currently undergoing a major renovation project, which should greatly improve safety along

this roadway. Heavy traffic and recreational use make this passageway extremely prone to a fire ignition. Furthermore, emergency evacuation of this corridor would be difficult and unsafe. The only alternate escape route from Riggins is the Bean Creek Road, a Forest Road traveling north along the ridge on the west side of the river all the way back to White Bird. In order to function as a safe escape route, this road would need clearing of hazardous vegetation, regular maintenance, and emergency route signage.

INFRASTRUCTURE

Residents of Riggins depend on a community well system and personal wells. These water resources would not likely be severely affected by a wildland fire; however, the electrical power that operates the pumps on the wells could potentially be interrupted or damaged leaving all or a portion of the community without water.

FIRE PROTECTION

The Riggins City Volunteer Emergency Services has equipment and a station in Riggins, which provides for city fire protection and the protection of homes within the ten-mile mutual aid area with Salmon River Rural Fire Department. This station also houses two ambulances. The Nez Perce National Forest is responsible for wildland fire control west and north of the Salmon River, while the Payette National Forest is responsible for wildland fire control east and south of the river.

COMMUNITY ASSESSMENT

Residents of the Riggins area have moderate to high risk of experiencing a wildland fire due to the intense recreational activities, dry, flashy fuels, and steep slopes rising from the river canyon. Therefore, it is imperative that homeowners implement fire mitigation measures to protect their structures and families prior to such an event.

Many homes in this area are accessed by one-way in and one-way out driveways. It is difficult for emergency response personnel to protect these homes safely; therefore, it is more likely that homes with this characteristic will experience loss of life or property in the event of a wildland fire. Many of the homes in the creek drainages on the west side of the Salmon River are accessed by only a single roadway. In most cases, these roads dead end near the top of the ridge within the National Forest. Homes in the Race Creek, Squaw Creek, Bean Creek, and Kessler Creek drainage are at a higher fire risk due to the flashy fuels and limited ingress and egress. This situation is further exacerbated by their location in a draw, which may funnel hot gases and fumes. Fires in this type of topography are generally difficult and dangerous for firefighters to suppress.

Homes located on mid or upper slopes are in danger of becoming threatened by rangeland fire spreading rapidly up slope. These homes generally have poor access and would be difficult to protect in a wildfire situation. The receptive nature of the fuels in the area increases the likelihood of a fire start. Residences exhibiting these traits have an increased fire risk. However, most homeowners maintain a defensible space around structures by watering their yards and mowing grass and weeds.

MITIGATION ACTIVITIES

Development of evacuation plans for the residents located in the small creek drainages west of Riggins is necessary to assure orderly evacuations in the event of a threatening wildland fire. Designation and posting of escape routes would reduce chaos and escape times for fleeing residents. Most residents would benefit from the construction of additional escape routes to Highway 95. Community safety zones should also be established in the event of a compromised evacuation. Efforts should be made to educate homeowners through existing homeowners associations or creation of such organizations to act as conduits for this information.

Grazing generally works positively towards reducing the fine fuels in the vegetation types surrounding Riggins, particularly in rangeland areas and open forest stands with grass and brush in the understory. Many landowners already graze livestock in areas that would otherwise be more susceptible to carrying a wildland fire. Grazing is a relatively inexpensive fire mitigation tool that typically works very well with little negative impact on the land.

Residents and visitors to the Riggins area would also benefit from improvements to the Salmon River Road. In the event of an emergency, this road would become extremely congested. Emergency personnel would not be able to travel up river during an evacuation due to the narrowness of the roadbed and lack of turnouts.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Slate Creek and Lucile

The small communities of Slate Creek and Lucile are located along U.S. Highway 95 and the Salmon River between White Bird and Riggins. Slate Creek, after which the community was named, flows into the Salmon River just north of the Slate Creek city center. The economy in Slate Creek is largely dependent on area farmers and ranchers; however, employees of the Salmon River Ranger District make up a large portion of seasonal residents. There are only a few permanent residents living in Lucile; however, privately owned recreational facilities attract travelers and tourists, especially during the warmer months. There are several homes located in the Cow Creek drainage on the west side of the canyon across the Salmon River from the city center. Lucile is also the primary pick up point for rafters and kayakers traveling down river from Riggins. Both Slate Creek and Lucile are also popular fishing and camping destinations due to their easy access of the highway and their location along the Salmon River corridor.

FIRE POTENTIAL

Fuels Assessment

The rangeland vegetation dominating these town sites is typical of the Salmon River canyon consisting of cured grasses and forbs. Scattered ponderosa pine grows at higher elevations in many of the shallow draws where the soil moisture is slightly higher. Many non-native hardwood species have been planted along Slate Creek and throughout the community of Slate Creek creating somewhat of an oasis in the dry rangeland landscape. The steep canyon slopes rising from both communities are actively grazed by livestock and wildlife, which helps to reduce the fine fuel loads. Fires in rangeland fuels typically burn at low intensities, but spread very rapidly, especially under the influence of up canyon winds.

Along the upper breaks on both sides of the river, land is dominated by forest cover intermixed with rangelands. These habitat types will experience ground fires under normal fire conditions, but have the potential to spread to crowns when fuel moisture is low and winds are high. Ladder fuels are present in the interface between the range lands and the forest lands, which increases the likelihood of a torching and crowning wildfire. The dry nature of the vegetation combined with steep canyon slopes makes this area very susceptible to rapidly spreading rangeland fires.

The Hells Canyon National Recreation Area (Wallowa-Whitman National Forest) and the Nez Perce National Forest boundaries are within two to five miles of both communities. Heavier fuel loading due to decades of fire suppression on these federally administered lands may increase the fire risk to neighboring communities including Slate Creek and Lucile. Nevertheless, immediate fire suppression is generally the policy if communities or homes are or could become threatened by wildfire.

Ignition Profile

Both natural and human caused ignitions occur around the Slate Creek and Lucile. The community centers are more prone to human caused ignitions than lightning strikes due to its location in the bottom of the drainage and nearby water resources; however, lightning strikes occur frequently in the forest and rangelands on upper slopes. Debris or campfires and vehicle use are more common ignition sources. On gentler slopes rangeland fires in this area can be relatively easy to suppress by modifying the vegetation; however, on the steeper slopes fire suppression becomes much more difficult and hazardous.

Vehicle use on- and off-road is also a significant source of ignitions. Not only do sparks from vehicles ignite fuels along roadways, but fires are also commonly started by vehicles driving through dry fields or on unimproved trails.

INGRESS-EGRESS

U.S. Highway 95 is the main access into both Slate Creek and Lucile. This two-lane highway provides rapid egress both to the north and south. The only secondary access out of Lucile is the Cow Creek Road, which travels west from the river intersecting with other Forest Roads on the ridge top. This gravel road may be an adequate escape route if a fire occurs on the east side of the Salmon River; however, it would likely become impassable in the event of a fire occurrence on the western slope. In order to function as a safe escape route, this road would need improvements, regular maintenance, and emergency route signage. There are two gravel roads on the eastern slope of the river near Slate Creek that could function as escape routes. Slate Creek Road and Nut Basin Road are both gravel routes that lead into Nez Perce National Forest system lands. Both of these routes would need improvements, regular maintenance, and signage to function as an emergency escape route. Both of these roadways could easily become impassable due to a wildfire on the eastern slope. There are no secondary routes on the western side of the Salmon River.

INFRASTRUCTURE

The communities of Slate Creek and Lucile rely on personal or multiple home wells. These water resources would not likely be affected by wildland fire.

FIRE PROTECTION

The Salmon River Rural Fire Department is responsible for structural fires in Slate Creek and the Riggins Fire Department is responsible for structural fires in Lucile. The USDA Forest Service and the Idaho Department of Lands provide wildland fire protection.

COMMUNITY ASSESSMENT

Residents of the Slate Creek-Lucile area have moderate risk of experiencing a wildland fire due to the intense recreational activities, dry, flashy fuels, and steep slopes rising from the river canyon. This risk is further increased by the lack of good alternate escape routes. In the event of a wildfire, U.S. Highway 95 will be the sole escape route for many residents and travelers. Therefore, it is imperative that homeowners implement fire mitigation measures to protect their structures and families prior to such an event.

Many homes in this area are accessed by one-way in and one-way out driveways. It is difficult for emergency response personnel to protect these homes safely; therefore, it is more likely that homes with this characteristic will experience loss of life or property in the event of a wildland fire.

Homes in the Cow Creek drainage opposite Lucile have an increased risk of fire. Not only are they surrounded by dry, flashy rangeland fuels, but they are also located in a narrow canyon with only one escape route. The walls of the canyon would likely funnel hot fumes and gases and cause extreme fire behavior characteristics, making suppression difficult and dangerous for firefighters. Residents in the Cow Creek area are dependent on the bridge across the Salmon River into Lucile for their primary escape route. If this bridge were compromised, residents would have to travel up the canyon to Forest Road 672, which, because fire generally moves upslope, may not be a very safe alternative.

Homes located on mid or upper slopes are in danger of becoming threatened by rangeland fires moving spreading rapidly up slope. These homes generally have poor access and would be difficult to protect in a wildfire situation. The receptive nature of the fuels in the area increases the likelihood of a fire start. Residences exhibiting these traits have an increased fire risk. However, most homeowners maintain a defensible space around structures by watering their yards and mowing grass and weeds. Additionally, both Slate Creek and Lucile are located in the bottom of the canyon adjacent to vast water resources, which drastically reduces the fire risk.

MITIGATION ACTIVITIES

Grazing generally works positively towards reducing the fine fuels in the vegetation types surrounding the communities of Slate Creek and Lucile, particularly in rangeland areas and open forest stands with grass and brush in the understory. Many landowners already graze livestock in areas that would otherwise be more susceptible to carrying a wildland fire. Grazing is a relatively inexpensive fire mitigation tool that typically works very well with little negative impact on the land.

Residents and visitors to Slate Creek and Lucile would also benefit from improvements and signage along the secondary escape routes.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Upper Salmon River In-Holdings

The Upper Salmon River community is a number of isolated ranches and homes scattered along the main Salmon River, upriver from the end of the Salmon River Road. This includes the Shepp Ranch, the Polly Bemis Ranch, the Indian Creek Ranch, the James Ranch, the Romine Ranch, the Allison Ranch, Campbell's Ferry, China Bar, Five Mile Bar, Jim Moore (historical), Painter Bar, the Wolfe Place, Yellow Pine, Whitewater Ranch, and Mackey Bar. These homes are scattered along the Main Salmon River in the typically grassy fuels that dominate these steep break lands.

FIRE POTENTIAL

Fuels Assessment

The rangeland vegetation dominating these sites is typical of the Salmon River canyon consisting of cured grasses. Fires in these fuels tend to burn at low intensities, but spread very rapidly, especially under the influence of up canyon winds.

Along the upper breaks on the north side of the river, the landscape is dominated by relatively open ponderosa pine and Douglas-fir stands with a grass understory. These forest fuels will generally experience surface fires in mild years, but could support a crown fire when fuel moisture is low and winds are high. Ladder fuels throughout the drainage have increased due to current fire suppression policies. This can lead to more severe fire behavior, especially on steeper slopes.

Ignition Profile

Both natural and human caused ignitions occur along the upper Salmon River. Many of the in holdings are more prone to human caused ignitions than lightning strikes due to their location in the bottom of the drainage and nearby water resources; however, lightning strikes occur frequently in the forested lands on upper slopes and along the canyon rim. Annual recreation use on the river brings a huge influx of potential starts; however, fire restrictions along the river corridor have aided in decreasing this likelihood. On gentler slopes wildland fires in this area can be relatively easy to suppress by modifying the vegetation; however, on the steeper slopes fire suppression becomes much more difficult and hazardous.

INGRESS-EGRESS

There is no road along the upper Main Salmon River. These backcountry ranches are supplied either by jet boat on the river or airplane. Most of these in-holdings have trail access also. Mackay Bar and White Water Ranch have road access via narrow, seasonal dirt roads accessible by ATV or four-wheel drive vehicles.

INFRASTRUCTURE

There are no phone or power lines. Communication consists of an old radio system, satellite internet and phone, and hand delivered mail via boat or aircraft.

FIRE PROTECTION

There is no organized fire protection for the residents along the upper Salmon River. Residents have established a backcountry radio network and are in communication with one another, usually daily; thus, they would be able to solicit help from their neighbors. The response time for each ranch may vary due to location, weather, and transportation means.

COMMUNITY ASSESSMENT

Residents along the Main Salmon River have moderate to high risk of experiencing a wildland fire due to the sheer remoteness, lack of escape routes, flashy fuels, and steep slopes rising from the river canyon. Human caused fire ignitions are more likely to occur along the river corridor and move very quickly upslope leaving little time to escape. Therefore, it is imperative that homeowners implement fire mitigation measures to protect their structures and families prior to such an event.

The remoteness of these homes and the vast amounts of surrounding fuels make it highly probable that a number of these residents will experience loss of life or property in the event of a wildland fire.

Prescribed burning projects have been conducted on Forest Service lands adjacent to the Mackey Bar Road to Little Mallard Creek to reduce the risk of wildfire encroaching on private lands. These projects not only serve to create a safe escape route for residents, but will also enable emergency apparatus and personnel to access the property more safely.

Homes located on mid or upper slopes are in danger of becoming threatened by fire spreading rapidly up slope. These homes generally have poor access and would be difficult to protect in a wildfire situation. The receptive nature of the fuels in this area increases the likelihood of a fire start. Residences exhibiting these traits have an increased fire risk. However, most homeowners maintain a defensible space around structures by irrigating their yards and mowing grass and weeds.

MITIGATION ACTIVITIES

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

White Bird

This small town is located one mile off the Salmon River along White Bird Creek at about 1,600 feet in elevation. The mountains surrounding it quickly rise to 5,000 feet with the timber line down to 2,000 feet on north slopes and 3,800 feet on south slopes. Ponderosa pine grows along the river in the shade of the mountains. The rangeland is plagued by yellow starthistle and cheat grass, but there are still native grasses mixed throughout.

Deer Creek Road takes off from the Swiftwater Bridge on the west side of the canyon west of White Bird. This road travels southwest over the ridge, then drops down to the Snake River on the other side. There are numerous homes and ranches all along this roadway up to the National Forest Boundary.

The Twin Rivers Subdivision, which is still under development, lies on the west side of the Salmon River in the Hammer Creek and lower Deer Creek area. These lots are typically riverfront views with limited access.

FIRE POTENTIAL

Fuels Assessment

The rangeland vegetation that covers most of the Salmon River canyon, including the slopes rising from the White Bird Creek drainage, is primarily made up of cured grasses with hay fields and pasture ground intermixed. Fires in rangeland fuels typically burn at low intensities, but spread very rapidly, especially under the influence of up canyon winds.

Ponderosa pine is present on the mid and upper slopes of the western canyon wall of the Salmon River. These stands tend to be relatively open with a grass and light brush understory. Over the past several years, this east aspect slope has been systematically logged in order to continue development of the Twin River subdivision. This area is at high risk for wildfire due to the increased human activity in combination with highly flammable rangeland fuels, slash build up from logging activity, and steep slopes.

Rangeland in the Salmon River canyon historically burned very frequently, which restored nutrients to the ecosystem and eradicated invasive species. Due to recent suppression policies and severe soil disturbance cheat grass and other nonnative species have become established. Cheat grass's fine structure and ability to dominate completely disturbed sites provides a dry, consistent fuel bed for fire. In areas where the exotic has out competed native species, there is a consistent bed of fine fuels that can actively carry fire without the effect wind. Because of these characteristics, cheat grass will support fire during times of the year and under conditions in which native vegetation would not sustain a wildland fire.

Ignition Profile

Both natural and human caused ignitions occur around the community of White Bird. The community center is more prone to human caused ignitions than lightning strikes due to its location in the bottom of the drainage and nearby agricultural development; however, lightning strikes occur frequently along the canyon rim and in the forestland east of the town. Annual field burning, debris fires, and vehicle use are much more common ignition sources. Stubble fires seldom escape landowners' boundaries; however, there are a few such incidents each year. These fires are generally easily suppressed by modifying the vegetation and homes are rarely threatened.

Vehicle use on- and off-road is also a significant source of ignitions. Not only do sparks from vehicles ignite fuels along roadways, but fires are also commonly started by vehicles driving through dry fields or on unimproved trails. Grain trucks, ATV's, and pickups are used regularly in farming operations.

INGRESS-EGRESS

The old U.S. Highway 95 passed directly through the White Bird community center. The new highway bypasses the town site via a large bridge across the White Bird Creek drainage. The primary access into the community center is a short spur road off the new U.S. 95 that connects to the old highway. The new U.S. 95 is the most direct route to and from the Salmon River canyon; however, the old highway can still be used to gain access to the Camas Prairie to the north. Both of these roadways are bordered by rangeland fuels; thus, it is unlikely that both would be disabled at the same time due to the short duration of fires typical in these fuels. Nevertheless, the Free Use Road and the Canfield Road could be used as alternative escape routes. These roads are also at low risk due to the lack of heavy fuels.

The Deer Creek Road is the sole access route for residents in the Deer Creek area. Most of this gravel route is fairly narrow and winding, traveling through rangeland fuels or pasture ground until it reaches the Nez Perce National Forest boundary near the summit.

The Twin Rivers Subdivision is accessed by Deer Creek Road and Canfield Road off the Old Highway 95 loop through Swift Water. Both of these access routes are narrow gravel roads, which may not support two-way truck traffic in several spots. Additionally, most homeowners have narrow private driveways with inadequate turnaround or turnout areas, which may limit emergency vehicle admittance.

INFRASTRUCTURE

Residents of city of White Bird rely on a community well system, while homeowners in the surrounding areas have personal or multiple home wells. These water resources are not likely to be severely affected by wildfire.

FIRE PROTECTION

The White Bird Volunteer Fire Department is responsible for structural fire protection in the City of White Bird. Salmon River Rural Fire Department and White Bird Volunteer Fire Department have an automatic response agreement for the area surrounding the city.

COMMUNITY ASSESSMENT

Although the White Bird town site is at relatively low risk of experiencing a wildfire; homes located along the steep slopes rising from either Salmon River or the White Bird Creek drainage are at much higher risk. Many homeowners in the Deer Creek area would be threatened in the event of a fire burning upslope on the west side of the river. If access to the river via the Deer Creek Road were compromised, residents would be forced to travel up the grade either to be airlifted or jet boated out of Pittsburg Landing or take Forest Road 672 along the ridge top all the way to Lucile or Riggins.

The Twin River Subdivision on the west side of the Salmon River is at particularly high risk. Since the development of the subdivision seven years ago, there have been five fires in the area, and on four of those occasions structures were threatened. On one occasion, a fire came so close that scorch marks were left on a home. Idaho County currently has no planning and zoning laws in place; however, cooperation through local fire response agencies has resulted in a small fire education program for Twin River residents. The combination of light fuels and high fire occurrence on these steep slopes make it imperative that homeowners implement fire mitigation measures to protect their structures and families prior to such an event. The Hells Canyon National Recreation Area lies only two air miles south of the subdivision. The Wallowa-Whitman National Forest has jurisdiction over these lands; however, the less than aggressive initial attack that is practiced in natural areas could become a significant threat to homeowners in the Twin River development. A fire spreading over the ridge from the Hells Canyon area could result in multiple spot fires on the Salmon River side.

In 2000, landowners in the White Bird Creek drainage northeast of White Bird realized the importance of defensible space as the Burnt Flats Fire nearly caused an evacuation of the entire town. This fire burned 25,000 acres of forest and rangeland before it was contained. Additionally, the Poe-Cabin fire in 2007 threatened numerous homes and structures in the Salmon-River canyon south of White Bird. A fuels mitigation project started in 2004 and finished two years later resulted in all treated homes surviving a severe crown fire event. Evaluations of home sites conducted after the fire led to the production of the video, "Are We Safe from Fire?", currently being used nationally and on the internet.

As more and more homes are built in the wildland urban interface, particularly in the Twin River subdivision, pre-fire mitigation activities will become increasingly important. Due to the nature of the topography, many of these structures are accessed by one-way in, one-way out driveways, which are not conducive to effective fire protection and dramatically increases the likelihood of loss of life or property in the event of a wildland fire. These homes and other buildings are at much higher risk of experiencing a fire.

The primary fire risk is associated with the abundance of human activity and the use of machinery near dry, flashy fuels. The receptive nature of these fuels increases the likelihood of a fire start.

MITIGATION ACTIVITIES

Grazing generally works positively towards reducing the fine fuels in the vegetation types surrounding White Bird, particularly in rangeland areas and open forest stands with grass and brush in the understory. Many landowners already graze livestock in areas that would otherwise be more susceptible to carrying a wildland fire. Grazing is a relatively inexpensive fire mitigation tool that typically works very well with little negative impact on the land.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

4.3 Forestland Communities' Risk Evaluations in Idaho County

This section provides wildland fire risk evaluations for the forestland communities located in Idaho County by discussing general forestland vegetative associations, the overall forestland fuels assessment, and finally displaying individual community assessments.

4.3.1 Vegetative Associations

Vegetative structure and composition in Idaho County are closely related to elevation, aspect, and precipitation. Relatively mild and moist environments characterize the undulating topography of the region, which transitions from the Palouse prairie plant communities of the northwest region to the forest ecosystems that characterize the vast majority of the land area in Idaho County. These forest communities 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 toward forested communities dominated by ponderosa pine, western larch, grand fir, and Douglas-fir at the lower elevations, transitioning to lodgepole pine and subalpine fir at the higher elevations. Engelmann spruce and western red cedar are commonly 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 grass and shrub lands; 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 mosaic pattern at mid elevations, where accumulations of forest fuels result in either single or group tree torching, and in several instances, short crown fire runs. At the highest elevations, fire events are typically stand replacing, as years of fuel accumulation lead to large, intense wildfires.

Idaho County is unique in the sense that a huge amount of land area is designated wilderness or National Forest. The Selway Bitterroot Wilderness and the Frank Church River of No Return Wilderness cross into Idaho County. The Gospel Hump Wilderness is completely encompassed within Idaho County. In addition, jurisdiction over much of Idaho County's forestlands is apportioned to the Nez Perce National Forest, the Payette National Forest, the Bitterroot National Forest, and the Clearwater National Forest.

Many lower elevation forested areas throughout Idaho 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 the ability to manage wildland fires in the wildland-urban interface.

4.3.2 Overall Fuels Assessment

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 structures themselves are all examples. The physical properties and characteristics of fuels govern how fires burn. Fuel loading, size and shape, moisture content and continuity and arrangement all have an

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

The majority of homes and structures within and surrounding these communities are along a spectrum from low to moderate to high risk of loss to wildland fire. Individual characteristics of each community and structure dictate the risk factors. The prevalence of tree and shrub fuels poses a moderate to high threat to homes surrounded by these fuels. Fire typically spreads quickly through grasses, but burns at relatively high intensities in the brush and forest tree fuels, especially where declining forest health is a factor. Many homes are at low risk because of the management of fuels in the area immediately surrounding the structures and their access routes. There are a number of individual homes that are at much higher risk to wildland fire loss in the area, largely due to the use of highly ignitable materials in home construction, or to the lack of defensible space surrounding the home. Home defensibility practices can dramatically increase the probability of home survivability. The amount of fuel modification necessary will depend on the specific attributes of the site. Considering the high spread rates possible in these fuel types, homes need to be protected prior to fire ignitions, as there is little time to defend a home in advance of fire.

4.3.3 Individual Community Assessments

Burgdorf, Secesh, and Warren

The small mountain towns of Burgdorf, Secesh, and Warren are steeped in the history of the area. During the mid and late 1800's and early 1900's these communities were bustling mining towns. During their heydays, over 5,000 people lived in the area. Gold dredging began in the 1930's and continued until 1956. As a result, much of the Stratton Creek and Warren Creek drainages have been chewed up and overturned by the dredges, which is still staggeringly evident today.

On the Warren Wagon Road, it is approximately 30 miles to Burgdorf Junction and 45 miles to Warren from McCall. The scattered community of Secesh is located throughout Secesh Meadows on the Warren Wagon Road between Burgdorf and Warren

The Burgdorf Hot Springs and the USDA Forest Service Burgdorf Administrative Site are two of the few functioning buildings left in the old Burgdorf town site. Owners of the Burgdorf Hot Springs currently maintain the pool area and buildings and many of the old cabins, which they rent to visitors. There are several developed campgrounds in the area, which are well used by RV's and other campers, hikers, off-road ATV users, anglers, and explorers.

Residents of Secesh are scattered throughout the Secesh Meadows area in a privately owned strip along the Warren Wagon Road. This area is completely surrounded by Payette National Forest system lands. During the summer months, approximately 100 individuals reside in the area; however, many of these are only seasonal residents. The Chinook Campground is also located in Secesh and offers nine overnight campsites and additional parking. This is a popular starting point for overnight trips into the Loon Lake area.

Although it is listed as a ghost town, Warren has 9 to 15 year round and 45 to 60 summer time residents. There are several cabins and businesses at the old Warren town site still catering to tourists and travelers. Adventurers drive and four-wheel into Warren throughout the summer months and snowmobile in during the winter. Warren has a post office, a store, an air strip, and a few rooms for rent. The Warren Guard Station, located on the southwest end of town, is fully staffed during the fire season, complete with fire response and suppression equipment.

Much of the ground along the Warren Wagon Road between Burgdorf Junction and Warren is privately owned. Many new homes and seasonal residences have been built along this corridor. The majority of these structures are log cabins with short private drives. Although several homeowners maintain a defensible space, most homes are surrounded by forest fuels with little to no lawn or cleared area in an attempt to preserve an "outdoorsy" look.

FIRE POTENTIAL

Fuels Assessment

The landscape surrounding Burgdorf, Secesh, and Warren is dominated by higher elevation forest habitat types. Lodgepole pine and spruce are the dominant overstory species with a generally sparse grass and shrub understory. Due to extensive mining in various areas, rock piles and mounds of dirt are common throughout the forestlands, in a few cases reducing the fire potential by limiting available soil for plant growth.

Large portions of the Payette National Forest were burned during the 1910 fires and evidence of more recent fires is apparent surrounding the town sites, especially Burgdorf. The majority of the fires in the Burgdorf-Warren area tend to burn through subalpine forest types that typically experience low-

frequency, high-severity fire regimes. Since widespread fire suppression began in 1911, many subalpine forests have not yet missed an entire fire cycle; thus, much of these forests are still within their historical range of variability. Evidence of the 1985 French Creek Fire, 1989 Whangdoodle Fire, 1994 Corral Fire, the 2000 Burgdorf Junction Fires can be seen in the large, haunting stands of snags along the Warren Wagon Road and Forest Road 246.

Due to the steep, rugged terrain and remoteness of the communities, fires in these high elevation forests are difficult and potentially dangerous to fight. Additionally, there are only a few roads in the area that will support heavy equipment travel, which complicates and considerably limits suppression capabilities.

Ignition Profile

Both natural and human caused fires occur in this area. Most of the fire ignitions near Burgdorf, Secesh, and Warren are caused by summer lightning storms; however, the high density of recreational and industrial activity increases potential ignition sources significantly. Debris burning, discarded cigarettes, children playing with matches, fireworks, roadway fires, and camp fires are just a few of the countless potential human ignition sources in the area.

The abundance of human and natural ignition sources and unhealthy forest conditions in a number of areas increases the propensity of wildland fire. Fire characteristics will depend on fuel types and moisture levels, as well as on weather conditions at the time of ignition. Fires during periods of drought with high temperatures, low humidity, and strong winds can quickly lead to fast-moving, destructive wildfires, as was experienced during the Burgdorf Junction Fire.

INGRESS-EGRESS

The primary access into Burgdorf, Secesh, and Warren is via the Warren Wagon Road. This mostly two-lane route is paved from McCall to Burgdorf Junction and continues with a gravel surface towards Secesh and Warren and beyond. Burgdorf can also be reached by traveling up from the Salmon River Road on Forest Road 246, which is a one-lane dirt road. This path is not well-maintained (potholes, large rocks, etc. in road path) and traverses a steep grade with no guard rails and very few turnouts. This route could function as an emergency evacuation route due to the relatively small population, but only in extreme situations and only with coordination between officials on Salmon River Road to ensure a single direction of travel.

Forest Road 340 continues from Warren towards Big Creek in Valley County. Although escape on this route is possible, Forest Road 340 is not an acceptable secondary escape route. This is a one-lane, dirt road that travels deeper into the National Forest through heavy forest fuels. Not only would an evacuation on this route be difficult and dangerous, but it would also take several hours for escapees to reach a good safety zone.

There are several other Forest Roads in the area; however, these are generally dead end roads that lead to more remote regions of the Payette National Forest.

INFRASTRUCTURE

There are still at least three active mines in Warren, the Rescue, Charity, and Unity Mines, and a small, private wood mill. The mining and wood products industries have been the chief employers in this area for many decades. The loss of productive timber ground because of a large wildfire may affect the mill's ability to continue operating efficiently. Mining operations would not be significantly impaired by wildfire.

Tourism is becoming an increasingly important component of the local economy. Weekend warriors and other adventurers are supporting small stores and lodging facilities in Warren, Burgdorf, and Secesh. In

addition, more and more homes are being built in the area. These businesses also provide closer access to supplies and amenities for residents. Restricted access due to wildfires may negatively affect this cash flow.

Burgdorf, Secesh, and Warren do not have access to commercial electricity, but underground phone lines were installed in 1995. These transmission lines are not at significant risk of being damaged by or causing a wildfire ignition. Due to the lack of electricity, most full-time and seasonal residents rely on propane or generators for a power source. Large propane tanks are typically located in close proximity to structures, which creates a potential fire and explosion hazard. The closest refueling station for area residents is located in McCall; therefore, many residents also maintain fuel tanks. These containers are also a fire and explosion hazard.

Residents of Burgdorf, Secesh, and Warren have personal wells. These water resources are unlikely to be severely affected by wildland fire.

FIRE PROTECTION

Warren has an old fire engine that residents can use in the event of a fire, but they do not have a fire department. The Secesh Meadows Rural Fire District is responsible for structural fire protection in the Secesh and Burgdorf communities. Nevertheless, this department lacks training, functioning equipment, a facility, and volunteers. Most of the volunteers, including the chief, only live in the area part time; thus, it is difficult to run a operational department. It would be in the best interests of residents to know whom to call in the case of a fire emergency, especially during the winter months when there are limited response personnel in the immediate area.

The USDA Forest Service provides wildland fire protection.

COMMUNITY ASSESSMENT

Like many remote mountain communities, Burgdorf, Secesh, and Warren are considered to be at high risk of wildfire due to the surrounding forest fuels, lack of escape routes, and high ignition potential. Past fires in this area have proven difficult to suppress due to the intensity at which the subalpine habitat burns, steep topography, and limited access points.

Many structures are scattered around the town sites and along access roads with private one-way in, one-way out driveways. The majority of homes, new and old alike are constructed with wood building materials, which further increases their fire risk.

Recreational and industrial activities introduce a multitude of potential ignition sources. Landowners should be especially careful to maintain a well-groomed defensible space and locate propane and fuel tanks as well as firewood away from structures.

MITIGATION ACTIVITIES

Development of a community evacuation plan is necessary to assure an orderly evacuation in the event of a threatening wildland fire. Designation and posting of escape route signage would reduce chaos and escape times for fleeing residents. A community safety zone should also be established in the event of compromised evacuation. Efforts should be made to educate homeowners through existing homeowners associations or creation of such organizations to act as conduits for this information.

Other specific mitigation activities are likely to include improvement of emergency water supplies and management of trees and vegetation along roads and on surrounding National Forest system lands. Furthermore, building codes should be established to provide for more fire conscious construction techniques such as using fire resistant siding, roofing, and decking.

Recreational facilities near the community and along access routes 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 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 strictly enforcing fire-use regulations.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Clearwater, Harpster, and Tahoe Ridge/Big Cedar

The town of Harpster is located on the eastern bank of the South Fork of the Clearwater River drainage approximately ten miles east of Grangeville. The small community of Clearwater lies about four miles northeast Harpster and away from the river. Although both communities have a designated city center, most homes are scattered throughout the area.

The community of Tahoe Ridge/Big Cedar lies directly east of Kooskia and north across the thousand-foot deep valley of Clear Creek from Clearwater. It has no city or community center and its 650 residents are scattered over four drainages: Big Cedar Creek, Leitch Creek, Big Horse Canyon, and Tinker Creek. In addition to a growing population of retirees, resident income is derived mainly from employment outside the community. A few families are still involved with historic agriculture and timber pursuits.

FIRE POTENTIAL

Fuels Assessment

The terrain along the river is generally identified as very steep break-lands; however, above the rim of the canyon the topography is much milder. Vegetation is primarily mixed agricultural land and open ponderosa pine stands with Douglas-fir and grand fir on north slopes and in cooler drainages. The transition of native vegetation to cultivated or grazed fields around home sites serves to break up the continuity of fuels, which will tend to reduce the intensity and increase the ability of emergency personnel to control approaching wildfires. Homes located in timbered areas, especially those on steeper slopes have a much higher fire risk. Fires in these fuels will tend to burn much more intensely and move very rapidly upslope under the influence of up canyon winds.

The Nez Perce National Forest boundary lies within two miles of both Harpster and Clearwater, and forms the entire eastern and part of the southern boundary of the Tahoe Ridge/Big Cedar community. Additionally, Tahoe Ridge/Big Cedar's northern boundary is the Middle Clearwater Wild and Scenic River corridor along the Middle Fork of the Clearwater River. Fire suppression on National Forest system lands (and private lands) over the past few decades has led to increased brush, regeneration, and other surface fuels in the understory, which can lead to more intense fires. Fire behavior in these fuel types is highly variable ranging from low intensity surface fires to stand replacing wildfires. Torching, crowning, and spot fires tend to occur more frequently under these conditions. Several of the larger drainages, including Wall Creek, Clear Creek, Big Cedar Creek, Leitch Creek, Big Horse Canyon, and Tinker Creek have denser fuels with a cedar/fir component. The current fuel conditions in these drainages leads to an increased threat of stand replacing wildfires.

Ignition Profile

Both natural and human caused fires occur in this area. The high density of recreational activity and the intense use of mechanized equipment in farming and logging operations increase potential ignition sources significantly. Debris burning, discarded cigarettes, children playing with matches, fireworks, roadway fires, and camp fires are just a few of the countless potential human ignition sources in the area. Contact between power lines and trees can spark fires, especially during windy conditions.

Lightning events are common across Idaho County; but are especially common in the mountainous regions encompassed by the Nez Perce National Forest and the Middle Clearwater Wild and Scenic River corridor near the Harpster, Clearwater, and Tahoe Ridge, Big Cedar communities. The cured grasses and dry forest habitat types that dominate the area surrounding these communities are very receptive to ignition.

The abundance of human and natural ignition sources and the dry nature of fuels in the area increase the probability of wildland fire. Fire characteristics will depend on fuel types and moisture levels, as well as on weather conditions at the time of ignition. Fires during periods of drought with high temperatures, low humidity, and strong winds can quickly lead to fast-moving, destructive wildfires.

INGRESS-EGRESS

State Highway 13 passes directly through Harpster. This two lane highway follows the path of the South Fork of the Clearwater River and can be very narrow and windy. This roadway is the sole paved route between Harpster and other population centers to the north and south. Much of this roadway abuts timber-type fuels and steep slopes. The river canyon is narrow enough that a fire on either side could restrict access due to extreme heat and fumes. In the event of a wildfire along the river, it is likely that this escape route would become impassable. Clearwater can be reached by traveling east on the Sally Ann Creek Road off State Highway 13. This is a paved/gravel two lane route that ends near the community center. This roadway is bordered primarily by light grassland fuels.

The Tahoe Ridge/Big Cedar community is accessed from Kooskia by Leitch Creek Road (paved) and Wilson Road (gravel). Both roads are steep, narrow, winding, and travel through brush- and timber-type fuels, which have received little or no fire mitigation management in many years. It is conceivable that spot fires from an incident along Battle Ridge paralleling and west of Clear Creek would close these evacuation routes.

There are a few secondary roads in the area that may serve as a potential escape routes in the event that Highway 13 becomes impassable including Battle Ridge Road and Clear Creek Road. These roads typically travel through grassland fuels, and have a much lower risk of being blocked by fire.

INFRASTRUCTURE

Although most newly constructed homes rely on personal wells, the Wall Creek Municipal Watershed, within the Nez Perce National Forest boundary, provides a critical water source to many residents in the community of Clearwater. This watershed could potentially be heavily impacted by wildfire, not only through direct vegetation removal, but also from the creation of ash and sediment as secondary effects of a fire. Municipal watersheds should be afforded a high priority for fire mitigation treatments.

FIRE PROTECTION

The Harpster Fire Protection District provides structural fire protection for the community of Harpster and the BPC Volunteer Fire Department provides the Clearwater area with structural fire protection. Ridge Runner Fire Department provides residents of the Tahoe Ridge/Big Cedar community with wildfire and minimal structure fire protection. While the Ridge Runner Fire Department is working quickly to become fully equipped and trained to handle structure fires, Kooskia Fire Department is automatically paged-out when a structure is involved. Due to conditions and distances along Leitch Creek Road, Kooskia Fire Department is severely time-restricted in even getting into the Tahoe Ridge/Big Cedar community with its big engines and response to remote homes can take as long as an hour.

The USDA Forest Service is responsible for wildland fire protection on National Forest system lands. The Idaho Department of Lands responds to wildfire situations on non-National Forest property.

Nez Perce National Forest, Idaho Department of Lands, and the Kooskia, Stites, Harpster, BPC, and Ridge Runner Fire Departments, all have an excellent working relationship with each other and, in many cases, have trained together. Mutual aid agreements between the various departments and agencies have been formalized and implemented. In addition, an Idaho-Lewis County Fire Association has recently been formed with the intent of improving inter-agency communication and collaboration.

COMMUNITY ASSESSMENT

The communities of Harpster and Clearwater are at moderate risk of experiencing a wildland fire. Homes built on steep slopes or with timber directly abutting or overhanging structures are at the highest risk. Fires in these timber fuel types are generally much more intense and difficult to control than rangeland fires. Dry grasses on the steep slopes would support very rapidly spreading wildfires, leaving little time for residents to escape. Additionally, the abundance of recreational and other human activities in the area drastically increase potential ignition sources. Preparing a home prior to a wildfire event will significantly increase its chance of survival.

The Big Cedar, Clear Creek, Big Horse Canyon, Tinker Creek, and Leitch Creek drainages north of Clearwater pose a very different situation. These larger, steep draws have a high concentration of dense cedar/fir stands. There are approximately 650 structures, many of which are homes, scattered throughout these watersheds with little to no defensible space around them. Limited access creates a concern for both the landowner and responding firefighting resources.

Fires that more frequently start in the drier conditions at lower elevations become larger and more difficult to suppress as they head onto the national forest. Such fires would have large-scale impacts to the landscape that would negatively affect development and communities down river via erosion and flooding, as well as decreased water quality.

The location of the primary access route in the bottom of a narrow canyon exacerbates already hazardous landscape characteristics. A fire on either side of the river would funnel hot gases and fumes through the canyon. Intense heat, sparks, or fire brands could easily light the opposite side; thus, compounding the threat. Additionally, there are only a few alternate escape routes available to residents.

Many landowners in the Harpster, Clearwater, Tahoe Ridge/Big Cedar areas are grazing cattle and horses around homes, in pastures, and in the forest-range interface. These animals serve to eat the fine, porous grasses and shrubs, trample fine woody fuels, and keep the ladder fuels trimmed and thus reduce the fire risk in this interface area. Although this practice helps deflate the fire risk in this area, many other mitigation activities would significantly improve the survivability of this community in the event of a wildland fire.

MITIGATION ACTIVITIES

Local fire departments and fire management agencies within the Harpster-Clearwater-Tahoe Ridge/Big Cedar area are currently working with residents to complete individual home site evaluations and Red Zone surveys. Home defensibility steps should be implemented based on the results of these evaluations.

Development of a community evacuation plan is necessary to assure an orderly evacuation in the event of a threatening wildland fire. Designation and posting of escape route signage would reduce chaos and escape times for fleeing residents. A community safety zone should also be established in the event of compromised evacuation. Efforts should be made to educate homeowners through existing homeowners associations or creation of such organizations to act as conduits for this information.

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 established to provide for more fire conscious construction techniques such as using fire resistant siding, roofing, and decking.

Recreational facilities near the community and along the South and Middle Forks of the Clearwater River corridor 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 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.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Dixie and Orogrande

Dixie is located approximately 35 miles southwest of Elk City along Forest Road 222. Orogrande is located approximately 21 miles northwest of Dixie along the Dixie-Orogrande Road. Orogrande can also be accessed from Crooked River Road via Highway 14. Dixie and Orogrande are located within the Nez Perce National Forest. Both Dixie and Orogrande are old gold mining communities that have been converted into recreation towns since the decline of the gold mining industry. These small, mountain communities have not become urbanized, with very few services and amenities available for residents or visitors. Due to the high recreational use of the area including ATV's, motorcycles, pickups, and chainsaws, there are many potential ignition sources.

FIRE POTENTIAL

Fuels Assessment

Dixie and Orogrande lie in a very fire prone region of the Nez Perce National Forest. The landscape surrounding these communities is dominated by moderate to steep forestland. Lodgepole pine dominates the overstory with Douglas-fir, western larch, Engelmann spruce, and grand fir components mixed intermittently throughout. The understory is mostly bear-grass, huckleberry, alder, and various other brush species. Thick patches of regeneration, in various stages of development, are also occurring in several areas.

The Forest Service reduced natural fuels on 90 acres of National Forest system land surrounding the community of Dixie, Idaho in 2003, and is currently maintaining this reduction. Additionally, the Red Pines timber sale and hazardous fuels reduction project is currently being implemented, and is located east of Orogrande and north of Dixie. Moreover, areas south of Dixie burned in 2007 during the Rattlesnake Fire, and some of the timber around Dixie was thinned for structure protection during the incident.

However, much of this area around Dixie and Orogrande has not burned or been otherwise managed for many years and is unnaturally dense with significant increases in the fuel loading, and consequently the fire hazard. The occurrence of thick brush and regeneration in the understory can also lead to higher intensity fires or a crown fire.

Beetles, particularly Mountain Pine and Douglas-fir beetles have moved into stressed trees. Beetles in combination with root diseases are killing off many acres of timber in the Dixie and Orogrande vicinity. The large amount of mortality caused by insects and disease increases the risk of a catastrophic fire. Due to the topography, fuel type, and rural nature of the area, Dixie, Orogrande, and surrounding forestlands are at a very high risk for wildfire.

Ignition Profile

Both natural and human caused fires occur in this area. The high density of recreational activity increases potential ignition sources significantly. Off-road vehicles, debris burning, discarded cigarettes, children playing with matches, fireworks, roadway fires, and campfires are just a few of the countless potential human ignition sources in the area.

Lightning events are common across Idaho County; but are especially common in the mountainous regions encompassed by the Nez Perce National Forest. The cured grasses and dry forest habitat types that dominate the area surrounding Dixie and Orogrande are very receptive to ignition.

The abundance of human and natural ignition sources and the dry nature of fuels in the area increase the probability of wildland fire. Fire characteristics will depend on fuel types and moisture levels, as well as

on weather conditions at the time of ignition. Fires during periods of drought with high temperatures, low humidity, and strong winds can quickly lead to fast-moving, destructive wildfires.

INGRESS-EGRESS

The roads into the area are mainly gravel roads, which are typically one-lane roads with turnouts. The Crooked River Road/Dixie-Orogrande Road and Forest Road 222 (Jack Mountain Road) are the main transportation routes into Dixie and Orogrande. Both roads lack regular maintenance and are adjacent to heavy forest fuels; however, the Jack Mountain Road allows more rapid ingress and egress to and from Dixie. Additionally, the southern extension of Forest Road 222 (Mackay Bar Road) from Dixie to the Mackay Bar area on the Salmon River serves as the sole escape route for residents and recreational users at Mackay Bar. In order to function as escape routes, these roadways should be signed and frequently maintained.

Although there are several other Forest Roads in the area, very few drivable routes could serve as an adequate escape route. Many of the Forest Roads in the area were originally built to access mining claims or other remote sites and are now limited to off-road vehicles or horses. These roads tend to be very steep, rocky, and winding. The lack of alternate escape routes exacerbates the need for pre-fire mitigation activities in order to ensure the safety of people and structures in the communities.

Private driveways are generally short, but need pruning and expanded turn-around areas to aid safe fire response. Although there are a few, gated drives are not common. This trend helps fire response personnel more safely access properties and effectively protect homes from fire.

INFRASTRUCTURE

The economy in Dixie, and Orogrande to a smaller degree, are completely reliant on tourism. Warm weather attracts adventurous campers, hikers, four-wheelers, and other recreational users, while during the winter months snowmobiles flood the area. The amenities provided by the small scale hostels and stores in Dixie draw patrons and keep business owners active year round.

FIRE PROTECTION

The Dixie Fire Station is responsible for structural fire protection within the Dixie community. Orogrande has no structural fire protection. Due to the location of the communities, the USDA Forest Service takes control of the majority of the wildfire suppression duties. The USDA Forest Service has a guard station located approximately four miles south of Dixie. This guard station has several engines and equipment for initial attack responses. An air strip is also located just west of the guard station. There are several streams near the communities, but the availability of water during the late summer months could be questionable. Mountain lakes exist within the area, which could be used for aerial dipping.

COMMUNITY ASSESSMENT

The majority of the homes within the area are seasonally occupied recreation cabins. These cabins are typically built using very flammable wood construction materials, although most have metal roofs. Most cabins are nestled within or adjacent to the forestlands putting these cabins at high risk of damage to wildland fires. Many lawns are intermittently maintained; thus, dried and cured grasses are common with little to no defensible space cleared. A small number of cabin owners within the area have taken an active management approach to protect their properties and performed various thinning, pruning, and slashing activities to reduce the amount of fuels adjacent to their cabins. Additionally, recreationists tend to bring valuable vehicles, campers, and ATVs to the area, which increases the dollar value of the community during the fire season.

The communities of Dixie and Orogrande are at high risk of experiencing a wildland fire, and being negatively affected by one. Homes built on steep slopes or with timber directly abutting or overhanging structures are at the highest risk. Fires in these timber fuel types are generally much more intense and difficult to control than rangeland fires. Dense and dying forest conditions on the steep slopes rising from the community centers would support very rapidly spreading wildfires, leaving little time for residents to escape. Additionally, the abundance of recreational and other human activities in the area drastically increase potential ignition sources. Preparing a home or cabin prior to a wildfire event will significantly increase its chance of survival.

MITIGATION ACTIVITIES

Beyond the homes, cost effective forest management efforts must be considered to slow the approach of a fire that threatens Dixie and Orogrande. Forest conditions in this area typically consist of dense canopies of mature trees, dead and dying lodgepole pine, and steep slopes. All of these factors combine to create potentially extreme fire conditions.

Development of a community evacuation plan is necessary to assure an orderly evacuation in the event of a threatening wildland fire. Designating and posting of escape routes would reduce chaos and escape times for fleeing residents. A community safety zone should also be established in the event of compromised evacuation. Efforts should be made to educate homeowners through existing homeowners associations or creation of such organizations to act as conduits for this information. Additionally, consideration of forming a fire department would be prudent.

Other specific mitigation activities are likely to include improvement of emergency water supplies and management of trees and vegetation along roads. Furthermore, building codes should be established to provide for more fire conscious construction techniques such as using fire resistant siding, roofing, and decking.

Recreational facilities near the community 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 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 strictly enforcing fire-use regulations.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Elk City, Newsome, and Red River

Elk City is located within the USDI Bureau of Land Management's Elk City Management Area (ECMA). The ECMA is located in North Central Idaho, approximately fifty-two miles east of Grangeville, Idaho. The area encompasses approximately 111,177 acres of mixed land ownership comprised of 11.8% USDI Bureau of Land Management (13,173 acres), 78.4% USDA Forest Service (87,121 acres), and 9.8% private (10,884 acres). The community of Elk City is located in the heart of the management area with a population of approximately 450 people. The USDI Bureau of Land Management's ECMA is isolated from other USDI Bureau of Land Management administered lands due to being surrounded by Nez Perce National Forest jurisdiction. This part of Idaho County is almost solely dependent on the timber economy of the region.

The old Newsome town site, which is now mostly recreational cabins and campgrounds, is located on Forest Road 1858 about six miles north of State Route 14 and approximately ten miles northwest of Elk City. Newsome is part of the Old Elk City Wagon Road historic tour.

Red River consists of scattered homes, ranches, and other structures along the Red River Road from State Route 14 all the way to Red River Hot Springs. The Red River Ranger District sits at the intersection of the Red River Road and Jack Mountain Road adjacent to Red River. Besides the ranger station and its outbuildings, there are also several government housing structures and private homes in this area. Red River Hot Springs lies at the culmination of the Red River Road and consists of a pool area and several small rental cabins as well as a campground. There are four designated campgrounds spread out along Red River Road; however, there are numerous undeveloped camp sites along this corridor and on many of the secondary roads.

FIRE POTENTIAL

Fuels Assessment

Elk City sits in a small valley near the headwaters of the South Fork of the Clearwater River. Although much of the valley is characterized by a riparian meadow ecosystem, the surrounding mountainsides are dominated by forestland. Forest species in the Elk City Management Area are adapted to moderate to high elevations ranging from 3,615 feet along the river (west of Elk City) to 8,938 feet on the Buffalo Hump summit (southeast of Orogrande). Forest tree species in this region include; Douglas-fir, ponderosa pine, western larch, lodgepole pine, grand fir, subalpine fir, western white pine, western red cedar, western hemlock, and a variety of hardwood species. Over the past several decades, extensive harvesting operations have created a mosaic pattern of forest stands at different stages of re-growth ranging from seedlings to old growth. This pattern in conjunction with the road systems create numerous opportunities to develop fuel breaks and anchor points to assist in suppression of uncontrolled wildfires.

One factor that is substantially increasing the potential for high intensity stand replacing fires is the ongoing mortality associated with the mountain pine beetle. Due to a variety of factors, lodgepole pine in the Elk City Management Area (ECMA) are dying from bark beetle attacks. The mountain pine beetle (*Dendroctonus ponderosae*) attacks individual trees that are weakened from other factors such as age, root rot, overcrowding, and environmental stress. The wide extent of mature lodgepole pine in the region, combined with overcrowded stand conditions, has resulted in wide expanses of successful mountain pine beetle attacks in the ECMA.

Stands of dying lodgepole pine represent a significant risk to the Elk City community. In several stands, the mortality is over 40% of the standing trees and increasing. The substantial amounts of dead and down fuels from the mountain pine beetle attacks coupled with the abundance of dense ladder fuels has

substantially increased the potential fire intensity and resistance to control and the risk to the homes in the Elk City region.

The Red River and Newsome areas are facing the same fuels issues as Elk City. Dying trees due to mountain pine beetle and overcrowded forest conditions are drastically increasing the fuel hazard in these areas. For the most part, homes in the Red River area were built adjacent to the river corridor in the bottom of the valley with timber extending in all directions. There are several large meadows near the Red River Ranger Station that may provide somewhat of a fuel break and a safety zone for area residents. Newsome sits in the bottom of a timbered basin where several streams come together to form Newsome Creek. Due to the topography, a fire in this area would likely exhibit extreme fire behavior and be very difficult and dangerous to suppress. Both the Red River and the Newsome areas have limited access; thus, further exacerbating the already high risk fire conditions.

Fires in these fuel types are highly variable, ranging from low intensity surface fires to very destructive, stand replacing wildfires. Fire suppression over the past few decades has led to increased brush, regeneration, and other surface fuels in the understory, which can lead to more intense fires. Torching, crowning, and spot fires tend to occur more frequently under these conditions.

Ignition Profile

Both natural and human caused fires occur in these areas. The high density of recreational and industrial activity and the intense use of mechanized equipment in logging operations increase potential ignition sources significantly (although loggers usually have the means to extinguish small starts). Debris burning, discarded cigarettes, children playing with matches, fireworks, roadway fires, and camp fires are just a few of the countless potential human ignition sources. Contact between power lines and trees can spark fires, especially during windy conditions. Propane tanks next to homes can cause explosions and put homeowners and firefighters at increased risk. Landslides along the South Fork of the Clearwater River also have the potential to take down power lines causing an ignition. The occurrence of arson fires each year is rising. So far, local fire emergency resources have controlled these fires before they caused serious damage and threatened lives or property.

Lightning events are common across Idaho County; but are especially common in the mountainous regions encompassed by the Nez Perce National Forest. The cured grasses and dry forest habitat types that dominate the area surrounding Elk City are very receptive to ignition.

The abundance of human and natural ignition sources and the expansive stands of dead or dying lodgepole pine increase the probability of wildland fire. Fire characteristics will depend on fuel types and moisture levels, as well as on weather conditions at the time of ignition. Fires during periods of drought with high temperatures, low humidity, and strong winds can quickly lead to fast-moving, destructive wildfires.

INGRESS-EGRESS

The primary access into Elk City is by State Highway 14. This two-lane highway follows the path of the South Fork of the Clearwater River and is very narrow and winding. This roadway is the sole paved route between Elk City and other population centers in Idaho County. The majority of this roadway abuts timber-type fuels and steep slopes. The river canyon is narrow enough that a fire on either side could restrict access due to extreme heat and fumes. In the event of a wildfire along the river, it is likely that this escape route would become impassable; thus, fire professionals in the area will need to identify this risk early on in order to initiate a safe evacuation on this road system.

There are numerous forest roads in the area that may serve as a potential escape routes depending on the location of the fire. However, these roads typically travel through heavy forest fuels and lead to even more remote locations. Forest Road 443 or the Selway River Road, which leads to the Selway River, is

the most direct alternative route. In order to function as an escape route, this roadway should be cleared of hazardous vegetation, signed, and frequently maintained.

Forest Road 1858 is the only developed road into the Newsome area. This well-maintained gravel route extends from State Route 14 north until it intersects Lookout Butte Road, which is also a good gravel road. There are several dirt roads in the area; however, these are generally four-wheel drive access only and would not support emergency vehicles. The Forest Road 1858 corridor abuts timber type fuels except for a few cleared areas for campsites and an occasional small meadow.

The Red River Road is the only maintained gravel road from the Red River Ranger Station east to the Hot Springs. There are several gravel roads that would eventually lead back to Highway 14 west of the Ranger Station; nevertheless, the Red River Road would be the most direct path and therefore, should be the designated escape route. The Red River Road abuts timber fuels along most of its path; however, there are large meadows along the road near the Ranger Station. The Ranger Station has also cleared a small area around its structures, which it maintains as green lawns.

INFRASTRUCTURE

Tourism is an important component of Elk City's economy. Warm weather tends to bring campers, hikers, and other recreationalists into this part of the Nez Perce National Forest, while during the winter months snowmobilers flood the area. The Red River Hot Springs, approximately 15 miles east of Elk City attracts tourists as well as local patrons. There are several recreational cabins in the Newsome area that many owners use year-round.

The Elk City community is on a citizen-owned water system that draws its water from Elk Creek. The water is stored in a large cistern above the community and uses both a pumping system and a gravity feed. Generators have been purchased to keep the water flowing during power outages as well as during a fire situation. Installation is anticipated for completion in November 2009. Sanitation could be a problem over an extended period and use of a community water system may need to be prioritized.

The Elk Creek Watershed consists primarily of lodgepole pine, Douglas-fir, and true fir stands. Much of this drainage has been logged over the years with little subsequent management. There are several acres of dense pine/fir regeneration stands intermixed with multi-layered stands of Douglas-fir, pine, true firs, and several western larch and Engelmann spruce. These slopes have a high risk of crown fire spread. Potential impacts of a large stand-replacing fire in this area could negatively affect the community of Elk City via potential flooding, erosion, and impacts to water quality.

Homeowners in the Red River and Newsome areas rely on personal wells. Several recreational homes do not have running water. Propane, rather than electricity, is used by many residents in the greater Elk City, Newsome, and Red River area.

Avista Utilities' power poles run along the South Fork of the Clearwater River from Grangeville to Elk City. Most of this line crosses over Nez Perce National Forest system lands. Although most of the trees have been cleared from the corridor, Avista has been unable to clear the path down to grass due to environmental constraints. The brush and other fuels remaining beneath the power lines increase the potential risk of an ignition from sparks or arcing. If cleared, the power line corridor could serve as a fuel break through parts of the National Forest.

FIRE PROTECTION

The Elk City Volunteer Fire Department is responsible for structural and wildland fire protection for the community of Elk City. They also respond, when able, to fires in Orogrande, Red River, Newsome, Junction Flats, Mallard Creek, Fall Creek, Upper American River, and all of the surrounding areas. There is one fire station in the area located on Sweeny Road in Elk City. This is an all-volunteer department with a total of twelve firefighters. The number one concern for this department is wildland and structural

fire protection, but due to the nature of the area, the majority of their responses have been wildland fires in the grasslands or forested environments. The Elk City Volunteer Fire Department has a good working relationship with the Forest Service. Currently, this department is dispatched by the Idaho County Sheriff's Office in Grangeville.

The response time for the Elk City Volunteer Fire Department varies due to a large coverage area and limited road access. Many of their calls are in remote areas. The first members to respond go in the small, faster truck, while the other members follow in the larger truck. Once on scene, the small truck refills the large truck with water. Currently, the Elk City Volunteer Fire Department is in the process of procuring a 2,200-gallon tanker that can go on scene with a full load of water. This will allow the department to be on scene with over 3,000 gallons of water between all trucks.

COMMUNITY ASSESSMENT

The communities of Elk City, Newsome, and Red River are at high risk of experiencing a wildland fire. Homes built on steep slopes or with timber directly abutting or overhanging structures are at the highest risk. Fires in these timber fuel types are generally much more intense and difficult to control than rangeland fires. Dry grasses on the steep slopes would support very rapidly spreading wildfires, leaving little time for residents to escape. Additionally, the abundance of recreational and other human activities in the area drastically increase potential ignition sources. Preparing a home prior to a wildfire event will significantly increase its chance of survival. An extensive program of thinning and slash removal is needed in and around these communities. Large clear cuts in the 1970's and 1980's have resulted in thick stands of dog hair lodgepole pine that need to be managed. Recent mountain pine beetle infestations have caused large-scale mortality of lodgepole in the greater area. Unhealthy forest conditions are contributing to the fire risk in Elk City and the surrounding communities.

According to the USDA Forest Service, within the township of Elk City, an average of 79% of all fires suppressed were kept within 0.25 acres in size in the last 5 years (2000-2004). The five-year average of all wildfires within the Red River Ranger District suppression jurisdiction is 99.5% controlled at less than 0.10 acres. Because of reduced suppression funding and deterioration of forest conditions on private and federal lands, the likelihood of escaped wildfire is dramatically increasing.

The location of the primary access route, State Route 14, in the bottom of a narrow canyon exacerbates already hazardous landscape characteristics. A fire on either side of the South Fork of the Clearwater River would funnel hot gases and fumes through the canyon. Intense heat, sparks, or firebrands could easily light the opposite side; thus, compounding the threat. Additionally, there are no alternate escape routes available to residents. Two large meadows at the Elk City town site could serve as safety zones if needed. Meadows near Red River could also serve this purpose in an emergency. It is suggested that those citizens who are ill or elderly be scheduled for an immediate airlift out of the area during a fire.

Many landowners in the greater Elk City area are grazing livestock around homes, in pastures, and in the forest-range interface. These livestock serve to eat the fine, porous grasses and shrubs, trample fine woody fuels, and keep the ladder fuels trimmed and thus reduce the fire risk in this interface area. Although this practice helps reduce the fire risk in this area, many other mitigation activities would significantly improve the survivability of this community in the event of a wildland fire.

MITIGATION ACTIVITIES

Many homeowners have initiated Firewise projects around their properties. These projects typically focus on creating a fire defensible space around homes by clearing away trees, brush, weeds, and other burnable vegetation. A large part of the Firewise program concentrates on educating landowners about specific hazards that may be increasing their home's fire risk such as wood stacks, construction materials, hazard trees, and propane tanks. These types of educational programs are encouraged and should be continued, especially in highly prone areas like Elk City, Newsome, and Red River.

Beyond the homes, forest management efforts must be considered to slow the approach of a fire that threatens Elk City and the surrounding communities. The gravest threat to Elk City is from the southwest. Forest conditions in this area typically consist of dense forest canopies of mature trees, dead and dying lodgepole pine, and steep southerly and westerly slopes. All of these factors combine to create fire conditions that would be nearly impossible to stop in the case of low humidity, moderate to high winds, and a single ignition to the southwest of the community.

The Whiskey South II proposed project is designed to treat approximately 915 acres of public land to improve forest health, long-term stand viability that would reduce the potential and extent of high intensity wildfires on USDI Bureau of Land Management and adjacent lands. We strongly support these management activities.

There are over 50 square miles of high risk landscapes adjacent to Elk City. The USDI Bureau of Land Management and the Forest Service manage these lands. The fire risk is extreme and is due to a combination of crowded forests, a high percentage of lodgepole pine susceptible to and experiencing mountain pine beetle mortality, steep slopes, and southerly and westerly aspects. Lack of logging activity has contributed to extreme fire risks and overly crowded forests. During periods of high fire activity following lightning bursts, the probability of successfully suppressing all ignitions is decreasing proportionately with the increased resistance to control. While the typical wind direction is southwesterly, it is not uncommon for east winds to occur. This was the case on the Slims Fire. In this case, homes in the Elk City area would be difficult to protect. Aggressive forest management in this area is strongly urged for the federal land management agencies. In general, management should strive to thin overcrowded forests favoring Douglas-fir, western larch, and ponderosa pine as mature leave trees. Lodgepole pine and grand fir should be targeted for removal in these areas. Both the USDA Forest Service and the USDI Bureau of Land Management have several proposed fuel treatment projects in the greater Elk City area. These projects are highly recommended and supported.

Development of community evacuation plans and safe refuge areas is necessary to assure an orderly evacuation in the event of a threatening wildland fire. Community safety zones must be established in the event of compromised evacuation. Efforts should be made to educate homeowners.

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. Homeowners should be urged to use fire resistant siding, roofing, and decking to improve their fire protection.

Recreational facilities near the community and along the South Fork of the Clearwater River corridor 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 controlled burns or other activities that would reduce surface and ground fuel loads. Other actions that would reduce the fire hazard would be thinning and pruning timbered areas, creating a fire resistant buffer along roads and around the community, around homes and long power line corridors, and strictly enforcing fire-use regulations.

Elk City has also prepared a Fire Plan that addresses prevention, planning, and fire mitigation actions, available through the fire department.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Kamiah

Kamiah is located at the junction of U.S. Highway 12 and State Highways 162 and 64 approximately seven miles north of Kooskia. Although many of the local businesses and infrastructure associated with the community are on the western bank of the Clearwater River, which is part of Lewis County, there are also many structures and significant infrastructure on the eastern bank in Idaho County. As Kamiah grows, more and more homes are being built along the steep slopes of the river canyon. Particularly noteworthy is the abundance of homes along the Beaver Slide Road, the Tom Taha Grade Road, and the Woodland Road. The economy in this part of the County is more focused on the lumber and tourism industries than agriculture.

FIRE POTENTIAL

Fuels Assessment

The Idaho County portion of Kamiah is spread along the base of the west aspect slope that defines the Clearwater River canyon. This slope is characterized by very patchy timber intermixed with grass and pasture lands. Drier habitat species such as ponderosa pine and Douglas-fir grow in open stands on this steep slope. Fires in this fuel type were historically frequent, but generally burned at low to moderate intensities. Fire suppression over the past few decades has led to increased brush, regeneration, and other surface fuels in the understory, which can lead to more intense fires. Torching, crowning, and spot fires tend to occur more frequently under these conditions. More moist and dense forest types are found in the Tom Taha Creek drainage. Douglas-fir, ponderosa pine, grand fir, and western red cedar with an abundance of ladder fuels in the understory are common along the creek and extending upwards on the north and south aspect slopes. Fires in these fuels are less frequent, but typically burn at much higher intensities than open forest stands.

The timber component of the system becomes much more continuous to the north and east, but transitions to a grassland habitat to the west. Fires in these grassland ecosystems cure early in the summer and become increasingly prone to ignition.

Ignition Profile

Both natural and human caused fires occur in this area. The high density of recreational and industrial activity near the river and the intense use of mechanized equipment for farming and logging increase potential ignition sources significantly. The use of equipment near cured grasses sparked the 2003 Milepost 59 Fire, which burned over 8,000 acres in the Clearwater River canyon five miles north of Kamiah. Debris burning, discarded cigarettes, children playing with matches, fireworks, roadway fires, and camp fires are just a few of the countless potential human ignition sources in the area. Contact between power lines and trees can spark fires, especially during windy conditions. The occurrence of arson fires each year is rising. To date, local fire emergency resources have controlled these fires before they caused serious damage and threatened lives or property.

Lightning events are common across Idaho County; however, ignitions due to down strikes occur more frequently in mountainous areas. The cured grasses that cover the steep slopes of the Clearwater River canyon and the dry forest habitat types that dominate much of the area surrounding Kamiah are very receptive to ignition.

The abundance of human and natural ignition sources and the dry nature of fuels in the area increase the probability of wildland fire. Fire characteristics will depend on fuel types and moisture levels, as well as on weather conditions at the time of ignition. Fires during periods of drought with high temperatures, low

humidity, and strong winds can quickly lead to fast-moving, destructive wildfires regardless of whether the event occurs in forest or rangeland fuels.

INGRESS-EGRESS

The primary access into Kamiah is by U.S. Highway 12, part of the Lewis and Clark Trail. This two lane highway follows the path of the Clearwater River and can be very narrow and winding. State Highway 162 enters Kamiah from the southwest and is a narrow two lane highway that provides the quickest route from the Camas Prairie. Both Highway 12 and 162 could function as escape routes; however, it is possible that one or both would become impassable in the event of a fire. Sections of these roadways abut timber-type fuels and steep slopes. The Clearwater River canyon near Kamiah is narrow enough in several places that a fire on either side could shut down Highway 12 due to extreme heat and fumes. If both routes are disabled, there are several secondary roads on the Idaho County side of the river that could function as escape routes including Woodland Road and Tom Taha Road.

State Highway 64, also known as the Kamiah-Nez Perce Grade, is a very narrow and winding, primarily gravel, single lane road that climbs the steep canyon wall to the Camas Prairie above. This is not an adequate escape route. Not only does it lack suitable turnouts and guard rails, but there is also a history of ignitions along the roadway.

INFRASTRUCTURE

Kamiah has both a municipal surface water system and ground water sources. Landowners outside of the city water district are generally supplied by personal or multiple home wells. The Kamiah Watershed could potentially be negatively impacted by a wildfire event; however, ground water sources would not likely be affected by a wildfire event.

High tension power lines run along the southwestern side of the community. Sections of these transmission lines cross over forest ecosystems. These lines have a moderate potential of sparking an ignition, particularly during severe wind events. Efforts should be made to ensure power line corridors are kept clear of fuels.

One of the key components of the economy in Kamiah is the existence of Empire Lumber Company and a few small sawmills. The wood products industry has been one of the chief employers in this area for many decades. The loss of productive timber ground because of a large wildfire may affect the mill's ability to continue operating efficiently, especially in today's shrinking log markets.

Camas Prairie Railroad still transports logs and a few other products between Kamiah and Lewiston. The track mimics the path of the Clearwater River along its eastern bank. This transportation route heavily influences Kamiah's economy. There have been no recent fire starts due to the passage of the train, yet the potential of ignition from sparks or hot brake shoes exists.

Tourism is also an important component of Kamiah's economy. Travelers seeking adventure along the Lewis and Clark Trail pass through Kamiah on U.S. 12. Lodging, dining, and other recreational facilities have become relatively dependent on the flow of travelers during the warmer months. Restricted access due to wildfires may negatively affect this cash flow.

FIRE PROTECTION

Structural fire protection is provided to Kamiah and the surrounding areas by the Kamiah City and Rural Fire Protection District. The Idaho Department of Lands-Maggie Creek District, USDA Forest Service, and the Nez Perce Tribe offer wildland fire protection.

COMMUNITY ASSESSMENT

The community of Kamiah is at moderate to high risk of experiencing a wildland fire, which has been recently demonstrated by the 2003 Milepost 59 Fire. Homes built on steep slopes or with timber directly abutting or overhanging structures are at the highest risk. Fires in these timber fuel types are generally much more intense and difficult to control than rangeland fires. Dry grasses on the steep slopes rising from the community center would support very rapidly spreading wildfires, leaving little time for residents to escape. Additionally, the abundance of recreational and other human activities in the area drastically increase potential ignition sources. Preparing a home prior to a wildfire event will significantly increase its chance of survival.

The location of the town site in the bottom of a narrow canyon exacerbates already hazardous landscape characteristics. A fire on either side of the river would funnel hot gases and fumes through the canyon. Intense heat, sparks, or fire brands could easily light the opposite side; thus, compounding the threat. Additionally, there are only a few safe escape routes available to residents.

MITIGATION ACTIVITIES

Development of a community evacuation plan is necessary to assure an orderly evacuation in the event of a threatening wildland fire. Designation and posting of escape route signage would reduce chaos and escape times for fleeing residents. A community safety zone should also be established in the event of compromised evacuation. Efforts should be made to educate homeowners through existing homeowners associations or creation of such organizations to act as conduits for this information.

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 established to provide for more fire conscious construction techniques such as using fire resistant siding, roofing, and decking.

Recreational facilities near the community and along the Clearwater River corridor 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 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.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Kooskia and Stites

The towns of Kooskia and Stites are located three miles from each other on State Highway 13. Kooskia is located at the confluence of the Middle Fork and the South Fork of the Clearwater River. Stites is located three miles upstream on the South Fork. The elevation in Kooskia is 1,260 feet, and Stites is approximately 60 feet higher. Both communities are located in the valley bottom immediately adjacent to the South Fork of the Clearwater River. Kooskia has a population in town of 675 that triples outside the city limit. Stites has a population of 226 that increases only slightly outside the city limit.

FIRE POTENTIAL

Fuels Assessment

Much of the landscape immediately surrounding Kooskia and Stites is dominated by grasses and shrubs with a few open stands of ponderosa pine and Douglas-fir randomly interspersed. Heavier timber conditions can be found on the more northerly and east slopes and in moist draws. Several of these areas are adjacent to the Kooskia and Stites city limits creating a significant wildland-urban interface fuel hazard. Grand fir and Douglas-fir with a small cedar component are common in these areas

Due to the steeper topography of the river corridor, fires in the light grass fuels would be expected to move very rapidly, especially under the influence of up canyon winds. The transition of native fuels to agricultural or pastureland around homes serves to break up fuel continuity and slow the spread. Additionally, fires in cultivated fields can be more quickly controlled by fuel modification.

Fires in denser fuel types are highly variable ranging from low intensity surface fires to very destructive; stand replacing wildfires depending on the fuel build up, topography, and local weather. Fire suppression over the past few decades has led to increased brush, regeneration, and other surface fuels in the understory, which can lead to more intense fires. Torching, crowning, and spot fires tend to occur more frequently under these conditions.

Ignition Profile

Both natural and human caused fires occur in this area. The high density of recreational and industrial activity and the intense use of mechanized equipment in farming and logging operations increase potential ignition sources significantly. Debris burning, discarded cigarettes, children playing with matches, fireworks, roadway fires, and camp fires are just a few of the countless potential human ignition sources in the area. Contact between power lines and trees can spark fires, especially during windy conditions. Tribal firework stands carry a substantial supply of fireworks; thus, increasing the use of these particularly around the Fourth of July. These stands are also a significant fuel hazard in themselves.

Lightning events are common across Idaho County, but are especially common in the mountainous regions east of Kooskia and Stites. The cured grasses and dry forest habitat types that dominate the area surrounding these communities are very receptive to ignition.

The abundance of human and natural ignition sources and the dry nature of fuels in the area increase the probability of wildland fire. Fire characteristics will depend on fuel types and moisture levels, as well as on weather conditions at the time of ignition. Fires during periods of drought with high temperatures, low humidity, and strong winds can quickly lead to fast-moving, destructive wildfires.

INGRESS-EGRESS

Kooskia is located at the junction of State Highways 13 and 12, both of which are two lane highways. Stites is accessed by traveling south from Kooskia on State Route 13. These highways follow the path of

the river corridor and can be narrow and windy in several areas. These roadways are the sole paved routes between Kooskia and Stites and other population centers in Idaho County. Although much of these passages are bordered by light grass fuels, the river canyon is narrow enough that a fire on either side could restrict access due to extreme heat and fumes. In the event of a wildfire along the river, it is likely that this escape route would become impassable.

The most direct alternative escape route is the Winona Grade Road leading up to the Camas Prairie; however, this road is only suitable for high clearance vehicles and is located partially in a draw that has heavy fuel loadings and could be hazardous during a fire. There are numerous other secondary roads in the area that may serve as potential escape routes depending on the location of the fire.

INFRASTRUCTURE

One of the key components of the economy in Kooskia and Stites is the existence of Clearwater Forest Industries. The wood products industry has been one of the chief employers in this area for many decades. The loss of productive timber ground because of a large wildfire may affect the industry's ability to continue operating efficiently, especially in today's shrinking log markets.

The Clearwater Valley High School and Junior High School campus is located in the rural area adjacent to Clearwater Forest Industries along State Route 13.

Tourism is also an important component of Kooskia's economy. Travelers seeking adventure along the Lewis and Clark Trail pass through Kooskia on U.S. 12. Lodging, dining, and other recreational facilities have become relatively dependent on the flow of travelers during the warmer months. Warm weather also tends to bring campers, hikers, and other recreationalists into the area. Restricted access due to wildfires may negatively affect this cash flow.

Camas Prairie Railroad still transports logs and a few other products between Kooskia and Lewiston. The track mimics the path of the Clearwater River along its eastern bank. There has been no recent fire starts due to the passage of the train, yet the potential of ignition from sparks or hot brake shoes exists.

The Stites municipal water system has two wells that are located adjacent to the wildland interface on the east side of the community of Stites. The Kooskia municipal water system has four wells. Wells #1 and #2 are along the Middle Fork of the Clearwater River off Beach Drive. Well #3 is on Stewart Drive adjacent to the timbered north facing slope of Mount Stewart and Well #4 sits on the corner of the city park at Fourth Avenue and Front Street.

A set of power supply lines parallel the South Fork of the Clearwater River from the power substation on Depot Street in Kooskia. These cross an east aspect slope that is partly timbered and could be threatened by fire.

FIRE PROTECTION

The Kooskia Fire Department and Stites Volunteer Fire Department provide local fire protection and primary response. These departments have Mutual aid agreements with each other, BPC Rural Fire District and the Idaho Department of lands. The local departments have primary responsibility for structural fire protection. The Idaho Department of Lands has primary responsibility of wildland fire suppression. The local departments provide initial wildland response in the area they cover. The Kooskia Fire Department station is located at 4th and Front Streets in Kooskia and has six bays housing seven vehicles. The Stites Volunteer Fire Department operates out of a station located on Main Street in Stites. Both departments are equipped for both structural and wildland fire suppression.

COMMUNITY ASSESSMENT

Like many valley bottom communities, Kooskia and Stites are not considered to be at high risk of wildfire due to the lack of heavy fuels and a readily available water source. However, residences located on the steeper slopes surrounding both towns have an increased risk for wildfire loss. A huge contributing factor is the lack of good access. Roads accessing these hillsides are primarily located in narrow draws, which may act as a funnel for heat and gases during a wildfire.

Generally speaking, homes east of the South Fork of the Clearwater River, have a higher fire risk. Structures are scattered on nearby slopes extending from the valley floor to the ridge top. Many of these slopes have aspects oriented south to west, further increasing the risk of loss due to rapidly spreading wildfires.

The location of the primary access routes in the bottom of a narrow canyon exacerbates already hazardous landscape characteristics. A fire on either side of the river would funnel hot gases and fumes through the canyon. Intense heat, sparks, or fire brands could easily light the opposite side; thus, compounding the threat. Additionally, there are only a few alternate escape routes available to residents.

Many landowners in the Kooskia-Stites area are grazing cattle, horses, and other livestock around homes, in pastures, and in the forest-range interface. These animals serve to eat the fine, porous grasses and shrubs, trample fine woody fuels, and keep the ladder fuels trimmed and thus reduce the fire risk in this interface area. Although this practice helps deflate the fire risk in this area, many other mitigation activities would significantly improve the survivability of this community in the event of a wildland fire.

MITIGATION ACTIVITIES

Development of a community evacuation plan is necessary to assure an orderly evacuation in the event of a threatening wildland fire. Designation and posting of escape route signage would reduce chaos and escape times for fleeing residents. A community safety zone should also be established in the event of compromised evacuation. Efforts should be made to educate homeowners through existing homeowners associations or creation of such organizations to act as conduits for this information.

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 established to provide for more fire conscious construction techniques such as using fire resistant siding, roofing, and decking.

Recreational facilities near the community and along the Middle Fork and the South Fork of the Clearwater River 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 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.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Lowell, Syringa and Selway River Corridor to O'Hara Bridge

The small community of Lowell is located at the junction of the Lochsa and Selway Rivers along U.S. Highway 12. Lowell consists of a small cluster of homes, an RV park, a café, and a small motel. Three Rivers Resort is on the opposite side of the Lochsa River and offers additional rooms for rent, camping, rafting, restaurant, and a small store. Syringa is approximately seven miles west of Lowell also along the Highway 12 corridor. There are only a few permanent homes and a roadside café remaining at the town site. Up the Selway River to just past the O'Hara Bridge, there is a small community of homes and the USDA Forest Service Fenn Ranger Station. The Middle Fork of the Clearwater River drainage including the Lochsa and Selway Rivers near Lowell and Syringa is federally recognized as a Wild and Scenic River. The Middle Fork of the Clearwater River and continuing up the Lochsa River is the boundary between the Clearwater National Forest (north side) and the Nez Perce National Forest (south side).

FIRE POTENTIAL

Fuels Assessment

Lowell, Syringa, and the Selway River corridor communities sit at the bottom of the river drainages with steep slopes rising from both sides. The southeast and northwest aspects surrounding Lowell and the north and south aspects rising from Syringa and the Selway communities are dominated by relatively moist forest types. Western red cedar and Engelmann spruce are commonly found in draws and frost pockets, while a healthy mixture of Douglas-fir, grand fir, ponderosa pine, lodgepole pine, western white pine, and western larch dominate the overstory on most slope faces. On rockier gradients, where soils are less developed, ninebark, ocean spray, and other brush species are common. In several areas, the closed canopy of the overstory limits regeneration or other vegetative growth in the understory. In other areas; however, the understory is over laden with dense brush, conifer regeneration, and hardwoods.

Fires in these fuel types are highly variable, ranging from low intensity surface fires to very destructive, stand replacing wildfires. Fire suppression over the past few decades has led to increased brush, regeneration, and other surface fuels in the understory, which can lead to more intense fires. Torching, crowning, and spot fires tend to occur more frequently under these conditions.

Ignition Profile

Both natural and human caused fires occur in this area. The high density of recreational activity increases potential ignition sources significantly. Off-road vehicles, debris burning, discarded cigarettes, children playing with matches, fireworks, roadway fires, and camp fires are just a few of the countless potential human ignition sources in the area. Contact between power lines and trees can spark fires, especially during windy conditions.

Lightning events are common across Idaho County; but are especially common in the mountainous regions encompassed by National Forest system lands. In the late summer and early fall, the cured grasses and drier forest conditions are very receptive to ignition.

The abundance of human and natural ignition sources and the nature of fuels in the area increase the probability of wildland fire. Fire characteristics will depend on fuel types and moisture levels, as well as on weather conditions at the time of ignition. Fires during periods of drought with high temperatures, low humidity, and strong winds can quickly lead to fast-moving, destructive wildfires.

INGRESS-EGRESS

The primary access into these communities is by U.S. Highway 12 from Kooskia or Missoula Montana. This two-lane highway follows the path of the Middle Fork of the Clearwater River and continues up the Lochsa. This road is very narrow and windy and abuts timber-type fuels and steep slopes. The river canyon is narrow enough that a fire on either side could restrict access due to extreme heat and fumes. In the event of a wildfire along the river, it is likely that this escape route would become impassable. U.S. Highway 12 is the sole escape route between these communities and less hazardous areas.

There are a few forest roads in the area that may serve as a potential escape routes depending on the location of the fire. However, these roads typically travel through heavy forest fuels and lead to even more remote locations. The Selway River Road, which leads to Selway Falls and eventually to Elk City is the most direct alternative route from Lowell. Currently, this road and several private driveways in the area lack weight rating and other vital information at bridge crossings. Not only does this slow emergency response personnel, but it is also a safety issue for residents and visitors utilizing the roadway, especially those with heavy loads or trailers. The Smith Creek Road, which heads into the Clearwater National Forest from near Syringa, could also be used as an escape route in the event of a fire. In order to function as escape routes, these roadways should be signed and frequently maintained.

Homes on the south side of the river (opposite the highway) are typically accessed by long, dirt driveways from a bridge that may be several miles away. Residents of these homes commonly park on the highway and ride a cable cart across the river to their property. Due to the lack of safe access and close proximity to forest fuels, these homes are at very high fire risk.

INFRASTRUCTURE

As part of the Lewis and Clark Trail and the close proximity of the Clearwater and Nez Perce National Forests, the economy in both communities is dependent on travelers and tourists. Warm weather tends to bring campers, hikers, rafters, and other recreationalists into the Middle Fork of the Clearwater River drainage. The Three Rivers Resort at Lowell also brings in a large number of rafters, kayakers, and other vacationers. Highway 12 can become very congested during the summer months due to tourist traffic; however, during the winter, these areas are relatively vacant due to the hazardous driving conditions on this stretch of the highway.

The communities of Syringa and Lowell and homeowners in the surrounding areas have personal wells or multiple home wells. These water resources are not likely to be severely affected during a wildland fire.

Public power transmission lines have been strung from Kooskia to homes and businesses in the Lowell, Syringa, and Selway River corridor areas; however, many residents also rely on propane as either a primary or secondary power source. In a few areas, particularly on private property these power lines are in direct contact with trees or other vegetation.

FIRE PROTECTION

Local fire district coverage is provided by the Kooskia Volunteer Fire Department for structural fire (closest station is located in Kooskia). Due to the distance from the station, response times are variable; however, they can reach up to 30 to 45 minutes for very remote areas. During the winter (wildland fire off-season), the only available suppression equipment is based in Kooskia.

Primary wildland fire coverage is provided by the USDA Forest Service, which has seasonal crew and equipment stationed at the Fenn Ranger Station about five miles up the Selway River Road from Lowell. The Idaho Department of Lands also provides limited wildland fire coverage.

COMMUNITY ASSESSMENT

The communities of Lowell, Syringa, and the Selway River corridor are at high risk of experiencing a wildland fire. Homes built on mid and upper slopes or with timber directly abutting or overhanging structures are at the highest risk. Fires in these timber fuel types are generally much more intense and difficult to control than rangeland fires. Brush and other understory vegetation on the steep slopes rising from these communities would support very rapidly spreading wildfires, leaving little time for residents to escape. Additionally, the abundance of recreational and other human activities in the area drastically increase potential ignition sources. Preparing a home prior to a wildfire event will significantly increase its chance of survival.

The location of the primary access route in the bottom of a narrow canyon exacerbates already hazardous landscape characteristics. A fire on either side of the river would funnel hot gases and fumes through the canyon. Intense heat, sparks, or fire brands could easily light the opposite side; thus, compounding the threat. Additionally, there are only a few alternate escape routes available to residents and tourists.

A number of landowners in the Middle Fork of the Clearwater River drainage have decreased the fire risk to their property by conducting thinning, pruning, and slashing operations around structures. Others graze livestock in pastures surrounding the home site. Both management methods help create a defensible space around the structures, which drastically reduces the risk of a wildfire threatening the home.

MITIGATION ACTIVITIES

Beyond the homes, forest management efforts must be considered to slow the approach of a fire that threatens Lowell, Syringa, or the Selway corridor communities. Forest conditions in this area typically consist of dense forest canopies with a brushy understory component on steep slopes. All of these factors combine to create fire conditions that may be very difficult to control.

Development of a community evacuation plan 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. A community safety zone should also be established in the event of a compromised evacuation. Efforts should be made to educate homeowners through existing homeowners associations or creation of such organizations to act as conduits for this information.

Recreational facilities near the community and along the Middle Fork of the Clearwater River corridor and the Lochsa and Selway Rivers 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 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. Furthermore, building codes should be established to provide for more fire conscious construction techniques such as using fire resistant siding, roofing, and decking.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Mount Idaho

Mt. Idaho is located two miles southeast of Grangeville and is situated at the very edge of the Camas Prairie. Terrain of the town site is predominantly rolling hills, but quickly drops off to the east and southeast into the break lands overlooking the South Fork of the Clearwater River, 1,500 feet below. There are many homes located on and along the top of these steep slopes.

FIRE POTENTIAL

Fuels Assessment

Mount Idaho is located in the transition zone between the grasslands of the Camas Prairie and forestlands. Fuels surrounding the town site are primarily open ponderosa pine and Douglas-fir stands, with a grass and brush understory. Vegetation on the steeper slopes to the east and south is dominated by ponderosa pine/Douglas-fir stands, which become denser, with an increased fir component, on north facing slopes and in drainages. Under extreme weather conditions, these stands may lead to greater risk of crown fire and rapid spread upslope.

Fire risk in the steep canyon lands just east of the community is dramatically increased due to the abundance of ignition sources and steep topography. Concern has developed over recent harvest activities on private property adjacent to USDA Forest Service system lands above the Mount Idaho Grade. Inadequate slash disposal on these steep slopes leads to a serious threat of wildland fire, especially to structures directly upslope along the Cove Road.

Ignition Profile

Both natural and human caused ignitions occur around the community of Mount Idaho. The community center is more prone to human caused ignitions than lightning strikes due to the flat topography and agricultural development; however, lightning strikes occur frequently in the state and federal forestlands to the south and east of the population center. Annual field burning, debris fires, and vehicle use are much more common ignition sources. Stubble fires seldom escape landowner's boundaries, but there are a few such incidents each year. These fires are generally easily suppressed by modifying the vegetation and homes are rarely threatened.

Vehicle use on- and off-road is also a significant source of ignitions. Not only do sparks from vehicles ignite fuels along roadways, but fires are also commonly started by vehicles driving through dry fields or on unimproved trails. Grain trucks, ATV's, and pickups are used regularly in farming operations.

INGRESS-EGRESS

The primary access to Mount Idaho is via the Mount Idaho Road from Grangeville or the Mount Idaho Grade from State Route 14 along the South Fork of the Clearwater River. These are both two-lane, paved roadways. The Mount Idaho Road from Grangeville is bordered by agricultural and pastureland and is at little threat to wildland fire. Due to its location along the steep canyon wall, the Mount Idaho Grade has increased risk of becoming threatened by fire, especially fire originating along State Route 14. Fuels along the grade are typically cured grasses with scattered ponderosa pine and Douglas-fir stands. There are also several gravel secondary routes that could serve as potential escape routes including Cove Road, Poor Farm Road, and Whitetail Drive. The Cove Road is the only access route for residents in the Cove Road area. Several sections of this passageway abut timber-type fuels, which significantly increase the fire risk; however, Cove Road connects to Forest Road 279 (Cove Creek Road) providing a thru road to the river throughout the fire season.

INFRASTRUCTURE

Residents of Mount Idaho rely on personal or multiple home wells. These water resources are not likely to be severely affected by wildland fire; however, the power supply to the pumps that draw the water from the wells could easily be interrupted or damaged by fire.

Residents living in the Cove Road area currently do not have access to landline telephone connections; however, they do have phone service through a local cellular phone service.

FIRE PROTECTION

The Grangeville Rural Fire Department provides structural protection in Mount Idaho, but their district only extends approximately one mile to the east. There is currently a gap in fire coverage between the Harpster Fire District and the Grangeville Rural Fire District. This results in both the Golden Hills Subdivision and the Cove Road area being without structural protection.

The USDA Forest Service and the Idaho Department of Lands provide wildland fire protection. The USDI Bureau of Land Management is not responsible for wildland fire suppression in Idaho County; however, they do have limited abilities to respond if requested.

COMMUNITY ASSESSMENT

Residents of the Mount Idaho area have moderate to high risk of experiencing a wildland fire due to the close proximity of forestlands and steep topography. Therefore, it is imperative that homeowners implement fire mitigation measures to protect their structures and families prior to such an event.

As the community grows, more and more homes are being built in the wildland urban interface, particularly south and east of town. Many of these new homes abut forest-type fuels and are accessed by one-way in and one-way out driveways, which dramatically increases the likelihood of loss of life or property in the event of a wildland fire. These homes and other buildings are at much higher risk of experiencing a fire.

Many homes have been built along the rim of the western canyon wall of the South Fork of the Clearwater River. These homes are at very high risk due to the rapid rate of fire spread upslope that would be expected in the event of a fire in the canyon. These homes generally have poor access and would be difficult to protect in a wildfire situation.

The primary fire risk is associated with the abundance of human activity and the use of machinery near dry fuels. The receptive nature of these fuels increases the likelihood of a fire start. Most homeowners maintain an adequate defensible space around structures by watering their yards and mowing grass and weeds.

MITIGATION ACTIVITIES

Grazing generally works positively towards reducing the fine fuels in the vegetation types surrounding Mount Idaho, particularly in the open forest stands with grass and brush in the understory. Many landowners already graze livestock in areas that would otherwise be more susceptible to carrying a wildland fire. Grazing is a relatively inexpensive fire mitigation tool that typically works very well with little negative impact on the land.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Powell

Powell is a small community located in the Clearwater National Forest on the upper end of the Lochsa River. The main cluster of structures is adjacent to the USDA Forest Service Powell Ranger Station. This area includes the USDA Forest Service compound, private residences, an Idaho Department of Transportation maintenance shed and associated residences, and the Lochsa Lodge. The Lochsa Lodge is a private business including a restaurant, bar, store, and rental cabins. The community of Powell has a transient population consisting of various seasonal employees at both the ranger station and the Lochsa Lodge, tourists, loggers, and many other forest users. A major highway, U.S. Highway 12, a route from Missoula, Montana to Lewiston, Idaho passes directly through the community.

FIRE POTENTIAL

Fuels Assessment

Powell sits in the river bottom in the upper end of the Lochsa River drainage with moderate to steep slopes rising from both sides. The area around the community is dominated by relatively moist forest types. Western red cedar, grand fir, Engelmann spruce, and Douglas-fir are predominate in this area. There are drier sites with lodgepole pine and subalpine fir in the higher elevations. Alder, shiny leaf ceanothus, snowberry, and fools huckleberry are common brush species. The timber stands vary from heavily logged to fully stocked and mature.

Fires in these fuel types are highly variable, ranging from low intensity surface fires to very destructive, stand replacing wildfires. Fire suppression over the past few decades has led to increased brush, regeneration, and other surface fuels in the understory, which can lead to more intense fires. Torching, crowning, and spot fires tend to occur more frequently under these conditions. This area has a history of frequent fires including a significant number that have grown to large size.

Ignition Profile

Both natural and human caused fires occur in this area. The high density of recreational activity increases potential ignition sources significantly. Off-road vehicles, debris burning, discarded cigarettes, children playing with matches, fireworks, roadway fires, and camp fires are just a few of the countless potential human ignition sources in the area.

Lightning events are common across Idaho County; but are especially common in the mountainous regions encompassed by National Forest system lands. This area has one of the higher incidences of lightning caused fires in the county. In the late summer and early fall, the cured grasses and drier forest conditions are very receptive to ignition.

The abundance of human and natural ignition sources and the nature of fuels in the area increase the probability of wildland fire. Fire characteristics will depend on fuel types and moisture levels, as well as on weather conditions at the time of ignition. Fires during periods of drought with high temperatures, low humidity, and strong winds can quickly lead to fast-moving, destructive wildfires.

INGRESS EGRESS

The primary access into Powell is by U.S. Highway 12 from Kooskia or Missoula. This two lane highway follows the path of the Middle Fork of the Clearwater River and continues up the Lochsa. Highway 12 is very narrow and windy resulting in congestion during the summer months due to tourist traffic and becoming hazardous in the winter due to weather. The majority of the roadway abuts timber-type fuels and steep slopes. The river canyon is narrow enough that a fire on either side could restrict

access due to extreme heat and fumes. In the event of a wildfire along the river, it is likely that this escape route would become impassable. U.S. Highway 12 is the sole escape route between Powell and less hazardous areas.

There are a few Forest Roads in the area that may serve as a potential escape routes depending on the location of the fire. However, these roads typically travel through heavy forest fuels and lead to even more remote locations. In many cases, these roads may not be passable after an ice storm or severe wind event.

INFRASTRUCTURE

Due to its close proximity to the Clearwater and Nez Perce National Forests and its historical significance as part of the Lewis and Clark Trail, the economy of this community is heavily dependent on travelers and tourists. Warm weather tends to bring campers, hikers, rafters, and other recreationalists into the Lochsa River drainage. The Lochsa Lodge also brings in a large number of vacationers. During the winter, this area is heavily used by cross country skiers and snowmobilers recreating in the Lolo Pass area.

The water system in the Powell area is fed by a spring and provides very limited water for firefighting purposes. Public power transmission lines from the Missoula area are the primary power source for most residents. These are extremely vulnerable to both weather events and fire. Communication is primarily by buried phone lines, which are typically only vulnerable at the junction boxes. Both the Forest Service and local citizens have high quality radio systems with excellent coverage. In both cases, these systems depend on repeaters located in fire lookouts that are vulnerable to fire and lightning.

FIRE PROTECTION

The USDA Forest Service fire crew based at the Powell Ranger Station provides wildland fire protection during the summer fire season. They have approximately 16 to 20 personnel and two wildland engines. Structural fire protection is available from the Frenchtown, Montana Fire Department; however, due to the long response time and limited resources, effectiveness of this system is limited. Powell does have its own volunteer EMS unit.

COMMUNITY ASSESSMENT

The community of Powell is at high risk of experiencing a wildland fire. Homes built with timber directly abutting or overhanging structures are at the highest risk. Fires in the timber fuel types present in this area are generally much more intense and difficult to control than rangeland fires. Brush and other understory vegetation and heavy timber on the steep slopes rising from these communities would support very rapidly spreading wildfires, leaving little time for residents to escape. Additionally, the abundance of recreational and other human activities in the area drastically increases potential ignition sources. Preparing a home prior to a wildfire event will significantly increase its chance of survival.

The location of the primary access route in the bottom of a narrow canyon exacerbates already hazardous landscape characteristics. A fire on either side of the river would funnel hot gases and fumes through the canyon. Intense heat, sparks, or fire brands could easily light the opposite side; thus, compounding the threat. Additionally, there are only a few alternate escape routes available to residents and tourists.

MITIGATION ACTIVITIES

Beyond the homes, forest management efforts must be considered to slow the approach of a fire that threatens Powell. Forest conditions in this area typically consist of dense forest canopies with a brushy understory component on steep slopes. All of these factors combine to create fire conditions that may be very difficult to control. The USDA Forest Service has recently completed fuel reduction projects around

the community to help reduce the fire hazard, but more needs to be done in order to increase the safety of Powell residents and visitors.

Development of a community evacuation plan 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 and tourists. A community safety zone should also be established in the event of a compromised evacuation. Efforts should be made to educate homeowners through existing homeowner's associations or creation of such organizations to act as conduits for this information.

Recreational facilities near the community and along the Lochsa River corridor 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 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. Furthermore, building codes should be established to provide for more fire conscious construction techniques such as using fire resistant siding, roofing, and decking.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

Woodland, Pardee, Caribel, and Glenwood

The small community of Woodland is located near the western tip of the flat topped ridge between the Clearwater River and the Lolo Creek drainage. The Friends of Woodland Church marks the center of town; however, most residents are scattered randomly throughout the area. Much of the ridge top is dominated by converted hay fields and pasture ground with patches and stringers of forestland along the perimeter.

Pardee, Caribel, and Glenwood are remnant communities. Pardee sprang up alongside the Camas Prairie Railroad tracks running on the eastern side of the Clearwater River southwest of Woodland to serve area miners and other pioneers. The old Pardee town site is currently owned by the USDI Bureau of Land Management with only an interpretive sign and an aging silo marking its location. A small subdivision is located just upstream of the original Pardee town site. Residents in this area are very isolated with an incredibly narrow, winding road as their sole access route. The Caribel town site was once located on the same ridge, but approximately 11 miles southeast of Woodland on the Woodland Road. A few homes remain in the area; however, there is no definitive community center. Much of this area has been cleared for agricultural purposes, yet forest vegetation remains in the nearby Tom Taha drainage and on the steeper slopes leading down to Lolo Creek on the north side of Woodland Road. The remnant community of Glenwood is found on the Glenwood/Tom Taha Road approximately eight miles east of Caribel and 14 miles east of Kamiah near the summit of the Tom Taha Grade. There are several residents in this area, although an old schoolhouse is all that remains of the community center. Several landowners have cleared acreage for agricultural purposes; however, most of this area is covered by forestlands. The Clearwater National Forest boundary lies about three miles to the east, while the Idaho Department of Lands manages much of the area to the south.

FIRE POTENTIAL

Fuels Assessment

Many homes in the Woodland, Pardee, Caribel, and Glenwood areas have defensible space around structures in the form of pasture for livestock or small farm fields. A fire start in a field or pasture can generally be quickly controlled by modifying vegetation and creating fuel breaks. Nevertheless, fires in this type of light, flashy fuels will tend to spread very rapidly leaving little time to protect structures.

Due to their location on the ridge top, a fire occurrence on either the northeast aspect rising from Lolo Creek or the southwest aspect coming from the Clearwater River side will threaten these communities. Woodland has an increased risk of fire due to the urban development in the Clearwater River breaks area south and west of the community. This slope is characterized by dry open ponderosa pine stands with a grass understory. The main Woodland Road accesses many homes and private drives as it winds its way up to the Woodland town site. Although most homeowners have cleared a defensible space, several structures are nestled into wooded, higher risk areas. Fires in these fuel types would be expected to move very rapidly upslope, but burn at lower intensities. This fuel type is very flashy and easily influenced by weather patterns making suppression efforts difficult and potentially dangerous for firefighters. Timbered areas can burn very intensely, throwing fire brands and creating rolling embers that ignite spot fires. Fire starts due to vehicles, ATV's, cigarettes, and debris burning is becoming more common in this area.

The south slope of the Lolo Creek drainage, the Tom Taha Creek drainage, and forestlands surrounding Glenwood are dominated by Douglas-fir with ponderosa pine and grand fir intermixed. Western red cedar and Engelmann spruce can also be found in frost pockets. The understory in these areas is variable; however, thick patches of ninebark, ocean spray, and other brush species are common. Ladder fuels caused by thick regeneration at various stages of development increase the risk of catastrophic fire in these habitat types. Enhanced vertical and horizontal fuel continuity can lead to larger fires with

increased occurrences of crowning and torching. These hazardous fuel complexes coupled with dry summers and numerous ignition sources significantly increase the probability of an intense and destructive wildfire.

Ignition Profile

Both natural and human caused fires occur in this area. The high density of recreational and industrial activity near the river and the intense use of mechanized equipment for farming and logging increase potential ignition sources significantly. The use of equipment near cured grasses sparked the 2003 Milepost 59 Fire, which burned over 8,000 acres in the Clearwater River canyon five miles north of Kamiah. Debris burning, discarded cigarettes, children playing with matches, fireworks, roadway fires, and camp fires are just a few of the countless potential human ignition sources in the area. Contact between power lines and trees can spark fires, especially during windy conditions. The occurrence of arson fires each year is rising. To date, local fire emergency resources have controlled these fires before they caused serious damage and threatened lives or property.

Lightning events are common across Idaho County; however, ignitions due to down strikes occur more frequently in mountainous areas. The cured grasses that cover the steep slopes of the Clearwater River canyon and the forest habitat types that dominate much of the area surrounding Woodland, Pardee, Caribel, and Glenwood are very receptive to ignition.

The abundance of human and natural ignition sources and the dry nature of fuels in the area increase the probability of wildland fire. Fire characteristics will depend on fuel types and moisture levels, as well as on weather conditions at the time of ignition. Fires during periods of drought with high temperatures, low humidity and strong winds can quickly lead to fast-moving, destructive wildfires regardless of whether the event occurs in forest or rangeland fuels.

INGRESS-EGRESS

The primary access into Woodland is via the Woodland Road from Kamiah. This is a relatively steep two-lane paved grade with several turnouts. Much of this roadway is bordered by agricultural fields or grasslands; thus, the risk of this route becoming impassable for an extended amount of time is unlikely under normal fire conditions. The Woodland Grade Road traveling the opposite direction to Greer could serve as an alternate escape route for residents on the ridge; however, this road is less desirable due to the narrow roadbed, tight switchbacks, and sheer steepness. Additionally, this area is dominated by a dry forest habitat type. Emergency evacuation on the Woodland Grade to Greer would be very slow and dangerous.

The Woodland Road traveling east from Woodland to Caribel and eventually Glenwood is a well maintained gravel route. Although there are a few patches of timber, this roadway follows the ridgeline through predominately agricultural and pastureland. This section of the Woodland Road ties into the main Woodland Road to Kamiah on the west side and the Tom Taha/Glenwood Road on the east side. Since it is the sole thru road connecting the central region of the ridge, this would be the primary escape route for many residents.

The sole road that accesses Pardee residents is very narrow with many switchbacks. Although residents may be able to escape on this road, it is unlikely that most fire suppression vehicles would be able to descend in an emergency event. Furthermore, there are very few places where two vehicles could pass each other. In the event of a fire in the Pardee area, evacuation as well as fire suppression by air or boat would probably be more suitable depending on the location of the fire.

The Tom Taha/Glenwood Grade Road from Glenwood to Kamiah is a paved two-lane road. This path is relatively steep with several switchbacks making rapid emergency evacuation dangerous. Additionally, this grade was built in a timbered draw making suppression efforts difficult. Flames, smoke, and

hazardous fumes would likely funnel through this narrow drainage, significantly increasing the hazard. In the event of a fire in this draw, it is highly probable that this escape route would be cut off. The Beaver Slide Road and the Kidder Ridge Road are alternative routes that depart from the Tom Taha Grade about four miles west of Glenwood. The Beaver Slide Road descends into Kamiah just south of the Tom Taha Grade. This very steep, narrow, and winding road is not a safe escape route. The Kidder Ridge Road heads south along Kidder Ridge before dropping down into Kooskia. This gravel route could serve as an alternate escape route with additional maintenance, guard rails, turn outs, and signing.

INFRASTRUCTURE

Residents of the Woodland, Pardee, Caribel, and Glenwood rely on personal wells. These water resources would not likely be affected by wildfire. There are also several springs and ponds dotting the landscape, which commonly are used to water livestock. These water resources may be impacted by wildfire (sedimentation, increased surface runoff, etc.), but it is improbable that the damage would be severe or long-term.

Public power transmission lines run along the ridge top and roadways to each of the communities. Sections of these transmission lines cross over forest ecosystems. These lines have a moderate potential of sparking an ignition, particularly during severe wind events. Efforts should be made to ensure power line corridors are kept clear of fuels.

The economy in this region is dependent on agriculture and the timber industry. A few small sawmills near Kamiah have employed many residents of Woodland, Pardee, Caribel, and Glenwood for many decades. The loss of productive timber ground because of a large wildfire may affect the mill's ability to continue operating efficiently, especially in today's shrinking log markets.

Camas Prairie Railroad still transports logs and a few other products between Kooskia and Lewiston. The track mimics the path of the Clearwater River along its eastern bank. There have been no recent fire starts due to the passage of the train, yet the potential of ignition from sparks or hot brake shoes exists.

FIRE PROTECTION

The Glenwood-Caribel Volunteer Fire District provides fire protection to Glenwood, Caribel, and the surrounding areas. The Carrot Ridge Volunteer Fire Department provides structural protection to the community of Woodland. The Idaho Department of Lands-Maggie Creek District, USDA Forest Service, and the Nez Perce Tribe offer wildland fire protection to Woodland, Pardee, Caribel, Glenwood, and the surrounding area.

COMMUNITY ASSESSMENT

The communities of Woodland, Pardee, Caribel, and Glenwood are at moderate to high risk of experiencing a wildland fire, which has been recently demonstrated by the 2003 Milepost 59 Fire. Homes built on steep slopes or with timber directly abutting or overhanging structures are at the highest risk. Fires in these timber fuel types are generally much more intense and difficult to control than rangeland fires. Dry grasses on the steep slopes rising from the Clearwater River would support very rapidly spreading wildfires, leaving little time for residents to escape. Additionally, the abundance of recreational, industrial, and other human activities in the area drastically increase potential ignition sources. Preparing a home prior to a wildfire event will significantly increase its chance of survival.

The location of Woodland, Caribel, and Glenwood along the ridge top exacerbates already hazardous landscape characteristics. A fire on either side, from the Clearwater River or from Lolo Creek, could quickly spread upslope and threaten homes. Additionally, there are only a few safe escape routes available to residents. Pardee residents have a much higher risk due to the lack of a safe escape route and the difficulty of access for firefighters.

MITIGATION ACTIVITIES

Very few of the roads around Woodland, Pardee, Caribel, and Glenwood have road names posted. This could lead to confusion and lost time in an emergency. All roads should have road names posted. 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. A community safety zone should also be established in the event of compromised evacuation. Efforts should be made to educate homeowners through existing homeowners associations or creation of such organizations to act as conduits for this information. Development of the access road into Pardee to accommodate emergency vehicles and two-way traffic would drastically improve the safety of residents. It is very important that homeowners in the Pardee area have a preset and agreed upon evacuation and safety plan for emergencies.

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 established to provide for more fire conscious construction techniques such as using fire resistant siding, roofing, and decking. Surface fuel accumulations in nearby forests can also be kept to a minimum by periodically conducting 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.

Please see Section 5.4 *Wildfire Mitigation Activities Applicable to All Communities* for additional recommended mitigation.

4.4 Fire Departments' Firefighting Resources and Capabilities

Rural and city fire district personnel are often the first responders during emergencies. In addition to house fire protection, they are called for wildland fires, floods, landslides, and other events. Many individuals in Idaho County serve fire protection districts in various capacities. The Resources and Capabilities of the Fire Departments represented in the *Idaho County Revised Wildland-Urban Interface Wildfire Mitigation Plan* can be found in *Appendix 2009* in this Volume. This section has been moved to an appendix to facilitate periodic updates of the *Mitigation Plan* without having to disrupt the flow of the document.

4.5 Wildland Fire Districts' Firefighting Resources and Capabilities

The Resources and Capabilities of the Wildland Fire Districts represented in the *Idaho County Revised Wildland-Urban Interface Wildfire Mitigation Plan* can be found in *Appendix 2009* in this Volume. This section has been moved to an appendix to facilitate periodic updates of the *Mitigation Plan* without having to disrupt the flow of the document.

4.6 Issues Facing Idaho County Fire Protection

Because of the large area encompassing Idaho County, the issues facing successful fire protection are diverse, ranging from concerns about continued rapid growth to home accessibility issues to watershed issues to obtaining insurance for non-profit fire departments. Discussion of these issues follows.

4.6.1.1 Continued Rapid Growth

Growth will continue to present the greatest challenge to fire management in the urban interface over the long term. As of June 2007, there are 150 new subdivisions or housing developments (several are multiple phases of the same development) planned throughout Idaho County.

The dramatic increase in demand for homes throughout Idaho County has resulted in significant changes in land use patterns. Many agricultural lands and private non-industrial forest lands have been sold and subdivided over the last few decades, pushing residential development further into the timberlands. This trend will continue, as forestlands and rangelands are sold for real estate development, having a dramatic effect on the ability of emergency resources to maintain current levels of fire protection without considerable increases in funding for equipment, personnel, and training. Indeed, many emergency response resources in Idaho County are already at a critical threshold. Further increases in protection responsibility will come at the expense of preparedness, as emergency resources are increasingly spread over an expanding protection area.

4.6.1.2 Elk City and Red River Development

There are several new housing developments planned in the Elk City and Red River area. Many of these developments are being planned along the National Forest boundary and are typically all or partially forested. The declining health of many of the lodgepole and mixed conifer stands in the Elk City township and surrounding area have become a major wildfire hazard due to overcrowding and insect-caused mortality. The increasing popularity of the Elk City and Red River areas as a recreational destination further exacerbates the potential risk for wildfire. The growing housing density coupled with the increasing recreational traffic spread over a large coverage area puts a significant burden on the local volunteer fire department as well as the federal agencies responsible for wildland fire protection. Further complicating the situation is the inevitable lack of access. The Elk City and Red River areas are very rural, which adds to their appeal; however, State Highway 14 is the only paved, direct access into the

area. This two-lane highway follows the path of the South Fork of the Clearwater River and is very narrow and winding. Furthermore, many of the housing development, both old and new, are accessed by one-way in, one-way out driveways bordered by forest.

There have been several efforts to improve forest health and thereby decrease the potential wildfire risk in the Elk City and Red River areas; however, new developments and home builders should be made aware of the inherent fire risk and take the appropriate actions to protect their property and families. The Elk City Township and surrounding forestlands can and will eventually burn; thus, residents should be prepared to deal with the potential consequences and have safety measures in place ahead of time.

4.6.2 Grangeville Watershed

The community of Grangeville is dependent on a controlled surface runoff from the Three Mile Creek Watershed. At one time, the city obtained their water from the Three Mile Creek Drainage, now all of the domestic water for the community comes from wells. The city has contained the creek in channels and a tunnel that runs under several down town businesses. A severe wildfire in this watershed could cause serious injury to this resource by removing vegetation, creating ash and sediments, and impairing soil properties. Fire mitigation treatments prior to a fire event are a high priority and are imperative to conserving the functionality of the watershed following a wildland fire. An assessment of the Watershed was completed in September of 2009, and fuel mitigation recommendations are forthcoming.

4.6.3 Elk City Watershed

Most of the community of Elk City is dependent on surface runoff from the Elk Creek Watershed as its primary source of water. This is a citizen-owned water system that draws its resources from Elk Creek. The water is stored in a large cistern above the community and uses both a pumping system and a gravity feed. Generators have been purchased to keep the water flowing during power outages as well as during a fire situation. Installation is anticipated for completion in November 2009. A severe wildfire in this watershed could cause serious injury to this resource by removing vegetation, creating ash and sediments, and impairing soil properties. Fire mitigation treatments prior to a fire event are a high priority and are imperative to conserving the functionality of the watershed following a wildland fire.

4.6.4 Grangeville – Elk City Power Supply

The power line system from Grangeville to Elk City and surrounding communities is out of date and does not provide a reliable source of power for residents tapped into this grid. The poles maintaining the system are wooden and provide low elevation lift to the wires. In order to alleviate this issue, residents feel replacing the wooden poles with taller metal poles would decrease their risk to fire as well as provide better service to residents using this system. Additionally, fuels treatments under the power lines should be conducted to provide a fuel break and make the lines more likely to sustain a wildfire.

4.6.4.1 Elk City Forest Health Issues

In the heart of Central Idaho's backcountry lies a single township, thirty-six square miles, surrounded by the Nez Perce National Forest. Once a center for mining, prospecting and the businesses associated with those activities, the community of Elk City occupies perhaps a third of this township. One legacy of the area's history as a mining district is that the USDI Bureau of Land Management now cares for the public lands within the township, managing approximately 12,500 acres. Another legacy is the rest of the area is in private ownership, the result of mining claims that were patented and thereby granted to individuals or mining companies.

Since the early 1980's, a major outbreak of mountain pine beetle has been progressing through forestlands surrounding the township and is now well established in the lodgepole within the township itself. The

cycle in which older lodgepole pine are killed by beetles, replaced by fire, and the burned areas regenerated with more lodgepole is widely recognized. Each year, additional trees die from the beetle attacks, and the dead trees with their dry needles await only dry conditions and an ignition source to create serious wildfires that will be virtually impossible to control.

History is confirmed by the preponderance of lodgepole and other early seral species that currently occupy the forested sites in a classic fire type pattern. On the ridges above the South Fork Clearwater River and in the southwest corner of the township, for example, lodgepole stands were found to be over 100 years old. Where past fires were most intense, nearly pure stands of lodgepole or, in other cases, western larch, occupy the land. Where the fires burned with lower severity, larger trees and those that are less fire resistant were spared the impact of the flames.

The nearly pure stands of lodgepole pine and the presence in mixed conifer stands are both a testament to the fire history of much of the township and an indicator of future fire occurrences. Recent fire suppression has been successful, as there have been no significant fires within the township since 1940. However, it can be argued that suppression has merely postponed the inevitable. Fire suppression, along with timber harvest, have altered what would have been the historic mosaic of varying forest types, age classes, and fire risk across the landscape. When fuels build up and conditions allow, there could be high intensity fires that will defy control efforts. This situation should not be viewed as an aberration, as the area has both lethal, mixed, and even low frequency historic fire regimes. Nevertheless, the norm may no longer be acceptable, given the level of human development within the landscape.

Unless there is an unusually cold winter or two, control of the beetle epidemic and mitigation of the fire hazard they create will be dependent upon human actions. Control strategies boil down to thinning lodgepole stands and disposing of the slash. Fortunately, the forestlands surrounding Elk City township have Douglas-fir, larch, ponderosa pine, and grand fir trees interspersed with lodgepole or adjoining lodgepole stands, so that the stands can be selectively logged for the lodgepole, leaving fire and beetle resistant tree species with sufficient numbers of trees to maintain aesthetic values.

There is a dire need to find acceptable ways to mitigate unnaturally high fire hazards, particularly around populated areas and to include the local community and other stakeholders in deciding future management directions. As the Federal agencies move to implement recommendations of this Plan, it is critical that all stakeholders participate in the development process. Agencies, working with the county, tribe, and other local governments, as well as the local community and preservation groups, can collaboratively strive to implement the goals of this plan and the National Fire Plan.

The challenge for land managers in the greater Elk City area is to pay heed to the fire history and to current vegetative conditions and fuel loads, and then mitigate the unacceptably high fire risk. History acts as a credible predictor of fire occurrence, but the size and intensity, and the risk that the inevitable fires pose to human values can be manageable.

4.6.5 Fire Behavior Issues for Communities Located in Valleys and River Bottoms

Several Idaho County communities have been built within narrow valleys and river corridors. Smoke and toxic fumes created by wildland fires typically funnel through these corridors by the up or down canyon winds and changing air pressures. Residents of communities such as Riggins, Kooskia, Stites, Elk City, and several others could be severely affected by these dangerous fumes and superheated air currents. In extreme cases, this type of fire behavior could result in the need for a complete evacuation of a community and area residents. This type of evacuation is a complex task that rural fire departments and other emergency response personnel should consider as part of their response plan.

4.6.6 Accessibility

Fire Chiefs throughout the County have identified home accessibility issues as a primary concern in several parts of Idaho County. It appears as though many homes and driveways have been constructed without regard to access requirements of large emergency vehicles. Lack of accessibility precludes engagement by suppression resources. Many homes within fire protection districts in Idaho County effectively have no fire protection simply because access is not possible or is potentially dangerous. Enforcement of the International Fire Code, regarding road and driveway construction standards for fire apparatus would prevent accessibility issues in new developments.

4.6.7 Communication

Currently, emergencies throughout Idaho County are dispatched through the Idaho County Sheriff's Office in Grangeville. Due to the ruggedness of terrain and the sheer size of the County, many areas do not have adequate communication with the Sheriff's Office or each other. This is particularly evident in the Salmon River canyon around Riggins. Outdated or inconsistent radio equipment between fire districts and other fire response agencies is also hindering the interoperability and communication process. Recently, all of the federal agencies have begun switching to narrow band radios. These are significantly more expensive than the wide band radios currently used by most rural and city fire districts and other local emergency services. Until all emergency service departments are able to outfit themselves with the new radios, communication between the two systems may be complicated. Communication is essential in a wildfire or any other emergency; thus, it should be a high priority to improve communicative abilities countywide.

4.6.8 Lack of Insurance for Not-for-Profit Fire Departments

Currently, most of the fire departments in Idaho County are not-for-profit organizations (all departments except Grangeville Rural Fire District, Cottonwood Volunteer Fire Department, Kamiah City and Rural Fire Protection District, and Harpster Volunteer Fire District) deriving their income from subscribers, which makes them responsible for having their own insurance coverage. Many departments cannot afford such a large expense without outside help. Thus, Idaho County Commissioners are encouraged to support, encourage, and help these organizations gain insurance coverage to protect the organizations and their firefighters, and continue providing fire protection service.

4.7 Success Stories in Idaho County

4.7.1 Idaho State Fire Plan Working Group 2008 Annual Report

The Idaho State Fire Plan Working Group (ISFPWG) is a multi-agency collaborative body charged with assisting counties with their County Wildfire Protection Plans and their associated countywide working groups, dissemination of information, and oversight and prioritization of grant assistance programs in order to facilitate the implementation of the National Fire Plan in Idaho.

Their annual reports provide current information on implementation of the County Wildfire Protection Plans, and the 2008 Annual Report marks the progress of Idaho's wildland fire community in preparing for fires and protecting communities (available at <http://www.idahofireplan.org>). Homeowners, rural fire departments, counties, state and federal fire agencies, and others are working together to prepare for wildfires. From 2001 to 2008, Idaho has accomplished approximately 1.7 million acres of hazardous fuels reduction. County Wildfire Protection Plans (CWPPs) are in place in all 44 counties, with active updates ongoing. National Fire Plan grants have protected over 13,000 homes and structures, and more than \$33 million has been invested in firefighting resources.

In 2009, the Idaho State Fire Plan Working Group will continue to support counties in their efforts to assess and reduce risk. The State Working Group will support priority fuels reduction and restoration work that crosses ownerships and builds on previous work.

Highlights from Idaho County identified in the 2008 Report include the Upper Red River Project and the Fire Squirts Summer Camp.

UPPER RED RIVER PROJECT

In 2008, Idaho County completed 1.75 miles of fuel break and home defensible space projects around 95 structures on the Upper Red River Project. Four other projects are ready to start as soon as the snow leaves in the spring of 2009. The greatest challenge in implementing the Upper Red River project has been contacting the absentee landowners and obtaining their approval for the work to proceed. More than half the project is complete, and the remainder is scheduled to be completed in 2009.

FIRE SQUIRTS SUMMER CAMP

The USDA Forest Service partnered with the USDI Bureau of Land Management, Framing Our Community (an Elk City community non-profit), and local school districts to provide a summer opportunity for children in Idaho County to learn about fire. The Fire Squirts program is a fun, educational week-long camp that teaches children ages 8 to 14 about fire ecology, fire history, fire behavior, fire prevention, and fire suppression.

Through interactive sessions, creative artwork, laboratory experiments, and dramatic play, students learned about the fire triangle, ecological cycles, fuels treatments, defensible space, and map and compass skills. Students dressed up in firefighter and smokejumper protective equipment to learn firsthand about tools and gear, engines and parachutes, and even implemented suppression tactics on a practice fire. The children also visited nearby homes that had been impacted by a recent wildfire to learn about defensible space. They “played with fire” in laboratory experiments that demonstrated how fuel composition, wind, and topography influence fire behavior.

The Fire Squirts program has been offered annually by the Nez Perce National Forest since 2000. Interagency partnerships have allowed this program to expand to more than one location per year and to enhance the curriculum. With Community Assistance funding, the USDI Bureau of Land Management Cottonwood Field Office has provided support to this program through an Assistance Agreement with Framing Our Community. Instructors included Nez Perce National Forest employees from the Clearwater and Salmon River Ranger District fire programs as well as Grangeville Air Center Smokejumpers.

In the past, Idaho County and its communities been very successful at securing grants to improve the County’s resilience to wildland fire. Idaho County has received approximately \$1,262,380 from 2005 through 2008 through the State of Idaho and the NFA Community Fire Protection Grants.

4.7.2 Clearwater Fire Academy

The Clearwater Fire Chief’s Association has successfully implemented the Clearwater Fire Academy, which is a three-day firefighting (structural and wildland) school open to all departments and agencies in the region. Courses cover a number of topics ranging from specific structural firefighting issues to basic wildland firefighting. The Academy has been very well attended and is an excellent example of departments and agencies working together to provide quality training at a lower cost to everyone.

4.7.3 Completed Grant Projects

Several Idaho County organizations have completed various types of fuel mitigation projects. Tables 4-14 through 4-17 provide a summary of these projects. Some of the projects have completed and ongoing

components. These projects are displayed here and in the next section. Please see the *Acronyms and Glossary* in Chapter 6 for an explanation of the funding agency acronyms.

Table 4-14. 2005 Idaho County National Fire Funds Plan.

Assistance Recipient	Funding Agency	2005 Funds	Project Description
Kooskia FD	BIA RFA	\$21,366.00	Fire Prevention & Education
Framing Our Community	BLM CAR	\$30,000.00	WUI Program Support
Stites FD	BLM RFA	\$619.00	Equipment
Kooskia FD	FEMA AFG	\$104,500.00	Vehicle Acquisition
Kooskia FD	IDL/FS VFA	\$5,662.85	PPE/Communications
Salmon River RFD	IDL/FS VFA	\$11,590.00	PPE/Communications
Idaho County - Cove Road	IDL/FS CFP	\$35,325.00	Hazardous Fuels Treatment
Idaho County - Red River	IDL/FS CFP	\$10,900.00	Hazardous Fuels Treatment
Idaho County - Syringa	IDL/FS CFP	\$54,775.00	Hazardous Fuels Treatment
Idaho County - Elk City	IDL/BLM PF	\$30,725.00	Hazardous Fuels Treatment
2005 Total		\$305,462.85	

Table 4-15. 2006 Idaho County National Fire Funds Plan.

Assistance Recipient	Funding Agency	2006 Funds	Project Description
Idaho County - Secesh II	IDL/FS CFP	\$41,800.00	Hazardous Fuels Treatment
Idaho County - Glenwood-Caribel	IDL/FS SFA	\$134,000.00	Hazardous Fuels Treatment
Idaho County - South Fork	IDL/FS SFA	\$54,000.00	Hazardous Fuels Treatment
Ferdinand Fire Department	IDL/FS VFA	\$3,504.60	Firefighting Equipment
Grangeville Rural Fire Department	IDL/FS VFA	\$3,084.00	Firefighting Equipment
Harpster Fire Protection District	IDL/FS VFA	\$13,276.00	Firefighting Equipment
Keuterville Cowboy Wildland Firefighters	IDL/FS VFA	\$3,700.00	Firefighting Equipment
Salmon River Rural Fire Department	IDL/FS VFA	\$1,395.00	Firefighting Equipment
Stites Fire Department	IDL/FS VFA	\$1,442.00	Firefighting Equipment
Harpster Fire Protection District	BIA RFA	\$9,202.00	Radios, computer, projector
Glenwood-Caribel Volunteer Fire District	BIA RFA	\$13,699.00	Training and PPE
Cottonwood Rural Fire Department	BIA RFA	\$5,426.00	PPE and Pagers
White Bird Fire Department	IFCA FFLP	\$1,000.00	Laptop
City of Riggins	FEMA AFG	\$41,505.00	Operations & Safety
Cottonwood Rural Fire Department	FEMA AFG	\$14,250.00	Operations & Safety
Ferdinand Fire Department	FEMA AFG	\$15,039.00	Operations & Safety
Salmon River Rural Fire Department	BLM RFA	\$9,144.00	PPE, Communications & Equipment
2006 Total		\$365,466.60	

Table 4-16. 2007 Idaho County National Fire Funds Plan.

Assistance Recipient	Funding Agency	2007 Funds	Project Description
Framing Our Community	FS EA	\$88,900.00	Sort Yard
Framing Our Community Inc.	IDL/FS CFP	\$20,000.00	Living With Fire Video
Idaho County	IDL/FS CFP	\$82,500.00	Upper Red River
Idaho County	IDL/FS CFP	\$34,448.00	Warren, Salmon River
Idaho County	IDL/FS SFA	\$75,000.00	Countywide I
Cottonwood RFD	IDL/FS VFA	\$585.00	Equipment
Glenwood-Caribel Volunteer Fire District	IDL/FS VFA	\$6,700.00	P25 Compliant Radios and Personal Protective Equipment
Kooskia FD	IDL/FS VFA	\$2,000.00	
2007 Total		\$310,133.00	

Table 4-17. 2008 Idaho County National Fire Funds Plan.

Assistance Recipient	Funding Agency	2008 Funds	Project Description
Ridge Runner Fire Department	BIA RFA	\$2,440	PPE and equipment
Cottonwood RFD	BIA RFA	\$3,716	PPE
Carrot Ridge VFD	BIA RFA	\$4,590	Equipment, communications, training
Kooskia Fire Department	BIA RFA	\$2,574	PPE
Harpster VFD	BIA RFA	\$7,168	PPE
Glenwood-Caribel Volunteer Fire District	BIA RFA	\$9,415	PPE and equipment
Clearwater RC&D	BLM CAR	\$5,000	Idaho County Fire Mitigation Coordinator
Nez Perce NF	BLM CAR	\$20,000	Salmon River homeowner assessments
Clearwater RC&D	BLM CAR	\$5,000	Harpster RFD RedZone
Framing Our Community	BLM CAR	\$5,000	Homeowner Assessments
Framing Our Community	BLM CAR	\$2,000	“Are We Safe From Fire” video, additional costs
Framing Our Community	BLM CAR	\$3,000	Educational Outreach
Framing Our Community	BLM CAR	\$5,000	Fire Squirts Ed Program
Cottonwood Fire Dept.	BLM RFA	\$6,120	Communications - P25 compliant radios
Keuterville Wildland Firefighters	BLM RFA	\$12,240	Communications - P25 compliant radios
Grangeville RFD	FEMA AFG	\$5,510	Equipment
Idaho County	IDL/FS SFA	\$156,000	Fire Safe - Salmon River RedZone, White Water Wilderness Ranch, Upper Salmon River II, Elk City
Cottonwood RFD	IDL/FS VFA	\$3,041	2 Shelters and 2 Radios
Elk City VFD	IDL/FS VFA	\$2,200	2 Radios
Glenwood-Caribel Volunteer Fire District	IDL/FS VFA	\$3,000	Shelters & Radios
Grangeville RFPD	IDL/FS VFA	\$3,498	Radios
Harpster VFD	IDL/FS VFA	\$696	Foam Mixer and First Aid Kits

Assistance Recipient	Funding Agency	2008 Funds	Project Description
Kooskia FD	IDL/FS VFA	\$1,122	PPE and Equipment
Ridge Runner Fire Department	IDL/FS VFA	\$5,984	PPE
Salmon River RFD	IDL/FS VFA	\$5,000	Equipment
White Bird FD	IDL/FS VFA	\$2,000	Shelters and Pike Poles
2008 Total		\$281,314	

4.7.4 Ongoing Grant Projects

Several Idaho County organizations are currently working on various types of fuel mitigation projects through grant programs. Table 4-18 provides a summary of these projects.

Table 4-18. Active Grant Programs

Project #	Program Name	Original Amount	Balance
07SAFP-06	Idaho County-Countywide	\$75,000	\$0
06SAFP-05	Idaho County-Glenwood Caribel	\$55,576	\$0
06SAFP-13	Idaho County- Countywide II (from Glenwood Caribel)	\$78,424	\$251
06NFA4-04	Idaho County-Secesh II	\$41,800	\$35,710
07NFA4-04	Idaho County-Warren-Salmon River	\$34,448	\$12,057
07NFA105	Upper Red River	\$82,500	\$23,942
08SAFP12	Salmon River Rural	\$17,400	\$8,900
08SFAP12	White Water Ranch	\$35,000	\$180
08SAFP12	Upper Salmon River	\$65,750	\$28,450
08SAFP12	Elk City	\$30,500	\$3,906
09NFA102	Powell Fuel Break	\$60,000	\$60,000
Totals		\$576,398	\$173,396

4.7.5 Creation of the Glenwood-Caribel Volunteer Fire District

Prior to 2005, the communities of Glenwood and Caribel and homes in the surrounding area were not covered by any formal structural or wildland fire protection district. In April of 2005, landowners and residents in these areas took action to create a new fire district in order to provide fire protection resources and personnel to the citizens of Glenwood, Caribel, and the surrounding areas. The Glenwood-Caribel Volunteer Fire District (GCVFD) provides both structure and wildland firefighting support to a large area (42 square miles). The topographical features range from flat farmland to deep, difficult to access canyons. Large areas of cultivated farmland, thick-forested areas, and dense underbrush, with numerous homes dispersed throughout, provide a challenge to effective firefighting. Sections of State land, National forest, tribal lands, and large areas private forest add to the complexity of fire protection.

Through grant funding and private donations, this rural fire department has built a small fire station, acquired a used pumper truck, as well as two 1,200-gallon tenders, a 2,500-gallon tender, and two brush trucks. These vehicles are well equipped and are maintained by the volunteers. In addition, a Quick Response Unit has been established for the Glenwood-Caribel-Woodland areas, with two response vehicles, seven Basic EMTs, and one Advanced EMT. The Quick Response Units (QRUs) are equipped to provide non-transport emergency service until the arrival of an ambulance. Mutual Aid Agreements with other structural and wildland fire departments and agencies in the area provide additional support.

4.7.6 Creation of the South Fork of the Clearwater River Volunteer Fire Department

Currently, the Elk City Volunteer Fire Department not only provides structural fire protection to the community of Elk City, they also respond to fires in the small, remote communities of Newsome, Orogrande, Fall Creek, Mallard Creek, Red River Hot Springs, and Red River. The level of protection the Elk City Volunteer Fire Department can provide to these communities is dependent on current resources and generally decreases as the distance to these areas increases. Response times to many of these locations could reach up to two or three hours depending on road conditions. In order to mitigate this risk, it is recommended that six fire brigades; the Newsome Brigade; the Fall Creek Brigade; the Mallard Creek Brigade; the Red River Brigade; the Red River Hot Springs Brigade; and the Orogrande Brigade; be formed as appendages to the existing Elk City Volunteer Fire Department to inclusively be called the South Fork of the Clearwater River Volunteer Fire Department. This Department would have a basic set of equipment including a portable pump, fire hose, sprinkler system, hand tools, and several volunteers within each brigade's boundaries in order to provide immediate first response. The main branch of the Elk City Volunteer Fire Department would also be dispatched to provide back up and refilling capabilities to the brigade.

4.7.7 The Salmon River Home Assessment Collaboration Project (Between the Salmon River Ranger District and the Salmon River Rural Fire Department)

Over the past year, there have been 152 structural/educational assessments that have taken place in the Salmon River Canyon. The Salmon River Rural Fire Department, the Salmon River Ranger District of the Nez Perce National Forest, and the New Meadows Ranger District of the Payette National Forest coordinated these efforts.

4.7.8 RedZone Software Distribution and Training.

Since 2006, several volunteer fire departments and land management agencies acquired the RedZone software, through the Community Assistance dollars of the Bureau of Land Management and the assistance of the Clearwater RC&D, who generously facilitated the purchases and distribution. RedZone is an easy to use, intuitive, and professional mapping software for first responders. To date, only three fire departments have not purchased RedZone (Secesh, BPC, and Ridge Runner), and the County is attempting to purchase a license for all the Departments, and exploring opportunities to manage the data.

The purchase of RedZone has allowed the Volunteer Fire Departments to collect wildland urban interface data that can be used by the local departments, as well as the county, for their suppression and fuels planning efforts.

Again, through the assistance of the BLM and the Clearwater RC&D, the county was able to facilitate one-day RedZone training with the designer and company owner, Clark Woodward, followed by local field sessions, allowing new users of the software to become more comfortable with the technical use, as well as the assessment process.

Work is in progress to make RedZone available at the County level to all the fire organizations. The County would maintain the database.

4.7.9 North Central Idaho Fire Prevention Cooperative.

The North Central Idaho Fire Prevention Cooperative is taking tentative steps forward, with five counties participating (including Idaho County). As of 2009, the cooperative encompasses five counties. While still in the development stages, the group has established a board with representatives from each county.

The organization has also defined projects and programs to target over the next year, with the goal of two programs per county. Educational outreach messages related to both wildland and structural fire issues will be presented.

Both the Bureau of Land Management and the Nez Perce Tribe have pledged Community Assistance dollars to promote fire education messages. There are several representatives from Idaho County working on this effort from the Idaho Department of Lands (Maggie Creek and Craigmont), USDA Forest Service (Nez Perce and Clearwater National Forest), and Volunteer Fire Departments (White Bird Fire Department and Grangeville Fire Department). However, input and advice from the *Fire Mitigation Working Group* and the Fire Chiefs Associations to this education-focused group would be greatly appreciated.

4.7.10 Whitewater Wilderness Ranch as a FireWise Community

The Salmon River Ranger District is actively working with the Whitewater Wilderness Ranch subdivision in Pollock to become a nationally recognized FireWise community, and they received this designation in the fall of 2009. Assessments for the subdivision are complete, and the board for this subdivision has been active in developing an emergency response plan, as well as working with the Idaho County Fire Mitigation Coordinator on a plan to implement a shaded fuel break between upper subdivision boundary and the Forest Service system lands. There are also active, ongoing efforts to work with homeowners on fire mitigation issues around individual homes. Harry Steele, the FireWise Coordinator for the state will be assisting in these efforts.

4.7.11 Fire Education Camps for Children in Idaho County

For the past two seasons, agencies have been working collaboratively to facilitate fire education camps for children in Idaho County. Camps have been established in Kooskia, Elk City, White Bird, Grangeville, and Riggins. Curriculum revolves around fire ecology, fire suppression and management, and defensible space. Organizations involved include USDI Bureau of Land Management, USDA Forest Service, Idaho Department of Lands, Nez Perce Tribe, and Framing Our Community.

4.8 Lessons Learned or Questions for the Future

4.8.1 Managing Assessment Data

A more unified approach to collecting and housing structural assessment data is needed. There are several entities in the county collecting information. However, we need more consistency on uploading this data with the county and, possibly with a secondary source. It is recommended that we store back up data with the interagency dispatch offices in Grangeville. If needed, the information can then be used by fire management teams that may be called to Idaho County for large wildfire events. We could agree upon scheduled times throughout the year to send our information to the dispatch office.

4.8.2 Coordinating Educational Programs

Each organization or group has educational programs and outreach that they participate in each year. With the new cooperative moving forward, are there any coordination or outreach and education opportunities on which the working group would like to focus?

4.8.3 Coordinating RedZone Training

It may be beneficial to coordinate RedZone trainings.