

The Logan County Community Wildfire Protection Plan

AN ACTION PLAN FOR WILDFIRE MITIGATION IN
LOGAN COUNTY COLORADO

December 20, 2011



Prepared by Kurt Vogel, Fire Chief -Sterling Fire Department

The following report is a collaborative effort between various entities. The representatives listed below comprise the core decision-making team (Core Team) responsible for this report and mutually agree on this plan's contents:

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CWPP Signature Page

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Sterling Fire Chief **Date**

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Crook Fire Chief **Date**

Fleming Fire Chief **Date**

Merino Fire Chief **Date**

Peetz **Date**

BOCC Logan County, Colorado **Date**

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I. OBJECTIVES

The objective of the following report is to set clear priorities for the implementation of wildfire mitigation in Logan County. This includes prioritized recommendations as to the appropriate types and methods of fuel reduction and structure ignitability reduction that will protect this community and its essential infrastructure. It also includes a plan for wildfire suppression, identifies existing resources, describes how to maximize resources, outlines additional resources needed, and presents options for creating sustainability. This plan is non-binding agreement and its creation is intended to create coordination and cooperation between City and County policymakers, Sterling Fire Department, Logan County Fire Districts, Sheriff's Office, and the citizens of Logan County.

Purpose Statement

The purpose of the Logan County Community Wildfire Protection Plan is to identify potential wildfire hazards, to prioritize those hazards as they relate to public safety and community values, and to develop activities and objectives to reduce wildfire risk in the highest priority areas.

Healthy Forest Restoration Act

In 2000, more than 7 million acres burned across the United States, marking one of the worst wildfire seasons in American history. The fire season of 2002 was another reminder to citizens and governments about the severity of wildfire in America. Since then, the acreage burned each year has increased. In 2006, 9.1 million acres burned.

The fire seasons of 2000 and 2002 led to comprehensive forest planning and the enactment of the Healthy Forest Restoration Act (HFRA) in 2003. In response to HFRA, Congress directed vulnerable communities to prepare Community Wildfire Protection Plans. Once completed, a CWPP provides statutory incentives for the US Forest Service (USFS) and the Bureau of Land Management (BLM) to give consideration to the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects.

HFRA requirements for Community Wildfire Protection Plans

The Healthy Restoration Act requires the following items of a CWPP:

- a. Collaboration between private landowners, emergency services personnel and federal and state land managers.
- b. Identification and prioritization of fuel reduction strategies and treatments, with recommendations for the future.
- c. Recommendation of measures that homeowners and communities can take to reduce ignitability of structures.

Wildland Urban Interface (WUI) Description

According to the guide, *Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities*, "The wildland-urban interface (WUI) is commonly described as the zone where structures and other human development meet and intermingle with undeveloped wildland or vegetative fuels."

Most of the factors and treatments that determine the survivability of a structure lie within one to two hundred yards of the structure, and usually it is located on private lands. However, many other items beyond that distance are critical to a community. These include, among others, community water supplies, effects on property and real estate values, community infrastructure, economic impacts to residents and businesses, aesthetic values, and a sense of community or why “we live here.” Because of those factors, it is important for this CWPP to define a WUI that includes all items critical to the communities.

The maps enclosed in this document identify and illustrate the WUI for the top three priorities of Logan County. *(See maps on the following pages)*

II. COMMUNITY COLLABORATION

A task force convened in February of 2010 to assess risks and develop the Community Wildfire Protection Plan. The task force for this plan comprised of the Logan County Fire Chiefs, the Logan County Sheriff, Sterling Emergency Communications, the Fort Morgan District Forester and the Logan County Emergency Manager. This group sought out additional community collaboration by attending and holding local meetings.

This CWPP is a living document that should be reviewed annually and updated as needed. The core team should track projects and record needed revisions in an addendum section of their copy of the CWPP. It is requested that these revisions be submitted to County Commissioners where they will maintain a single master CWPP in which all revisions and updates will be tracked.

The revised CWPP will be submitted for approval to all signatories approximately every five years or more frequently if needed.

Meetings were held to encourage input from all interested parties. There were several meetings held throughout the county.

STERLING FIRE DEPARTMENT

The Sterling Fire Department held an Open House to gain input and to educate the public within the City of Sterling and the Sterling Rural Fire Protection District. We also went through our local media to direct our citizens to the City’s webpage and our CWPP Facebook page to educate and encourage input through an online survey.

MERINO FIRE DEPARTMENT

The Merino Fire Department held an Open House to gain input and to educate the public within the City of Merino and the Sterling Rural Fire Protection District.

CROOK FIRE DEPARTMENT

The Crook Fire Department spent time at the football games to gain input and to educate the public within the City of Crook and the Crook Rural Fire Protection District.

PEETZ FIRE DEPARTMENT

The Peetz Fire Department held a Pancake breakfast to gain input and to educate the public within the City of Peetz and the Peetz Rural Fire Protection District.

FLEMING FIRE DEPARTMENT

The Fleming Fire Department held an Open House to gain input and to educate the public within the City of Fleming and the Fleming Rural Fire Protection District.

III. COMMUNITY BACKGROUND AND EXISTING SITUATION

Logan County is located in the northeast corner of the State of Colorado, and encompasses approximately 1845 square miles. Logan County was formed by an act of the Colorado State Legislature on February 25th, 1887.

The county seat is the City of Sterling and is located in the southern center of the county. Logan County consists of several towns, including Atwood, Iliff, Padroni, Willard, Dailey, Proctor, Fleming, Peetz, Merino, and Crook.

Logan County is divided into four fire protection districts: Sterling Rural Fire Protection District, Fleming Fire District, Peetz Fire District, Haxtun and Crook Fire District. The City of Sterling is protected by its own fire department.

The County’s major transportation infrastructure involves Interstate 76 as well as State Highways 6, 14, 55, 61, 63, 113 and 138.

The topography in Logan County is predominantly flat and rolling. The landscape is characterized by high plains topography with occasional small canyons, sandy soils, sand hills, bluffs, and river banks areas. The elevation ranges from 3,750 to 4,721 feet.

Logan County encompasses a variety of vegetation types. Vegetation zones are primarily a function of elevation, slope, aspect (direction a slope faces), substrate, and associated climatic regimes. Although location varies to some degree, the biophysical habitat types described in this section are typically governed by topography and substrate within the County.

Expected fire behavior for the most common vegetation type is described in more detail in the Risk Assessment section.

Critical Facilities Subject to Fire Hazard (by type)

Facility Type Facility Count

Airports	1
Bridges	151
Communications	4
Dams	2
Emergency Planning Offices	1
Fire Stations	5
HAZMAT	3
Health Care	25
Hospital	1
Natural Gas Facility	3
Police	3
Schools	15
Scour Critical Bridges	1
Waste Water Facility	1
Total	216

Natural and Historic Assets

Historic Sites in Logan County subject to wildfire hazard:

Merino:

- Davis Barn, 13341 County Rd. 8 (wood-frame Round-Roof Barn)

Sterling:

- Luft House, 1429 Colo. Hwy 14
- Powell and Blair Stone Ranch (aka Spring Valley Ranch in NW Logan County)
- Union Pacific Railroad Depot 113 N. Front
- Overland Trail Museum, 21053 CR 26.5
- Rock Ranch in Chimney Canyon (NW Logan County)

Fleming:

- Historic Bank, Town Hall and Jail off North Logan Avenue as well as museum and old depot off Hwy 6.

Wildland Fire Fuels in Northeast Colorado Counties

Wildland fire fuels can be divided into four categories: grazing land, cultivated agricultural land, forested lands and miscellaneous plants. Grazing lands are primarily made up of sandhill steppe and prairie, and exhibit rather predictable seasonal burning characteristics. Cultivated agricultural land includes irrigated and non-irrigated crop land and has very dynamic burning characteristics and seasons. Forested land includes the riparian forest, windbreaks, shelterbelts, living snow fences, wildlife habitats, and urban forests in the wildland urban interface (WUI). Miscellaneous areas include transportation rights-of-way, fence lines, disturbed areas, and other areas that contain tumbleweeds, grasses, wild sunflowers, and other weeds.

The prairie contains native mixed grasses, small brush, and some introduced grass species. It is generally described as "short grass" and other types of prairie. In many areas livestock grazing maintains a rather sparse fuel load.

Sandhill steppe is a conglomerate of sand sage and mixed grasses, generally including some introduced grass species. These areas are usually grazed by livestock. The fuel load on these lands is moderate to heavy. Very large fires have occurred with this fuel type, especially during times of high winds prevalent in the spring.

The cultivated agricultural land is used to produce various crops including; corn, winter wheat, sugar beets, onions, grass hay, alfalfa hay, carrots, beans, cabbage, sunflowers, millets, and others. Of these, the crops of concern as wildland fire fuel are dormant stands of winter wheat, wheat stubble, mature corn, corn stubble, grass hay, and mature millets and sorghum. Each of these crops is available as fuel during a specific season of the year. These seasons can differ widely. Also, the fields may contain different crops from year to year. This dynamic nature of the fuel locations and seasons of availability adds considerably to the challenge of suppression preparedness.

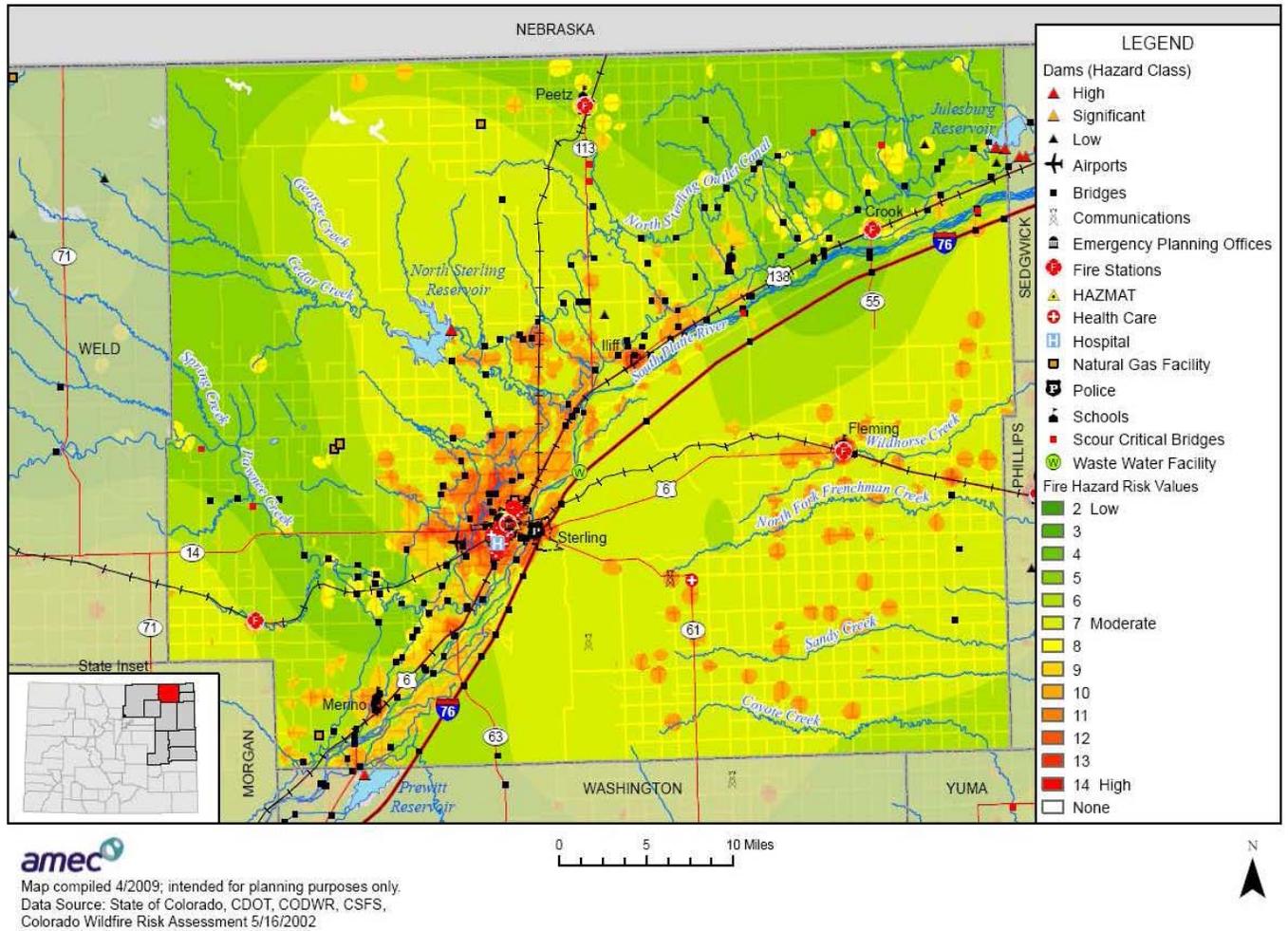
The forested lands are located along rivers, seasonal water courses, ponds, and lakes; scattered across the county as windbreaks, shelterbelts, living snow fences, and wildlife habitats; and in the vicinity of farmsteads and urban areas in the Wildland Urban Interface. In most cases the forest includes a surface cover of grass and brush, which is the primary carrier of the fire. The tree species of concern in the windbreaks, shelterbelts, living snow fences, and wildlife habitats are primarily Eastern Red Cedar,

Rocky Mountain Juniper, Ponderosa Pine, and Colorado Blue Spruce. Examples of shrub species include Caragana, Cotoneaster, Chokecherry, Native Plum, Sumac (Skunk Bush), Sandcherry, Nanking Cherry, European Sage, Buffaloberry, and Four-wing Saltbush. In some instances, the above species, along with other trees such as Cottonwood, Siberian Elm, Burr Oak, and Hackberry have been planted near homes and outbuildings.

In Northeastern Colorado the long-term weather patterns have flowed as a series of years of "normal" precipitation, followed by a series of drought years. Generally the fire season is from March through November. In drought years the fire season has been year-long. A period of high winds and an abundance of dried fuels from the previous year have produced extreme fire behavior in early March. There is usually a season of spring moisture and "green-up" from April to early June. Beginning in late May or early June the cool season grasses such as cheatgrass cure out and become available as fuel. In late June wheat begins to cure with harvest beginning in July. This harvest may last three to four weeks and fires can occur in these fields. The wheat stubble left on some fields may remain as fuel throughout the winter. Corn begins curing out in October and is available as fuel until harvest is completed by late November. Corn stubble may remain on the field and be available as fuel until spring tillage begins. The rangeland fuels are available throughout the year, but most prevalent in March and from mid-June through November. Forest fuels include the grasses, brush, trees, and the dead leaves and woody material on the forest floor. These fuels are available year-around in drought years, and from March through November in years of "normal" precipitation.

IV. COMMUNITY BASE MAP

Logan County Wildland Urban Interface



V. COMMUNITY WILDFIRE RISK ASSESSMENT

The wildfire risk to the community involves many exposures. Among these are natural resources, land values, critical infrastructures (such as highways and bridges which can be affected by fire), and even a sense of community. The responsibility for mitigating risk to these critical values crosses all jurisdictional boundaries, including private lands, which make up a large portion of Logan County. Risk from wildfires can be viewed at the individual home, structure, or other development level, whether it is public or private.

The bigger picture of evaluating risk is at the community level and beyond. Thus, two methods of assessment were done. HFRA, as discussed earlier, requires CWPPs to identify and prioritize fuel reduction treatment areas, and recommend measures homeowners and communities can take to reduce the ignitibility of structures.

The first is an overall assessment of all areas in Logan County. This is the bigger picture of community risk, which provides the information necessary to identify and prioritize fuels treatment areas. The treatment includes both public and private lands.

The second is an evaluation of individual subdivisions, and is a more specific assessment of risk to homes and developments. This assessment of potential for catastrophic fire and preparedness is also the first step in meeting the goal, identified by HFRA, of reducing the ignitibility of structures.

It is also important to understand that the subdivision assessment was purposely done at a broad, strategic level for this CWPP. This Community Wildfire Protection Plan encompasses five fire districts, one municipal fire department, several small communities, all within approximately 1845 square miles. Therefore, the results were not intended to be absolute at the lot size or small acreages. Subdivisions and communities should expect to do more site-specific analysis as it relates to their neighborhoods and area, through a neighborhood wildfire protection plan.

RANGELAND ECOLOGY

Rangeland and the ecology of the plant species that occupy these sites have their own relationship to wildland fire. The grass species can be a contributor to fire behavior, but can easily be modified through agricultural practices, such as grazing (Bunting, Kilgore, Bushey, 1987).

The sagebrush grass range is fairly extensive within the county. Sandhill Sage is the predominate species. Sandhill Sage dominates areas within the county. In some instances Sagebrush grows vigorously following spring burns, but fall burns result in greater mortality and low vigor of sprouts.

Many species of native grasses abound within the county. With proper range management practice these grasses provide outstanding grazing opportunities for range animals and wildlife. Areas of grasses that are absent from grazing find that over time they become rank and provide little for forage and present a significant danger from wildfire.

CONSERVATION RESERVE PROGRAM (CRP) LANDS

In 1985, the CRP was initiated to remove fragile, marginal land from crop production. Producers who enrolled were required to convert marginal acreages to perennial vegetation for a 10-year period. The

objectives of the program were to reduce soil erosion, decrease sedimentation, increase herbaceous cover, improve wildlife habitat, improve water quality, and provide financial incentives for participants.

The Core Team raised concern about the risk of fire in CRP lands, as they are common in the County. Heavy fuel loads accumulate in these locations due to reduced production of crops. Strict management practices associated with these lands are usually outlined in CRP contracts, which is why recommendations for possible treatments on CRP lands are included in this plan.

An important feature of the CRP is that the land is not simply idled from crop production, but is replanted in permanent vegetative cover—either grassland or trees. The government shares (50/50) with the farmer of the cost of converting the lands to this permanent vegetative cover. Soils in the County are highly erodible, which is why the CRP was originally initiated. The Northeastern parts of Colorado are prone to high wind conditions; therefore, soil erosion is of paramount concern. Burning and wildfire also contribute to erosion with the removal of surface vegetation, which then accelerates soil losses. Our group and the public are concerned that current mid-management practices, such as shredding, that are required under some CRP contracts are expensive and difficult to implement. Moreover, many CRP landowners are absentee landowners and privacy laws prevent identification of the property owner. In order to target at risk areas, County staff and fire departments should work with their local Farm Service Agency (FSA) office to contact the appropriate landowner to discuss fire mitigation measures.

Furthermore many producers favor increased grazing of CRP lands, but currently grazing results in a 25% reduction in CRP payment. The current policy also states that grazing can only occur 1 in every 10 years over a 3 month period from July 1st to September 30th, which some members of the groups felt was inadequate in reducing fire risk. Efforts are underway to change this policy at the national level.

We initiated several forms of communication and community input (Facebook, an online quiz, and open houses) and asked the following questions.

1. What areas (man-made and/or natural) in Logan County and in your Fire District are the most important to protect from wildfire?

There are several areas of importance that need protection from wildfire. I have broken them down into different categories.

- One of the areas that would affect the largest amount of people would be disruption of utilities and transportation. This could be caused by wildfires damaging or destroying power poles that carry electrical transmission lines. These are found throughout the county. Also there are several electrical sub-stations and communication facilities in the county. Some of these are critical considering that they are vital for the operation of emergency radio traffic and cell phones. There are also wind generation towers, transformers and associated facilities along with numerous oil and gas production facilities.
- Some specific sites include:
 - Gas pumping facilities at CR 38 and 21 and CR 55 on E. Hwy 6.
 - Repeater towers at Reiradon Hill (Hwy 61 at mile marker 39) and Peetz Tower (36501 CR 69).
 - Electrical sub-stations at Riverside Drive and throughout the county.
 - While most of these facilities are well maintained there are times when we have a large amount of tumbleweeds and vegetative growth that they could become a problem.
- Another area that could affect the public would be in the transportation sector. Items of concern would be the wooden bridges and railroad trestles that remain in the county. These have a way of collecting debris that are easily ignited and because most of them have been treated in creosote burn rapidly. Along with direct fire danger there is also the problem of smoke obscured roads

that could cause a problem for drivers.

- One of the biggest concerns in the area of business and commercial property would be the CHP Co-op on CR 34 and Hwy 138. Because of the presence of LPG, fertilizers and chemicals, they and their associated facility at CR 43 and CR 40 are of concern during a wildfire.
- Other problem areas may be the commercial feedlots.

These include:

Atwood Commercial	17844 CR 16, Sterling (7,000 head)
Bamford	18829 CR 95, Haxtun (15,000 head)
Bornhoft	18091 CR 35, Atwood (8,000 head)
Coakley	21612 CR 32.2, Sterling (4,000 head)
D & D	26819 CR 67.5, Iliff (20,006 head)
Dinklage	31838 CR 385, Iliff (68,000 head)
Flatland Feeders	38902 CR 16, Fleming (16,000 head)
Hamil	13557 CR 29, Sterling (8,000 head)
McEndaffer	13681 CR 12, Merino (22,000 head)
Mitchek #1	21607 CR 32, Sterling (7,020 head)
Mitchek #2	12456 CR 37, Sterling (5,000 head)
Mitchek #3	23289 CR 46, Iliff (10,000 head)
Smart Bros	3254 CR 31, Atwood (8,000 head)
Sonnenberg	5893 CR 53, Atwood (2,000)
Stieb	22650 CR 55, Iliff (2,000 head)
Timmerman	14345 CR 22, Sterling (30,000 head)

Along with the concern for the cattle and buildings there is usually a large amount of stored feed that may be in danger during a wildfire.

- There are other businesses that should be considered also. These include the Scoular Grain Elevator east of Sterling along the RR tracks and the Lousberg Elevator in Atwood. There are several businesses that border the interface area around Sterling. These include Trinidad Bean, The Sterling Ethanol Plant, Nichols Tillage Tools, Sterling Livestock, Sterling Ready Mix, Dickinson's, Kugler Co, and many of the businesses, and motels along the river and along East Hwy 6. There are many other businesses around the outskirts of Sterling and along the other highways, especially Hwy 14 that would be included.
- Individual farms and ranching operations may also be included. Items of importance would include residential structures and outbuildings, equipment, standing and stored crops and livestock.
- Governmental sites might also be considered. These include the manned missile sites and the silos. The county landfill, county shops, CDOT shops, CSP Office, Sterling Correctional Facility, the Logan County Justice Center, city water wells, storage tanks and the waste water facility.
- One of the biggest areas of concern as far as private residences are the many small communities, sub-divisions and rural developments. Many of the older communities have vacant and unkempt buildings in them that have been allowed to become overgrown and in disrepair. These are a

hazard to the other properties around them. Other subdivisions have allowed grass and fuel to grow up very close to the homes. These include the unincorporated towns of Padroni, Atwood, Proctor, Willard, and Dailey.

- Another area of concern is for the tourism of the area. This would concern fires involving the Overland Trail Museum, Visitor Center and Fishing is Fun Pond. The North Sterling State Park, Prewitt and Jumbo Reservoirs, Pawnee National Grassland and the many State Wildlife Areas.

2. What areas (man-made and/or natural) in Logan County and in your Fire District are most at risk in the event of a wildfire?

The area that has the most serious risk of wildland fire other than grass and rangeland would be the areas around farmsteads and the small communities. Most of the business and industrial property owners have fairly good mitigation programs. The area around Country Club Hills some of the rural housing developments are also at risk. One of the sub-divisions that is of most concern is Country Club Hills because of the value of the properties and the proximity of fuel.

3. What information would you like to have to be more prepared for wildland fires in Logan County and your Fire District?

Information that would be useful would be the dangers and consequences of wildland fires. What if I start a fire that gets out of control and damages someone else's property? What do I need to do to mitigate the hazards and where can I go to get information and assistance?

4. What actions could the community take to protect homes and the community in the event of wildland fire?

There could be a county wide and neighborhood effort to educate the members of a community about the hazards and consequences of wildfire. There might be a centralized office that could be contacted if a property owner or occupant had questions or wanted assistance with mitigation efforts. This office could keep a list of resources that would be available to assist in mitigation efforts. There should be a published plan that would have regular review with input from interested parties.

5. What would you like fire emergency service agencies and personnel to know about protecting your community from wildfire?

The fire emergency agencies in the county should have the knowledge, equipment and training to confine, control and extinguish wildfires. They should also be familiar with addresses, routes, terrain features and landmarks in their response area. They should be well versed in mitigation practices and be willing to pass that information along to property owners.

6. List information about the public meetings and interviews with your community – what were the highlights of the meetings? What was discussed?

Public meetings were held at the Fire Stations throughout the county. During the meetings citizens were encouraged to ask wildland fire questions and voice any concerns. They were also asked to fill out a survey before they left. A survey was also made public using the internet. The survey was promoted through the newspapers and the City of Sterling and Logan County's websites. A lot of valuable information was discussed. The following are the questions followed by the answers.

7. What types of structures are in your wildland urban interface area that cause you the most

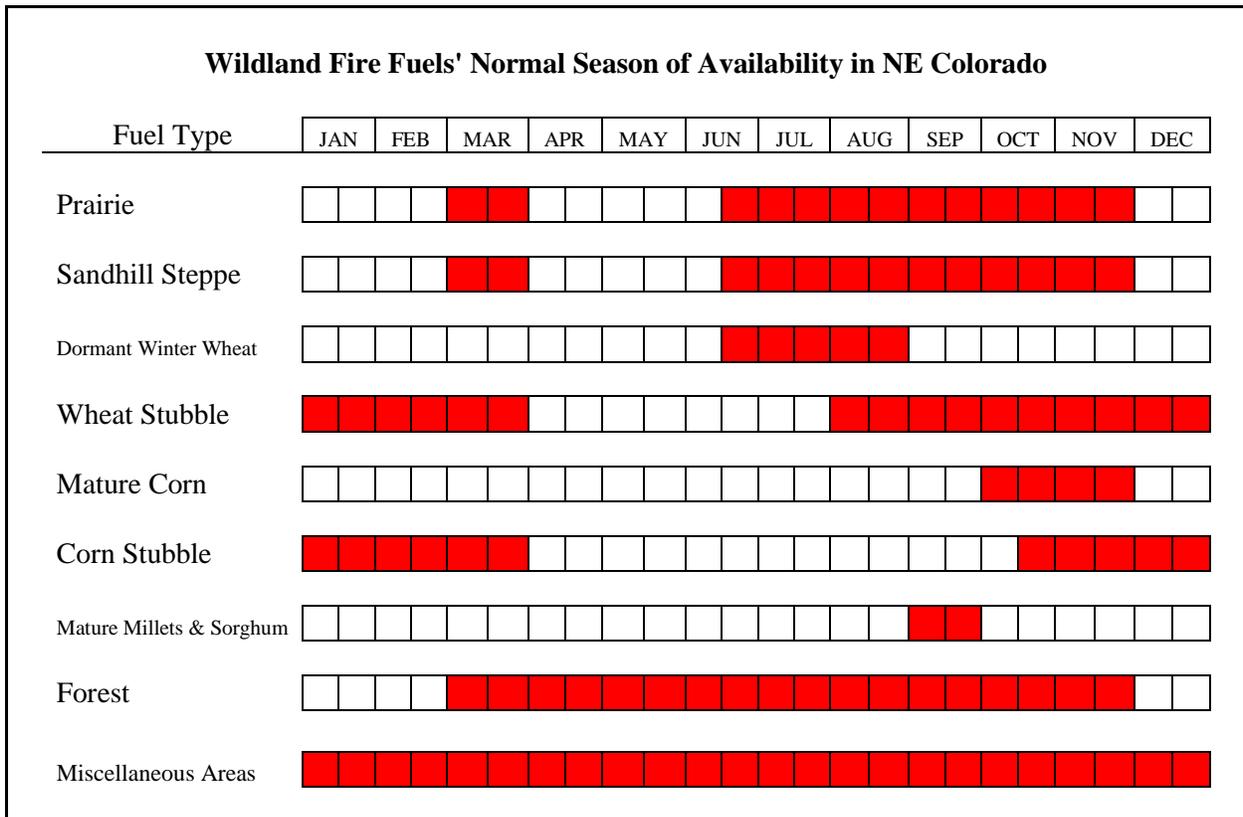
concern? Old wooden vacant structures? Or new subdivisions.

Both of these types of structures have their own set of hazards. There should be a sort of cost benefit thought process on any type of fire. What are we trying to save for the risk? Generally a vacant structure should involve taking little or no risk. A newer or occupied structure in a subdivision would take a closer look to see what would be risked. Another consideration would be if the structure was defensible or not – meaning, should we spend time on a structure that we have small chance of saving or should we expend resources on structures that can be saved.

8. What types of fuels do you have in your Fire District? What types of crops & vegetation are growing in the rangeland, sand hills, and your wildland urban interface?

There is a variety of wildland fuel types in our response area. We mainly have light grass and sagebrush in the rangeland and sandhill areas. We also have heavier grasses in the areas that have been planted to CRP and areas around fields. There are many tree rows that could involve medium growing trees and bushes. We also have the river bottom that would have riparian fuel types including bushes and trees. Most of the wildland urban interface would be cropland, CRP of overgrown grasses and shrubs.

Our group’s collective local and intimate knowledge of the area directed an assessment of risk along with the levels of prioritization for the recommendations. Local knowledge is critical to any CWPP, and particularly to Logan County's CWPP, as natural resource and other County data are not abundant. Determining a process for identifying the level of risk, the types of recommendations needed, and the process for prioritization involved assigning quantitative values to concerns that are more qualitative in nature. Much discussion was generated as our groups collaboratively worked to create this plan.



In 2010 Logan County land usage was as follows (in acres):

Wheat (small grain)	124,075
Corn	72,956
Millet & Sorghum	24,427
Other (beets, beans, sunflowers, etc.)	7,285
CRP	125,053
Grass	186,513
Fallow (50% of total fallow)	54,847

7 of the 13 Anderson Fire Behavior Fuel Models Are Found in NE Colorado

Fire Behavior Fuel Model 1

Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fire spreads rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one-third of the area. Typical grasses such as cheatgrass, medusahead ryegrass, and fescues.



Fire Behavior Fuel Model 2

Fire spread is primarily through the fine herbaceous fuels, either curing or dead. These are surface fires where the herbaceous fuels and deaddown stemwood from the open shrub or timber overstory, contribute to the fire intensity. Open shrub lands that cover one-third to two-thirds of the area may generally fit this model; such stands may include clumps of fuels that may produce firebrands. Some pinyon-juniper may be in this model as well as scattered sage within grasslands.



Fire Behavior Fuel Model 3

Fires in this fuel are the most intense of the grass group and display high rates of spread under the influence of wind. Wind speeds are high, and the heights of the grass and across standing water. Stands are tall, averaging about 3 feet (1 m), but considerable variation in height. One-third of more of the stand is considered dead or cured and maintains the fire. Wild or cultivated grains that have not been cured are similar to tall prairie and marshland grasses.



Fire Behavior Fuel Model 4

Fires intensity and fast-spreading fires involve the foliage and live and dead fine woody material in the crowns. Stands of mature shrubs, 6 or more feet tall, such as the closed jack pine stands of the north-central States are typical candidates. Besides flammable foliage, dead woody material in the stands significantly contributes to the fire intensity. Height of stands qualifying for this model depends on local conditions. A deep litter layer may also hamper suppression efforts.



Fire Behavior Fuel Model 5

Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs and the grasses or forbs in the undergrowth. Fires are not very intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little resin. Young, green stands with no dead wood would qualify: laurel, vine maple, manzanita, or chamise. Green, low shrub fields within timber stands or without overstory are typical.



Fire Behavior Fuel Model 8

Slow-burning ground fires with low flame lengths are generally the case, although the fire may encounter an occasional concentration that can flare up. Only under severe weather conditions involving high temperatures, low humidities, and high winds are these fires considered a major hazard. Closed canopy stands of short-needle conifers or hardwoods that have leafed out support fire in the compact litter of needles, leaves, and occasionally twigs because little undergrowth is present in the stand. Representative conifer types are spruce, fir, and larch.



Fire Behavior Fuel Model 9

Fires run through the surface litter faster than model 8 and have longer flame height. Both long-needle conifer stands and oak-hickory types are typical. Fall fires in hardwoods are predictable, but high winds will actually cause higher rates of spotting caused by rolling and blowing leaves. Closed stands of long-needled pine like ponderosa, Jeffrey, and red pine are also grouped in this model. Concentrations of dead-down woody material will contribute to possible torching out of trees, spotting, and crown fires.



Values at Risk

The primary intent of fire protection is to protect the values at risk and maintain grassland ecosystems. The purpose of a successful fire management program is to reduce the risks associated with values that are important to the county, its citizens, and natural resources. Values at risk will be used to assist fire protection agencies in prioritizing mitigation projects.

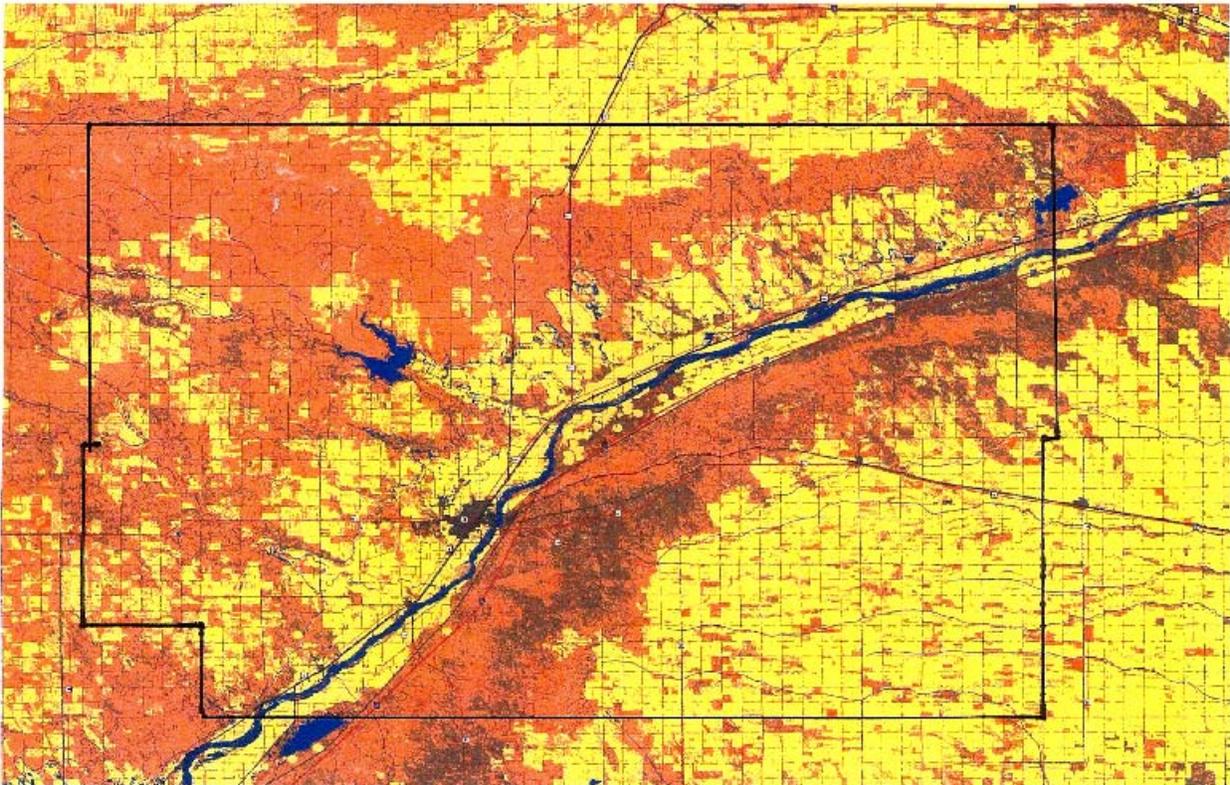
Some of the values at risk in Logan County are:

- Health & Safety – Public & Firefighters
- Property, Improvements & Facilities – Private and Public
- Recreation/Community Impacts – Economic and Social
- Ecosystem Health
- Grazing, Hay and Grain Crops

- Cultural and Historic Resources

VI. COMMUNITY HAZARDS MAP

The Community Hazards Map is the same as the Community Base Map but with areas marked to indicate wildfire hazard (low, moderate, high); areas marked for potential “fire start”; values at risk (e.g., homes, infrastructure) marked; and the locations of firefighting resources, evacuation routes, safety zones marked.



Logan County Vegetation Fuel Cover
 From U.S.G.S. National Map LANDFIRE Data Products
 U.S. Department of Agriculture Forest Service
 and U.S. Department of the Interior
 and U.S.D.A. Farm Service Agency Satellite Imagery

Image Color	Description	Fuel Model (Anderson)
	Western Great Plains Sandhill Steppe	1, 2, 8
	Western Great Plains Short Grass Prairie	1
	Introduced Upland Vegetation - Perennial Grassland & Forbland	1
	Southern Rocky Mountain Pinyon Juniper	1, 2, 5
	Central Mixed Grass Prairie	2
	Agriculture & Irrigated Agriculture (Standing dry crops, i.e., dry corn, dry wheat & stubble, CRP, etc.) **	3 **
	Riparian Mixed Hardwoods*	2,5,8
	Urban Mixed Hardwoods*	2,5,8

* Note: Fuel Type not shown on LANDFIRE image, but observed in ground survey. Includes cottonwood, tamarisk, russian olive, willow, juniper, and others.

** Note: Fuel description modified for local conditions. Fuel Model not given by LANDFIRE, so inserted from observed ground survey.

www.landfire.gov

VII. PRIORITIZED MITIGATION RECOMMENDATIONS

The following recommendations were developed by the Core Team as a result of the Community Wildfire Risk Assessment. The recommendations are prioritized based on the following factors:

The recommended actions in the following categories:

- Fuel breaks along major roads;
- Develop Information and Project Demonstration programs to educate residents in defensible space and FireWise structural mitigation actions;
- Seek additional Fire Prevention Ordinances in the WUI;
- Develop annual chipping/mulching programs to visit all neighborhoods;
- Fuels modification projects (fuel breaks in and adjacent to the communities);
- Improve community emergency notification systems; and local preparedness and firefighting capabilities.

Most of this information was gathered from community input. The irrigation ditches along with the river have an over growth of fuels that could bring a fire into the Sterling City limits.

There are many sources for finding additional information about methods and resources for community and structure protection. These include the Sterling Fire Department, your local Fire District, the Colorado State Forest Service Offices in Ft. Morgan, the US Forest Service, and the FireWise program.

Also, the following websites contain a wealth of information on fire protection.

<http://www.firewise.org/>
<http://www.colostate.edu/Depts/CSFS>
<http://www.healthyforests.gov/community/cwpp.html>
<http://www.fireplan.gov/>
http://www.fs.fed.us/fire/prev_ed/index.html

Proposed Community Hazard Reduction Priorities

FUELS REDUCTION TREATMENT METHODS

Strategic timing and placement of mowing and planned fire treatments is critical for effective fuels management practices and should be prescribed based on the conditions of each particular treatment area. Some examples of this would be to place fuel breaks in areas where the fuels are heavier and in the path of prevailing winds, and to mow grasses just before they cure and become flammable. Also, burning during the hotter end of the prescription is important since hotter fires are typically more effective at reducing heavy fuels and shrub growth. In areas where the vegetation is sparse and not continuous, fuels treatments may not be necessary to create a defensible area where firefighters can work. In this situation, where the amount of fuel to carry a fire is minimal, it is best to leave the site in its current condition to avoid the introduction of more flammable, exotic species such as cheatgrass (*Bromus tectorum*).

MOWING

Our group has stated that mowing is one of the County's priorities and funding is needed to accomplish this goal. Mowing should take place at least once every growing season and possibly more than once every year, depending on the re-growth of vegetation over the course of the fire season. Areas with cheatgrass and/or other exotic species should be mowed in the early spring and later in the season depending on the amount of regeneration that takes place throughout the course of the season. Although mowing will not permanently remove stands of cheatgrass, limiting the production of seed heads will help to control the density and spread of cheatgrass over time.

In areas where there is an encroachment of shrubs or trees, more intensive fuels treatments may be necessary to keep the fire on the ground surface and reduce flame lengths. Within the fuel break, shrubs should be removed and trees should be pruned to a height of 4 to 8 feet depending on the height of the fuel below the canopy and thinned with a spacing of at least 2 to 3 times the height of the trees to avoid movement of an active fire into the canopy.

GRAZING

Managed grazing can also reduce the risk and extent of wildfire and improve wildlife habitat. Removing undesirable vegetation can be accomplished by controlled grazing along power line easements, irrigation canals, and roadsides and in forest plantations and orchards. Animal impact can also be harnessed to sow seeds for ecological restoration of degraded lands. Targeted grazing should be considered as another tool in the kit for constructing desirable ecosystems. It can and should be used in combination with other technologies, such as burning, mechanical tree harvesting, hand-grubbing, chaining, applying herbicides, chiseling, and seeding. Most of these traditional management tools have significant economic, ecological, or social implications that limit their application. Weed and vegetation control is difficult on lands of low economic value, making chemical and mechanical treatments impractical. Insects and microbes for bio-control can be quite effective for weed control but are difficult, expensive, and time consuming to develop. Prescribed burning is a useful tool, but its application is often hindered by concern over air pollution and the risk of unintended spread. Targeted livestock grazing is a readily available and under-exploited tool that is fast proving effective for vegetation management in many settings. Effective grazing programs for weed control require a clear statement of the kind of animal, timing, and rate of grazing necessary to suppress troublesome plants and maintain healthy landscapes. A successful grazing prescription should: 1) cause significant damage to the target plant; 2) limit damage to the surrounding vegetation; and 3) be integrated with other control methods as part of an overall landscape management strategy.

PRESCRIBED BURNING

Prescribed burning is also a useful tool to reduce the threat of extreme fire behavior by removing excessive standing plant material, litter, and woody debris while limiting the encroachment of shrubby vegetation into the grasslands, such as broom snakeweed (*Gutierrezia sarothrae*), salt cedar (*tamarisk*), and other woody species. Similar to mowing, prescribed fires should be conducted along roads surrounding the WUI and around the particular areas at risk, but should take place on a larger scale beyond the road and WUI corridors since fire is ecologically beneficial to the grassland community and wildlife habitat. Some areas, particularly along roadsides, may be susceptible to the invasion of exotic species, so this practice should be carried out with management of invasive species in mind. Cheatgrass is adapted to fire and will easily regenerate at the site following a fire. Other methods to control cheatgrass will be necessary if a large amount of cheatgrass is present at the site. Prescribed fires within the grassland ecosystem should be implemented when the conditions are dry enough for the fine fuels to carry a fire, but not so dry that the fire containment is difficult.

Using prescribed burns can initiate regeneration of grasslands and rangelands, as it facilitates natural ecosystem dynamics such as nutrient and water cycling, which increases variability in vegetation composition and density. Grasslands are threatened by woody encroachment, which shades out desirable plant species and uses large amounts of water. Grasslands have adapted to fire, and fire can be used to periodically remove unwanted trees. Fires provide restoration of productivity and diversity of grasslands, while controlling non-native or undesirable plant species and woody invasions (USFWS 2006). Following any type of fuels reduction treatments, post-treatment monitoring should continue to ensure that management actions continue to be effective throughout the fire season. Vegetation in a grassland community can change rapidly in response to drought or moisture from year to year and during the course of the season, so fuels treatments should be adjusted accordingly.

RECOMMENDATIONS FOR PUBLIC EDUCATION AND OUTREACH

Public education and outreach is a major focus of the CWPP planning process. These recommendations are valuable because our group representatives and members of the public have expressed the need for greater education regarding wildfire in all communities throughout the planning area.

Although many residents are familiar with Firewise, many others could benefit from greater exposure to this program. Workshops demonstrating and explaining Firewise principles provide homeowners with a greater awareness and understanding of home protection from wildfire.

Information about the program is available at <http://www.firewise.org/usa/index.htm>. Greater participation in the Firewise Communities/USA program could improve local understanding of wildfire and in turn improve protection and preparedness.

Other methods to improve public education could include providing signs indicating fire danger level (low, moderate, high, extreme) to be displayed in highly visible areas where they do not already exist; improving awareness about fire department response and fire department resource needs; distributing fire evacuation plans; providing workshops at demonstration sites showing Firewise landscaping techniques or fuels treatment projects; organizing community clean-ups; publicizing availability of government funds for thinning; and, most importantly, improving communication between homeowners and local land management agencies to improve and build trust.

VIII. ACTION PLAN

The action plan is the heart of the CWPP. It details the prioritized actions that the County and cooperators want to take to reduce the risk of wildland fire damage to people, property and the environment. It will require a high level of commitment of landowners, citizens and public officials to accomplish the tasks shown in this action plan and reduce the risk of catastrophic wildland fire in Logan County. The major topics in the Action Plan are:

1. Organization and Funding
2. Local Preparedness and Firefighting Capabilities
3. Fuels Treatment
4. Reducing Structure Ignitability
5. Fire Prevention
6. Areas of Special Interest

Roles and Responsibilities

Projects described in this Action Plan will be on-going, accomplished or substantially initiated over the next ten years. The Logan County Fire Chiefs will take the lead in monitoring the progress of the proposed projects. The projects have been prioritized but it is not meant to be restrictive. If an opportunity arises to accomplish a lower priority, the Fire Chiefs should take advantage. The Logan County Community Wildfire Protection Plan will be a living document that can periodically be adjusted to reflect lessons learned and new ideas. The Logan County Commissioner’s Office will be the “keeper” of the official copy of the plan.

Action Plan Table

Agency	Projects	Responsible party	Completion date
County-Wide	Prevention/Education	Fire Districts	Year round
	Prescribed burning	Fire Districts	September each year
	Mowing	Landowner	September each year
	Improve reverse 911 system	SECC	April, 2012
	Develop chipping mulching programs	County	June, 2013
	Add Fire Prevention Ordinances	Fire Districts/County	June, 2013
	Fire breaks along Railroad	Railroad and landowners	2014
	ICS Procedure/Training	Fire Districts	Yearly

Agency	Projects	Responsible party	Completion date
Sterling Fire Department			
	Prevention/Education	Sterling	Ongoing
	Prescribed burning	Landowner	Ongoing
	Mowing	Landowner	Ongoing
	Enforce Fire Code	Sterling	Ongoing
	Develop rural water supply	Rural District	Ongoing
Crook Fire District			
	Prevention/Education	Crook Fire	Ongoing
	Prescribed burning	Landowner	Ongoing
	Mowing	Landowner	Ongoing
Fleming Fire District			
	Prevention/Education	Fleming Fire	Ongoing
	Prescribed burning	Landowner	Ongoing
	Mowing	Landowner	Ongoing
Merino Fire Department			
	Prevention/Education	Merino Fire	Ongoing
	Prescribed burning	Landowner	Ongoing
	Mowing	Landowner	Ongoing
Peetz Fire District			
	Prevention/Education	Peetz Fire	Ongoing
	Prescribed burning	Landowner	Ongoing
	Mowing	Landowner	Ongoing

IX. EVALUATION AND SUSTAINABILITY

Evaluation Strategy

The most important part of choosing a monitoring program is selecting a method appropriate to the people, place, and available time. Several levels of monitoring activities meet different objectives, have different levels of time intensity, and are appropriate for different groups of people. They include the following:

- **Pre- and post-project photos**
Appropriate for many individual homeowners who conduct fuels reduction projects on their properties.
- **Multiple permanent photo points**
Permanent photo locations are established using rebar or wood posts, and photos are taken on a regular basis. Ideally, this process would continue over several years. This approach might be appropriate for more enthusiastic homeowners or for agencies conducting small-scale, general treatments.
- **Basic vegetation plots**
A series of plots can allow monitors to evaluate vegetation characteristics, such as species composition, percent cover, and frequency; monitors then can record site characteristics such as slope, aspect, and elevation. Parameters would be assessed pre- and post-treatment. The monitoring agency should establish plot protocols based on the types of vegetation present and the level of detail needed to analyze the management objectives.
- **Basic vegetation plus dead and downed fuels inventory**
The protocol for this level would include the vegetation plots described above but would add more details regarding fuel loading. Crown height or canopy closure might be included for live fuels. Dead and downed fuels could be assessed using other methods, such as or an appropriate photo series.

Sustainability Plan

The CWPP is a living document and should be revised as environmental conditions change or social issues arise. As the needs of communities and community member's shift or environmental conditions change, the CWPP will need to be modified. The Core Team has determined that they should reconvene annually to update and modify the plan as needed. The plan should be modified to reflect changing conditions and priorities in the County, and those involved will review and update the recommendations to reflect which projects have been accomplished, as well as list new projects. Members of the Core Team communicate regularly about fire response and operations in the County, meaning continued communication regarding the CWPP should be feasible.

This document is designed to aid the communities and individuals of Logan County in wildfire protection planning. Logan County's CWPP describes the conditions in the fire environment, along with the community structure, and addresses the risks of wildland fire to communities in the County. The risks and hazards have been clarified through public involvement, collaborative planning, Core Team participation, and GIS data and modeling. Once the risks and hazards were identified, the planning process turned to finding solutions to reduce the risk of wildland fire.

Recommendations falling into the categories of fuels reduction, public outreach and education, reducing structural ignitability, and improving fire response capabilities were outlined and will potentially be implemented. The CWPP alone does not require implementation of any of the recommendations; however, the support and momentum driving the planning process will hopefully lead to active implementation. Securing funding will aid in the completion of many of the project goals. Many of the recommendations for public outreach and education can be accomplished with little or no funding. Community planning and grass roots organizing have proven to be very effective in terms of reducing the risk of life and property in many Firewise communities throughout the country. Some of these communities offer positive examples of how rural communities can prepare for wildland fire.

The development of this document has required multi-party collaboration across a region of 1,845 square miles in size. The Core Team meetings were attended by a wide cross section of people, which enabled the plan to consider various suggestions, concerns, and recommendations. With the limits of government support for fire suppression, environmental conditions that lead to fuels being highly prone to ignition, and the increasing WUI and unpredictable events in nature, it is important for individuals and communities to take actions to prepare for wildland fire events. This document provides tools and information that should be widely shared with community members throughout the County and practiced in an effort to protect community values, landscapes, and land-based heritage.

Our 10-Year Comprehensive Strategy is to:

- Improve Prevention through education
- Reduce hazardous fuels
- Restore fire adapted ecosystems
- Promote community assistance and involvement

At the local level successful implementation will include stakeholder groups with broad representation including state, and local agencies and the public, teaming up with local officials on decision to establish priorities, cooperation on activities, and increase public awareness and participation to reduce the risks to communities and environments.

APPENDIX ONE: HOME OWNERS GUIDE

This guide has been developed to address site-specific information on wildfire for Logan County. In public meetings and written comments, residents expressed a need for better information on reducing wildfire risk and what to do in the event of a wildfire. This document was developed to meet these expressed community needs, as well as to fulfill requirements for the Community Wildfire Protection Plan. This guide (1) suggests specific measures that can be taken by homeowners to reduce structure ignitability and (2) enhances overall preparedness in the planning area by consolidating preparedness information from several local agencies and departments.

BEFORE THE FIRE—PROTECTION AND PREVENTION

REDUCING STRUCTURE IGNITABILITY

Structural Materials

Roofing—The more fire-resistant the roofing material, the better. The roof is the portion of the house that is most vulnerable to ignition by falling embers, known as firebrands. Metal roofs afford the best protection against ignition from falling embers. Slate or tile roofs are also noncombustible, and Class-A asphalt shingles are recommended as well. The most dangerous type of roofing material is wood shingles. Removing debris from roof gutters and downspouts at least twice a year will help to prevent fire, along with keeping them functioning properly.

Siding—Non-combustible materials are ideal for the home exterior. Preferred materials include stucco, cement, block, brick, and masonry.

Windows—Double-pane windows are most resistant to heat and flames. Smaller windows tend to hold up better within their frames than larger windows. Tempered glass is best, particularly for skylights, because it will not melt as plastic will.

Fencing and trellises—Any structure attached to the house should be considered part of the house. A wood fence or trellis can carry fire to your home siding or roof. Consider using nonflammable materials or use a protective barrier such as metal or masonry between the fence and the house.

If you are designing a new home or remodeling your existing one, do it with fire safety as a primary concern. Use non-flammable or fire-resistant materials and have the exterior wood treated with Underwriter Laboratories approved fire-retardant chemicals. More information on fire-resistant construction is available at <http://www.firewise.org>.

Screen off the area beneath decks and porches

The area below an aboveground deck or porch can become a trap for burning embers or debris, increasing the chances of the fire transferring to your home. Screen off the area using screening with openings no larger than one-half inch. Keep the area behind the screen free of all leaves and debris.

Firewood, kindling, and other flammables

Although convenient, stacked firewood on or below a wooden deck adds fuel that can feed a fire close to your home. Be sure to move all wood away from the home during fire season. Stack all firewood uphill, at least 30 feet and preferably 100 feet from your home.

When storing flammable materials such as paint, solvents, or gasoline, always store them in approved safety containers away from any sources of ignition such as hot water tanks or furnaces. The fumes from

highly volatile liquids can travel a great distance after they turn into a gas. If possible, store the containers in a safe, separate location away from the main house.

If you have high-voltage lines running near your property, take a moment to walk underneath them and ensure that no tree branches are close to the towers or lines. If there is any situation that could be a fire hazard, contact your utility customer service representative.

Chimneys and fireplace flues

Inspect your chimney and damper at least twice a year and have the chimney cleaned every year before first use. Have the spark arrestor inspected and confirm that it meets the latest safety code.

Your local fire department will have the latest edition of National Fire Prevention Code 211 covering spark arrestors. Make sure to clear away dead limbs from within 15 feet of chimneys and stovepipes.

Fireplace and woodstove ashes

Never take ashes from the fireplace and put them into the garbage or dump them on the ground. Even in winter, one hot ember can quickly start a grass fire. Instead, place ashes in a metal container, and as an extra precaution, soak them with water. Cover the container with its metal cover and place it in a safe location for a couple of days. Then either dispose of the cold ash with other garbage or bury the ash residue in the earth and cover it with at least 6 inches of mineral soil.

Propane tanks

Your propane tank has many hundreds of gallons of highly flammable liquid that could become an explosive incendiary source in the event of a fire. The propane tank should be located at least 30 feet from any structure. Keep all flammables at least 10 feet from your tank. Learn how to turn the tank off and on. In the event of a fire, you should turn the gas off at the tank before evacuating, if safety and time allow.

Smoke alarms

A functioning smoke alarm can help warn you of a fire in or around your home. Install smoke alarms on every level of your residence. Test and clean smoke alarms once a month and replace batteries at least once a year. Replace smoke alarms once every 10 years.

Fire-safe behavior

- If you smoke, always use an ashtray in your car and at home.
- Store and use flammable liquids properly.
- Keep doors and windows clear as escape routes in each room.

Defensible space

The removal of dense, flammable foliage from the area immediately surrounding the house reduces the risk of structure ignition and allows firefighters access to protect the home. A 100-foot safety zone, free of all trees and shrubs, is recommended by the fire department; the minimum distance is 30 feet. Steep slopes require increased defensible space because fire can travel quickly uphill.

Within the minimum 30-foot safety zone, plants should be limited to fire-resistant trees and shrubs. Focus on fuel breaks such as concrete patios, walkways, rock gardens, and irrigated garden or grass areas within this zone. Use mulch sparingly within the safety zone, and focus use in areas that will be watered regularly. In areas such as turnarounds and driveways, nonflammable materials such as gravel are much better than wood chips or pine needles.

Vegetative debris such as dead grasses or leaves provide important erosion protection for soil but also may carry a surface fire. It is simply not feasible to remove all the vegetative debris from around your

property. However, it is a good idea to remove any accumulations within the safety zone and extending out as far as possible. This is particularly important if leaves tend to build up alongside your house or outbuildings. Removing dead vegetation and leaves and exposing bare mineral soil is recommended in a 2-foot-wide perimeter along the foundation of the house. Also, be sure to regularly remove all dead vegetative matter including grasses, flowers, and leaf litter surrounding your home and any debris from gutters, especially during summer months. Mow the lawn regularly and promptly dispose of the cuttings properly. If possible, maintain a green lawn for 30 feet around your home.

All trees within the safety zone should have lower limbs removed to a height of 6–10 feet. Remove any branches within 15 feet of your chimney or overhanging any part of your roof. Ladder fuels are short shrubs or trees growing under the eaves of the house or under larger trees. Ladder fuels carry fire from the ground level onto the house or into the tree canopy. Be sure to remove all ladder fuels within the safety zone first. The removal of ladder fuels within about 100 feet of the house will help to limit the risk of crown fire around your home. More information about defensible space is provided at <http://www.firewise.org>.

Fire retardants

For homeowners who would like home protection beyond defensible space and fire-resistant structural materials, fire retardant gels and foams are available. These materials are sold with various types of equipment for applying the material to the home. They are similar to the substances applied by firefighters in advance of wildfire to prevent ignition of homes. Different products have different timelines for application and effectiveness. The amount of product needed is based on the size of the home, and prices may vary based on the application tools. Prices range from a few hundred to a few thousand dollars. An online search for "fire blocking gel" or "home firefighting" will provide a list of product vendors.

Address posting

Locating individual homes is one of the most difficult tasks facing emergency responders. Every home should have the address clearly posted with numbers at least 3 inches high. The colors of the address posting should be contrasting or reflective. The address should be posted so that it is visible to cars approaching from either direction.

Access

Unfortunately, limited access may prevent firefighters from reaching many homes in Logan County. Many of the access problems occur at the property line and can be improved by homeowners. First, make sure that emergency responders can get in your gate. This may be important not only during a fire but also to allow access during any other type of emergency response. If you will be gone for long periods during fire season, make sure a neighbor has access, and ask them to leave your gate open in the event of a wildfire in the area.

Ideally, gates should swing inward. A chain or padlock can be easily cut with large bolt cutters, but large automatic gates can prevent entry. Special emergency access red boxes with keys are sold by many gate companies but actually are not recommended by emergency services. The keys are difficult to keep track of and may not be available to the specific personnel that arrive at your home. An alternative offered by some manufacturers is a device that opens the gate in response to sirens. This option is preferred by firefighters but may be difficult or expensive to obtain.

Beyond your gate, make sure your driveway is uncluttered and at least 12 feet wide. The slope should be less than 10 percent. Trim any overhanging branches to allow at least 13.5 feet of overhead clearance. Also make sure that any overhead lines are at least 14 feet above the ground.

If any lines are hanging too low, contact the appropriate phone, cable, or power company to find out how to address the situation.

If possible, consider a turnaround within your property at least 45 feet wide. This is especially important if your driveway is more than 300 feet in length. Even small fire engines have a hard time turning around and cannot safely enter areas where the only means of escape is by backing out. Any bridges must be designed with the capacity to hold the weight of a fire engine.

Neighborhood communication

It is important to talk to your neighbors about the possibility of wildfire in your community. Assume that you will not be able to return home when a fire breaks out and may have to rely on your neighbors for information and assistance. Unfortunately, it sometimes takes tragedy to get people talking to each other. Do not wait for disaster to strike. Strong communication can improve the response and safety of every member of the community.

Neighbors in need of assistance

Ask mobility-impaired neighbors if they have notified emergency responders of their specific needs. It is also a good idea for willing neighbors to commit to evacuating a mobility-impaired resident in the event of an emergency. Make sure that a line of communication is in place to verify the evacuation.

Absentee owners

Absentee owners often are not in communication with their neighbors. If a home near you is unoccupied for large portions of the year, try to get contact information for the owners from other neighbors or your neighborhood association. Your neighbors would probably appreciate notification in the event of an emergency. Also, you may want to contact them to suggest that they move their wood pile or make sure that the propane line to the house is turned off.

HOUSEHOLD EMERGENCY PLAN

A household emergency plan does not take much time to develop and will be invaluable in helping your family deal with an emergency safely and calmly. One of the fundamental issues in the event of any type of emergency is communication. Be sure to keep the phone numbers of neighbors with you rather than at home.

It is a good idea to have an out of state contact, such as a family member. When disaster strikes locally, it is often easier to make outgoing calls to a different area code than local calls. Make sure everyone in the family has the contact phone number and understands why they need to check in with that person in the event of an emergency. Also, designate a meeting place for your family. Planning an established meeting site helps to ensure that family members know where to meet, even if they cannot communicate by phone.

Children

Local schools have policies for evacuation of students during school hours. Contact the school to get information on how the process would take place and where the children would likely go.

The time between when the children arrive home from school and when you return home from work is the most important timeframe that you must address. Fire officials must clear residential areas of occupants to protect lives and to allow access for fire engines and water drops from airplanes. If your area is evacuated, blockades may prevent you from returning home to collect your children. It is crucial to have a plan with a neighbor for them to pick up your children if evacuation is necessary.

Pets and livestock

Some basic questions about pets and livestock involve whether you have the ability to evacuate the animals yourself and where you would take them. Planning for the worst-case scenario may save your animals. An estimated 90 percent of pets left behind in an emergency do not survive.

Do not expect emergency service personnel to prioritize your pets in an emergency. Put plans in place to protect your furry family members.

Pets

Assemble a pet disaster supply kit and keep it handy. The kit should contain a three-day supply of food and water, bowls, a litter box for cats, and a manual can opener if necessary. It is also important to have extra medication and medical records for each pet.

The kit should contain a leash for each dog and a carrier for each cat. Carriers of some kind should be ready for birds and exotic pets. In case your pet must be left at a kennel or with a friend, also include an information packet that describes medical conditions, feeding instructions, and behavioral problems. A photograph of each pet will help to put the right instructions with the right pet.

In the event of a wildfire you may be prevented from returning home for your animals.

Talk to your neighbors and develop a buddy system in case you or your neighbors are not home when fire threatens. Make sure your neighbor has a key and understands what to do with your pets should they need to be evacuated.

If you and your pets were evacuated, where would you go? Contact friends and family in advance to ask whether they would be willing to care for your pets. Contact hotels and motels in the area to find out which ones accept pets. Boarding kennels may also be an option. Make sure your pets' vaccinations are up-to-date if you plan to board them.

Once you have evacuated your pets, continue to provide for their safety by keeping them cool and hydrated. Try to get your pets to an indoor location rather than leaving them in the car. Do not leave your pets in your vehicle without providing shade and water. It is not necessary to give your pets water while you are driving, but be sure to offer water as soon as you reach your destination.

Livestock

Getting livestock out of harm's way during a wildfire is not easy. You may not be able or allowed to return home to rescue your stock during a wildfire evacuation. Talk to your neighbors about how you intend to deal with an evacuation. If livestock are encountered by emergency responders, they will be released and allowed to escape the fire on their own. Make sure your livestock have some sort of identification. Ideally, your contact information should be included on a halter tag or ear tag so that you could be reached if your animal is encountered.

If you plan to evacuate your livestock, have a plan in place for a destination. Talk to other livestock owners in the area to find out whether they would be willing to board your stock in the event of an emergency. Often in large-scale emergencies, special accommodations can be made at fair and rodeo grounds, but personal arrangements may allow you to respond more quickly and efficiently.

If you do not own a trailer for your horses or other livestock, talk to a neighbor who does.

Find out whether they would be willing to assist in the evacuation of your animals. If you do own a trailer, make sure it is in working condition with good, inflated tires and functioning signal lights. Keep in mind that even horses that are accustomed to a trailer may be difficult to load during an emergency.

Practicing may be a good idea to make sure your animals are as comfortable as possible when being loaded into the trailer.

House and property

Insurance companies suggest that you make a video that scans each room of your house to help document and recall all items within your home. This video can make replacement of your property much easier in the unfortunate event of a large insurance claim. See more information on insurance claims in the “After the Fire” section below.

Personal items

During fire season, items you would want to take with you during an evacuation should be kept in one readily accessible location. As an extra precaution, it may be a good idea to store irreplaceable mementos or heirlooms away from your home during fire season.

It is important to make copies of all important paperwork, such as birth certificates, titles, and so forth, and store them somewhere away from your home, such as in a safe deposit box. Important documents can also be protected in a designated fire-safe storage box within your home.

IN THE EVENT OF A FIRE

WHEN FIRE THREATENS

Before an evacuation order is given for your community, there are several steps you can take to make your escape easier and to provide for protection of your home. When evaluating what to do as fire threatens, the most important guideline is: **DO NOT JEOPARDIZE YOUR LIFE.**

Back your car into the garage or park it in an open space facing the direction of escape. Shut the car doors and roll up the windows. Place all valuables that you want to take with you in the vehicle. Leave the keys in the ignition or in another easily accessible location. Open your gate.

Close all windows, doors, and vents, including your garage door. Disconnect automatic garage openers and leave exterior doors unlocked. Close all interior doors as well.

Move furniture away from windows and sliding glass doors. If you have lightweight curtains, remove them. Heavy curtains, drapes, and blinds should be closed. Leave a light on in each room.

Turn off the propane tank or shut off gas at the meter. Turn off pilot lights on appliances and furnaces.

Move firewood and flammable patio furniture away from the house or into the garage.

Connect garden hoses to all available outdoor faucets and make sure they are in a conspicuous place. Turn the water on to "charge," or fill your hoses and then shut off the water. Place a ladder up against the side of the home, opposite the direction of the approaching fire, to allow firefighters easy access to your roof.

Evacuation

When evacuation is ordered, you need to go *immediately*. Evacuation not only protects lives, it also helps to protect property. Some roads/drives in the County are too narrow for two-way traffic, especially with fire engines. Fire trucks often cannot get into an area until the residents are out.

Also, arguably the most important tool in the wildland urban interface toolbox is aerial attack. Airplanes and helicopters can be used to drop water or retardant to help limit the spread of the fire, but these resources cannot be used until the area has been cleared of civilians.

Expect emergency managers to designate a check-out location for evacuees. This process helps to ensure that everyone is accounted for and informs emergency personnel as to who may be remaining in the community. Every resident should check out at the designated location before proceeding to any established family meeting spot.

A light-colored sheet closed in the front door serves as a signal to emergency responders that your family has safely left. This signal saves firefighters precious time, as it takes 12–15 minutes per house to knock on each door and inform residents of the evacuation.

AFTER THE FIRE

Returning home

First and foremost, follow the advice and recommendations of emergency management agencies, fire departments, utility companies, and local aid organizations regarding activities following the wildfire. Do not attempt to return to your home until fire personnel have deemed it safe to do so.

Even if the fire did not damage your house, do not expect to return to business as usual immediately. Expect that utility infrastructure may have been damaged and repairs may be necessary. When you return to your home, check for hazards, such as gas or water leaks and electrical shorts. Turn off damaged utilities if you did not do so previously. Have the fire department or utility companies turn the utilities back on once the area is secured.

Insurance claims

Your insurance agent is your best source of information as to the actions you must take in order to submit a claim. Here are some things to keep in mind. Your insurance claim process will be much easier if you photographed your home and valuable possessions before the fire and kept the photographs in a safe place away from your home. Most if not all of the expenses incurred during the time you are forced to live outside your home could be reimbursable. These could include, for instance, mileage driven, lodging, and meals. Keep all records and receipts. Do not start any repairs or rebuilding without the approval of your claims adjuster. Beware of predatory contractors looking to take advantage of anxious homeowners wanting to rebuild as quickly as possible. Consider all contracts very carefully, take your time to decide, and contact your insurance agent with any questions.

Post-fire rehabilitation

Homes that may have been saved in the fire may still be at risk from flooding and debris flows. Homeowners can assist the process by implementing treatments on their own properties as well as volunteering on burned public lands to help reduce the threat to valuable resources. Volunteers can assist by planting seeds or trees, hand mulching, or helping to construct straw-bale check dams in small drainages.

Volunteers can help protect roads and culverts by conducting storm patrols during storm events. These efforts dramatically reduce the costs of such work as installing trash racks, removing culverts, and re-routing roads.

Community volunteers can also help scientists to better understand the dynamics of the burned area by monitoring rain gauges and monitoring the efficacy of the installed treatments.

APPENDIX TWO: FUELS MITIGATION STRATEGIES AND TREATMENT OPTIONS

Strategies

There are three broad components to mitigating the risk of wildfire impacts. The first is prevention, which applies only to human-caused fires and is not the focus of this section. The second is defensibility of the structures themselves. This includes how structures are built, access and defensible space. This is also not the subject of this section.

The focus of this section is modification of fuel beds to alter the behavior of fires. This may be directly adjacent to structures or across large tracts of wildlands. Generally, this involves changing potential fire behavior from high intensity to a lower intensity that is more conducive to control actions. It normally does not do away with fire, only changes it. It could, however, include eliminating fire behavior, such as paving or clearing all vegetation around a structure, or eliminating all burnable vegetation and replacing it with less flammable vegetation.

General Treatment Objectives

The objective of fuels mitigation treatments is to alter one or more components of the existing fuel bed enough to create the type of fire behavior, which is acceptable or desired. There are four main components which can be altered, fuel moistures, arrangements, loading, and continuity. There are three main parts of the fuel bed, surface, ladders, and crowns.

Changing fuel moistures is not normally practical, except, watering grass vegetation around homes to keep it green and less flammable. Most people have well water rights that do not allow for watering. Most fuels treatments focus on the remaining components. These include reducing the continuity, such as thinning trees, eliminating trees from specified areas all together, or removing large portions of brush or shrub fields, removing ladder fuels such as smaller trees and shrubs, and/or removing down dead material. All can alter fire behavior, while still maintaining other objectives, such as aesthetics, wildlife habitat, or landscaping needs.

Treatment Methods

There are only two basic ways to alter fuels, either by controlled burning or mechanical treatments, or a combination of both.

Mechanical

Mechanical treatment of fuels changes the structure of the fuel bed. There are many treatments, but they usually involve thinning of trees or shrub/brush fields, removal of ladder fuels, and/or altering surface fuels. The objective is to prevent crown fires in trees or brush fields, and/or reduce the intensity of surface fires.

Treatment by mechanical means is normally done by one of two broad methods: (1) mechanically removing the material for use as a product, or (2) mechanically altering the material for later removal or other treatment. Mechanical methods must be followed up by removal of the residue or slash created, or by changing that residue to a different form. Otherwise, the only accomplishment will be to change one type of high intensity fire to another form, often worse than the original situation.

The following are typical mechanical treatments:

Thinning

This is the use of handsaws, power saws, or heavy mechanized equipment to reduce the density of, primarily, conifer forests. The objective is to create openings in the forest canopy to reduce the potential of high intensity crown-to-crown fire. It can be done across large acreages or in backyards.

The acceptable level of risk and other objectives determines the amount of thinning.

It is normally implemented with a secondary objective of producing or salvaging some level of product, such as firewood. Forest residue or slash will be produced and needs to be treated.

Mastication

Mastication is used to thin conifer trees, reduce or eliminate brush or shrub fields, eliminate ladder fuels, and/or change surface fuels such as large down logs. Specially designed equipment is used to chew up trees, brush, or dead wood. It is very effective in brush, shrubs, and trees, and is a thinning method when there is no value to the trees (which is often the case here in Colorado). The size of the material left depends on the type of equipment used. Sizes range from small chips to large chunks of logs.

Pruning

Pruning is removal of lower branches to reduce the potential for fire spread into the tree crowns. It is more common as a follow up treatment, after thinning, to prevent or reduce the likelihood of the remaining trees from “torching” and being killed or throwing burning embers onto nearby structures. It is also used to prepare areas for broadcast burning.

Slash treatments

Slash treatments may be needed to clean up the residue from the primary mechanical treatments. These fall into two categories: (1) removal of all slash, or (2) alter the slash to reduce intensity. Removal is primarily accomplished by prescribed burning, and will be discussed further below. However, chipping and removal can also be utilized.

The other secondary treatments consist mostly of lowering the height of the remaining material and changing its size to smaller pieces. This reduces the intensity of any fire that occurs and speeds up decomposition.

Both removal and alteration are also used, at times, to prepare areas for controlled burning. It can reduce the risk and the amount of smoke produced.

Lop and Scatter:

This treatment consists of using saws or equipment to cut the slash into smaller pieces so that the height of the remaining slash is reduced, usually 12 inches or less. It may be the only practical treatment in areas where chippers are unavailable, prohibitively expensive, or in inaccessible locations.

It is usually the lowest cost treatment since no special equipment, other than a chainsaw, is required. The treated slash is left to decompose or can be broadcast burned. Over the course of several winters, snow pack pushes the slash down and it decomposes. Decomposition usually requires three to five years or longer if larger material was present. It is the most aesthetically unappealing method since the slash remains visible until it breaks down. It also creates an extremely flammable fuel bed until it decomposes, which can be easily ignited, and burns with high intensities. It should not be used adjacent to high values, such as homes, or areas prone to regular fire occurrence.

Chipping:

Chipping is the grinding up of the slash into small pieces, usually less than a few inches in diameter. Material can be chipped and left, or removed for off-site disposal or as a product.

It requires mechanized equipment to perform the chipping. The slash must be brought to the chipper, unless it is an expensive mobile chipping piece of equipment. Either way, it can quickly become a very expensive operation.

Chipping is a common method of slash disposal in the defensible zones around structures. Chips do not significantly contribute to fire hazard around structures since they produce low intensity fire behavior. Large piles of chips should be avoided as they could smolder for a significant amount of time. Chips should be spread along the ground to a depth of less than four inches.

Trampling, Crushing, or Roller Chopping

This is using heavy equipment, usually a dozer, to run over the slash, breaking it down in both size and height. It can be done with just the tracks or by also pulling a heavy, water filled drum with cutting blades welded on it.

It is very effective and can also crush and break up heavy fuels such as down logs. However, the slash must dry, usually for several seasons, to make this treatment truly effective. There is an increased fire hazard in the interim.

There is an additional benefit to crushing or trampling. The material is not only broken down, but also driven into the soil. This can add nutrients to the soil faster, create small pockets in the soil surface for holding water, and decrease the potential for erosion.

Piling

This is the use of mechanized equipment, or by hand, of placing the residue or slash into piles for later disposal by burning. This will be discussed in more detail below under burning.

Burning

This is the use of controlled burning, either broadcast (over an entire area) or pile, done under specific conditions, as either a primary or secondary fuels treatment. Broadcast burning can be utilized by itself to thin, remove forest or brush fuels, reduce ladder fuels, and/or reduce surface fuels such as litter, duff, and down dead woody material.

Pile burning is normally utilized as a secondary treatment to remove slash residue, either as a final stand-alone treatment, or to prepare for broadcast burning.

Pile Burning

Any form of open burning requires a permit, and burning must be done only under the conditions stipulated in the permit. Local fire districts in Logan County issue information and permits. Public land burning, as well as some private land burning, is regulated through the State Air Pollution Control Board, and requires a smoke permit.

Piles can be constructed with equipment or by hand. Piling with heavy equipment should only be done with a brush rake and not a regular blade. Piling with a regular blade will include significant amount of dirt, which will make the pile harder to burn, create more smoldering and smoke, and will hold heat longer adding to the risk of an escape at a later date.

For most landowners, the slash is piled by hand and burned when conditions are safe—usually several inches of snow on the ground that will persist for a couple days. This will depend on what type of material is contained in the pile. Material greater than five inches will take longer to burn and will hold heat for more time. Piles burn best when they are relatively compact, contain material less than one inch

in diameter, and the height is greater than the diameter. This arrangement promotes hotter burning and less smoke.

It is important that burn piles not located directly adjacent to or under the canopy of trees or other flammable material. Separation should be greater on the downwind side. It is easy to scorch living trees from the heat of the burning pile, even in winter. Avoid making burn piles on top of stumps. Stumps will hold heat for extended periods of time.

Often piles must sit through the summer in order to dry, or piles from one season may be left over the next summer if proper burning conditions were not available during the winter. In each case the dry woodpiles will sit through a burning season with the risk of ignition.

The fire should be monitored during the day and for several days thereafter. The center of a pile usually burns completely, but often wood around the edges does not. To ensure that the slash at the edge of each pile burns it is necessary to “chunk in” the piles periodically. This means that as the fire at the middle of the pile burns down, wood from the edges should be thrown into the center to insure complete burning of all slash.

The ash pile must be monitored and may need to be cooled below the point of combustion, which is a process called “mopping up.” This is especially important on south and west slopes where the snow melts off quickly and may be followed by dry windy weather.

For several years after a pile is burnt, an unsightly black ring remains where the heat of the fire scorched the soil. Many landowners find these unpleasant to look at. They may also present an opportunity for noxious weed to colonize the bare soil. Breaking up the burned soil with a rake and reseeding with native plants is recommended.

Broadcast Burning

This method is more often used by the Federal or State land management agencies than by private landowners. Private landowners, interested in broadcast burning, should contact a knowledgeable consultant or the Colorado State Forest Service since there are numerous legal issues. A great deal of expertise is required to carry out the burn.

Broadcast burning can be a “stand alone” treatment for fuel mitigation or the final step following mechanical treatments and even pile burning. It is an effective method for reducing surface fuels, reducing the density of shrubs, and reducing ladder fuels. It can also be used to thin larger trees, but it obviously can’t be done with the precision of mechanical treatments. It is more effective in thinning the smaller trees and in patches or groups of trees.

Land management agency burns require a burn plan. The burn plan is an extensive legal document that describes the conditions under which the burn may be carried out, the organization required, and all the other activities that must be done. There is also a closely monitored smoke permit process with the State of Colorado that must be followed.

Broadcast burning can also be used to accomplish other objectives, such as regenerating decadent grass and shrubs, providing a seedbed for new trees, promote growth of wildlife forage, and many other items. There are also limits on its effectiveness for fuels treatments. Sites may be so dense or contain so much down dead material that a burn might kill everything. Certain species, even with light under burning, since these species naturally burn in high intensity fires that kill almost all the trees. Burned sites also have to be monitored for other problems, such as undesirable noxious weeds, or other issues.

CITY/TOWN and Fire District Information

STERLING

The City of Sterling is 6.9 square miles and is populated by approximately 12,600 people.

The City of Sterling maintains an Intergovernmental Agreement with the Sterling Rural Fire Protection District (SRFPD) to provide fire protection for approximately 660 square miles of the approximately 775 square miles of the SRFPD. The towns of Merino, Atwood, Iliff, Padroni and Willard fall within the boundaries of the SRFPD.

Coordinates for Sterling are 40°37'32"N 103°12'42"W and is at an elevation of 3,935 ft.

Sterling Fire Department has the following emergency response equipment – one engine, one four-wheel drive engine, two tenders - one 1500 gallon, one 2500 gallon, two four-wheel drive squads (grass units), one wildland engine, one rescue, three support vehicles, and one aerial platform.

MERINO

The Town of Merino is 0.2 square miles and is populated by approximately 284 people within the Sterling Rural Fire Protection District.

Coordinates are 40°29'4"N 103°21'13"W and is at an elevation of 4,035 ft.

Major industries – Wisdom Industries, Agriculture, Feedlots, Southern Star Natural Gas Plant, and Lousberg Feed and Grain.

Merino Fire Department has the following equipment:

2 class A engines

2 type VI wildland engines

1 3500 gallon tender

1 1250 gallon tender

1 ambulance

1 command vehicle

ATWOOD

Atwood is .2 square miles, is populated by approximately 133 people and is an unincorporated town within the Sterling Rural Fire Protection District.

Coordinates are 40°32'43"N 103°16'25"W and is at an elevation of 3,993 ft.

ILIFF

Iliff is 0.3 square miles, is populated by approximately 266 people and is an incorporated town within the Sterling Rural Fire Protection District.

Coordinates are 40°45'32"N 103°3'57"W and is at an elevation of 3,835 ft.

PADRONI

Padroni is 0.08 square miles, is populated by approximately 100 people and is an unincorporated town within the Sterling Rural Fire Protection District.

Coordinates are 40°46'45"N 103°10'21"W and is at an elevation of 3,999 ft.

WILLARD

Willard is 0.05 square miles, and is populated by approximately 40 people and is an unincorporated town within the Sterling Rural Fire Protection District.

Coordinates are 40°33'16"N 103°29'08"W and is at an elevation of 4,337 ft.

FLEMING

The Town of Fleming is 0.5 square miles and is populated by approximately 408 people.

The Fleming Fire District is approximately 250 square miles.

Coordinates are 40°40'58"N 102°50'24"W and is at an elevation of 4,242 ft.

Fleming Fire Department has the following equipment:

- 1 pumper
- 1 ambulance
- 2 tenders
- 3 scats (squads)

PEETZ

The Town of Peetz is 0.2 square miles and is populated by approximately 238 people

The Peetz Fire District is approximately 400 square miles.

Coordinates are 40°57'42"N 103°6'43"W and is at an elevation of 4,436 ft.

Peetz Fire Department has the following equipment:

- 2 engines
- 1 pumper
- 1 ambulance
- 1 tender
- 3 scats (squads)

CROOK

The Town of Crook is 0.1 square miles and is populated by approximately 110 people.

The Crook Fire District is approximately 275 square miles.

Coordinates are 40°51'31"N 102°48'4"W and is at an elevation of 3,711 ft.

Crook Fire Department has the following equipment:

- 2 engines
- 1 pumper
- 1 ambulance
- 1 command vehicle
- 2 tenders
- 2 scats (squads)

Community input sign-in sheets
Sterling -

SIGN-IN SHEET	
Project: Sterling Fire Department CWPP Open House	Meeting Date: October 9 th , 2010 Place: Sterling Fire Department
Name	Address
Brekel Family	19034 CR 46 Sterling, CO 704 S 3rd Ave Sterling
Lope Vogel	14835 Hwy 14 Lot 6 Sterling, CO
Polk Family	222 Villa Vista St. Sterling CO
Esther Hartsky	414 Washington St Sterling, CO 80751
Sonnenberg Family	201 w Logan Sterling haxton CO
David schneck	8 Sterling
Jessie Bornhoft	522 Elm Sterling
Louise Teni'yek	602 Broadway
Kennedy Family	512 Jackson St.
Kaiser Family	525 California St.
Kambrale & Jackie Vetter	13514 CR 16.5 Merino CO 80741
Sara Waste & Jamie	413 Park Cir Dr. Sterling, CO 80751
Jammie + Zach Pomeroy	705 Delmar St. Sterling, CO 80751
Bob & Anita Quins	12350 Beverly Ln Sterling "
Boeff Family	Brownfield Co
Scr. van, Clark Diane	
Doree Erica Denton & Amy Quinn	

MERINO

NAME	ADDRESS
Darlene Shinn	381 Co. Ave.
Kellie Lyman	222 Cobrad
Wes Probst	Box 3 Penek
Mark Mertens	7562 CR 18 Merino
Chuck Darchuk	7926 CR 10 Merino
Ben: Heather Lerdal	401 Lee St.
Metheny	601 Lee St.
Mark & Julie Jonasing	7500 CR 6 Merino
Cara Beam	1413 WESTVIEW DR. STERLING, CO
Desiree Stratton	302 Cortez Sterling
Ashley Smith	1517 Filmore Apt 203 Sterling
Robert Allen Vica	315 Hays ave 201 # 110 Sterling.
Chanelle Conour	413 N 4th ave Sterling
Doug Unrein	320 Logan ave Merino
Susan Shanon	PO Box 56 Merino
Richard Schendel	PO 212 Merino
Pete Kjosness	54125 CR XX OTIS
April Gibson	439 Lee St Merino
Linda Dougherty	110 1/2 Logan Ave. Merino
Elissa Kang	4405 CR 31, Atwood
Wick	4987 Hwy 63 Atwood

MERINO

Name	ADDRESS
Esther Bartlett	12440 Cyp Rd 4.
Brenda Lechman	17350 Skyline Ct, Sterling CO
Danny & Crowell	33545 CR 34 Merino Col 80751
Rachel Berg	103 Denver - Sterling
Rod Nestor	4567 CO Rd. 25 Merino Co
Jeresa Helvie	14322 CR 14 Atwood Co
Dan Thamerth	14922 Rd 57 Hillrose CO.
Brad + Dawn Jackson	4585 CR 25 Merino
Deb Montgomery	404 Logan Ave Merino CO
Cate Trenkle	504 Ralph Edwards, Merino
Jamie Biddle	203 Colorado Ave Merino
Ron Wilson	17936 CR 30 Sterling
Bob & Kristie Mari	2383 CR 29 Merino
Rod & Geni Mari	2074 CR 29 - Merino
James R. Turner	710 Boy 22 Atwood Colo 80722
Ken Sayer	407 Lee Merino
Esthyle Arner	
303 Morgan	

MERINO

NAME	ADDRESS
A. Peltzer	Sterling
Kelly Stephenson	Ft. Collins, CO
Jack & Pat McLamy	Sterling
Rhonda Hagemann	Merino
Annelle Lockman	Merino
Lori Mathews	Merino
Kathy Wetstein	Merino
Pam Bevans	Sterling
Michael Bevans	Sterling
Ashley Transon	Sterling
Brenda Biardi	Merino
Lori Shino	Merino
Ker Maxwell	Merino
Loretta Maxwell	Merino
Cruz Brundage	Sterling
Ed. Leppner	Merino Co.
Dene Stegner	Sterling, CO
Mildred Anderson	Merino, CO
Sharon Ladd	Sterling, CO