SUBLETTE COUNTY

Community Wildfire Protection Plan
January 2016

Table of Contents

2016 Sublette County CWPP Signature Page 3
Background and Significance 5
Community Wildfire Protection Plan (CWPP) 6
Sublette County Community 6
Collaboration 7
Prioritized Fuel Reduction 7
Wildland-Urban Interface Areas (WUI) – Priority Ranking 7
Communities at Risk 10
Pinedale Rural Fire Response Area 12
Big Piney / Marbleton Rural Fire Response Area 16
Bondurant Rural Fire Response Area 18
Boulder Rural Fire Response Area 22
Daniel Rural Fire Response Area 25
Kendall Valley Rural Fire Response Area 27
Summary of Proposed Wildfire Mitigation Activities 32
Resources 36
Plan Review and Approval 37
APPENDICES 38
APPENDIX A: Fire Hazard Severity Form 39
APPENDIX B: Minimum Design Standards for Dry Hydrants 41
APPENDIX C: The Basics of Defensible Space and the "Home Ignition Zone" 45
APPENDIX D: Defensible Space: Landscaping Steps to Reduce the Wildfire Threat (from "Living with Wildfire in Wyoming") 50
APPENDIX E: Survive the Unthinkable – if wildfire threatens your home (from "Living with Wildfire in Wyoming") 61
APPENDIX F: Consolidated Structure and Fuel Mitigation Guideline 68
APPENDIX G: Plants for a Firewise Landscape 73
APPENDIX H: Links 78

2015 Sublette County CWPP Signature Page

Signature Authorization: My signature below verifies that I have reviewed and approved the 2015 Sublette County Community Wildfire Protection Plan (CWPP).

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Executive Summary

This document illustrates Sublette County's commitment to its communities in mitigating the effects of uncontrolled wildfire to its firefighters, homeowners, properties, and critical infrastructure key resources. Furthermore, this document illustrates an on-going collaborative effort between state and federal jurisdictions, county government, and homeowners regarding wildfires. It is also the intent of this plan to provide input from firefighters, homeowners, and the various agencies in the county involving wildfire and fuel mitigation issues.

Background and Significance

Historically, Sublette County has experienced significant wildfires. As a result, local, state, and federal jurisdictions began cooperative planning in an effort to fight wildfires occurring within the county. The agencies involved began the process of assessing subdivisions at risk and implementing fuels reduction management projects upon all jurisdictional lands.

The 1996, 2007, and 2012 fire years proved the value of the interagency efforts. The significance to the community is that such cooperation brings together multiple disciplines, technical experts and specialties, local fire protection, and tactical resources to create a holistic approach to wildfire issues. In addition, such an approach maximizes resources regionally and makes each agency stronger.

Homeowners living in the wildland urban interface area face a real danger of wildfire. Wildfires destroy thousands of homes and affect hundreds of thousands of acres of wildland every year.

Protecting one's home from wildfire is a personal responsibility. To reduce the risk, one needs to consider the fire resistance of their home, the topography of their property, and the nature of the vegetation in the ignition zone of their structures in an effort to develop and maintain fire adaptive communities.

Homeowners should always be ready for an emergency evacuation. Evacuation may be the only way to protect one's family in a wildfire;... know where to go and what to take. Individuals should plan several escape routes in case roads are blocked by a wildfire. Wildfire can travel very fast, and response time by emergency personnel may be delayed in rural fire protection areas. Important information and materials related to evacuations can be found in the appendixes of this document and on the Ready, Set, Go! Website at http://www.wildlandfirersg.org/.

Community Wildfire Protection Plan (CWPP)

CWPP's are generally developed by local government with assistance from state, tribal, and federal agencies and other interested partners. Plans can take a variety of forms and may be as simple or complex as necessary, based on the specific needs and desires of the local communities. While plans do not need to be overly complicated, they should effectively address local forest and range conditions, values-at-risk, priorities for action, occurrence of wildfire, resistances to control of wildfires, and response times of fire suppression resources.

Sublette County Community

Sublette County is the newest county in the State of Wyoming with a population just over 10,000 residents. Sublette County is located on the western side of the continental divide between Fremont County, (east), Sweetwater County, (southeast), Lincoln County, (southwest) and Teton County, (northwest). The Wyoming Mountain Range comprises its western border, the Gros Ventre Mountain Range its northern border, and the Wind River Mountain Range its eastern border. Most of the populous lives in the central and northern areas of the county within the river valley between these mountains. Approximately 36 percent of the population live in the Pinedale, Marbleton, and Big Piney townships with the residual population, (64 percent), living in the rural setting. The southern side of the county opens up into rolling hills of sage brush and grass covered lands. This area is home to the largest natural gas reserves for the state of Wyoming. Sublette County is 4,936 square miles (12,784 km^2). 99 percent or 4,887 sq. mi, (12,657 km^2), is comprised of land. 1 percent or 49 sq. mi (127 km^2), is comprised of water. Approximately 81.1 percent of the county is comprised of state and federally managed lands, with 18.9 percent representing local jurisdiction and private lands.

The county consists of the following jurisdictions with their approximate number of acres: (acreage split pulled from Sublette County GIS map database courtesy of Greenwood Mapping)

Bridger Teton N.F.	1,164,800 acres (36.88%)
BLM	1,271,936 acres (40.27%)
State of Wyoming	114,304 acres (3.62%)
Wyoming Game and Fish	9,728 acres (0.31%)
Sublette County	5,824 acres (0.18%)
Townships	704 acres (0.02%)
Private	591,040 acres (18.71%)
Total	3,158,336 acres

Collaboration

Sublette County has a long history of collaboration with regional partners and property owners. Current government partners include Sublette County Commissioners, Sublette County Unified Fire, Sublette County Emergency Management, Bridger-Teton National Forest, Bureau of Land Management, Wyoming Game & Fish, and Wyoming State Forestry. This collaborative effort will examine the wildland challenges across all lands regardless of ownership to create fire adapted communities in Sublette County.

Prioritized Fuel Reduction

Using a comprehensive approach based on risk assessment, this CWPP collaborative team comprised of local, state, and federal representatives has identified and prioritized areas for hazardous fuel reduction treatments on both federal and non-federal land. The ongoing effort is to work with the local target communities in conjunction with bordering state and federally managed land managers to arrive at complementary types and methods of treatments that, if completed, would reduce the risk to the community. Middle Piney and Flying A Ranch are current examples of completed fuel reduction efforts.

Wildland-Urban Interface Areas (WUI) – Priority Ranking

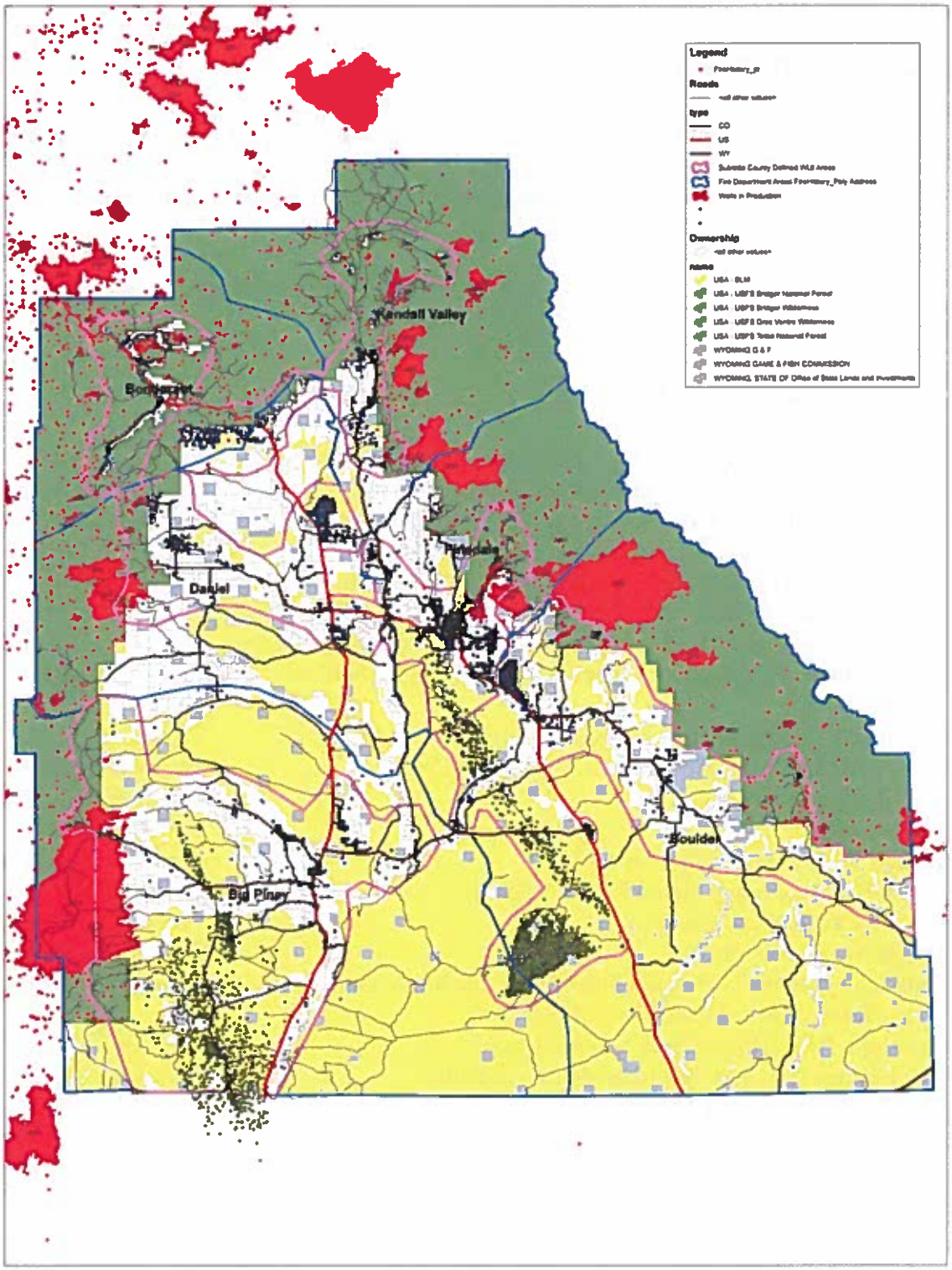
Sublette County defines the **W**ildland **U**rban **I**nterface, (WUI), as the line, area, or zone where structures, communities, critical infrastructure, key resources, and other human development meet or intermingle with undeveloped wildland or vegetative fuels. These lands and communities adjacent to and surrounded by wildlands are at risk from wildfires. The increasing number of people residing in the wildland urban interface environment adds complexity to the ability to conduct mitigation efforts. Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters.

- It creates safer communities by reducing loss of life and property damage.
- It allows individuals and communities to minimize post disaster disruptions and recover more rapidly.
- It lessens the financial impact on individuals, communities, and society as a whole.
- It contributes to firefighter and public safety by reducing fuels or lessening the risk of structures igniting.

Living with fire presents a need for creating fire adapted communities within these Rural Fire Protection areas. Communities where mitigation actions of residents and agencies considering the relation between critical infrastructure/buildings/landscaping and the surrounding ecosystem, can lessen the need for extensive protection actions during a wildland fire. This enables the community to safely live with fire as part of the surrounding natural landscape. A successful fire adapted communities program,

implemented comprehensively, has the potential to save lives, homes and communities, critical infrastructure, and millions of dollars in suppression costs annually.

The map on the following page highlights the geographies that Sublette County considers are Wildland Urban Interface areas within Sublette County. Sublette County WUI areas are identified in magenta borders.



County Map showing land ownership, addresses, active natural gas wells, fire history, and WUI zones

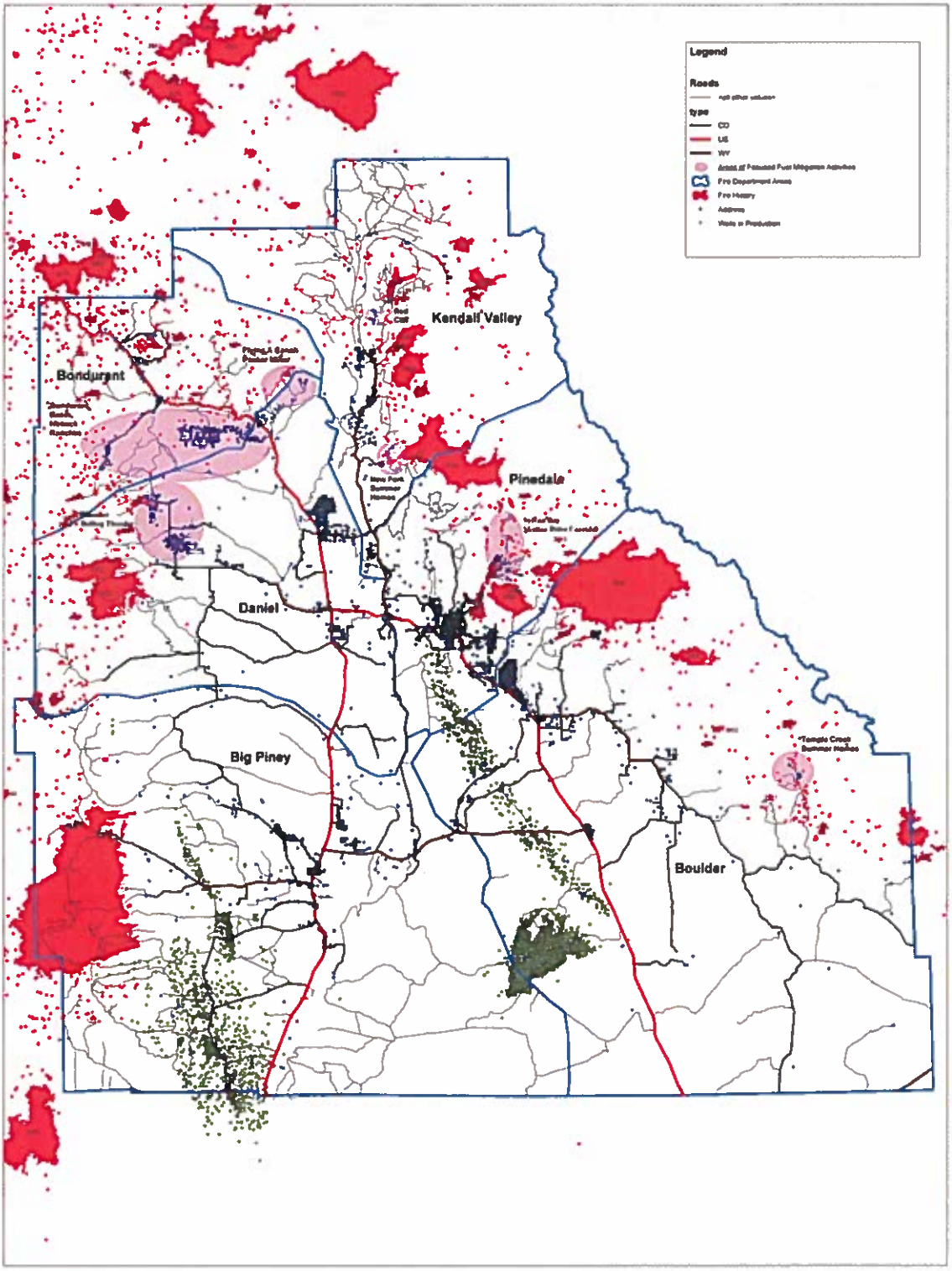
Communities at Risk

State, local, and federal fire representatives from Sublette County had meetings during the 2015 CWPP revision process to review the priority ranking of communities at risk within the county. Also discussed was upcoming projects and how agencies can best collaborate to accomplish the required work.

Here are the current rankings. Refer to page 30 for a summary of specific communities we are focusing fuel mitigation activities:

Sublette County

1. **Bondurant Basin** (includes Hoback Ranches, upper Hoback, Bondurant, Rim Ranch, Packer Miner, Flying A)	Private/BLM/FS
2. **Sylvan Bay/Skyline Drive Corridor** (Half Moon, Fremont Lake, White Pine, Sylvan Bay, Chambers, Elkhart Park)	Private/Permit/ FS
3. **Upper Green** (includes, Moose/Gypsum, Buffalo Basin, Kendall Valley Lodge, Red Stone SubDiv, Red Cliff, Green River Developed Recreation, Boulder Basin, The Bend (Darwin Ranch)	Private/Permit/BLM/FS/State
4. **Jim Bridger** (includes Thunder and Rolling Thunder SubDiv, Aspen Ridge)	Private/BLM/FS/State
5. **Big Sandy** (Dutch Joe and Big Sandy, Temple Creek SubDiv)	Permit/FS
6. **New Fork Lake** (Summer homes, Boy Scout Camp)	Private/Permit/BLM/FS/State
7. **Boulder Lake Estates**	Private/FS
8. **Bargerville**	Private/BLM/State
9. **Round Hill Ranch** (High Lonesome)	Private/FS/BLM/State
10. **Forty-Rod** (including Green River Ranches)	Private/BLM/State
11. **Pocket Creek** (Scab Creek)	Private/BLM/State
12. **Deadline** (Exxon Mobile)	Industry/FS/BLM
13. **Pinedale** (include TOP, Anticline Gas Fields; Mesa, Blue Rim, Stud Horse Buttes, Jonah Gas Field)	Pinedale/Industry/BLM
14. **Antelope Run** (Horse Creek to Rye Grass)	Private/BLM/FS/State
15. **Riley Ridge** (includes Denbury Helium Facility)	Industry/FS/BLM/State
16. **Middle Piney Summer Homes**	Permit/FS



Areas of focused fuel mitigation activities are indicated in purple shaded areas.

Pinedale Rural Fire Response Area

Description

Pinedale area consists of the Town of Pinedale; the Cora Y Subdivision; and the "Skyline Drive Corridor" comprised of the subdivisions of Fremont Lake, Sylvan Bay, Half Moon Lake, White Pine Ski Resort, and Chambers Bay. Also included are the Bridger-Teton National Forest, Wyoming State Lands, and the BLM. This is a large geographical area with moderate to high-density subdivisions. The complexity of fire(s) in this area may necessitate evacuation of some portions of, or all of the area affected.

Focused Risk Mitigation Activities in the Pinedale Rural Fire Response Area

SKYLINE DRIVE CORRIDOR:

Description: The Skyline Drive Corridor consists of Fremont and Half Moon Lakes, Sylvan Bay Summer Homes, Half Moon Bay Resort, White Pine Ski Resort, and Elkhart Park recreational area and trailhead. The area consists of mountainous terrain and limited access, with fuel loading that is moderate to moderate heavy. Fuel mixture is predominately lodgepole pine and subalpine fir, with interspersed groves of aspen and Douglas-fir. Lodgepole stands have a 30-60% mortality rate due to the pine beetle infestation. We are starting to see some mortality in the Douglas-fir stands due to Douglas-fir beetle which is on a rise in the county. The mortality has led to local wood cutting activities that have left large volumes of slash on the forest floor creating heavy fuel loads when combined with the standing/wind thrown dead lodgepoles and a heavy forest canopy. Elkhart Park represents a major trailhead for access into the Wind River Range with access via a narrow, single access, mountain road that can easily be cut off if a fire occurs in the lower reaches of the Skyline Drive corridor. The lower corridor which consists of Fremont /Half Moon Lakes and Sylvan Bay Summer Homes are popular destinations for day and multi-day recreational boating and camping providing an increased possibility of human induced fire starts. Lightning starts have also been a frequent and numerous occurrence in the past in this area.

Hazard Level: MODERATE to EXTREME due to high recreational traffic, increased risk to life due to limited evacuation and fire apparatus egress, moderate to high fuel loading in tree stands of 30 to 60% mortality, and increased likelihood of fire starts due to natural and human caused events.

Proposed Mitigation Activities:

1. **Skyline Wildland Urban Interface Fuels Reduction Project**. Refer to http://www.fs.usda.gov/project/?project=45976 for details. USFS driven project where approximately 2,440 acres would be treated to reduce fuels utilizing mechanical equipment, prescribed burning, and a combination of these treatments. The treatments will reduce the risk of high severity wildfire and increase public and firefighter safety in the event of a wildfire. No new or temporary road construction will be authorized. Project is in the final planning phases and will start implementation in summer of 2016 if approved. Project is driven by USFS with collaborative support of Sublette County Road and Bridge and Sublette County Unified Fire.
   Phase 1:
   - Widening of Skyline Drive to White Pine Ski Resort (County Road/Bridge)
   - Shaded fuel break on Skyline Drive to White Pine Ski Resort (USFS)
   - Fuel Reduction Activity: area between Fremont Lake Campground/Sylvan Bay Residences (USFS)
   - Fuel Reduction Activity: area between Half Moon Lake and White Pine Ski Resort (USFS)

   Phase 2:
   - Widening of Skyline Drive to Elkhart Park (County Road and Bridge)
   - Shaded fuel break on Skyline Drive to Elkhart Park (USFS)
   - Improve "Refuge in Place" Evacuation Location @ Elkhart Park (USFS)

2. **Activities Supporting USFS Skyline WUI Fuels Reduction Project**. Sublette County Unified Fire driven activities in support of Skyline Fuels Reduction project. Focuses on:
   a. Cooperative USFS and Sublette County Unified Fire public education program providing fuel reduction consultation and recommended activities with individual permit holders in Sylvan Bay Summer Homes, White Pine Ski Resort and Half Moon Bay Resort
   b. In cooperation with USFS, investigate adoption of Firewise and Ready, Set, Go programs with Sylvan Bay residential community and HOA.
   c. Cooperative USFS, Sublette County Unified Fire, Sublette County Emergency Management effort to consolidate and update Sylvan Bay Evacuation Plan for Sylvan Bay Summer Homes.

TOWN OF PINEDALE:

Description: The town of Pinedale represents the largest population base in the county with a population of just over 2000 people. Town has two rivers flowing through it with green belts along the river that are surrounded by moderate to high-density subdivisions. The green belts are comprised predominately of lodgepole pine, Engelmann Spruce, and subalpine fir, with interspersed groves of

aspen. Lodgepole stands have a 30-40% mortality rate due to the pine beetle infestation. Many of these green belt areas are owned by private residents. Some have done excellent work in addressing the mortality rate with fuel reduction activities, while some areas are more challenged.

Hazard Level: MODERATE to HIGH in some areas due to close proximity of moderate to high fuel loading in tree stands of 30 to 40% mortality with the moderate to high-density subdivisions in the Town of Pinedale and increased likelihood of fire starts due to human caused events.

Proposed Mitigation Activities:

3. **Fuel Reduction Activities along Pine Creek**: Sublette County Unified Fire driven activity focusing on:
    - In cooperation with Town of Pinedale and Sublette County, public education and fuel reduction activities with individual land holders on Pine Creek to reduce the fuel loading to a level that is more manageable from a risks prospective. Sublette County Unified Fire in conjunction with State Forestry would work with landowners to take advantage of fuel mitigation cost sharing opportunities to make the effort more manageable and affordable. Expectations would be that landowners would be responsible for fuel load maintenance of the property after any mitigation activities were done. Sublette County Unified Fire will promote and educate landowners on their responsibility of fuel loading maintenance of their property.

Predominant Hazard Fuel

Predominate hazardous fuels are mixed lodgepole pine and subalpine fir with areas of aspen and sagebrush. Along the river and creek bottoms are large quantities of willows and thick grass. Beetle infested trees are becoming an increasing hazard in this area due to increased fuels loads more susceptible to fire and increased ground fuels via windthrow and tree stem failure.

Infrastructure

Single access points. Steep roads, narrow in spots. No fire hydrants with some access points along the river and creeks for seasonal water supply.

Evacuation

This plan will include both notification and evacuation order phases. Both phases will be activated by the following trigger points.

Notification Trigger: 1. If a fire escapes initial attack or spots within 1.5 miles of adjacent subdivisions and/or affected recreational areas.

Evacuation Trigger: 2. If a fire escapes initial attack or spots within 1 mile of adjacent subdivisions and/or affected recreational areas.

NOTE: Any fire which burns in the area and exhibits extreme fire behavior, is tactically unsafe to fight, or poses an immediate threat to the area would trigger immediate evacuation.

Big Piney / Marbleton Rural Fire Response Area

Description

Big Piney Fire Area consists of the Towns of Big Piney/Marbleton, Middle Piney Summer Homes, Riley Ridge/Denbury/Deadline/Black Canyon/EOG with Critical Infrastructure Key Resources (CIKR) interface, Calpet/Deerhills CIKR, Round Hill Ranch, Sleepy Hollow/Tanner, Wassenberg, and the surrounding areas. Also included are the Bridger-Teton National Forest, the BLM, and Wyoming State Lands. This is a relatively small geographical area with high-density subdivisions within the interface. The complexity of fire(s) in this area may necessitate evacuation of some portions of, or all of the area.

Focused Risk Mitigation Activities in the Big Piney / Marbleton Rural Fire Response Area

The occurrence of the 64,000+ acre, Fontenelle Fire in 2012 removed much of the heavy wildland fuels in the Big Piney/Marbleton response area for wildland fires. Continued efforts by the USFS in Fuel Mitigation and Prescribed burns in the Wyoming Mountain Range have maintained the risk level as low to moderate. Key risk concern for the area is the large amount of Oil/Natural Gas infrastructure and the Helium Extraction Plant which currently supplies over 25% of the world's supply. Industry and the BLM have done an excellent job of mitigating the fire risk exposure for the developed industrial infrastructure in these developed areas due to wildland fire.

Hazard Level: LOW to MODERATE

Predominant Hazard Fuel

Predominate hazardous fuels are mixed lodgepole pine and subalpine fir with areas of aspen and sage brush including un-grazed grass resulting in areas of heavy flashy fuel levels. Along the creek bottoms are large quantities of willows and thick grass.

Infrastructure

Single access points. Steep roads, narrow in spots, one way in, one way out. No fire hydrants with some access points along the creeks and a few ponds but as whole poor water supplies.

Evacuation

This plan will include both notification and evacuation order phases. Both phases will be activated by the following trigger points.

Notification Trigger: 1. If a fire escapes initial attack or spots within 1.5 miles of adjacent municipalities, natural gas/oil and/or helium extraction infrastructure.

Evacuation Trigger: 2. If a fire escapes initial attack or spots within 1 mile of adjacent municipalities, natural gas/oil and/or helium extraction infrastructure.

NOTE: Any fire which burns in the area and exhibits extreme fire behavior, is tactically unsafe to fight, or poses an immediate threat to the area would trigger immediate evacuation.

Bondurant Rural Fire Response Area

Description

Bondurant Area consists of the communities of Bondurant, Upper Hoback River, Rim Ranches/Packer Creek Ranches, Hoback Ranches, Flying A Ranch, and the surrounding areas. Also included are the Bridger-Teton National Forest, the BLM and Wyoming State Lands. This is a very large geographical area with high-density subdivisions within the interface. The complexity of fire(s) in this area may necessitate evacuation of some portions of, or all of the area.

Focused Risk Mitigation Activities in the Bondurant Rural Fire Response Area

HOBACK RANCH ESTATES:

Description: The Hoback Ranch Estates is a 6500 acre development currently having 217 landowners. Area consists of mountainous terrain and limited access, with fuel loading that is moderate to moderate heavy. Fuel mixture is predominately lodgepole pine and subalpine fir, with interspersed groves of aspen and Douglas-fir. Lodgepole stands have a 30-60% mortality rate due to the pine beetle infestation. We are starting to see some mortality in the Douglas-fir stands due to Douglas-fir beetle which is on a rise in the county. The mortality has led to large areas comprised of standing/wind thrown dead lodgepoles combined with a heavy forest canopy of residual lodgepoles, subalpine fir and Douglas-fir. Existing groves of Aspen are generally losing vigor with age, and conifer trees are becoming dominant which increases the risk of crown fires in these stands. Restrictive Protective Covenants in the Hoback Ranches have severely limited the ability to implement large fuel mitigation activities making this area difficult to address from a fire risk prospective. Over 140 homes are in the Hoback Ranch Estates which combined with an increase in ATV usage in the area provides an increased possibility of human induced fire starts. Lightning starts have also been frequent and numerous occurrences in the past in this area.

Hazard Level: MODERATE to EXTREME due to moderate level of interspersed housing, increased recreational ATV traffic, increased risk to life due to limited evacuation and fire apparatus egress, moderate to high fuel loading in tree stands of 30 to 60% mortality, and increased likelihood of fire starts due to natural and human caused events.

Proposed Mitigation Activities:

1. **Hoback Ranches Protective Covenants**: The current protective covenants in Hoback Ranches Estates restricts the cutting down of green trees of greater diameter than 3" with the exception for the clearing of space necessary for the placement of structures and roads. Individual landowners have figured out a workaround for small scale fuel mitigation projects but this has all but precluded the ability for large scale, multi landowner fuel mitigation efforts to be executed with the assistance of County, State, or Federal funds and resources. Sublette County Unified Fire will work with the Hoback Ranch Estate HOA to help change the covenant to one that promotes the appropriate level of fuel reduction and tree removal to ensure healthy forested lands.
2. **Hoback Ranches Fuels Reduction Project**. Sublette County Unified Fire driven activities in support of promoting Shaded Fuel Breaks along main evacuation egress paths and Defensible Space around structures for homeowners in the community. Focuses on:
    a. Compilation of completed BLM, USFS, and Landowner mitigation activities along with identification of existing fuel caches and natural fuel breaks on a map of the Hoback Ranches community to enable a strategic look of where we should target focused mitigation activities moving forward.
    b. Public education and fuel reduction activities with individual land holders to reduce the fuel loading to a level that is more manageable from a fire risk prospective. Sublette County Unified Fire in conjunction with State Forestry is working with landowners to take advantage of fuel mitigation cost sharing opportunities to make the effort more manageable and affordable. Expectations would be that landowners would be responsible for fuel load maintenance of the property after any mitigation activities were done. Sublette County Unified Fire in cooperation with the Hoback Ranches HOA will promote and educate landowners on their responsibility of fuel loading maintenance of their property.
        i. Priority will be to work with landowners along Rim Road and other escape routes to help facilitate a shaded fuel break along those roads to ensure a safe evacuation path for the community.
        ii. Secondary priority will be to work with coalitions of adjacent landowners on fuel mitigation activities to try to generate fuel breaks that limit exposure of any fire to a more contained area of the Hoback Ranches Estates.
    c. In cooperation with Hoback Ranches Estate HOA, investigate adoption of Firewise and Ready, Set, Go programs with Hoback Ranches residential community and HOA.
3. **Hoback Ranches Evacuation Plan:** Sublette County Emergency Management driven activity in cooperation with Sublette County Unified Fire, Hoback Ranches HOA and community residents to review and update current

evacuation plan to include refuge in place locations and alternate escape routes. Work will also be done to supplement the current evacuation call tree notification network with a reverse 911 emergency notification system.

FLYING A RANCH, PACKER MINER, RIM PROPERTIES:

Description: Properties adjacent to Hoback Ranches Estates with similar topography, limited access and fuel loading conditions, but without the restrictive covenants allowing greater freedom to do large scale fuel reduction projects. (See Hoback Ranches Estates for description of fuel loading and mixture).

Hazard Level: MODERATE to EXTREME due to increased risk to life due to limited evacuation and fire apparatus egress, moderate to high fuel loading in tree stands of 30 to 60% mortality, and increased likelihood of fire starts due to natural and human caused events.

Proposed Mitigation Activities:

4. **Flying A, Packer Miner, Rim Fuels Reduction Projects.** Sublette County Unified Fire driven activities in support of promoting Shaded Fuel Breaks along main evacuation egress paths and Defensible Space around structures for homeowners in the community. Focuses on:
    a. Public education and fuel reduction activities with individual land holders to reduce the fuel loading to a level that is more manageable from a fire risk prospective. Sublette County Unified Fire in conjunction with State Forestry would work with landowners to take advantage of fuel mitigation cost sharing opportunities to make the effort more manageable and affordable. Expectations would be that landowners would be responsible for fuel load maintenance of the property after any mitigation activities were done. Sublette County Unified Fire will promote and educate landowners on their responsibility of fuel loading maintenance of their property.
        i. Priority will be to work with landowners along escape routes to help facilitate a shaded fuel break along those roads to ensure a safe evacuation path for the community.
        ii. Secondary priority will be to work with coalitions of adjacent landowners on fuel mitigation activities to try to generate fuel breaks that limit exposure of any fire to a more contained area.

WATER SUPPLY PROJECTS:

Description: Sublette County Unified Fire has identified 4 locations where incorporation of Dry Hydrants or Fire Cisterns would improve water supply access in the event of a wildland fire. The four locations are:

- Elkhorn or Black Powder Guest Ranch
- Bondurant Post Office
- Kilgore Creek on Upper Hoback River
- Hoback Ranch Rd and Fisherman's Creek

Sublette County Unified Fire will work with landowners and Sublette County Road and Bridge to get these hydrants/cisterns installed. Hydrants installed will meet standards as defined in *APPENDIX B: Minimum Design Standards for Dry Hydrants.*

Predominant Hazard Fuel

Predominate hazardous fuels are mixed lodgepole pine and subalpine fir with areas of aspen and large flat areas of sage brush and grazed grass. Along the river and creek bottoms are large quantities of willows and thick grass.

Infrastructure

Single access points. Steep roads, narrow in spots, one way in, one way out. No fire hydrants. There are some access points along the river and creeks and a few ponds have access points for water sources.

Evacuation

This plan will include both notification and evacuation order phases. Both phases will be activated by the following trigger points.

Notification Trigger:	1. If a fire escapes initial attack or spots within 1.5 miles of adjacent subdivisions and/or affected recreational areas.
Evacuation Trigger:	2. If a fire escapes initial attack or spots within 1 mile of adjacent subdivisions and/or affected recreational areas.

NOTE: Any fire which burns in the area and exhibits extreme fire behavior, is tactically unsafe to fight, or poses an immediate threat to the area would trigger immediate evacuation.

Boulder Rural Fire Response Area

Description

Boulder Area consists of the community of the Boulder, Bargerville, Boulder Lake Ranch Estates, Big Sandy/Dutch Joe, Pocket Creek, East Fork Estates, Scab Creek, Sand Draw Industrial Park, including the active gas fields from the Mesa Anticline to the bottom of the Jonah field, and the surrounding areas. Also included are the Bridger-Teton National Forest, the BLM, and Wyoming State Lands. This is a moderate geographical area with moderate-density subdivisions within the interface. The complexity of fire(s) in this area may necessitate evacuation of some portions of, or all of the area.

Focused Risk Mitigation Activities in the Boulder Rural Fire Response Area

TEMPLE CREEK SUMMER HOMES:

Description: The Temple Creek Summer Homes are located in the Bridger-Teton National Forest in the Wind River Mountain Range. Access is about 38 miles in from HWY 191 off Wyoming Highway 252. These USFS permitted properties are located adjacent to the USFS Dutch Joe Guard Station and Big Sandy Campgrounds, with the permit holders being responsible to do fuel mitigation on their respective permitted lands. Area consists of mountainous terrain and limited access, with fuel loading that is moderate to moderate heavy. Fuel mixture is predominately lodgepole pine and subalpine fir, with areas of aspen and large areas of sagebrush. Lodgepole stands have a 30-60% mortality rate due to the pine beetle infestation. The mortality has led to large areas comprised of standing/wind thrown dead lodgepoles combined with a heavy forest canopy of residual lodgepoles and subalpine fir. Existing groves of Aspen are generally losing vigor with age, and conifer trees are becoming dominant which increases the risk of crown fires in these stands. Big Sandy Reservoir is a popular destination for day and multi-day recreational boating and camping providing an increased possibility of human induced fire starts. Lightning starts have also been frequent and numerous occurrences in the past in this area.

Hazard Level: MODERATE to HIGH due to increased recreational traffic, increased risk to life due to limited evacuation and fire apparatus egress, extended response times, moderate to high fuel loading in tree stands of 30 to 60% mortality, and increased likelihood of fire starts due to natural and human caused events.

Proposed Mitigation Activities:

1. **Temple Creek Fuels Reduction Project.** Focuses on:
    a. Cooperative USFS and Sublette County Unified Fire public education program providing fuel reduction consultation and recommended activities with individual permit holders in the Temple Creek community.

WATER SUPPLY PROJECTS:

Description: Sublette County Unified Fire has identified 1 location where incorporation of Dry Hydrants or Fire Cisterns would improve water supply access in the event of a wildland fire. The identified location is:

- Barger Subdivision

Sublette County Unified Fire will work with landowners and Sublette County Road and bridge to get these hydrants/cisterns installed. Hydrants installed will meet standards as defined in *APPENDIX B: Minimum Design Standards for Dry Hydrants.*

Predominant Hazard Fuel

Predominate hazardous fuels are mixed lodgepole pine and subalpine fir with areas of aspen and large flat areas of sage brush and grazed grass. Along the river and creek bottoms are large quantities of willows and thick grass.

Infrastructure

Single access points. Steep roads, narrow in spots, one way in, one way out. No fire hydrants. There are some access points along the river and creeks and a few ponds have access points for water sources.

Evacuation

This plan will include both notification and evacuation order phases. Both phases will be activated by the following trigger points.

Notification Trigger: 1. If a fire escapes initial attack or spots within 1.5 miles of adjacent subdivisions and/or affected recreational areas.

Evacuation Trigger: 2. If a fire escapes initial attack or spots within 1 mile of adjacent subdivisions and/or affected recreational areas.

NOTE: Any fire which burns in the area and exhibits extreme fire behavior, is tactically unsafe to fight, or poses an immediate threat to the area would trigger immediate evacuation.

Daniel Rural Fire Response Area

Description

Daniel Area consists of the Daniel, Roberts Road, Forty-Rod/Green River Ranches, Jim Bridger/Aspen Ridge, Thunder/Rolling Thunder Homes, Horse Creek, and the surrounding areas. Also included are the Bridger-Teton National Forest, Wyoming State Lands, and the BLM. This is a large geographical area with high-density subdivisions within the interface. The complexity of fire(s) in this area may necessitate evacuation of some portions of, or all of the area.

Focused Risk Mitigation Activities in the Daniel Rural Fire Response Area

JIM BRIDGER ESTATES, ROLLING THUNDER, THUNDER SUBDIVISIONS:

Description: The Jim Bridger Estates, Rolling Thunder, Thunder subdivisions are located adjacent to Bridger-Teton National Forest in the Wyoming Mountain Range. Access is via the Merna/North Beaver road about 15 miles out from the Daniel Junction off State Highway 354. Area consists of mountainous terrain and limited access, with fuel loading that is moderate to moderate heavy. Fuel mixture is predominately lodgepole pine and subalpine fir, with areas of aspen and large areas of sagebrush. Lodgepole stands have a 30-60% mortality rate due to the pine beetle infestation. The mortality has led to large areas comprised of standing/wind thrown dead lodgepoles combined with a heavy forest canopy of residual lodgepoles and subalpine fir. In sections, existing groves of Aspen are generally losing vigor with age, and conifer trees are becoming dominant which increases the risk of crown fires in these stands. The area is a popular destination for day and multi-day recreational fishing, hunting, and camping providing an increased possibility of human induced fire starts. Lightning starts have also been frequent and numerous occurrences in the past in this area.

Hazard Level: MODERATE to HIGH due to increased recreational traffic, increased risk to life due to limited evacuation and fire apparatus egress, moderate to high fuel loading in tree stands of 30 to 60% mortality, and increased likelihood of fire starts due to natural and human caused events.

Proposed Mitigation Activities:

1. **Jim Bridger Estates, Rolling Thunder, Thunder Fuels Reduction Project.** Sublette County Unified Fire driven activity in support of localized community fuel mitigation efforts. Focuses on:
   a. Public education and fuel reduction activities with individual land holders of Jim Bridger Estates, Rolling Thunder, and Thunder subdivisions to reduce the fuel loading to a level that is more manageable from a fire risk prospective. Sublette County Unified Fire in conjunction with State Forestry would work with landowners to take advantage of fuel mitigation cost sharing opportunities to make the effort more manageable and affordable. Expectations would be that landowners would be responsible for fuel load maintenance of the property after any mitigation activities were done. Sublette County Unified Fire will promote and educate landowners on their responsibility of fuel loading maintenance of their property.

WATER SUPPLY PROJECTS:

Description: Sublette County Unified Fire has identified 2 locations where incorporation of Dry Hydrants or Fire Cisterns would improve water supply access in the event of a wildland fire. The identified location is:

- Warren Bridge
- Green River Estates Subdivision

Sublette County Unified Fire will work with landowners and Sublette County Road and bridge to get these hydrants/cisterns installed. Hydrants installed will meet standards as defined in *APPENDIX B: Minimum Design Standards for Dry Hydrants.*

Predominant Hazard Fuel

Predominate hazardous fuels are mixed lodgepole pine and subalpine fir with areas of aspen and large flat areas of sage brush. Along the river and creek bottoms are large quantities of willows and thick grass.

Infrastructure

Single access points. Steep roads, narrow in spots, one way in, one way out. In the town itself there are fire hydrants that could be used in areas around town. However, no fire hydrants exist in the other communities. Some access points along the river, creeks, and a few ponds provide water sources for these other areas.

Evacuation

This plan will include both notification and evacuation order phases. Both phases will be activated by the following trigger points.

Notification Trigger: 1. If a fire escapes initial attack or spots within 1.5 miles of adjacent subdivisions and/or affected recreational areas.

Evacuation Trigger: 2. If a fire escapes initial attack or spots within 1 mile of adjacent subdivisions and/or affected recreational areas.

NOTE: Any fire which burns in the area and exhibits extreme fire behavior, is tactically unsafe to fight, or poses an immediate threat to the area would trigger immediate evacuation.

Kendall Valley Rural Fire Response Area

Description

Kendall Valley Area consists of the New Fork Lake/Boy Scout Camp, Red Cliff Bible Camp, Black Butte, Moose-Gypsum, Red Stone, Hecox, Buffalo Head Springs Estates, Marsh Creek, Green River corridor, and the surrounding areas. Also included are the Bridger-Teton National Forest, Wyoming State Lands, and the BLM. This is a large geographical area with high-density subdivisions within the interface. The complexity of fire(s) in this area may necessitate evacuation of some portions of, or all of the area.

Focused Risk Mitigation Activities in the Kendall Valley Rural Fire Response Area

RED CLIFF HOMES AND BIBLE CAMP:

Description: The Red Cliff Homes and Bible Camp are located in and adjacent to Bridger-Teton National Forest in the Wind River Mountain Range. Access is about 26 miles in from HWY 191 off Wyoming Highway 352. Area consists of mountainous terrain and limited access, with fuel loading that is moderate to moderate heavy. Fuel mixture is predominately lodgepole pine and subalpine fir, with areas of aspen and Douglas-fir. Lodgepole stands have a 30-60% mortality rate due to the pine beetle infestation. We are starting to see some mortality in the Douglas-fir stands due to Douglas-fir beetle which is on a rise in the county. The mortality has led to large areas comprised of standing/wind thrown dead lodgepoles combined with a heavy forest canopy of residual lodgepoles and subalpine fir. Existing groves of Aspen are generally losing vigor with age, and conifer trees are becoming dominant which increases the risk of crown fires in these stands. The adjacent Green River Lakes are a popular destination for day and multi-day recreational boating and camping providing an increased possibility

of human induced fire starts. Lightning starts have also been frequent and numerous occurrences in the past in this area.

Hazard Level: MODERATE to HIGH due to increased recreational traffic, increased risk to life due to limited evacuation and fire apparatus egress, moderate to high fuel loading in tree stands of 30 to 60% mortality, and increased likelihood of fire starts due to natural and human caused events.

Proposed Mitigation Activities:

1. **Red Cliff Fuels Reduction Project**. Sublette County Unified Fire driven activity in support of localized community fuel mitigation efforts. Focuses on:
    a. Public education and fuel reduction activities with individual land holders of Red Cliff community to reduce the fuel loading to a level that is more manageable from a fire risk prospective. Sublette County Unified Fire in conjunction with State Forestry would work with landowners to take advantage of fuel mitigation cost sharing opportunities to make the effort more manageable and affordable. Expectations would be that landowners would be responsible for fuel load maintenance of the property after any mitigation activities were done. Sublette County Unified Fire will promote and educate landowners on their responsibility of fuel loading maintenance of their property.

NEW FORK SUMMER HOMES, BOY SCOUT CAMP:

Description: The New Fork Summer Homes are located adjacent to the Bridger-Teton National Forest in the Wind River Mountain Range. Access is about 20 miles in from HWY 191 off Wyoming Highway 352. The Boy Scout Camp is USFS permitted property on National Forest lands adjacent to New Fork Lake. USFS permit holders are responsible to do fuel mitigation on their respective permitted lands. Area consists of mountainous terrain and limited access, with fuel loading that is moderate to moderate heavy. Fuel mixture is predominately lodgepole pine and subalpine fir, with areas of aspen and Douglas-fir. Lodgepole stands have a 30-60% mortality rate due to the pine beetle infestation. We are starting to see some mortality in the Douglas-fir stands due to Douglas-fir beetle which is on a rise in the county. The mortality has led to large areas comprised of standing/wind thrown dead lodgepoles combined with a heavy forest canopy of residual lodgepoles and subalpine fir. Existing groves of Aspen are generally losing vigor with age, and conifer trees are becoming dominant which increases the risk of crown fires in these stands. The adjacent New Fork Lake is a popular destination for day and multi-day recreational boating and camping providing an increased possibility of human induced fire starts. Lightning starts have also been a frequent and numerous occurrence in the past in this area.

Hazard Level: MODERATE to HIGH due to increased recreational traffic, increased risk to life due to limited evacuation and fire apparatus egress, moderate to high fuel loading in tree stands of 30 to 60% mortality, and increased likelihood of fire starts due to natural and human caused events.

Proposed Mitigation Activities:

2. **New Fork Fuels Reduction Project**. Sublette County Unified Fire/BLM/USFS driven activity in support of localized community fuel mitigation efforts. Focuses on:
    a. Cooperative BLM, USFS, and Sublette County Unified Fire public education program providing fuel reduction consultation and recommended activities with the Boy Scout Camp and individual land owners in the New Fork community.

WATER SUPPLY PROJECTS:

Description: Sublette County Unified Fire has identified 2 locations where incorporation of Dry Hydrants or Fire Cisterns would improve water supply access in the event of a wildland fire. The identified locations are:

- approximately 14 miles in from HWY 191 on the west side of Wyoming State Highway 352 on the north end of the New Fork Lake parking area drafting from Marsh Creek a tributary of the New Fork River drainage.
- Kendall Valley Redstone Subdivision

Sublette County Unified Fire will work with landowners and Sublette County Road and Bridge to get this hydrant installed. Hydrant installed will meet standards as defined in *APPENDIX B: Minimum Design Standards for Dry Hydrants.*

Predominant Hazard Fuel

Predominate hazardous fuels are mixed lodgepole pine and subalpine fir with areas of aspen and large flat areas of sage brush. Along the river and creek bottoms are large quantities of willows and thick grass.

Infrastructure

Single access points. Steep roads, narrow in spots, one way in, one way out. In the towns there are fire hydrants that could be used in areas around town. In other areas water sources are found by access to some points along creeks, river, and ponds.

Evacuation

This plan will include both notification and evacuation order phases. Both phases will be activated by the following trigger points.

Notification Trigger: 1. If a fire escapes initial attack or spots within 1.5 miles of adjacent subdivisions and/or affected recreational areas.

Evacuation Trigger: 2. If a fire escapes initial attack or spots within 1 mile of adjacent subdivisions and/or affected recreational areas.

NOTE: Any fire which burns in the area and exhibits extreme fire behavior, is tactically unsafe to fight, or poses an immediate threat to the area would trigger immediate evacuation.

Summary of Proposed Wildfire Mitigation Activities

Sublette County, along with state and federal agencies, are committed to mitigate the severity of wildfire in our communities at risk. The County helps fund mitigation projects for landowners by applying for Western States WUI federal grant funding in an effort to educate landowners how to maintain their property against wildfire on a long term basis. Also, Sublette County has utilized funding from the CAFA adjacent lands grant, which includes the recently completed 100 acre fuels reduction project on the Flying A Ranch. A summary of the proposed Fuel Mitigation Projects are listed below by Response Area.

Pinedale Rural Response Area		
Item	Agency	Activity
1	**USFS,** County R/B	**Skyline WUI Fuels Reduction Project** ~2440 acre fuels reduction effort managed by the USFS encompassing: Phase 1: * Widening of Skyline Drive to White Pine Ski Resort (County Road/Bridge) * Shaded fuel break on Skyline Drive to White Pine Ski Resort (USFS) * Fuel Reduction Activity: area between Fremont Lake Campground/Sylvan Bay Residences (USFS) * Fuel Reduction Activity: area between Half Moon Lake and White Pine Ski Resort (USFS) Phase 2: * Widening of Skyline Drive to Elkhart Park (County Road and Bridge) * Shaded fuel break on Skyline Drive to Elkhart Park (USFS) * Improve "Refuge in Place" Evacuation Location @ Elkhart Park (USFS) reference: http://www.fs.usda.gov/project/?project=45976
2	**Unified Fire,** USFS, Emergency Management, Sylvan Bay HOA, Permit Holders	**Activities Supporting Skyline WUI Fuels Reduction Project** * Public Education program providing fuel reduction consultation and recommended activities with individual permit holders in Sylvan Bay Summer Homes, White Pine Ski Resort and Half Moon Bay Resort. (SCUF, USFS, Permit Owners) * Investigate adoption of FireWise and Ready, Set, Go programs for Sylvan Bay Community (SCUF, USFS, SB HOA, Permit Owners) * Consolidate/Update Sylvan Bay Evacuation Plan (SCUF, USFS, SCEM, SB HOA)
3	**Unified Fire,** Wyoming State Forestry, Landowners	**Fuel Reduction Activities along Pine Creek** * Public education and fuel reduction activities with individual land holders on Pine Creek (SCUF, State Forestry, Landowners)

Big Piney/Marbleton Rural Response Area		
Item	Agency	Activity
No focused mitigation activities planned		
Bondurant Rural Response Area		
Item	Agency	Activity
1	**HR HOA,** HR Landowners, Unified Fire	**Covenant Activities w Hoback Ranches** * Modification of Hoback Ranches Covenants to enable cutting of "green trees" with goal to promote healthy forests and fire risk management (HR HOA, landowners, SCUF)
2	**Unified Fire,** WSF, HR Landowners, HR HOA, SC Road/Bridge	**FireWise Activities w Hoback Ranches** * Compilation of completed BLM, USFS, and Landowner mitigation activities along with identification of existing fuel loading and natural fuel breaks on a map of the Hoback Ranches community to enable a strategic look of where we should target focused mitigation activities moving forward. (SCUF, WSF, USFS, BLM, HR HOA) * Public Education/Residential Risk Assessments/Fuel Reduction Activities w Hoback Ranches landowners (SCUF, WSF, HR Landowners) * Investigate adoption of FireWise and Ready, Set, Go programs for HR Community (SCUF, HR HOA, HR Landowners)
3	**Emergency Management** Unified Fire, HR Landowners, HR HOA	**Hoback Ranches Evacuation Plan** * Review and update of current Hoback Ranches evacuation plan to include refuge in place locations and alternate escape routes. (SCEM, SCUF, HR HOA, HR Landowners)
4	**Unified Fire,** WSF, FA, PM, Rim Landowners	**FireWise Activities w Flying A Ranch, Packer Miner, Rim Properties** * Public Education/Residential Risk Assessments/Fuel Reduction Activities w Flying A Ranch, Packer Miner and Rim Properties (SCUF, Flying A Ranch, P/M, Rim Landowners)
5	**Unified Fire,** SC Road/Bridge Landowners	**Water Supply Enhancement - Bondurant** * Explore incorporation of 4 dry hydrants/fire cisterns (SCUF, SC R/B, Landowners) • Elkhorn or Black Powder Guest Ranch • Bondurant Post Office • Kilgore Creek on Upper Hoback River • Hoback Ranch Rd and Fisherman's Creek

Boulder Rural Response Area		
Item	Agency	Activity
1	**Unified Fire,** USFS, Permit Holders	**FireWise Activities w Temple Creek Summer Homes** (Permit) * Public Education program providing fuel reduction consultation and recommended activities with individual permit holders in Temple Creek Summer Homes (SCUF, USFS, Permit Owners)
2	**Unified Fire,** SC Road/Bridge Landowners	**Water Supply Enhancement - Boulder** *Explore incorporation of 1 dry hydrant/fire cistern (SCUF, SC R/B, Landowners) • Barger Subdivision
Daniel Rural Response Area		
Item	Agency	Activity
1	**Unified Fire,** WSF, Jim Bridger Estates, Thunder, Rolling Thunder, Green River Estates Subdivisions	**FireWise Activities w Jim Bridger Estates, Thunder, Rolling Thunder, Green River Estates Subdivisions** * Public Education/Residential Risk Assessments/Fuel Reduction Activities w residents of Jim Bridger Estate, Thunder, Rolling Thunder, Green River Estates Subdivisions (SCUF, WSF, landowners)
2	**Unified Fire,** SC Road/Bridge Landowners	**Water Supply Enhancement - Daniel** * Explore incorporation of 2 dry hydrants/fire cisterns (SCUF, SC R/B, Landowners) • Green River Estates • Warren Bridge
Kendall Valley Rural Response Area		
Item	Agency	Activity
1	**Unified Fire,** WSF, RC Landowners	**FireWise Activities w Red Cliff Subdivision** * Public Education/Fuel Reduction Consultation/Fuel Reduction Activities w Red Cliff landowners (SCUF, WSF, RC Landowners)
2	**Unified Fire,** Landowners	**FireWise Activities w New Fork Summer Homes** * Public Education providing fuel reduction consultation and recommended activities with individual New Fork Summer Home landowners (SCUF, landowners)
3	**Unified Fire,** SC Road/Bridge Landowners	**Water Supply Enhancement - Kendall Valley** * Incorporation of 1 dry hydrant/fire cistern (SCUF, SC R/B, Landowners) • approximately 14 miles in from HWY 191 on the west side of Wyoming State Highway 352 on the north end of the New Fork Lake parking area drafting from Marsh Creek a tributary of the New Fork River drainage. • Kendall Valley Redstone Subdivision

For more information concerning county mitigation activities or efforts that can be done in prevention of wildfire along with steps to take when wildfire occurs please contact.

County Fire Chief /Warden or County Fire Protection Officer
Sublette County Unified Fire
PO Box 2410 / 130 South Fremont
Pinedale, WY. 82941
(307) 367-4550 (office)

Resources

Sublette County Unified Fire collaborates with Sublette County Emergency Management, Bridger-Teton National Forest, Wyoming State Forestry, and the BLM in pre-fire planning, fuel reduction projects, training, and public education within the communities of Sublette County. Prevention goals include:

- Increase public awareness of wildfire in wildland urban interface areas.
- Increase public awareness of the positive effects of wildfire as a natural process.
- Increase public awareness of the importance of forest health and stewardship.
- Conduct community risk assessments with recommendations to homeowners on how to improve the fire defensibility of their structures.
- Conduct fuel reduction and vegetation management projects within wildland urban interface areas.

Bridger-Teton National Forest, BLM High Desert District, and Sublette County Unified Fire personnel collaboratively respond to staff initial attack resources dependent on the fires jurisdiction. Wyoming State Forestry, USFS, and BLM provide additional fire resources in the case of larger incidents. Cumulatively, resources include wildland fire resources, structural fire resources, aviation resources, and support/logistical resources. These agencies operate through individual agreements and through a multi-agency Wildland Fire Management Annual Operating Plan. Reaction force goals include:

- Ensure an adequately trained, equipped, and response ready force.
- Continue collaborative training programs.
- Increase cross-agency familiarity of operations.
- Ensure team cohesion and integrity at the agency level.

Plan Review and Approval

In order to be effective, this plan must be a dynamic document that addresses the changing wildland conditions and the interface within it, regarding wildfire behavior. The plan review, amendment, and approval process will be as follows:

1. It will be the responsibility of the agencies involved to review this plan and recommend changes to decision makers. All meetings are open to the public and public input is encouraged.

2. The plan will be reviewed on an annual basis.

3. The amended plan will be approved by a 2/3 or greater vote of the signatories or their designated representatives.

4. The approved plan will be forwarded to the appropriate bodies for signature. The head of each agency or a designated deputy will be authorized to sign the plan. All signatures remain valid until the plan is amended and approved.

APPENDICES

A. **Fire Hazard Severity Form**
B. **Minimum Design Standards for Dry Hydrants**
C. **The Basics of Defensible Space and the "Home Ignition Zone"**
D. **Defensible Space: Landscaping Steps to Reduce the Wildfire Threat**
E. **Survive the Unthinkable – if wildfire threatens your home**
F. **Consolidated Structure and Fuel Mitigation Guideline**
G. **Plants for a Firewise Landscape**
H. **Links**

APPENDIX A: Fire Hazard Severity Form

	Points
A. Subdivision Design	
1. Ingress/Egress	
Two or more primary roads	1
One road	3
One-way road in, one –way road out	5
2. Width of Primary Road	
20 feet or more	1
Less than 20 feet	3
3. Accessibility	
Road grade 5% or less	1
Road grade more than 5%	3
4. Secondary Road Terminus	
Loop roads, cul-de-sacs with an outside Turning radius of 45 feet or greater	1
Cul-de-sac turnaround	
Dead-end roads 200 feet or less in length	3
Dead-end roads greater than 200 feet	5
5. Street Signs	
Present	1
Not Present	3
B. Vegetation (IUWIC Definitions)	
1. Fuel Types	
Light	1
Medium	5
Heavy	10
2. Defensible Space	
70% or more of site	1
30% or more, but less than 70% of site	10
Less than 30% of site	20

	Points
C. Topography	
8% or less	1
More than 8%, but less than 20%	4
20% or more, but less than 30%	7
30% or more	10
D. Roofing Material	
Class A Fire Rated	1
Class B Fire Rated	5
Class C Fire Rated	10
Nonrated	20
E. Fire Protection-Water Source	
500 GPM hydrant within 1,000 feet	1
Hydrant farther than 1,000 feet or draft site	2
Water source 20 min. or less, round trip	5
Water source farther than 20 min. and 45 min. or less, round trip	7
Water source farther than 45 min. round trip	10
F. Existing Building Construction Materials	
Noncombustible siding/deck	1
Noncombustible siding/combustible deck	5
Combustible siding and deck	10
G. Utilities (gas and/ or electric)	
All underground utilities	1
One underground, one aboveground	3
All aboveground	5

Total for Subdivision _____

Moderate Hazard	40-59
High Hazard	60-74

Extreme Hazard	75+

APPENDIX B: Minimum Design Standards for Dry Hydrants

The following have been provided to give guidance to contractors on acceptable design and materials for dry hydrant installation. The following design features are suggested and are to be used for a basis for design for dry hydrants using PVC pipes. All designs are required to be approved by the Fire Prevention Officer or County Fire Chief/Warden of Sublette County Unified Fire prior to installation. Each dry hydrant design is reviewed on an individual basis and is approved specific to that location. Not all dry hydrants work the same in all locations.

- All dry hydrants shall be capable of providing a year round water supply with a desirable flow of 500 to 1000 gallons per minute.
- Dry hydrant piping, elbows, couplings, reducers and underwater strainers shall be constructed of PVC pipe (schedule 40 or greater) and/or steel pipe. PVC fittings should be joined with appropriate PVC-type cement according to manufacturer's specifications to ensure all joints are airtight. Steel pipe fitting should be joined using Teflon tape or appropriate pipe dope at the fittings to ensure all joints are airtight.
- Pipe shall not be less than a 6 inch diameter.
- An intake strainer, capable of supporting the above noted flow requirements, shall be provided.
- For streambed installation the strainer section may be buried below bed of stream and surrounded/covered with gravel.
- The total area of strainer holes must exceed 4 times the area of the diameter of the pipe.
- The dry hydrant horizontal pipe installation depth must be buried and placed nearly level. Its depth must be sufficiently below the frost-free depth for the area and also below the average 50-year drought level.
- All elbows associated with the riser assembly shall be ninety (90) degrees. Ninety-degree elbows will not be permitted elsewhere in the suction line.
- The riser, including the underground portion, shall not exceed 12 feet of rise. The dry hydrant shall not extend less than 24 inches and not more than 36 inches above adjacent ground level.
- The outlet, (i.e. fire department connection) on the dry hydrant shall consist of the following:
    - One 6" PVC or steel 90 degree elbow with 6" NH (NST) male outlet adaptor
    - One adapter, 6" NH (female) x 4.5" NH (male) with rocker lugs.
    - One cap, 4.5" NH with attaching cable
- All exposed PVC or metal surfaces and all underground metal surfaces should be primed and painted white to prevent deterioration of the material and enable rapid locating of hydrants.
- The dry hydrant should be as close as practical to the water source and the road itself should be at least 12 feet wide with a 30 foot turn radius and the site should have proper drainage.

- It is recommended that the designers of dry hydrants use the design worksheet and accompanying tables located in the rear portion of this appendix as the basis for the hydrant design.
- Following installation, flow tests shall be conducted by the owner or installer and documentation of flows shall be forwarded to Sublette County Unified Fire.
- It shall be the responsibility of the owner to ensure proper maintenance of the hydrant.
- Dry Hydrants will be serviced and flow tested on an annual basis by Sublette County Unified Fire

DRY HYDRANT TABLES/DESIGN WORKSHEET

Chart A: STRAIGHT PIPE EQUIVALENT FOR FITTINGS (IN FEET)

PVC PIPE DIAMETER	6.0"	8.0"	10.0"
90 ELBOW, STANDARD	16.0	26.0	27.0
90 ELBOW, MEDIUM SWEEP	14.0	18.0	22.0
90 ELBOW, LONG SWEEP	11.0	14.0	18.0
45 ELBOW	7.5	10.0	13.0
HYDRANT CONNECTION (6" x 4.5")	2.5		
REDUCER (8" x 6")	3.5		
REDUCER (10" x 6")	5.0		

SOURCE: HANDBOOK OF PVC PIPE

Chart B: HEAD LOSS PER 100' OF PVC PIPE (IN FEET)

GPM PIPE SIZE	6.0"	8.0"	10.0"
750	3.4	0.8	0.3
800	3.8	0.9	0.3
900	4.8	1.2	0.4
1000	5.8	1.4	0.5
1100	6.9	1.7	0.6
1200	8.1	2.0	0.7
1300	9.4	2.3	0.8
1400	10.8	2.7	0.9
1500	12.3	3.0	1.0
1600	13.8	3.4	1.2
1700	15.5	3.8	1.3
1800	17.2	4.2	1.4
1900	19.0	4.7	1.6
2000	20.9	5.2	1.7

SOURCE: NFPA 1231: STANDARD ON WATER SUPPLIES FOR SUBURBAN AND RURAL FIRE FIGHTING (1993)

Chart C: HEAD LOSS PER 100' OF HARD SUCTION HOSE (IN FEET)

GPM PIPE SIZE	4.5"	6.0"
750	14.7	3.6
800	18.9	4.7
900	23.5	5.8
1000	28.5	7.0
1100	34.0	8.4
1200	40.0	9.9
1300	46.4	11.4
1400	53.2	13.1
1500	60.5	14.9
1600	68.1	16.8
1700	76.2	18.8
1800	84.7	20.9
1900	93.7	23.1
2000	103.0	25.4

SOURCE: NFPA 1231: STANDARD ON WATER SUPPLIES FOR SUBURBAN AND RURAL FIRE FIGHTING (1993)

DRY HYDRANT DESIGN WORKSHEET

DATE: _____
PROJECT LOCATION:

_____

TOWNSHIP: _____ **DESIGN FLOW = 1000 GPM**

A. STATIC LIFT (SL) (assume pumper intake @ 3 ft) _____ **FEET**

B. PIPE HEAD LOSSES

1. **HORIZONTAL PIPE LOSSES (HPL)**

Horiz. Pipe Diameter	_____ inches
Horiz. Pipe Length (including strainer)	_____ feet
Horiz. Pipe Fittings: (use Chart A for straight pipe equivalents)	
90 degree elbow @ bottom of riser	_____ feet
Total Horizontal Length	_____ feet

HPL = Total Horizontal Length x Chart B factor
HPL = (_____) x (_____ ft/100 ft) _____ **FEET (HPL)**

2. **RISER PIPE LOSSES (RPL)**

Riser Pipe Diameter	6.0 inches
Riser Pipe Height	_____ feet
Riser Pipe Fittings: (use Chart A for straight pipe equivalents)	
_____ x 6" reducer	_____ feet
90 degree elbow, std. @ top	16.0 feet
Total Riser Height	_____ feet

RPL = Total Riser Height x Chart B factor
RPL = (_____) x (_____ ft/100 ft) _____ **FEET (RPL)**

3. **CONNECTION LOSSES (CL)** (worst case)

6" x 4.5" Adapter: 2.5' (Chart A) x 28.5 ft/100 ft (Chart C)	0.7 feet
4.5" Dia Hard Suction Hose: 10.0' x 28.5 ft/100 ft (Chart C)	2.9 feet

CL = (1.2 ft) + (6.0 ft) 3.6 **FEET (CL)**

C. TOTAL HEAD LOSSES (THL)
THL = SL + HPL + RPL + CL = (____) + (____) + (____) + (3.6 ft)
THL = _____

If the Total Head Loss is greater than 25-30 feet, the pump may not be able to flow its rated GPM. Increase the horizontal pipe diameter and redesign.

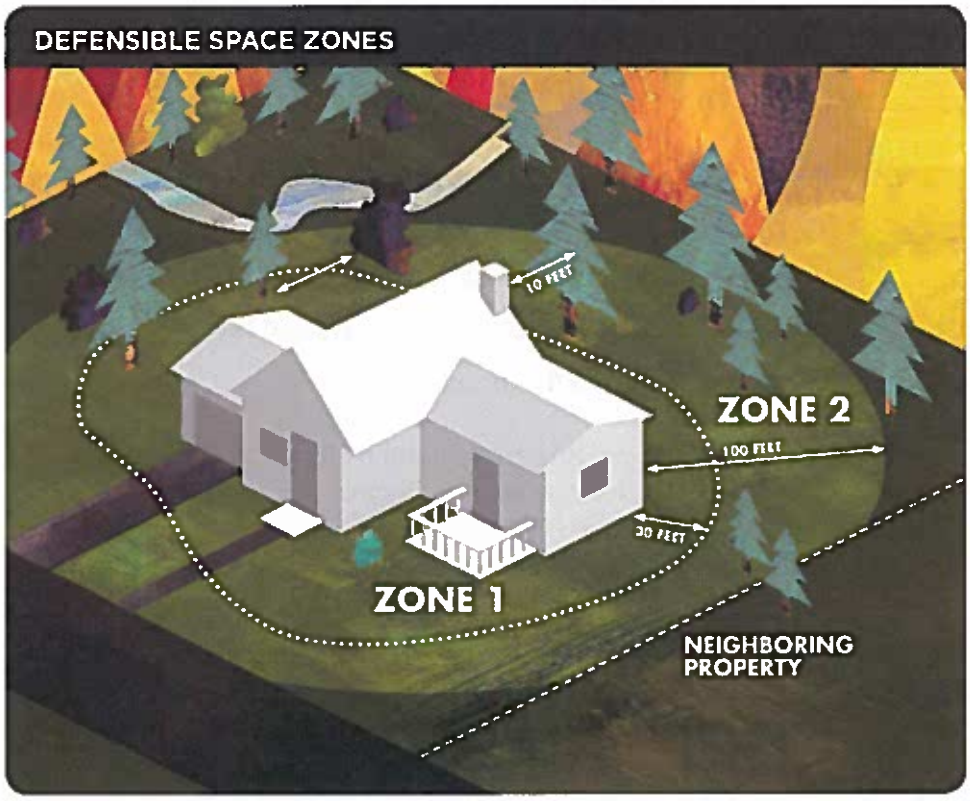
APPENDIX C: The Basics of Defensible Space and the "Home Ignition Zone"

Recommendations from the Firewise Communities Program

The concept of the home ignition zone was developed by USDA Forest Service fire scientist Jack Cohen in the late 1990s, following some breakthrough experimental research into how homes ignite due to the effects of radiant heat. For more than 15 years, NFPA's wildfire safety recommendations have been shaped by this fire science and because of it, is able to provide actionable guidance for homeowners, (http://www.firewise.org/wildfire-preparedness/be-firewise/home-and-landscape.aspx?sso=0), to help them prepare homes/home landscapes to resist wildfire.

Using the Zone Concept

The primary goal for Firewise landscaping is fuel reduction — limiting the amount of flammable vegetation and materials surrounding the home and increasing the moisture content of remaining vegetation. The home itself and everything around it up to 100 – 200 feet is known as the 'home ignition zone.' In areas across the country where the risk of wildfire is high, the home ignition zone extends up to 200 feet beyond the actual home structure. Within this 200 foot area, there are three zones:



Zone 1 encircles the structure and all its attachments (wooden decks, fences, and boardwalks) for at least 30 feet on all sides. *Note:* the 30-foot number comes from the very minimum distance, on flat ground, that a wood wall can be separated from the radiant heat of large flames without igniting. In this area:

- Plants should be carefully spaced, low-growing and free of resins, oils and waxes that burn easily.
- Mow the lawn regularly. Prune trees up six to ten feet from the ground.
- Space conifer trees 30 feet between crowns. Trim back trees that overhang the house.
- Create a 'fire-free' area within five feet of the home, using non-flammable landscaping materials and/or high-moisture-content annuals and perennials.
- Remove dead vegetation from under deck and within 10 feet of house.
- Consider fire-resistant material for patio furniture, swing sets, etc.
- Remove firewood stacks and propane tanks; they should not be located in this zone.
- Water plants, trees and mulch regularly.
- Consider xeriscaping if you are affected by water-use restrictions.

Zone 2 is 30 to 100 feet from the home, and plants in this zone should be low-growing, well irrigated and less flammable. In this area:

- Leave 30 feet between clusters of two to three trees, or 20 feet between individual trees.
- Encourage a mixture of deciduous and coniferous trees.
- Create 'fuel breaks', like driveways, gravel walkways and lawns.
- Prune trees up six to ten feet from the ground.

Zone 3 is 100 to 200 feet from the home and this area should be thinned, although less space is required than in Zone 2. NOTE: Because of other factors such as topography, the recommended distances to mitigate for radiant heat exposure actually extend between 100 to 200 feet from the home – on a site-specific basis. In this area:

- Remove smaller conifers that are growing between taller trees. Remove heavy accumulation of woody debris.
- Reduce the density of tall trees so canopies are not touching.

Download the Firewise Landscaping and Construction Guide (http://www.firewise.org/~/media/firewise/files/pdfs/guides/landscaping.pdf?la=en) which provides a more in-depth look at each zone and the applicable actions steps (within that zone) that homeowners can take to reduce the risk of wildfire damage to their home and property.

Property owners need to address the "little things" first: NFPA advises property owners to start with the house and work their way out. Having a nonflammable roof covering and assembly adds an enormous safety measure. Keeping roofs and gutters clean and clear of leaves or needles is critical to minimizing ignition from embers. Flammable attachments (e.g., untreated wooden decks) are very vulnerable to ignition and can carry fire to the main structure. Keep flat surfaces clear of debris. Clean out any leaves, needles or stored material that could burn from under decks or porches. During this high fire danger season, remove large potential heat sources such as piles of firewood, spare building materials, vehicles - anything that could catch embers or ignite by flames in the grass needs to be as far away from dwellings as possible. Download NFPA's Firewise Tips Checklist for Homeowners (http://www.firewise.org/wildfire-preparedness/be-firewise/home-and-landscape.aspx?sso=0) that includes these and other actionable steps residents can start working on today.

Remove fuel sources close to the house: The perimeter of the home and attachments out to about 5 feet is vulnerable if there is anything there - organic mulch, woody shrubs and

plants, juniper bushes - that could ignite and thus allow flames to touch the house. Wind-driven fire will create a blizzard of embers that will pile up in corners where you might normally find accumulations of leaves or needles around your home. These corners, nooks and crannies should be clear of any flammables. If there are any limbs or branches overhanging the roof, or any branches close to/touching the house, trim back to at least 10 feet from the house. Keep grass mowed low and well-watered if possible.

Larger projects to reduce potential fuel: Our tips for homeowners also cover projects that can be done when fire is not imminent. Download our Firewise Tips Checklist for Homeowners, (http://www.firewise.org/wildfire-preparedness/be-firewise/home-and-landscape.aspx?sso=0), that includes tips for landscaping to create space between trees, removing heavy accumulations of brush or trees out to 100-200 feet depending on slope and topography (because radiant heat ALSO causes homes to burn), creating a low-water (xeriscape) landscape, adding hardscape (rock or concrete patios, walkways, etc.) to break up the path of flames, screening vents or openings with fine metal mesh, and replacing windows with double- or triple-paned alternatives or tempered glass.

Embers and small flames are major culprits: Jack Cohen's work and further analysis and studies, including experiments sponsored by the insurance industry, (http://www.extension.org/pages/63495/vulnerabilities-of-buildings-to-wildfire-exposures#.Vb-ibflViko), show that not only should the radiant heat exposure be mitigated in the home ignition zone, but exposure to embers and surface fire as well. In fact, all the research around home destruction and home survival in wildfires point to embers and small flames as the main way that the majority of homes ignite in wildfires. For that reason, NFPA recommends methods to prepare homes to withstand ember attack and minimize the likelihood of flames or surface fire touching the home or any

attachments (fences, decks, porches) as the first place for homeowners to start working to prepare their properties.

APPENDIX D: Defensible Space: Landscaping Steps to Reduce the Wildfire Threat (from "Living with Wildfire in Wyoming")

Create Defensible Space for Fire Safety
Wildfires burn hundreds of thousands of acres in the United States every year, force evacuations, burn structures, and claim lives.
Firefighting agencies do all they can, but their resources can be quickly overwhelmed by a large blaze. Only the homeowner can help guarantee his or her safety, the safety of family members, firefighters, and pets, and increase the chances your home, outbuildings, and landscaping survive a wildfire. For Wyoming homeowners, there are many things that can be done during a weekend to increase your wildfire preparedness.

The Three R's of Defensible Space
Neighborhoods and subdivisions should work together to create defensible space when possible. Begin by inventorying the vegetation around you and your neighbors' houses.

Remove
- Remove dead vegetation, and clear weeds.
- Remove low tree branches.
- Remove ladder fuels (these are explained below).
- Remove firewood piles from near the house.

Reduce
- Breakup dense shrub fields and thick tree cover.
- Prune dead wood from shrubs.
- Reduce the amount of highly flammable native vegetation.

Replace
- Replace highly flammable plant material with less flammable, low-growing species within 30 feet to 100 feet of your house; check with your fire agency for local regulations.
- Consider replacing flammable roofing, siding, and other combustible building materials with fire-rated non-combustible materials, such as class A asphalt roof shingles, fiber cement siding.
- Replace attic vents and soffits that are plastic or can easily allow embers to pass into the attic or other parts of the house. Vents should be metal and less than ¼-inch mesh.

Following local regulations when creating defensible space is important. For example, the Casper Mountain Zoning District of Natrona County has regulations pertaining to fuel reduction requirements (see page 55 for Casper Mountain requirements). These requirements for homeowners on Casper Mountain are the only of their kind in Wyoming. If you live in an area without any requirements, these regulations may work as a guide.

Most people realize houses in or adjacent to wildland vegetation are at-risk for damage from wildfire. However, few people recognize that houses within urbanized areas are also threatened. During intense wildfires, burning pinecones, branches, and other material can be carried a half-mile or more beyond the fire front. Showers of embers are produced. If these embers land in spots where there are easily ignited fuels, such as wood shingle roofs, trash piles, or dried grass, new fires can start.

What is Defensible Space?

Defensible space describes an area of reduced wildfire threat around a home. You can modify a landscape to create defensible space by altering vegetation to decrease overall fuel volume and altering the arrangement and height of plant material. It is also important to ensure adequate space for firefighters to operate safely. These practices can make the difference between a structure surviving a wildfire or being destroyed.

Factors affecting how easy it will be to create your own defensible space are:

- The size of your property
- Types of vegetation
- Accessibility
- Slopes and steepness

In some instances, a homeowner may already have an effective defensible space in place and need to perform only minimal additional work to contribute substantially to protecting a home from wildfire.

From Natrona County Firewise www.firewisewyoming.com

How To Create Effective Defensible Space

Make areas closest to the house lean, clean, and green – reduce the amounts of fuel, remove dead or high-risk vegetation, and keep the areas closest to the house well-maintained, green, and healthy. Many people find defensible space fits other landscape objectives as well. The area closest to the house is where you entertain guests, eat outside in good weather, and enjoy a lawn or flower garden. Many houses are adjacent to forests or prairie or on steep vegetated slopes, which are areas of high wildfire hazard. They need both the lean, clean, and green zone (first 100 feet) and an additional area outside of that.

Step One: Determine your defensible space

The amount and type of highly flammable wildland vegetation (grass, shrubs, or trees) growing on or adjacent to your property and how steep the slope of the area around and leading up to the house determines how much defensible space is needed. The minimum for most homes in Wyoming is 100 feet from a house, but a heavier amount of vegetation or steep slopes could mean at least 200 feet.

If the recommended distance goes beyond the property boundaries, contact the adjacent property owner and work cooperatively to create defensible space. The effectiveness of defensible space increases when property owners work together. Do not implement defensible space practices on neighboring properties without first securing permission. The county assessor's office can provide assistance if the owners of adjacent parcels are unknown.

Once the recommended distance is determined, temporarily mark the outer boundary with survey flagging or paint on trees or shrubs. The land within this boundary is the defensible space you need.

Step Two: Make a list of what you need to do and do it

Clean Up

Look around – is there dead vegetation in your defensible space zone?

Dead vegetation includes dead trees and shrubs, dead branches lying on the ground or still attached to plants, dried grass and flowers, dropped leaves and needles, and firewood. Dead vegetation should be removed from the defensible space area. Two important exceptions are pine needles covering bare soil and downed trees embedded in the ground. Pine needles are good cover for bare soil but should be kept to a thickness of between 1 and 2 inches – more is a hazard and less promotes erosion. Be careful not to remove the duff area – the dark brown zone beneath the needles where the needles have begun to decompose. Remove all pine needles under decks and within 2 feet of any structure. Move firewood piles away from the structure during fire season.

This mountain cabin owner thinned and pruned up the trees and removed a significant amount of under-brush. Limbs and whole trees have been chipped.

This cabin owner followed up a year after the treatment with a native wildflower mix on the bare soil. Photo: Nick Williams

Breakup the canopy

Within the defensible space, is there a dense, continuous cover of shrubs or tree canopies? Sometimes, wildland plants grow as an uninterrupted layer of vegetation as opposed to patchy or widely spaced plants. The more continuous and dense the vegetation, the greater the threat of wildfire. If the branches of neighboring trees or shrubs touch, break them up. There are two types of dense, continuous vegetation that homeowners are likely to encounter in mountain areas – brush fields and crowded stands of coniferous trees.

Prairie and other brush fields

Create separation between shrubs based on shrub height and steepness of slope. The separation between individual or small groups of shrubs on flat to gently sloping terrain should be twice the height of remaining shrubs. For example, if the shrub height is 4 feet, then the recommended separation should be 8 feet (2 x 4-foot shrub height = 8-foot separation). Separation is measured from the edge of the canopy of one shrub to another and not from trunk to trunk. The separation between shrub canopies should increase as the steepness of the slope increases.

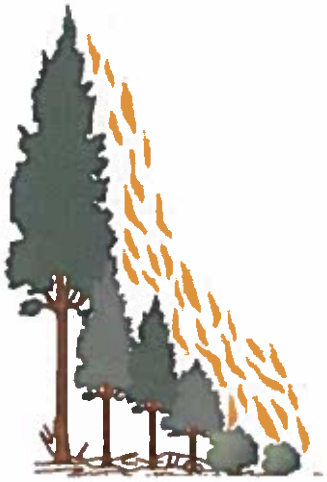
Crowded and dense stands of trees

In many mountainous areas, coniferous trees occur in dense, overcrowded stands where their branches are touching or interwoven. These conditions contribute to the risk of an uncontrollable and possibly catastrophic crown fire (wildfire burning through the tree canopies, independent of the understory vegetation). Create a separation between trees within the defensible space area. This is typically accomplished through tree removal or thinning of the stands. Note the photos on page 6; homeowners do not have to completely remove all the trees around their houses to have adequate defensible space.

Make sure there are no ladder fuels within your defensible space

Sometimes, plants serve like rungs of a ladder; they carry flames from fuels burning at ground level, such as dead grass and weeds, to taller fuels, such as shrubs, which ignite still taller fuels, such as tree branches. The ladder fuel problem can be remedied by removing the lower tree branches or reduce the height of the shrub or both. Exceptions to this practice are:

- Removal of lower tree branches should not exceed one-third to half of the tree's total height.
- Lower tree branches should be removed to at least 7 feet in height when no understory vegetation is present.
- Lower branches on shrubs taller than 3 feet should be removed to provide at least 12 inches of separation from the ground.



Ladder fuels are created when vegetation of different heights is close enough to allow a surface fire to become a crown fire.

From "A Landscape Guide for Mountain Homes," by University of Nevada Cooperative Extension

Remember, if you create slash piles of dead material such as tree branches during your creation or maintenance of defensible space, these piles should be eliminated annually. Landowners should consult their local law enforcement and fire protection district on slash pile burning and disposal of slash. Some communities have publically designated slash piles that are burned by the local fire department or forestry agency on an annual basis. Take advantage of these opportunities if they are available in your community.

No junipers

Junipers are often planted around the foundations of homes. They are very flammable – not good choices for a Firewise landscape.

Step Three: Plant choice critical for defensible space areas

You should keep your defensible space in mind when planning a landscape or planting. Poor plant choice and spacing can jeopardize your defensible space. In addition to choosing plants to meet needs, such as providing shade, producing wind protection, adding color, and con- trolling erosion, select plants that have a low fire hazard. There are no fireproof plants. Any plant can burn during extreme fire conditions. There are, however, important differences in flammability. Some plants are more difficult to ignite, burn more slowly, produce less heat, and have shorter flame length. See "Some native plants for use in Wyoming landscapes" for a list of native plants and other tips that can get you started on a landscaping endeavor.

As you conduct landscaping activities, preserve or create your concentric "rings" of protection around your home or cabin.

In the first ring – an area around the home at least 3 feet and preferably 5 feet – do not use any wood mulch or flammable plants. Choose short (less than 18 inches high), fire-

resistant plants and keep them away from contact with the structure. Have no plants in this area if the structure is built of logs or flammable material.

In the next ring, a space 30 feet out from the structures, herbaceous, fire-resistant plants should dominate. For example, a lawn planted in this area can be a cool and relaxing place for family members to gather. For defensible space purposes, this lawn should be kept green, if possible, and short. Any shrubs should be deciduous and less than 2 feet high. Any fire-resistant trees, shrubs, or other plants in this ring or the final ring from 30 to100 or 200 feet should meet the spacing requirements and other safety considerations listed above.

In addition to the right plants, hardscaping can help protect a home. Rock mulch is a very useful addition to landscapes where wildfire is a concern. Using pea-sized gravel mulches and/or larger rocks up to boulder-sized can be an attractive form of hardscaping that will not burn or carry flames to the home. Other forms of hardscaping to create firebreaks around a house include paved patio areas, walkways and driveways of gravel, concrete or pavers, and raised beds made of rock or brick.

Step Four: Maintain for fire safety

Remember these three words – lean, clean, and green – when there is any potential of wildfire in your area. Keep your landscape lean by reducing, removing, or replacing the most flammable vegetation within your defensible zone. Keep it clean – make sure there is no accumulation of dead vegetation or other flammable debris. Keep it green – make sure plants are healthy and green during the fire season. Creating a defensible space should not be viewed as a one-shot effort. Maintaining an effective defensible space is an ongoing process.

Working with your community, neighborhood, or homeowners association will improve the chances that structures will survive a wildfire. Ask a forester or local fire department about how your community could become a nationally recognized Firewise Community. For more information about Firewise communities, including additional tips on preparing your home for wildfire season, go to www.firewise.org/.

Obtaining More Information

Wyoming State Forestry Division and Sublette County have Firewise and fuels reduction programs to assist landowners who live in the wildland–urban interface. Sublette County even has federal assistance grants for landowners to help offset some of the costs of creating defensible space. For more information, please contact Sublette County Unified Fire at 307-367-4550. Or, go to www.firewisewyoming.com.

WELL-PLANNED HOME LANDSCAPE CAN REDUCE WILDFIRE DANGER

This cabin appears at first glance to not have any problems but look closely at how thick and dense the forest is, how tall the brown grass is, and the firewood pile under and near the deck. See the photo to the right after the wildfire arrived.

Firefighters were unable to reach this home before embers entered the firewood pile and the cabin, which caused the cabin to become fully involved with fire. Wildland firefighters are often not equipped to handle structure fires once a house is fully involved with fire.

Many Wyoming families have homes or cabins in forested areas, which provide a get-away from the heat and cares of lower-elevation towns.

The defensible tips given here can help protect a cab- in or home and the many memories these family gathering places hold; however, few want to go away for the weekend to a place with nothing around the building to beautify the site and make the structure seem part of the natural landscape.

A well-planned home landscape can reduce fire danger, protect your investment, and help the cabin fit in with the natural vegetation.

As mentioned, landscape plants, if not selected and placed well, can actually increase the fire hazard to a house. Evergreen trees are the most common plants around cabins and mountain homes. Unfortunately, these are some of the most flammable plants. Even their needles are highly flammable after they fall from the trees at the end of the growing season.

What makes one plant less flammable than another?

Some characteristics of less flammable plants include: high moisture content, low growing, and lack of very flammable chemicals. Herbaceous plants (grasses, bulbs, annual and perennial flowers, and some ground covers) tend to contain the most moisture. Of the shrubs and trees, deciduous varieties (ones that lose leaves in fall) tend to contain the most moisture and lack many of the flammable chemicals found in evergreens. Many of the native plant species found in mountainous areas, such as sagebrush or ground juniper, are very flammable. Water plants well during the fire season to maximize their fire resistance. Inspect regularly for any dry or dead material and remove.

Some native plants for use in Wyoming landscapes

Scientific Name	Common Name	Water Needs	Sun/Shade	Height
Flowers and Groundcovers				
Antennaria parvifolia	Smallleaf pussytoes	Low – Moderate	Sun	3"–8"
Antennaria rosea	Rosy pussytoes	Low – Moderate	Sun	3"–8"
Aquilegia spp.	Columbine	Low – Moderate	Part Shade/Shade	18"–24"
Arabis spp.	Rockcress	Low	Sun/Part Sun	6"
Campanula rotundifolia	Common harebell	Low – Moderate	Part Sun/Part Shade	4"–5"
Claytonia lanceolata	Spring beauty	Moderate	Part Sun/Part Shade	6"
Echinacea purpurea	Purple coneflower	Moderate	Sun	2'–3'
Eriogonum umbellatum	Sulphur flower	Low – Moderate	Sun/Part Shade	6"–12"
gaillardia aristata	Blanket flower	Low – Moderate	Sun/Part Shade	12"–20"
geum triflorum	Prairie smoke	Moderate	Sun/Part Shade	8"–18"
Ipomopsis aggregata	Scarlet gilia	Low – Moderate	Sun/Part Sun	18"–24"
Liatris punctata	Dotted gayfeather	Low – Moderate	Sun/Part Sun	6"–18"
Penstemon spp.	Penstemon	Low – Moderate	Sun/Part Shade	6"–36"
Sedum spp.	Stonecrop	very Low – Low	Sun	1"–6"
Shrubs				
Mahonia repens	Creeping grape holly	Low – Moderate	Sun/Part Shade	4"–6"
Philadelphus microphyllus	Little-leaf mockorange	Low – Moderate	Sun/Part Shade	18"–40"
Rosa woodsii	Wood's rose	Moderate	Sun/Shade	2'–3'
Trees				
Amelanchier alnifolia	Saskatoon alder-leaf serviceberry	Moderate	Sun/Part Shade	6'–8'
Crataegus spp.	Hawthorn	Moderate	Sun	6'–8'
Acer grandidentatum	Bigtooth maple	Low	Moderate Sun/Part Shade	10'–20'
Populus tremuloides	Quaking aspen	Moderate	Sun	8'–25'

Other or more extensive plant lists are available from local extension, USDA Forest Service, or Wyoming State Forestry Division offices. Plant lists are also available on the Internet but be sure plants are cold hardy enough for your location.

Remember, fire-resistant landscaping requires annual maintenance to be effective! Pine needles should be raked away from the house in the closest zone, gutters cleaned, plants pruned or thinned, dead material removed, and slash piles dis- posed of by legal means.

By taking these steps, time spent at mountain cabins or rural homes can be much safer. Nothing can guarantee a cabin or house will survive a wildfire, but steps to modify the natural vegetation and create an attractive, less-flammable land- scape near your forest sanctuary will help.

Vegetative Management and Defensible Space

Public agencies and some local homeowners associations have fuel-reduction requirements. Below are those for the Casper Mountain Zoning Area of Natrona County (2011).

Casper Mountain Zoning Fuel Reduction Requirements for Building Permits

(a) A mitigation plan for vegetative management and defensible space/fire safety shall be submitted with site plans for principle building construction. Zoning certificates shall be issued after approval by the reviewing officials (fire inspector or other designated official, and building official).

(i) Vegetative Management Recommendations:

(A) Fuel breaks: This can be implemented along access roads, driveways, and subdivision boundaries. The fuel break should be a minimum of 10 feet wide, and all material should be removed as well as all live brush and trees under 20 feet tall. A few larger trees (20 feet tall and larger) can be left, although all branches should be pruned to a height of 10 feet.

(ii.) Defensible Space Zones:

(A) Zone 1 – This area is the first 30 feet from the structure.

(I) Remove all dead material from this area and firewood piles and other combustible materials.

(II) Maintain an area of non-combustible material 3 to 5 feet away from structure.

(III) Remove all shrubs and trees except for a few individuals. (Minimum spacing between crowns of trees is 10 feet.)

(IV) Prune branches off of remaining trees to a minimum height of 10 feet. If a tree is less than 20 feet tall, prune it to half of total height.

(V) Plant species in this zone should be of a fire-resistant variety, which is mostly leafy species. These plants need to be watered well to maintain adequate moisture content.

(VI) Keep all vegetation mowed to a height not exceeding 2 inches.

(VII) Prune away any branches within 10 feet of structure and 15 feet away from any chimney outlets.

(VIII) Clear pine needles, leaves, limbs, and other debris from roofs and gutters.

(B) Zone 2 – This zone extends 70 feet beyond the outer edge of Zone 1.

(I.) Thin all trees to a spacing of 8 feet between tree crowns. (II.) Prune all remaining trees to a minimum height of 10 feet

(II.) Remove dead trees and downed combustible materials. Firewood and other combustible material can be stored here, but keep it at least 15 feet away from trees.

(III.) Control ground vegetation.

(C) Recommendations for remaining lot area:

(I.) Mark all fire protection equipment and water sources so they are clearly identified.

(II.) Inspect power lines on the property and ask the utility company to re- move any trees within 15 feet of the lines.

(III.) Place propane tanks at least 50 feet from structures and maintain a clear 10-foot area around the tank. Also, locate tanks at same or lower level as structure.

The original article published in "Living with Wildfire in Wyoming" 2013 edition was modified from the University of Nevada's Cooperative Extension document "A Landscape Guide for Mountain Homes."

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This article was pulled from "Living with Wildfire in Wyoming" 2013 edition and used with the expressed approval of Barnyards and Backyards and UW Extension. Some minor formatting was done to enable this article to be appended to this document.

APPENDIX E: Survive the Unthinkable – if wildfire threatens your home (from "Living with Wildfire in Wyoming")

Families in some areas of Wyoming can be safe and secure one day and have their lives turned upside down by wildfires the next.

To increase your safety and preparedness, we offer the following.

Ready– Preparing for the fire threat.

Be ready, be Firewise, and create defensible space. Prepare before the threat of a wildfire so you, other family members, and your house are ready. Assemble emergency supplies and belongings in a safe spot. Make sure everyone living within the home is familiar with the escape plan; set escape routes. Ask your local fire department if your county has a reverse 911 service and how to join. This service will try to contact your phone number in the event of a major incident in your area.

Set – Situational awareness when a fire starts.

If a wildfire breaks out near your area, pack emergency items in your vehicle. Listen to the latest news from the media and local fire department either by AM/FM radio, local TV, or by talking with authorities' on-scene. Prepare domestic animals and livestock for possible evacuation. Livestock trailers should be pre-positioned to capture and transport large animals before the fire arrives. Do not rely on phones or TV as the only means of obtaining information. Power and phone lines can go down, and cell phone towers can quickly become overloaded in large incidents such as wildfires. Knowing when and how to go is your responsibility.

Go – Leave early!

With a plan in place, you are prepared to leave at a moment's notice. Firefighters can take appropriate action without endangering you or your family. Evacuations take a lot of time and effort for authorities to accomplish. You can help by leaving as soon as possible in the event of an evacuation. Do not return home unless given permission by authorities.

STAY INFORMED! LEAVE EARLY! DON'T GET IN A BAD SITUATION!

Before a Wildfire

If you see a wildfire, call 911. Don't assume someone else already has. Have a disaster kit (see page 60) and emergency plan ready.

Well Before the Fire Approaches Your House

- Evacuate pets, the young, and anyone with medical or physical limitations.
- Wear protective clothing made of cotton that covers exposed skin. Do not wear nylon or similar fabrics.
- Clear flammable items from around the house, including woodpiles, lawn furniture, barbecue grills, tarp coverings, etc. Move them at least 30 feet from the area around your home.
- Close and protect openings. Close all doors inside the house to prevent drafts. Open the damper on a fireplace but close the fireplace screen. Close outside attic, eave and basement vents, windows, doors, pet doors, etc. Remove flammable drapes and curtains. Close all shutters, blinds, or heavy non-combustible window coverings to reduce radiant heat.
- Shut off any natural gas, propane, or fuel oil supplies at the source.
- Connect garden hoses and fill any pools, hot tubs, garbage cans, tubs, or other large containers with water. Firefighters may take advantage of these resources if near your home. Back your car into the driveway and roll up the windows.
- Disconnect any automatic garage door openers so doors can still be opened by hand if the power fails. Close all garage doors.
- Place valuable papers, mementos, and anything "you can't live without" inside the car, ready for quick departure. Any remaining pets should also be put in the car.

Preparing to Leave

- Turn on outside lights and leave a light on in every room to make the house more visible in heavy smoke.
- Leave doors and windows closed but unlocked. Firefighters may need quick entry into a home to fight fire. The entire area typically will be isolated and patrolled by sheriff's deputies or police after the fire moves on.

During a Wildfire

Survival in a Vehicle

This is dangerous and should only be done in an emergency, but surviving a firestorm is possible if you stay in a car. It is much less dangerous than trying to run from a fire on foot.

- Roll up windows and close air vents. Drive slowly with headlights on. Watch for other vehicles and pedestrians. Do not drive through heavy smoke.
- If you have to stop, park away from the heaviest trees and brush. Turn headlights on and ignition off. Roll upwindows and close air vents.
- get on the floor and cover up with a blanket or coat.
- Stay in the vehicle until the main fire passes. Do not run. The engine may stall and not restart. Air currentsmay rock the car, and some smoke and sparks may enter the vehicle. Temperature inside will increase, butmetal gas tanks and containers rarely explode.

If Caught in the Open

- The best temporary shelter is in a sparse fuel area. Some examples would be a plowed field, large pavedor gravel car parking area, or an irrigated lawn or field.
- If a road is nearby, lay face down along the road cut or in the ditch on the uphill side. Cover yourself with anything for protection from the fire'sheat.
- If hiking in the back country, seek a depression withsparse fuel. Clear fuel away from the area while the fire is approaching and then lay face down in the depression and cover yourself. Stay down until the fire passes.

After a Wildfire

- When allowed to return, immediately check the roofs of all buildings. If any heat or fire still exists, contact 911 and emergency services first. If safe and possible, extinguish any roof fires, sparks, or embers. Check the attic for hidden burning embers. Keep checking for several days after the fire. See page 16 of this guide for tips on how to keep safe during the aftermath of a wildfire.
- The water in the pool or hot tub and other containerscan come in handy now if you need to apply water toembers or heat on or around the house.
- After the fire, maintain a fire watch. Re-check for smoke and sparks throughout the house.

Obtaining More Information

- http://www.ready.gov/
- Information from the International Association of Fire Chiefs program; "Ready, Set, GO!: Your personal Wildland Fire Action guide." See http://www.wildland-firersg.org/
- Firewise Wyoming at www.firewisewyoming.com/index.html
- Contact Sublette County Unified Fire at 307-367-4550.

FIREFIGHTING DEPENDENT ON ACCESS AND WATER

During a wildfire, firefighting resources are generally limited, and those fighting the fire have to decide how to best position those resources. Firefighters un- able to safely enter and leave properties may not defend structures. Make sure firefighters have the room and water needed to best defend your home if able.

Some items to consider:

- Underground cisterns, aboveground water tanks, or draftable water sources that are accessible by emergency vehicles can help provide firefighters with water. Remember, your well may not pump water fast enough for firefighters to use, and the electricity that powers your water pump may go out. Make sure signs or other markings indicate any water sources firefighters can use.
- Reflectorized "red" fire numbers and street name signs can help firefighters find your property, especially in smoky situations.
- Firefighters need a clearance of 12 feet wide and 14 feet high along any roads to and through the property.
- Firefighters need a 45-foot turnaround area and pullouts large enough for emergency vehicle use to safely enter and leave a property.
- Fire trucks can be very heavy. They may not be able to climb slopes steeper than 10 percent grade when fully loaded.
- Bridge weight limits should be posted. Bridges should be wide enough and strong enough to support a fire truck weighing 18 tons or more (check with your local fire department for their requirements) and built of non-combustible material.
- All roads more than 150 feet in length should have turnouts to allow two vehicles to pass.

Creating an *emergency plan*

- Find out what disasters could occur in your community. Do you live in a flood zone or a wildfire-prone area? Learn what to do in different disasters.
- Your local government and local Red Cross chapter should have details on evacuation routes. Learn the emergency signals and discuss them with your family.
- Determine the best ways to leave your home and the best ways to escape disaster in your neighborhood or town.
- If you cannot meet loved ones at your home, determine a meeting place in the neighborhood. You may also con- sider looking at evacuation plans outside of the neighborhood or community in case meeting in the vicinity of your home isn't possible.
- Check disaster plans at schools, daycares, work, and places where you and your family tend to spend time in the community. Try to coordinate the evacuation procedures at each place to ensure everyone will be able to reach each other or end up on the same side of town.
- It's not a bad idea to have a Plan A, a Plan B, and a Plan C. Whatever the plans, make sure everyone in the family knows about them and what to do in different scenarios.
- Calling long distance during disasters may be easier since cell phone lines and local telephone networks may be down or overwhelmed. Be sure to have an out- of-town emergency contact.
- After a disaster, services or aid might not arrive for days. You might even have to flee your home or you might not be able to get to your house. In such cases, it will help to have a few things handy. Make a disaster kit for your home and car, along with a portable one.
- Don't forget to think about how to care for pets during an emergency. Many shelters may not allow them in- side because of health laws. Make sure to prepare pets for the worst.
- This is a lot to remember. Write down your family's plans and emergency contact numbers and give everyone a copy.

PREPARE EMERGENCY NECESSITIES

If forced to evacuate, you will want to be ready. Have a plan and list of things needed ready wellbefore fire season. Here is a list of commonly considered emergency necessities in wildfire season. Put these items in easy-to-carry containers such as backpacks, duffel bags, or plastic crates for easy transport.

Water

Store a minimum of 1 gallon per person per day for drinking and sanitation purposes. You should store a three-day supply. Store water in plastic containers.

Food

Store at least a three-day supply of ready-to-eat, canned food. Select foods that require no refrigeration, preparation, or cooking, and little or no water. If food must be heated, pack a canof Sterno. Don't forget to store food and water for your pet if you have one!

Other Items

Sleeping bag or blankets for everyone	Computers	Flashlight
Extra car keys, cash, and checks	Portable radio	Extra batteries
Cell phones and chargers	Sanitation supplies	Keys to safety deposit boxes

First Aid Kits

You should have two: one for your home and one for the car. Both should include:

sterile adhesive bandages in assorted sizes	scissors
assorted sizes of safety pins	tweezers
soap	needles
latex gloves	moist towelettes
sterile gauze pads of various sizes	antiseptic
various sizes of bandages	thermometer

Special Items

- **For babies:** Formula, diapers, bottles, medications
- **For adults:** Medications, denture needs, contact lenses and supplies, extra eyeglasses
- **Entertainment:** games and books
- **Important family documents:** Keep these in a waterproof, portable container:
  - Wills, insurance policies, contracts, deeds, stocks and bonds, titles
  - Passports, social security cards, immunization records, copy of driver's license, copies of health insurance cards
  - Bank account numbers, loan and investment info, first two pages of last year's tax records, computer usernames and passwords
  - Credit card account numbers and companies
  - Inventory (written, photo, video) of household goods, important telephone numbers
  - Family records (birth, marriage, death certificates)

A Few Things To Remember

- Keep items in airtight plastic bags.
- Change your stored water supply every six months so it stays fresh.
- Replace your stored food every six months.
- Rethink your kit and family needs at least once a year.
- Ask your physician or pharmacist about storing prescription medications.
- It is a good idea to have a safety deposit box in which copies of all valuable items are kept.

Author of "Survive the Unthinkable – if wildfire threatens your home":

- **Nick Williams** was a former fire resource forester and fuels mitigation program manager with Wyoming State Forestry Division.

This article was pulled from "Living with Wildfire in Wyoming" 2013 edition and used with the expressed approval of Barnyards and Backyards and UW Extension. Some minor formatting was done to enable this article to be appended to this document.

APPENDIX F: Consolidated Structure and Fuel Mitigation Guideline

Experience has shown that structure and landscape design is one of the most important factors in a home's survival. Using the appropriate building materials combined with an aggressive defensible space and fuels reduction plan can greatly increase your home's chance of survivability in a wildfire without decreasing the aesthetic value of your home.

Structure Protection:

- **Chimneys should have spark arresters and screens.**
- **Roofs:**
  The following roof coverings in natural colors (brown, tan, black, or green), are acceptable.
  - APPROVED: Color-impregnated metal roofing with a non-reflective finish is the preferred roof material.
  - APPROVED: Composition "Class A" shingles, clay, or cement tile materials are allowed. Composition roofing such as "3-D shingles" look very much like natural wood.
  - Wooden shake and wooden shingles are not recommended in the forest setting due to increased fire hazard. Existing wooden shake / shingle roofs will be allowed to remain but will eventually need to be replaced with approved fire-resistant material when (1) resident desires to replace the roof, or (2) the roof is in unacceptable condition and requires replacement.
- **Recommended Material for Exterior Wall and Decks/Porches:**
  - Textured exterior plywood if stained or painted, wooden or manufactured vertical or horizontal siding, peeled logs, native stone, or manufactured logs or decking. Combination of these material are often more aesthetically pleasing than a single material. Note: While vinyl siding is difficult to ignite, it can fall away or melt when exposed to extreme heat.
  - Small concrete block, lightweight aggregate blocks, split face block, and similar materials in muted tan, grey, green and charcoal work well in appropriate combination with wood.
- **Use Double-Pane or Tempered Glass Recommended.**
  - Double-pane glass can help reduce the risk of fracture or collapse during extreme wildfire. Tempered glass is most effective. For skylights, glass is a better choice than plastic or fiberglass.
- **Recommended to Enclose Eaves, Fascia's, Soffits and Vents.**
  - It is recommended to 'box' eaves, soffits and vents, or enclose them with metal screens. Vent openings should be covered with 1/8" or smaller opening metal screen.
- **Recommended to Protect Overhangs and other attachments:**
  - It is recommended to remove all vegetation and other fuels from around overhangs and other attachments (room additions, bay

windows, decks, porches, carports and fences). Box in the underside of overhangs, decks, and balconies with noncombustible or fire resistant materials.

- Anything attached to the house (decks, porches, fences and outbuildings), should be considered part of the house. These act as fuel bridges, particularly if constructed from flammable materials.
- If wood fence is attached to house, it is recommended to separate the fence from the house with a masonry or metal barrier.
- Decks and elevated porches should be kept free of combustible material and debris.

Defensible Space Zoning

To create an effective Firewise landscape, remember that the primary goal is fuel reduction. To this end, create defensible space zones around your home. Zone 1 is the closest to your house with Zones 2 and 3 moving progressively away from your house.

Zone 1: (0 – 30 feet from residence)

(0-5 feet from residence)

- All trees should be removed.
- Create a "fire-free" area using non-flammable landscaping material, (i.e. decorative rock or gravel), and/or high-moisture content annual or perennials. Other flammable plant material should be removed.
- Firewood should not be stacked directly next to or within 20 feet of structures.
- Remove dead vegetation from under and around decks.
- Consider fire-resistant material for patio furniture, swing sets, etc.

(5-30 feet from residence)

- Thin conifer trees to a spacing of 30 feet between crowns. Prioritize removal of Juniper trees first, removal of Lodgepole and Sub-alpine fir second, and Douglas fir third to meet the conifer spacing recommendation. Note: Lodgepole pines have shallow root systems that make them prone to blow-over. For Lodgepole pine, leave 30 feet between clusters of two to three lodgepole trees to help prevent this problem. Given their flame resistance, aspen trees do not need to be removed and are ideal in this area.
- Trim back trees that overhang the house or are within 10 feet of the chimney.
- Prune trees so that the lowest branches are 6-10 feet above the ground, or up to 1/3 of the tree height if the tree is less than 18 ft.
- Standing dead and dead topped trees should be removed.

- Dispose of all slash and dead, down trees by hauling off, or piling and burning
- Mow grasses to keep them low, a maximum of 6 inches high
- If desired, plant dispersed fire-safe trees and/or shrubs, such as aspen
- Propane tanks should not be located in this zone.
- Water plants, trees, and mulch regularly.

Zone 2: (30 – 100 feet from residence, 0-100 feet from main egresses and driveways)

- Leave 30 feet between clusters of two to three trees, or 20 feet between individual trees.
- Prune trees so that the lowest branches are 6-10 feet above the ground, or up to 1/3 of the tree height if the tree is less than 18 ft.
- Remove standing dead and dead topped trees
- Dispose of most slash and dead, down trees by hauling off, or piling and burning
- *Small* amounts of slash can be lopped and scattered for decomposition
- If desired, plant aspen trees in open areas

Zone 3 (100 – 200 feet from residence)

- Reduce the density of tall trees so canopies are not touching. Remove small conifers that are growing between taller trees. Remove heavy accumulation of woody debris.
- Pruning is not necessary in this zone
- Treat slash by lop-and-scatter, or piling and burning
- Remove most standing dead and dead topped trees; two per acre could be left for wildlife as long as the trees pose no threat to structures or access roads.

Insect & Disease Attack Prevention

An aggressive defensible space and fuels reduction plan will also promote healthy vegetation in the forest surrounding your home. Insect and disease attacks such as Comandra Blister Rust, Dwarf Mistletoe, and Mountain Pine Beetle can devastate an unhealthy, overgrown forest in a very short time. However, with selective fuels reduction you can promote tree health and improve growth while inhibiting the spread of insects and diseases.

Comandra Blister Rust is a disease that is caused by a fungus growing in the inner bark. The fungus has a complex life cycle. It infects lodgepole pines, but needs an alternate host, an unrelated plant to spread from one pine to another.

On lodgepole pines, the fungus causes growth reduction, stem deformity, and mortality. In addition, pines with stem cankers produce significantly fewer cones and seeds than healthy trees.

Dwarf Mistletoe is a native, parasitic, seed plant that occurs essentially throughout the range of western conifers in North America. It is the most damaging disease agent in coniferous trees, causing severe growth loss and increased tree mortality.

In the United States, the principle host of Dwarf Mistletoe is the lodgepole pine. It is occasionally found on limber and ponderosa pines, Engelmann spruce, blue spruce, whitebark pine, and Rocky Mountain bristlecone pines as well.

Abnormally tufted branches characterize affected trees. These growths, which are caused by the Dwarf Mistletoe, are called witches' brooms. Dwarf Mistletoe can cause the tree's growth to slow and eventually the crown will die. It also reduces the seed production of the host trees and can cause deformities such as cankers and knots.

Mountain Pine Beetle is a member of a group of beetles known as bark beetles. Except when the adults emerge and attack new trees, the mountain pine beetle completes its life cycle under the bark of the tree.

The beetle attacks and kills lodgepole, ponderosa, and western white pines. Outbreaks frequently develop in lodgepole pine stands that are grouped in dense stands of trees.

During epidemics, widespread tree mortality alters the forest ecosystem. Often, beetles have almost completely depleted the commercial pine forests. Moreover, the dead trees that are left after an epidemic are a source of readily ignitable fuel that will burn unless removed.

Douglas-fir Beetle is an insect that infests and kills Douglas-fir throughout most of its range in western United States. Douglas-fir beetles normal kill small groups of trees, but during outbreaks hundreds of infected tree groups are not uncommon. Losses can be devastating during periodic outbreaks.

At low or endemic levels, the beetle infests scattered trees, including windfalls and trees injured by fire, defoliation, or root disease. Where such susceptible trees are abundant, once they have been infested and killed,

beetle populations can build up rapidly and spread to adjacent green, standing trees.

APPENDIX G: Plants for a Firewise Landscape

FIREWISE LANDSCAPING

A well designed landscape around your home is the first step toward reducing risk from wildfire. Maintaining it is the second step.

All vegetation is potential fuel for fire. There are no truly "fire proof" plants. All will burn if the conditions are right. There are, however, plants that are FIRE-PRONE, and those that are FIRE-RESISTANT.

FIRE-PRONE PLANTS

Traits include:

- needle-like or other fine leaves.
- resinous, oily or waxy foliage or wood.
- loose or papery bark.

FIRE-RESISTANT PLANTS

Traits include:

- little or no seasonal accumulation of dead leaves.
- non-resinous wood and leaves.
- high moisture content of leaves.

Design your landscaping to include a combination of fire-resistant plants/trees and noncombustible *hardscape* materials, such as decorative stone/brick walls, patios, decorative stone borders around the foundation, stone or brick fences, or a stone or brick pillar in the fence separating the fence from the house. Look at existing natural fire-breaks on your property and incorporate them into your design. Examples include utility rights-of-way, roads, trails, meadows, rocky areas and streams.

Refer to Plant List below

http://firewise.org/~/media/Firewise/Files/Pdfs/Guides/landscaping.pdf

FLOWERS & GROUNDCOVERS

Scientific Name	Common Name
Achillea lanulosa	Native yarrow
Aconitum columbianum	Columbian monkshood
Allium cernum	Nodding onion
Allium geyeri	Geyer onion
Anaphalis margaritacea	Pearly everlasting
Antennaria parvifolia	Small-leaf pussytoes
Antennaria rosea	Rosy pussytoes
Aquilegia spp.	Columbine
Aquilegia coerulea	Colorado blue columbine
Arabis sp.	Rockcress
Artemesia frigida	Fringed sage
Artemesia ludoviciana	Prairie sage
Aster leavis	Smoot aster
Aster porteri	Porter aster
Calochortus gunnisonii	Mariposa lily
Campanula rotundifolia	Common harebell
Claytonia lanceolata	Spring beauty
Delphinium spp.	Delphinium
Dianthus spp.	Pinks
Epilobium angustifolium	Fireweed
Erigeron flagellarius	Whiplash dairy, trailing fleabane
Eriogonum umbellatum	Sulphur flower
Erysimum asperum	Western wallflower
Gaillardia aristata	Blanket flower
Galium boreale	Northern bedstraw
Geranium spp.	Hardy geraniums
Geum triflorum	Prairie smoke
Helianthella quinquenervis	Aspen sunflower
Helianthus pumilus	Small sunflower
Heuchera spp.	Coral bells
Ipomopsis aggregata	Scarlet gilia
Iris missouriensis	Native iris

Leucocrinum montanum	Sand lily
Liatris punctata	Dotted gayfeather

FLOWERS & GROUNDCOVERS

Scientific Name	Common Name
Linum lewisii	Wild blue flax
Lupinus argenteus	Silver lupine
Martensia lanceolata	Narrow-leaved chiming bells
Mimulus guttatus	Yellow monkey-flower
Monarda fistulosa	Native beebalm
Oenothera caespitosa	White stemless evening primrose
Penstemon caespitosus	Mat penstemon
Penstemon seqndiflorus	Sidebells
Penstemon virens	Blue mist penstemon
Polemonium	Jacobs ladder
Potentilla fissa	Leafy potentilla
Ratibida columnifera	Prairie coneflower
Rudbeckia hirta	Black-eyed Susan
Scutellaria brittonii	Skullcap
Sedum spp.	Stonecrop
Sedum lanceolatum	Yellow stonecrop
Senecio spartioides	Broom groundsel
Solidago missouriensis	Smooth goldenrod
Thalictrum fendleri	Fendler meadowrue
Thermopsis divaricarpa	Spring golden banner
Tradescantia occidentalis	Western spiderwort

SHRUBS

Scientific Name	Common Name
Arctostaphylos uva-ursi	Kinnikinnick, bearberry
Betula ganulosa	Bog birch
Ceanothus fendleri	Buckbrush, mountain lilac
Cercocarpus intricatus	Little-leaf mountain mahogany
Cercocarpus montanus	True mountain mahogany
Chrysothamnus spp.	Rabbitbrush
Cornus stolonifera	Redwig dogwood
Holodiscus dumosus	Ocean spray, cliff/rock spirea
Jamesia americana	Wax flower
Mahonia repens	Creeping grape holly
Philadelphus microphyllus	Little-leaf mockorange
Psysocarpus monogynus	Mountain ninebark
Prunus besseyi	Western sand cherry
Purshia tridentata	Antelope bitterbrush
Ribes aureum	Golden currant
Rhus sp.	Sumac
Rosa woodsii	Woods or native wild rose
Shepardia canadensis	Russet buffaloberry
Symphoricarpos spp.	Snowberry, coralberry
Viburnum edule	Highbush cranberry
Yucca glauca	Spanish bayonet, small soapweek, Great plains yucca

LARGE SHRUBS AND TREES

Scientific Name	Common Name
Acer ginnala	Amur maple, Ginnala maple
Acer glabrum	Rocky Mountain maple
Acer grandidentatum	Wasatch maple, Canyon maple
Acer tataricum	Tatarian maple
Alnus tenuifolia	Thinleaf alder
Amelanchier alnifolia	Saskatoon alder-leaf serviceberry
Amelanchier utahensis	Utah serviceberry
Betula nigra	River birch
Betula occidentalis	Western water birch
Cercocarpus ledifolius	Mountain mahogany
Corylus cornuta	Filbert, beaked hazelnut
Crataegus spp.	Hawthorn (several native)
Fraxinus pennsylvanica	Green ash
Gleditsia triacanthos	Honeylocust
Malus ssp.	Crabapple
Populus angustifolia	Narrowleaf cottonwood
Populus tremuloides	Aspen
Prunus americana	American wild plum
Prunus pennsylvanica	Pine/fire/wild red cherry
Prunus virviniana melanocarpa	Western chokecherry
Rubus delisiosus	Boulder raspberry, thimbleberry
Salix amygdaloides	Peachleaf willow
Shepherdia argentea	Silver buffaloberry
Sorbus scopulina	Western mountain ash

*** Some plants, shrubs and trees will not grow at higher elevations.**
Check with your State Forestry Office or Master Gardener before planting.

APPENDIX H: Links

Bridger-Teton National Forest: www.fs.fed.us/btnf

BLM: www.wy.blm.gov/pfo/nepa.htm.

Wyoming State Forestry Division-http://wsfd.wyo.gov/

FIREWISE: www.Firewise.org

FIREWISE Wyoming: http://www.firewisewyoming.com

Firewise Landscaping and Construction Checklists:
http://www.tetonfires.com/pdf/fwlistsz.pdf

National Interagency Fire Center (NIFC): www.nifc.gov

Ready, Set, Go!: http://www.wildlandfirersg.org/