

Economic Values at Risk

Economic Indicators for Five Bark Beetle Infested Counties of Colorado

Prepared by:
Michael Retzlaff

RMC Consultants, Inc
12345 W. Alameda Parkway, Suite 205
Lakewood, CO 80228

and

Economic Insights of Colorado, LLC
7924 Eagle Feather Way
Lone Tree, CO 80124

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/s/ Mary H. Peterson July 23, 2008

Mary H. Peterson
Lead Forest Supervisor, Bark Beetle IMT

Executive Summary

Since 1995, north central Colorado has experienced the most severe infestation of bark beetles in its history. By the end of 2007, more than 1.5 million acres had been affected by the beetles, killing entire landscapes of lodgepole pine. Mountain communities rely solidly upon these landscapes for their economic vitality. With nearly all lodgepole pine stands either dead or dying and an increased risk of large-scale wildfire, there is a need to identify the economic values that may be at risk of loss.

This study uses several indicators to examine three kinds of economic values at risk of loss from wildfire: assets, fiscal dependency, and economic dependency. The study area includes the counties hit first and hardest by the beetle infestation: Eagle, Grand, Jackson, Routt, and Summit. The analysis summarizes indicator values by wildland urban interface areas as defined in Community Wildfire Protection Plans, and compares them with county-wide totals.

The analysis reinforces the notion that there are many economic values at risk of loss from wildfire in the beetle-infested counties of Colorado. The magnitude of county asset value, the high proportion of property taxes, and the number of special districts in the wildland urban interface all lend quantified support to the seriousness of the situation. Key economic engines are based in the wildland urban interface and could be affected appreciably by large wildfires. Critical infrastructure for water and power supplies are located in high risk areas, and remain at risk of loss from wildfire within the beetle-ravaged landscapes.

Consequences of wildfire are not limited to the five-county area. Economic and physical links between west-slope counties and Front Range cities can easily extend the reach of wildfire effects. Scenic landscapes, water supplies, and the power grid can affect Denver, Fort Collins, Colorado Springs, and communities in between.

It is recommended that 1) the economic indicators be incorporated into planning activities across jurisdictions, 2) large-scale wildfire scenarios be developed and analyzed for better understanding of regional impacts, 3) wildland urban interface data be developed consistently and made available at a single internet location to improve their use in communications and decision-making, and 4) community wildfire protection plans be completed where missing and implemented where they exist to reduce the potential of economic losses.

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Report

Introduction

Background

The high country of Colorado has always been highly dependent upon its landscapes. Early in the last century, immigrants from the East and West coasts were drawn to the mountain west by the lure of wealth from natural assets. Gold, silver, timber, and forage were there for the taking. Communities sprung up – some lasting beyond the rush for instant riches. Today many of those communities still find their dependency and identity linked to mountain landscapes. While a few communities benefit from significant mining operations, many benefit from visitors who come to admire the landscapes for their beauty and their recreation opportunities.

Communities in the north central part of the state share all the characteristics and history of high-country Colorado. Small-town appeal, big-town amenities, and world-class landscapes have transformed the area into a cluster of national and international destinations. Vail, Frisco, Grand Lake, Winter Park, and Steamboat Springs are a few of the communities that have become the signature of Colorado tourism.

The attraction of high-country communities has prompted new development in recent decades – including first and second homes of new full-time and seasonal residents. National demographic and wealth patterns are resulting in population booms for northern Colorado. Career shifters and retirees are deciding that life is better lived in mountain communities. Whether they come to stay seasonally or year-round, the economy of these towns has become highly dependent upon their presence.

High country communities experience the same highs and lows of business cycles found elsewhere. Business cycles are expected events that affect every economy and every community. Natural events and cycles do the same. Hurricanes, drought, and pest infestations can all wreak havoc on an area and its livelihood. Economic downturns are often short-lived, lasting only a few months or years. But natural events and cycles can have economic implications that persist for years or decades. The current bark beetle infestation in Colorado, and now southern Wyoming, is one of those natural events that will likely have consequences for a very long time.

The current bark beetle epidemic began in 1995. Triggered by drought that weakened tree resistance, indigenous beetle populations exploded across a landscape of mature, dense, homogenous lodgepole pine. This natural large scale disturbance has affected more than 1.5 million acres since the first signs of outbreak. Although bark beetle cycles are a regular occurrence in lodgepole pine forests, this epidemic is the largest ever recorded in this area.

A consequence of the infestation is an increased potential for large-scale wildfires. The threat lies in both extent and severity. The threat is high today while red needles cling to the trees, subsides as needles—and later trees—fall to the ground, then rises again

in three or four decades as a young forest emerges through the older, fallen trees. When the threat becomes reality and wildfire hits mountain communities—where landscapes are a critical foundation for life and livelihood—the results could be devastating.

To address the multiple threats of the bark beetle infestation, local communities and governments joined with state and Federal agencies to create the Colorado Bark Beetle Cooperative (CBBC). The CBBC is composed of elected officials, businesses, government agency representatives, and environmental leaders. This organization asked the USDA-Forest Service to examine the economic implications of the bark beetle infestation with its associated wildfire threat. This report is the culmination of that request.

Objective of the Study

The CBBC originally requested an examination of potential economic impacts to five counties in northern Colorado – Eagle, Grand, Jackson, Routt, and Summit. Scope of the study was limited to effects by wildfire potential only. Communication from CBBC members indicated that wildfire was and remains the single threat most feared by residents in the five-county area (Severson, 2007). The loss of infrastructure, disruption of critical utility supplies, and changes in routine business activity are included in the threat of wildfire. This limited scope ignores threats from dead or dying trees alone, such as reduced scenic quality, safety risks from falling dead trees, and diminished watershed conditions. None are considered in this study.

Initial study efforts focused on scenarios of wildfire events. In cooperation with geographic information system (GIS) and fire modeling specialists on the White River National Forest, a variety of fire scenarios for parts of Summit County were first explored. Specification of each scenario, however, required a multitude of assumptions regarding weather conditions, fuel conditions, ignition points, and targeted values at risk. After several attempts to model wildfire scenarios, it became apparent that the number of scenarios needed to examine potential economic impacts in dozens of locations across the study area would exceed the resources and time available for the work. Therefore, no specific wildfire events and associated economic impacts were modeled for this report.

While estimating economic impacts has great merit for examining specified wildfire events in a limited number of site-specific locations, a simpler approach was needed to understand potential economic implications of wildfire across the 5-million-acre study area. The focus shifted to an assessment of economic values at risk of loss rather than estimating the impact of modeled losses. A value at risk does not suggest it would be lost under any and all wildfire events. It does suggest, however, that it is highly vulnerable and susceptible to loss under likely wildfire events.

The term “risk” used in this report is defined differently from the technical definition employed by some disciplines. Wildfire professionals use the term “risk” to describe the probability of fire ignition (Hardy, 2005). This use does not include potential wildfire

characteristics or losses. Economists use “risk” to mean the quantified probability of any event or outcome (Klemperer, 1996). Risk in this report is used in a more general sense to describe economic values that face an elevated threat of loss from wildfire. Quantifying the probability of large-scale wildfires or the subsequent loss of economic values was beyond the scope of this work.

Economic values at risk of loss can be separated into those observed as transactions in the market place, such as property and commercial values, and others that are not. The latter are often subjects of non-market valuation research. While non-market values—such as wildlife habitat, watershed conditions, and preferences by outdoor recreationists—are clearly affected by wildfire, this study was limited to transaction characteristics that could be observed and quantified in the marketplace.

Scores of economic values found in the marketplace can be affected by wildfire. An important purpose of this study was to identify a few values that could serve as indicators of economic values at risk. Several important indicators—such as private infrastructure—were quantified. Others—such the delivery of electricity and water to local and Front Range communities—are discussed but not quantified. Some indicators could not be estimated for all counties—such as improved property values for Jackson County—because data were not available. Despite these limitations, the indicators offered in this report are intended to benefit decision-makers in their understanding of economic risks at hand and where the risks may be the greatest. This information should help inform local, state, and Federal officials as they allocate limited resources to best mitigate potential consequences of wildfire.

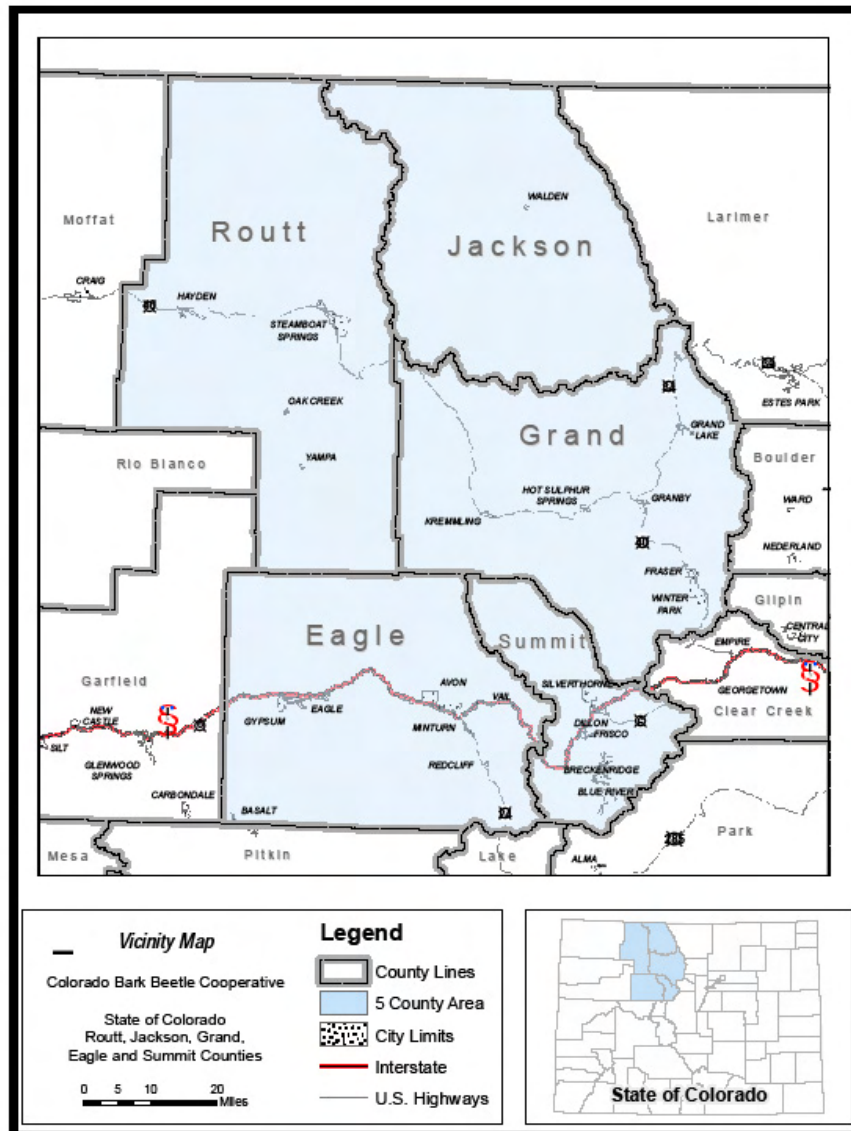
Methods

This analysis is premised on economic value differences. Public policy and business success hinge on understanding how values differ in place and time. To be useful, value differences must be commensurate in scale with the intended purpose and application. Large-scale value differences are generally helpful to inform large-scale public policy, but they miss important differences that are significant at a smaller scale. For this reason, greater detail must be available when seeking data to support local decision-making. The differences sought here should be appropriate for county-level and some project-level decision-making.

Analysis Area

Five counties in north central Colorado were included in the study: Eagle, Grand, Jackson, Routt, and Summit. See Figure 1. These have been the first and hardest hit by the bark beetle infestation. Each county was examined separately.

Figure 1. Five-County Study Area



Analysis Unit

The organizing unit for this study was the Wildland Urban Interface (WUI). The WUI has been generally regarded as that area of land in which community-based social and economic values intersect with serious wildfire potential. The WUI is typically found where public and private forested lands are intermingled and contain substantial economic values threatened by wildfire.

Over the last decade, the WUI has been defined and used in dozens of ways. It has been used to express concern over any value on private land that might be affected by wildfire started on public lands. It has also been used to reference any public lands in

close proximity to private lands. It has been used without any particular reference to land ownership or land use. In the Healthy Forests Restoration Act of 2003 (HFRA), however, the WUI was given official status and a specific definition. (The full text of HFRA is provided in Appendix D.) Under HFRA, local communities are given responsibility for developing a Community Wildfire Protection Plan (CWPP) that, among other things, defines and locates WUIs to best serve their own social and economic interests. The Colorado State Forest Service also participates in the process by providing guidance and oversight in the development and completion of CWPPs (Briefing Paper: Community Wildfire Protection Plans, 2005). Because this study focused on community economic values at risk, the areas defined by communities for that purpose were logical candidates for analysis.

The definition set forth in HFRA affords local jurisdictions great freedom in applying the concept of a Wildland Urban Interface to the ground. One drawback to this freedom is that no community is required to delineate WUIs in a way that affords consistency across jurisdictions. Under similar conditions, WUIs could be defined in substantially different ways. Some communities may draw very tight boundaries around improved lands, while others may draw boundaries more broadly to include non-forested, agricultural lands. Some communities may limit WUIs to areas close in proximity to public lands, while others may choose to encompass broad swaths of land extending miles away from public forests. While the HFRA definition is not without drawbacks when used for systematic comparisons, it was judged as a reasonable choice for addressing community concerns about many economic and social values.

As a result of the freedom HFRA affords, the number of CWPPs per county, number of WUIs defined by each CWPP, and the share of lands in each county covered by defined WUIs varied tremendously in the study area. In Eagle, Summit, and Grand Counties, one CWPP covered the entire county and defined all wildland urban interfaces within the county. The Grand County plan identified nine WUIs, finding that many developed parts of the county did not qualify for WUI designation. The Summit County plan identified four WUIs which covered virtually all developed acres county-wide. Eagle County chose a very different approach. Like Summit County, nearly all developed parts of the county were included within the wildland urban interface. Unlike the other counties, however, Eagle County defined WUIs at an extremely detailed level resulting in over 20,800 distinct locations county-wide.

In Jackson County, four CWPPs had been completed, and four more were in progress or scheduled for completion. Each CWPP defined a single WUI, some of which exceeded 100,000 acres. The four completed plans were: Gould, Grizzly Creek, North End, and Rand. Since completion of this analysis two additional CWPPs have been completed: West End and Wade-Tamlin-Spicer Peak. The two remaining plans are Connor Creek and Meadow Creek. Deborah Alpe, Jackson County Extension Director, who has been instrumental in developing all the CWPPs, estimated WUI boundaries for the four CWPPs that were not complete during the data collection and analysis phases of this study.

Routt County is in a similar situation as Jackson County, but with fewer completed CWPPs and fewer defined WUIs. There are four complete CWPPs in Routt County: Fish Creek-Sanctuary, Burgess Creek, Steamboat Pines, and North Routt. All but North Routt cover very small parts of the county that might be considered as WUIs in the future. Much of Routt County remains to be examined and covered by a CWPP. Chuck Vale, Routt County Director of Emergency Management, provided an estimate of eighteen additional WUIs that are either in progress or likely candidates for future designation.

Despite the variation in HFRA- and CWPP-defined WUIs across the study area, these units offered the best common denominator in assessing community-based economic values at risk. Appendix C includes maps of each county, showing the boundaries of all WUIs used in this study.

Indicators

Suitable economic indicators had to meet a variety of criteria to make them both useful and credible to both decision-makers and the public. First, the indicators should reflect how wildfire could affect both the stock and flow of economic values in a community. A stock indicator offers a picture of certain economic values at a particular point in time. Assets and net worth are examples of stock indicators. A flow indicator offers a picture of other economic values over a given period of time. Annual business transactions or tax receipts are examples of flow indicators. Second, the indicators should embrace both the public and private sectors. Because healthy communities have healthy public and private components, the indicators should reflect conditions in both sectors. Third, the indicators should be based on data that are generally available at low cost, both now and in the future. Fourth, the data had to be spatially discrete to distinguish locations in a particular WUI from those outside or in adjacent WUIs. Finally, the indicators should be based on primary data that are locally determined, locally understandable, and therefore locally credible.

Using these criteria, three categories of indicators were identified: Assets, Fiscal Dependency, and Economic Dependency. Within each category, one or two specific indicators were identified. The selected indicators are shown in Table 1.

Table 1. Indicators of Economic Values at Risk

General	Specific	Type	Public/Private
Assets	Improvement Valuation	Stock	Both
Fiscal Dependency	Annual Property Taxes Due	Flow	Public
	Special Districts in WUIs	Stock	Public
Economic Dependency	Annual Employment by Driver	Flow	Both
	Power Infrastructure & Water Supplies	Stock/Flow	Both

It should be noted that improvement value only includes developments on the land, such as houses, barns, schools, and office buildings. Land values were excluded. Although land values can be affected by wildfire, the values often rebound within a few years of the fire, and thus do not offer a suitable indicator of loss.

Data Sources

Several data sources were used to develop the specific indicators. These sources are listed in Table 2.

Table 2. Specific Indicator Data Sources

Specific Indicator	Variable	Source	Data Year
Improvement Valuation	Actual value of property improvements	County assessor database	2007
	Geographic definition of properties	County parcel layer	2007
	Geographic definition of WUI	Community Wildfire Protection Plans	Most recent or projected
Property Taxes Due	Taxes due on property improvement value	County assessor database	2007
	Geographic definition of special districts	Colorado Dept of Local Affairs special districts maps	2007
Employment by Driver	Total employment by driver by county	Economic and tourism studies	2004 & 2006
	Geographic location of business types	Colorado Dept of Local Affairs sales tax database	2007
Utility Infrastructure	Utility infrastructure by county on NFS lands	USDA-Forest Service Special Uses Database	2007
Water Supplies	Raw water by source county	Denver Water Board; Northern Colorado Water Conservation District	2007

All data are easily available and updated regularly, with the exception of Jackson County and one economic study used to estimate local employment by driver. Jackson County assessor data, including property parcels and their characteristics, were not available electronically during the analysis. (The county is working towards full availability of their data in electronic format.) The economic driver study will be discussed in more detail later.

Indicator Development

The indicators were developed with heavy reliance on GIS capabilities. Typically, WUI boundaries were identified, and then compared with locations of individual properties (parcels). Property characteristics were summarized for all parcels located in each WUI. This procedure was used to obtain both asset and fiscal dependency indicators.

Obtaining CWPPs and the resulting WUIs was surprisingly difficult. There is no common electronic library or clearinghouse in Colorado that stores these documents. Once found, CWPPs did not provide a consistent standard for defining and mapping WUIs. Some WUIs were mapped precisely, while others were mapped very generally. Some used GIS technology to store and present WUIs, while others used wide-tipped markers and paper maps. Forest Service GIS specialists created GIS shape files from non-electronic map information so that all WUI boundaries could be shared and used by county personnel.

Highly skilled GIS specialists in each county government provided critical assistance in the process. These specialists started with WUI shape files—either already owned or provided by the Forest Service—and then identified all property parcels within each WUI. This list was then cross-referenced with the most current assessor databases to obtain property characteristics needed for the Asset and Fiscal Dependency indicators. Assessor databases were provided by county assessor office personnel. A database file of matching properties and their characteristics were then provided to the Forest Service for analysis.

Jackson County was the only jurisdiction that did not have electronic parcel data. These data are being developed, but they were not available for this study. Consequently, asset and fiscal indicators could not be completed for Jackson County.

Economic Dependency indicators were obtained using a variety of methods. Not all counties shared the necessary studies and data to develop the indicators, so results across counties were mixed. Grand County had the most studies and data, while Jackson and Routt Counties had the least. Employment by economic drivers from Job Generation in the Colorado Mountain Resort Economy (Lloyd Levy Consulting, 2004) was apportioned into WUIs. Total employment generated by the second home driver was allocated to each WUI based on its share of countywide second home improvement value. Employment generated by summer and winter tourism drivers was apportioned using city/county quarterly gross sales tax reports. Total employment generated by each tourism driver was allocated to each WUI based on its city sales tax receipts as a share of countywide receipts. Winter tourism was based on first quarter sales tax receipts, while summer tourism was based on third quarter receipts.

Water source and utility infrastructure data were only available at a county or national forest level. Specific locations in or outside of WUIs could not be determined.

Results

The bark beetle infestation and its associated threat of wildfire have economic implications that can reach well beyond local communities. Asset and fiscal dependency indicators are inherently local. Economic dependency indicators, however, can extend beyond the local area, affecting industries and communities regionally. In this section of the report indicators have been applied to the local five-county area and to the highly-populated Front Range of Colorado.

The Five County Area

Asset and Fiscal Dependency

Figure 2 and Tables 3 through 7 provide asset and fiscal indicators for each of the five counties.

Each county's definition of the wildland urban interface strongly influences results in these tables. As noted in the Methods section, Eagle and Summit Counties show virtually all improvement value located in a WUI. Eagle County has the highest values in the study area, more than double those in Summit County and more than four times those in Routt and Grand Counties. While actual value in the WUI is nearly 100 percent of all improvement values in Eagle County and Summit Counties, it is 60 percent in Routt and 50 percent in Grand. The inclusion of virtually all improvements along the high-value I-70 corridor—both public and private—suggests that Eagle and Summit Counties may be more vulnerable to losses from wildfire than their counterparts along the US 40 corridor. Terrain and settlement along I-70 have combined with transportation flows to make the wildfire danger a very serious economic threat.

In Grand and Routt Counties, the asset value at risk is concentrated in one or two WUIs. WUI #9 in Grand County (Table 5), which includes most winter tourism centers and the towns of Winter Park, Fraser, and Tabernash, contains over a quarter of all improvement value in the county. WUI #8, which includes Granby and Grand Lake and much of the summer tourism, contains another 18 percent of value county-wide. In total, these two WUIs contain over 45 percent of Grand County improvement value that is at risk of loss from wildfire. In Routt County (Table 6), WUI #18 also contains 45 percent of county-wide improvement value. This WUI includes developed areas to the north, south, and in Steamboat Springs.

Figure 2. Improvement Valuations within the Wildland Urban Interface (WUI) by County (2007)

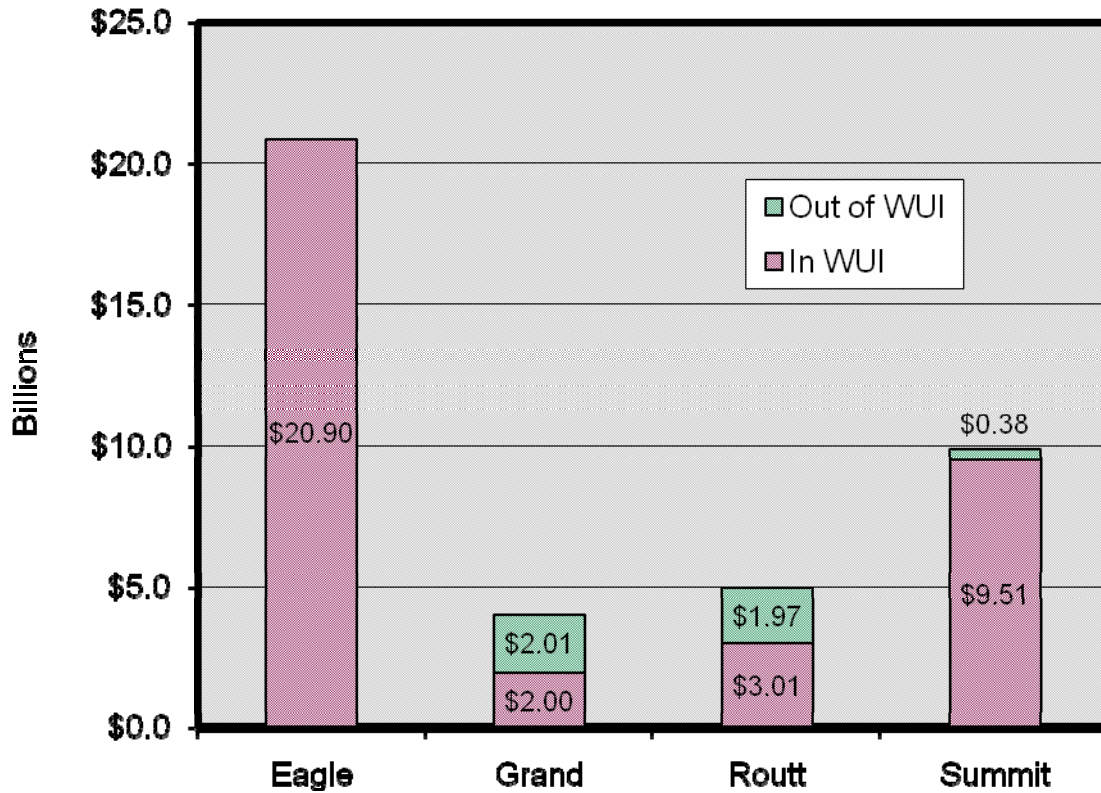


Table 3. Asset and Fiscal Indicators – Eagle County (2007)

Wildland Urban Interface	Asset Indicator		Fiscal Indicators					
	Improvement Value – Actual		Improvement-Based Taxes – All Entities		Total Taxes – All Entities		Fire, Water, & Sanitation Special Districts	
	\$ million	%	\$ million	%	\$ million	%	Number	Type^
Subtotal in WUI	\$20,902.9	100.0%	\$108.6	100.0%	\$144.9	100.0%	4	F, W
Other Lands	\$0.0	0.0%	\$0.0	0.0%	\$0.0	0.0%	4	F, W
County Total	\$20,902.9	100.0%	\$108.6	100.0%	\$144.9	100.0%	4	F, W

^F=Fire district, W=water &/or sanitation district

Table 4. Asset and Fiscal Indicators – Grand County (2007)

Wildland Urban Interface	Asset Indicator		Fiscal Indicators					
	Improvement Value – Actual		Improvement-Based Taxes – All Entities		Total Taxes – All Entities		Fire, Water, & Sanitation Special Districts	
	\$ million	%	\$ million	%	\$ million	%	Number	Type^
1	\$4.9	0.1%	\$0.0	0.0%	\$0.0	0.0%	0	---
2	\$1.0	0.0%	\$0.0	0.0%	\$0.1	0.3%	0	---
3	\$7.4	0.2%	\$0.0	0.0%	\$0.1	0.3%	1	F
4	\$8.0	0.2%	\$0.0	0.0%	\$0.1	0.3%	0	---
5	\$3.8	0.1%	\$0.0	0.0%	\$0.1	0.3%	0	---
6	\$112.6	2.8%	\$1.8	7.9%	\$4.6	11.9%	0	---
7	\$26.7	0.7%	\$0.1	0.4%	\$0.4	1.0%	1	F
8	\$717.3	17.9%	\$3.4	14.8%	\$7.7	19.9%	7	F, W
9	\$1,115.3	27.8%	\$5.9	25.8%	\$10.3	26.7%	8	F, W
Subtotal in WUI	\$1,997.0	49.9%	\$11.2	48.9%	\$23.4	60.6%	14	F, W
Other Lands	\$2,008.5	50.1%	\$11.7	51.1%	\$15.2	39.4%	6	F, W
County Total	\$4,005.5	100.0%	\$22.9	100.0%	\$38.6	100.0%	16	F, W

^F=Fire district, W=water &/or sanitation district

Table 5. Asset and Financial Indicators – Jackson County (2007)

Wildland Urban Interface	Asset Indicator		Fiscal Indicators					
	Improvement Value – Actual		Improvement-Based Taxes – All Entities		Total Taxes – All Entities		Fire, Water, & Sanitation Special Districts	
	\$ million	%	\$ million	%	\$ million	%	Number	Type^
North End							0	--
Grizzly Creek							0	--
Gould							0	--
Rand							0	--
West Side*							0	--
Meadow Creek*							0	--
Connor Creek*							0	--
Wade-Tamlin-Spicer*							0	--
Subtotal in WUI							0	--
Other Lands							0	--
County Total							0	--

^F=Fire district, W=water &/or sanitation district

* Estimated WUIs without completed CWPPs -- D. Alpe, Jackson County Extension Director

Table 6. Asset and Financial Indicators – Routt County (2007)

Wildland Urban Interface	Asset Indicator		Fiscal Indicators					
	Improvement Value – Actual		Improvement-Based Taxes – All Entities		Total Taxes – All Entities		Fire, Water, & Sanitation Special Districts	
	\$ million	%	\$ million	%	\$ million	%	Number	Type^
North Routt	\$259.0	5.2%	\$1.4	5.2%	\$1.7	3.7%	2	F, W
Fish Creek/Sanctuary	\$232.0	4.7%	\$1.0	3.7%	\$1.5	3.2%	2	F, W
Steamboat Pines	\$15.8	0.3%	\$0.1	0.4%	\$0.1	0.3%	1	F
Stagecoach*	\$83.8	1.7%	\$0.6	2.3%	\$0.7	1.5%	2	F, W
1*	\$8.3	0.2%	\$0.1	0.4%	\$0.1	0.2%	0	--
2*	\$1.0	0.0%	\$0.0	0.0%	\$0.0	0.0%	0	--
8*	\$14.9	0.3%	\$0.1	0.4%	\$0.1	0.2%	1	F
17*	\$70.8	1.4%	\$0.6	2.3%	\$1.0	2.2%	1	F
18*#	\$2,224.2	44.7%	\$13.6	51.5%	\$24.5	52.8%	3	F, W
All Other--West County*	\$95.6	1.9%	\$0.7	2.7%	\$0.9	1.9%	3	F
Subtotal in WUI	\$3,005.3	60.4%	\$18.1	68.7%	\$30.7	66.1%	10	F, W
Other Lands	\$1,970.4	39.6%	\$8.3	31.3%	\$15.7	33.9%	10	F, W
County Total	\$4,975.7	100.0%	\$26.4	100.0%	\$46.4	100.0%	10	F, W

^F=Fire district, W=water &/or sanitation district # Includes Burgess Creek

* Estimated WUIs without completed CWPPs -- C. Vale, Routt County Emergency Management Director

Table 7. Asset and Financial Indicators – Summit County (2007)

Wildland Urban Interface	Asset Indicator		Fiscal Indicators					
	Improvement Value – Actual		Improvement-Based Taxes – All Entities		Total Taxes – All Entities		Fire, Water, & Sanitation Special Districts	
	\$ million	%	\$ million	%	\$ million	%	Number	Type^
Frisco/Upper Blue	\$5,162.7	52.2%	\$25.1	52.1%	\$43.1	55.2%	3	F, W
Snake River/Lower Blue	\$3,840.0	38.8%	\$19.0	39.4%	\$29.7	38.0%	4	F, W
Copper	\$503.7	5.1%	\$3.3	6.8%	\$4.5	5.8%	0	--
Uneva Lake	\$0.1	0.0%	\$0.0	0.0%	\$0.0	0.0%	0	--
Subtotal in WUI	\$9,506.5	96.2%	\$47.4	98.3%	\$77.3	99.0%	7	F, W
Other Lands	\$379.6	3.8%	\$0.8	1.7%	\$0.8	1.0%	0	--
County Total	\$9,886.1	100.0%	\$48.2	100.0%	\$78.1	100.0%	7	F, W

^F=Fire district, W=water &/or sanitation district

Improvement-based property taxes to local governments follow the same pattern as improvement assets, but they do not correlate perfectly. Varying tax rates applied to varying taxable values for different kinds of properties across the same county can make for important differences from actual value trends. For example, WUI #6 in Grand County (Table 4) has actual value estimated at 2.8 percent of the county total. In contrast, improvement-based taxes due in WUI #6 are estimated at 7.9 percent of the county total. WUI #6 is primarily the Henderson Mine and associated infrastructure – an industrial development of high value that is assessed at a higher rate than residential properties. This kind of value difference in terms of asset and its contribution to local government revenue suggests that WUI #6 might be a very high priority for fuels treatment. Such action has already occurred on adjoining national forest land.

A similar pattern occurs in Routt County (Table 6). WUI #18, as noted earlier, accounts for 44.7 percent of actual value in the county. This same area provides 51.5 percent of improvement-based. Like the example in Grand County, this area might be a very high priority for fuels treatment. Unlike the example above for Grand County, however, this WUI has a very high percentage of private lands with thousands of owners, making the task of effective fuels treatments more challenging. Figure 3 summarizes improvement-based taxes by county.

The tax estimates of Tables 3 through 7 include taxes due to all taxing authorities in the WUI. County, school districts, and all types of special districts are included in these totals.

Special districts can be especially vulnerable to wildfire. The boundaries of special districts can be small, the fiscal health of districts can be very dependent upon property taxes, and the services provided by districts can be absolutely essential for communities. Fire, water, and sanitation districts – those that provide critical services for communities – were examined for their inclusion in wildland urban interfaces. Many of these districts were found to lie wholly or partially in WUIs. They are shown in Figure 4 and listed in Table 8. According to map data from the Colorado Department of Local Affairs, there are no special districts in Jackson County.

Figure 3. Improvement-Based Taxes Due within Wildland Urban Interface (WUI) by County (2007)

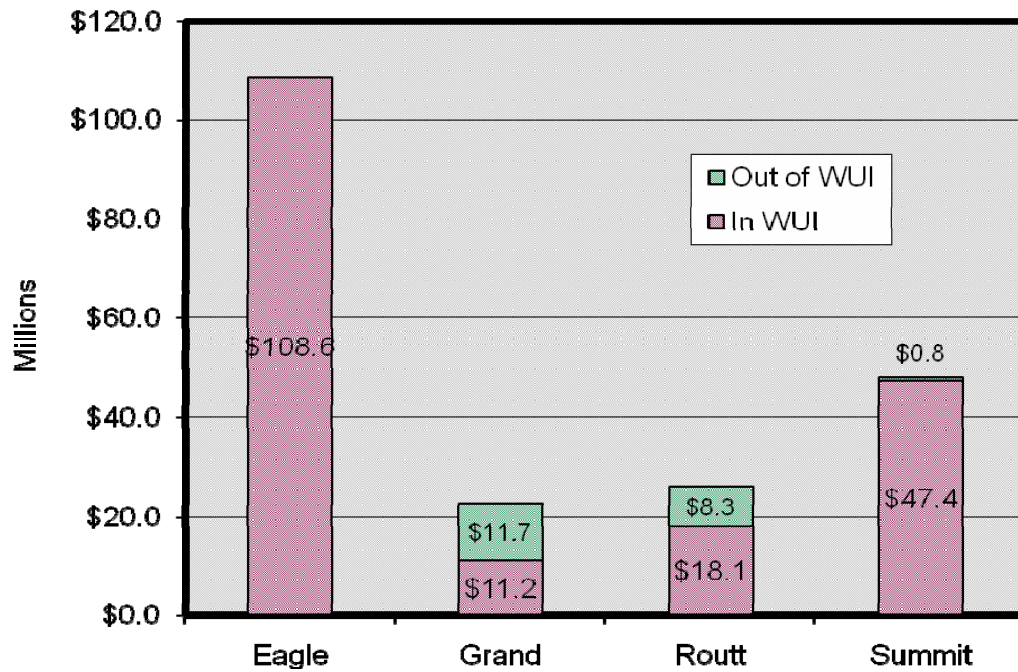


Figure 4. Water and/or Sanitation Special Districts Located in the Wildland Urban Interface by County (2007)

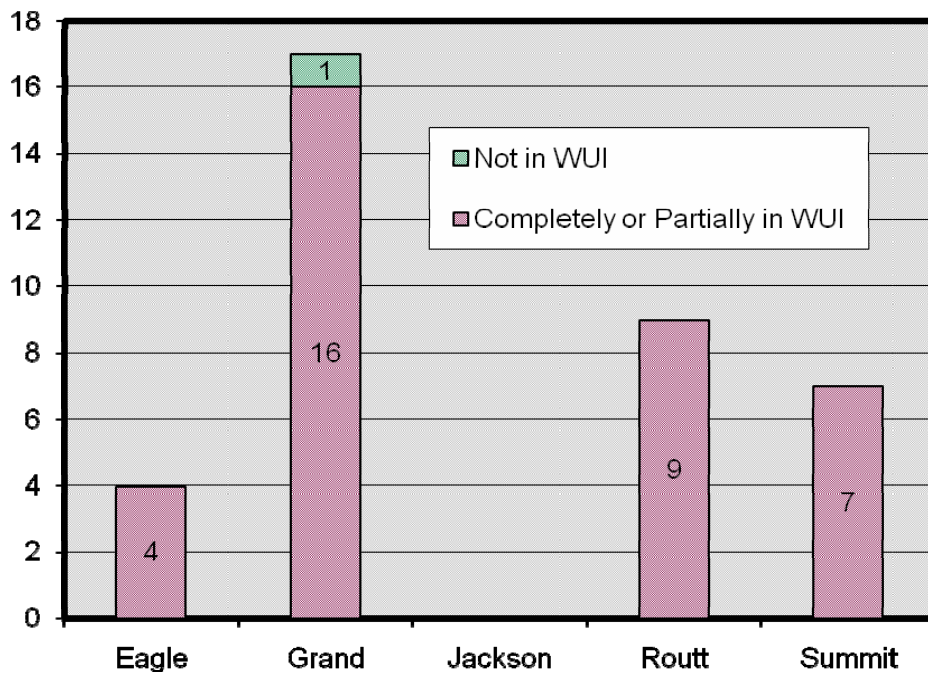


Table 8. Fire, Water, and Sanitation Special Districts Located in Wildland Urban Interface Areas by County (2007)

County	Name	In WUI	WUI Identifier
<i>Eagle</i>	Basalt & Rural Fire Protection District Eagle River Water & Sanitation District Greater Eagle Fire Protection District Gypsum Fire Protection District	Partial Partial Partial Partial	Many Many Many Many
<i>Grand</i>	Winter Park Water & Sanitation District Grand County Water & Sanitation District #1 Winter Park West Water & Sanitation District Fraser Sanitation District Valley at Winter Park Water District Tabernash Meadows Water & Sanitation District Silver Creek Water & Sanitation District Granby Sanitation District Three Lakes Water & Sanitation District North Shore Water & Sanitation District Columbine Lake Water District East Grand County Fire Protection District #4 Grand Fire Protection District #1 Grand Lake Fire Protection District Hot Sulphur Springs-Parshall Fire Protection District Kremmling Fire Protection District	Full Full Full Full Full Full Partial Full Full Full Full Full Partial Partial Partial Partial Partial	9 9 9 9 9 9 8 8 8 8 8 8 9 8 8 8 3 7
<i>Jackson</i>	None	---	---
<i>Routt</i>	Morrison Creek Metropolitan Water & Sanitation Distr. Timbers Water & Sanitation District Mt. Werner Water & Sanitation District Steamboat Lake Water & Sanitation District Yampa Fire Protection District Oak Creek Fire Protection District Steamboat Springs Rural Fire Protection District North Routt Fire Protection District West Routt Fire Protection District	Full Full Full Full Partial Partial Partial Full Partial	Stagecoach 18 Several North Routt Stagecoach Several Many North Routt Many
<i>Summit</i>	Breckenridge Sanitation District Frisco Sanitation District East Dillon Water District Snake River Water District Red, White & Blue Fire Protection District Snake River Fire Protection District Lake Dillon Fire Protection District	Full Full Full Full Partial Partial Full	Frisco/Upper Blue Frisco/Upper Blue S. River/Lower Blue S. River/Lower Blue Frisco/Upper Blue S. River/Lower Blue S. River/Lower Blue

The fiscal dependence of each district on property taxes could not be examined as part of this study, but one is offered as an example of high vulnerability. In discussions with Chuck Vale, Director of Emergency Services for Routt County, he noted that the North Routt Fire Protection District was very susceptible to wildfire losses. In its financial statement for 2005 (Catterson & Company, 2006), property taxes accounted for 56 percent of general fund revenues and 91 percent of debt service revenues. A significant wildfire that incurred widespread losses of taxable value in the district could pose a serious fiscal threat. The district could rely upon existing fund balances to bridge any temporary revenue shortfalls and emergency grants could be sought, but it might take years to fully recover. Any falldown in meeting debt service obligations caused by wildfire losses could also affect the cost of fire district services for years. The threat of wildfire to the North Routt Fire Protection District offers some insight into potential vulnerabilities of special districts throughout beetle-infested parts of Colorado.

Treatment of forest fuels can dramatically reduce the threat of wildfire and accompanying losses, but they cannot prevent wildfires, nor can they guarantee protection. Under severe weather and moisture conditions, in fact, fuel treatments may offer minor benefits. But under moderate weather and moisture conditions, fuel treatments can legitimately reduce the severity and spread of wildfire in and around the treated area.

The Arapaho-Roosevelt, Medicine Bow-Routt, and White River National Forests have been treating fuels in beetle-infested parts of the wildland urban interface for a number of years. Many treatments have been designed to reduce the threat of potential wildfire losses not only on national forests, but also on adjoining ownerships. To estimate the values affected by these treatments, fire and fuels specialists on each forest first delineated the area expected to benefit from each project, given moderate weather and moisture conditions. Using the same procedures described in the Methods section, improvement values and taxes due for properties within each area were then summarized. Again, Jackson County results could not be estimated because electronic assessor data were not available.

Fuels projects included in this analysis have been either implemented since the beetle outbreak or approved for implementation by October 1, 2007. Implemented projects include those that have been completed and those for which contracts have been awarded. Contracts awarded include work that may be in progress or possibly not started. Approved projects are those for which environmental analysis and disclosure has been completed, but implementation has not begun.

Tables 9 through 13 provide a summary of asset and fiscal indicators by county that have been positively affected by recent fuel treatment projects. Total asset value in the WUIs benefiting from Forest Service treatments vary from 2 percent in Eagle County to 19 percent in Grand County. Improvement-based taxes in these same areas range from 1.7 percent in Eagle County to 29.5 percent in Grand County. The proportion of assets and taxes due which were positively affected county-wide are the highest in Summit County – 15 percent. As noted earlier, treatment does not guarantee protection from large wildfire events, but it does reduce the vulnerability of these values.

Table 9. Asset and Fiscal Indicators Benefiting from Fuels Treatments on National Forest System Lands – Eagle County (2007)

Fuel Treatment Projects	Asset Indicator		Fiscal Indicators					
	Improvement Value – Actual		Improvement-Based Taxes – All Entities		Total Taxes – All Entities		Fire, Water, & Sanitation Special Districts	
	\$ million	%	\$ million	%	\$ million	%	Number	Type^
Implemented	\$455.6	100.0%	\$1.9	100.0%	\$2.7	100.0%	2	F, W
Approved/Not Implemented	\$0.0	--	\$0.0	--	\$0.0	--	--	--
Total	\$455.6	100.0%	\$1.9	100.0%	\$2.7	100.0%	2	F, W
Percent of All WUIs		2.2%		1.7%		1.9%		
Percent of County		2.2%		1.7%		1.9%		

^F=Fire district, W=water &/or sanitation district

Table 10. Asset and Fiscal Indicators Benefiting from Fuels Treatments on National Forest System Lands – Grand County (2007)

Fuel Treatment Projects	Asset Indicator		Fiscal Indicators					
	Improvement Value – Actual		Improvement-Based Taxes – All Entities		Total Taxes – All Entities		Fire, Water, & Sanitation Special Districts	
	\$ million	%	\$ million	%	\$ million	%	Number	Type^
Implemented	\$367.8	95.0%	\$3.1	93.9%	\$7.1	97.3%	8	F, W
Approved/Not Implemented	\$0.0	0.0%	\$0.0	0.0%	\$0.0	0.0%	1	F
Planned/No NEPA								
Blue Ridge	\$14.2	3.7%	\$0.2	6.1%	\$0.2	2.7%	1	F
Willow Creek	\$5.1	1.3%	\$0.0	0.0%	\$0.0	0.0%	1	F
Planned Subtotal	\$19.3	5.0%	\$0.2	6.1%	\$0.2	2.7%	2	F
Total	\$387.1	100.0%	\$3.3	100.0%	\$7.3	100.0%	8	F, W
Percent of All WUIs		19.4%		29.5%		31.2%		
Percent of County		9.7%		14.4%		18.9%		

^F=Fire district, W=water &/or sanitation district

Table 11. Asset and Fiscal Indicators Benefiting from Fuels Treatments on National Forest System Lands – Jackson County (2007)

Fuel Treatment Projects	Asset Indicator		Fiscal Indicators											
	Improvement Value – Actual		Improvement-Based Taxes – All Entities		Total Taxes – All Entities		Fire, Water, & Sanitation Special Districts							
	\$ million	%	\$ million	%	\$ million	%	Number	Type^						
Implemented							0	--						
Approved/Not Implemented	Electronic Parcel Data Not Available													
Pearl												0	--	
Approved Subtotal													0	--
Total													0	--
Percent of All WUIs														
Percent of County														

^F=Fire district, W=water &/or sanitation district

* Estimated WUIs without completed CWPPs -- D. Alpe, Jackson County Extension Director

Table 12. Asset and Fiscal Indicators Benefiting from Fuels Treatments on National Forest System Lands – Routt County (2007)

Fuel Treatment Projects	Asset Indicator		Fiscal Indicators					
	Improvement Value – Actual		Improvement-Based Taxes -- All Entities		Total Taxes – All Entities		Fire, Water, & Sanitation Special Districts	
	\$ million	%	\$ million	%	\$ million	%	Number	Type^
Implemented	\$109.2	75.3%	\$0.5	91.7%	\$0.8	77.8%	4	F, W
Approved, Not Implemented								
Hahns Pk Lk (P1)	\$4.5	3.1%	\$0.0	3.2%	\$0.0	2.7%	1	F
Larsen Cr (L1,2,3)	\$11.0	7.6%	\$0.0	5.0%	\$0.1	9.7%	2	F, W
Seedhouse (S2)	\$4.8	3.3%	\$0.0	0.0%	\$0.0	0.0%	1	F
Seedhouse (S3)	\$6.4	4.4%	\$0.0	0.0%	\$0.0	0.0%	1	F
Seedhouse (S8)	\$1.5	1.0%	\$0.0	0.0%	\$0.0	0.0%	1	F
Big Creek (BC5)	\$0.0	0.0%	\$0.0	0.0%	\$0.0	0.0%	1	F
Dry Lake (DL2,8)	\$7.4	5.1%	\$0.0	0.0%	\$0.1	9.7%	1	F
Indian Run (IR1)	\$0.2	0.1%	\$0.0	0.0%	\$0.0	0.0%	1	F
Approved Subtotal	\$35.8	24.7%	\$0.0	8.3%	\$0.2	22.2%	5	F, W
Total	\$145.0	100.0%	\$0.5	100.0%	\$1.0	100.0%	5	F, W
Percent of All WUIs		4.8%		3.0%		3.4%		
Percent of County		2.9%		2.1%		2.2%		

^F=Fire district, W=water &/or sanitation district # Includes Burgess Creek

* Estimated WUIs without completed CWPPs -- C. Vale, Routt County Emergency Management Director

Table 13. Asset and Fiscal Indicators Benefiting from Fuels Treatments on National Forest System Lands – Summit County (2007)

Fuel Treatment Projects	Asset Indicator		Fiscal Indicators					
	Improvement Value – Actual		Improvement-Based Taxes – All Entities		Total Taxes – All Entities		Fire, Water, & Sanitation Special Districts	
	\$ million	%	\$ million	%	\$ million	%	Number	Type^
Implemented	\$734.3	50.5%	\$3.7	53.1%	\$5.9	52.8%	2	F, W
Approved/Not Implemented								
Keystone 1	\$310.6	21.4%	\$1.3	19.1%	\$1.9	17.5%	2	F, W
Keystone 2	\$71.1	4.9%	\$0.3	3.9%	\$0.4	3.7%	3	F, W
Keystone 3	\$70.0	4.8%	\$0.5	6.4%	\$0.5	4.9%	4	F, W
Keystone 4-5	\$14.0	1.0%	\$0.1	0.8%	\$0.1	0.7%	5	F, W
Peak 7	\$150.3	10.3%	\$0.7	9.9%	\$1.4	12.3%	6	F, W
Frisco	\$57.4	3.9%	\$0.2	3.4%	\$0.4	3.7%	7	F, W
Boulder Creek	\$1.3	0.1%	\$0.0	0.1%	\$0.0	0.2%	0	--
Hamilton Creek	\$19.1	1.3%	\$0.1	1.9%	\$0.3	2.5%	1	F, W
Sierra Bosque	\$13.3	0.9%	\$0.1	0.7%	\$0.1	1.0%	0	--
Red Tail Ranch	\$1.2	0.1%	\$0.0	0.1%	\$0.0	0.1%	2	F, W
Pebble Cr Rnch	\$12.1	0.8%	\$0.0	0.7%	\$0.1	0.7%	0	--
Approved Subtotal	\$720.5	49.5%	\$3.3	46.9%	\$5.3	47.2%	7	F, W
Total	\$1,454.8	100.0%	\$7.1	100.0%	\$11.1	100.0%	7	F, W
Percent of All WUIs		15.3%		14.9%		14.4%		
Percent of County		15%		15%		14%		

^F=Fire district, W=water &/or sanitation district

Fuel treatments on national forest lands cannot benefit all lands in the wildland urban interface. Coordination with and actions by private and other public ownerships is required to extend these benefits throughout the WUI. Nonetheless, treatments on national forest lands have already provided a reduced threat of wildfire losses to \$1.7 billion of assets in communities across the five-county area. Similar benefits to another \$775 million of assets are approved and awaiting implementation.

Economic Dependency

Just as infrastructure is vulnerable to wildfire, so is business activity. Tourism, second homes, and other economic engines can be affected by wildfire, and can be subject to the increased risk of fire caused by the beetle infestation. This section of the report offers some insight into business activity based in the wildland urban interface and its importance to the economy of these counties.

This part of the analysis relies, in part, upon recent economic studies completed in the study area. In 2003, the Northwest Colorado Council of Governments sponsored a study of second homes in four of their member counties – Grand, Summit, Eagle, and Pitkin. The first phase of this landmark study used assessor records and surveys of homeowners to collect a wealth of information about second home owners and their properties. The second phase estimated the importance of second homes and other critical drivers to the economy of each county (Lloyd Levy Consulting, 2004). The second phase found that only a few fundamental economic engines largely shape the economy in these destination-resort areas. Second homes, defined as residential properties owned by non-residents, were estimated to generate 27 to 45 percent of all employment in the county. In all but Summit County, these surprising results exceeded the more traditional winter and summer tourism drivers that have been so important to this part of the state.

While second homes have become a vital component to the economic and financial welfare of these counties, this new source of local employment and tax receipts comes with a high risk of loss from wildfires. Second home owners typically prefer locations near public lands, seeking forested locations that offer beauty, privacy, and quick access for outdoor recreation. But these locations frequently lie within the wildland urban interface.

All the attributes of the wildland urban interface which draw second home owners, also attract traditional tourists. Ski area base properties, the retail sector, and the recreation-based service industry typically cluster within the urban interface. Consequently, both winter and summer tourism are two economic drivers that also face a high risk of wildfire losses. When tourism is combined with second homes, high risks found in the wildland urban interface can pose a considerable threat to the economies of these counties.

Tables 14 through 18 show jobs generated by second homes, winter tourism, and summer tourism that originate in the wildland urban interface. Virtually all jobs generated by these drivers in Eagle and Summit Counties are based in the WUI. In Grand County, the picture is different. Because there are substantial developments outside of Grand County WUIs, job dependence varies by driver. However, it is clear that WUIs still play an enormous role in job generation. Up to 80 percent of jobs created by second homes, 74 percent created by winter tourism, and 62 percent created by summer tourism are based in WUIs. Figure 5 shows that 31 percent of all jobs county-wide are generated by economic drivers located in the wildland urban

interface. Clearly, a catastrophic wildfire in any of these counties that causes significant asset loss could also devastate annual business and employment activity.

Table 14. Economic Indicators – Eagle County (jobs, 2002)

Wildland Urban Interface	<i>Economic Driver</i>					
	Second Homes		Winter Tourism		Summer Tourism	
	Jobs	%	Jobs	%	Jobs	%
Subtotal in WUI	15,130	100%	6,750	100%	2,260	100%
Other Lands	-	0%	-	0%	-	0%
County Total	15,130	100%	6,750	100%	2,260	100%

Source: Total driver jobs from "Job Generation in the Colorado Mountain Resort Economy," June 2004.

Table 15. Economic Indicators – Grand County (jobs, 2002)

Wildland Urban Interface	<i>Economic Driver</i>					
	Second Homes		Winter Tourism		Summer Tourism	
	Jobs	%	Jobs	%	Jobs	%
1	-	0%	-	0%	10	1%
2	-	0%	-	0%	-	0%
3	10	0%	-	0%	-	0%
4	10	0%	-	0%	-	0%
5	-	0%	-	0%	-	0%
6	50	2%	-	0%	-	0%
7	30	1%	-	0%	-	0%
8	830	30%	410	19%	700	36%
9	1,310	47%	1,180	55%	500	26%
Subtotal in WUI	2,240	80%	1,590	74%	1,210	62%
Other Lands	550	20%	560	26%	740	38%
County Total	2,790	100%	2,150	100%	1,950	100%

Source: Total driver jobs from "Job Generation in the Colorado Mountain Resort Economy," June 2004.

Table 16. Economic Indicators – Jackson County (jobs, 2002)

Wildland Urban Interface	<i>Economic Driver</i>					
	Second Homes		Winter Tourism		Summer Tourism	
	Jobs	%	Jobs	%	Jobs	%
North End Grizzly Creek Gould Rand West Side* Meadow Creek* Connor Creek* Wade-Tamlin-Spicer*	Data Not Available -- No Economic Driver Study					
Subtotal in WUI						
Other Lands						
County Total						

* Estimated WUIs without completed CWPPs -- D. Alpe, Jackson County Extension Director

Table 17. Economic Indicators – Routt County (jobs, 2002)

Wildland Urban Interface	<i>Economic Driver</i>					
	Second Homes		Winter Tourism		Summer Tourism	
	Jobs	%	Jobs	%	Jobs	%
North Routt Fish Creek/Sanctuary Steamboat Pines Stagecoach* 1* 2* 8* 17* 18*# All Other--West County*	Data Not Available -- No Economic Driver Study					
Subtotal in WUI						
Other Lands						
County Total						

* Estimated WUIs without completed CWPPs -- C. Vale, Routt County Emergency Management Director

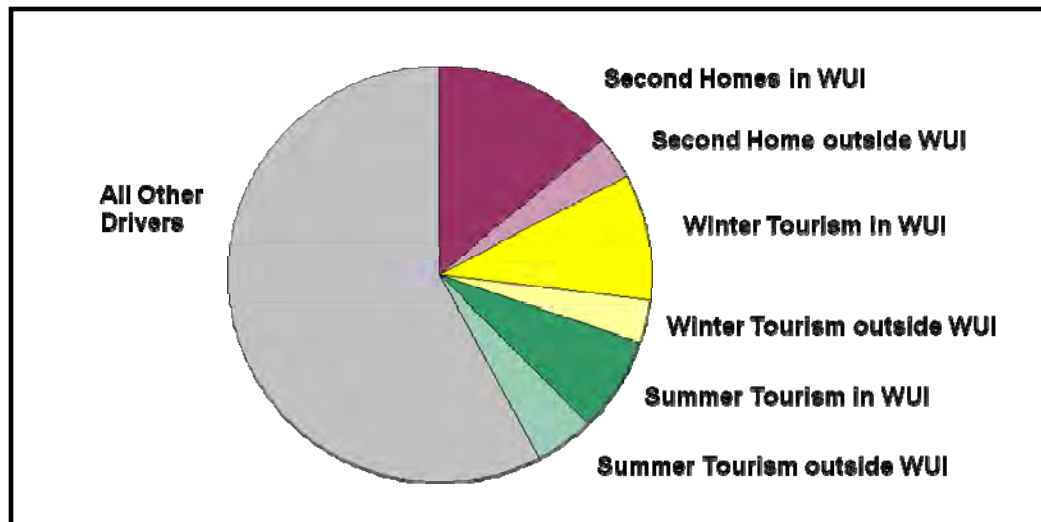
Includes Burgess Creek

Table 18. Economic Indicators – Summit County (jobs, 2002)

Wildland Urban Interface	Economic Driver					
	Second Homes		Winter Tourism		Summer Tourism	
	Jobs	%	Jobs	%	Jobs	%
Frisco/Upper Blue	3,340	58%	5,200	54%	60	3%
Snake River/Lower Blue	1,920	33%	3,830	40%	1,150	49%
Copper	400	7%	630	7%	1,150	49%
Uneva Lake	0	0%	-	0%	-	0%
Subtotal in WUI	5,660	98%	9,660	100%	2,360	100%
Other Lands	120	2%	-	0%	-	0%
County Total	5,780	100%	9,660	100%	2,360	100%

Source: Total driver jobs from "Job Generation in the Colorado Mountain Resort Economy," June 2004.

Figure 5. Jobs by Selected Economic Drivers within the Wildland Urban Interface in Grand County (2002)



Another piece of economic dependency is reliance upon utility infrastructure. Just as the closure of a major highway can isolate a community and cause substantial economic hardship, so can the failure of a water or power delivery system that is damaged by wildfire. Infrastructure losses need not occur in a community-defined WUI to trigger economic losses within the WUI.

Water supply collection and delivery systems are located across the affected landscapes, providing water to local communities throughout the five-county area. Severe wildfires can either destroy the infrastructure outright, or render the systems

ineffective because of high sedimentation and mass movement from post-fire precipitation. Power lines and related infrastructure are also found across the beetle-kill landscapes, making communities of northern Colorado vulnerable to outages caused by wildfire.

Public lands often contain critical pieces of utility infrastructure that communities rely upon for economic activity and growth. The USDA-Forest Service maintains a database of utility infrastructure located on the national forests. Specific location variables are not yet a part of that database. Infrastructure could be identified by county only, and thus identification by WUI could not be made. Figure 6 shows and Table 19 lists the water and power providers that have collection, transportation, and other types of infrastructure located on the national forests. Although it cannot be stated with certainty, it is highly likely that most of these facilities are located on sites that are either in the wildland urban interface or in lodgepole pine stands that have been substantially killed by the bark beetle.

Figure 6. Local Water and Power Provider Infrastructure on National Forest System Lands by County (2007)

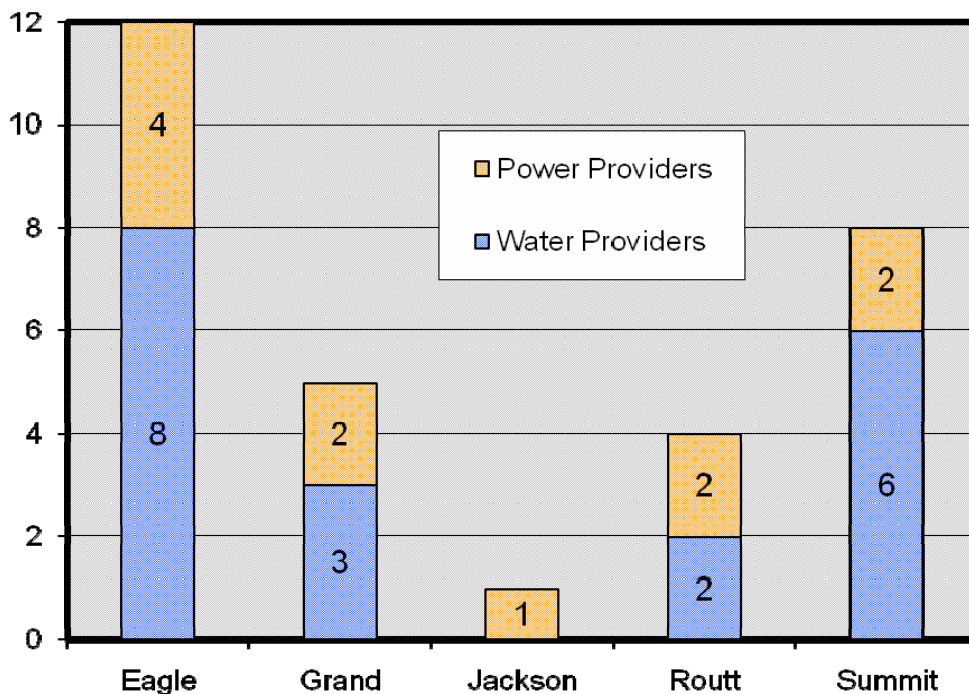


Table 19. Local Water and Power Provider Infrastructure Located on National Forest System Lands by County (2007)

County	Utility	
	Water	Power
<i>Eagle</i>	Eagle River Water & Sanitation Town of Eagle Town of Minturn Town of Redcliff Town of Gypsum Vail Corporation Fulford Assn Peachblow Homeowners Assn Other small private providers	Holy Cross Energy Town of Minturn Colorado-Ute Electric Assn. Xcel Energy
<i>Grand</i>	Grand County Water & Sanitation District #1 Winter Park Water & Sanitation District Grand County Other small private providers	Mountain Parks Electric, Inc. Xcel Energy
<i>Jackson</i>	Small private providers	Mountain Parks Electric, Inc.
<i>Routt</i>	City of Steamboat Springs Mt Werner Water & Sanitation District Other small private providers	Mountain Parks Electric, Inc. Yampa Valley Electric Assn.
<i>Summit</i>	Town of Dillon Town of Frisco Dillon Valley District Snake River Water District Copper Mountain Consolidated Metro Willow Hills Other small private providers	Mountain Parks Electric, Inc. Xcel Energy

The Region

Economic implications of wildfire can range far from the actual location of fire incidence. The local economies of western and northern Colorado are not isolated, but highly connected with the Front Range. Denver, Boulder, Colorado Springs, Fort Collins, and smaller cities along the Front Range provide and receive labor, materials, goods, and services to and from resort towns in the beetle-kill area. Economic dependency is one economic indicator used to gauge economic values at risk in WUIs that can also be applied regionally.

Economic Dependency

Travelers spent \$1.7 billion in Eagle, Grand, Jackson, Routt, and Summit Counties in 2005 (Dean Runyan & Associates, 2006). This is an important contribution to Colorado as a whole, and generates much of the employment discussed earlier. But that is not the full picture. Figure 7 is a typical screenshot that potential visitors to Colorado see when viewing www.colorado.com. Stunning landscapes have been used by the Colorado

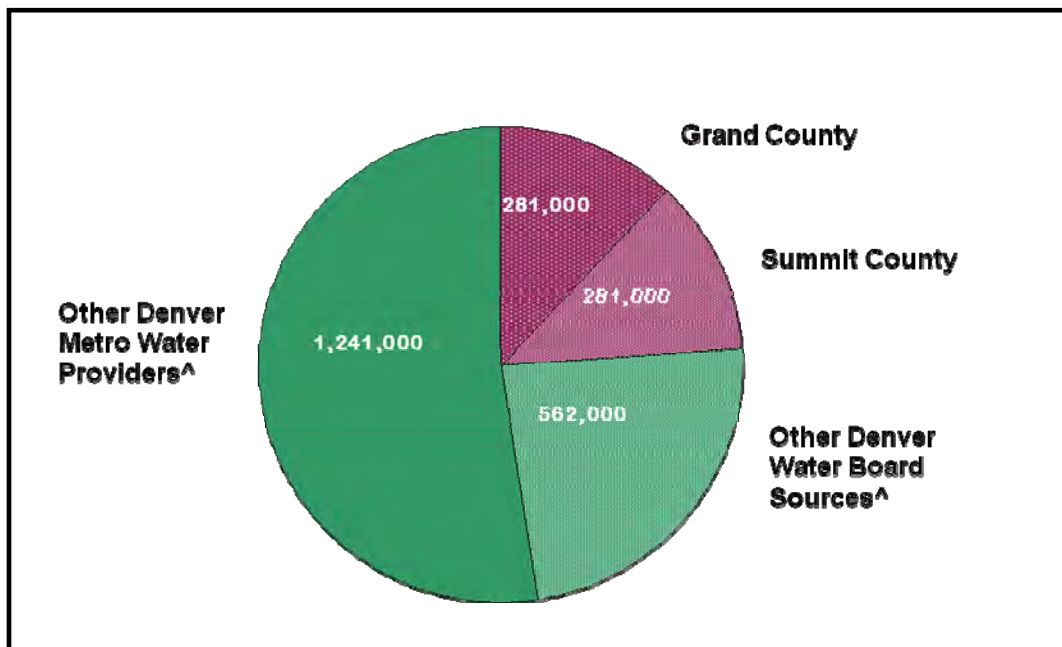
Figure 7. Colorado Landscapes are Prominent on www.colorado.com



Tourism Office and the state’s tourism industry for years to draw visitors to the state. These signature landscapes, many in the beetle-infested counties, help attract 20 million visitors each year to all parts of Colorado (Longwoods International, 2007). Visitors from out of state spent \$7.6 billion in Colorado in 2006. Although it cannot be quantified in this study, landscapes in north and central Colorado that have been affected by the bark beetle and that are more at risk of wildfire have been an important piece of the Colorado tourist industry. Substantial changes in those landscapes could prove to have very important impacts to tourism statewide.

Just as local landscapes are essential to the utility services of Eagle, Grand, Jackson, Routt, and Summit Counties, so are they essential to the Front Range. Summit and Grand Counties in particular provide vital water supplies to the Denver metro area. Figure 8 shows the share and population served by raw water collected from these and other sources. Raw water supplied by Grand and Summit Counties each support a quarter of the Denver Water Board service area, or 281,000 people (Waage, 2007; Comprehensive Annual Financial Report, 2006). Raw water from other sources outside of the five-county area may also be affected by beetle-kill.

Figure 8. Raw Water Serving the Denver Metro Area from the Study Area (2006)



[^] Includes water from areas with a smaller incidence of beetle-kill.

Earlier this decade, the Denver Water Board collection and delivery system was severely affected by large front-range wildfires. Annual expenses of \$400,000 are still being incurred to deal with continuing sedimentation problems caused by fire damage to various watersheds (Waage, 2007). Strontia Springs Reservoir was severely silted in immediately after these fires, and remains in that condition today. \$20 million must be spent to dredge the reservoir and return it to useful service. These examples serve as a

reminder that distant wildfires can significantly affect the metro area. Given the increased risk of catastrophic wildfire, beetle-killed areas offer the potential for much larger impacts to the Denver area water supply than the fires of just a few years ago.

Denver is not the only Front Range city that could be affected by large wildfires on the West Slope. The Northern Colorado Water Conservancy District (NCWCD) draws water exclusively from Grand County, and delivers it to agricultural and municipal customers across northeastern Colorado. Table 20, drawn from the NCWCD annual report for 2006 (Municipal Subdistrict Annual Financial Report, 2006), lists principal cities and other communities that receive supplemental water supplies from Grand County. While less reliant than Denver upon water from beetle-infested landscapes, the NCWCD service area is nonetheless vulnerable to disrupted water supplies when wildfires occur in the study area.

Table 20. Supplemental Water Supply from Beetle-Infested Areas Provided to Municipalities Served by the Northern Colorado Water Conservation District (2006)

Cities	Population
Fort Collins	127,686
Greeley/Evans	105,787
Boulder	97,422
Longmont	81,678
Loveland	58,691
Broomfield	45,755
Lafayette	23,849
Louisville	18,417
Windsor	13,542
Fort Lupton	7,205
Principal cities served by the District	580,032
Other towns and unincorporated areas	165,682
Total estimated population	745,714

Finally, power supplies to the Front Range are at risk as well. Most electricity in Colorado is generated in the western part of the state, and must be transmitted across high risk areas to satisfy Front Range demands. Heat from high intensity wildfires can destroy transmission lines and associated infrastructure. Where there is smoke, arcing from transmission lines to dead trees is possible and can ignite additional wildfires. In some locations, lodgepole pine killed by the bark beetle can fall upon power lines, threatening power delivery and increasing the potential for wildfire ignition. Should one or more of these events occur, power to Denver could be disrupted and disrupted significantly. Because the power grid is highly interconnected, a power loss in one part

of the state can easily affect other parts. Consequently, power losses anywhere in Colorado, even for short periods of time, can turn into serious economic losses statewide.

Just as public lands offer convenient and low cost sites for the infrastructure of local utility providers, they offer the same for regional providers. Table 21 lists infrastructure of regional utility providers on national forest lands. As noted earlier for local providers, it is highly likely that most of these facilities are located on sites that are either in the wildland urban interface or in lodgepole pine stands that have been ravaged by the bark beetle.

Table 21. Regional Water and Power Provider Infrastructure Located on National Forest System Lands by County (2007)

County	Utility	
	Water	Power
<i>Eagle</i>	City of Aurora City of Colorado Springs Pueblo Water Works	Western Area Power Administration US Bureau of Reclamation Tri-State Generation & Transmission Xcel Energy
<i>Grand</i>	Denver Water Board Northern Colorado Water Conservation District	Western Area Power Administration US Bureau of Reclamation Tri-State Generation & Transmission Xcel Energy
<i>Jackson</i>	None	Western Area Power Administration Mountain Parks Electric, Inc.
<i>Routt</i>	None	Western Area Power Administration US Bureau of Reclamation Tri-State Generation & Transmission
<i>Summit</i>	Denver Water Board City of Colorado Springs City of Golden	Western Area Power Administration Xcel Energy

Conclusion

This analysis reinforces the notion that there are many economic values at risk of loss from wildfire in the beetle-infested counties of Colorado. The magnitude of county asset value, the high proportion of property taxes, and the number of special districts in the wildland urban interface all lend quantified support to the seriousness of the situation. The consequences of a large-scale wildfire—a fire that most describe as “when” rather than “if”—will not be just lost infrastructure and lower property tax receipts. Leading economic engines could slow as the public reacts to the disturbance, causing reduced sales taxes and employment opportunities. Critical water and power supplies could be disrupted, and providers of these essential commodities could suffer vital infrastructure losses. Economic values at risk of loss from wildfire cut across many facets of the study area.

Consequences of wildfire are not limited to the five-county area. Economic and physical links between west-slope counties and Front Range cities can easily extend the reach of wildfire effects. Scenic landscapes, water supplies, and the power grid can all affect Denver, Fort Collins, Colorado Springs, and communities in between.

Recommendations

Four recommendations are offered as a conclusion to this report. The first concerns the use of indicators in local planning efforts. The indicators provided in this report offer quantified value differences between locations across the landscape. These differences can offer insights into a variety of planning activities by considering site-specific community benefits. For example, the vast area of beetle-kill poses many dilemmas for public officials. There is never enough money to treat fuels in all desired locations, but these indicators may help guide decision-makers—Federal, state, and local—in seeking the best locations. Fuel treatments that may be cheap to implement in one location might offer greater net benefits for the community when placed somewhere else. Another application may be use by local governments, and especially special districts, to review their reliance upon property taxes when all or most of their jurisdiction is located within a WUI. As a third application, local land use and economic development plans may be reviewed in light of these indicators, closely examining locations where wildfire risk and economically important industries coincide.

The second recommendation is for the development and analysis of wildfire scenarios. These scenarios offer superior understanding of particular large-scale wildfires, including their probability and regional economic impacts, especially when compared with a more general values-at-risk analysis provided by this effort. A limited number of scenarios could be constructed, each one focusing on specific community and economic values. Such analyses could provide a better understanding of how water supplies and power delivery to local and Front Range areas could be affected given large fire events. Scenarios could also be specified to examine implications to important local and statewide industries, such as tourism. These analyses could be immensely valuable for disaster planning and designing preventive actions.

The third recommendation concerns a variety of data consistency issues within Colorado. First, it would be helpful for all CWPPs in the state to be housed in a single internet location. Given the many parties interested in wildfire planning today, a common location would eliminate one barrier to information exchange and encourage a more informed public. Second, a common set of standards for defining WUIs would make cross-jurisdictional communications and comparisons more meaningful. This would assure that when seeking a landscape, regional, or state perspective, descriptive and analytical results from one county could be compared with another. Lastly, a common electronic mapping standard should be established for all CWPPs. This standard would facilitate informational and analytical products that can educate and inform both the public at large and decision-makers at all levels of government.

Lastly, there are many CWPPs in the beetle-kill area and throughout the state of Colorado that have not been completed. These plans bring communities together and focus attention on the real risks of wildfire. They are the first step in recognizing community vulnerability, but they also provide a basis for understanding the economic values at risk of loss. Plans alone do not reduce the threat of wildfire, however. CWPPS must be implemented. Fuel treatments on public and private lands must be done in concert to make a real difference in reduced fire threat. The most important measures may be those by individual homeowners who take personal responsibility in the design, landscaping, and maintenance of their properties, including the creation of defensible space. All of these actions, starting with the CWPP and implemented together, can reduce the risk of economic losses by wildfires in Colorado.

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Appendix B Contributors

Eagle County

Scott Fleming, GIS Specialist, GIS Department
Mary Kessler, Assessment Manager, Assessor's Office
Kenneth Sexton, Cartographer Coordinator, Assessor's Office

Grand County

Kim Adams, GIS Director, Department of Information Systems
Vicki McManus, Deputy Assessor, Assessor's Office
William Wharton, Chief Appraiser, Assessor's Office

Jackson County

Deborah Alpe, Director, Jackson County Extension Office
Jamie Crocket, Treasurer
Kent Crowder, County Administrator
Curran Trick, GIS Analyst, GIS Department

Routt County

Robert Felinczak, GIS Coordinator, GIS Department
Chuck Vale, Director, Routt County Emergency Management

Summit County

Trip McLaughlin, GIS Analyst, Planning Department

Northwest Colorado Council of Governments

Gary Severson, Executive Director

Water & Power Providers

Jeff Drager, Deputy Manager, Engineering Division, Northern Colorado
Water Conservancy District
Sally Edwards, Right of Way Agent, Xcel Energy
Sue Starceвич, Realty Land Management, Western Area Power
Administration
Ron Turley, Field Maintenance manager, Western Area Power
Administration
Marc Waage, Manager of Raw Water Supply, Denver Water Board

USDA-Forest Service

Nicolai Bencke, GIS Specialist, Medicine Bow-Routt National Forests, Hahns Peak/Bears Ears Ranger District
Phil Bowden, East Zone Fuels Specialist, White River National Forest
Jan Burke, Timber Program Manager, White River National Forest
Mark Cahur, Zone Fire Management Officer, Medicine Bow-Routt National Forests, Hahns Peak/Bears Ears Ranger District
Don Carroll, Deputy Commander, White River National Forest
Mary Ann Chambers, Public Affairs Specialist, Arapaho & Roosevelt National Forests
Jane Frambach, GIS Specialist, White River National Forest
Steve Gregonis, GIS Coordinator, Rocky Mountain Region
Clint Kyhl, Bark Beetle Incident Team Leader, Medicine Bow-Routt National Forests
Melinda McGann, Remote Sensing Specialist, Rocky Mountain Region
Paul Mintier, District Fire Management Officer, Arapaho & Roosevelt National Forests, Sulphur Ranger District
Michelle O'Connell, Group Leader-Special Uses, Rocky Mountain Region
Jessica Pettee, GIS Analyst, White River National Forest, Dillon District
Debra Ryon, Realty Specialist, Rocky Mountain Region
Sue Valente, GIS Specialist, Arapaho & Roosevelt National Forests, Sulphur Ranger District

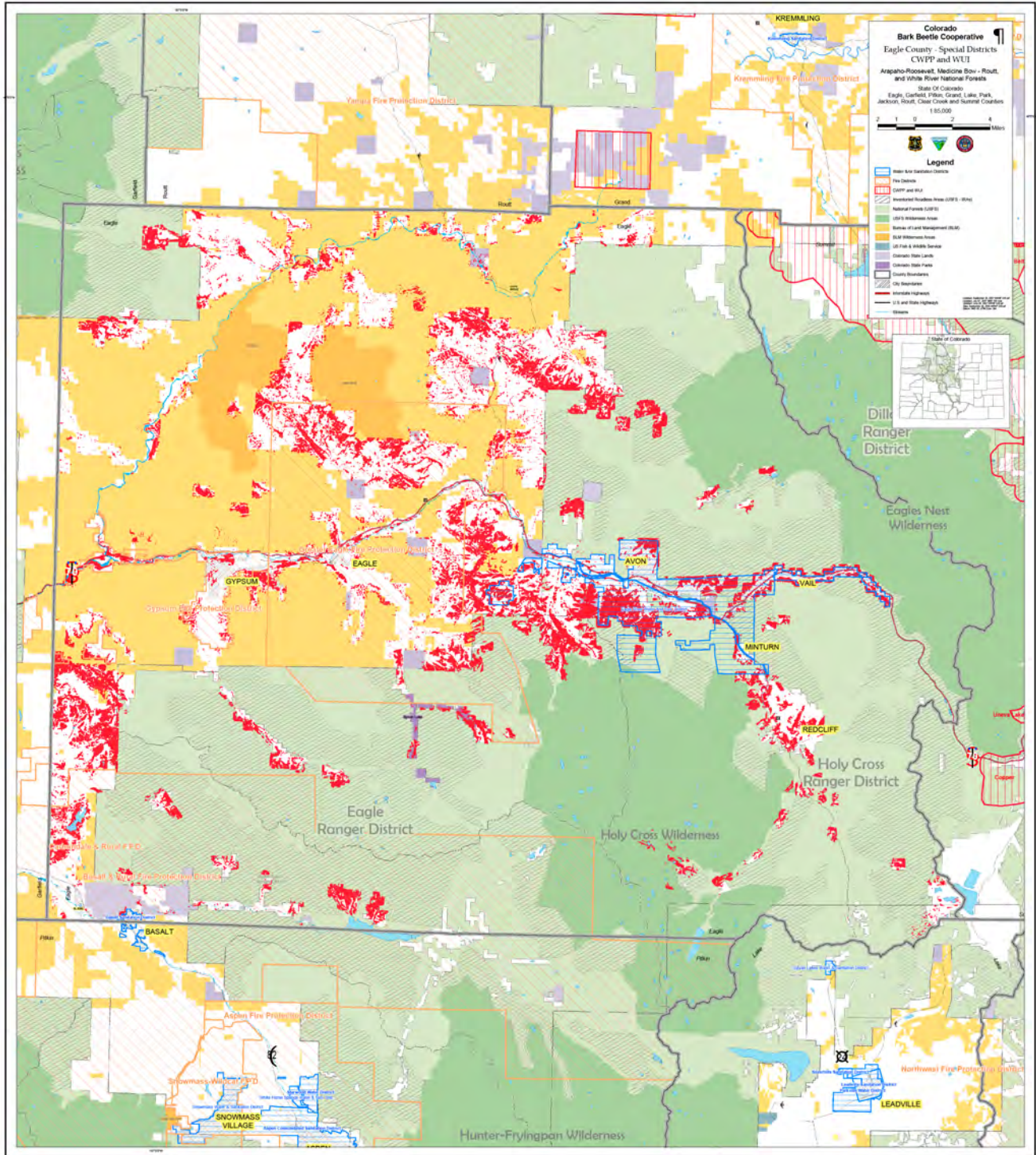
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Paul Langowski, Branch Chief – Fuels & Fire Ecology, State and Private Forestry, Rocky Mountain Region
Chris Miller, Economist, Ecosystem Management Coordination, Washington Office
Mary Peterson, Forest Supervisor, Medicine Bow-Routt National Forests
Keith Stockmann, Economist, Ecosystem Assessment & Planning, Northern Region
David Wheeler, Assistant Director, Forest and Rangeland Management, Rocky Mountain Region.

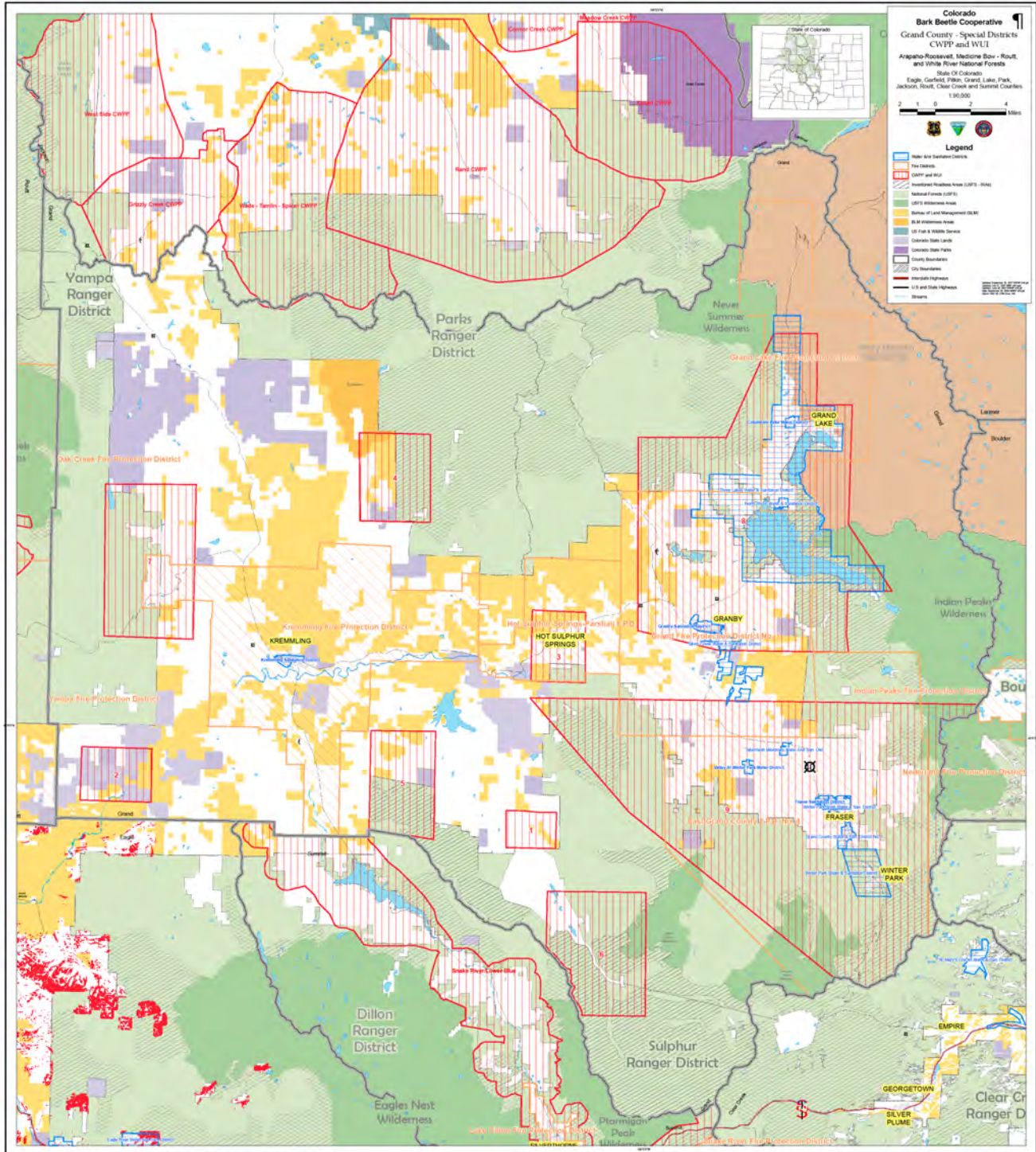
Appendix C

Maps

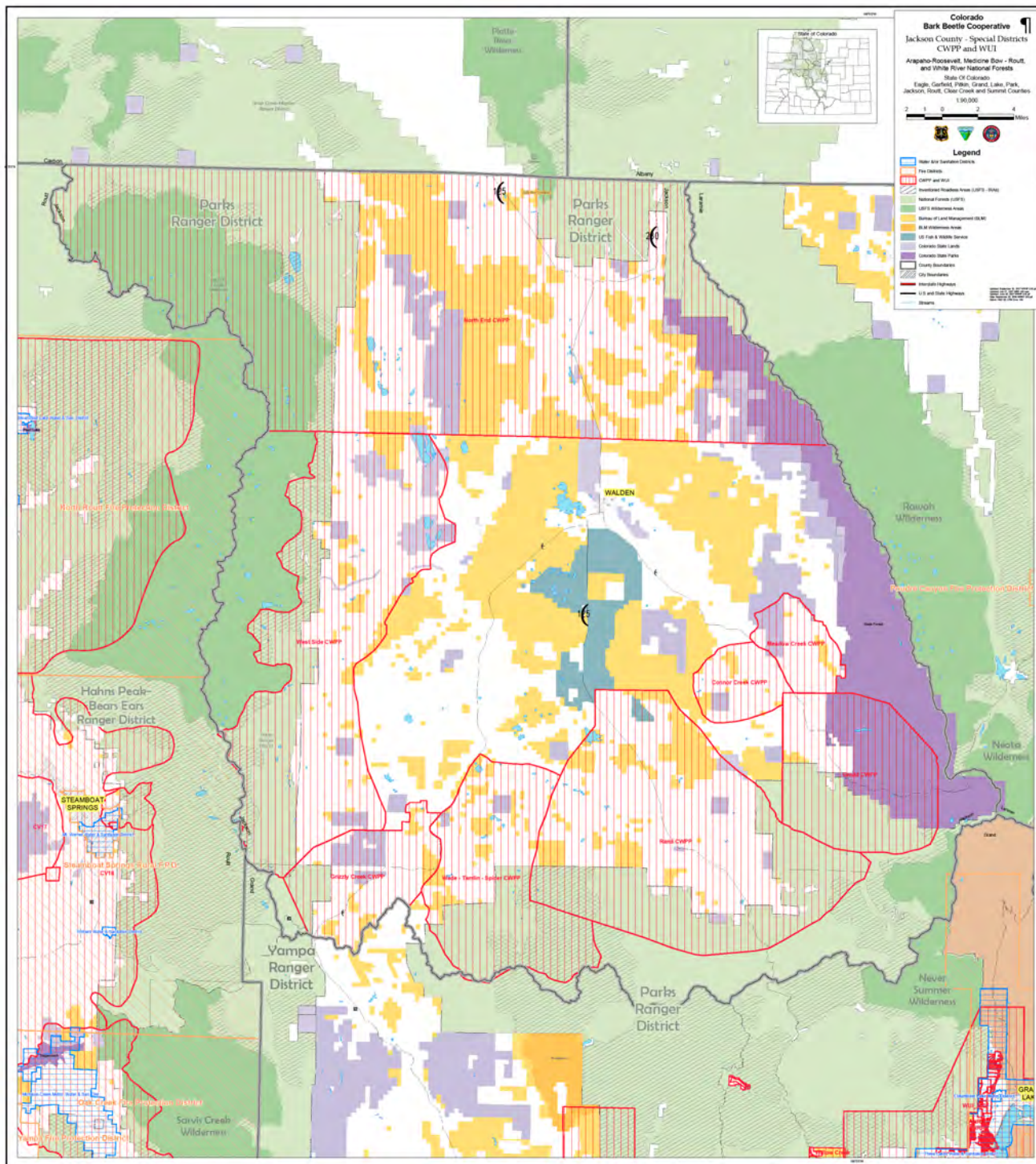
Map C1. Eagle County Wildland Urban Interface Areas plus Fire, Water, and Sanitation Special Districts



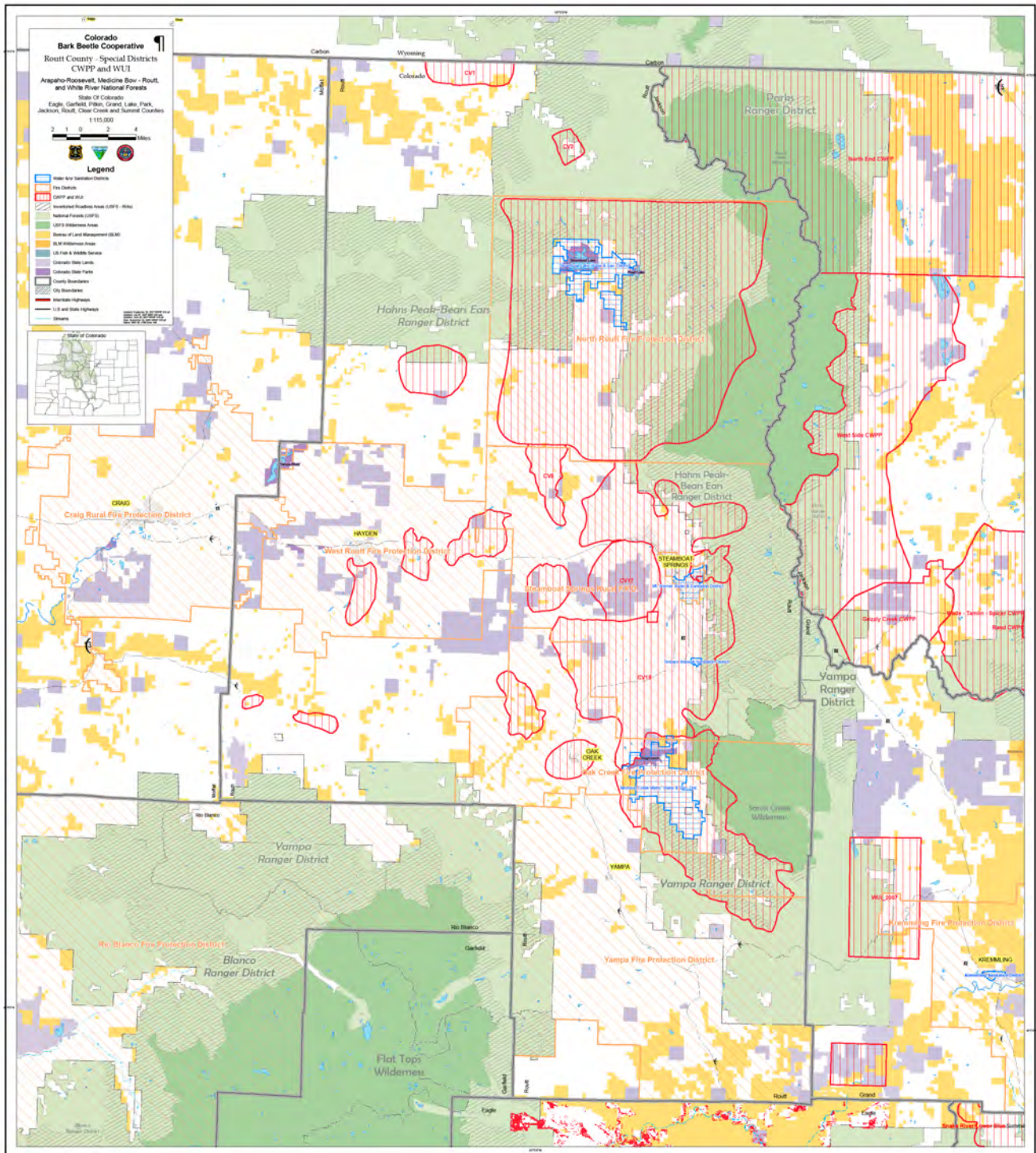
Map C2. Grand County Wildland Urban Interface Areas plus Fire, Water, and Sanitation Special Districts



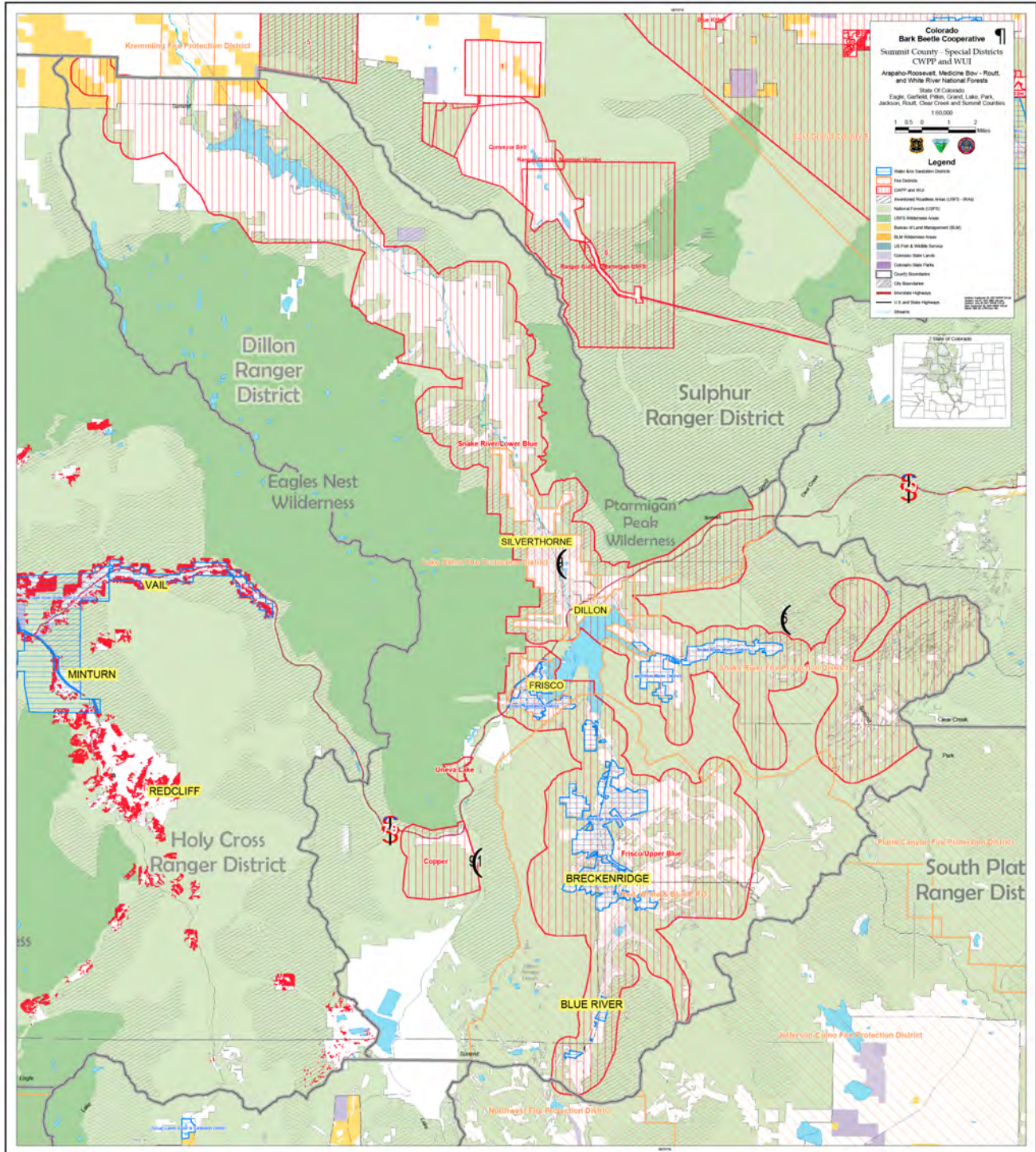
Map C3. Jackson County Wildland Urban Interface Areas plus Fire, Water, and Sanitation Special Districts



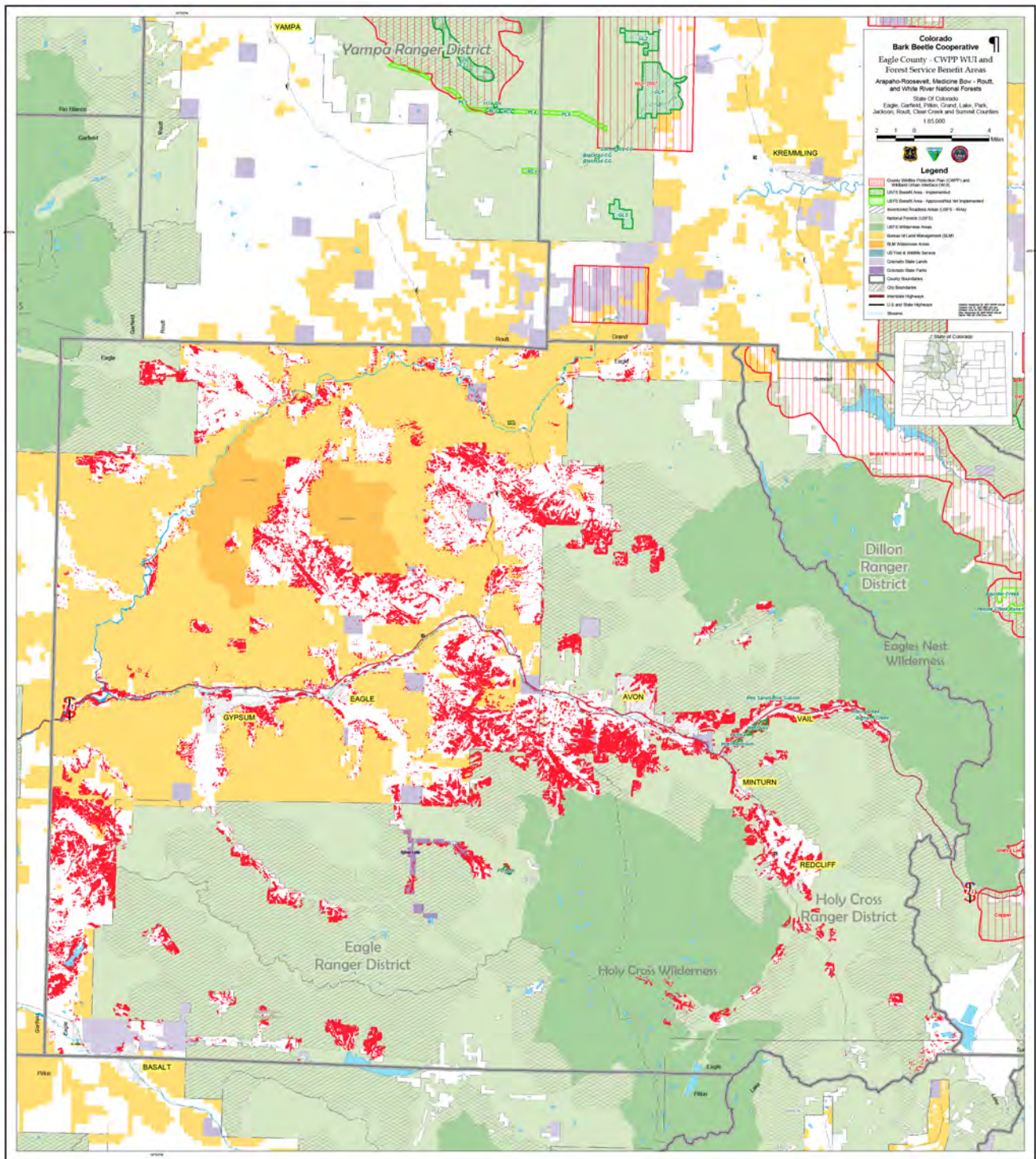
Map C4. Routt County Wildland Urban Interface Areas plus Fire, Water, and Sanitation Special Districts



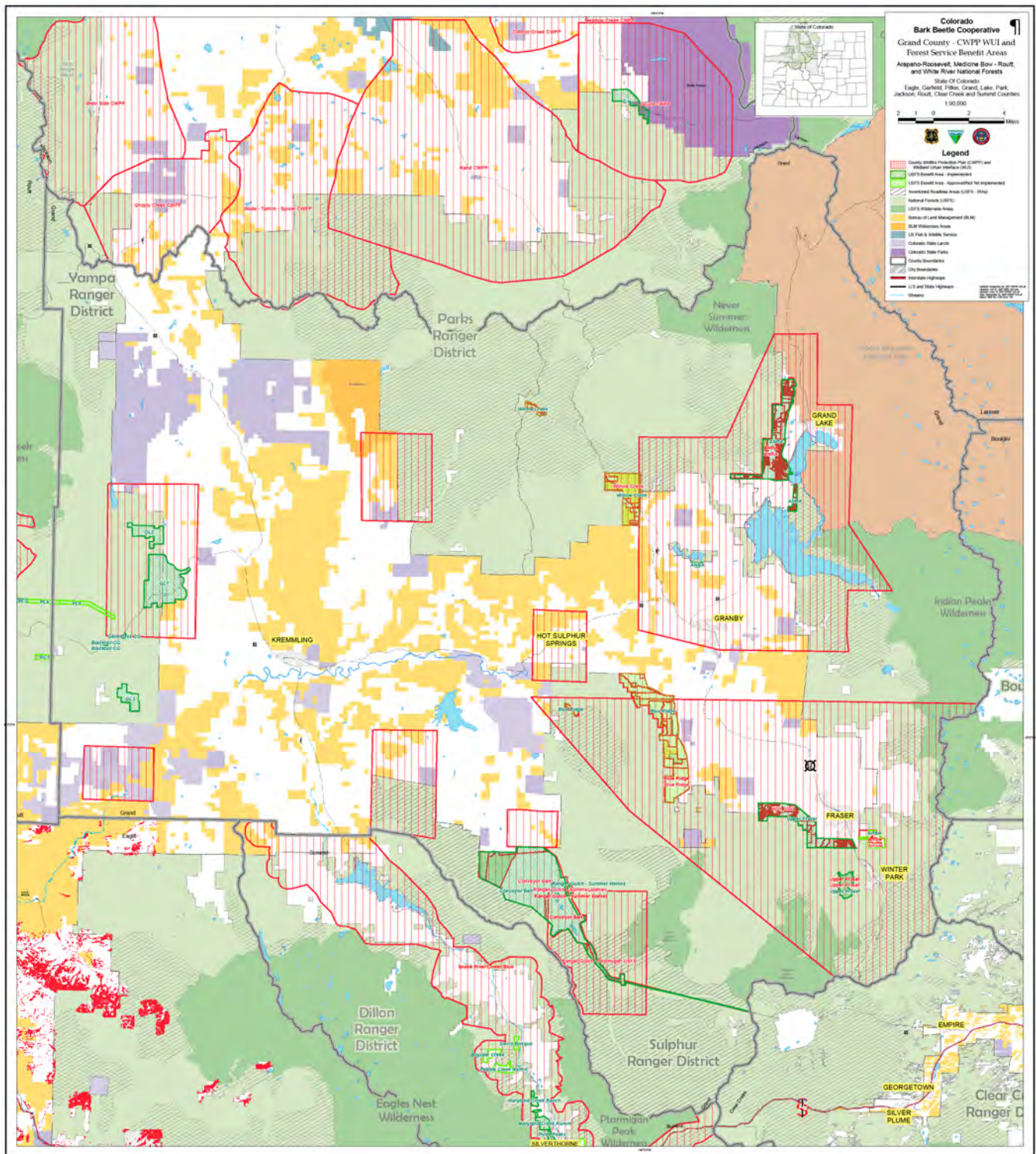
Map C5. Summit County Wildland Urban Interface Areas plus Fire, Water, and Sanitation Special Districts



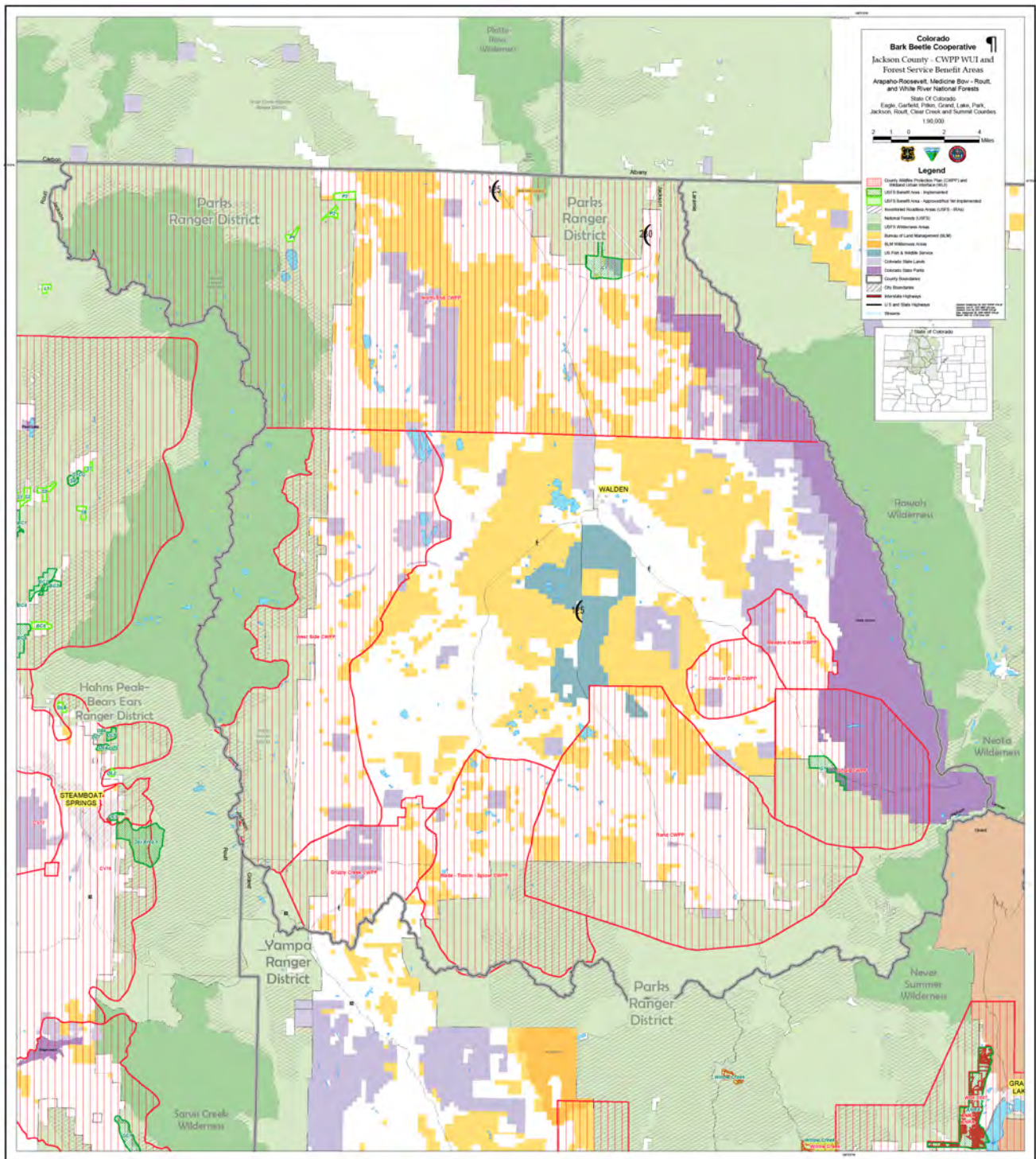
Map C6. Eagle County Wildland Urban Interface and Benefiting Areas



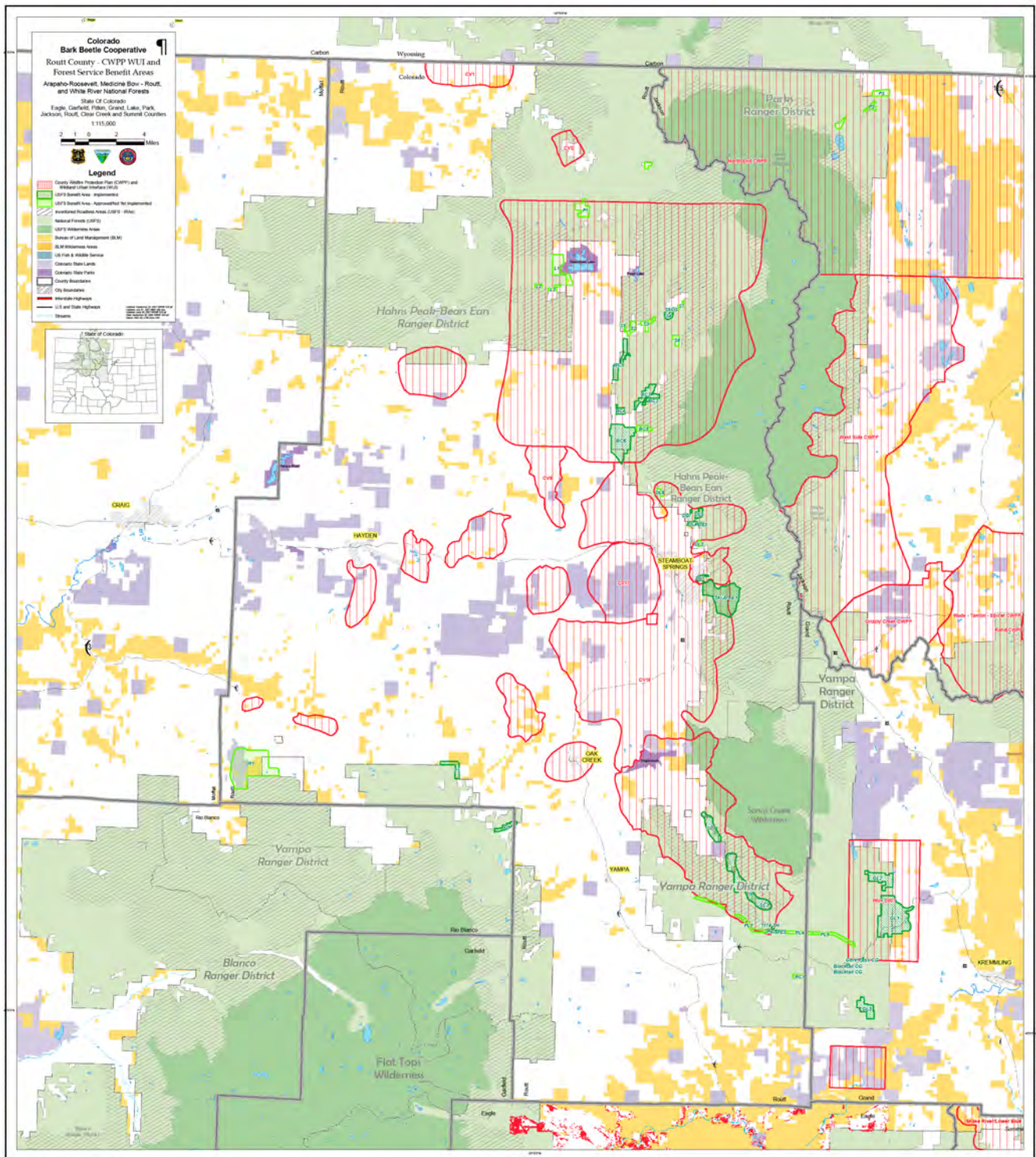
Map C7. Grand County Wildland Urban Interface and Benefiting Areas



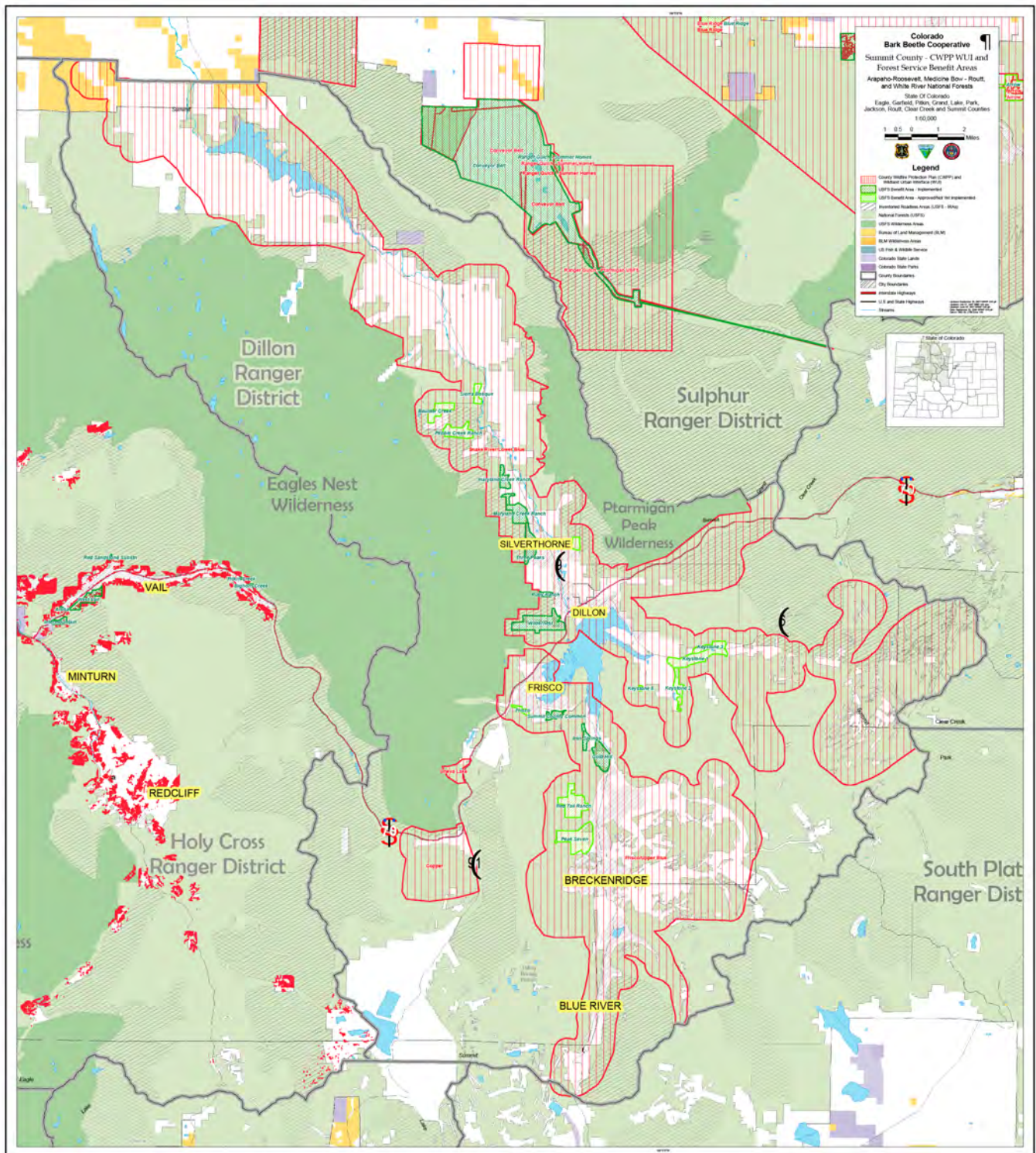
Map C8. Jackson County Wildland Urban Interface and Benefiting Areas



Map C9. Routt County Wildland Urban Interface and Benefiting Areas



Map C10. Summit County Wildland Urban Interface and Benefiting Areas



Appendix D

H.R. 1904

One Hundred Eighth Congress of the United States of America

AT THE FIRST SESSION

*Begun and held at the City of Washington on Tuesday,
the seventh day of January, two thousand and three*

An Act

To improve the capacity of the Secretary of Agriculture and the Secretary of the Interior to conduct hazardous fuels reduction projects on National Forest System lands and Bureau of Land Management lands aimed at protecting communities, watersheds, and certain other at-risk lands from catastrophic wildfire, to enhance efforts to protect watersheds and address threats to forest and rangeland health, including catastrophic wildfire, across the landscape, and for other purposes.

*Be it enacted by the Senate and House of Representatives of
the United States of America in Congress assembled,*

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the “Healthy Forests Restoration Act of 2003”.

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

- Sec. 1. Short title; table of contents.
- Sec. 2. Purposes.
- Sec. 3. Definitions.

TITLE I—HAZARDOUS FUEL REDUCTION ON FEDERAL LAND

- Sec. 101. Definitions.
- Sec. 102. Authorized hazardous fuel reduction projects.
- Sec. 103. Prioritization.
- Sec. 104. Environmental analysis.
- Sec. 105. Special administrative review process.
- Sec. 106. Judicial review in United States district courts.
- Sec. 107. Effect of title.
- Sec. 108. Authorization of appropriations.

TITLE II—BIOMASS

- Sec. 201. Improved biomass use research program.
- Sec. 202. Rural revitalization through forestry.
- Sec. 203. Biomass commercial utilization grant program.

TITLE III—WATERSHED FORESTRY ASSISTANCE

- Sec. 301. Findings and purposes.
- Sec. 302. Watershed forestry assistance program.
- Sec. 303. Tribal watershed forestry assistance.

TITLE IV—INSECT INFESTATIONS AND RELATED DISEASES

- Sec. 401. Findings and purpose.
- Sec. 402. Definitions.
- Sec. 403. Accelerated information gathering regarding forest-damaging insects.
- Sec. 404. Applied silvicultural assessments.
- Sec. 405. Relation to other laws.
- Sec. 406. Authorization of appropriations.

TITLE V—HEALTHY FORESTS RESERVE PROGRAM

- Sec. 501. Establishment of healthy forests reserve program.
- Sec. 502. Eligibility and enrollment of lands in program.
- Sec. 503. Restoration plans.

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Sec. 504. Financial assistance.

Sec. 505. Technical assistance.

Sec. 506. Protections and measures

Sec. 507. Involvement by other agencies and organizations.

Sec. 508. Authorization of appropriations.

TITLE VI—MISCELLANEOUS

Sec. 601. Forest stands inventory and monitoring program to improve detection of and response to environmental threats.

SEC. 2. PURPOSES.

The purposes of this Act are—

(1) to reduce wildfire risk to communities, municipal water supplies, and other at-risk Federal land through a collaborative process of planning, prioritizing, and implementing hazardous fuel reduction projects;

(2) to authorize grant programs to improve the commercial value of forest biomass (that otherwise contributes to the risk of catastrophic fire or insect or disease infestation) for producing electric energy, useful heat, transportation fuel, and petroleum-based product substitutes, and for other commercial purposes;

(3) to enhance efforts to protect watersheds and address threats to forest and rangeland health, including catastrophic wildfire, across the landscape;

(4) to promote systematic gathering of information to address the impact of insect and disease infestations and other damaging agents on forest and rangeland health;

(5) to improve the capacity to detect insect and disease infestations at an early stage, particularly with respect to hardwood forests; and

(6) to protect, restore, and enhance forest ecosystem components—

(A) to promote the recovery of threatened and endangered species;

(B) to improve biological diversity; and

(C) to enhance productivity and carbon sequestration.

SEC. 3. DEFINITIONS.

In this Act:

(1) FEDERAL LAND.—The term “Federal land” means—

(A) land of the National Forest System (as defined in section 11(a) of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1609(a))) administered by the Secretary of Agriculture, acting through the Chief of the Forest Service; and

(B) public lands (as defined in section 103 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1702)), the surface of which is administered by the Secretary of the Interior, acting through the Director of the Bureau of Land Management.

(2) INDIAN TRIBE.—The term “Indian tribe” has the meaning given the term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450b).

TITLE I—HAZARDOUS FUEL REDUCTION ON FEDERAL LAND

SEC. 101. DEFINITIONS.

In this title:

(1) AT-RISK COMMUNITY.—The term “at-risk^{community}” means an area—

(A) that is comprised of—

(i) an interface community as defined in the notice entitled “Wildland Urban Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire” issued by the Secretary of Agriculture and the Secretary of the Interior in accordance with title IV of the Department of the Interior and Related Agencies Appropriations Act, 2001 (114 Stat. 1009) (66 Fed. Reg. 753, January 4, 2001); or

(ii) a group of homes and other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) within or adjacent to Federal land;

(B) in which conditions are conducive to a large-scale wildland fire disturbance event; and

(C) for which a significant threat to human life or property exists as a result of a wildland fire disturbance event.

(2) AUTHORIZED HAZARDOUS FUEL REDUCTION PROJECT.—The term “authorized hazardous fuel reduction project” means the measures and methods described in the definition of “appropriate tools” contained in the glossary of the Implementation Plan, on Federal land described in section 102(a) and conducted under sections 103 and 104.

(3) COMMUNITY WILDFIRE PROTECTION PLAN.—The term “community wildfire protection plan” means a plan for an at-risk community that—

(A) is developed within the context of the collaborative agreements and the guidance established by the Wildland Fire Leadership Council and agreed to by the applicable local government, local fire department, and State agency responsible for forest management, in consultation with interested parties and the Federal land management agencies managing land in the vicinity of the at-risk community;

(B) identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment on Federal and non-Federal land that will protect 1 or more at-risk communities and essential infrastructure; and

(C) recommends measures to reduce structural ignitability throughout the at-risk community.

(4) CONDITION CLASS 2.—The term “condition class 2”, with respect to an area of Federal land, means the condition class description developed by the Forest Service Rocky Mountain Research Station in the general technical report entitled “Development of Coarse-Scale Spatial Data for Wildland Fire and Fuel Management” (RMRS-87), dated April 2000 (including any subsequent revision to the report), under which—

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(A) fire regimes on the land have been moderately altered from historical ranges;

(B) there exists a moderate risk of losing key ecosystem components from fire;

(C) fire frequencies have increased or decreased from historical frequencies by 1 or more return intervals, resulting in moderate changes to—

(i) the size, frequency, intensity, or severity of fires; or

(ii) landscape patterns; and

(D) vegetation attributes have been moderately altered from the historical range of the attributes.

(5) CONDITION CLASS 3.—The term “condition class 3”, with respect to an area of Federal land, means the condition class description developed by the Rocky Mountain Research Station in the general technical report referred to in paragraph (4) (including any subsequent revision to the report), under which—

(A) fire regimes on land have been significantly altered from historical ranges;

(B) there exists a high risk of losing key ecosystem components from fire;

(C) fire frequencies have departed from historical frequencies by multiple return intervals, resulting in dramatic changes to—

(i) the size, frequency, intensity, or severity of fires; or

(ii) landscape patterns; and

(D) vegetation attributes have been significantly altered from the historical range of the attributes.

(6) DAY.—The term “day” means—

(A) a calendar day; or

(B) if a deadline imposed by this title would expire on a nonbusiness day, the end of the next business day.

(7) DECISION DOCUMENT.—The term “decision document” means—

(A) a decision notice (as that term is used in the Forest Service Handbook);

(B) a decision record (as that term is used in the Bureau of Land Management Handbook); and

(C) a record of decision (as that term is used in applicable regulations of the Council on Environmental Quality).

(8) FIRE REGIME I.—The term “fire regime I” means an area—

(A) in which historically there have been low-severity fires with a frequency of 0 through 35 years; and

(B) that is located primarily in low elevation forests of pine, oak, or pinyon juniper.

(9) FIRE REGIME II.—The term “fire regime II” means an area—

(A) in which historically there are stand replacement severity fires with a frequency of 0 through 35 years; and

(B) that is located primarily in low- to mid-elevation rangeland, grassland, or shrubland.

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(10) FIRE REGIME III.—The term “fire regime III” means an area—

(A) in which historically there are mixed severity fires with a frequency of 35 through 100 years; and

(B) that is located primarily in forests of mixed conifer, dry Douglas fir, or wet Ponderosa pine.

(11) IMPLEMENTATION PLAN.—The term “Implementation Plan” means the Implementation Plan for the Comprehensive Strategy for a Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, dated May 2002, developed pursuant to the conference report to accompany the Department of the Interior and Related Agencies Appropriations Act, 2001 (House Report No. 106–64) (and subsequent revisions).

(12) MUNICIPAL WATER SUPPLY SYSTEM.—The term “municipal water supply system” means the reservoirs, canals, ditches, flumes, laterals, pipes, pipelines, and other surface facilities and systems constructed or installed for the collection, impoundment, storage, transportation, or distribution of drinking water.

(13) RESOURCE MANAGEMENT PLAN.—The term “resource management plan” means—

(A) a land and resource management plan prepared for 1 or more units of land of the National Forest System described in section 3(1)(A) under section 6 of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1604); or

(B) a land use plan prepared for 1 or more units of the public land described in section 3(1)(B) under section 202 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1712).

(14) SECRETARY.—The term “Secretary” means—

(A) the Secretary of Agriculture, with respect to land of the National Forest System described in section 3(1)(A); and

(B) the Secretary of the Interior, with respect to public lands described in section 3(1)(B).

(15) THREATENED AND ENDANGERED SPECIES HABITAT.—The term “threatened and endangered species habitat” means Federal land identified in—

(A) a determination that a species is an endangered species or a threatened species under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.);

(B) a designation of critical habitat of the species under that Act; or

(C) a recovery plan prepared for the species under that Act.

(16) WILDLAND-URBAN INTERFACE.—The term “wildland-urban interface” means—

(A) an area within or adjacent to an at-risk community that is identified in recommendations to the Secretary in a community wildfire protection plan; or

(B) in the case of any area for which a community wildfire protection plan is not in effect—

(i) an area extending $1\frac{1}{2}$ -mile from the boundary of an at-risk community;

(ii) an area within $1\frac{1}{2}$ miles of the boundary of an at-risk community, including any land that—

(I) has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community;

(II) has a geographic feature that aids in creating an effective fire break, such as a road or ridge top; or

(III) is in condition class 3, as documented by the Secretary in the project-specific environmental analysis; and

(iii) an area that is adjacent to an evacuation route for an at-risk community that the Secretary determines, in cooperation with the at-risk community, requires hazardous fuel reduction to provide safer evacuation from the at-risk community.

SEC. 102. AUTHORIZED HAZARDOUS FUEL REDUCTION PROJECTS.

(a) **AUTHORIZED PROJECTS.**—As soon as practicable after the date of enactment of this Act, the Secretary shall implement authorized hazardous fuel reduction projects, consistent with the Implementation Plan, on—

(1) Federal land in wildland-urban interface areas;

(2) condition class 3 Federal land, in such proximity to a municipal water supply system or a stream feeding such a system within a municipal watershed that a significant risk exists that a fire disturbance event would have adverse effects on the water quality of the municipal water supply or the maintenance of the system, including a risk to water quality posed by erosion following such a fire disturbance event;

(3) condition class 2 Federal land located within fire regime I, fire regime II, or fire regime III, in such proximity to a municipal water supply system or a stream feeding such a system within a municipal watershed that a significant risk exists that a fire disturbance event would have adverse effects on the water quality of the municipal water supply or the maintenance of the system, including a risk to water quality posed by erosion following such a fire disturbance event;

(4) Federal land on which windthrow or blowdown, ice storm damage, the existence of an epidemic of disease or insects, or the presence of such an epidemic on immediately adjacent land and the imminent risk it will spread, poses a significant threat to an ecosystem component, or forest or rangeland resource, on the Federal land or adjacent non-Federal land; and

(5) Federal land not covered by paragraphs (1) through (4) that contains threatened and endangered species habitat, if—

(A) natural fire regimes on that land are identified as being important for, or wildfire is identified as a threat to, an endangered species, a threatened species, or habitat of an endangered species or threatened species in a species recovery plan prepared under section 4 of the Endangered Species Act of 1973 (16 U.S.C. 1533), or a notice published in the Federal Register determining a species to be an endangered species or a threatened species or designating critical habitat;

(B) the authorized hazardous fuel reduction project will provide enhanced protection from catastrophic wildfire

for the endangered species, threatened species, or habitat of the endangered species or threatened species; and

(C) the Secretary complies with any applicable guidelines specified in any management or recovery plan described in subparagraph (A).

(b) RELATION TO AGENCY PLANS.—An authorized hazardous fuel reduction project shall be conducted consistent with the resource management plan and other relevant administrative policies or decisions applicable to the Federal land covered by the project.

(c) ACREAGE LIMITATION.—Not more than a total of 20,000,000 acres of Federal land may be treated under authorized hazardous fuel reduction projects.

(d) EXCLUSION OF CERTAIN FEDERAL LAND.—The Secretary may not conduct an authorized hazardous fuel reduction project that would occur on—

(1) a component of the National Wilderness Preservation System;

(2) Federal land on which the removal of vegetation is prohibited or restricted by Act of Congress or Presidential proclamation (including the applicable implementation plan); or

(3) a Wilderness Study Area.

(e) OLD GROWTH STANDS.—

(1) DEFINITIONS.—In this subsection and subsection (f):

(A) APPLICABLE PERIOD.—The term “applicable period” means—

(i) the 2-year period beginning on the date of enactment of this Act; or

(ii) in the case of a resource management plan that the Secretary is in the process of revising as of the date of enactment of this Act, the 3-year period beginning on the date of enactment of this Act.

(B) COVERED PROJECT.—The term “covered project” means an authorized hazardous fuel reduction project carried out on land described in paragraph (1), (2), (3), or (5) of subsection (a).

(C) MANAGEMENT DIRECTION.—The term “management direction” means definitions, designations, standards, guidelines, goals, or objectives established for an old growth stand under a resource management plan developed in accordance with applicable law, including section 6(g)(3)(B) of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1604(g)(3)(B)).

(D) OLD GROWTH STAND.—The term “old growth stand” has the meaning given the term under management direction used pursuant to paragraphs (3) and (4), based on the structure and composition characteristic of the forest type, and in accordance with applicable law, including section 6(g)(3)(B) of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1604(g)(3)(B)).

(2) PROJECT REQUIREMENTS.—In carrying out a covered project, the Secretary shall fully maintain, or contribute toward the restoration of, the structure and composition of old growth stands according to the pre-fire suppression old growth conditions characteristic of the forest type, taking into account the contribution of the stand to landscape fire adaptation and

watershed health, and retaining the large trees contributing to old growth structure.

(3) NEWER MANAGEMENT DIRECTION.—

(A) IN GENERAL.—If the management direction for an old growth stand was established on or after December 15, 1993, the Secretary shall meet the requirements of paragraph (2) in carrying out a covered project by implementing the management direction.

(B) AMENDMENTS OR REVISIONS.—Any amendment or revision to management direction for which final administrative approval is granted after the date of enactment of this Act shall be consistent with paragraph (2) for the purpose of carrying out covered projects.

(4) OLDER MANAGEMENT DIRECTION.—

(A) IN GENERAL.—If the management direction for an old growth stand was established before December 15, 1993, the Secretary shall meet the requirements of paragraph (2) in carrying out a covered project during the applicable period by implementing the management direction.

(B) REVIEW REQUIRED.—Subject to subparagraph (C), during the applicable period for management direction referred to in subparagraph (A), the Secretary shall—

(i) review the management direction for affected covered projects, taking into account any relevant scientific information made available since the adoption of the management direction; and

(ii) amend the management direction for affected covered projects to be consistent with paragraph (2), if necessary to reflect relevant scientific information the Secretary did not consider in formulating the management direction.

(C) REVIEW NOT COMPLETED.—If the Secretary does not complete the review of the management direction in accordance with subparagraph (B) before the end of the applicable period, the Secretary shall not carry out any portion of affected covered projects in stands that are identified as old growth stands (based on substantial supporting evidence) by any person during scoping, within the period—

(i) beginning at the close of the applicable period for the management direction governing the affected covered projects; and

(ii) ending on the earlier of—

(I) the date the Secretary completes the action required by subparagraph (B) for the management direction applicable to the affected covered projects; or

(II) the date on which the acreage limitation specified in subsection (c) (as that limitation may be adjusted by a subsequent Act of Congress) is reached.

(5) LIMITATION TO COVERED PROJECTS.—Nothing in this subsection requires the Secretary to revise or otherwise amend a resource management plan to make the project requirements of paragraph (2) apply to an activity other than a covered project.

(f) LARGE TREE RETENTION.—

(1) IN GENERAL.—Except in old growth stands where the management direction is consistent with subsection (e)(2), the Secretary shall carry out a covered project in a manner that—

(A) focuses largely on small diameter trees, thinning, strategic fuel breaks, and prescribed fire to modify fire behavior, as measured by the projected reduction of uncharacteristically severe wildfire effects for the forest type (such as adverse soil impacts, tree mortality or other impacts); and

(B) maximizes the retention of large trees, as appropriate for the forest type, to the extent that the trees promote fire-resilient stands.

(2) WILDFIRE RISK.—Nothing in this subsection prevents achievement of the purposes described in section 2(1).

(g) MONITORING AND ASSESSING FOREST AND RANGELAND HEALTH.—

(1) IN GENERAL.—For each Forest Service administrative region and each Bureau of Land Management State Office, the Secretary shall—

(A) monitor the results of a representative sample of the projects authorized under this title for each management unit; and

(B) not later than 5 years after the date of enactment of this Act, and each 5 years thereafter, issue a report that includes—

(i) an evaluation of the progress towards project goals; and

(ii) recommendations for modifications to the projects and management treatments.

(2) CONSISTENCY OF PROJECTS WITH RECOMMENDATIONS.—An authorized hazardous fuel reduction project approved following the issuance of a monitoring report shall, to the maximum extent practicable, be consistent with any applicable recommendations in the report.

(3) SIMILAR VEGETATION TYPES.—The results of a monitoring report shall be made available for use (if appropriate) in an authorized hazardous fuels reduction project conducted in a similar vegetation type on land under the jurisdiction of the Secretary.

(4) MONITORING AND ASSESSMENTS.—Monitoring and assessment shall include a description of the changes in condition class, using the Fire Regime Condition Class Guidebook or successor guidance, specifically comparing end results to—

(A) pretreatment conditions;

(B) historical fire regimes; and

(C) any applicable watershed or landscape goals or objectives in the resource management plan or other relevant direction.

(5) MULTIPARTY MONITORING.—

(A) IN GENERAL.—In an area where significant interest is expressed in multiparty monitoring, the Secretary shall establish a multiparty monitoring, evaluation, and accountability process in order to assess the positive or negative ecological and social effects of authorized hazardous fuel reduction projects and projects conducted pursuant to section 404.

(B) DIVERSE STAKEHOLDERS.—The Secretary shall include diverse stakeholders (including interested citizens and Indian tribes) in the process required under subparagraph (A).

(C) FUNDING.—Funds to carry out this paragraph may be derived from operations funds for projects described in subparagraph (A).

(6) COLLECTION OF MONITORING DATA.—The Secretary may collect monitoring data by entering into cooperative agreements or contracts with, or providing grants to, small or micro-businesses, cooperatives, nonprofit organizations, Youth Conservation Corps work crews, or related State, local, and other non-Federal conservation corps.

(7) TRACKING.—For each administrative unit, the Secretary shall track acres burned, by the degree of severity, by large wildfires (as defined by the Secretary).

(8) MONITORING AND MAINTENANCE OF TREATED AREAS.—The Secretary shall, to the maximum extent practicable, develop a process for monitoring the need for maintenance of treated areas, over time, in order to preserve the forest health benefits achieved.

SEC. 103. PRIORITIZATION.

(a) IN GENERAL.—In accordance with the Implementation Plan, the Secretary shall develop an annual program of work for Federal land that gives priority to authorized hazardous fuel reduction projects that provide for the protection of at-risk communities or watersheds or that implement community wildfire protection plans.

(b) COLLABORATION.—

(1) IN GENERAL.—The Secretary shall consider recommendations under subsection (a) that are made by at-risk communities that have developed community wildfire protection plans.

(2) EXEMPTION.—The Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to the planning process and recommendations concerning community wildfire protection plans.

(c) ADMINISTRATION.—

(1) IN GENERAL.—Federal agency involvement in developing a community wildfire protection plan, or a recommendation made in a community wildfire protection plan, shall not be considered a Federal agency action under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).

(2) COMPLIANCE.—In implementing authorized hazardous fuel reduction projects on Federal land, the Secretary shall, in accordance with section 104, comply with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).

(d) FUNDING ALLOCATION.—

(1) FEDERAL LAND.—

(A) IN GENERAL.—Subject to subparagraph (B), the Secretary shall use not less than 50 percent of the funds allocated for authorized hazardous fuel reduction projects in the wildland-urban interface.

(B) APPLICABILITY AND ALLOCATION.—The funding allocation in subparagraph (A) shall apply at the national level. The Secretary may allocate the proportion of funds differently than is required under subparagraph (A) within individual management units as appropriate, in particular

to conduct authorized hazardous fuel reduction projects on land described in section 102(a)(4).

(C) WILDLAND-URBAN INTERFACE.—In the case of an authorized hazardous fuel reduction project for which a decision notice is issued during the 1-year period beginning on the date of enactment of this Act, the Secretary shall use existing definitions of the term “wildland-urban interface” rather than the definition of that term provided under section 101.

(2) NON-FEDERAL LAND.—

(A) IN GENERAL.—In providing financial assistance under any provision of law for hazardous fuel reduction projects on non-Federal land, the Secretary shall consider recommendations made by at-risk communities that have developed community wildfire protection plans.

(B) PRIORITY.—In allocating funding under this paragraph, the Secretary should, to the maximum extent practicable, give priority to communities that have adopted a community wildfire protection plan or have taken proactive measures to encourage willing property owners to reduce fire risk on private property.

SEC. 104. ENVIRONMENTAL ANALYSIS.

(a) AUTHORIZED HAZARDOUS FUEL REDUCTION PROJECTS.—Except as otherwise provided in this title, the Secretary shall conduct authorized hazardous fuel reduction projects in accordance with—

(1) the National Environmental Policy Act of 1969 (42 U.S.C. 4331 et seq.); and

(2) other applicable laws.

(b) ENVIRONMENTAL ASSESSMENT OR ENVIRONMENTAL IMPACT STATEMENT.—The Secretary shall prepare an environmental assessment or an environmental impact statement pursuant to section 102(2) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)) for each authorized hazardous fuel reduction project.

(c) CONSIDERATION OF ALTERNATIVES.—

(1) IN GENERAL.—Except as provided in subsection (d), in the environmental assessment or environmental impact statement prepared under subsection (b), the Secretary shall study, develop, and describe—

(A) the proposed agency action;

(B) the alternative of no action; and

(C) an additional action alternative, if the

additional alternative—

(i) is proposed during scoping or the collaborative process under subsection (f); and

(ii) meets the purpose and need of the project, in accordance with regulations promulgated by the Council on Environmental Quality.

(2) MULTIPLE ADDITIONAL ALTERNATIVES.—If more than 1 additional alternative is proposed under paragraph (1)(C), the Secretary shall—

(A) select which additional alternative to consider, which is a choice that is in the sole discretion of the Secretary; and

(B) provide a written record describing the reasons for the selection.

(d) ALTERNATIVE ANALYSIS PROCESS FOR PROJECTS IN WILDLAND-URBAN INTERFACE.—

(1) PROPOSED AGENCY ACTION AND 1 ACTION ALTERNATIVE.—

For an authorized hazardous fuel reduction project that is proposed to be conducted in the wildland-urban interface, the Secretary is not required to study, develop, or describe more than the proposed agency action and 1 action alternative in the environmental assessment or environmental impact statement prepared pursuant to section 102(2) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)).

(2) PROPOSED AGENCY ACTION.—Notwithstanding paragraph (1), but subject to paragraph (3), if an authorized hazardous fuel reduction project proposed to be conducted in the wildland-urban interface is located no further than 1¹/₂ miles from the boundary of an at-risk community, the Secretary is not required to study, develop, or describe any alternative to the proposed agency action in the environmental assessment or environmental impact statement prepared pursuant to section 102(2) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)).

(3) PROPOSED AGENCY ACTION AND COMMUNITY WILDFIRE PROTECTION PLAN ALTERNATIVE.—In the case of an authorized hazardous fuel reduction project described in paragraph (2), if the at-risk community has adopted a community wildfire protection plan and the proposed agency action does not implement the recommendations in the plan regarding the general location and basic method of treatments, the Secretary shall evaluate the recommendations in the plan as an alternative to the proposed agency action in the environmental assessment or environmental impact statement prepared pursuant to section 102(2) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)).

(e) PUBLIC NOTICE AND MEETING.—

(1) PUBLIC NOTICE.—The Secretary shall provide notice of each authorized hazardous fuel reduction project in accordance with applicable regulations and administrative guidelines.

(2) PUBLIC MEETING.—During the preparation stage of each authorized hazardous fuel reduction project, the Secretary shall—

(A) conduct a public meeting at an appropriate location proximate to the administrative unit of the Federal land on which the authorized hazardous fuel reduction project will be conducted; and

(B) provide advance notice of the location, date, and time of the meeting.

(f) PUBLIC COLLABORATION.—In order to encourage meaningful public participation during preparation of authorized hazardous fuel reduction projects, the Secretary shall facilitate collaboration among State and local governments and Indian tribes, and participation of interested persons, during the preparation of each authorized fuel reduction project in a manner consistent with the Implementation Plan.

(g) ENVIRONMENTAL ANALYSIS AND PUBLIC COMMENT.—In accordance with section 102(2) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)) and the applicable regulations

and administrative guidelines, the Secretary shall provide an opportunity for public comment during the preparation of any environmental assessment or environmental impact statement for an authorized hazardous fuel reduction project.

(h) **DECISION DOCUMENT.**—The Secretary shall sign a decision document for authorized hazardous fuel reduction projects and provide notice of the final agency actions.

SEC. 105. SPECIAL ADMINISTRATIVE REVIEW PROCESS.

(a) **INTERIM FINAL REGULATIONS.**—

(1) **IN GENERAL.**—Not later than 30 days after the date of the enactment of this Act, the Secretary of Agriculture shall promulgate interim final regulations to establish a predecisional administrative review process for the period described in paragraph (2) that will serve as the sole means by which a person can seek administrative review regarding an authorized hazardous fuel reduction project on Forest Service land.

(2) **PERIOD.**—The predecisional administrative review process required under paragraph (1) shall occur during the period—

(A) beginning after the completion of the environmental assessment or environmental impact statement; and

(B) ending not later than the date of the issuance of the final decision approving the project.

(3) **ELIGIBILITY.**—To be eligible to participate in the administrative review process for an authorized hazardous fuel reduction project under paragraph (1), a person shall submit to the Secretary, during scoping or the public comment period for the draft environmental analysis for the project, specific written comments that relate to the proposed action.

(4) **EFFECTIVE DATE.**—The interim final regulations promulgated under paragraph (1) shall take effect on the date of promulgation of the regulations.

(b) **FINAL REGULATIONS.**—The Secretary shall promulgate final regulations to establish the process described in subsection (a)(1) after the interim final regulations have been published and reasonable time has been provided for public comment.

(c) **ADMINISTRATIVE REVIEW.**—

(1) **IN GENERAL.**—A person may bring a civil action challenging an authorized hazardous fuel reduction project in a Federal district court only if the person has challenged the authorized hazardous fuel reduction project by exhausting—

(A) the administrative review process established by the Secretary of Agriculture under this section; or

(B) the administrative hearings and appeals procedures established by the Department of the Interior.

(2) **ISSUES.**—An issue may be considered in the judicial review of an action under section 106 only if the issue was raised in an administrative review process described in paragraph (1).

(3) **EXCEPTION.**—

(A) **IN GENERAL.**—An exception to the requirement of exhausting the administrative review process before seeking judicial review shall be available if a Federal court finds that the futility or inadequacy exception applies to a specific plaintiff or claim.

(B) INFORMATION.—If an agency fails or is unable to make information timely available during the administrative review process, a court should evaluate whether the administrative review process was inadequate for claims or issues to which the information is material.

SEC. 106. JUDICIAL REVIEW IN UNITED STATES DISTRICT COURTS.

(a) VENUE.—Notwithstanding section 1391 of title 28, United States Code, or other applicable law, an authorized hazardous fuels reduction project conducted under this title shall be subject to judicial review only in the United States district court for a district in which the Federal land to be treated under the authorized hazardous fuels reduction project is located.

(b) EXPEDITIOUS COMPLETION OF JUDICIAL REVIEW.—In the judicial review of an action challenging an authorized hazardous fuel reduction project under subsection (a), Congress encourages a court of competent jurisdiction to expedite, to the maximum extent practicable, the proceedings in the action with the goal of rendering a final determination on jurisdiction, and (if jurisdiction exists) a final determination on the merits, as soon as practicable after the date on which a complaint or appeal is filed to initiate the action.

(c) INJUNCTIONS.—

(1) IN GENERAL.—Subject to paragraph (2), the length of any preliminary injunctive relief and stays pending appeal covering an authorized hazardous fuel reduction project carried out under this title shall not exceed 60 days.

(2) RENEWAL.—

(A) IN GENERAL.—A court of competent jurisdiction may issue 1 or more renewals of any preliminary injunction, or stay pending appeal, granted under paragraph (1).

(B) UPDATES.—In each renewal of an injunction in an action, the parties to the action shall present the court with updated information on the status of the authorized hazardous fuel reduction project.

(3) BALANCING OF SHORT- AND LONG-TERM EFFECTS.—As part of its weighing the equities while considering any request for an injunction that applies to an agency action under an authorized hazardous fuel reduction project, the court reviewing the project shall balance the impact to the ecosystem likely affected by the project of—

(A) the short- and long-term effects of undertaking the agency action; against

(B) the short- and long-term effects of not undertaking the agency action.

SEC. 107. EFFECT OF TITLE.

(a) OTHER AUTHORITY.—Nothing in this title affects, or otherwise biases, the use by the Secretary of other statutory or administrative authority (including categorical exclusions adopted to implement the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.)) to conduct a hazardous fuel reduction project on Federal land (including Federal land identified in section 102(d)) that is not conducted using the process authorized by section 104.

(b) NATIONAL FOREST SYSTEM.—For projects and activities of the National Forest System other than authorized hazardous fuel reduction projects, nothing in this title affects, or otherwise biases,

the notice, comment, and appeal procedures for projects and activities of the National Forest System contained in part 215 of title 36, Code of Federal Regulations, or the consideration or disposition of any legal action brought with respect to the procedures.

SEC. 108. AUTHORIZATION OF APPROPRIATIONS.

There is authorized to be appropriated \$760,000,000 for each fiscal year to carry out—

- (1) activities authorized by this title; and
- (2) other hazardous fuel reduction activities of the Secretary, including making grants to States, local governments, Indian tribes, and other eligible recipients for activities authorized by law.

TITLE II—BIOMASS

SEC. 201. IMPROVED BIOMASS USE RESEARCH PROGRAM.

(a) **USES OF GRANTS, CONTRACTS, AND ASSISTANCE.**—Section 307(d) of the Biomass Research and Development Act of 2000 (7 U.S.C. 7624 note; Public Law 106–224) is amended—

- (1) in paragraph (3), by striking “or” at the end;
- (2) in paragraph (4), by striking the period at the end and inserting “; or”; and
- (3) by adding at the end the following:
 - “(5) research to integrate silviculture, harvesting, product development, processing information, and economic evaluation to provide the science, technology, and tools to forest managers and community developers for use in evaluating forest treatment and production alternatives, including—
 - “(A) to develop tools that would enable land managers, locally or in a several-State region, to estimate—
 - “(i) the cost to deliver varying quantities of wood to a particular location; and
 - “(ii) the amount that could be paid for stumpage if delivered wood was used for a specific mix of products;
 - “(B) to conduct research focused on developing appropriate thinning systems and equipment designs that are—
 - “(i) capable of being used on land without significant adverse effects on the land;
 - “(ii) capable of handling large and varied landscapes;
 - “(iii) adaptable to handling a wide variety of tree sizes;
 - “(iv) inexpensive; and
 - “(v) adaptable to various terrains; and
 - “(C) to develop, test, and employ in the training of forestry managers and community developers curricula materials and training programs on matters described in subparagraphs (A) and (B).”.

(b) **FUNDING.**—Section 310(b) of the Biomass Research and Development Act of 2000 (7 U.S.C. 7624 note; Public Law 106–224) is amended by striking “\$49,000,000” and inserting “\$54,000,000”.

SEC. 202. RURAL REVITALIZATION THROUGH FORESTRY.

Section 2371 of the Food, Agriculture, Conservation, and Trade Act of 1990 (7 U.S.C. 6601) is amended by adding at the end the following:

“(d) RURAL REVITALIZATION TECHNOLOGIES.—

“(1) IN GENERAL.—The Secretary of Agriculture, acting through the Chief of the Forest Service, in consultation with the State and Private Forestry Technology Marketing Unit at the Forest Products Laboratory, and in collaboration with eligible institutions, may carry out a program—

“(A) to accelerate adoption of technologies using biomass and small-diameter materials;

“(B) to create community-based enterprises through marketing activities and demonstration projects; and

“(C) to establish small-scale business enterprises to make use of biomass and small-diameter materials.

“(2) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to carry out this subsection \$5,000,000 for each of fiscal years 2004 through 2008.”.

SEC. 203. BIOMASS COMMERCIAL UTILIZATION GRANT PROGRAM.

(a) IN GENERAL.—In addition to any other authority of the Secretary of Agriculture to make grants to a person that owns or operates a facility that uses biomass as a raw material to produce electric energy, sensible heat, transportation fuel, or substitutes for petroleum-based products, the Secretary may make grants to a person that owns or operates a facility that uses biomass for wood-based products or other commercial purposes to offset the costs incurred to purchase biomass.

(b) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to carry out this section \$5,000,000 for each of fiscal years 2004 through 2008.

TITLE III—WATERSHED FORESTRY ASSISTANCE

SEC. 301. FINDINGS AND PURPOSES.

(a) FINDINGS.—Congress finds that—

(1) there has been a dramatic shift in public attitudes and perceptions about forest management, particularly in the understanding and practice of sustainable forest management;

(2) it is commonly recognized that the proper stewardship of forest land is essential to sustaining and restoring the health of watersheds;

(3) forests can provide essential ecological services in filtering pollutants, buffering important rivers and estuaries, and minimizing flooding, which makes forest restoration worthy of special focus; and

(4) strengthened education, technical assistance, and financial assistance for nonindustrial private forest landowners and communities, relating to the protection of watershed health, is needed to realize the expectations of the general public.

(b) PURPOSES.—The purposes of this title are—

(1) to improve landowner and public understanding of the connection between forest management and watershed health;

(2) to encourage landowners to maintain tree cover on property and to use tree plantings and vegetative treatments as creative solutions to watershed problems associated with varying land uses;

(3) to enhance and complement forest management and buffer use for watersheds, with an emphasis on community watersheds;

(4) to establish new partnerships and collaborative watershed approaches to forest management, stewardship, and conservation;

(5) to provide technical and financial assistance to States to deliver a coordinated program that enhances State forestry best-management practices programs, and conserves and improves forested land and potentially forested land, through technical, financial, and educational assistance to qualifying individuals and entities; and

(6) to maximize the proper management and conservation of wetland forests and to assist in the restoration of those forests.

SEC. 302. WATERSHED FORESTRY ASSISTANCE PROGRAM.

The Cooperative Forestry Assistance Act of 1978 is amended by inserting after section 5 (16 U.S.C. 2103a) the following:

“SEC. 6. WATERSHED FORESTRY ASSISTANCE PROGRAM.

“(a) DEFINITION OF NONINDUSTRIAL PRIVATE FOREST LAND.—In this section, the term ‘nonindustrial private forest land’ means rural land, as determined by the Secretary, that—

“(1) has existing tree cover or that is suitable for growing trees; and

“(2) is owned by any nonindustrial private individual, group, association, corporation, or other private legal entity, that has definitive decisionmaking authority over the land.

“(b) GENERAL AUTHORITY AND PURPOSE.—The Secretary, acting through the Chief of the Forest Service and (where appropriate) through the Cooperative State Research, Education, and Extension Service, may provide technical, financial, and related assistance to State foresters, equivalent State officials, or Cooperative Extension officials at land grant colleges and universities and 1890 institutions for the purpose of expanding State forest stewardship capacities and activities through State forestry best-management practices and other means at the State level to address watershed issues on non-Federal forested land and potentially forested land.

“(c) TECHNICAL ASSISTANCE TO PROTECT WATER QUALITY.—

“(1) IN GENERAL.—The Secretary, in cooperation with State foresters or equivalent State officials, shall engage interested members of the public, including nonprofit organizations and local watershed councils, to develop a program of technical assistance to protect water quality described in paragraph (2).

“(2) PURPOSE OF PROGRAM.—The program under this subsection shall be designed—

“(A) to build and strengthen watershed partnerships that focus on forested landscapes at the State, regional, and local levels;

“(B) to provide State forestry best-management practices and water quality technical assistance directly to owners of nonindustrial private forest land;

“(C) to provide technical guidance to land managers and policymakers for water quality protection through forest management;

“(D) to complement State and local efforts to protect water quality and provide enhanced opportunities for consultation and cooperation among Federal and State agencies charged with responsibility for water and watershed management; and

“(E) to provide enhanced forest resource data and support for improved implementation and monitoring of State forestry best-management practices.

“(3) IMPLEMENTATION.—In the case of a participating State, the program of technical assistance shall be implemented by State foresters or equivalent State officials.

“(d) WATERSHED FORESTRY COST-SHARE PROGRAM.—

“(1) IN GENERAL.—The Secretary shall establish a watershed forestry cost-share program—

“(A) which shall be—

“(i) administered by the Forest Service; and

“(ii) implemented by State foresters or equivalent State officials in participating States; and

“(B) under which funds or other support provided to participating States shall be made available for State forestry best-management practices programs and watershed forestry projects.

“(2) WATERSHED FORESTRY PROJECTS.—The State forester, an equivalent State official of a participating State, or a Cooperative Extension official at a land grant college or university or 1890 institution, in coordination with the State Forest Stewardship Coordinating Committee established under section 19(b) (or an equivalent committee) for that State, shall make awards to communities, nonprofit groups, and owners of non-industrial private forest land under the program for watershed forestry projects described in paragraph (3).

“(3) PROJECT ELEMENTS AND OBJECTIVES.—A watershed forestry project shall accomplish critical forest stewardship, watershed protection, and restoration needs within a State by demonstrating the value of trees and forests to watershed health and condition through—

“(A) the use of trees as solutions to water quality problems in urban and rural areas;

“(B) community-based planning, involvement, and action through State, local, and nonprofit partnerships;

“(C) application of and dissemination of monitoring information on forestry best-management practices relating to watershed forestry;

“(D) watershed-scale forest management activities and conservation planning; and

“(E)(i) the restoration of wetland (as defined by the States) and stream-side forests; and

“(ii) the establishment of riparian vegetative buffers.

“(4) COST-SHARING.—

“(A) FEDERAL SHARE.—

“(i) FUNDS UNDER THIS SUBSECTION.—Funds provided under this subsection for a watershed forestry project may not exceed 75 percent of the cost of the project.

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“(ii) OTHER FEDERAL FUNDS.—The percentage of the cost of a project described in clause (i) that is not covered by funds made available under this subsection may be paid using other Federal funding sources, except that the total Federal share of the costs of the project may not exceed 90 percent.

“(B) FORM.—The non-Federal share of the costs of a project may be provided in the form of cash, services, or other in-kind contributions.

“(5) PRIORITIZATION.—The State Forest Stewardship Coordinating Committee for a State, or equivalent State committee, shall prioritize watersheds in that State to target watershed forestry projects funded under this subsection.

“(6) WATERSHED FORESTER.—Financial and technical assistance shall be made available to the State Forester or equivalent State official to create a State watershed or best-management practice forester position to—

“(A) lead statewide programs; and

“(B) coordinate watershed-level projects.

“(e) DISTRIBUTION.—

“(1) IN GENERAL.—Of the funds made available for a fiscal year under subsection (g), the Secretary shall use—

“(A) at least 75 percent of the funds to carry out the cost-share program under subsection (d); and

“(B) the remainder of the funds to deliver technical assistance, education, and planning, at the local level, through the State Forester or equivalent State official.

“(2) SPECIAL CONSIDERATIONS.—Distribution of funds by the Secretary among States under paragraph (1) shall be made only after giving appropriate consideration to—

“(A) the acres of agricultural land, nonindustrial private forest land, and highly erodible land in each State;

“(B) the miles of riparian buffer needed;

“(C) the miles of impaired stream segments and other impaired water bodies where forestry practices can be used to restore or protect water resources;

“(D) the number of owners of nonindustrial private forest land in each State; and

“(E) water quality cost savings that can be achieved through forest watershed management.

“(f) WILLING OWNERS.—

“(1) IN GENERAL.—Participation of an owner of nonindustrial private forest land in the watershed forestry assistance program under this section is voluntary.

“(2) WRITTEN CONSENT.—The watershed forestry assistance program shall not be carried out on nonindustrial private forest land without the written consent of the owner of, or entity having definitive decisionmaking over, the nonindustrial private forest land.

“(g) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to carry out this section \$15,000,000 for each of fiscal years 2004 through 2008.”.

SEC. 303. TRIBAL WATERSHED FORESTRY ASSISTANCE.

(a) IN GENERAL.—The Secretary of Agriculture (referred to in this section as the “Secretary”), acting through the Chief of the Forest Service, shall provide technical, financial, and related

assistance to Indian tribes for the purpose of expanding tribal stewardship capacities and activities through tribal forestry best-management practices and other means at the tribal level to address watershed issues on land under the jurisdiction of or administered by the Indian tribes.

(b) TECHNICAL ASSISTANCE TO PROTECT WATER QUALITY.—

(1) IN GENERAL.—The Secretary, in cooperation with Indian tribes, shall develop a program to provide technical assistance to protect water quality, as described in paragraph (2).

(2) PURPOSE OF PROGRAM.—The program under this subsection shall be designed—

(A) to build and strengthen watershed partnerships that focus on forested landscapes at the State, regional, tribal, and local levels;

(B) to provide tribal forestry best-management practices and water quality technical assistance directly to Indian tribes;

(C) to provide technical guidance to tribal land managers and policy makers for water quality protection through forest management;

(D) to complement tribal efforts to protect water quality and provide enhanced opportunities for consultation and cooperation among Federal agencies and tribal entities charged with responsibility for water and watershed management; and

(E) to provide enhanced forest resource data and support for improved implementation and monitoring of tribal forestry best-management practices.

(c) WATERSHED FORESTRY PROGRAM.—

(1) IN GENERAL.—The Secretary shall establish a watershed forestry program in cooperation with Indian tribes.

(2) PROGRAMS AND PROJECTS.—Funds or other support provided under the program shall be made available for tribal forestry best-management practices programs and watershed forestry projects.

(3) ANNUAL AWARDS.—The Secretary shall annually make awards to Indian tribes to carry out this subsection.

(4) PROJECT ELEMENTS AND OBJECTIVES.—A watershed forestry project shall accomplish critical forest stewardship, watershed protection, and restoration needs within land under the jurisdiction of or administered by an Indian tribe by demonstrating the value of trees and forests to watershed health and condition through—

(A) the use of trees as solutions to water quality problems;

(B) application of and dissemination of monitoring information on forestry best-management practices relating to watershed forestry;

(C) watershed-scale forest management activities and conservation planning;

(D) the restoration of wetland and stream-side forests and the establishment of riparian vegetative buffers; and

(E) tribal-based planning, involvement, and action through State, tribal, local, and nonprofit partnerships.

(5) PRIORITIZATION.—An Indian tribe that participates in the program under this subsection shall prioritize watersheds in land under the jurisdiction of or administered by the Indian

tribe to target watershed forestry projects funded under this subsection.

(6) **WATERSHED FORESTER.**—The Secretary may provide to Indian tribes under this section financial and technical assistance to establish a position of tribal forester to lead tribal programs and coordinate small watershed-level projects.

(d) **DISTRIBUTION.**—The Secretary shall devote—

(1) at least 75 percent of the funds made available for a fiscal year under subsection (e) to the program under subsection (c); and

(2) the remainder of the funds to deliver technical assistance, education, and planning in the field to Indian tribes.

(e) **AUTHORIZATION OF APPROPRIATIONS.**—There is authorized to be appropriated to carry out this section \$2,500,000 for each of fiscal years 2004 through 2008.

TITLE IV—INSECT INFESTATIONS AND RELATED DISEASES

SEC. 401. FINDINGS AND PURPOSE.

(a) **FINDINGS.**—Congress finds that—

(1) high levels of tree mortality resulting from insect infestation (including the interaction between insects and diseases) may result in—

- (A) increased fire risk;
- (B) loss of old trees and old growth;
- (C) loss of threatened and endangered species;
- (D) loss of species diversity;
- (E) degraded watershed conditions;
- (F) increased potential for damage from other

agents of disturbance, including exotic, invasive species; and

- (G) decreased timber values;

(2)(A) forest-damaging insects destroy hundreds of thousands of acres of trees each year;

(B) in the West, more than 21,000,000 acres are at high risk of forest-damaging insect infestation, and in the South, more than 57,000,000 acres are at risk across all land ownerships; and

(C) severe drought conditions in many areas of the South and West will increase the risk of forest-damaging insect infestations;

(3) the hemlock woolly adelgid is—

(A) destroying streamside forests throughout the mid-Atlantic and Appalachian regions;

(B) threatening water quality and sensitive aquatic species; and

(C) posing a potential threat to valuable commercial timber land in northern New England;

(4)(A) the emerald ash borer is a nonnative, invasive pest that has quickly become a major threat to hardwood forests because an emerald ash borer infestation is almost always fatal to affected trees; and

(B) the emerald ash borer pest threatens to destroy more than 692,000,000 ash trees in forests in Michigan and Ohio alone, and between 5 and 10 percent of urban street trees in the Upper Midwest;

(5)(A) epidemic populations of Southern pine beetles are ravaging forests in Alabama, Arkansas, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia; and

(B) in 2001, Florida and Kentucky experienced 146 percent and 111 percent increases, respectively, in Southern pine beetle populations;

(6) those epidemic outbreaks of Southern pine beetles have forced private landowners to harvest dead and dying trees, in rural areas and increasingly urbanized settings;

(7) according to the Forest Service, recent outbreaks of the red oak borer in Arkansas and Missouri have been unprecedented, with more than 1,000,000 acres infested at population levels never seen before;

(8) much of the damage from the red oak borer has taken place in national forests, and the Federal response has been inadequate to protect forest ecosystems and other ecological and economic resources;

(9)(A) previous silvicultural assessments, while useful and informative, have been limited in scale and scope of application; and

(B) there have not been sufficient resources available to adequately test a full array of individual and combined applied silvicultural assessments;

(10) only through the full funding, development, and assessment of potential applied silvicultural assessments over specific time frames across an array of environmental and climatic conditions can the most innovative and cost effective management applications be determined that will help reduce the susceptibility of forest ecosystems to attack by forest pests;

(11)(A) often, there are significant interactions between insects and diseases;

(B) many diseases (such as white pine blister rust, beech bark disease, and many other diseases) can weaken trees and forest stands and predispose trees and forest stands to insect attack; and

(C) certain diseases are spread using insects as vectors (including Dutch elm disease and pine pitch canker); and

(12) funding and implementation of an initiative to combat forest pest infestations and associated diseases should not come at the expense of supporting other programs and initiatives of the Secretary.

(b) PURPOSES.—The purposes of this title are—

(1) to require the Secretary to develop an accelerated basic and applied assessment program to combat infestations by forest-damaging insects and associated diseases;

(2) to enlist the assistance of colleges and universities (including forestry schools, land grant colleges and universities, and 1890 Institutions), State agencies, and private landowners to carry out the program; and

(3) to carry out applied silvicultural assessments.

SEC. 402. DEFINITIONS.

In this title:

(1) APPLIED SILVICULTURAL ASSESSMENT.—

(A) IN GENERAL.—The term “applied silvicultural assessment” means any vegetative or other treatment carried out for information gathering and research purposes.

(B) INCLUSIONS.—The term “applied silvicultural assessment” includes timber harvesting, thinning, prescribed burning, pruning, and any combination of those activities.

(2) 1890 INSTITUTION.—

(A) IN GENERAL.—The term “1890 Institution” means a college or university that is eligible to receive funds under the Act of August 30, 1890 (7 U.S.C. 321 et seq.).

(B) INCLUSION.—The term “1890 Institution” includes Tuskegee University.

(3) FOREST-DAMAGING INSECT.—The term “forest-damaging insect” means—

(A) a Southern pine beetle;

(B) a mountain pine beetle;

(C) a spruce bark beetle;

(D) a gypsy moth;

(E) a hemlock woolly adelgid;

(F) an emerald ash borer;

(G) a red oak borer;

(H) a white oak borer; and

(I) such other insects as may be identified by the Secretary.

(4) SECRETARY.—The term “Secretary” means—

(A) the Secretary of Agriculture, acting through the Forest Service, with respect to National Forest System land; and

(B) the Secretary of the Interior, acting through appropriate offices of the United States Geological Survey, with respect to federally owned land administered by the Secretary of the Interior.

SEC. 403. ACCELERATED INFORMATION GATHERING REGARDING FOREST-DAMAGING INSECTS.

(a) INFORMATION GATHERING.—The Secretary, acting through the Forest Service and United States Geological Survey, as appropriate, shall establish an accelerated program—

(1) to plan, conduct, and promote comprehensive and systematic information gathering on forest-damaging insects and associated diseases, including an evaluation of—

(A) infestation prevention and suppression methods;

(B) effects of infestations and associated disease interactions on forest ecosystems;

(C) restoration of forest ecosystem efforts;

(D) utilization options regarding infested trees; and

(E) models to predict the occurrence, distribution, and impact of outbreaks of forest-damaging insects and associated diseases;

(2) to assist land managers in the development of treatments and strategies to improve forest health and reduce the susceptibility of forest ecosystems to severe infestations of forest-damaging insects and associated diseases on Federal land and State and private land; and

(3) to disseminate the results of the information gathering, treatments, and strategies.

- (b) COOPERATION AND ASSISTANCE.—The Secretary shall—
- (1) establish and carry out the program in cooperation with—
 - (A) scientists from colleges and universities (including forestry schools, land grant colleges and universities, and 1890 Institutions);
 - (B) Federal, State, and local agencies; and
 - (C) private and industrial landowners; and
 - (2) designate such colleges and universities to assist in carrying out the program.

SEC. 404. APPLIED SILVICULTURAL ASSESSMENTS.

(a) ASSESSMENT EFFORTS.—For information gathering and research purposes, the Secretary may conduct applied silvicultural assessments on Federal land that the Secretary determines is at risk of infestation by, or is infested with, forest-damaging insects.

(b) LIMITATIONS.—

(1) EXCLUSION OF CERTAIN AREAS.—Subsection (a) does not apply to—

- (A) a component of the National Wilderness Preservation System;
 - (B) any Federal land on which, by Act of Congress or Presidential proclamation, the removal of vegetation is restricted or prohibited;
 - (C) a congressionally-designated wilderness study area;
- or
- (D) an area in which activities under subsection (a) would be inconsistent with the applicable land and resource management plan.

(2) CERTAIN TREATMENT PROHIBITED.—Nothing in subsection (a) authorizes the application of insecticides in municipal watersheds or associated riparian areas.

(3) PEER REVIEW.—

(A) IN GENERAL.—Before being carried out, each applied silvicultural assessment under this title shall be peer reviewed by scientific experts selected by the Secretary, which shall include non-Federal experts.

(B) EXISTING PEER REVIEW PROCESSES.—The Secretary may use existing peer review processes to the extent the processes comply with subparagraph (A).

(c) PUBLIC NOTICE AND COMMENT.—

(1) PUBLIC NOTICE.—The Secretary shall provide notice of each applied silvicultural assessment proposed to be carried out under this section.

(2) PUBLIC COMMENT.—The Secretary shall provide an opportunity for public comment before carrying out an applied silviculture assessment under this section.

(d) CATEGORICAL EXCLUSION.—

(1) IN GENERAL.—Applied silvicultural assessment and research treatments carried out under this section on not more than 1,000 acres for an assessment or treatment may be categorically excluded from documentation in an environmental impact statement and environmental assessment under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).

(2) ADMINISTRATION.—Applied silvicultural assessments and research treatments categorically excluded under paragraph (1)—

(A) shall not be carried out in an area that is adjacent to another area that is categorically excluded under paragraph (1) that is being treated with similar methods; and

(B) shall be subject to the extraordinary circumstances procedures established by the Secretary pursuant to section 1508.4 of title 40, Code of Federal Regulations.

(3) MAXIMUM CATEGORICAL EXCLUSION.—The total number of acres categorically excluded under paragraph (1) shall not exceed 250,000 acres.

(4) NO ADDITIONAL FINDINGS REQUIRED.—In accordance with paragraph (1), the Secretary shall not be required to make any findings as to whether an applied silvicultural assessment project, either individually or cumulatively, has a significant effect on the environment.

SEC. 405. RELATION TO OTHER LAWS.

The authority provided to each Secretary under this title is supplemental to, and not in lieu of, any authority provided to the Secretaries under any other law.

SEC. 406. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated such sums as are necessary to carry out this title for each of fiscal years 2004 through 2008.

TITLE V—HEALTHY FORESTS RESERVE PROGRAM

SEC. 501. ESTABLISHMENT OF HEALTHY FORESTS RESERVE PROGRAM.

(a) ESTABLISHMENT.—The Secretary of Agriculture shall establish the healthy forests reserve program for the purpose of restoring and enhancing forest ecosystems—

(1) to promote the recovery of threatened and endangered species;

(2) to improve biodiversity; and

(3) to enhance carbon sequestration.

(b) COORDINATION.—The Secretary of Agriculture shall carry out the healthy forests reserve program in coordination with the Secretary of the Interior and the Secretary of Commerce.

SEC. 502. ELIGIBILITY AND ENROLLMENT OF LANDS IN PROGRAM.

(a) IN GENERAL.—The Secretary of Agriculture, in coordination with the Secretary of the Interior and the Secretary of Commerce, shall describe and define forest ecosystems that are eligible for enrollment in the healthy forests reserve program.

(b) ELIGIBILITY.—To be eligible for enrollment in the healthy forests reserve program, land shall be—

(1) private land the enrollment of which will restore, enhance, or otherwise measurably increase the likelihood of recovery of a species listed as endangered or threatened under section 4 of the Endangered Species Act of 1973 (16 U.S.C. 1533); and

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(2) private land the enrollment of which will restore, enhance, or otherwise measurably improve the well-being of species that—

(A) are not listed as endangered or threatened under section 4 of the Endangered Species Act of 1973 (16 U.S.C. 1533); but

(B) are candidates for such listing, State-listed species, or special concern species.

(c) OTHER CONSIDERATIONS.—In enrolling land that satisfies the criteria under subsection (b), the Secretary of Agriculture shall give additional consideration to land the enrollment of which will—

(1) improve biological diversity; and

(2) increase carbon sequestration.

(d) ENROLLMENT BY WILLING OWNERS.—The Secretary of Agriculture shall enroll land in the healthy forests reserve program only with the consent of the owner of the land.

(e) MAXIMUM ENROLLMENT.—The total number of acres enrolled in the healthy forests reserve program shall not exceed 2,000,000 acres.

(f) METHODS OF ENROLLMENT.—

(1) IN GENERAL.—Land may be enrolled in the healthy forests reserve program in accordance with—

(A) a 10-year cost-share agreement;

(B) a 30-year easement; or

(C) an easement of not more than 99 years.

(2) PROPORTION.—The extent to which each enrollment method is used shall be based on the approximate proportion of owner interest expressed in that method in comparison to the other methods.

(g) ENROLLMENT PRIORITY.—

(1) SPECIES.—The Secretary of Agriculture shall give priority to the enrollment of land that provides the greatest conservation benefit to—

(A) primarily, species listed as endangered or threatened under section 4 of the Endangered Species Act of 1973 (16 U.S.C. 1533); and

(B) secondarily, species that—

(i) are not listed as endangered or threatened under section 4 of the Endangered Species Act of 1973 (16 U.S.C. 1533); but

(ii) are candidates for such listing, State-listed species, or special concern species.

(2) COST-EFFECTIVENESS.—The Secretary of Agriculture shall also consider the cost-effectiveness of each agreement or easement, and associated restoration plans, so as to maximize the environmental benefits per dollar expended.

SEC. 503. RESTORATION PLANS.

(a) IN GENERAL.—Land enrolled in the healthy forests reserve program shall be subject to a restoration plan, to be developed jointly by the landowner and the Secretary of Agriculture, in coordination with the Secretary of Interior.

(b) PRACTICES.—The restoration plan shall require such restoration practices as are necessary to restore and enhance habitat for—

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(1) species listed as endangered or threatened under section 4 of the Endangered Species Act of 1973 (16 U.S.C. 1533); and

(2) animal or plant species before the species reach threatened or endangered status, such as candidate, State-listed species, and special concern species.

SEC. 504. FINANCIAL ASSISTANCE.

(a) **EASEMENTS OF NOT MORE THAN 99 YEARS.**—In the case of land enrolled in the healthy forests reserve program using an easement of not more than 99 years described in section 502(f)(1)(C), the Secretary of Agriculture shall pay the owner of the land an amount equal to not less than 75 percent, nor more than 100 percent, of (as determined by the Secretary)—

(1) the fair market value of the enrolled land during the period the land is subject to the easement, less the fair market value of the land encumbered by the easement; and

(2) the actual costs of the approved conservation practices or the average cost of approved practices carried out on the land during the period in which the land is subject to the easement.

(b) **THIRTY-YEAR EASEMENT.**—In the case of land enrolled in the healthy forests reserve program using a 30-year easement, the Secretary of Agriculture shall pay the owner of the land an amount equal to not more than (as determined by the Secretary)—

(1) 75 percent of the fair market value of the land, less the fair market value of the land encumbered by the easement; and

(2) 75 percent of the actual costs of the approved conservation practices or 75 percent of the average cost of approved practices.

(c) **TEN-YEAR AGREEMENT.**—In the case of land enrolled in the healthy forests reserve program using a 10-year cost-share agreement, the Secretary of Agriculture shall pay the owner of the land an amount equal to not more than (as determined by the Secretary)—

(1) fifty percent of the actual costs of the approved conservation practices; or

(2) fifty percent of the average cost of approved practices.

(d) **ACCEPTANCE OF CONTRIBUTIONS.**—The Secretary of Agriculture may accept and use contributions of non-Federal funds to make payments under this section.

SEC. 505. TECHNICAL ASSISTANCE.

(a) **IN GENERAL.**—The Secretary of Agriculture shall provide landowners with technical assistance to assist the owners in complying with the terms of plans (as included in agreements or easements) under the healthy forests reserve program.

(b) **TECHNICAL SERVICE PROVIDERS.**—The Secretary of Agriculture may request the services of, and enter into cooperative agreements with, individuals or entities certified as technical service providers under section 1242 of the Food Security Act of 1985 (16 U.S.C. 3842), to assist the Secretary in providing technical assistance necessary to develop and implement the healthy forests reserve program.

SEC. 506. PROTECTIONS AND MEASURES.

(a) **PROTECTIONS.**—In the case of a landowner that enrolls land in the program and whose conservation activities result in a net conservation benefit for listed, candidate, or other species, the Secretary of Agriculture shall make available to the landowner safe harbor or similar assurances and protection under—

- (1) section 7(b)(4) of the Endangered Species Act of 1973 (16 U.S.C. 1536(b)(4)); or
- (2) section 10(a)(1) of that Act (16 U.S.C. 1539(a)(1)).

(b) **MEASURES.**—If protection under subsection (a) requires the taking of measures that are in addition to the measures covered by the applicable restoration plan agreed to under section 503, the cost of the additional measures, as well as the cost of any permit, shall be considered part of the restoration plan for purposes of financial assistance under section 504.

SEC. 507. INVOLVEMENT BY OTHER AGENCIES AND ORGANIZATIONS.

In carrying out this title, the Secretary of Agriculture may consult with—

- (1) nonindustrial private forest landowners;
- (2) other Federal agencies;
- (3) State fish and wildlife agencies;
- (4) State forestry agencies;
- (5) State environmental quality agencies;
- (6) other State conservation agencies; and
- (7) nonprofit conservation organizations.

SEC. 508. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to carry out this title—

- (1) \$25,000,000 for fiscal year 2004; and
- (2) such sums as are necessary for each of fiscal years 2005 through 2008.

TITLE VI—MISCELLANEOUS

SEC. 601. FOREST STANDS INVENTORY AND MONITORING PROGRAM TO IMPROVE DETECTION OF AND RESPONSE TO ENVIRONMENTAL THREATS.

(a) **IN GENERAL.**—The Secretary of Agriculture shall carry out a comprehensive program to inventory, monitor, characterize, assess, and identify forest stands (with emphasis on hardwood forest stands) and potential forest stands—

- (1) in units of the National Forest System (other than those units created from the public domain); and
- (2) on private forest land, with the consent of the owner of the land.

(b) **ISSUES TO BE ADDRESSED.**—In carrying out the program, the Secretary shall address issues including—

- (1) early detection, identification, and assessment of environmental threats (including insect, disease, invasive species, fire, and weather-related risks and other episodic events);
- (2) loss or degradation of forests;
- (3) degradation of the quality forest stands caused by inadequate forest regeneration practices;
- (4) quantification of carbon uptake rates; and
- (5) management practices that focus on preventing further forest degradation.

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(c) EARLY WARNING SYSTEM.—In carrying out the program, the Secretary shall develop a comprehensive early warning system for potential catastrophic environmental threats to forests to increase the likelihood that forest managers will be able to—

(1) isolate and treat a threat before the threat gets out of control; and

(2) prevent epidemics, such as the American chestnut blight in the first half of the twentieth century, that could be environmentally and economically devastating to forests.

(d) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to carry out this section \$5,000,000 for each of fiscal years 2004 through 2008.

Speaker of the House of Representatives.

*Vice President of the United States and
President of the Senate.*