# Whitefish Area
# Community Wildfire Protection Plan
# 2009

***Background***

Living in a forested landscape in Montana means living with wildfire. Fire plays an important and valuable role in the environment, but under some conditions it also can present a significant threat to communities and individual residents' life and property. For that reason, one of the goals of the Whitefish Neighborhood Plan that was adopted in 2004 was to "*minimize or reduce the risk of catastrophic fire in Whitefish and the County neighborhoods that are adjacent to state trust lands.*" Flathead County similarly recognized the need to more actively involve communities and other stakeholders in addressing wildfire risks. In 2005 the county commissioners approved a collaboratively developed Community Wildfire Fuels Reduction/Mitigation Plan, which mapped the wildland urban interface and identified priority areas throughout the county for needed hazardous fuels reduction treatments.

Since those plans were written, however, there has been significant new residential and commercial development in forested areas around Whitefish, and the designation of additional priority areas needs to be considered. More importantly, public and private forest landowners/managers need to be proactive in addressing the identified wildfire risks. The purpose of this Whitefish-specific Community Wildfire Protection Plan, an addendum to the county mitigation plan, is to help mobilize and focus those efforts.

***Community Wildfire Protection Plans***

The Healthy Forests Restoration Act (HFRA) passed by Congress in 2003 gives communities who have prepared a Community Wildfire Protection Plan (CWPP) a tremendous opportunity to influence where and how federal agencies implement fuels reduction projects on nearby federal lands. Additionally, communities with CWPPs in place are given priority for funding of hazardous fuels reduction projects carried out under the auspices of the HFRA. Private landowners' participation in CWPP planning and implementation is strictly voluntary, although strongly encouraged.

CWPPs can take a variety of forms and be as simple or complex as a community desires. The *minimum requirements* for a CWPP are that it (1) be collaboratively developed by local and state government, in consultation with federal land management agencies and other interested parties; (2) identify and prioritize areas for hazardous fuels treatments and recommend the types and methods of treatments to be used; and (3) recommend measures that communities and individual homeowners can take to reduce the structural ignitability of their buildings.[1]

---

[1] Communities Committee, et al., *Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities,* Society of American Foresters, Bethesda, MD, 2004. Last viewed at http://www.safnet.org/policyandpress/cwpphandbook.pdf 4/13/09.

For a CWPP to take effect, it must be approved by the concerned local governments (in this case, the City of Whitefish and Flathead County), fire departments (Whitefish and Big Mountain Fire Departments), and state forest management agency (Montana Department of Natural Resources and Conservation).

***Current Situation***

As the Fire History map (Figure 1) shows, the area's fire regime prior to the advent of modern wildland fire suppression practices in the 1930's was typified by relatively infrequent, large fires. A significant portion of the Whitefish area fell within the perimeters of one of the major fires of 1910, 1919, and 1931. Since then, however, a combination of aggressive fire suppression, periodic drought, and various forest insect and disease infestations has produced a steadily accumulating amount of woody biomass in forested areas not being actively managed. A combination of dead fuel and continuous live vegetation from the forest floor to the upper forest canopy creates a complex of fuel that, when ignited under severe fire conditions, may leave little or no surviving above-ground vegetation. Such fuel conditions also lead to a decreasing probability of stopping a wildfire before it spreads. [2]

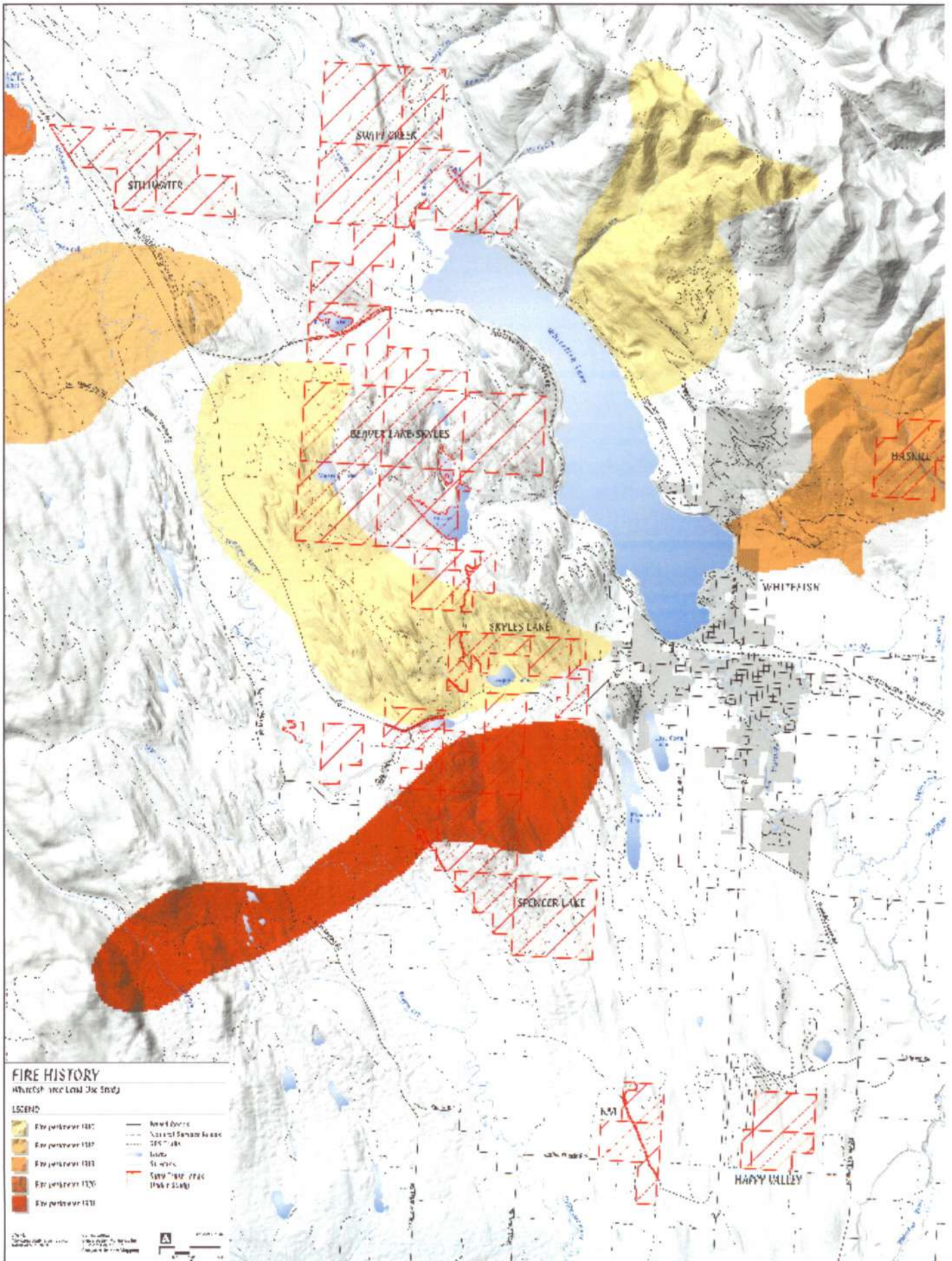
The Historic Fire Regime indicates that much of the area west of Whitefish Lake historically experienced stand-replacing fires (fires that kill most or all of the trees) at long intervals (35-100+ years). East of the lake, fires also occurred at long intervals, but were more often of mixed severity; that is, fire-resistant species were more likely to survive, producing a patchy post-fire landscape of living and dead trees.

The Fire Regime Condition Class map (Figure 2) shows the current extent of change from historic fire regimes as determined by the number of missed fire return intervals with respect to (1) the historic fire return interval, and (2) the current structure and composition of the system resulting from alterations to the natural disturbance regime, most often by housing development, agriculture, grazing, and/or logging.[3] While much of the Whitefish area shows a low level of departure from historic regimes, there are some areas, particularly developed areas to the south and southwest of Whitefish Lake in which departure levels are high.

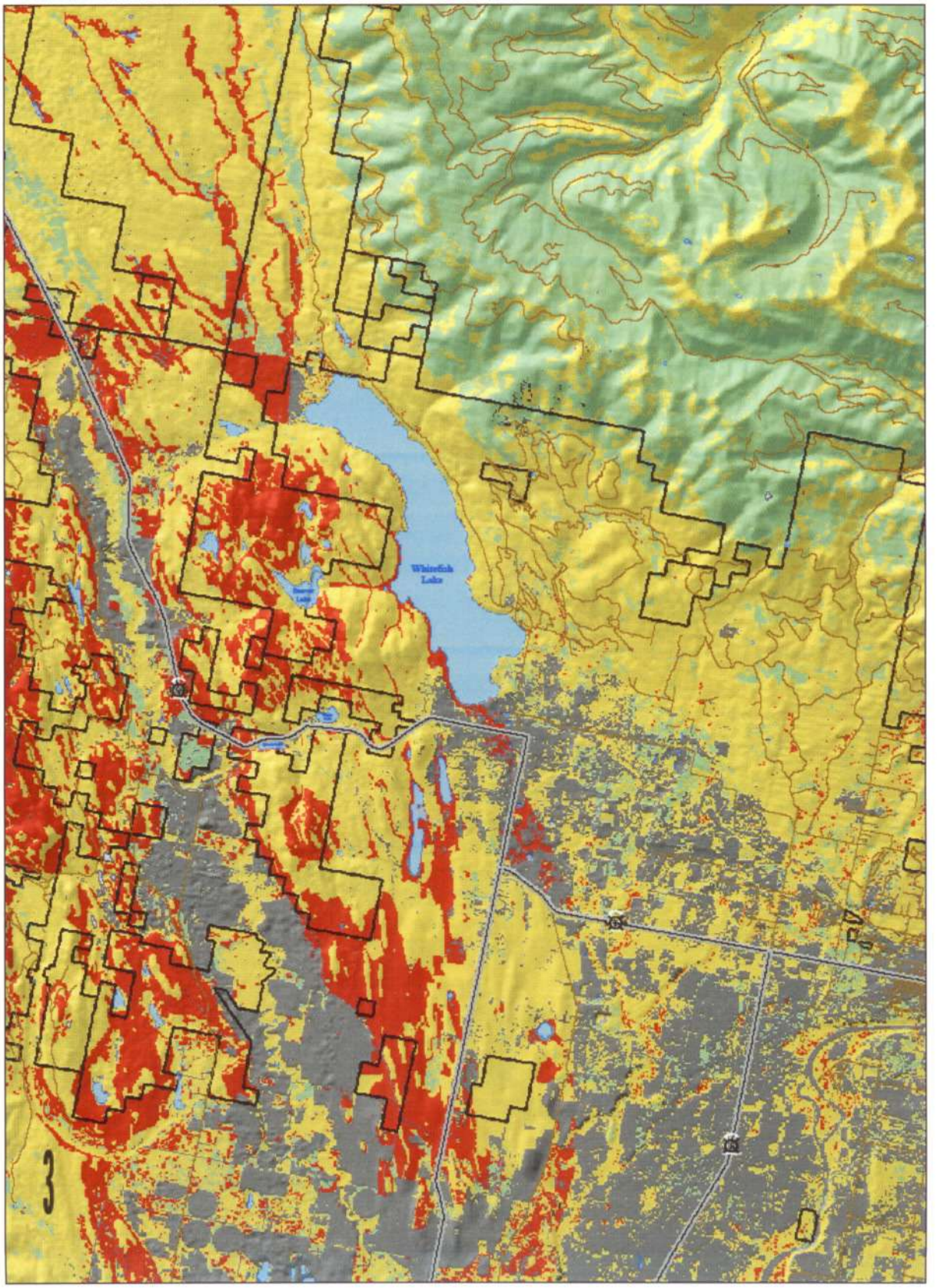
---

[2] Flathead National Forest, *Valley Face Fuels Reduction Project Environmental Assessment,* Whitefish, MT, 2005, last viewed 4/13/09 at http://www.fs.fed.us/r1/flathead/nepa/valley_face/b_chapter_1.pdf

[3] National Interagency Fire Center, *Communicator's Guide to Wildland Fire,* Boise, ID, undated, last viewed 4/13/09 at http://www.nifc.gov/preved/comm_guide/wildfire/fire_5.html


SWIFT CREEK
STILLWATER
BEAVER LAKE-SKYLES
SKYLES LAKE
WHITEFISH
SPENCER LAKE
HAPPY VALLEY
FIRE HISTORY
LEGEND

# FIRE REGIME CONDITION CLASS




*Whitefish Area Fire Safe Council in cooperation with*
*USDA Forest Service*
*Whitefish Fire Department*

0 0.5 1 2
Miles

**Legend**

1 - Low | 2 - Moderate | 3 - High

***Collaborative Development of the Whitefish Area CWPP***

Conscious of the high risk of wildfire in the area, residents of some subdivisions as well as a number of individual landowners in or near Whitefish have undertaken wildfire mitigation activities on their properties over the last several years. The Elkhorn subdivision's comprehensive efforts, for instance, led to its recognition in 2005 as a Firewise USA community, one of only 11 in Montana to date.

Other landowners meanwhile approached Northwest Regional Resource Conservation and Development (NR-RC&D), a non-profit organization, seeking technical and/or financial assistance to undertake their own hazardous fuels reduction work. NR-RC&D has administered fuels reduction cost-share programs in Flathead, Lake, Lincoln, and Sanders Counties for a number of years as part of its Natural Resources program, and an RC&D staff forester participated on the Steering Committee that oversaw preparation of the Flathead County CWPP. He suggested the development of a Whitefish-specific CWPP to serve as the basis for future grants for fuels reduction activities in the area.

Following that suggestion, a few concerned Whitefish residents met with representatives of federal and state land management agencies, local government, and fire departments, and found them receptive to participation in the development of a Whitefish Area CWPP. FireSafe Montana, a statewide non-profit group that encourages and assists Montana communities to initiate and carry out firesafe programs and fire wise activities, volunteered to facilitate the planning process.

The first general organizational meeting was held January 15, 2009, with 38 attendees representing local and county government; state and federal land management agencies; area fire departments/fire services; recreational and service businesses; the forest products industry and forestry contractors; conservation organizations; transportation and utility companies; business/industry associations; subdivisions, neighborhoods, and individual landowners; and others. The participants agreed on the need for more proactive wildfire preparedness, and decided to proceed with CWPP development. A number volunteered to serve on a steering committee to guide the effort. A new, all volunteer group, the Whitefish Area FireSafe Council (WAFSC) also began to take shape, looking ahead to the activities that would be needed to implement a CWPP.

Over the following months, six meetings of the steering committee and three general community meetings were held, resulting in the development of this document, which was approved in accordance with HRFA requirements in June 2009.

Having a CWPP provides a variety of benefits to communities such as Whitefish which have been designated by the state as "at risk" of wildland fire. One advantage is the opportunity to establish a localized definition and boundary for the community's wildland-urban interface (WUI), generally defined as "the line, area, or zone where

structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels."[4]

At least 50 percent of all funds appropriated for projects under HFRA must be used within the WUI as defined by either a CWPP or (when no CWPP exists) by the limited default definition provided in HFRA.

In addition to giving communities the flexibility to define their own WUI, HFRA also gives priority to projects and treatment areas identified in a CWPP by directing that federal agencies give specific consideration to fuel reduction projects that contribute to the implementation of those plans. If a federal agency proposes a fuel treatment project in an area addressed by a community's CWPP but identifies a different treatment method, the agency must also evaluate the community's recommendation as part of the project's environmental assessment process

***Defining the Wildland-Urban Interface and Areas and Values at Risk***

The Whitefish Area CWPP Boundary map (Figure 3) delineates the Whitefish WUI, the area covered by this plan. Of the 68,015 acres in the area, 9,612 are owned/managed by the State of Montana/DNRC, 8,317by the Flathead National Forest, 2,720 by F. H. Stoltze Land and Lumber, and 470 by Plum Creek. Whitefish Lake covers 3,320 acres, 19,096 acres are in private, non-industrial ownership, transportation and utility corridors, and a variety of state and local government holdings.

In drawing the boundaries, a number of factors were taken into account.

- Inhabited areas at potential risk to wildland fire, taking into account the common causes and relative frequency of wildfires in the area and the range of other factors, including critical weather patterns, that could contribute to the probability of fire ignitions and/or extreme fire behavior;
- Hazardous vegetative fuels on federal and non-federal lands within or near Whitefish that, if ignited, would pose a significant threat to the community or essential community infrastructure;
- Specific improvements such as homes, businesses, and essential infrastructure (e.g., escape routes, municipal water supply structures, and major power and communication lines) that would be adversely impacted by wildfire;
- Other areas of community importance, such as critical wildlife habitat; significant recreation and scenic areas; and landscapes of historical, economic, or cultural value that community members believed would benefit from treatment to reduce wildfire risks.

**Inhabited areas at risk --** In 2005, when Flathead County's CWPP was developed, the Whitefish Fire Department identified three inhabited areas it deemed high priority for hazardous fuels treatment. They were the East Lakeshore of Whitefish Lake, Haskill Basin, and the Twin Lakes area west of Whitefish. A more recent assessment of the

[4] National Wildfire Coordinating Group, *Glossary of Wildland Fire Terminology,* 2008, last viewed 4/15/09 at http://www.nwcg.gov/pms/pubs/glossary/index.htm

private land vegetative conditions in the Beaver Lake to Spencer Lake vicinity has revealed significant areas of very high fuel hazard. Since 2005, the Flathead National Forest has implemented its Valley Face Project in the Twin Lakes area and the Beaver Lake South Project adjacent to the Elkhorn subdivision. Both projects included understory fuels reduction on National Forest lands. Also, NR-RC&D has been funded to administer a cost-share program that will help private landowners in that area reduce their hazardous fuels. While both Forest Service and NR-RC&D are beneficial in reducing fuel on the west side of Whitefish, the preponderance of private land has high fuel hazard. Haskill Basin and the East Lakeshore remain largely untreated, and are included within the WUI area.

**Hazardous vegetative fuels --** Prevailing winds in the Whitefish area blow principally out of the southwest, so wildfires starting in the forested areas to the south and west of Whitefish Lake are the ones most likely to threaten the residential areas and recreational facilities areas west of the Lake. Because firebrands that result in ignitions can originate from wildland fires that are at a distance of 1 kilometer [.62 mile] or more,[5] fires in those residential/recreation areas south and west of the lake could potentially spot into the city or even to the east side of the lake. For that reason, reducing hazardous fuels southwest of and within those residential/recreation areas is important. The WUI therefore includes most of that part of the Whitefish Rural Fire Service Area[6] east of Highway 93 N. and KM Ranch Road. (Those roads themselves could serve as a fuel break in some fire situations.) .

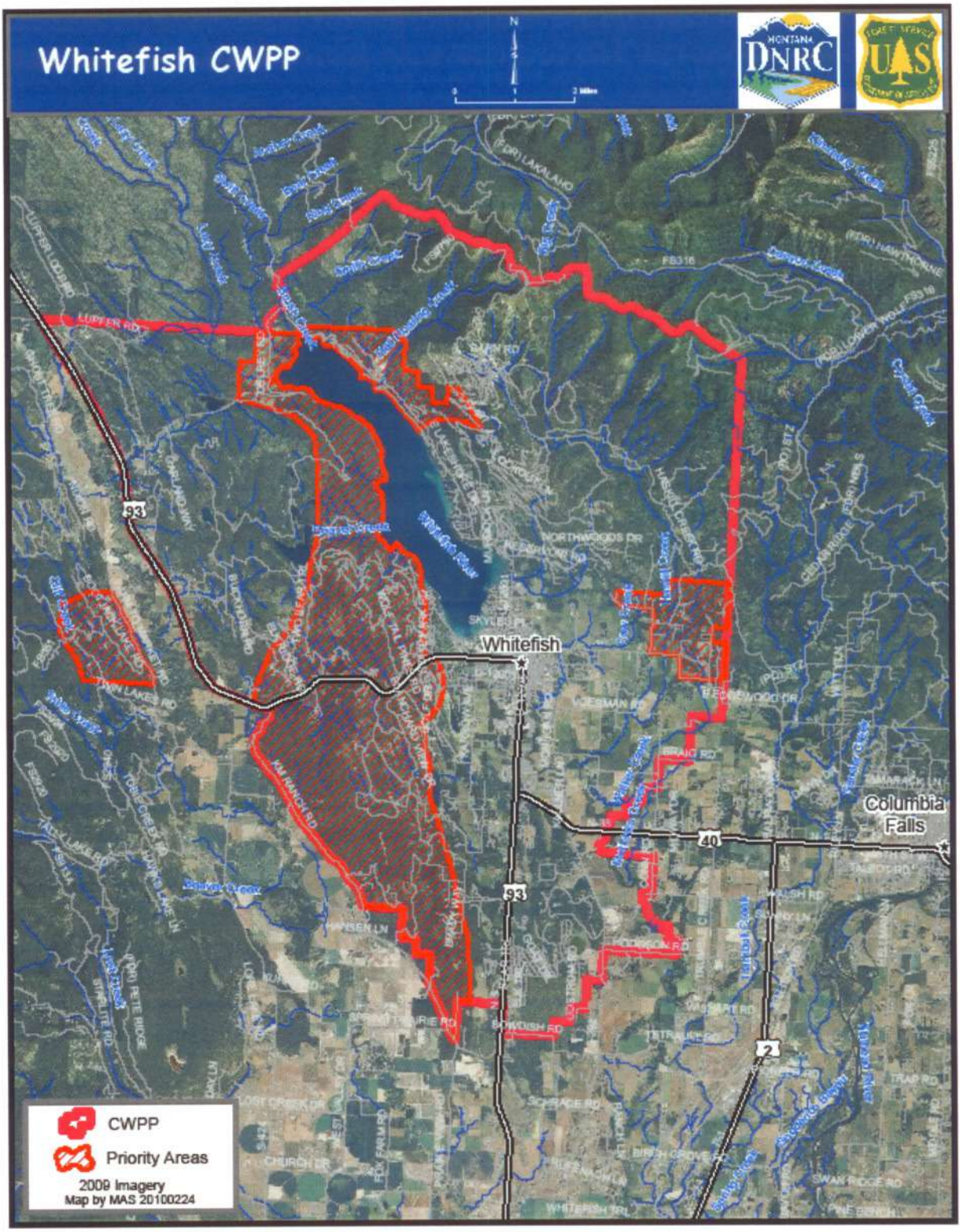
Similarly, hazardous fuels reduction in the Whitefish Rural Fire Service Area east of Highway 93 S, as well as that north of Highway 40, would help protect Happy Valley, Mallard Loop, and other subdivisions and businesses north of them, as well as downwind residential and commercial areas. Fuels reduction in that portion of the Flathead County Fire Service Area that includes Lupfer Meadows would lessen the wildfire risk in that rural neighborhood.

Finally, reducing vegetative fuels along the BNSF Railway line would mitigate the risk of a fire starting along the line and spreading outward.

---

[5] Cohen, Jack D., *Reducing the Wildland Fire Threat to Homes: Where and How Much?,* USDA Forest Service Gen.Tech.Rep. PSW-GTR-173.1999.

[6] The Whitefish Fire Service Area includes not only the area inside the city limits, but also that area outside the city that the Whitefish Fire Department serves under contract.


Whitefish CWPP
MONTANA DNRC
Whitefish
Columbia Falls
93
40
2
CWPP
Priority Areas
2009 Imagery
Map by MAS 20100224

**Specific community improvements –** The CWPP steering committee consulted with utility companies, telecommunications companies, the BNSF Railroad, and the City of Whitefish Public Works Department, the Whitefish Fires Department, the Big Mountain Volunteer Fire Department, and others to identify structures or essential infrastructure which would be adversely impacted by wildfire. The identified improvements (all within the WUI) include:

- Whitefish water treatment facility and related intakes and pipelines;
- Flathead Electric Cooperative substation on Big Mountain Road, and FEC's transmission line poles, which are wooden and susceptible to loss in a ground fire;
- Water storage facilities on Grouse Mountain, at Happy Valley, Mallard Lake, and other subdivisions;
- Wireless communication towers, radio, television, and Federal Aviation Administration towers, many of them located on ridge tops to the north and east of Whitefish;
- Northwestern Energy gasline gate station and related regulators;
- BNSF's roundhouse and fueling facility, storehouse and section building, and communications building, warehouse, and towers.

**Other areas of community importance – The upper reaches of** Haskill Creek contain the Whitefish Municipal Watershed, the primary water source for Whitefish's drinking water. The Haskill watershed and that for Whitefish Lake are critical not only to community health, but also for the wildlife habitat, recreational opportunities, forest products and resort-related employment, and scenic/aesthetic benefits they provide. The loss of any or all of those watershed values would have a huge negative impact on the community and, indeed, on the entire Flathead Valley.

Whitefish Mountain Resort at the Big Mountain and the related lodging, retail, and other commercial enterprises it anchors, make that area vitally important. A wildfire ignition on the East Lakeshore could rapidly spread up the Hell Roaring drainage to the resort, imperiling a major employment source and economic asset for the area as well as residents.

The WUI also includes numerous buildings and areas of historical significance such as the Whitefish Depot and the only Frank Lloyd Wright-designed building in Montana.

The Trail Runs Through It, currently under development, will be a valuable recreational asset for area residents and visitors alike. It is also envisioned that the Trail and its design will play a role in the creation of a fuel break west of Whitefish Lake and the mitigation of possible ignition sources, as will be discussed in the following section.

### ***Community Hazard Reduction Priorities***

The primary objective is to reduce the likelihood of injury or loss of life for residents, visitors, and firefighters when wildfire occurs in the Whitefish area. Any activity that contributes to that – be it the creation of a fuel break that protects a large area of the city

or the work done to create survivable space around a single dwelling - is important and will be encouraged.

In 1993, DNRC did an in-depth risk assessment of a number of neighborhoods in the Whitefish area WUI. The assessment considers many factors such an area's fire history, topography, aspect, dangerous features (draws, canyons, chimneys, saddles, fuels, etc), road access, road surface width, maximum road grade, road endings, bridges, electrical utilities, housing density and ignitability, landscaping, water supply, hydrants, water draft sources, and helicopter bucket dip spots. Based on that data, a numerical score/rating is determined. Because the assessment was done over 15 years ago, many changes have occurred, and some neighborhoods/subdivisions (Lookout Ridge, Iron Horse, Whitefish Hills, etc.) are not included. A similarly thorough but updated and expanded assessment is needed now, both to inform mitigation efforts and to help firefighters who may have to respond to wildfires in the Whitefish area. Funding will be sought to accomplish that work.

Meanwhile, however, the DNRC F-701 home evaluation form is recommended for use in the assessment of individual structures and neighborhoods. While much less comprehensive, and most individual landowners, homeowners' associations, or neighborhood groups should be able to use the F-701 (readily accessible at http://www.keepgreen.org/assetts/documents/documents/701.pdf) to do a preliminary assessment of their properties. WAFSC community outreach efforts will help landowners access the technical and financial (cost-share) resources available to help them plan and carry out mitigation activities. Additional resources will be sought when needed.

Two priority areas identified by the Whitefish Fire Department in 2005 still are in need of mitigation action: Haskill Basin and the east shore of Whitefish Lake.

**Haskill Basin** -- The Haskill Basin drainage is located north and east of the City of Whitefish and Whitefish Lake. Haskill Creek is a tributary to the Whitefish River. The watershed extends from Whitefish Mountain Resort in the northern part of the drainage to the Whitefish River to the south. The drainage encompasses approximately 8,200 acres. The City of Whitefish obtains most of its drinking water from upper Haskill Creek.[7]

The majority of the Basin within the CWPP 2,720 acres is comprised of lands owned by F. H. Stoltze Land and Lumber Company (managed actively for timber production), and by the Forest Service (managed primarily for recreation, wildlife, and scenic values). DNRC also has a 520 acre block in the Basin.

The municipal watershed is at moderate fire risk from the standpoint that it is located in a high elevation cool and very moist environment, but annually receives frequent lightning strikes. There is little development within the upper portions of the watershed, so there is relatively little threat to humans and structures (The chalet at the top of Big Mountain is

[7] Flathead Conservation District, last viewed April 8, 2009 at http://www.flatheadcd.org/content/view/57/59/

located at the top of the Municipal Watershed). High mortality in subalpine fir and whitebark pine at upper elevations, however, has resulted in dead standing and heavy down fuels within that portion of the watershed. Those down fuels within the dense subalpine fir present the greatest hazard when the area dries out sufficiently to burn. When that occurs, Haskill Basin can experience stand-replacing fires. Such burns in the higher reaches would create ash that will erode into the water treatment facility rendering it ineffective for long periods. The result could interrupt clean water service to the community.. Because of the remoteness of the area, the steepness of the terrain, and the abundant streams and waterways, treatment of the area is difficult. Some thinning is needed to reduce the risk of high-intensity wildfire, but the long-term goal should be restoration of the fire-adapted ecosystem. A combination of planned fire ignition (when possible), helicopter logging, slashing, and low intensity underburns implemented in stages over time appears to be the most practical approach.

In the lower elevations of the Basin there has been considerable residential development. Interior roads in the developed areas are primarily gravel, often not well maintained, and frequently dead-end or looped. Because of access problems, survivable space around homes and suitably located safety zones need to be created. "Leave early" evacuation plans and routes also should to be developed and widely publicized in the area.

***Survivable space*** is the modification of landscape design, fuels, and building materials that make a home ignition caused by wildfire unlikely, even without direct firefighter intervention. The size of the survivable space area is usually expressed as a distance extending outward from the main home/structure and all attachments, such as decks and carports. That distance varies according to the steepness of the terrain and the type of wildland vegetation present. For example, if a house is on flat land surrounded by grassland, the survivable space distance would extend out at least 30 feet from the sides of the house. If the house sits on a 25 percent slope and the adjacent wildland vegetation is shrubs, hazardous fuels would need to be reduced at least 200 feet from the house.[8]

Where fuels reduction on National Forest and state lands abutting or in close proximity to developed areas has not already been accomplished, it should be carried out as soon as possible. The areas bordering Winter Sports and Lookout Ridge need special attention.

The most cost effective hazardous fuels treatments in residential areas in Haskill Basin should include a combination of techniques. The creation of survivable space around homes usually entails hand clearing, some mechanical work (with tractors, mowers, etc.), pruning, piling, and chipping or burning of removed vegetative material. Depending upon the density and species of trees in the immediate area of the home and other structures, some thinning (removal of a portion of the trees in a given area while leaving others) may be appropriate. On larger properties selective logging may be appropriate. Landowners may also use livestock grazing or the application of herbicides or biological control agents to reduce grass, weeds, and shrubs. Irrigation or sprinkling of the property during dry weather helps increase the moisture content of fuels and reduce their ignitability.

---

[8] FireSafe Montana, *Living With Fire,* Helena, MT, 2009. See also www.firesafemt.org

Long-term maintenance of reduced fuel conditions is essential. Mowing, sprinkling/irrigation, pruning, and hand removal of accumulated vegetative debris are the primary techniques used to maintain survivable space. In some conditions and fuel types, and after suitable preparation, prescribed burning may be feasible and effective.

**East Shore of Whitefish Lake --** On the east shore, human-caused fires are the biggest threat. Forest stand composition is quite different from that on the opposite shore, with a strong western red cedar and grand fir component. The terrain is steep, and East Lakeshore Drive provides the only ingress and egress for much of the at-risk area. The best mitigation treatment would be the creation and maintenance of survivable space on all the residential properties, with the goal of a continuous defensible zone. Along Big Mountain Road, survivable space should be created and maintained around residential properties, and hazardous fuels need to be reduced (or, in some cases, kept at currently reduced levels) around key infrastructure, such as the electrical power station and Whitefish Mountain Resort facilities/structures. Selective commercial thinning and hazardous fuel removal is necessary on both sides of the property line between private lands and the Flathead National Forest

The safety zones that have been created in the Whitefish Mountain Resort area are expected to protect residents and visitors on site so that evacuation of the area need not be attempted under the hazardous driving conditions and limited visibility that would prevail during a wildfire event. The most significant challenge, given the dispersed nature of recreation activities in the area, will be making all residents/users of the area aware, in advance, of the location of the safety zones and providing them timely notice when conditions dictate the need to seek refuge in the zones.

**West Side Fuelbreak System --** The Whitefish School Trust Lands Neighborhood Plan was developed by a diverse stakeholder group, including DNRC representatives, that worked collaboratively to develop a land-use plan for the 13,000-plus acres of State School Trust land surrounding the community of Whitefish. The plan was designed to meet the needs of both the State School Trust and the community.

Policy 3 of the plan (Create an Areawide Fire-Mitigation Strategy*)* says, in part:

> In conjunction with the development of the regional recreation system, DNRC, MT FWP [Montana Department of Fish, Wildlife & Parks], Whitefish, and the County should explore the creation of a fire-mitigation strategy or firebreak that would significantly reduce the potential for catastrophic wildfire to further protect the value of these trust lands and reduce firefighting expenses. Since trust lands are adjacent to Whitefish and County neighborhoods to the north, west, and south of Whitefish, an opportunity exists to explore a fire-mitigation strategy in conjunction with the creation of the recreation trail.[9]

---

[9] Whitefish Trust Lands Advisory Committee, *et al.*, *Whitefish School Trust Lands Neighborhood Plan,* 2004, p. 7, last viewed 4/18/09 at http://dnrc.mt.gov/trust/Whitefish_neighborhood_plan/final_plan.pdf

The backcountry "Trail Runs Through It" is now under development and, when completed, is expected to pass through forested lands in the areas of Spencer Lake, Skyles Lake, Lion Mountain, Beaver Lake, Stillwater, and Swift Creek, looping through state, federal and private lands and extending dozens of miles around Whitefish Lake. The first 5.18 mile section, now under construction, will run from the Lion Mountain Loop Road around the back (north side) of Skyles Lake, tying into the parking lot at the Two Bear Ranch gate. Fuels reduction work will be done on both sides of the Trail by community volunteers, resulting in a 50-100 foot fuel break along the Trail corridor. While the Trail will not provide the kind of break needed to drop a crown fire to the ground, it will provide a significant suppression/control resource in the event of a surface fire beginning in or burning into the vicinity of the Trail.

Other current or planned work in the area west and southwest of Whitefish includes mitigation projects on individual private properties as well as in entire subdivisions, together with DNRC's upcoming Lion Mountain contract logging project, Beaver/Swift/Skyles Timber Sale, Beaver Lake Jumpstart Project, Spencer Mountain Timber Sale, and Lion Mountain Fuels Project.

The upcoming work, together with the work already done, provides a good start on the creation of a West Side Fuelbreak System for Whitefish. The priority now is to finish "connecting the dots" – creating a contiguous zone that addresses those parts of the fuelbreak line not yet treated. In some places existing roads, natural barriers, power corridors, and/or fuel-free zones can be incorporated into the fuelbreak. In other places additional work such as thinning and maintenance work will be needed. An organized effort to create a network of "firewise" communities on the Westside of Whitefish is also underway. Cumulatively, the treatments should help reduce the intensity of a wildfire threatening Whitefish from the west or southwest and provide a safer environment for firefighters working to suppress it.

***Reducing Structural Ignitability***

The "fire triangle" is comprised of fuel, heat, and oxygen (in the air). Ignitions occur and fires burn only if a sufficient supply of each element is present. Fuels are the flammable material that feed a fire. In the context of wildfire, homes and other structures need to be considered as part of the available fuel.

Ignition can occur even if the flames of an advancing wildfire do not reach the home. Firebrands lofted downwind from a fire a mile or more away can collect on and ignite homes and adjacent flammables. During severe WUI fires, firebrand ignitions are particularly hazardous for homes with flammable roofs. Often these houses ignite and burn without the surrounding vegetation also burning, which suggests that homes can be more flammable than the surrounding vegetation.[10]

---

[10] Cohen, Jack D., *Reducing the Wildland Fire Threat to Homes: Where and How Much?*, USDA Forest Service Gen.Tech.Rep. PSW-GTR-173.1999.

The U.S. Government Accountability Office reports that analysis of homes burned during wildland fires has shown that the two most effective measures for protecting structures from wildland fire are (1) the creation of survivable space around a structure and (2) using fire-resistant roofs and fire-resistant or screened vents. In addition to roofs and vents, other technologies—such as fire-resistant windows and building materials, chemical agents (foams and gels), and inside sprinkling systems — also help in protecting structures. [11]

Because the vast majority of structures damaged or destroyed by wildland fires are located on private property, the primary responsibility for taking adequate steps to minimize or prevent damage from a wildland fire rests with the property owner and, to a lesser extent, with state and local governments that can establish building requirements and land-use restrictions. Flathead County has addressed this issue to some degree by requiring that the Final Plat for a new subdivision located in the Wildland Urban Interface:[12]

- This subdivision is located in the Wildland Urban Interface wildfire priority area where wildfires can and do occur.
- Only Class A and Class B fire-rated roofing materials are allowed.
- Firewise defensible space standards shall be incorporated around all primary structures and improvements.

Use of the DNRC Home Evaluation Form F-701 (see above) can help homeowner identify potential problem areas, such as:

- Flammable roof coverings
- Unscreened vents and eaves
- Single pane windows
- Flammable siding
- Attached decks or exterior stairs and any open/unscreened areas beneath them
- Gutters and roof valleys where leaves and needles can accumulate
- Garages (which are vulnerable to firebrands and also tend to have flammable materials stored inside)
- Firewood stacked against the house, under the deck or stairs, or in close proximity to the house
- Propane tanks close to the house
- Wooden fences or walkways
- Flammable landscaping, such as juniper, close to the house

---

[11] General Accountability Office, *Technology Assessment: Protecting Structures and Improving Communications During Wildland Fire*, GAO-05-380, Washington, D.C., 2005, last viewed at 4/18/09 at http://www.gao.gov/new.items/d05380.pdf

[12] The Wildland Urban Interface for the purpose of the county subdivision regulations is defined as "the wildland fire priority area where structures and other human developments meet and intermingle with undeveloped wild land and vegetative fuels as shown on the most recent *Flathead County Community Wildfire Fuels Reduction/Mitigation Plan Wildland Urban Interface Map*".

Educational/informational outreach programs developed to implement the Whitefish Area CWPP will make it clear that in a severe wildfire event, fire services will almost certainly not be able to protect all homes at risk, and those properties where homeowners have been proactive in reducing structural ignitability will have the greatest chance of survival. Further, homeowners' attention will be drawn to the need to provide adequate ingress and egress routes for fire trucks and other emergency equipment, have clearly visible street signs and house numbers posted, and (if possible) on-site or neighborhood water storage facilities and back-up electricity (generators) to run pumps.

***Strengthening Community Fire Preparedness, Prevention and Public Education***

With participation by private landowners being strictly voluntary, achieving the goals of a CWPP covering multiple public and private land ownerships necessarily depends upon cooperation and coordination among all landowners and managers and with local governments, fire departments, and other concerned interests.

To help ensure efficient and effective implementation of this CWPP, the Whitefish Area FireSafe Council (WAFSC) will hold periodic information and coordination meetings for landowners planning and/or conducting fuels reduction or forest restoration projects. Other possible WAFSC activities, which will be determined on the basis of community need, could include: providing on-going public education and information on wildfire related issues; organizing Chipping Days, when wood chipping machines would be available in specific areas of the community to encourage neighborhood-wide fuels reduction and survivable space maintenance efforts; organizing field tours of completed wildfire preparedness projects; and presenting an annual report to the community on the overall progress being made toward reducing wildfire risks to Whitefish.

***Potential Projects***

To achieve the mission of the WAFSC, the following is a list of projects the Council will pursue;

- Fuel modification projects
- Commercial harvest for forest management
- Biomass utilization
- Safety Zones
- Infrastructure improvements (including water supply; utilities; emergency response; fire stations; training, certification, and qualifications; operational procedures and programs; and staffing)
- Access
- Asset protection zone (defensible space)
- Recommended building materials/firewise construction
- Fire-resistant landscaping
- Evacuation plan
- Legal requirements (such as those pertaining to subdivision regulations)
- Agreements, MOUs, and operating plans
- Wildland Type 6 engine for Whitefish Fire Department

## *Monitoring and Evaluation, and Regular Updating of CWPP*

Annual multi-party, collaborative monitoring and evaluation of this CWPP will be three-pronged. First, accomplishments will be recognized. An integrated database showing where survivable space and safety zones have been created and hazardous fuels reduction treatments have been carried out will be prepared and periodically updated. Some of that data (particularly for state, federal, and industrial forest lands) is already available, but complete information on the type, location, size, and date of treatments on non-industrial private land has been lacking.

Secondly, an assessment will be made of the degree to which CWPP goals are being met.

Finally, implementation strategies and activities will be modified as necessary to remedy any deficiencies identified and/or to address any new circumstances or needs that have arisen.

## *Glossary and Acronyms*

**BNSF Railway Company** – railroad with major facilities in Whitefish

**Community Wildfire Protection Plan (CWPP)** – a plan that is developed collaboratively by local and state government representatives in consultation with federal agencies and other interested parties. It identifies and prioritizes areas for hazardous fuel treatments and recommends the types and methods of treatment to be used. The CWPP also recommends measures that homeowners and communities can take to reduce the ignitability of structures in the area.

**Condition classes** – measurements of general wildfire risk, as follows:

- Fire Condition Class 1 – For the most part, fire regimes in this condition class are within historical ranges. Vegetation composition and structure are intact. Thus, the risk of losing key ecosystem components from the occurrence of fire remains relatively low.
- Fire Condition Class 2 – Fire regimes on these lands have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified on these lands.
- Fire Condition Class 3 – Normal fire regimes on these lands have been dramatically altered. Fire frequencies have departed from historical ranges by multiple return intervals. Vegetation composition, structure, and diversity have changed greatly. The risk of losing key ecosystem components from fire is high.

**Crown Fires** – fires burning in the uppermost canopy of trees. They depend on strong winds and dry ladder fuels, which make them the most intense and most difficult fires to control. Some crown fires are part of a normal fire regime; others are the result of changed fire regimes and an unnatural buildup of fuels.[13]

**Defensible Space** – see **Survivable space**.

**Department of Natural Resources and Conservation (DNRC)** – the Montana state forest management agency. Both the Stillwater Unit and the Kalispell Unit of DNRC manage state-owned lands in the Whitefish area.

**Disaster and Emergency Services (DES)** – Montana DES takes the lead in coordinating comprehensive emergency management for the state. Individual counties have their own DES coordinators.

**Fire-adapted ecosystem –** An ecosystem with the ability to survive and regenerate in a fire-prone environment.

**Fire frequency (fire return interval)** – how often fire burns a given area; usually expressed in terms of fire return intervals (e.g., fire returns to a site every 5-15 years).

**Fire-prone ecosystems (including fire-influenced and fire-adapted ecosystems)** -- include ecosystems that historically burned intensely at low frequencies (stand-replacing fires), those that burned with low intensity at a high frequency (understory fires), and those that burned very infrequently historically but are now subject to much more frequent fires because of changed conditions.

**Fire regime** –the historic natural pattern of fire in a specific ecosystem. It describes what kinds of fires are likely to occur and how often, as well as where, when, and how intensely the fires will burn. (TWS)

**Fire Use –** the combination of wildland fire use and prescribed fire application to meet resource objectives.

**FireSafe Montana** – a private, non-profit organization that encourages and assists Montana communities to initiate and carry out firesafe programs and fire wise activities. It functions as a statewide advocate and clearinghouse for mitigation information and activities, produces and distributes related educational materials, and offers training and technical assistance to local firesafe groups.

**Firewise** – the concepts and practices (such as thinning, pruning, and treatment of ground fuels) that are the building blocks of the Firewise Communities/USA program.

**Firewise Communities/USA** - a multi-agency national public education program developed by the National Wildland Fire Coordinating Group. Its goal is to encourage

---

[13] The Wilderness Society, *Restoring Balance to Wildland Fire Policy*. Washington, D.C. 2003, p. 4.

and acknowledge action that minimizes home loss to wildfire. It emphasizes community responsibility and teaches participants to prepare for a fire before it occurs.

**Fuelbreak --** a natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into those fuels can be more readily controlled.

**Fuelbreak system** -- a series of modified strips or blocks tied together to form continuous strategically located fuel breaks around land units.[14]

**Ground fires --** burn below the ground surface. They are very slow-moving fires that smolder underground in buried fuels and can be "sleeper fires," escaping detection for several days following their ignition until they become an unexpected wildfire.[15]

**Home ignition zone –** see **Survivable space**

**Mitigation** – improvement or easing of a condition or situation. In the context of wildfire, mitigation generally refers to action taken to reduce wildfire danger, most often through the thinning or removal of hazardous fuels.

**Mixed severity fires --** fires which cause selective mortality of dominant vegetation, depending on different tree species' susceptibility to fire.

**Restoration** – the active or passive management of an ecosystem or habitat toward its original structure, natural complement of species, and natural functions or ecological processes.

**Safety zone --** An area cleared of flammable materials used for escape in the event the fire line is outflanked or in case a spot fire causes fuels outside the control line to render the line unsafe. In firing operations, crews progress so as to maintain a safety zone close at hand allowing the fuels inside the control line to be consumed before going ahead. Safety zones may also be constructed as integral parts of fuelbreaks; they are greatly enlarged areas which can be used with relative safety by firefighters and their equipment in the event of a fire blowup in the vicinity. (NWCG)

**Stand replacing fires** -- infrequent, high-severity fires that tend to recur at intervals of 100 to 400 years in the northern Rocky Mountains. By killing most overstory trees, such fires usually set the stage for the generation of new forests.

**Surface fires** – the most common type of wildfire. It burns dead fuels and live vegetation located above the ground, including dead needles and limbs, grasses, forbs, brush, tree saplings and poles, but does not burn the overstory tree canopy layer. Surface fires can range from slow- to fast-moving and from low- to high-intensity. (Ingalsbee)

---

[14]National Wildfire Coordinating Group, *supra,* note 4, last viewed 4/17/09 at http://www.nwcg.gov/pms/pubs/glossary/f.htm#Fuelbreak

[15] Ingalsbee, Timothy, *A Reporter's Guide to Wildland Fire,* FUSEE, Eugene, OR, last viewed 4/18/09 at http://www.fire.uni-freiburg.de/media/A%20Reporters%20Guide%20to%20Wildland%20Fire.pdf

**Survivable space** (also referred to as **defensible space** or the **home ignition zone) –** is the area created by modification of landscape design, fuels, and building materials that make a home ignition caused by wildfire unlikely, even without direct firefighter intervention.

**US Forest Service (USFS)** – the agency of the U.S. Department of Agriculture that manages the Flathead National Forest and other units of the National Forest System.

**Whitefish Area FireSafe Council (WAFSC)** – an all-volunteer local group which engages in a variety of programs in cooperation with local businesses, government entities, communities, and landowners to aid, assist, and foster the achievement, and maintenance of firesafe conditions in the Whitefish area.

**Wildland-urban interface (WUI)** – pronounced *woo'-eee*, an area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel.

**Wildland fire use –** the management of naturally ignited wildland fires to accomplish specific, planned resource management objectives in predefined geographic areas outlined in fire management plans. Wildland fire use is not to be confused with "fire use," which includes prescribed fire.

**Woody biomass** – trees (living, standing dead, and down) and woody plants, including limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, or rangeland environment.