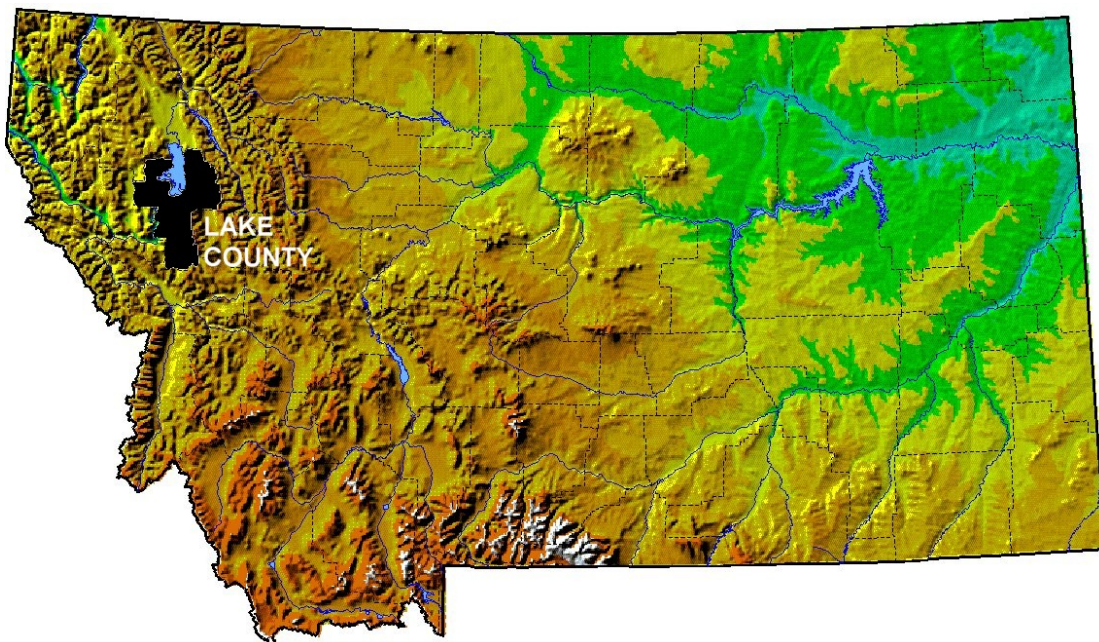


# Community Wildfire Protection Plan

For

## Lake County, Montana

January, 2005



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*Prepared For:*

**Lake County, Montana**

*In Cooperation With*  
**Northwest Regional RC&D,  
Montana Department of Commerce, and  
U.S. Forest Service, National Fire Plan**

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# LAKE COUNTY COMMUNITY WILDFIRE PROTECTION PLAN

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# CHAPTER 1: INTRODUCTION

## 1.1 PURPOSE

The purpose of this Community Fire Protection Plan is to help make Lake County residents, communities, and businesses less vulnerable to the adverse effects of wildland fires. This will be accomplished by identifying the wildfire problem in the County, assessing the level of risk to people, property and natural resources, and developing a collaborative approach to mitigation programs through federal, tribal, state, and local planning efforts.

This Community Fire Protection Plan is intended to establish a starting point for a continuing and open-ended community protection program relying on a concerted effort between fire protection agencies and the residents of Lake County. Additionally, this fire plan is intended to assist emergency response personnel and landowners in identifying and mitigating wildland fire hazards on public and private land, and to work cooperatively in developing mitigation options to reduce the impact of a wildland fire.

This Plan has been prepared in compliance with:

- The National Fire Plan; A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan– May 2002.
- The Federal Emergency Management Agency’s Region 10 guidelines for a Local Hazard Mitigation Plan as defined in 44 CFR parts 201 and 206, and as related to a fire mitigation plan chapter of a Natural Hazards Mitigation Plan. This plan will be attached as an annex to the Lake County Pre-Disaster Mitigation Plan.

The objective of combining these two complimentary guidelines is to facilitate an integrated wildland fire risk assessment, identify pre-disaster hazard mitigation activities, and prioritize efforts to enhance the protection of people, structures, the environment, and significant infrastructure in Lake County.

Among the primary guiding principals in preparing this plan are:

1. Priority setting that emphasizes the protection of communities and other high-priority values at-risk.
2. Collaboration among government agencies and the citizens of the County.
3. Ensuring successful implementation through the establishment of a dynamic and continuing planning process.

### **NATIONAL FIRE PLAN**

This Wildland-Urban Interface Fire Mitigation Plan documents the County’s intentions in meeting the National Fire Plan’s 10-Year Comprehensive Strategy. The projects and activities recommended under this plan are in addition to other Federal, state, and private / corporate forest and rangeland management activities. The implementation plan does not alter, diminish, or expand the existing jurisdiction, statutory and regulatory responsibilities and authorities or budget processes of participating Federal, State, and tribal agencies.

By endorsing this implementation plan, all signed parties agree that reducing the threat of wildland fire to people, communities, and ecosystems will require:

- Firefighter and public safety continuing as the highest priority.
- A sustained, long-term and cost-effective investment of resources by all public and private parties, recognizing overall budget parameters affecting Federal, State, Tribal, and local governments.
- A unified effort to implement the collaborative framework called for in the Strategy in a manner that ensures timely decisions at each level.
- Accountability for measuring and monitoring performance and outcomes, and a commitment to factoring findings into future decision making activities.
- The achievement of national goals through action at the local level with particular attention on the unique needs of cross-boundary efforts and the importance of funding on-the-ground activities.
- Communities and individuals in the wildland-urban interface to initiate personal stewardship and volunteer actions that will reduce wildland fire risks.
- Management activities, both in the wildland-urban interface and in at-risk areas across the broader landscape.
- Active forestland and rangeland management, including thinning that produces commercial or pre-commercial products, biomass removal and utilization, prescribed fire and other fuels reduction tools to simultaneously meet long-term ecological, economic, and community objectives.

The National Fire Plan identifies a three-tiered organization structure including 1) the local level, 2) state/regional and tribal level, and 3) the national level. This plan adheres to the collaboration and outcomes consistent with a local level plan. Local level collaboration involves participants with direct responsibility for management decisions affecting public and/or private land and resources, fire protection responsibilities, or good working knowledge and interest in local resources. Participants in this planning process include Tribal representatives, local representatives from Federal and State agencies, local governments, landowners and other stakeholders, and community-based groups with a demonstrated commitment to achieving the defined goals. Existing resource advisory committees, watershed councils, or other collaborative entities may serve to achieve coordination at this level. Local involvement, expected to be broadly representative, is a primary source of planning, project prioritization, and resource allocation and coordination at the local level. The role of the private citizen is not to be underestimated, as their input and contribution to all phases of risk assessments, mitigation activities, and project implementation is greatly facilitated by their involvement.

### **FEDERAL EMERGENCY MANAGEMENT AGENCY**

Effective November 1, 2004, a Local Hazard Mitigation Plan approved by the Federal Emergency Management Agency (FEMA) is required for Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM) eligibility. The HMGP and PDM programs provide funding, through state emergency management agencies, to support local mitigation planning and projects to reduce potential disaster damages.

The new local hazard mitigation plan requirements for HMGP and PDM eligibility is based on the Disaster Mitigation Act of 2000, which amended the Stafford Disaster Relief Act to promote and integrate a cost effective approach to mitigation. Local hazard mitigation plans must meet the minimum requirements of the Stafford Act-Section 322, as outlined in the criteria contained in 44 CFR Part 201. The plan criteria covers the planning process, risk assessment, mitigation strategy, plan maintenance, and adoption requirements.

FEMA will only review a local hazard mitigation plan submitted through the appropriate State Hazard Mitigation Officer (SHMO). Draft versions of local hazard mitigation plans will not be reviewed by FEMA. FEMA will review the final version of a plan prior to local adoption to determine if the plan meets the criteria, but FEMA will be unable to approve it prior to adoption.

A FEMA designed plan will be evaluated on its adherence to a variety of criteria.

Adoption by the Local Governing Body	Multi-jurisdictional Plan Adoption
Multi-jurisdictional Planning Participation	Documentation of Planning Process
Identifying Hazards	Profiling Hazard Events
Identifying Assets	Estimating Potential Losses
Multi-Jurisdictional Risk Assessment	Local Hazard Mitigation Goals
Identification and Analysis of Mitigation Measures	Implementation of Mitigation Measures
Multi-Jurisdictional Mitigation Strategy	Continued Public Involvement
Monitoring, Evaluating, and Updating the Plan	Implementation Through Existing Programs

*Although numerous Federal, State, Tribal and local agencies participate in this planning effort, the plan itself is considered to be a "Single-Jurisdiction" plan under FEMA guidelines (there are no incorporated towns or cities in Lake County with jurisdiction over lands considered as Wildland-Urban Interface). Approval of the Plan by the Lake County Board of Commissioners signifies it's adoption by Lake County governmental departments, as well as by the subordinate political subdivisions of Lake County.*

## **1.2 GOALS**

- To reduce the area of WUI land burned and losses experienced because of wildfires where these fires threaten communities in the wildland-urban interface
- Prioritize the protection of people, structures, infrastructure, and unique ecosystems that contribute to the quality of life and the sustainability of the local and regional economy
- Educate communities about the unique challenges of wildfire in the wildland-urban interface (WUI)
- Establish mitigation priorities and develop mitigation strategies in the WUI
- Strategically locate, plan, and implement fuel reduction projects
- Provide recommendations for alternative treatment methods, such as modifying forest stand density, prescribed burning, fuel reduction techniques, and disposal of treated slash
- Meet or exceed the requirements of the National Fire Plan and FEMA for a County level Fire Mitigation Plan.

### **1.3 PLAN STRUCTURE**

**The Lake County Community Fire Protection Plan is comprised of two parts:**

- 1.) The main Plan (this document) is intended to provide background information on the Lake County wildfire situation, identify overall goals and objectives, and to establish general operating guidelines for a continuing planning process. This plan does not include recommendations for specific risk reduction projects; it does, however, provide guidance for the conduct of an on-going, collaborative hazard mitigation program throughout the County. Given the general nature of this document, it is intended to be valid for a period of at least five years. The Plan may be amended if needed, as part of the annual planning process, which will be described in later chapters.**
- 2.) An operating plan will be prepared annually, based on guidance and direction provided in the main plan. The annual update will be used as a means for documenting plan activities, identification of emerging issues, evaluation of past work projects, and to establish an annual risk-mitigation work plan based on priorities set by involved stakeholders.**

**For purposes of complying with the requirements of the Healthy Forest Restoration Act, this Community Wildfire Protection Plan is considered to include the current Annual Operating Plan.**

### **1.4 PLANNING PROCESS**

Documentation of the planning process, including public involvement, is required to meet FEMA's DMA 2000 (44CFR§201.4(c)(1) and §201.6(c)(1)). This section includes a description of the planning process used to develop this plan, including how it was prepared, who was involved in the process, and how all of the involved agencies participated. Documentation of the process for development of the overall plan is included in this primary plan document, and the annual operating plan will include documentation of on-going planning and mitigation efforts.

The Lake County Community Wildfire Protection Plan was developed through a collaborative process involving the following organizations and agencies:

Lake County Board of Commissioners  
Lake County Office of Emergency Management  
Lake County Local Emergency Planning Committee  
Lake County Fire Association  
Lake County Conservation District  
Northwest Regional Resource Development and Conservation Area  
Montana Department of Natural Resources  
Confederated Salish and Kootenai Tribes  
Bureau of Indian Affairs, Flathead Agency  
USFS Flathead National Forest

The County's local coordinator contacted these organizations directly to invite their participation in organizing the planning effort. Development of the plan was guided principally by a Fire Plan

Steering Committee that was formed with representatives from some of these agencies.  
Steering Committee member include:

Paddy Trusler, Lake County Commissioner  
Greg Larson, Northwest Regional Resource Conservation and Development  
Steve Stanley, Lake County Emergency Management Coordinator  
Tony Harwood, Confederated Salish and Kootenai Tribes  
Dave Poukish, Montana Department of Natural Resources  
Dennis Devries, Lake County Conservation District

The planning process included 5 distinct phases which were in some cases sequential (step 1 then step 2) and in some cases intermixed (step 2 completed though out the process):

1. Identifying Objectives of the planning effort, and obtaining funding
2. Collection of Data & Compilation of Maps
3. Identification of issues
4. Development of Mitigation strategies
5. Analysis and Drafting of the Report

Funding for the development of this plan was provided through an *Economic Action Program* grant from the U.S. Department of Agriculture, Forest Service, administered through the *Community Planning for Fire Protection Program* of the Montana Department of Commerce. The Grant was awarded to the Northwest Regional Resource Conservation and Development Area, which assisted Lake County in the preparation of the plan. The NWRC&D solicited competitive bids from companies for management, analysis and development of the Lake County Wildfire Protection Plan. Arctos Research, of Plains, Montana was selected for this task in August, 2004, with a goal of having a completed plan in place by November of 2004. The project manager for Arctos Research is Jeff Reistroffer, of Plains, and Greg Larson of NWRC&D served as the liaison between the county and the contractor.

### **EXISTING EFFORTS, STUDIES AND PLANNING DOCUMENTS**

Lake County Cooperative Fire Management Plan (DNRC)

Lake County Annual Action Plan (DNRC)

Seeley-Swan Fire Plan

Lake County Emergency Operations Plan

Lake County Pre-Disaster Mitigation Plan (in progress)

Wildland Fire Annual Operating Plan (Flathead Agency, BIA)

Lake County Growth Policy

Lake County Emergency Services Master Mutual Aid Agreement

Lake County Growth Density Plan (Draft)

## **RECORD OF PLANNING MEETINGS HELD**

<b><u>DATE</u></b>	<b><u>LOCATION</u></b>	<b><u>GROUP</u></b>	<b><u>PURPOSE</u></b>
6/9/04	Polson	Steering Committee	Planning effort initiation
7/8/04	Polson	Steering Committee	Scoping, establish guidelines & contract spec.
8/02/04	Polson	Steering Committee	Initial meeting with contractor; establish scope
8/09/04	Polson	Firefighters Assn.	Discussion of planning effort; request for input
9/16/04	Libby	NWRC&D	Review of Outline/ proposed plan structure
10/6/04	Ronan	Steering Committee	Interim Plan review; discussion of critical items
10/20/04	Ronan	Firefighters Assn.	Special planning meeting; risk rating criteria
10/29/04	Polson	Lake Co. Planning	Mapping and GIS products
12/8/04	Swan Lake	General Public	Presentation of draft plan; request comments
12/9/04	Ronan	General Public	Presentation of draft plan; request comments
12/13/04	Ronan	Firefighters Assn.	Presentation of draft plan; request comments

## **PUBLIC INVOLVEMENT**

Public involvement in this plan is essential to ensure an effective fire prevention and public safety strategy. There are a number of ways that public involvement is sought and facilitated. In some cases members of the public may provide information and seek an active role in protecting their own homes and businesses, while in other cases it may lead the public to become more aware of the process without becoming directly involved in the planning process. Public meetings were held during the development phase of this plan, and the annual planning process incorporates public involvement through extensive outreach programs throughout the course of the year, on a continuing basis.

## **News Releases**

A news release was provided to the Lake County Leader newspaper at the beginning of the planning effort. The following news release was published in the September 9<sup>th</sup> issue of the paper, accompanied by a wildfire-related photograph.



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## PRESS RELEASE

DATE: September 3, 2004

TO: Lake County Leader  
FROM: Arctos Research  
Attn: Jeff Reistroffer  
P.O. Box 728  
Plains, MT 59859

Phone: (406) 826-5171  
FAX: (406) 826-5172  
e-mail: [arctos@blackfoot.net](mailto:arctos@blackfoot.net)

### PLANNING EFFORT UNDERWAY FOR WILDFIRE SAFETY

A Community Wildfire Protection Plan is currently being developed for Lake County in order to enhance public safety and to help prevent property loss from wildfires. The Northwest Regional Resource Conservation and Development Area, based in Libby, is administering the planning project which has been funded through a grant from the Montana Department of Commerce. Similar planning projects have recently been completed in the Seeley Lake/Swan Valley area, the Bitterroot Valley and Lincoln County. Arctos Research, a research and development firm based in Plains, has been contracted to coordinate and produce the plan for Lake County.

The two primary objectives of this planning effort are: (1.) To identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will help protect lives and property at-risk from wildfire, and (2.) To recommend measures that homeowners and communities can take to reduce the ignitability of structures in forested areas throughout the county.

In addition, completion of a Wilfire Protection Plan will enable Lake County to compete for federal funding of hazardous fuels reduction projects carried out under the auspices of the National Fire Plan and the Healthy Forests Restoration Act of 2003.

This project is being undertaken in cooperation with the Lake County Board of Commissioners, the Lake County Office of Emergency Management, the Lake County Fire Association, CS&KT Fire Management, the Montana Department of Natural Resources, the USFS Flathead National Forest, and other fire-related entities.

At this time, the planning process is in the early stages of gathering baseline information and producing maps for use in identifying those areas of the County at greatest risk from wildfire. Meetings will be held this fall to analyze existing conditions and to determine recommendations for needed actions. Input from homeowner associations, community groups, and other interested parties is welcomed. If you would like to be kept informed of the progress of this planning project, or have questions about it, please send a letter indicating your interest to: FIREPLAN, c/o Arctos Research, P.O. Box 728, Plains, MT 59859 or by e-mail to [fireplan@blackfoot.net](mailto:fireplan@blackfoot.net).

The following news release was issued after completion of the preliminary draft, and published in the November 26, 2004 edition of the Lake County Leader:

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## PRESS RELEASE

DATE: November 22, 2004

TO: Lake County Leader  
FROM: Arctos Research  
Attn: Jeff Reistroffer  
P.O. Box 728  
Plains, MT 59859

Phone: (406) 826-5171  
FAX: (406) 826-5172  
e-mail: [arctos@blackfoot.net](mailto:arctos@blackfoot.net)

### DRAFT COUNTY WILDFIRE PLAN TO BE PRESENTED

A Community Wildfire Protection Plan for Lake County has been in development for the past three months, and a draft version of the plan is now available for public comment. The plan is intended to help in improving public safety, and to help prevent property loss from wildfires. The Northwest Regional Resource Conservation and Development Area, based in Libby, is administering the planning project which has been funded through a grant from the Montana Department of Commerce.

In addition to describing the wildfire situation in the County, the Plan has the following two main objectives: (1.) To identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will help protect lives and property at-risk from wildfire, and (2.) To recommend measures that homeowners and communities can take to reduce the ignitability of structures in forested areas throughout the county.

Furthermore, completion of a Wilfire Protection Plan will enable Lake County to compete for federal funding of hazardous fuels reduction projects carried out under the auspices of the National Fire Plan and the Healthy Forests Restoration Act of 2003.

This project is being undertaken in cooperation with the Lake County Board of Commissioners, the Lake County Office of Emergency Management, the Lake County Fire Association, CS&KT Fire Management, the Montana Department of Natural Resources, the USFS Flathead National Forest, and other fire-related agencies.

A draft version of the Plan will be presented to the public at two upcoming open-house meetings: December 8<sup>th</sup> at the Swan Lake Community Center and December 9<sup>th</sup> at the Tribal Division of Fire Management conference room. Both meetings will begin at 7:00 p.m. The public is invited to attend, and comments are welcomed for consideration in the writing of the final version of the Plan. Further information may be obtained by sending an e-mail inquiry to [fireplan@blackfoot.net](mailto:fireplan@blackfoot.net), or by calling Jeff Reistroffer, the project director, at 406-826-5171.

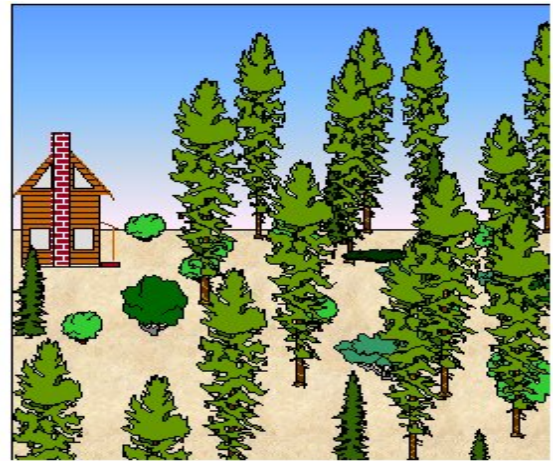
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**PUBLIC MEETINGS HELD**

There were two public meetings held for the purpose of presenting the preliminary draft of the Community Wildfire Protection Plan and to solicit comments, corrections or other input. The figure shown below is a copy of the announcement of the meetings. The announcement was posted at all post offices in the county, as well as at other significant bulletin boards, at least two weeks in advance of the meetings.

# PROTECTING HOMES FROM WILDFIRE

A Preliminary Draft of the Lake County Community Fire Protection Plan has been completed, and will be discussed at upcoming Open House meetings.



Lake County residents and landowners interested in the County's

## **HAZARDOUS FUELS REDUCTION PROGRAM**

are invited to attend. Comments on the preliminary draft are welcomed, and will be considered in the development of the final version.

**WEDNESDAY, DECEMBER 8<sup>th</sup>**  
**7:00 P.M.**  
**SWAN LAKE COMMUNITY CENTER**  
**HIGHWAY 83**  
**SWAN LAKE**

**THURSDAY, DECEMBER 9<sup>th</sup>**  
**7:00 P.M.**  
**TRIBAL FIRE MANAGEMENT**  
**CONFERENCE ROOM**  
**IN RONAN (NEAR THE AIRPORT)**

**For Further Information, Call Jeff Reistroffer at (406)826-5171**

## CHAPTER 2: LAKE COUNTY CHARACTERISTICS

### 2.1 POPULATION

The 2000 U.S. Census count shows the population of Lake County at 26,507 people. Lake County is currently ranked tenth in population for Montana counties. From 1990 to 2000, Lake County grew by 26 percent, or 5,466 persons. During that same period, the Montana population grew by almost 13 percent. The current rate of growth in Lake County is more than a 50 percent increase over that which occurred during the 1980s, when the overall growth rate was 10.4 percent.

Lake County is more densely populated than Montana as a whole. The average population density of Lake County is 17.75 people per square mile, while the average population density of Montana is six people per square mile. Approximately 25 percent of Lake County's population lives within the incorporated communities of Polson, Ronan and St. Ignatius. These areas grew by 23, 17 and 1.25 percent respectively during the 1990s. Despite the relatively fast growth of the incorporated areas, 75 percent of the population of Lake County lives in unincorporated areas. The unincorporated population centers are Arlee, Charlo, Pablo, Woods Bay, Elmo, Big Arm, Dayton, Rollins, Swan Lake, Finley Point and Ravalli. Of these, Arlee and Charlo each grew by approximately 23 percent, Pablo grew by almost 40 percent, and Finley Point grew by 25 percent. See Map #7, "Residential Density" (pg. 66).

The U. S. Census Bureau predicts that population growth in Lake County will continue at a rate of 1.8 percent annually through 2025. This translates into over 12,000 new residents over the 25-year period. Table 1-3 shows population projections for Lake County through 2025.

Year	2000	2005	2010	2025
Projected Population	26,507	28,840	31,230	38,570
Percent Increase	NA	9	18	46
Projected Number of New Residents		2,333	4,723	12,063

### 2.2 LAKE COUNTY COMMUNITIES

The two largest commerce centers within Lake County are the cities of Polson and Ronan, both of which are bisected by Highway 93. While much of the commercial/industrial development is located within the limits of these cities, development has crept north and south of both due to exposure along the highway. St. Ignatius and Arlee have also experienced commercial development along the highway frontage. In general, retail businesses are located in the centers of the communities, while light manufacturing, mini storage, some services and retail sales such as auto dealers (which require more space) are located at and beyond the edges of the communities. Due to the volume of recreational traffic using and passing through Lake County on Highway 93 and 35, there are many gas and convenience-type stores located along Highway 93, particularly around Polson and in the southern areas.

Communities in Lake County fall into several categories with respect to their geographic settings. The largest category is made up of those places located along U.S. Highway 93. This includes all of the incorporated entities---Polson, St. Ignatius and Ronan---and Pablo, Arlee and Ravalli, which are unincorporated. Charlo is located off Highway 93 but sets on a rail line and along Highway 212. With the exception of Ravalli, which is constrained by topography, the locations of these communities offer level to nearly-level building sites, easy highway access, room for expansion, scenic vistas and good water quality. These areas are prime for expansion, but generally lack excess public sewer and water capacity. The few constraints to expansion that do exist in the valley communities include the depth to groundwater (which varies from extremely shallow to very deep in areas), clayey soils that demand enhanced individual sewage treatment systems and close proximity to important wildlife habitat in some areas.

Most of the remaining communities, all unincorporated, are situated on the shores of Flathead Lake. These include Big Arm, Dayton, Rollins, and Elmo on the western side, also located along or just off Highway 93. On the eastern side of Flathead Lake are Finley Point, Yellow Bay and Woods Bay, all of which are accessed via Highway 35. The terrain in these areas has more relief than in the valley bottoms, and Flathead Lake constrains expansion, making development more challenging, but offering excellent views, recreational opportunities and nearby highway access.

The remaining towns are Proctor, northwest of Flathead Lake, and Ferndale, Salmon Prairie and Swan Lake in the Swan Valley. All of these unincorporated communities are located outside of the Flathead Reservation boundary. Proctor is off the main highway system, and the communities in the Swan Valley are located on Highway 83, a secondary state highway that runs the length of the valley. Ferndale is located along Highway 209 between Big Fork and the Swan Valley and is one of the most rapidly growing areas of Lake County due to its scenic, forested setting and proximity to Kalispell.

### **2.3 LAND COVER**

Lake County has a diverse vegetative cover due to the variety of soil types, landforms and differences in elevation. The highest elevations in the Mission and Swan Ranges that are covered by snow, ice fields, and rock are devoid of vegetation. The eastern one third of Lake County (the Swan Valley, Swan Range, and the Mission Range) at lower to mid elevations are covered primarily with evergreen forests. Approximately 50 percent of Lake County is forested (see Map #6, "Forest Land Cover"). Commercial forest lands are owned and managed by the Tribes, the state and federal governments, Plum Creek, and small private land owners. The Tribes recently finalized a Forest Management Plan which emphasizes "modified restoration" to pre-settlement conditions on their commercial timberlands.

## **2.4 LAND OWNERSHIP**

<b>Land Ownership Status</b>	<b>Acreage</b>	<b>Percent of Area of County</b>
Fee (both Tribal and non-Tribal members)	364,882	35%
Tribal	290,103	27%
Federal Government	168,989	16%
Water*	102,495	10%
State Government	65,668	6%
Large Corporate	64,000	6%
Conservation Organization	524	.05%
Local Government	87	.001%
Total Surface Area	1,056,679	100%

See Map #2, "Land Ownership".

## **2.5 WATER RESOURCES**

Lake County is situated at the southern end of the Flathead Basin, a watershed that drains approximately six million acres of northwestern Montana and southeastern British Columbia. Waters from this basin flow into the Clark Fork River and eventually into the Columbia River. The waters of the Flathead Basin play a vital role in the lives of Lake County's citizens and visitors. They support fish and wildlife as well as domestic, municipal, irrigation, stock watering, manufacturing, and recreational uses. Average annual precipitation for the Mission and Jocko Valleys is about 17 inches and is about 29 inches in the Swan Valley. Up to 70 percent of this moisture falls from April to September (Soil Survey for Lake County, Montana, Natural Resources Conservation Service, 1997).

Lakes and streams cover approximately 100,000 acres of Lake County, or just under 10 percent of the total area. The most prominent surface water features in Lake County are the southern two-thirds of Flathead Lake, the Flathead River, Swan Lake, the Swan River, Mission Creek, Post Creek, the Jocko River and Lake Mary Ronan. Other sizeable lakes include McDonald, Loon and St. Mary's Lakes. Lake County also contains several large reservoirs, including Pablo, Kicking Horse, Lower Crow, Mission and Ninepipe, and numerous small reservoirs which are important for wildlife and agriculture.

According to records of the Montana Department of Environmental Conservation, there are three public water supplies in Lake County that are permitted to derive at least part of their water from surface water sources (other than Flathead Lake). These are as follows:

- The City of Ronan Public Water Supply obtains water primarily from a surface water source, Middle Crow Creek, draining from the Mission Mountains located west of Ronan. The intake is located at the approximate point where the stream leaves the mountains into the valley. The backup water supply comprises two wells installed into a relatively deep aquifer comprised of glacial outwash deposits covered by several hundred feet of clay-rich glacial tills. One well is located in the central part of town, and the second is located on the west side of town (Figure 2). The wells draw water from an approximate depth of 400 feet below the ground surface. Ground water in the source aquifer for the wells flows in an general westward direction in the Ronan area.

The Middle Crow Creek Watershed is located within the Lower Flathead Watershed as part of the headwaters of the Columbia River Watershed. The limits of the Middle Crow Creek Watershed upstream from the surface water intake are shown on the map accompanying the “Mission Front, North” risk assessment worksheet in Section 5.6 of this document. The Middle Crow Creek watershed in the Mission Mountains upstream from the intake covers an estimated area of 3.25 square miles. Flow from the watershed is derived from meltwater from mountain glaciers in the upper elevations of the watershed; and from baseflow from the geologic materials filling the valley.

- Prior to the mid-1980s, Polson relied primarily on surface water from Hell Roaring Creek for the public water supply. During this period groundwater was used primarily during periods of unusually cold weather or high turbidity in Hell Roaring Creek. The limits of the Hell Roaring Creek Watershed upstream from Hell Roaring Dam are shown on the map accompanying the “Turtle Lake” risk assessment worksheet in Section 5.6 of this document. The hydrological integrity of this watershed is highly valued by the City of Polson, and the City considers the area to be a high priority for protection from wildfire.

Discoveries of Giardia lamblia cysts in the Hell Roaring Creek supply in 1985 led to temporary abandonment of the supply. After engineering evaluations and consideration of available options the City of Polson began developing additional groundwater supplies to replace the surface water system. This shift to groundwater for the Polson Public Water Supply appears to have eliminated the contamination problem. At the present time, Hell Roaring Creek does not account for any portion of Polson’s water supply, however the City is maintaining the integrity of this source for possible future uses.

- The Woods Bay Public Water Supply System has, in the past, obtained water from a spring that is fed by Sheaver’s Creek. Water from the spring is now classified as “Groundwater Under the Influence of Surface Water”, which requires a significant level of filtration and treatment before it can be used for a public water supply. This source is now listed as “Inactive” according to the most recent Public Water Supply System Monitoring report filed with the Montana DEQ. The limits of the Sheaver’s Creek Watershed upstream from the springwater intake are shown on the map accompanying the “East Shore - North” risk assessment worksheet in Section 5.6 of this document.

## **2.6 ECONOMY**

The Montana and Lake County economies have changed significantly over the past 30 years. In 1970, half of Montana’s workers were employed in the basic industries of farming and ranching, the federal government, forestry, manufacturing, mining and tourism. These are called basic industries because they bring outside income to the state. By 1997, only one-

quarter of Montana's workers were employed in these industries. In Lake County, the federal government and the mining industry do not play a major role, while farming and ranching, forestry, local and tribal governments and tourism all figure significantly in today's economy.

The Lake County and Flathead Indian Reservation economies are part of a larger regional picture. The regional business and economic centers are Missoula and Kalispell. Local residents go to those cities to purchase and sell goods and services that cannot be found, or have a limited market, locally. Population centers like Polson, Ronan, Pablo, St. Ignatius, and Arlee provide local employment and purchasing opportunities. The local population and regional economic centers share an interdependent relationship: Lake County has goods and services, such as wood products and recreational opportunities, that urban residents enjoy, while the economic centers have shopping and business opportunities that cannot be found locally.

Economic activity grew steadily throughout the 1990s in Lake County. Tourism and recreation, retail sales, construction and manufacturing all continued to grow, although the rate of expansion slowed by some measures toward the end of the decade. Jobs were relatively plentiful, however many of them were part-time and provided low wages. Some recent examples of economic growth in the area include tribal developments such as the KwaTaqNuk Resort, the People's Center and the Salish Kootenai College expansion, the Wal-Mart store in Polson, new post offices in Dayton, Polson, St. Ignatius and Arlee, and a number of new banking, fast food and grocery facilities across Lake County. Jore Corporation in Ronan expanded rapidly during the 1990s and reached a peak year-round employment of over 600 employees. The company has since endured a major restructuring and change of ownership but has retained around 300 permanent employees.

In addition to these large and well-known businesses, the numerous small businesses of Lake County are a major sustainer of economic activity. The majority of these are low-profile, home-based and employ few non-family members. They typically provide the local economy with diversity and strength, increase the tax base, provide some job opportunities and have minimal demands on local services. In 1996, more than one-third of the workforce in Lake County was self-employed. The major employers in Lake County at this time include the tribal government, New Jore, St. Luke Healthcare, the Ronan and Polson school districts and Plum Creek Timber.

The timber industry has a solid base in Lake County, due largely to the lands owned by Plum Creek Timber and the Confederated Salish & Kootenai Tribes. However, reductions in the amount of board feet taken from the Flathead National Forest and tribally owned lands may be affecting the numbers employed in the timber industry. The other major sectors, including retail trade, construction, and manufacturing, have been fairly stable over the past 25 years in terms of employing a given percentage of the workforce.

The largest economic sector in terms of both employment and personal income in Lake County is the service sector. In 1975, service-related jobs employed 19 percent of the labor market and accounted for just over 25 percent of non-farm labor earnings. In 1996, the service sector employed 33 percent of the workforce and was responsible for almost 43 percent of these earnings. The next closest income sector is retail sales, which generated over 16 percent of all non-farm labor earnings, followed by manufacturing at almost 15 percent and construction at almost 11 percent. The following table shows the percentages of total labor income in relation to the major sectors of the economy.



	1975	1985	1996
<b>Sector percentages of non-farm labor earnings:</b>			
<b>Services</b>	25.14%	33.6%	42.75%
Retail Trade	24.91%	20.13%	16.34%
Manufacturing	12.67%	17.06%	14.83%
Construction	13.44%	13.71%	10.72%
Finance, insurance, & real estate	5.84%	4.07%	5.27%
Agricultural services, forestry, fisheries, etc.	3.57%	1.93%	1%
Transportation and public utilities	7.69%	6.91%	6.05%
Wholesale trade	5.66%	1.75%	2.81%
Mining	1.08%	0.82%	0.22%

Source: O'Connor Center for the Rocky Mountain West, Regional Economic Assessment Database

## 2.7 CULTURAL RESOURCES

Cultural resources in Lake County include sites of historical, cultural or spiritual importance. Cultural resource inventories to locate these sites have been carried out in Lake County by the Confederated Salish & Kootenai Tribes, the Forest Service, the U.S. Fish and Wildlife Service, the Montana Department of Transportation, the Department of Natural Resources and Conservation and contractors to these entities. Inventories are frequently conducted in areas prior to ground disturbing projects, such as timber sales or road construction, to locate and protect cultural resources. While certain areas of Lake County have been surveyed for cultural resources, no systematic county-wide inventory has been conducted.

Federal historic preservation law is grounded in the concepts of conserving cultural resources for the benefit of future generations and focuses on the identification, designation, and protection of historic districts, sites, structures, and objects. Within the exterior boundaries of the Flathead Indian Reservation and in all dependent communities, the Tribal Historic Preservation Officer is the official conservator of culturally significant sites. In other areas of the state, the State Historic Preservation Officer investigates sites and maintains cultural site records.

The Tribal Preservation Office (TPO) is responsible for the protection, preservation, survey, and documentation of Tribal and historic cultural resources on the sites under its jurisdiction. In the Tribes' world-view, the intangible or ideology cannot be separated from the cultural sites, so they look to the elders and the Culture Committees for guidance on the best management and protection of these non-renewable resources.

As of June 1999, a total of 235 sites had been recorded in Lake County. This number reflects the vast majority, but not necessarily every site, which has been recorded by the Tribes. Once a site has been recorded as culturally significant, it must be evaluated to determine if it is to be listed on the National Register of Historic Places. Most of the sites recorded in Lake County have not yet been evaluated for listing. Of the 235 sites recorded, six have been found eligible and nominated to the National Register. These sites are Fort Connah, the Kootenai Lodge Historic District, the Frank Bird Linderman House, the Polson Feed Mill, the St. Ignatius Mission and the Swan Lake Rock House Historic District.

## CHAPTER 3: WILDLAND FIRE MANAGEMENT ORGANIZATION

In order to assure well coordinated wildland fire protection in the county, it is important to begin with a clear definition of the roles and responsibilities of everyone that takes part in fire control operations. The various individuals and entities must fully understand their own mission, as well as the role others fill in the countywide fire service.

Montana Statutes charge certain governmental bodies with wildland fire protection, depending on location, ownership, and vegetative cover of the land. Many times these distinctions are not exclusive, resulting in some areas of the county having wildland fire protection by more than one agency. This overlapping jurisdiction often provides some lands, usually classified forestlands, with an extra measure of fire protection. However, it can also lead to confusion and omissions if pre-established plans are inadequate or misunderstood.

The fire service in Lake County is essentially made up of two types of protection agencies: "county level" organizations and "Recognized Forest Fire Protection" agencies at both the State and federal level. The following section will describe the roles and responsibilities of the individual departments or agencies that fall under each classification.

### 3.1 WILDLAND FIRE AGENCIES

Forest fire protection is defined in 76-13-102(6) MCA as the "work of prevention, detection, and suppression of forest fires and includes training required to perform those functions." Most classified forestlands in Montana are in the Central and Western portions of the state. The majority of these lands are either part of a Forest Fire Protection District or an Affidavit Unit, which are generally referred to as direct protection areas. Within these areas, there is only one recognized agency assigned wildland fire protection, usually the DNRC, USFS, BLM, or CS&KTs. These lands are provided this protection based on an assessment for services rendered, paid through the county tax rolls to the State.

Because the DNRC is allowed under 76-13-105 MCA to "protect nonforest lands and improvements", there are nonforest agreements written for areas that are NOT classified forest. These areas are assigned a recognized wildland protection agency and they are protected at the same level as Forest Fire Districts. This is one reason why the term Non Forest Zones (NFZ) does not always give the correct picture of fire protection, as NFZ can have direct protection as mentioned previously. Because of the high value placed on commercial timber, and on natural resources in general, governmental agencies are mandated to provide wildfire protection to lands owned by the Government. In addition, Montana State law requires that all privately owned forested lands in the State be provided with wildfire protection (76-13-201 MCA). State laws also establish a mechanism to provide this service, through the formation of Forest Fire Protection Districts (76-13-204). These Forest Fire Protection Districts are formed in a manner similar to Rural Fire Districts, except that the DNRC (the State Board of Land Commissioners is still the final authority) is the body that creates the Forest Fire Protection District instead of the County Commissioners. In Lake County, there are three Forest Fire Protection Districts, with boundaries roughly the same as the protection boundaries shown on Map #3, "Wildland Fire Protection" (pg. 62), in Appendix A of this Plan.

"Forest fire protection" involves more than just putting out fires. Protection agencies are also responsible for pre-attack planning, fire prevention, equipment procurement, detection,

suppression, cause determination, and reporting. Under 76-13-201 MCA, an owner of forestland classified as such by the department shall protect against the starting or existence and suppress the spread of fire on that land. The department must in conformity with reasonable rules and standards for adequate fire protection adopt this protection and suppression.

Private owners of forested land in the State are required to pay a fee for this fire protection. A Forest Fire Assessment program is managed by the Department of Natural Resources and Conservation to collect these funds, through the county-based property tax system. Landowners are assessed a fee of \$.17 per acre or a minimum fee of \$22.00 currently per parcel in each fire protection district.

A landowner paying fire protection fees can receive no other charges as a result of wildfire originating on his or her land, unless the landowner is responsible for starting the fire. Although Rural Fire Districts are often reluctant to bill for costs, state and federal fire agencies are mandated, pursuant to MCA 50-63-103, *liability of offender for damages and costs*, to attempt to collect suppression costs from those responsible for starting the fire.

The following sections give a brief overview of the three wildland agencies in Lake County:

#### **CONFEDERATED SALISH AND KOOTENAI TRIBE (CS&KT)**

The CS&KT, Division of Fire protects 1.22 million acres of land on the Flathead Reservation. Tribal Trust and Trust Allotments account for 712,000 acres, private (fee) land accounts for 468,000 acres, and the remaining 40,000 is State owned. From a fire ecology perspective the reservation is quite diverse ranging from alpine forest types in the Mission Mountain Tribal Wilderness to sagebrush and grass at the driest site in Montana at Niarada. The Tribes fire mission ranges from prescribed natural fire in the Mission Wilderness to rapid response and suppression of fires in the Wildland Residential Interface along Flathead Lake, the foothills of the Mission Mountains, and throughout the classified forest and mutual threat zones in the Mission Valley. The tribe describes these suppression strategies as 1) Full suppression in the residential interface zone; 2) Modified suppression on fringes of wilderness areas; 3) Full wildland fire use (PNF) in wilderness areas.

The CS&KT maintains their own dispatch center located in Ronan and is members of the Southwestern Montana Interagency Coordination Center in Missoula. There are 30 seasonal firefighters staffed, 3 Type 4 engines, 4 Type 6 engines and 1 Type three helicopter contracted with the Lolo National Forest. They also have on a call when needed basis 5 - 10 Montana Indian Firefighter (20 person) Crews and 4 camp crews. These resources respond to an average of 36 fires per year on the Flathead Reservation, thirty-six percent (36%) of which are person caused.

The tribe also plans on using prescribed fire on an average of 4,000 acres per year including broadcast burns, under burns, pile burns, and hazard fuel reductions around homesites and urban interface.

#### **DEPARTMENT OF NATURAL RESOURCES & CONSERVATION (DNRC)**

The Kalispell and Swan Units of the Northwestern Land Office protect a total of 170,000 acres in Lake County. Both units are dispatched through the Flathead Interagency Dispatch Center located in the Flathead National Forest Supervisor's Office in Kalispell. The Kalispell Unit is a

participating member in the Interagency Burn Permit Center, which is located in the Northwestern Land Office North of Kalispell. The Swan Unit issues their own burn permits.

The Kalispell Unit is responsible for fire prevention and suppression on 58,000 acres of predominantly industrial and non-industrial private land as well as scattered State and U.S. Forest Service ownership. The bulk of this land is relatively low elevation and well roaded, characterized by increasing residential wildland interface extending from Rollins and Bigfork population centers. Seven seasonally staffed engine crews respond to an average of 4 fires per year, 33% of which are person-caused. The Northwestern Land Office also staffs a state owned Type 2 (UH-1H) helicopter for initial attack on the 5 DNRC Units in NW Montana.

The Swan Unit provides fire prevention and suppression for 112,000 acres of State, private and federal lands within Lake County. This area can be described as mid to high elevation, commercially productive timberland with good road access at the lower elevations. The Residential Wildland Interface areas are also expanding. The Unit's two wildland engines respond to an average of 12 fires per year, 30 % of which are person caused. The Swan Unit's fire protection area lies within the area covered by the Seeley-Swan Fire Plan, as well as this Lake County Community Wildfire Protection Plan.

### **U.S. FOREST SERVICE, FLATHEAD NATIONAL FOREST**

The Flathead National Forest in addition to its administrative site in Kalispell, is composed of The Swan Lake Ranger District, Tally Lake Ranger District, and the Three Forks Zone. The Three Forks Zone is comprised of the former Glacier View, Hungry Horse, and Spotted Bear Ranger Districts. Collectively these offices administer Fire management activities on over 2 million acres of national forest system lands in Flathead and Lake Counties, including the Bob Marshall Wilderness Area. The Swan Lake Ranger District, headquartered in Bigfork, provides fire protection to about 125,000 acres of predominately National Forest lands in the Swan River Valley, as well as lands along the east shore of Flathead Lake north of the Reservation boundary. The Flathead Forest is home to several threatened, endangered, or sensitive wildlife species such as the west slope cutthroat and bull trout, grizzly bears, and wolves. In addition, the Flathead Forest receives tremendous recreational use in the Bob Marshall Wilderness, Jewel Basin and on the three forks of the Flathead River. Most of the Forest is considered highly productive commercial timber ground containing many valuable watersheds important for maintaining water quality. On a National Forest with these kinds of competing management issues fire plays an important role as a management tool.

The Flathead Forest manages an average of 6 prescribed natural fires and suppresses an average of 65-70 fires per year. They house the Flathead Interagency Dispatch Center in their office across from the City Airport. The Forest hosts a national Type 1 Interagency Hotshot Crew, an air tanker and retardant plant, and supports a Type 3 contract helicopter for project and Fire management work. The districts staff 10 engines and employ 50 seasonal firefighters Forest wide.

## **3.2 LAKE COUNTY ORGANIZATIONS**

### **RURAL FIRE DISTRICTS**

A Rural Fire District (RFD) is a political subdivision having geographical boundaries established by a vote of the residents of an area. The operations of a district are funded by collection of a tax on all real property in the district.

In accordance with State law, Rural Fire Districts are responsible for protection of all property within the district from fire. There is no distinction in the law regarding what type of fire, so all fires are included (structural, vehicle, and wildland). This applies regardless of the vegetative cover on the land, so forested lands are also included even if these lands are already protected by a Recognized Wildland Protection Agency. It is these forested lands, lying within established rural fire districts, that are referred to as having "overlapping jurisdiction."

There is also no provision in the law that would exempt non-taxable, government-owned lands within the District's boundaries from the District's responsibility to provide fire protection. If government-owned lands were not specifically excluded from the fire district when it was formed, then the district must provide the same level of fire protection to those lands as it does to private lands.

Although the two types of organizations may share geographical responsibilities, they differ in their respective missions. In Montana the "recognized wildland fire protection agencies" include the U.S. Forest Service (USFS), U.S. Bureau of Land Management (BLM), Montana Department of Natural Resources & Conservation (DNRC), Confederated Salish & Kootenai Tribes (CS&KT), and any of the 56 counties in the State/County Coop Fire program where a higher level of wildland protection does not exist, and where the County accepts this responsibility. These entities are primarily wildland fire fighters, and for the most part will not perform structural fire fighting, as they do not have the training or equipment to do so. Fire districts on the other hand, are more geared towards fighting structure fires, and some structural departments have limited expertise in wildland firefighting, where natural fuels, weather, and topography influence fire fighting tactics.

These different agency orientations have changed in recent years, due to the growth of housing developments in the residential/wildland interface. As homes are built further out into the forest, all of the entities involved in fire operations find themselves operating closer to the others "turf." Rural fire districts must be more proficient in the wildland fire suppression arena to effectively protect structures from wildfires, and wildland fire agencies are faced with interface fires where man-made fuels (houses) are intermixed with wildland fuels.

### **FIRE SERVICE AREAS**

Fire Service Areas (FSA) are a relatively new form of fire protection codified in 7-33 part 24 MCA. They are also formed by submitting a petition to the County Commissioners, though the requirements (30 owners of real property in the proposed area), are much less strict than those for Rural Fire Districts. In areas where there are several large landowners, it was often impossible to get the required 50% or more of the owners of a majority of the land to sign a petition for forming a Rural Fire District. This meant that the formation of a Fire Company might be the only way to provide the structural protection that people sought for their homes. People found it hard to supply needed fire equipment when they had to rely on bake sales to raise the money. Fire Service Areas are supported by a tax on individual structures, or improvements. As such, FSAs have no direct or implied wildland Fire protection component. Only the Commissioners, by resolution, can decide on the boundaries, kinds, types, or levels of service a FSA will supply. Unless there is a Resolution to the effect that a FSA will do the wildland protection, one should assume that they are NOT legally mandated to do it. Most FSAs will respond to wildland fire calls within their boundaries, as it is prudent to help stop the spread of a wildfire before it involves the structures they are all legally mandated to protect. The wildland area within a FSA boundary but outside the overlap area of either a Forest Fire District/Affidavit Unit/Nonforest Agreement or other recognized wildland fire agency, would be considered county

fire protection responsibility, and would in most cases be assigned to that FSA. In addition, the FSA would not be paid by the State or federal agency to provide structural fire suppression within their boundaries as they are legally mandated to do this. They would not be paid to fight wildland fire on any areas within their boundaries, except under specific contractual arrangements made with the wildland fire protection agency with jurisdiction (such is the case with the Swan Valley Fire Service Area). If they were assigned the wildland fire protection within their boundaries by the County Commissioners, the FSA would not be eligible for payment within their boundaries by the federal or State agencies. Again, these specific exceptions should be addressed in an Annual Interagency Operating Plan where the FSA would respond to wildland fires within the areas of Nonforest Agreements in return for the *recognized agency* responding into the FSA.

For a specific location of all Rural Fire Districts/Fire Service Areas in Lake County see Map # 4 (pg. 63). All of these fire districts are dispatched by Lake County 911 center except for Arlee, VFD which is dispatched by Missoula County 911. The Fire Districts and Fire Service Areas are:

Arlee Rural Fire District  
Big Fork Rural Fire District (Flathead County District covering a portion of Lake County)  
St. Ignatius Rural Fire District  
Charlo / Moiese Rural Fire District  
Finley Point Rural Fire District  
Hot Springs Rural Fire District (Sanders County District covering a portion of Lake County)  
Polson Volunteer Fire Department (Covers Polson Rural Fire District)  
Ronan Volunteer Fire Department (Covers Ronan Rural Fire District)  
Ferndale Rural Fire District  
Chief Cliff Fire Service Area  
Rollins Rural Fire District  
Swan Lake Rural Fire District  
Swan Valley Fire Service Area

### **COUNTY OEM COORDINATOR**

The county Office of Emergency Management (OEM) Coordinator is responsible for ensuring that the county meets State and federal Disaster and Emergency Services requirements. This primarily involves pre-planning, resource tracking, readiness evaluation, and emergency response coordination.

Lake County, like other counties in the State, has an Emergency Operations Plan (EOP) that documents preparedness and response actions for declared emergencies and disasters within the county. There is a wildfire annex to the plan which addresses wildfires that are declared to be emergency situations or that result in a major disaster. Although every wildfire is technically an emergency, the county does not officially declare an emergency in most cases. An Emergency Declaration may be warranted in fire situations where multiple homes are under immediate threat of destruction, and where the ability of local fire forces to handle the fire is inadequate. Such a situation could occur with a large-scale fire in the wildland/urban interface anywhere in the county. The Lake County OEM Coordinator also serves as the Lake County Fire Coordinator (LCFC).

### **LAKE COUNTY FIRE ASSOCIATION**

The Lake County Fire Association is comprised of representatives from all of the fire departments, rural fire districts, fire service areas and wildland fire protection agencies in the County. The Association meets at least every two months, and works to improve the effectiveness of the County's fire service through cooperation and information exchange. Topics routinely handled include joint training programs, equipment compatibility, communications, mutual aid agreements, fire prevention activities and response coordination.

### **TRIBAL EMERGENCY RESPONSE COMMITTEE (TERC) / LOCAL EMERGENCY PLANNING COMMITTEE (LEPC)**

Emergency services providers in Lake County participate in a Local Emergency Management Committee that is chaired by the Emergency Management Coordinator. This group is now combined with a group representing the Flathead Reservation that has similar responsibilities. The purpose of the LEPC is:

- To carry out for Lake County and its political subdivisions those responsibilities required of the LEPC pursuant to Public Law 99-499, Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III, also known as the Emergency Planning and Community Right to Know Act (EPCRA) and other related regulations. This includes the development of a hazardous material emergency response plan for Lake County and its political subdivisions.
- To plan, develop, review, update, train and exercise community emergency response plans for all other risks and hazards identified in Lake County including but not limited to flooding, wildfires, major structure fires, winter storms, tornadoes, terrorism, etc.

### **FUELS REDUCTION ADVISORY COMMITTEE**

In 2004, the Lake County Commissioners formed an informal working group comprised of representatives from agencies in Lake County involved in wildland fires to address the hazardous fuels issue in Wildland-Urban Interface areas. These agencies include Lake County Office of Emergency Management, Confederated Salish and Kootenai Tribes, Montana Department of Natural Resources, U.S. Forest Service, Flathead Forest and the Lake County Fire Association. This group is involved in coordinating efforts to reduce the risk of loss due to wildfires through planning activities, application for grants, and the administration of fuels reduction projects. The chairman of the committee is the Lake County Emergency Services Coordinator.

### **FUELS REDUCTION COORDINATOR**

The mission of the Fuels Reduction Coordinator for Lake County is to protect lives, property, and the environment through hazard analysis and implementing mitigation projects to reduce identified risks. The position reports directly to the Lake County Office of Emergency Management, however direction and guidance is also provided by the Fuels Reduction Advisory Committee. The position is funded through grant money received by the County. Duties include:

- Program manager of the County's Hazardous Fuels Reduction program.
- Public information and education related to wildfire risk management.
- Prepares grant applications and administers projects conducted under awarded grants.
- Member of the Lake County Pre-Disaster Mitigation Planning Committee.
- Manages planning activities in accordance with this Community Fire Protection Plan.
- Provides professional forestry advice to the Fuels Reduction Advisory Committee.
- Works with the Lake County Fire Association in other wildfire-related matters.

## CHAPTER 4: FOREST CONDITIONS AND FIRE ENVIRONMENT

### 4.1 HISTORICAL FIRE REGIMES

An important factor in identifying the potential range of forest conditions that can occur on a landscape is an understanding of the influence of historical disturbance regimes on vegetation structure, species composition and spatial distribution. Some of the more common disturbance regimes within North America include fire, insects, disease, hurricanes, blowdowns, and flooding. Within any given landscape, several different historical disturbance regimes may have operated to influence vegetation in this manner. For the Fire Plan area three primary historical disturbance regimes influencing species composition and structure were the short-interval fire regime (avg. <25 years) and the long-interval fire regime (avg. >100 years), and the mixed severity fire regime with intermediate fire return intervals creating forest patches displaying either short or long-term fire effects. Fire was the primary disturbance agent in this landscape directly influencing large-scale changes in forest species composition, structure and spatial distribution. While insects and disease were and continue to be important disturbance agents as well, their activities often contribute to the occurrence and severity of fire as the end result. Consequently, the ultimate driving force of large-scale disturbance in the fire plan region was predominately fire.

Human-induced changes and/or impacts have functionally suppressed, eliminated or changed many of the historical disturbance regimes throughout North America. The result has been the loss of many native ecosystems and their corresponding biodiversity. In Lake County, the primary influence in this regard has been the suppression of fire for nearly 100 years as well as past logging that has changed the historical structure of many forest stands. Fire suppression programs have had profound effects on many ecological communities and ecosystem processes.

#### **Short-interval Fire Regime**

The short-interval fire regime is predominantly characterized by relatively frequent, non-lethal, low to moderate intensity fires that burn along the ground and remain within the understory. The frequency of these fires, generally averaging between 5 and 25 year intervals, influences both the species composition and vegetation structure within these forests. Fire tolerant species such as ponderosa pine and western larch become dominant in the overstory and bunch grasses become dominant in the understory. This becomes what is referred to as a “fire maintained seral disclimax”; due to the frequency of the fires, the stand is unable to succeed toward climax vegetation. Stand history studies have demonstrated that stands occurring within the short-interval fire regime had relatively predictable species composition and vegetative structure. They were also less likely to move through a typical successional progression of age classes. Instead, fire maintained a multi-age structure, characterized by saplings to old growth trees.

#### **Long-interval Fire Regime**

The long-interval fire regime is characterized by an infrequent, lethal, high intensity fire that consumes both the understory and overstory as it moves across the landscape. Stand replacing fire regimes result in a short term, catastrophic effect on stand conditions, in contrast to the persistent, yet less obvious effects of the short-interval fire regime. The result of this impact is to set the stand back to an early successional stage and release plant species



stimulated by severe fire events. Then the stand proceeds along an undisturbed successional trajectory for many years, depending on the ecological site.

### **Mixed Severity Fire Regime**

Within the Fire Plan region, a “mixed severity” fire regime also occurred. That is, depending on site conditions or position on the landscape, both non-lethal and lethal fires could occur within a mosaic of diverse stand conditions. This is typically common through the transitional portion of the environmental gradient where the lower elevation, drier sites are dominated by non-lethal fire regimes and the high elevation, moister sites are dominated by the lethal fire regime. Consequently, where a transitional site occurs primarily adjacent to the low elevation types, it is predominantly influenced by a short-interval fire regime. Where it occurs primarily adjacent to the high elevation types, it is predominantly influenced by a long-interval fire regime. Topographic features can also influence the occurrence of a “mixed” fire regime as well. For example, dry south aspect slopes and ridges within an ecological site such as warm, moist subalpine fir can be predominantly influenced by a short- interval fire regime. Whereas under average site conditions, this ecological site would more typically be influenced by a long-interval fire regime.

## **4.2 FOREST TYPES IN LAKE COUNTY**

### **Warm, Dry Ponderosa Pine, Xeric Douglas-fir**

**Distribution:** This group of habitat types, representing a large percentage of forested residential areas in Lake County, is at the warm, dry extreme of forest environments wherever ponderosa pine is found. Typically, they represent lower timberline conditions and in northwest Montana may occur as low as 2,000 feet in elevation. Upper limits may extend to about 5,400 feet on steep, dry, southerly aspects. Associated geology is quite variable and includes steep, rocky sites to glacially scoured ridge tops and ridge noses to moderately deep glacial till, with drumlins and moraines, to shallow and moderately deep residual soils. Geology and terrain appear to be limiting factors only to the extent of retaining sufficient soil moisture, which is the controlling influence.

**Potential Dominant Species:** Open stands of ponderosa pine are the characteristic tree cover. At the upper elevations of this habitat type, scattered Douglas-fir may be associated with the pine. The undergrowth vegetation is characterized by grasses (bluebunch wheatgrass, elk sedge and pinegrass) and occasional shrubs (bitterbrush and snowberry). In contrast to other habitat types, all members of the shrub and herb layers occur as components of the even drier shrub steppe or mountain shrub zones of vegetation. Consequently, this group of habitat types marks the lower transition between forest and non-forest.

These sites are severely limited in their tree-stocking capability and maintain a savannah appearance when fully stocked. Before Euro-American settlement interrupted the normal fire cycle, nearly all stands were likely in a savannah condition with grass-dominated understories. Historically, these sites burned at least every 5 to 25 years. Average densities ranged from 5 to 20 trees per acre. Historical patch sizes were characterized by small openings of less than 5 acres, within 20 to 200 acre stands of low-density trees. Low-intensity short-interval fires would result in few fire-sensitive shrubs, low fuel accumulations, and few tree seedlings and small saplings. Since the early 1900s, attempts to exclude fire have lengthened fire return intervals. Tree seedlings, small saplings, and fire-sensitive shrubs such as bitterbrush, and snowberry, have become more common and thereby have increased understory fuel loadings. When fires

do occur, they are often of higher severity and result in conditions that rarely occurred historically.

### **Warm, Dry Douglas-fir**

**Distribution:** This group of habitat types represents the warm and dry Douglas-fir/ponderosa pine forests of northwestern Montana and is a major component of the fire plan area. It characterizes the warm, mild environments of low- to mid-elevation forests but may extend upward to about 5,800 feet on dry, southerly aspects. These sites are typically well drained and vary from fairly deep glacial till associated with drumlins and moraines, to shallow and moderately deep residual soils.

**Potential Dominant Species:** The Douglas-fir habitat types are characterized by mixed stands of Douglas-fir and ponderosa pine but at lower elevations, Douglas-fir may be absent. On moderate elevation sites, ponderosa pine, Douglas-fir and western larch are major seral species with small amounts of lodgepole pine, Engelmann spruce, or subalpine fir present as well. In unlogged stands, ponderosa pine, at low elevations, and western larch, at moderate elevations, are usually the larger, older component with Douglas-fir ranging from sapling to mature trees. The undergrowth, if undisturbed, supports mainly rhizomatous shrub and grasses such as common snowberry, mallow, ninebark, pinegrass, or elksedge. Following a disturbance such as fire or logging, a wide variety of other shrubs, herbs, and grasses may be present.

Historically, these sites experienced frequent low-intensity underburns that excluded most Douglas-fir and killed many small ponderosa pines and western larch. Estimates of fire return intervals range from 15 to 45 years. These fires burned extensively throughout the low- to mid-elevation forests, being extinguished only by fall rains or lack of fuel due to previous fires. Under this burning regime, the stands remained open and park-like, consisting of mostly ponderosa pine, western larch and to a lesser degree, Douglas-fir in a variety of age classes. Stand density ranged from about 15 to 30 large overstory trees per acre. Trees often occurred in clumps, with irregular shaped openings between the relatively low density of trees. The potential for destructive wildfire, insect, or disease events was low. Due to their different responses to low-intensity burning, it is likely that shrub cover was less and grass cover was greater than under present conditions

Since Euro-American settlement, fires have become less frequent and stand conditions have changed dramatically, particularly in unmanaged stands. Here, the historical stand of widely spaced ponderosa pine or western larch is often still evident in the overstory as an older stand component. Between the pines, many smaller Douglas-firs and lodgepole pine have become established since the last underburn, which likely occurred in the late 1800s to early 1900s. Stand densities now range from 250 to 600, and sometimes 900, trees per acre, creating stressful conditions throughout the tree layer. Now the potential for destructive wildfire, bark beetle, spruce budworm, Douglas-fir tussock moth, dwarf mistletoe, and root rot events is quite high.

### **Cool, Moist and Cool, Dry Douglas-fir**

**Distribution:** Cool moist and dry Douglas-fir sites are less common in the fire plan area and represent the cooler extremes of the Douglas-fir zone. Subalpine fir is usually present on adjacent cooler sites. Cool, moist Douglas-fir sites may extend upwards to about 6,800 feet in elevation but are also common down to about 4,800+ feet in cold air drainages and frost pocket areas. At the lower elevation, nightly cold air patterns may be compensating for soil moisture.

**Potential Dominant Species:** Ponderosa pine is present as a major seral species only at the warmer extremes of these habitat types and is usually absent at the colder extremes. Lodgepole pine may be common on the cooler and more frost-prone sites. Trembling aspen along with lodgepole pine, may dominate early seral stands. In some cases, Douglas-fir is the only tree species capable of growing on the site. The undergrowth is characterized by shade-tolerant species such as mountain maple, mountain ash, and/or huckleberries. Many other disturbance-related species may be present, such as serviceberry, Scouler willow, thimbleberry, and chokeberry. On drier sites, undergrowth vegetation may be sparse with pinegrass and elksedge the most common species.

Historically, these sites likely experienced a mixed regime of both short-interval and long-interval fire regimes. Average short-interval fire regimes may have ranged from 17-102 years while long-interval fire regimes ranged from 150-400 years. Consequently, stand composition can vary from nearly pure stands of single-age lodgepole pine to mixtures of multi-age lodgepole or ponderosa pine with Douglas-fir or pure multi-age stands of Douglas-fir. The extended fire return intervals on some sites increase the opportunities for dwarf mistletoe and bark beetle infestations.

As a result of organized fire suppression, a shift to continuous, multi-story stands of Douglas-fir has greatly increased. The result being less opportunity for the diverse mosaic of vegetative conditions that result from a mixed fire regime. The probability of widespread stand-destroying fire has increased. Lack of fire has also increased the proportion of dense multistoried stands, making them more vulnerable to bark beetle attack and stand-destroying fire. Severity of dwarf mistletoe infection among these stands has also increased. In some areas, the increase has been dramatic, creating stands composed primarily of large witches brooms.

### **Warm, Moist Douglas-fir**

**Distribution:** In northwestern Montana, the warm, moist Douglas-fir group of habitat types is usually inter-fingered with the warm, dry Douglas-fir group and occurs wherever more favorable sites exist. This habitat type group is common in the fire plan area. These sites range in elevation from about 2,000 to 5,800 feet and occur on a variety of slopes and aspects but are most common on northerly aspects, toe slopes, and stream terraces.

**Potential Dominant Species:** In early seral stages, ponderosa pine is common at the warmer extremes, and western larch, Douglas-fir, and lodgepole pine are common on the cooler sites. Douglas-fir and on some sites, Engelmann spruce, dominate later seral stages. Small amounts of subalpine fir are often present on the cooler sites. Douglas-fir is the climax dominant throughout this group, depending on the habitat types.

Huckleberries, mainly dwarf huckleberry, are a major component of most mid to late seral undergrowths and are often accompanied by beargrass, Rocky Mountain maple, common snowberry, twinflower, or occasionally pachistima. A wide variety of early or mid seral shrubs, herbs, and grasses can appear following a major disturbance. For example, ceanothus, Scouler willow, and thimbleberry may develop high coverages following a wildfire. Sitka alder, common brome, and sweet-scented bedstraw can become conspicuous following logging.

Fire scar analysis and structure and composition of older stands suggest that historically, some of these sites experienced predominantly short-interval fires ranging from 17 to 102 years, particularly on the dryer sites. Here the underburns killed the small Douglas-fir and helped prolong the dominance of ponderosa pine, western larch, and even lodgepole pine. But long fire-free intervals also occurred, particularly on the wetter sites, and allowed Douglas-fir to

develop dense multilayered overstories. Sites predominantly influenced by long-interval fires would have experienced return intervals ranging from 100 to 250 years. Under these circumstances, stand-destroying wildfire would have been a normal part of the forest cycle.

Historic patch sizes typically ranged from 5 to 50 acres on the short-interval fire sites and from 20 to 200 acres on the long-interval fire sites. Tree densities ranged from 15 to 60 overstory trees per acre, with more in riparian areas.

### **Warm, Moist Subalpine Fir**

**Distribution:** This group ranges in elevation from about 5,000 to 7,200 feet but may follow cold air drainages as low as 4,500 feet. This habitat type group is common in the Swan Valley portion of the fire plan area. These sites are found in moist, protected areas such as stream terraces, toe slopes, and steep, northerly aspects. Soils are variable and range from loess overlaying glacial tills and lacustrine sediments, to alluvial and outwash deposits on terraces.

**Potential Dominant Species:** Various mixtures of lodgepole pine, western larch, Douglas-fir, and Engelmann spruce comprise the seral tree layers. Any one of these tree species may be dominant, depending on stand history and local site conditions.

Seral shrub layers may be tall and dense, consisting largely of Sitka alder. Lesser amounts of mountain maple, mountain ash, and serviceberry may be present. In late seral and climax stages, menziesia dominates some sites, but usually lower-growing shrubs, such as blue huckleberry and Utah honeysuckle, are more common.

Historically, these sites experienced both short-interval and long-interval severity fires. Estimates of fire frequency range from 38 to 120 years on predominantly short-interval sites and 120-300 on predominantly long-interval sites. Generally, ignitions occurred on adjacent drier sites, and the fire was wind-driven onto these sites. Fire patterns could be small and patchy (100 acres or less) or uniform and extensive (5,000 to 100,000 acres), depending on the burning conditions. Sites influenced by predominantly short-interval (mixed severity) fires resulted in large gaps in the canopy and a mosaic of structures within the stand. The presence of western larch in the canopy is a good indicator of short-interval fires on these sites. Long-interval fires create a mosaic of even-aged structures across stands and are characterized by the presence of both seral and climax species.

### **Warm, Dry Subalpine Fir**

**Distribution:** Warm, dry subalpine fir sites represents a small proportion of the fire plan area. They are found at elevations between 4,800 and 7,500 feet and represent the warm, dry extremes of the subalpine fir zone. At their lower limits, these sites occur mainly on steep, northerly or easterly aspects but shift to southerly and westerly aspects at their upper limits. Sites at the lower limits are often controlled by cold air drainage and are strongly interfingering with Douglas-fir sites.

**Potential Dominant Species:** Douglas-fir is the predominant seral tree, and small amounts of ponderosa pine may occur on the warmer sites. At the cool, moist extremes, lodgepole pine and Engelmann spruce may appear in varying amounts but seldom dominate.

Tall, dense shrub layers are common, reflecting the relatively warm nature of these sites. Mountain maple and mountain ash are common in near climax stands, while beargrass, serviceberry and Scouler willow are common components of mid-seral grass and shrub layers. Ceanothus and pinegrass can develop high coverages on severely burned sites in early seral

stages. The pinegrass can persist indefinitely on many of these sites, often dominating the herb layer. The historical fire regime consisted of sites influenced by predominantly short-interval fires ranging from 38 to 71 years and long-interval fires ranging from 100 to 500 years. A mixture of short-interval and long-interval fire patterns can create a mosaic of seral stages at the landscape level. Cyclic bark beetle attacks on dense patches of Douglas-fir, lodgepole pine, and Engelmann spruce can contribute further to this mosaic. The influence of fire regime on the species composition and structure are similar to those exhibited in Warm, Moist Subalpine fir. Historic patch size ranged from 50 to 300 acres on short-interval sites and 5,000 to 100,000 on long-interval sites. However, with a recent history of fire suppression, these sites are losing their mosaic patterns and are becoming more uniform. Unless managed to maintain landscape diversity, these sites will increase their risk of extensive, stand-destroying fire and bark beetle epidemics, providing less opportunities for a mosaic of conditions at the landscape level.

### **Cool, Dry Subalpine Fir**

**Distribution:** These sites are common at mid to upper elevations of the subalpine fir zone. They represent cold, dry subalpine sites and range upwards to 7,800 feet in elevation but are also common down to about 4,500 feet in cold frost-pocket areas. At the lower elevations, these sites usually occur in the dry gentle terrain formed by glacial outwash in broad valleys.

**Potential Dominant Species:** At upper elevations, whitebark pine may be present in minor amounts, however in recent years its distribution has decreased as a result of mountain pine beetle and whitepine blister rust. In the moister areas, minor amounts of Engelmann spruce are common. At the cold, dry extremes, which are transitional to nonforested systems, lodgepole pine is the only tree present and is considered to be the climax species. Elsewhere, subalpine fir usually appears in varying amounts as the climax indicator species. Alpine larch occurs on rockslides and talus. Douglas-fir, western larch, and western white pine rarely occur on these ecological sites.

Shrub layers are usually sparse and consist mainly of low-growing huckleberries, such as dwarf huckleberry and whortleberry. The sparse low shrub layer reflects the cool temperatures and short growing seasons inherent to these sites.

Stand conditions predominantly influenced by long-interval fire regimes and mountain pine beetle attacks were the normal historical recycling process. Long-interval fires occurred about every 100 to 300 years. Short-interval fires occurred less often and on a frequency of every 35 to 300 years. Minor fire scars in these stands attest to the nature of these low-intensity, short-interval fires. Fires crept through these stands wherever fine fuels would carry a flame and then flared up wherever fuel concentrated in the denser patches of larger trees, usually those greater than eight inches in diameter. When these trees were killed, the beetle population subsided until another group of trees grew into the vulnerable size class. After each beetle event, the dead trees soon fell and provided an opening for more regeneration. In this manner, a mosaic of tree sizes and densities were maintained, which helped reduce stand uniformity and the widespread destruction of crown fires and bark beetle epidemics.

*Note: The Fire Regime and Forest Type sections are taken from the Seeley-Swan Fire Plan, 2004.*

### **4.3 FIRE HISTORY**

Lake County's wildland fire suppression services respond to an annual average of over 67 fires burning approximately 1,644 acres. These fires typically burn in dryland crop and range land, and the surrounding coniferous forests. The lower elevation dry-site conifer stands are comprised largely of Ponderosa Pine, which is a fire-adapted species having a burning cycle of 20 years or less. Increasing rural development, commonly known as the wildland-urban interface, in these high fire frequency ecosystems will continue to add to the complexity of wildfire suppression in Lake County. Additionally, increasing amounts of ladder fuels (primarily Douglas Fir) in the understories will lead to more intense and severe stand replacing fires.

Because of the prevalence of grassland in the valley bottoms the most active part of the fire season for the rural fire districts is typically in the spring before green-up. Spring debris burning in these fuel types is responsible for the majority of person-caused fires in the county. Map #5, "Wildland Fire Occurrence" (pg. 64) displays fire locations from the past 20 years, by cause (lightning and person-caused).

## CHAPTER 5: WILDFIRE RISK ASSESSMENT

One of the core elements of a community fire plan is developing an understanding of the risk of potential losses to life, property and natural resources during a wildfire. The Healthy Forests Restoration Act, the National Fire Plan, FEMA's Disaster Mitigation Act of 2000 and the National Association of State Foresters all provide guidance on conducting a hazard and risk assessment for wildfire. In particular, this Community Fire Protection Plan is based on criteria suggested by the National Wildland /Urban Interface Fire Protection Program through a publication entitled "Wildland/Urban Interface Fire Hazard Assessment Methodology" (1997).

The objectives of the Risk Assessment process are to:

- Identify Communities-at-Risk and the Wildland-Urban Interface
- Develop and conduct an assessment of the potential for loss due to wildfires.
- Provide a comparative analysis of interface areas within Lake County to assist in establishing priorities for hazardous fuels treatment projects and other mitigation efforts.

### **5.1 IDENTIFYING THE WILDFIRE PROBLEM IN LAKE COUNTY**

In January 2001, then U.S. Agriculture Secretary Dan Glickman and Interior Secretary Bruce Babbitt released a proposed list of communities eligible for enhanced federal wildfire prevention assistance. The preliminary list of over 4000 communities included many that are near public lands managed by the federal government. The initial definition of urban wildland interface and the descriptive categories used in this notice are modified from "A Report to the Council of Western State Foresters—Fire in the West—The Wildland/Urban Interface Fire Problem" dated September 18, 2000. Under this definition, "the urban wildland interface community exists where humans and their development meet or intermix with wildland fuel."

There are three categories of communities that meet this description. Generally, the Federal agencies will focus on communities that are described under categories 1 and 2. For purposes of applying these categories and the subsequent criteria for evaluating risk to individual communities, a structure is understood to be either a residence or a business facility, including Federal, State, and local government facilities. Structures do not include small improvements such as fences and wildlife watering devices.

#### ***Category 1. Interface Community:***

The Interface Community exists where structures directly abut wildland fuels. There is a clear line of demarcation between residential, business, and public structures and wildland fuels. Wildland fuels do not generally continue into the developed area. The development density for an interface community is usually 3 or more structures per acre, with shared municipal services. Fire protection is generally provided by a local government fire department with the responsibility to protect the structure from both an interior fire and an advancing wildland fire. An alternative definition of the interface community emphasizes a population density of 250 or more people per square mile.

**Category 2. Intermix Community:**

The Intermix Community exists where structures are scattered throughout a wildland area. There is no clear line of demarcation; wildland fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres. Fire protection districts funded by various taxing authorities normally provide life and property fire protection and may also have wildland fire protection responsibilities. An alternative definition of intermix community emphasizes a population density of between 28–250 people per square mile.

**Category 3. Occluded Community:**

The Occluded Community generally exists in a situation, often within a city, where structures abut an island of wildland fuels (e.g., park or open space). There is a clear line of demarcation between structures and wildland fuels. The development density for an occluded community is usually similar to those found in the interface community, but the occluded area is usually less than 1,000 acres in size. Fire protection is normally provided by local government fire depts.

As listed in the Federal Register, Lake County Communities classified as “At Risk from Wildfire” include:

Arlee	Big Arm	Charlo
Condon (Salmon Prairie)	Elmo	Hwy 93 Corridor
Jocko River Corridor	Swan Lake	Ronan
Ravalli	Polson	Pablo
Moisse	Misson	Yellow Bay

**5.2 RISK ASSESSMENT PROCESS**

The Lake County Community Fire Protection Plan wildfire risk assessment is the analysis of the potential for loss of life, property and natural resources from wildfires. The analysis takes into consideration a combination of factors that are defined below:

**Risk:** the potential and frequency for wildfire ignitions (based on past occurrences)

**Hazard:** the conditions that may contribute to wildfire (fuel type, fuel loading, slope, aspect, weather factors and weather)

**Values:** the people, property, natural resources and other resources that could suffer losses in a wildfire event.

**Protection Capability:** the ability to mitigate losses, prepare for, respond to and suppress wildland and structural fires.

**Structural Vulnerability:** the elements that affect the level of exposure of the hazard to the structure (roof type and building materials, access to the structure, and whether or not there is defensible space or fuels reduction around the structure.)



## **IDENTIFICATION OF WILDLAND/URBAN INTERFACE AREAS**

The planning process in Lake County will involve two levels of risk assessment:

1. This Community Fire Protection Plan will identify major areas of the County that are particularly at risk from wildfire. These blocks are identified as “Planning Areas”, and will be comparatively evaluated for their level of risk in relation to each other. Examples of these areas include Lake Mary Ronan, Salmon Prairie, Big Arm, Ferndale, Swan Lake, etc. The Planning areas are evaluated in this Community Fire Protection plan for the first four of the rating factors above (all except for “Structural Vulnerability”).
2. The Annual Operating Plan will establish work priorities within the major Planning Areas, focusing on manageable work units (i.e.: subdivision or cluster level). The Annual Operating Plan may target certain areas for more intensive, site-specific risk rating, to prioritize fuels reduction work as well as other prevention measures such as door-to-door or neighborhood outreach efforts. The “Structural Vulnerability” rating factor will be assessed at the time of the site-specific risk rating effort. Work unit size should be based on criteria such as the number of concurrently open fuels treatment contracts, neighborhood identity, and resource allocation efficiency.

A primary objective in establishing two levels of planning is to enable overall prioritization of smaller, more manageable work units, and to accommodate an ongoing risk reduction process. The Planning Areas risk assessment conducted in the current plan will provide long-term guidance for targeting those general areas of the county in greatest need of mitigation work activities. There may be dozens of Work Units identified in the annual planning process, and the two-tier system of assessment allows for changes in priorities as a result of new growth or other changes in the County.

### **5.3 IDENTIFYING PLANNING AREAS**

For the purposes of this planning document, The wildland-urban interface in Lake County is identified as those areas of the county that are classified as “forested”, and have residential development. Approximately 50% of Lake County is considered to be forested, however most residential development is located at lower elevations on the edges of the large blocks of forested lands. In order to identify those areas that are most at risk from wildfires, the interface areas were delineated into separate blocks. The blocks of land have general boundaries that encompass broad areas of mostly homogenous fuel conditions.

Planning Area Boundaries were established using the, “Forest Land Cover” map (Map #6, pg. 65) and the “Residential Density” map (Map #7, pg. 66). Residential density was derived from a County GIS data set of assigned addresses. The various degrees of shading on the map represent differing densities of assigned addresses; the lightest shading indicates two or more residences per square mile, and the darkest shading represents those areas of the County with greater than one hundred residences per square mile. The Forested Area map represents those areas of the County that have forested land cover, regardless of the actual tree species. The data for this map was provided by the Montana Natural Resource Information Service (NRIS), of Helena, Montana.

These two data sets have been combined on Map #8 titled “Residential Density in Forested Areas” (pg. 67). The Planning Areas are based on those areas of the county with over 2 residences per square mile, and that are also classified as forested. These general Interface areas are further separated, where applicable, by administrative boundaries such as Rural Fire Districts and Wildland Fire Protection Agency (except for the area covered by the Ferndale and Swan Lake Fire Districts, which was combined because of the similar fuel type). Planning Area boundaries are intended to delineate broad, general areas considered to be Wildland-Urban Interface; they should not be strictly interpreted as a precise demarcation between high-risk and low-risk regions.

The Planning Areas are shown on Map #9 “Wildland-Urban Interface Planning Areas”, pg. 68, and are described in the following table:

LAKE COUNTY WILDLAND-URBAN INTERFACE PLANNING AREAS			
NAME	AREA (ACRES)	NUMBER OF RESIDENCES*	ASSESSED VALUATION**
Arlee	18,560	579	\$29,498,449
Big Arm / Rocky Point	26,880	1,118	\$172,148,893
East Shore – North	12,800	805	\$120,602,060
East Shore – South	23,680	766	\$127,435,026
Ferndale / Swan Lake	31,360	850	\$151,629,117
Lake Mary Ronan	8,960	83	\$12,165,187
Mission Front – North	32,000	1,121	\$71,490,604
Mission Front – South	23,680	202	\$16,519,798
Rollins	9,600	348	\$72,346,307
Salmon Prairie	17,920	132	\$14,373,401
Turtle Lake	7,680	283	\$13,408,363
Notes: * Number of assigned addresses within Planning Area boundary. From Lake County Planning Dept. GIS Database ** Assessed Property Valuation within Planning Area Boundary, and includes timber and commercial values. From Lake County Assessor’s Office.			

#### **5.4 IDENTIFYING WORK UNITS**

Planning Areas will be further subdivided into smaller-scale Work Units during the annual planning process. Representatives from the County (Fuels Reduction Coordinator), the responsible Wildland Fire Protection Agency, and the local Fire District will work to identify subdivisions, neighborhoods, or housing clusters to target annual work projects. Work Units should be established based on a variety of criteria such as neighborhood / community identity, fuel hazard characteristics, administrative efficiencies (i.e.: fuels reduction contract administration), and expressed interest in mitigation efforts by residents.

## **5.5 RISK RATING METHODOLOGY**

This risk assessment is based on a review of many different methods developed by a number of different jurisdictions in various states to evaluate wildfire and other natural hazards. The assessment is intended as a tool to illustrate the relative level of risk to life, property and natural resources within different areas of the county. As fuels reduction, emergency management and fire prevention projects are implemented, the maps and priorities developed through the assessment will change, but they will always point to areas identified as having the highest relative ranking for risk and hazard. The objective is not to quantify the level of risk, but to make a comparative analysis of the relative risk between Planning Areas within the county.

The assessment considers four categories in determining the relative severity of fire risk; Hazard, Values, Protection Capabilities, and Ignition Risk. Within each category is a number of individual rating elements that will be assigned a three-level score representing the relative ranking of a particular Planning Area for that element, in relation to others in the county. Depending on the rating element, a level of one, two or three corresponds with a LOW, MODERATE, OR HIGH level of risk, respectively. The numerical rating may also be considered to represent a BELOW AVERAGE, AVERAGE, and ABOVE AVERAGE risk with respect to fire-related loss.

Assignment of risk levels for each scoring element were made by evaluation of on-the-ground conditions in the Planning Areas, or were derived from available data sources. Road-based surveys were conducted in the fall of 2004, driving through a major portion of each Planning area and determining average, or predominate rating element conditions.

The aggregate sum of the scores assigned to the scoring elements, within each general risk category, is divided by the sum of the total points possible. The "Hazard" risk category, for example, is comprised of four scoring elements, each with a maximum score of three, yielding a total of 12 points possible. The resultant fraction is then multiplied by 100, to provide a rough score for the category (represented as a percentage of maximum risk).

A composite score for the planning area is derived by applying varying degrees of weighting to each category score, and then adding the weighted scores together. The weighting factors were arrived at through discussions among officials involved with the planning effort, and represent the degree to which each category affects overall wildfire risk. **The higher the score, the higher the risk of loss.** The composite scores are the primary basis for setting priorities between Lake County Planning Areas for risk mitigation activities. Rating criteria for each category is as follows:

### **HAZARD COMPONENT**

#### **Fuel Type**

Predominate fuel types in the Planning Areas are classified using the 13 standard fire behavior fuel models that were developed by the U.S. Forest Service. Each fuel model, representing the depth and arrangement of surface fuels, will yield a different flame length under standard weather/fuel conditions. Flame length is a good estimator of the expected intensity of a fire, and can be used to predict the effects a given fire will have on the area being burned. Fuel models were ranked low to high based on the flame length that is produced under standard conditions. Short flame lengths yield low risk; long flame lengths yield high risk.

**Topography**

Fire generally spreads faster uphill, with a resultant increase in flame lengths and fire intensity. The steeper the slope, the more difficult it is to control a fire and thus the risk is greater. Aspect, the cardinal direction which the slope faces, affects fire behavior because of the effects of solar heating on fuels. Some aspects are directly exposed to the drying effects of sunshine, or prevailing winds, while others are only indirectly exposed to sunlight or prevailing winds. This rating factor combines the effects of slope and aspect as a measure of relative risk.

**Weather**

This component takes into account the general weather factors in an area that influence fire behavior. Some areas of the county are wetter than others, overall, due to topographical features that affect rainfall. In addition, predominate winds that affect areas during the height of the fire season, in relation to fuels and residential densities, may contribute to a higher degree of fire danger for certain areas than for others.

**Condition Class**

Condition Class is used as a relative description of the degree of departure from historical fire regimes and generally describes how ‘missed’ fires have affected key ecosystem vegetative components. Effective fire suppression over the past 100 years has resulted in significant changes in the forest stands in some areas of the county, resulting in unnatural accumulations of fuels and higher densities of small trees and brush. For the purpose of this assessment, the condition class represents stand density and the amount of ladder fuels present (ladder fuels provide a pathway for surface fires to transition into a destructive crown fire).

HAZARD COMPONENT		
Factor	Level	Rating Criteria
Fuel Type	1	Fuel Model 8 (Closed canopy fir/spruce; little dead & down)
	2	Fuel Model 2 (Open Pine Stand w/ grass understory) Fuel Model 9 (Closed Pine w/ some surface litter )
	3	Fuel Model 10 (Heavy Doug. Fir; dead & down woody materials) Fuel Model 6 (Pine/Doug. Fir w/ moderate to heavy brush)
Topography	1	Flat to 10% slope
	2	Greater than 10% slope; Northwest through Southeast Aspect
	3	Greater than 10% slope; South, Southwest, West Aspect
Weather	1	Moist; Sheltered from winds
	2	Average; Some exposure to winds
	3	Dry; Open exposure to winds
Condition Class	1	<i>Condition Class 1</i> = Fire frequencies are within or near the historical range, and have departed from historical frequencies by no more than one return interval; vegetation attributes are intact and functioning within the historic range. Mature, even-aged stand.
	2	<i>Condition Class 2</i> = Fire frequencies and vegetation attributes have been moderately altered from the historical range, and fire frequencies have departed from historical frequencies by more than one return interval. Higher amount of regen. w/ some ladder fuels
	3	<i>Condition Class 3</i> = Fire frequencies and vegetation attributes have been significantly altered from the historical range, and fire frequencies have departed from historical frequencies by multiple return intervals. Dense stands of young trees w/ heavy ladder fuels

**VALUES AT RISK COMPONENT**

**\$ Valuation**

Using the County’s GIS resources, The Assessment and Taxation database was used to determine the total assessed valuation of property and improvements within the Planning Area boundaries. The value of standing timber is included for most privately-owned lands, however some timber value is not covered if it lies within large blocks of land that extend far beyond the Planning Area Boundaries (primarily Plum Creek Timber Co. lands). The value of non-taxable lands are also not included (i.e.: Tribal and government lands). Total valuation is divided by the size of the Planning Area, in square miles, and then three equal-sized classes of \$/sq. mile were partitioned for the rating system.

**Density**

The County GIS system was queried to determine the total number of assigned address with the Planning Areas. The totals were divided by the size of the Planning Areas to provide a residential density figure representing the number of residences per square mile.

**Other Values**

Other values include those special, non-monetary values that may lie within, or adjacent to the Planning Areas that would be negatively affected by wildfire loss. These include commercial establishments (jobs), Tribal cultural sites, ecologically sensitive areas, community watersheds, recreation sites, wildlife habitat, and tourism-related concerns.

VALUES-AT-RISK COMPONENT		
Factor	Level	Rating Criteria
\$ Valuation	1	Less than \$ 2.34 million per square mile in assessed property value
	2	Between \$2.34 and \$4.16 million per square mile in assessed property value
	3	More than \$4.16 million per square mile in assessed property value
Residential Density	1	Less than 16.5 Residences per square mile
	2	Between 16.5 and 28.3 Residences per square mile
	3	More than 28.3 Residences per square mile
Other Values	1	None
	2	Average (Relative to other Planning Areas within the County)
	3	More than average (Relative to other Planning Areas within the County)

**PROTECTION CAPABILITY COMPONENT**

**Response**

Response times and the amount of firefighting resources from both the Rural Fire Districts and the Wildland Fire Protection Agencies are considered. Close proximity of a rural fire district station is an advantage, however the time required for a sufficient number of personnel and equipment to quickly contain a wildfire on hot August day must also be considered. A normal late-season response to a fire in timber, with structures threatened, would involve a number of wildland engines, structural engines, water tenders, and aerial resources. The rating of this element is derived from a relative comparison of these factors between all of the Planning Areas in the County, and is not a measure of any fire protection agency’s performance capability.

**Access**

During a wildfire emergency, the movement of firefighting resources *in* to the fire area while at the same time providing for the possibility of evacuating residents *out* of the area is critical. The purpose of this rating element is to assess the road infrastructure of the Planning Areas in regards to the ability of firefighting resources to achieve access to the site of fires, and to protect dwellings. The rating is based on visual observation of roadways and bridges, as well as analysis of county road maps.

**Water Supply**

Adequate water supplies for fire suppression efforts are an important factor when considering protection capabilities. There are very few interface areas that have fire hydrants available, so direct drafting from water bodies is usually the most effective solution. Alternatively, Lake County fire protection agencies have developed an efficient mutual aid water tender shuttle system that is utilized to transport water from distant sources. This rating element is used to evaluate the availability of water supplies for wildfire control, and for structure protection. Turnaround times to helicopter bucket dip-sites is also considered.

PROTECTION CAPABILITIES COMPONENT		
Factor	Level	Rating Criteria
Response	1	Short Response Time
	2	Average Response Time
	3	Longer Response Time
Access	1	Good; multiple access points, short driveways, wide roadways
	2	Average
	3	Poor; single road access, long narrow driveways, no turnarounds
Water Supplies	1	Good; hydrants or dry hydrants located among structures
	2	Average; water bodies available for pumping to fire
	3	Poor; Water Tender shuttles from off-site supplies

**IGNITION RISK**

**Person-Caused Fires**

Fire occurrence data was obtained from wildland fire protection agency records listing wildland fire ignition locations for the past 20 years. For each Planning Area, the total number of person-caused fires is divided by the size of the area, in square miles, and then divided by 20 to provide the average number of fires per square mile per year. The full range of this figure among the Planning Areas is divided into 3 equal rating classes.

**Lightning-Caused Fires**

Fire occurrence data was obtained from wildland fire protection agency records listing wildland fire ignition locations for the past 20 years. For each Planning Area, the total number of lightning-caused fires is divided by the size of the area, in square miles, and then divided by 20 to provide the average number of fires per square mile per year. The full range of this figure among the Planning Areas is divided into 3 equal rating classes.

Rural Fire District response records were not used for this rating component because of the possibility for duplication of fire responses; the Rural Fire Districts and the wildland fire protection agencies are jointly responsible for responding to wildfires in the interface areas.

IGNITION RISK COMPONENT		
Factor	Level	Rating Criteria
Person-Caused Fires	1	Less than 0.05 fires per square mile per year
	2	Between 0.05 and 0.075 fires per square mile per year
	3	More than 0.075 fires per square mile per year
Lightning Fires	1	Less than 0.029 fires per square mile per year
	2	Between 0.029 and 0.05 fires per square mile per year
	3	More than 0.05 fires per square mile per year

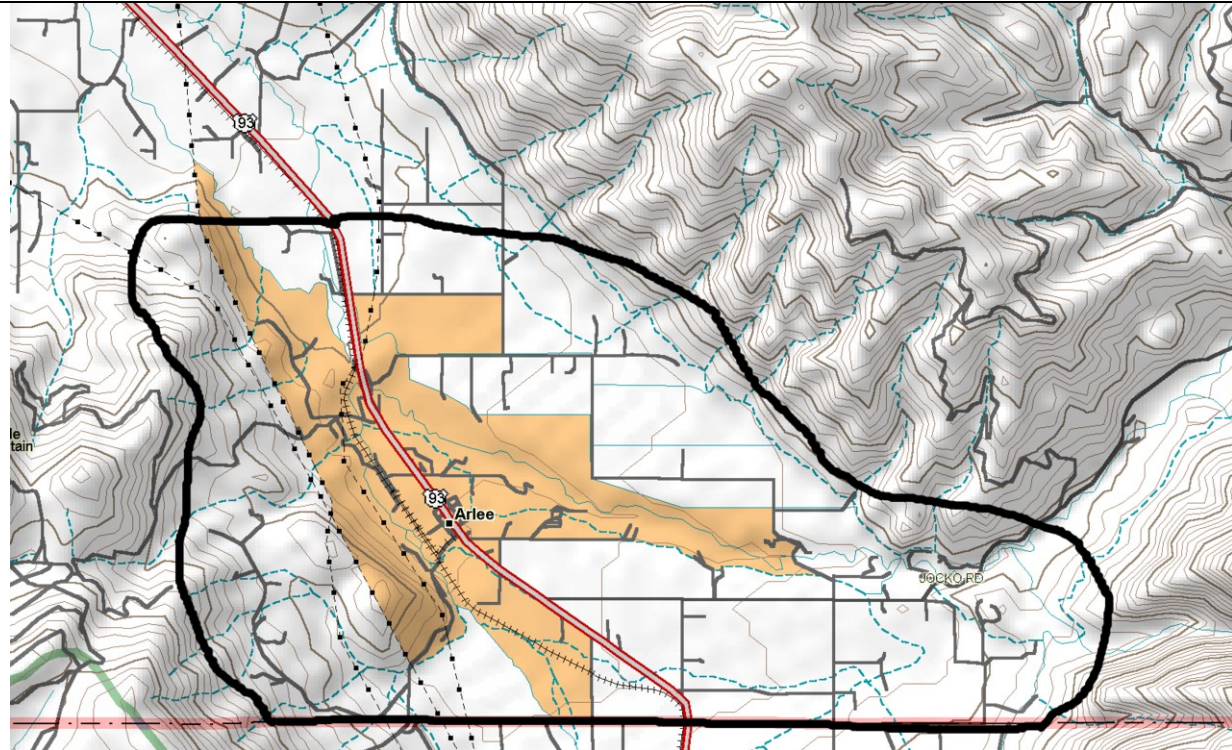
## **5.6 PLANNING AREA RISK ASSESSMENTS**

A Risk Assessment Worksheet has been completed for each of the Planning Areas, using the rating criteria listed above. This section includes the following worksheets, in alphabetical order:

Page 38	Arlee
Page 39	Big Arm/Rocky Point
Page 40	East Shore, North
Page 41	East Shore, South
Page 42	Ferndale/Swan Lake
Page 43	Lake Mary Ronan
Page 44	Mission Front, North
Page 45	Mission Front, South
Page 46	Rollins
Page 47	Salmon Prairie
Page 47	Turtle Lake

# PLANNING AREA RISK ASSESSMENT WORKSHEET

**PLANNING AREA:** Arlee



## GEOGRAPHICAL DESCRIPTION:

Adjacent to southern boundary of Lake County. Includes town of Arlee and mouth of Jocko River. 29 Square Miles.

### LOCAL FIRE DEPARTMENT

Arlee Rural Fire District

### WILDLAND FIRE PROTECTION AGENCY

CS&KT Fire Management / BIA

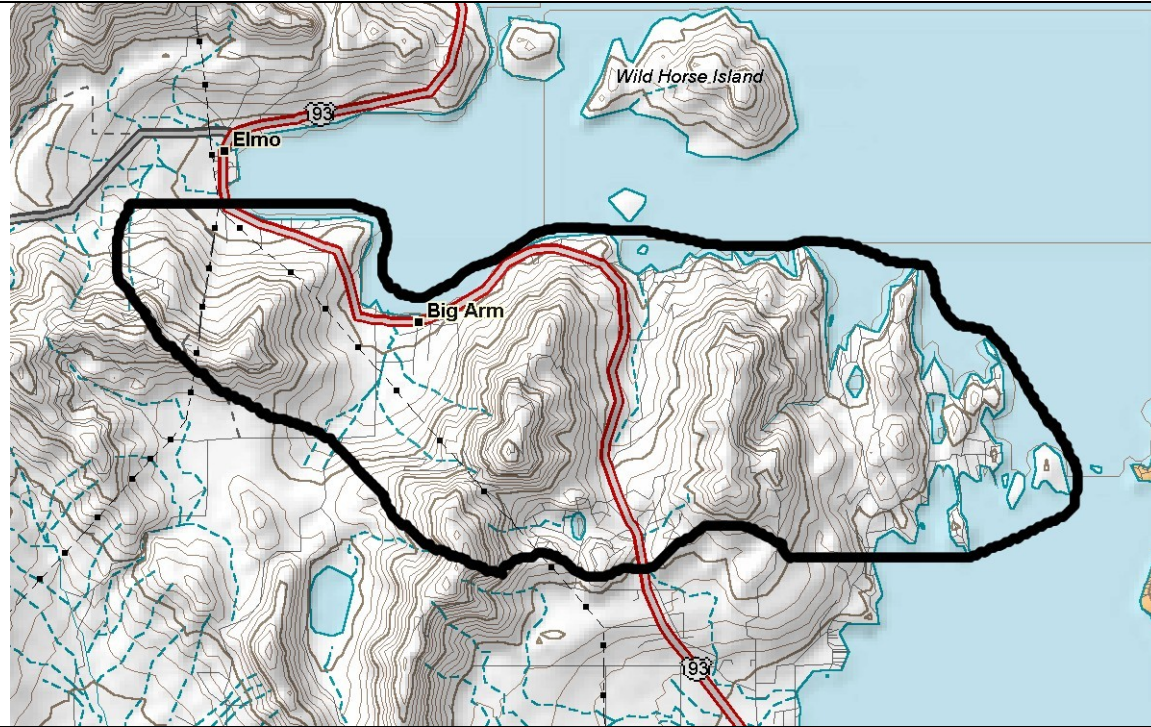
## RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 2 & 9	2	50	(40%)
	Topography	Flat to Gentle slope	1		
	Weather	Average Moisture	2		
	Cond. Class	Class 1; Logged / thinned	1		
	<b>Total:</b>				
Values at Risk	\$ Valuation	\$1.03 mm / Sq. mile	1	44	(20%)
	Density	20.2 Residences / sq. mile	2		
	Other Values	Powerlines	1		
	<b>Total:</b>				
Protection Capability	Response	RFD close; BIA far	2	67	(30%)
	Access	Good	1		
	Water Sup.	Poor	3		
	<b>Total:</b>				
Ignition Risk	Man-caused	.063 fires / sq. mile / year	2	83	(10%)
	Lightning	.051 fires / sq. mile / year	3		
	<b>Total:</b>				
<b>COMPOSITE SCORE:</b>					<b>57.2</b>



# PLANNING AREA RISK ASSESSMENT WORKSHEET

**PLANNING AREA:** Big Arm / Rocky Point



### GEOGRAPHICAL DESCRIPTION:

West shore of Flathead Lake. Includes Jette Meadows, Jette Lake, Kings Point, Matterhorn Road, Mellita Island Road. 42 Square Miles. Also some portions of Wild Horse, Cromwell, and Melita Islands.

#### LOCAL FIRE DEPARTMENT

Polson Rural Fire District

#### WILDLAND FIRE PROTECTION AGENCY

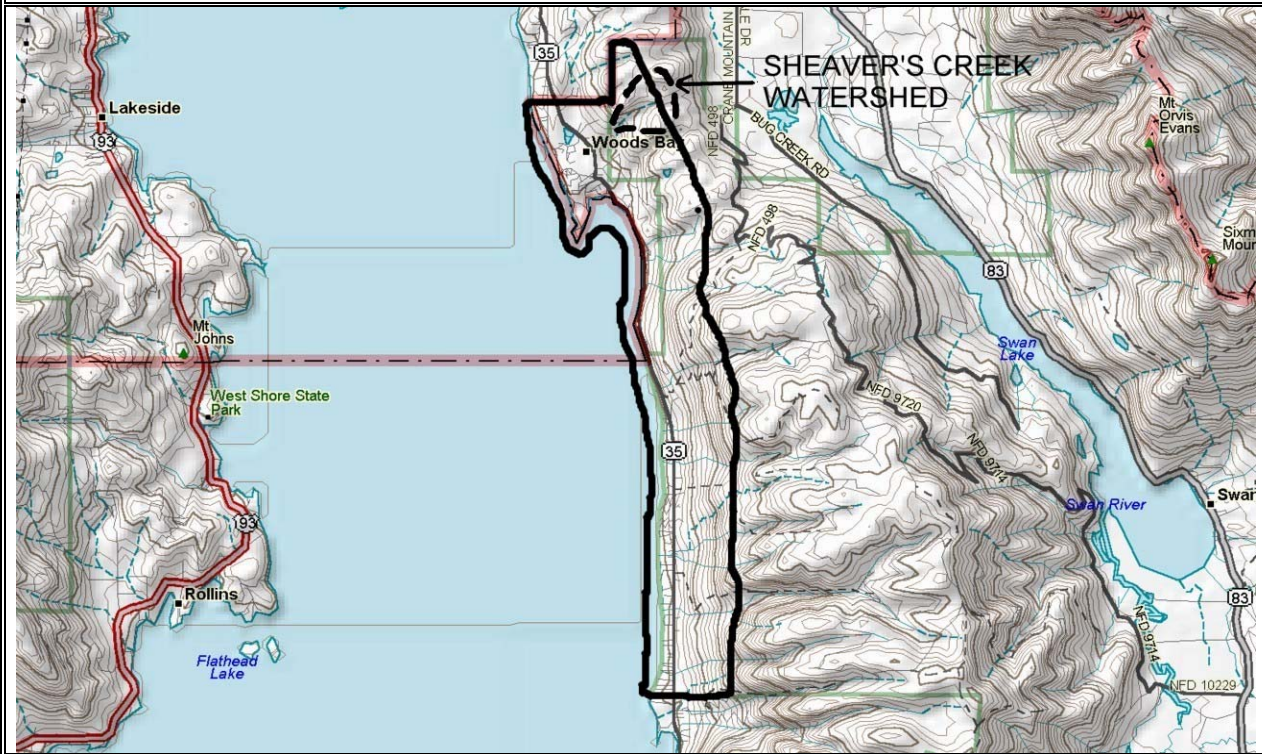
CS&KT Fire Management / BIA

### RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 10	3	92	(40%)
	Topography	Hilly terrain	3		
	Weather	Dry	2		
	Cond. Class	Class III; overcrowded w/ brush	3		
	<b>Total:</b>				
Values at Risk	\$ Valuation	\$4.12 mm / sq.mile	2	67	(20%)
	Density	26.7 Residences / sq. mile	2		
	OtherValues	Recreation / Power Lines	2		
	<b>Total:</b>				
Protection Capability	Response	Average	2	89	(30%)
	Access	Poor; narrow, single-access roads	3		
	Water Sup.	Poor	3		
	<b>Total:</b>				
Ignition Risk	Man-caused	.087 fires / sq. mile / year	3	83	(10%)
	Lightning	.031 fires / sq. mile / year	2		
	<b>Total:</b>				
<b>COMPOSITE SCORE:</b>					<b>85.7</b>

# PLANNING AREA RISK ASSESSMENT WORKSHEET

**PLANNING AREA: East Shore - North**



**GEOGRAPHICAL DESCRIPTION:**

East shore of Flathead Lake / north boundary of Lake County. Includes Woods Bay, Highway 35. Narrow band of housing along Hwy 35 and Flathead Lake. 20 Square Miles. Sheaver's Creek Watershed.

**LOCAL FIRE DEPARTMENT**

Bigfork Rural Fire District

**WILDLAND FIRE PROTECTION AGENCY**

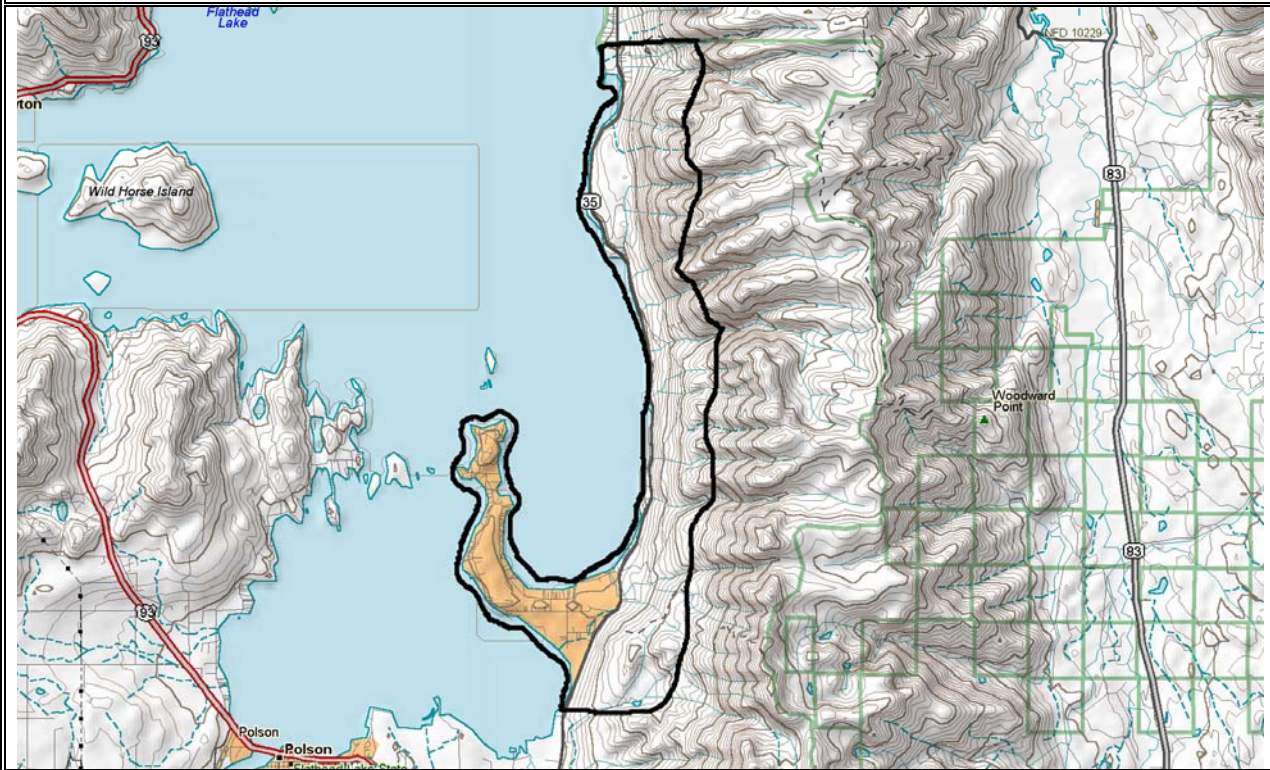
DNRC Kalispell Unit and USFS Flathead NF

**RISK ASSESSMENT SCORING**

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 8	1	67	(40%)
	Topography	Steep slopes, west aspect	3		
	Weather	Average Moisture	2		
	Cond. Class	Class II; Some Regen. & ladder	2		
Total:			8		26.8
Values at Risk	\$ Valuation	\$6.0 mm / sq. mile	3	100	(20%)
	Density	40 Residences / sq. mile	3		
	Other Values	Commercial & recreation; watershed	3		
	Total:				
Protection Capability	Response	Good	1	44	(30%)
	Access	Average	2		
	Water Sup.	Good	1		
	Total:				
Ignition Risk	Man-caused	.025 fires / sq. mile / year	1	33	(10%)
	Lightning	.012 fires / sq. mile / year	1		
	Total:				
<b>COMPOSITE SCORE:</b>					<b>63.3</b>

**PLANNING AREA RISK ASSESSMENT WORKSHEET**

**PLANNING AREA: East Shore - South**



**GEOGRAPHICAL DESCRIPTION:**

Southeast shore of Flathead Lake. Includes Finley Point, Yellow Bay, Blue Bay. West-Facing slope of Mission Range. 37 Square Miles.

**LOCAL FIRE DEPARTMENT**

Finley Point / Yellow Bay Rural Fire District

**WILDLAND FIRE PROTECTION AGENCY**

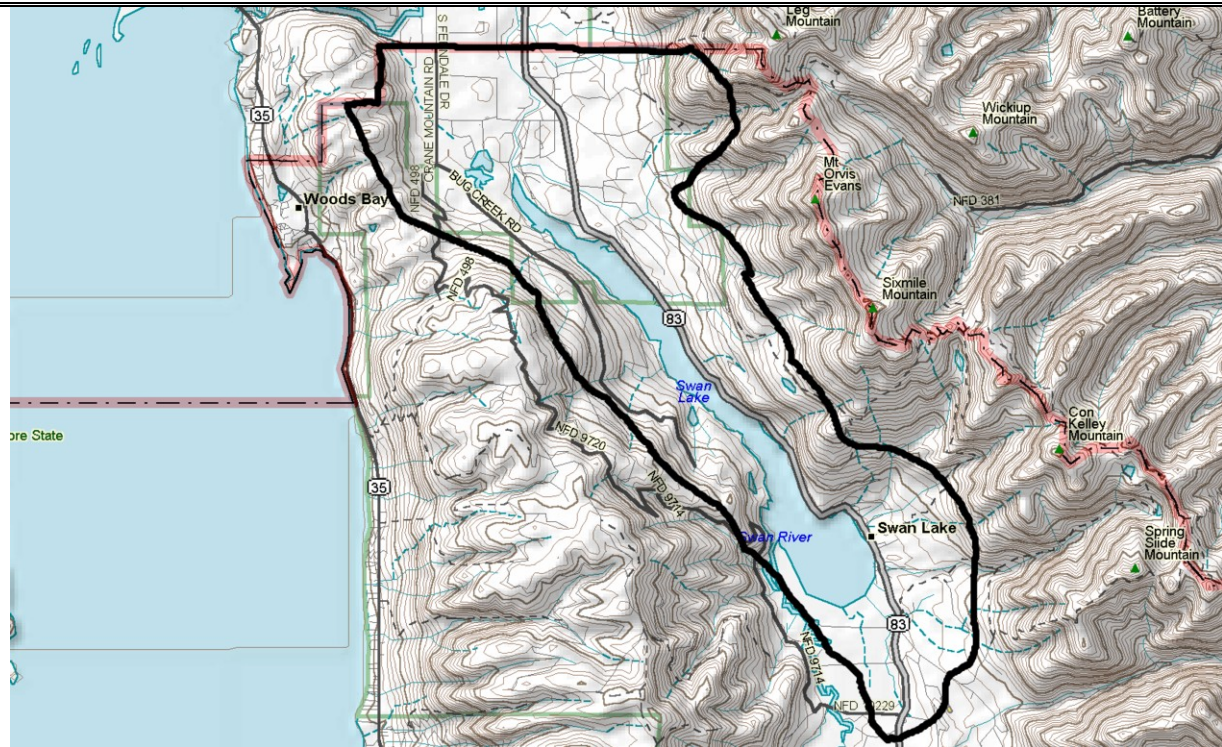
CS&KT Fire Management / BIA

**RISK ASSESSMENT SCORING**

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 9	2	67	(40%)
	Topography	Flat to Steep, west aspect	2		
	Weather	Average Moisture	2		
	Cond. Class	Class II; some regen. & Ladder	2		
	Total:				
Values at Risk	\$ Valuation	\$3.42 mm/ sq. mile	2	78	(20%)
	Density	20.6 Residences / sq. mile	2		
	Other Values	Commercial & recreation	3		
	Total:				
Protection Capability	Response	Average	2	56	(30%)
	Access	Average	2		
	Water Sup.	Good	1		
	Total:				
Ignition Risk	Man-caused	.027 fires / sq. mile / year	1	33	(10%)
	Lightning	.016 fires / sq. mile / year	1		
	Total:				
<b>COMPOSITE SCORE:</b>					<b>62.5</b>

**PLANNING AREA RISK ASSESSMENT WORKSHEET**

**PLANNING AREA: Ferndale / Swan Lake**



**GEOGRAPHICAL DESCRIPTION:**

Ferndale area south, encompassing Swan Lake. Adjacent to north boundary of Lake County. Valley bottom between Mission and Swan ranges. 49 Square miles.

**LOCAL FIRE DEPARTMENT**

Ferndale and Swan Lake Rural Fire Districts

**WILDLAND FIRE PROTECTION AGENCY**

DNRC Kalispell Unit and USFS Flathead NF

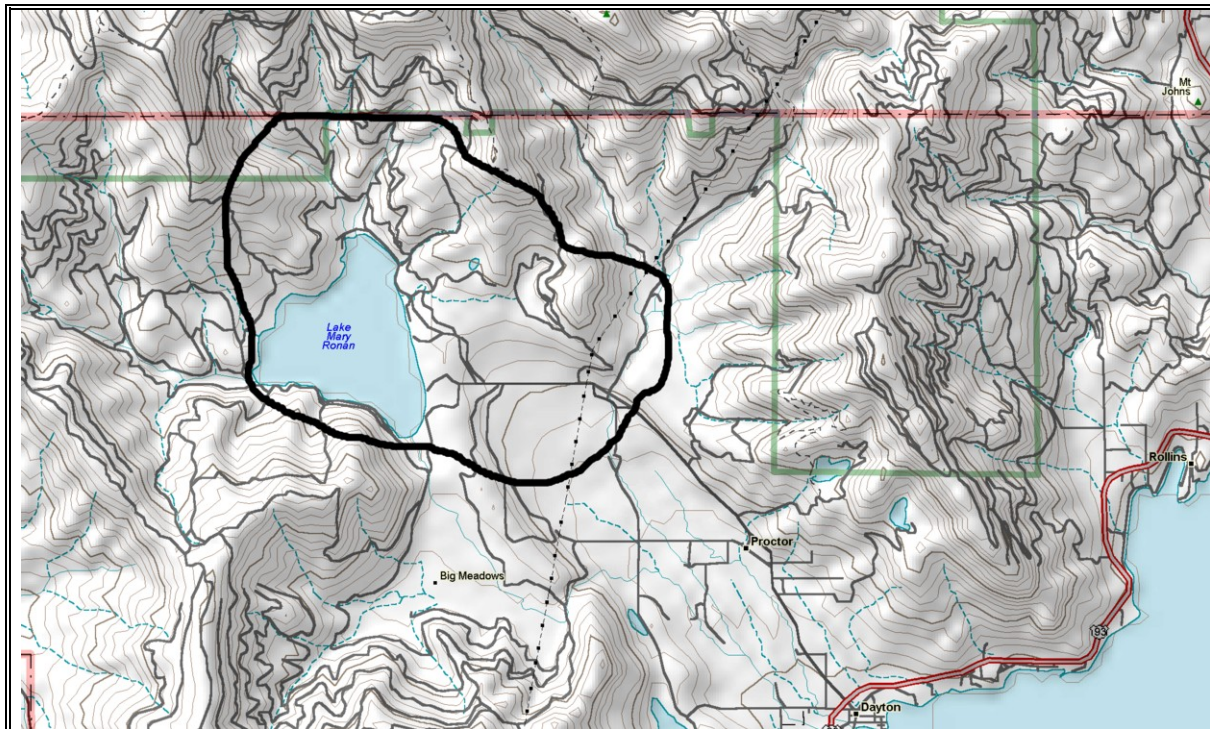
**RISK ASSESSMENT SCORING**

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 8	1	50	(40%)
	Topography	Residences at Valley bottom	1		
	Weather	Moist	1		
	Cond. Class	Class III; ladder fuels & brush	3		
	Total:				
Values at Risk	\$ Valuation	\$3.12 mm / sq. mile	2	67	(20%)
	Density	17.5 Residences / sq. mile	2		
	Other Values	Recreation / Fishery	2		
	Total:				
Protection Capability	Response	Good	1	44	(30%)
	Access	Good	1		
	Water Sup.	Average	2		
	Total:				
Ignition Risk	Man-caused	.032 Fires / sq. mile / year	1	33	(10%)
	Lightning	.019 fires / sq. mile / year	1		
	Total:				

**COMPOSITE SCORE: 49.9**

**PLANNING AREA RISK ASSESSMENT WORKSHEET**

**PLANNING AREA: Lake Mary Ronan**



**GEOGRAPHICAL DESCRIPTION:**

Lake Mary Ronan basin, northwest corner of Lake County. Starts at about Dayton Creek Rd., mm. 4 on Hwy. 352. 14 Square Miles.

**LOCAL FIRE DEPARTMENT**

Chief Cliff Volunteer Fire Company

**WILDLAND FIRE PROTECTION AGENCY**

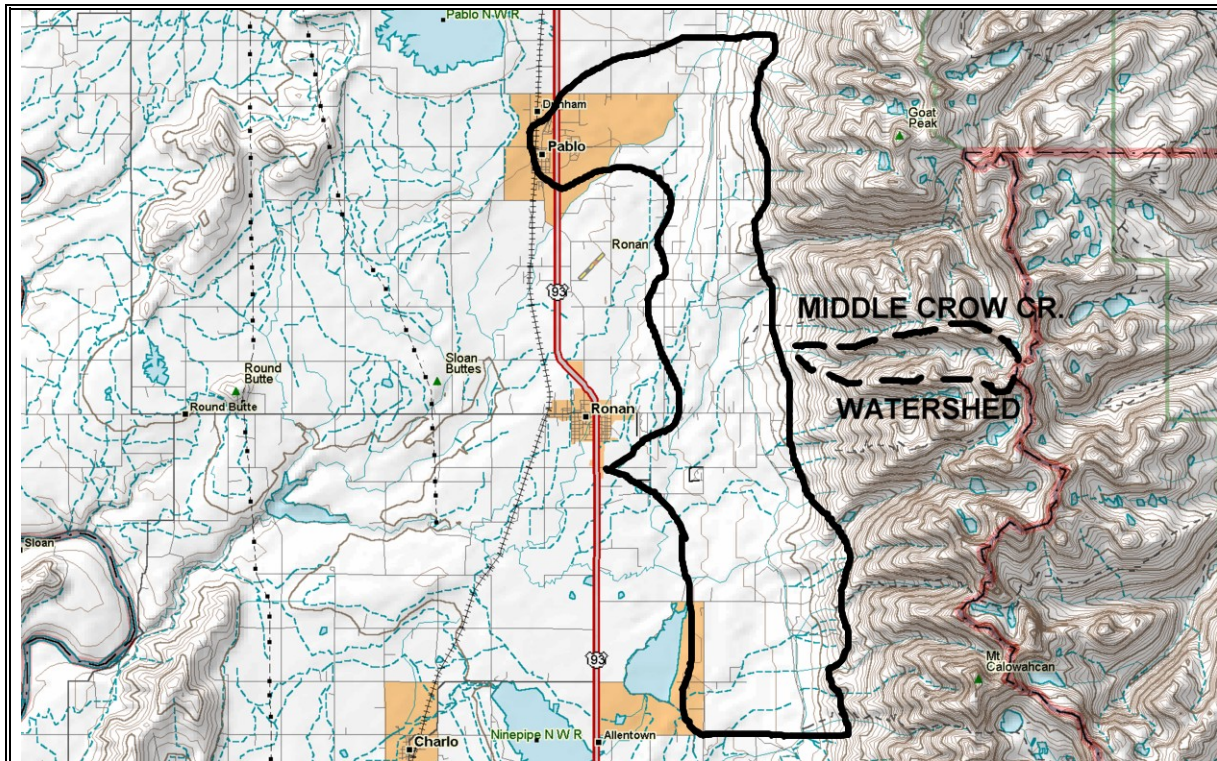
DNRC Kalispell Unit

**RISK ASSESSMENT SCORING**

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 6	3	92	(40%)
	Topography	Some slopes; SW Aspect	2		
	Weather	Dry	3		
	Cond. Class	Class 3; Doug. Fir encroachment	3		
	Total:				
Values at Risk	\$ Valuation	\$0.90 mm / sq. mile	1	44	(20%)
	Density	6.1 residences / sq. mile	1		
	Other Values	Recreation, Power Lines	2		
	Total:				
Protection Capability	Response	RFD Close; DNRC far	3	78	(30%)
	Access	Average	2		
	Water Sup.	Average	2		
	Total:				
Ignition Risk	Man-caused	.044 fires / sq. mile / year	1	50	(10%)
	Lightning	.037 fires / sq. mile / year	2		
	Total:				
<b>COMPOSITE SCORE:</b>					<b>74.2</b>

**PLANNING AREA RISK ASSESSMENT WORKSHEET**

**PLANNING AREA:** Mission Front - North



**GEOGRAPHICAL DESCRIPTION:**

Lower, west-facing slope of Mission Range from roughly Pablo to Ninepipe area. 50 Square Miles. Middle Crow Creek Watershed supplies Ronan Public Water Supply.

**LOCAL FIRE DEPARTMENT**

Ronan Rural Fire District

**WILDLAND FIRE PROTECTION AGENCY**

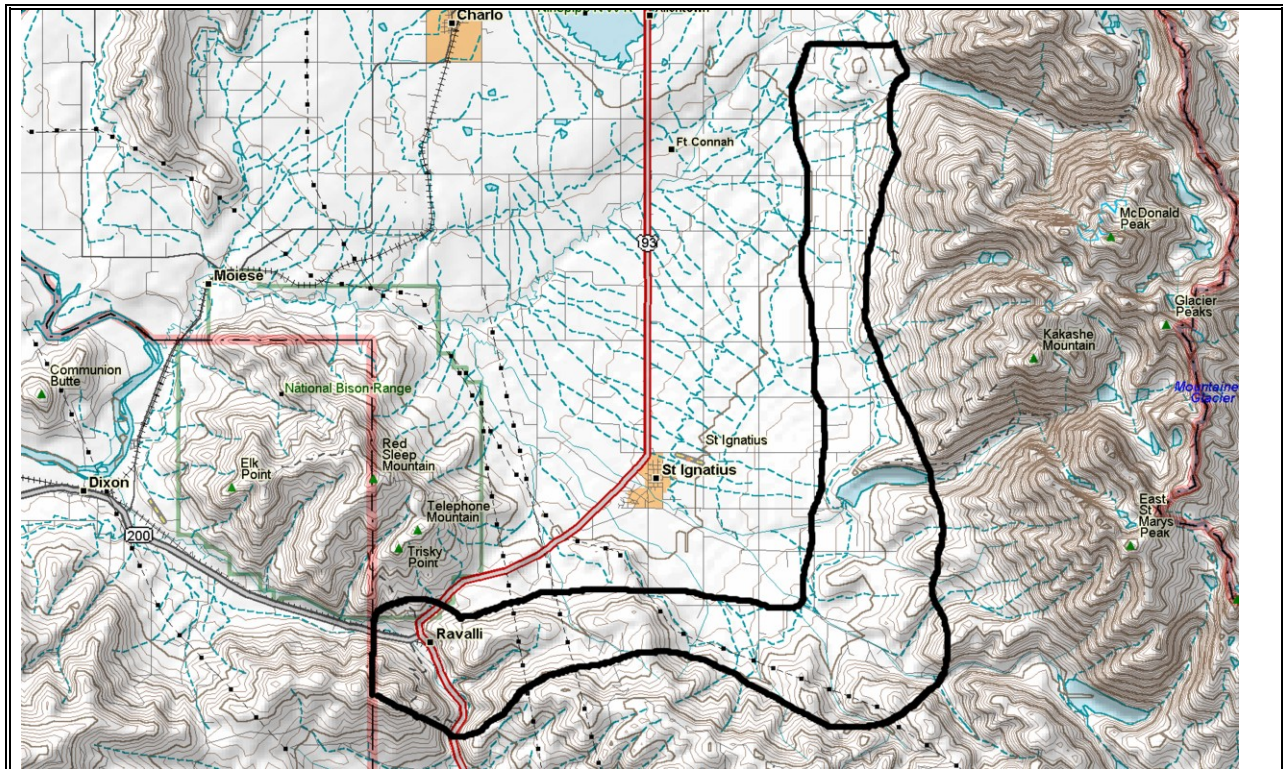
CS&KT Fire Management / BIA

**RISK ASSESSMENT SCORING**

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 2 & 9	2	50	(40%)
	Topography	Mostly Flat	1		
	Weather	Average Moisture	2		
	Cond. Class	Class I; Mature, even-aged	1		
	Total:			6	50
Values at Risk	\$ Valuation	\$1.42 mm / sq. mile	1	67	(20%)
	Density	22. 2 Residences / sq. mile	2		
	Other Values	Commercial; Crow Cr. Watershed	3		
	Total:			6	67
Protection Capability	Response	Good	1	56	(30%)
	Access	Good	1		
	Water Sup.	Poor	3		
	Total:			5	56
Ignition Risk	Man-caused	.077 fires / sq. mile / year	3	83	(10%)
	Lightning	.031 fires / sq. mile / year	2		
	Total:			5	83
<b>COMPOSITE SCORE:</b>					<b>58.5</b>

**PLANNING AREA RISK ASSESSMENT WORKSHEET**

**PLANNING AREA:** Mission Front - South



**GEOGRAPHICAL DESCRIPTION:**

Lower, west-facing slope of Mission Range from Ninepipe area to Saint Mary's Lake Road, and west to Ravalli. 37 Square Miles.

**LOCAL FIRE DEPARTMENT**

St. Ignatius Rural Fire District

**WILDLAND FIRE PROTECTION AGENCY**

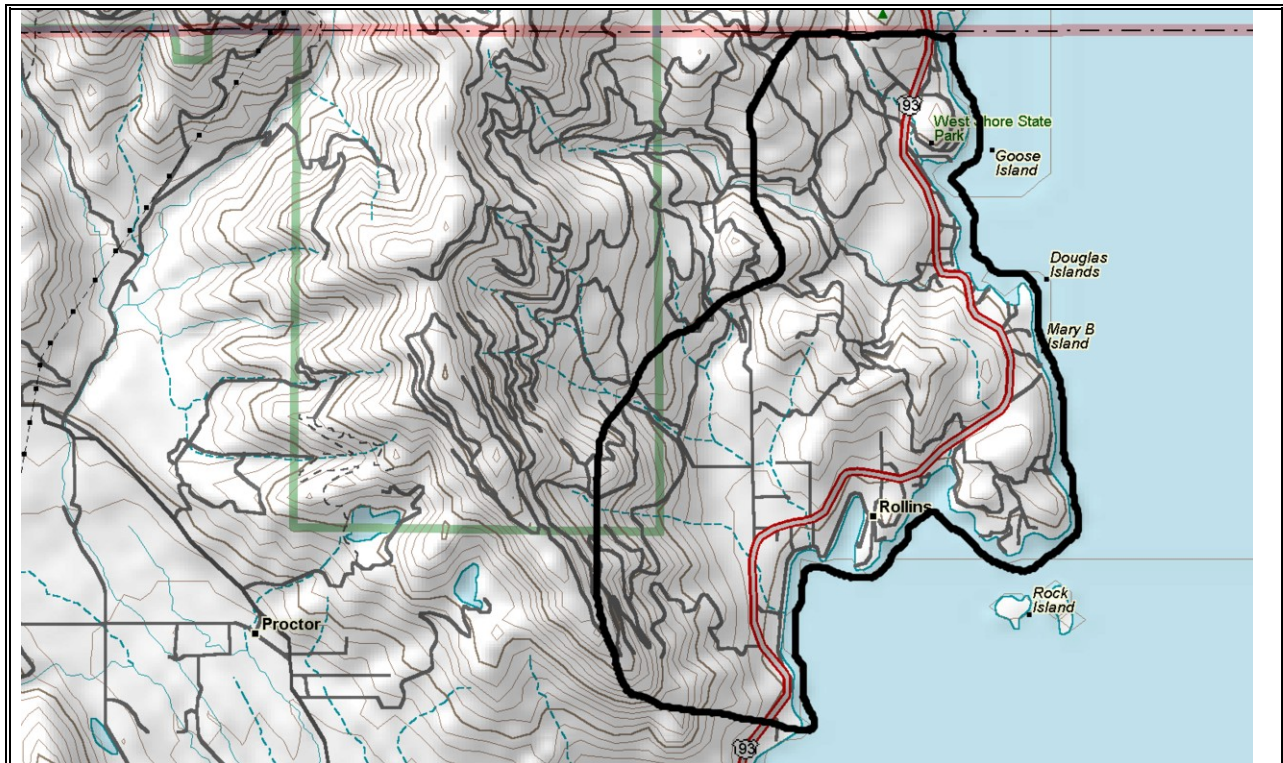
CS&KT Fire Management / BIA

**RISK ASSESSMENT SCORING**

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 2 & 9	2	50	(40%)
	Topography	Development mostly on flats	1		
	Weather	Average Moisture	2		
	Cond. Class	Class I; Managed Forest	1		
	Total:				
Values at Risk	\$ Valuation	\$0.44 mm / sq. mile	1	33	(20%)
	Density	5.4 Residences / sq. mile	1		
	Other Values	None	1		
	Total:				
Protection Capability	Response	Average	2	67	(30%)
	Access	Good	1		
	Water Sup.	Poor	3		
	Total:				
Ignition Risk	Man-caused	.099 fires / sq. mile / year	3	83	(10%)
	Lightning	.046 fires / sq. mile / year	2		
	Total:				
<b>COMPOSITE SCORE:</b>					<b>55</b>

**PLANNING AREA RISK ASSESSMENT WORKSHEET**

**PLANNING AREA:** Rollins



**GEOGRAPHICAL DESCRIPTION:**

West Shore of Flathead Lake at northern boundary of Lake County. Includes Rollins, West Shore State Park, Goose Bay. 15 Square Miles.

**LOCAL FIRE DEPARTMENT**

Rollins Rural Fire District

**WILDLAND FIRE PROTECTION AGENCY**

DNRC Kalispell Unit

**RISK ASSESSMENT SCORING**

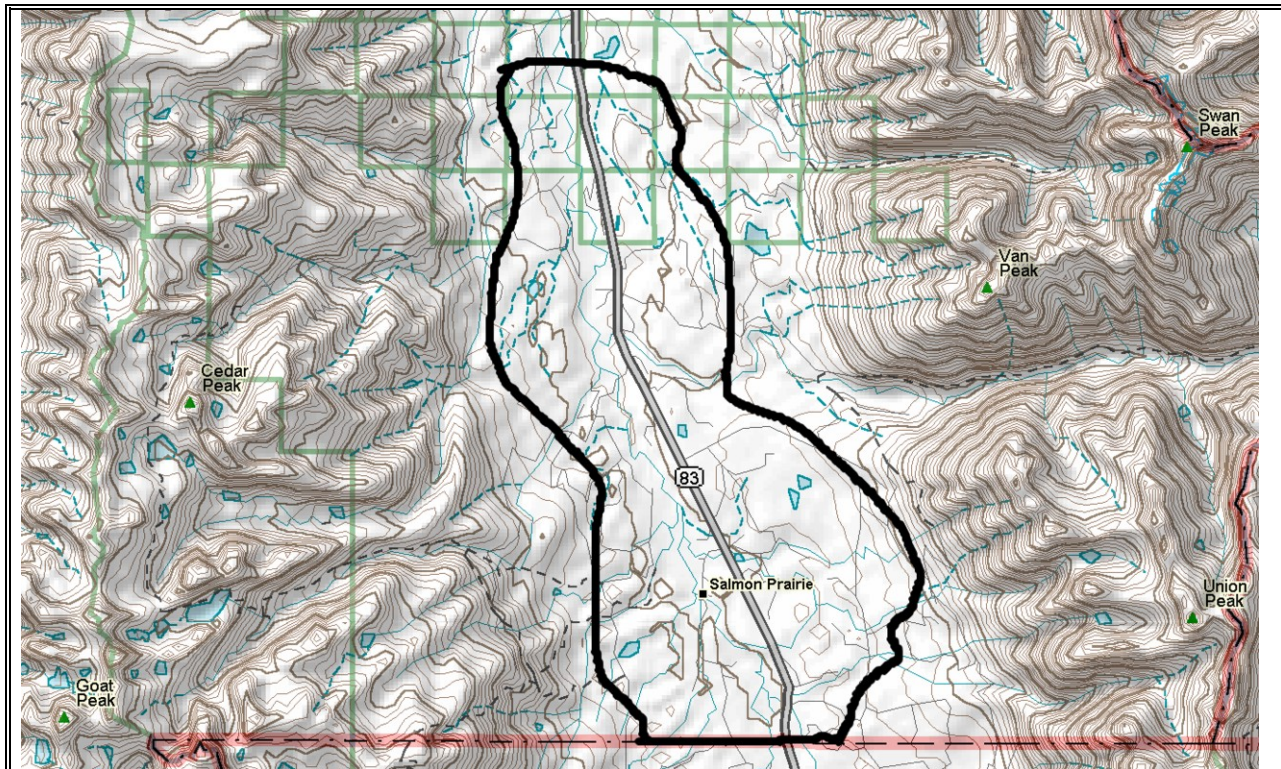
Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 9	2	58	(40%)
	Topography	Some slopes; east aspect	2		
	Weather	Average Moisture	2		
	Cond. Class	Class 1; Managed Stands	1		
Total:			7		23.2
Values at Risk	\$ Valuation	\$4.88 mm / sq. mile	3	67	(20%)
	Density	23.5 residences / sq. mile	2		
	Other Values	None	1		
Total:			6		13.4
Protection Capability	Response	RFD close; DNRC far	2	55	(30%)
	Access	Good	1		
	Water Sup.	Poor on hillsides	2		
Total:			5		16.5
Ignition Risk	Man-caused	.047 fires / sq. mile / year	1	67	(10%)
	Lightning	.054 fires / sq. mile / year	3		
Total:			4		6.7

**COMPOSITE SCORE:** 59.8

**PLANNING AREA RISK ASSESSMENT WORKSHEET**

**PLANNING AREA:** Salmon Prairie





**GEOGRAPHICAL DESCRIPTION:**

Swan Valley between Mission and Swan mountain ranges, at southern boundary of Lake County. 28 Square Miles.

**LOCAL FIRE DEPARTMENT**

Swan Fire Service Area

**WILDLAND FIRE PROTECTION AGENCY**

DNRC Swan Unit

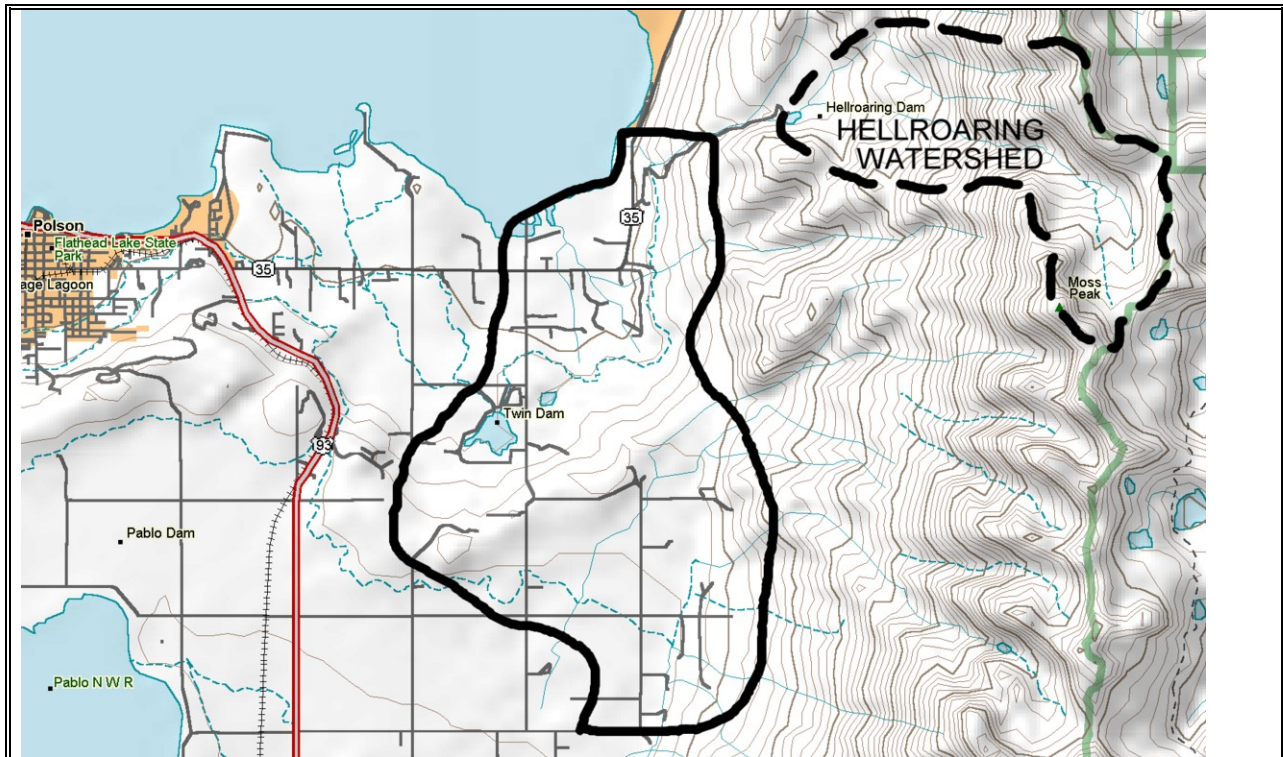
**RISK ASSESSMENT SCORING**

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 2 & 9	2	58	(40%)
	Topography	Flat	1		
	Weather	Dry	3		
	Cond. Class	Class 1; Managed stands	1		
Total:			7		23.2
Values at Risk	\$ Valuation	\$0.52 mm / sq. mile	1	44	(20%)
	Density	4.7 Residences / sq. mile	1		
	Other Values	Grizzly Bear Habitat, Bull Trout	2		
	Total:				
Protection Capability	Response	Good	1	55	(30%)
	Access	Good	1		
	Water Sup.	Poor	3		
	Total:				
Ignition Risk	Man-caused	.041 fires / sq. mile / year	1	67	(10%)
	Lightning	.061 fires / sq. mile / year	3		
	Total:				

**COMPOSITE SCORE:** 55.2

**PLANNING AREA RISK ASSESSMENT WORKSHEET**

**PLANNING AREA:** Turtle Lake



**GEOGRAPHICAL DESCRIPTION:**

Southeast corner of Flathead Lake, south to Pablo area along foothills of Mission Range. 12 Square Miles. Includes Hellroaring Creek Watershed (Polson Public Water Supply; Inactive)

**LOCAL FIRE DEPARTMENT**

Polson Rural Fire District

**WILDLAND FIRE PROTECTION AGENCY**

CS&KT Fire Management / BIA

**RISK ASSESSMENT SCORING**

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 8 & 2	1	50	(40%)
	Topography	Some slopes; west & south aspect	2		
	Weather	Average Moisture	2		
	Cond. Class	Class I; Mature, even-aged stands	1		
	Total:				
Values at Risk	\$ Valuation	\$1.12 mm / sq. mile	1	55	(20%)
	Density	23.7 Residences / sq. mile	2		
	Other Values	Municipal Watershed	2		
	Total:				
Protection Capability	Response	Good	1	44	(30%)
	Access	Good	1		
	Water Sup.	Average	2		
	Total:				
Ignition Risk	Man-caused	.084 fires / sq. mile / year	3	100	(10%)
	Lightning	.050 fires / sq. mile / year	3		
	Total:				
<b>COMPOSITE SCORE:</b>					<b>54.2</b>

## CHAPTER 6: MITIGATION

Crucial to the implementation of this Community Wildfire Protection Plan (CWPP) will be the identification and implementation of a comprehensive program directed at reducing the potential for loss of lives, property and natural resources in Lake County due to wildfire. This Plan is intended to establish a general system that provides guidance to County officials, fire professionals, and residents in carrying out an effective loss mitigation program.

The strength of the Lake County wildfire loss mitigation plan lies in the reliance on an annual planning process to identify needs and to establish work projects on a continuous, recurring schedule. With ever-increasing population and subsequent land development, priorities for loss prevention work may change from year to year. This document does not propose specific mitigation activities, rather it provides a protocol for planning and a range of alternative solutions for cooperators to utilize in accomplishing long-term goals.

The objectives of this Mitigation Plan are:

- To establish a system for identifying and prioritizing loss mitigation work activities.
- To provide a framework for conducting an ongoing risk reduction program.
- To provide a range of various management tools for accomplishing long-term community protection goals.

### **6.1 MITIGATION PLANNING PROCESS**

The key to an effective loss reduction program is the adoption of an integrated planning process that clearly identifies the steps needed to be taken in order to produce a workable plan. Further, the process should provide continuity and a seamless routine that continues year after year in the pursuit of established goals.

The annual planning process adopted by Lake County relies heavily on the involvement of all stakeholders with an interest in wildfire-related matters in the County. Collaboration in this effort will involve the State and Federal Wildland Fire Protection Agencies, the County office of Emergency Management, the Lake County Commissioners, the Confederated Salish and Kootenai Tribes, and the Rural Fire Districts of the County. In addition, and most importantly, the citizens of Lake County will be involved through extensive outreach/education programs as well as through regular public meetings held to present mitigation program details and to solicit comments.

Responsibility for managing the mitigation planning process lies with the Lake County Hazardous Fuels Coordinator position, which is under the supervision of the County Emergency Service Director. The Coordinator will receive direction and guidance from the Hazardous Fuels Advisory Committee, and the Local Emergency Planning Committee (LEPC).

Efforts will be made to ensure that Lake County's risk mitigation program activities are coordinated with similar work being planned in adjacent counties and other planning jurisdictions. The Seeley-Swan Fire Plan, completed in 2004, covers a portion of Lake County in the Swan River area. One of the goals of that plan is to complete hazardous fuels reduction work on 10% of lands in the planning area classified as "High-Risk", annually. The Lake County Hazardous Fuels Coordinator will work with the Swan Ecosystem Center to ensure that

mitigation work conducted under the two fire protection plans is completed in a cost-effective and mutually beneficial manner.

The net result of the planning process is the development and approval of an Annual Operating Plan, or Action Plan, that follows a general format provided for in this document. Besides serving as an annual update to the main plan, the operating plan will be used to provide a means of documenting plan activities, identification of emerging issues, evaluation of past work projects, and to establish an annual work plan based on priorities set by involved stakeholders. As a County-wide planning effort, the Annual Operating Plan must be approved by the County Commissioners, or their designee, as well as by all other governmental agencies involved with wildfire management in the County.

**PRIORITIZING MITIGATION WORK**

The Healthy Forests Restoration Act’s provision for Community Wildfire Protection Plans (CWPP) requires that communities identify and prioritize hazardous fuels treatments as part of the planning process. Currently, the Lake County Community Wildfire Plan risk assessment methodology provides a foundation for assessing hazards and risk. Priorities for selecting mitigation work projects will be determined on an annual basis, through consensus of the parties involved in the planning process.

The previous chapter of this Plan provided an assessment of the potential for wildfire loss to identified Wildland-Urban Interface areas in the County. The risk assessments were made based on the conditions existing during 2004, thus, the relative ranking of the Planning Areas in terms of risk level are made in light of those conditions. However, the components of wildfire risk and the preparedness of the county’s resources are not static. It will be necessary to fine-tune this plan’s recommendations annually to adjust for changes in the components of risk, population density, infrastructure modifications, and other factors. The following table summarizes the Planning Area risk assessments, and ranks them from highest to lowest relative level of risk.

<b>PLANNING AREA RISK ASSESSMENT SUMMARY</b>					
NAME	WEIGHTED COMPONENT SCORES				COMPOSITE SCORE
	Hazard	Values	Protection	Fire Risk	
Big Arm / Rocky Point	37	13.4	27	8.3	85.7
Lake Mary Ronan	37	8.8	23.4	5	74.2
East Shore – North	26.8	20	13.2	3.3	63.3
East Shore – South	26.8	15.6	16.8	3.3	62.5
Rollins	23.2	13.4	16.5	6.7	59.8
Mission Front- North	20	13.4	16.8	8.3	58.5
Arlee	20	8.8	20.1	8.3	57.2
Salmon Prairie	23.2	8.8	16.5	6.7	55.2
Mission Front - South	20	6.6	20.1	8.3	55
Turtle Lake	20	11	13.2	10	54.2
Ferndale/Swan Lake	20	13.4	13.2	3.3	49.9

The Risk Assessment is only one of the many criteria that could be used to set priorities for mitigation work activities, and should not be interpreted as a rigid, sequential schedule for accomplishment of the overall risk reduction program. Other factors must also be considered during the planning cycle to ensure that only the most worthwhile and cost-effective projects are undertaken. Priorities will be assigned to projects that provide the greatest benefits to communities within the Wildland-Urban Interface, or secondarily, to surrounding landscapes. Risk reduction projects will initially be targeted at areas with residential development, and then moving farther out into adjacent forested lands.

Alternative methods of setting priorities may be practical in many circumstances, upon agreement by the Fuels Reduction Advisory Committee. An example of this would be a situation where an opportunity exists to conduct cooperative fuel reduction activities in a low-ranking Planning Area adjacent to Federal, State or Tribal lands on which similar projects are being planned. Other factors to consider when setting work priorities include community interest, special properties needing protection, willingness of private landowners, and extraordinary events that may present special risk concerns. Emergent dead fuel accumulations resulting from insect and disease infestations, or localized weather-related events such as wind and ice storms may necessitate high priority fuels reduction work in a given year.

Initially, it may also be preferable to identify mitigation projects in an informal manner. Individual fire chiefs with responsibilities for interface area fire protection, in conjunction with wildland agency personnel, could each select one or two high priority units within their respective Planning Areas for demonstration projects. The list of proposed projects could then be narrowed down based on priorities indicated by the Planning Area Risk Assessment system, depending on funding limitations.

Two other important factors that must be taken into consideration when setting priorities for mitigation activities are: 1.) Public input and 2.) Coordination with other planning efforts. The success of any risk reduction strategy hinges upon the full cooperation and participation of landowners and residents. The public will be kept apprised on the status of the mitigation planning process, and input will be sought through informational press releases and public meetings. Contact with representatives from adjacent counties should be maintained to coordinate projects across county lines, where appropriate. The 2004 Seeley-Swan Fire Plan covers a small portion of Lake County in the Swan Valley, and separately makes recommendations for hazardous fuel treatment work.

### **ESTABLISHING WORK UNITS**

Planning Areas will be further subdivided into smaller-scale "Work Units" during the annual planning process. Representatives from the County (Fuels Reduction Coordinator), the responsible Wildland Fire Protection Agency, and the local Fire District will work to identify subdivisions, neighborhoods, or housing clusters for targeting annual work projects. Work Units should be established based on a variety of criteria such as neighborhood / community identity, fuel hazard characteristics, administrative efficiencies (i.e.: fuels reduction contract administration), and expressed interest in mitigation efforts by residents. The size of the Work Units is variable, and should be based in part on criteria such as the number of concurrently open fuels treatment contracts that would be anticipated.

Breaking the Planning Areas down into sub-units enables fire management personnel to effectively perform a more intensive, site-specific risk analysis of high priority areas. As part of

the annual planning process, selected Work Units should be identified for conducting a house-by-house, or street-by-street risk assessment of Structural Vulnerability to wildfire loss. The Montana Risk Rating System, developed by the Department of Natural Resources, is an effective tool for determining which properties are at greatest risk within the Work Unit, and thus prioritized for any available mitigation work. The Risk Rating System may also be used at the subdivision level for setting priorities between Work Units within a particular Planning Area. Another risk rating system which may be utilized is provided for in NFPA 1144, "Standard for Protection of Life and Property from Wildfire", published by the National Fire Protection Association. It would be beneficial if this site-specific work is conducted (or directed) jointly by representatives from the responsible fire district, the wildland fire agency and the County (Fuels Reduction Coordinator).

### **IDENTIFYING SPECIFIC MITIGATION ACTIVITIES**

Once the areas are identified that are most in need of loss prevention efforts, the planning group shall determine the most appropriate means for accomplishing the needed work. Strategies should be developed to address specific needs, using a variety of "tools" available to emergency management personnel. A number of these tools are listed in the "Mitigation Strategies" section of this chapter.

An important factor to consider when setting up mitigation work projects is the evaluation of past efforts. As part of the annual planning process, the Hazardous Fuels Advisory Committee will review the previous year's work projects and determine what, if any, changes should be made in methods and practices. Documentation of these issues will be included in the Annual Operating Plan, along with a detailed listing of proposed mitigation activities for the coming work season.

Since there are many land management agencies and hundreds of private landowners in Lake County, it is reasonable to expect that differing levels of participation will be experienced and varying degrees of accomplishment will be attained. A summary of the past year's accomplishments will also be included in the Annual Operating Plan.

**ANNUAL PLANNING SCHEDULE**

SEASON	PLANNING ACTIVITIES
Fall	First Planning meeting to be held at the conclusion of fire season.  Review past season's mitigation work, fire occurrences, effectiveness of mitigation work, new housing developments, etc.  Western States Grant Application Due (possibly others)  Set objectives for the next Annual Operating Plan
Winter	Meet every two months to identify mitigation projects and set priorities  Conduct public meetings regarding mitigation planning ; seek input  Work with State, Federal and Tribal agencies to develop cooperative projects
Spring	Write specifications / prescriptions for fuels treatment projects  Compile current list of private contractors qualified for performing mitigation work  Update fire district/agency contact and equipment lists  Submit Annual Operating Plan for approval by May 1
Summer	Implement hazardous fuels treatment work projects  Conduct any risk rating or site-specific risk assessment projects planned  Conduct fire prevention and homeowner awareness activities

**6.2 MITIGATION STRATEGIES**

As part of the implementation of this Community Wildfire Protection Plan, a variety of mitigation activities may be undertaken to reduce the potential for loss due to wildfire in the Wildland-Urban Interface areas of Lake County. The following mitigation strategies represent just a few of the tools available to the fire management community for achieving risk reduction goals; this list is not exclusive, and other appropriate mitigation activities should be identified and added to the “toolbox” for use in addressing specific needs.

**Hazardous fuel reduction**

Reducing hazardous fuels around homes, along transportation corridors and at a landscape-scale can significantly minimize losses to life, property and natural resources from wildfire. A core focus of mitigation strategies is to protect communities through the management of forest fuels occurring within and adjacent to wildland-urban interface areas. Removal of unnatural accumulations of dead and live vegetative matter, resulting from decades of effective fire suppression, will lead to reduced fire intensities while restoring fire-adapted ecosystems towards more natural conditions.

Research using modeling, experiments, and wildland urban interface case studies indicates that home ignitability during wildland fires depends on the characteristics of the home and its immediate surroundings. These findings have implications for hazard assessment and risk

mapping, effective mitigations, and identification of appropriate responsibility for reducing the potential for home loss caused by Wildland-urban interface fires. Wildland-urban ignition research indicates that a home's characteristics and the area immediately surrounding a home within 100 to 200 feet principally determine a home's ignition potential during a severe wildland fire. Jack Cohen with the Forest Service Rocky Mountain Research Station refers to this area that includes a home and its immediate surroundings as the *home ignition zone*.

There are many different options for the treatment of hazardous fuels in and around the wildland-urban interface, and different methods for conducting the work. These include thinning, trimming, commercial logging, on-site chipping, and prescribed burning. Given the wide variety in combinations of vegetation types, stand characteristics and topography, there is no single prescription for how to treat hazardous fuels. In general thinning tree density to so there is optimally 10 foot spacing between crowns, removal of lower branches to 12 feet above ground level (or one third the height of the tree) and removal of brush and other dead and down material is appropriate in the home ignition zone. Whatever the treatment method selected, disposition of the materials removed must also be addressed.

Treatment strategies can occur at multiple scales.

- Defensible space around individual homes
- Fuels reduction at the neighborhood, or subdivision level
- Thinning and biomass removal in the landscape adjacent to WUI communities
- Creation of fuel breaks or greenbelts to help limit wildfire intensity and rate of spread

Some additional factors that should be taken into consideration once an area has been prioritized for treatment dollars are :

- Predominate wind direction during high fire danger days
- Steepness of slope and aspect orientation of landscape in relation to wind flows and neighborhood location
- Type of fire behavior expected at treatment area, during average worst case conditions
- Access to areas best suited for treatment
- Neighbor cooperation in areas best suited for treatment
- Proximity to State, Federal, or Tribal lands that could be treated
- Willingness of landowners to make efforts on their own properties
- Organized groups of neighbors interested in neighborhood projects

The Annual Operating Plan shall provide a prioritized listing of Work Units proposed for hazardous fuels reduction projects, as well as the type and method of treatment.

### **Strategies to reduce structural ignitability**

Structural ignitability, defined as the home and its immediate surroundings, separates the Wildland- Urban Interface (WUI) structure fire loss problem from other landscape-scale fire management issues. Highly ignitable homes can be destroyed during lower-intensity wildfires, whereas homes with low home ignitability can survive high- intensity wildfires.

Structural ignitability, rather than wildland fuels, is the principal cause of structural losses during wildland/urban interface fires. Key items are flammable roofing materials (e.g. cedar shingles)



and the presence of burnable vegetation (e.g. ornamental trees, shrubs, wood piles) immediately adjacent to homes, open wooden decks and porches, uncovered eaves, and unprotected openings in the structure.

The Annual Operating Plan will outline the efforts to be undertaken by fire management personnel each year in conducting public education campaigns directed at informing homeowners on how to reduce structural ignitability. In addition to general, county-wide efforts, high priority Work Units or entire Planning Areas will be targeted for intensive outreach programs that include neighborhood meetings or door-to-door contacts with residents.

There is a wide variety of informational materials available from state, federal and non-profit sources that can be purchased and distributed for this purpose. A listing of representative materials is included in Appendix B of this plan.

### **Regulatory Issues**

Lake County has been one of the fastest growing regions in Montana over the past decade, and there is no indication that the trend will slow down. More and more housing developments are being constructed in the interface areas, leading to an increased potential for loss. Wildfire mitigation efforts must be supported by a set of policies and regulations at the county level that maintain a solid foundation for public and firefighter safety.

Those involved in the community protection planning effort should work with the County governing body as well as the planning department to evaluate the existing regulatory structure, and to make recommendations for any needed changes. For example, they may choose to consider and develop policy to address construction materials for homes and businesses located in high wildfire risk areas. Specifically, a county policy may be warranted concerning wooden roofing materials and flammable siding on new structures, especially where juxtaposed near heavy wildland fuels.

The subdivision review process provides a valuable opportunity for fire management officials to provide input on planned developments. The process should be reviewed to ensure the application of standard road widths and building regulations to ensure new houses can be protected while minimizing risks to firefighters and residents. Consideration should be given to defensible space, emergency access, evacuation routes, water supply, signage, utilities, driveway configuration, and vegetation management along roads.

### **Fire Prevention activities**

Fire prevention involves education, enforcement and engineering programs directed at minimizing the risk from human-caused wildfires. Fire management agencies are involved with a number of programs related to fire prevention in a multi-jurisdictional manner. Opportunities exist for achieving more efficient delivery of fire prevention messages through coordination with the community fire loss mitigation planning effort. The Annual Operating Plan associated with this document, or the County Cooperative Action Plan (DNRC) should identify planned county-wide fire prevention activities, and the method of implementation.

Effective public outreach programs are crucial to the successful implementation of this community fire protection plan. Much of the subject matter related to wildfire risk reduction is of a relatively complex nature, and technical expertise needs to be developed. Annual planning efforts will identify any needs for providing training to individuals involved with the delivery of fire

prevention messages. The participating agencies should coordinate and share resources to produce a quality educational fire prevention program for the Wildland-Urban Interface homeowners in Lake County.

#### **Fire response / emergency preparedness**

The Lake County Fire Association has been very successful in developing policies and practices for ensuring close cooperation among emergency responders during wildfire events. The annual planning process provides a valuable mechanism for fire agencies to review fire occurrences and to identify changes or improvements needed to minimize the potential for structural losses due to wildfires. Recommendations for needed equipment, training, facilities and communications infrastructure should be addressed in the Annual Operating Plan.

High priority Planning Areas or Work Units identified in the planning process should be targeted for site-specific emergency planning efforts, and identified in the Annual Operating Plan. Fire chiefs, working in conjunction with County and wildland protection agency officials, should address issues such as evacuation plans, emergency access routes, water supply points, heavy fuels concentrations, staging area locations, critical protection sites, firefighter safety, hazardous materials, and strategic containment lines.

Evaluation and analysis of pre-attack planning criteria often helps to identify critical infrastructure elements that are in need of improvement. Depending on priorities, mitigation funding may be sought for the upgrading of bridges, roadways, water supplies or communications equipment needed for the enhanced protection of life and property.

#### **Biomass / small diameter wood utilization**

After the removal of merchantable timber, hazardous fuels reduction projects often result in a large quantity of forest materials left on site that need to be disposed of, often through burning or chipping. Burning of the slash may contribute to air quality degradation, as well as posing a risk factor from escaped burns. On-site chipping is an attractive alternative, however the expense may increase treatment costs substantially. A number of communities have purchased, or leased, chipping equipment that is loaned out to residents, or the chipping service may be provided by local non-profit groups.

The amount of residue can be reduced, and income may be generated, by identifying a local market for the small diameter woody materials. This issue should be investigated further by the planning group in a cooperative effort with county or regional economic development personnel.

### **6.3 FUNDING**

Financial resources that can provide support for various wildland fire mitigation activities include various State and Federal grants administered through the Montana Department of Natural Resources, the US Department of the Interior, Bureau of Indian Affairs, the Natural Resource Conservation Service, and the Federal Emergency Management Agency. Specific grant programs include:

- Western States Wildland Urban Interface Grant
- National Fire Plan Community Assistance Program
- FEMA Hazard Mitigation Grant Program
- Environmental Quality Incentive Program (EQIP; NRCS)

Most of the Federal grant programs for hazardous fuels reduction work require a certain percentage of cost-sharing by the entity receiving the grant. The cost-share proportion can often be either in the form of “in-kind” services, or monetary. Lake County’s Hazardous Fuels Advisory Committee, and the Hazardous Fuels Coordinator, will oversee County-wide grant administration and will determine appropriate sources for matching cost-share requirements.

Grant applications may require submission of a copy of the applicant’s hazardous fuels mitigation plan that include a description of the “types and methods” of treatments proposed, as well as other criteria such as a prioritization process. Since the present Lake County Community Wildfire Protection Plan is comprised of two components, submittal for purposes of grant application will require that copies of the Annual Operating Plans be included as attachments to the main Plan document.

## **CHAPTER 7: MONITORING AND EVALUATION**

Maintenance of this Community Wildfire Protection Plan is ensured through the adoption of its provisions for a continuing planning process; a process which relies on the completion of an Annual Operating Plan. When the plan is fully implemented, a recurring annual schedule of planning activities is undertaken that requires cooperators to continuously monitor and evaluate the plan's effectiveness.

The Lake County Hazardous Fuels Advisory Committee will oversee management of the planning process, and may delegate executive authority to the Hazardous Fuels Coordinator position. The Annual Operating Plan will be used to document activities carried out under this plan, and as such should be reviewed and authorized each year by governing officials and agency line officers (or their designated representatives).

This Community Wildfire Protection Plan should be re-evaluated and updated no later than the fifth year after it's adoption, and every five years thereafter. Amendments to the plan may be incorporated during the annual planning process, and will be documented in the Annual Operating Plan.

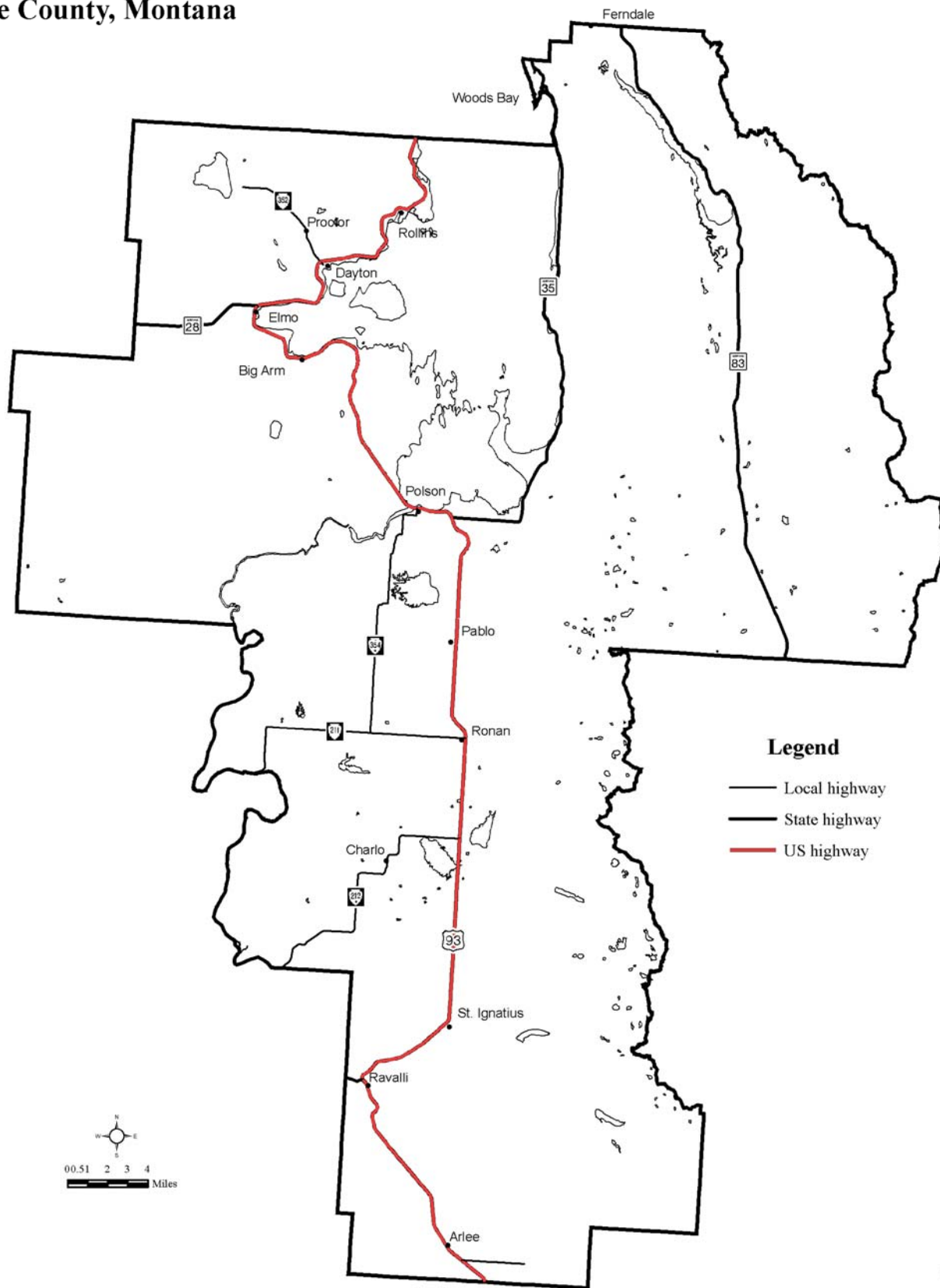
### **7.1 ANNUAL OPERATING PLAN OUTLINE**

1. TITLE
2. DATE OF COMPLETION
3. REVIEW OF THE PAST YEAR'S ACTIVITIES
  - WILDFIRE LOSS MITIGATION PROJECTS
  - OTHER ACCOMPLISHMENTS
  - WILDFIRE OCCURRENCES
  - EFFECTIVENESS OF PAST MITIGATION EFFORTS
4. DISCUSSION OF EMERGING ISSUES / CHANGING CONDITIONS
5. MITIGATION OBJECTIVES
6. IDENTIFY PRIORITIES FOR MITIGATION WORK
7. WORK PLAN
  - HAZARDOUS FUELS TREATMENTS
  - REDUCING STRUCTURAL IGNITABILITY
  - FIRE PREVENTION
  - FIRE RESPONSE / EMERGENCY PREPAREDNESS
  - BIOMASS / SMALL DIAMETER WOOD UTILIZATION
  - COMMUNITY AWARENESS
8. DOCUMENTATION OF PLANNING ACTIVITIES
  - FIRE PLAN STEERING COMMITTEE
  - PUBLIC MEETINGS
9. APPROVALS

## APPENDIX A - MAPS

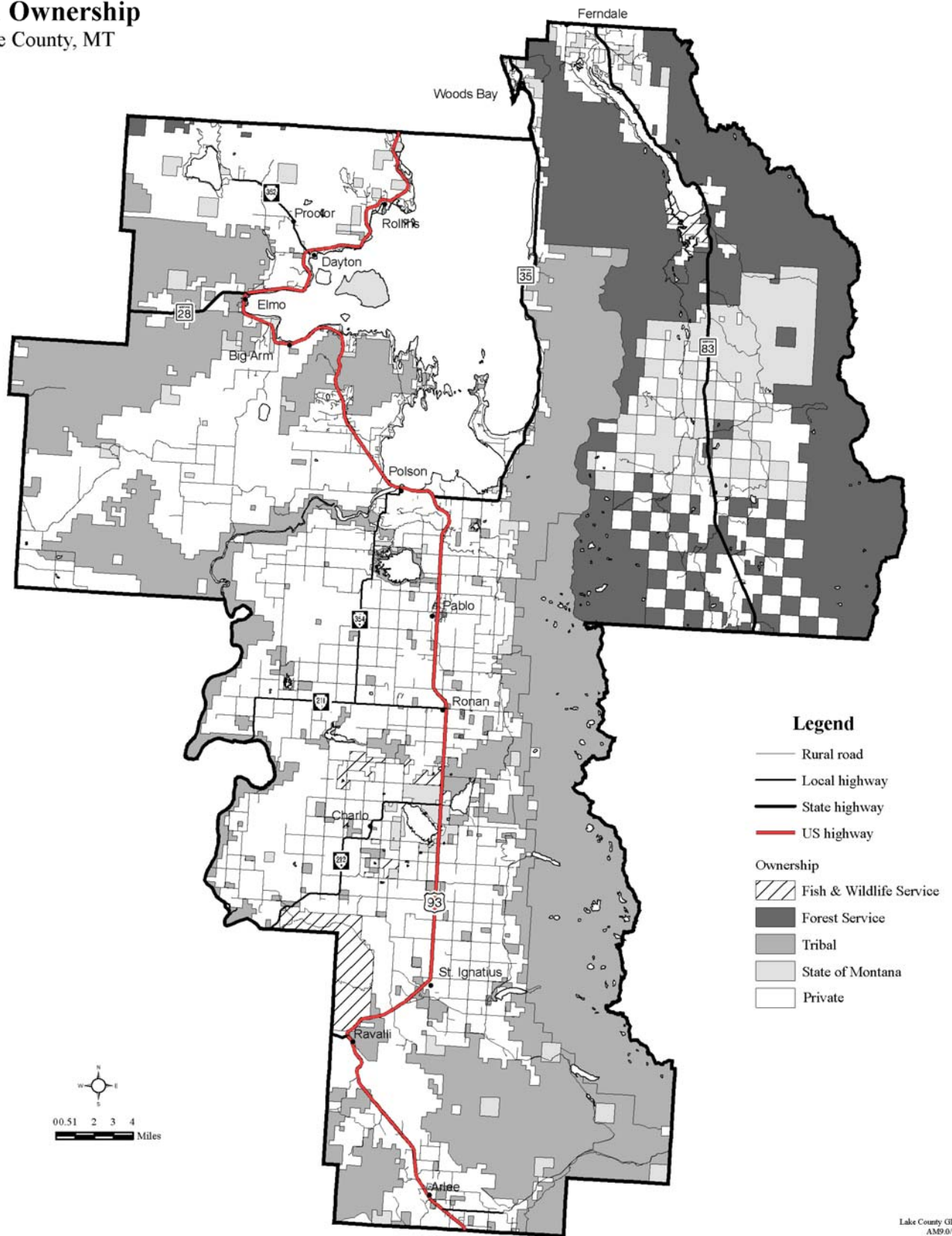
MAP #1	Lake County Base Map	pg. 60
MAP #2	Land Ownership	pg. 61
MAP #3	Wildland Fire Protection	pg. 62
MAP #4	Fire Districts	pg. 63
MAP #5	Wildland Fire Occurrence	pg. 64
MAP #6	Forest Land Cover	pg. 65
MAP #7	Residential Density	pg. 66
MAP #8	Residential Density in Forested Areas	pg. 67
MAP #9	Wildland-Urban Interface Planning Areas	pg. 68

# Lake County, Montana



# Land Ownership

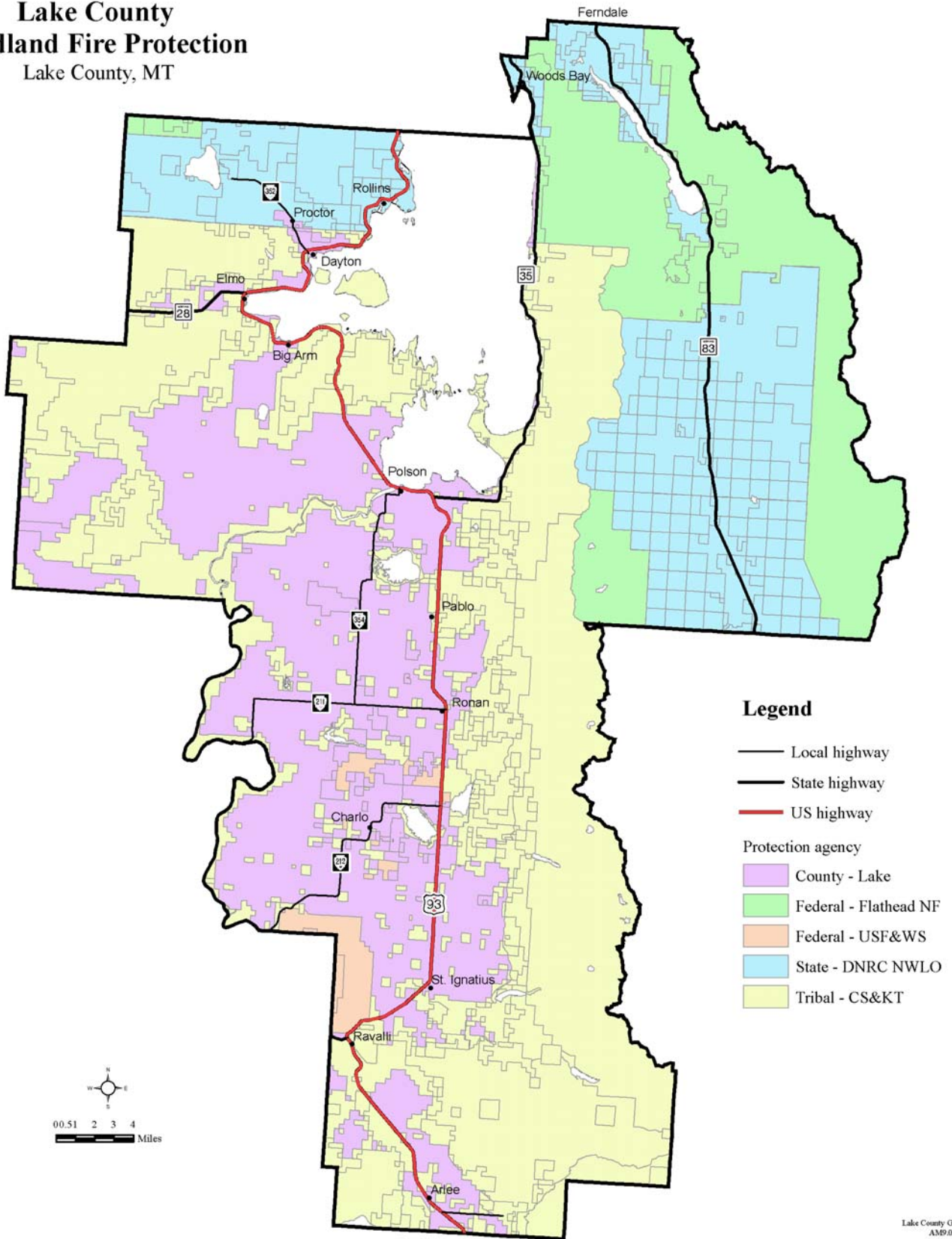
Lake County, MT



Lake County GIS Dept.  
 AM9 0 Fireplan  
 11/3/04

# Lake County Wildland Fire Protection

Lake County, MT



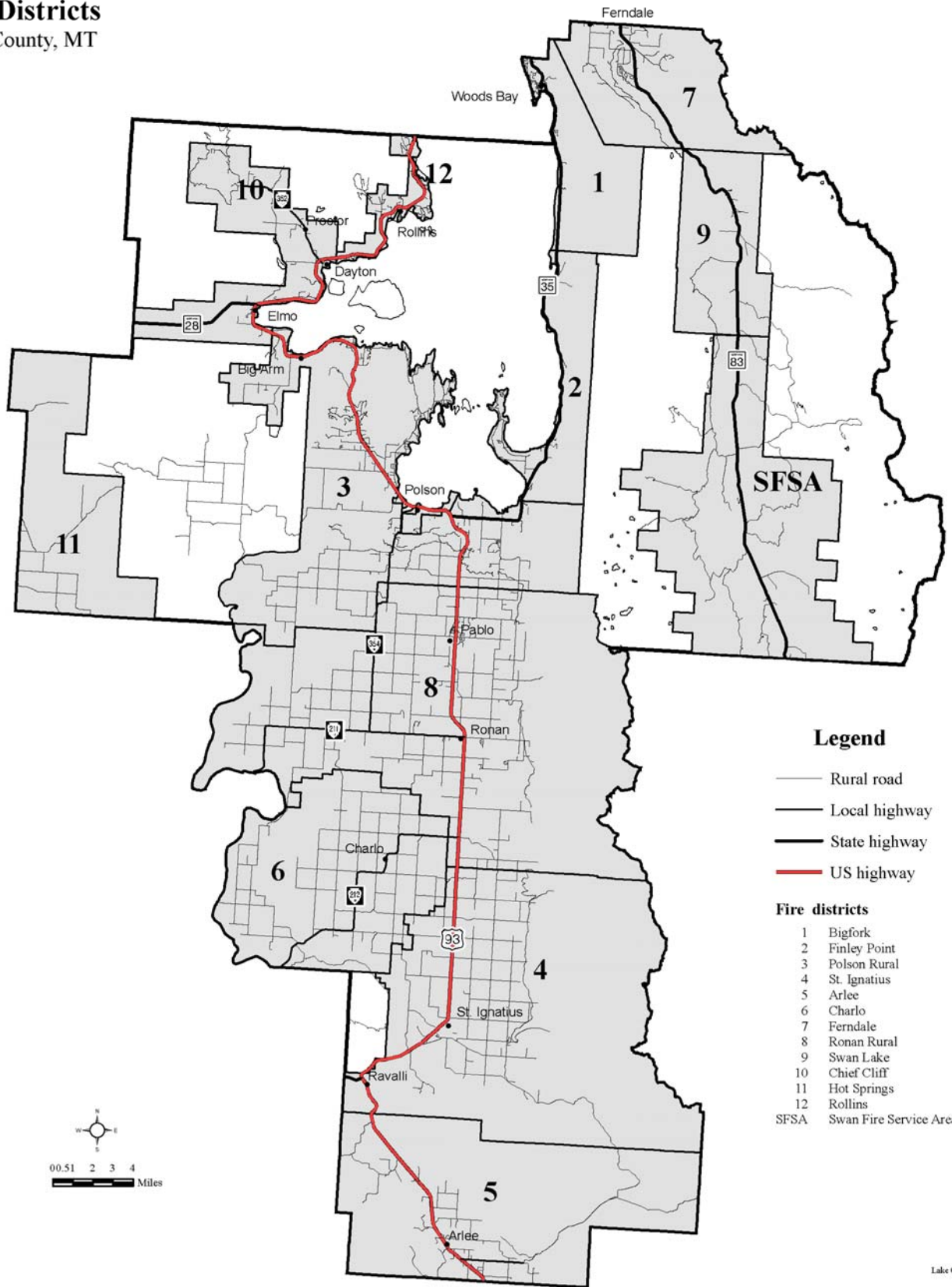
### Legend

- Local highway
  - State highway
  - US highway
- Protection agency
- County - Lake
  - Federal - Flathead NF
  - Federal - USF&WS
  - State - DNRC NWLO
  - Tribal - CS&KT

Lake County GIS Dept.  
AMP/0/fireplan  
11/1/04

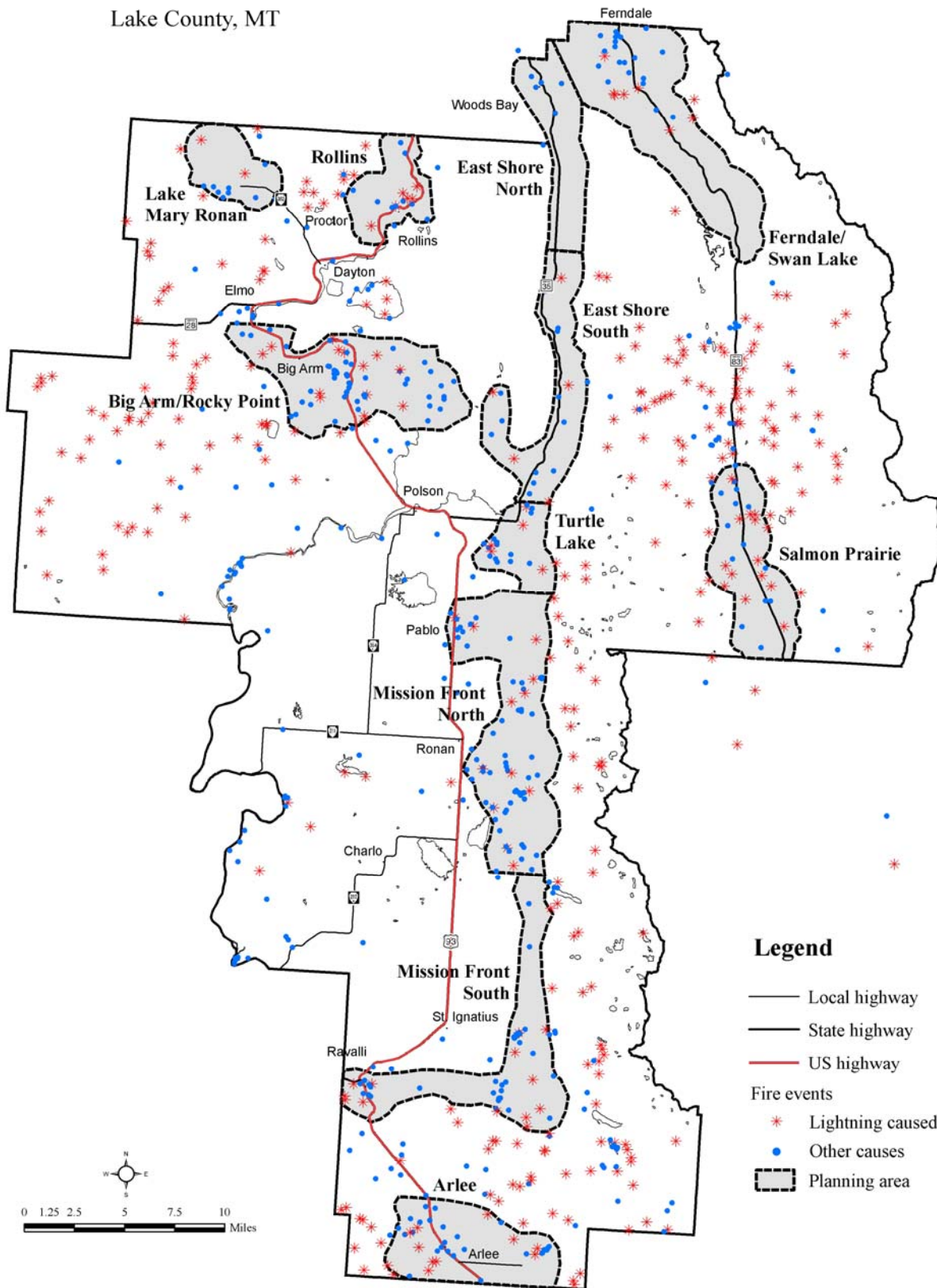


**Fire Districts**  
Lake County, MT



Lake County GIS Dept.  
AMP/0/fireplan  
11/3/04

# Wildland Fire Occurrence 1983 - 2003 Lake County, MT



## Legend

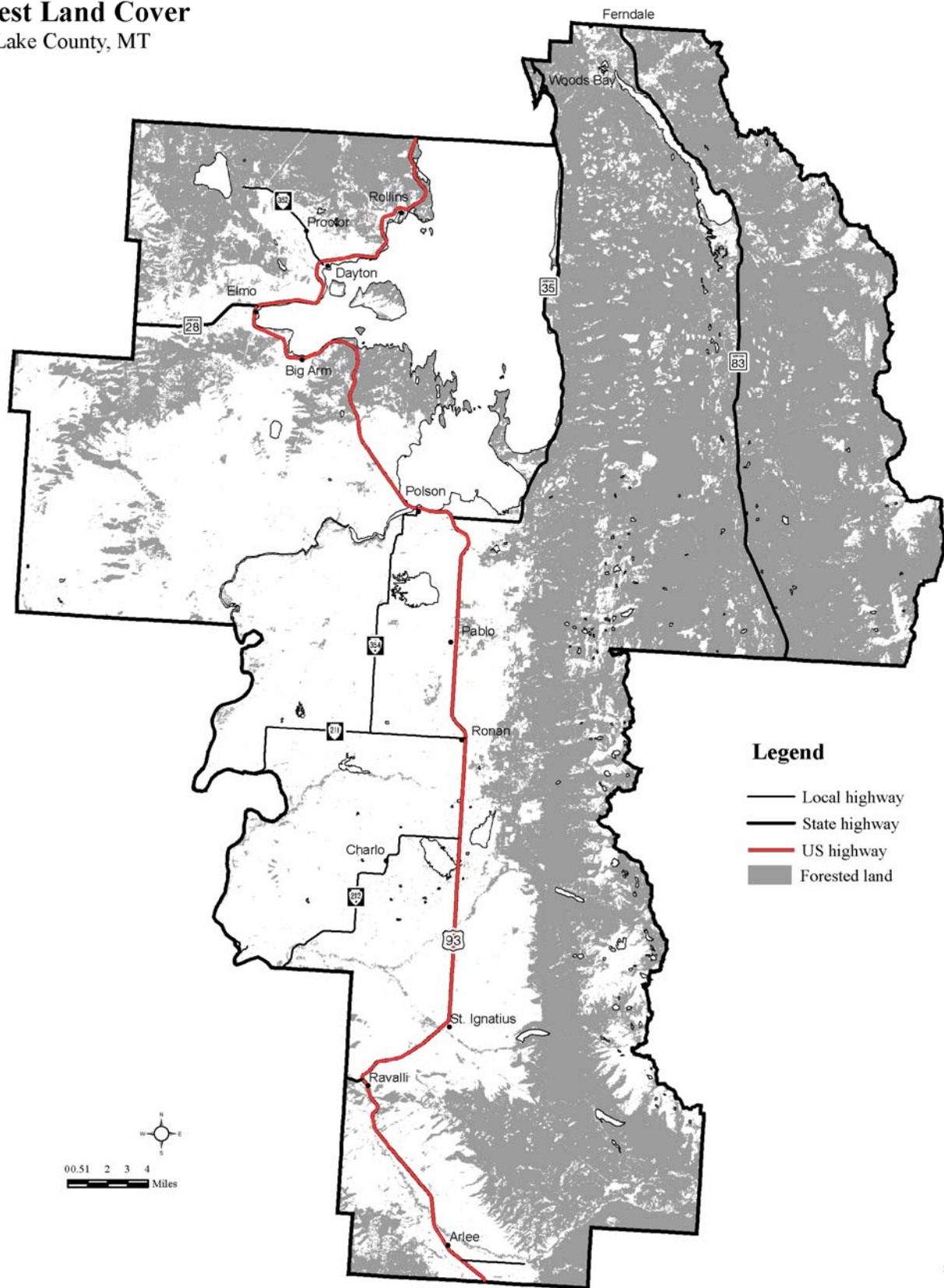
- Local highway
- State highway
- US highway

### Fire events

- \* Lightning caused
- Other causes
- ▭ Planning area

# Forest Land Cover

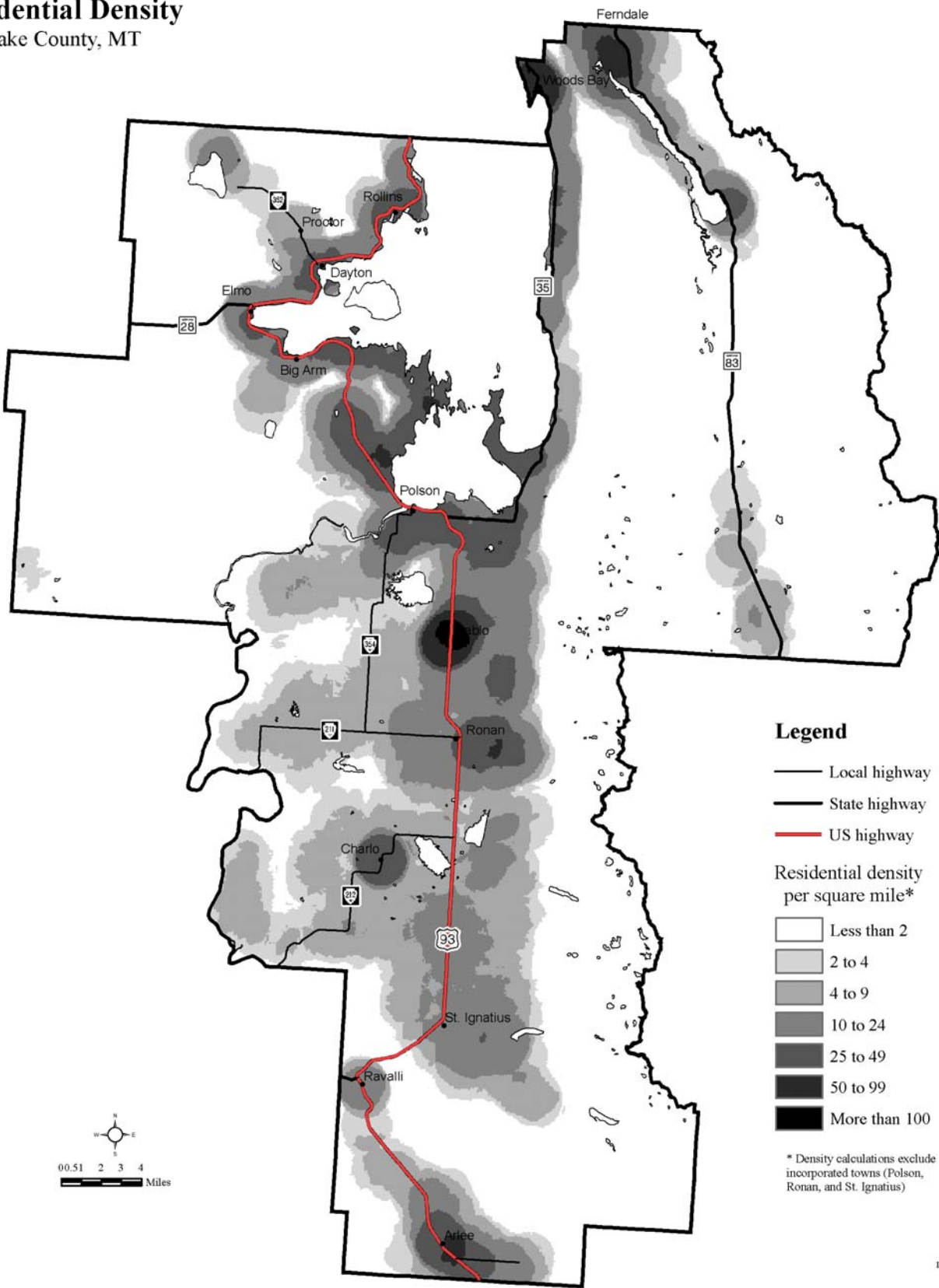
Lake County, MT



Lake County GIS Dept.  
AM9.0/fireplan  
9/7/04

# Residential Density

Lake County, MT



**Legend**

- Local highway
- State highway
- US highway

Residential density per square mile\*

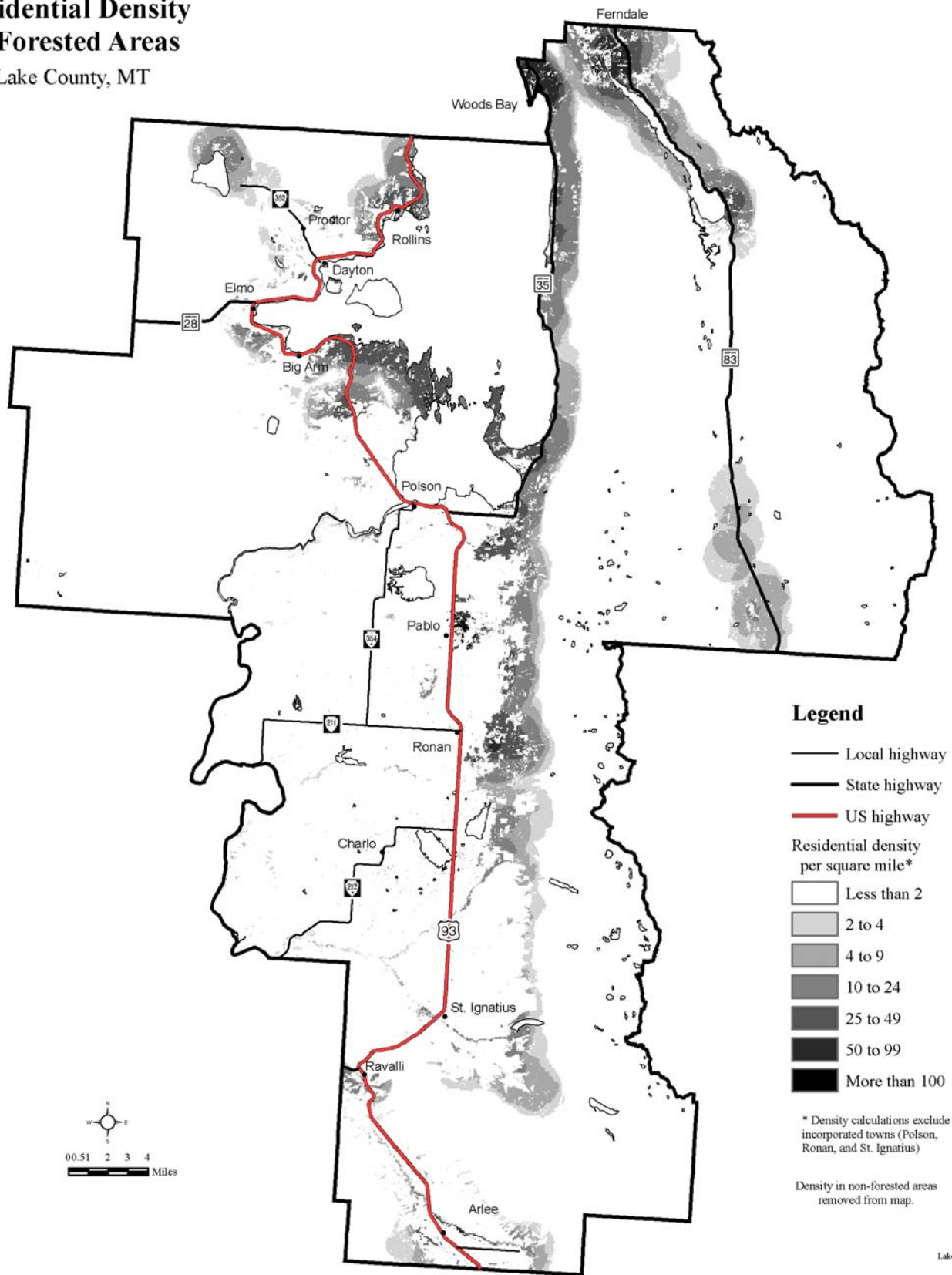
- Less than 2
- 2 to 4
- 4 to 9
- 10 to 24
- 25 to 49
- 50 to 99
- More than 100

\* Density calculations exclude incorporated towns (Polson, Ronan, and St. Ignatius)

Lake County GIS Dept.  
AMB/0/breplan  
9/7/04

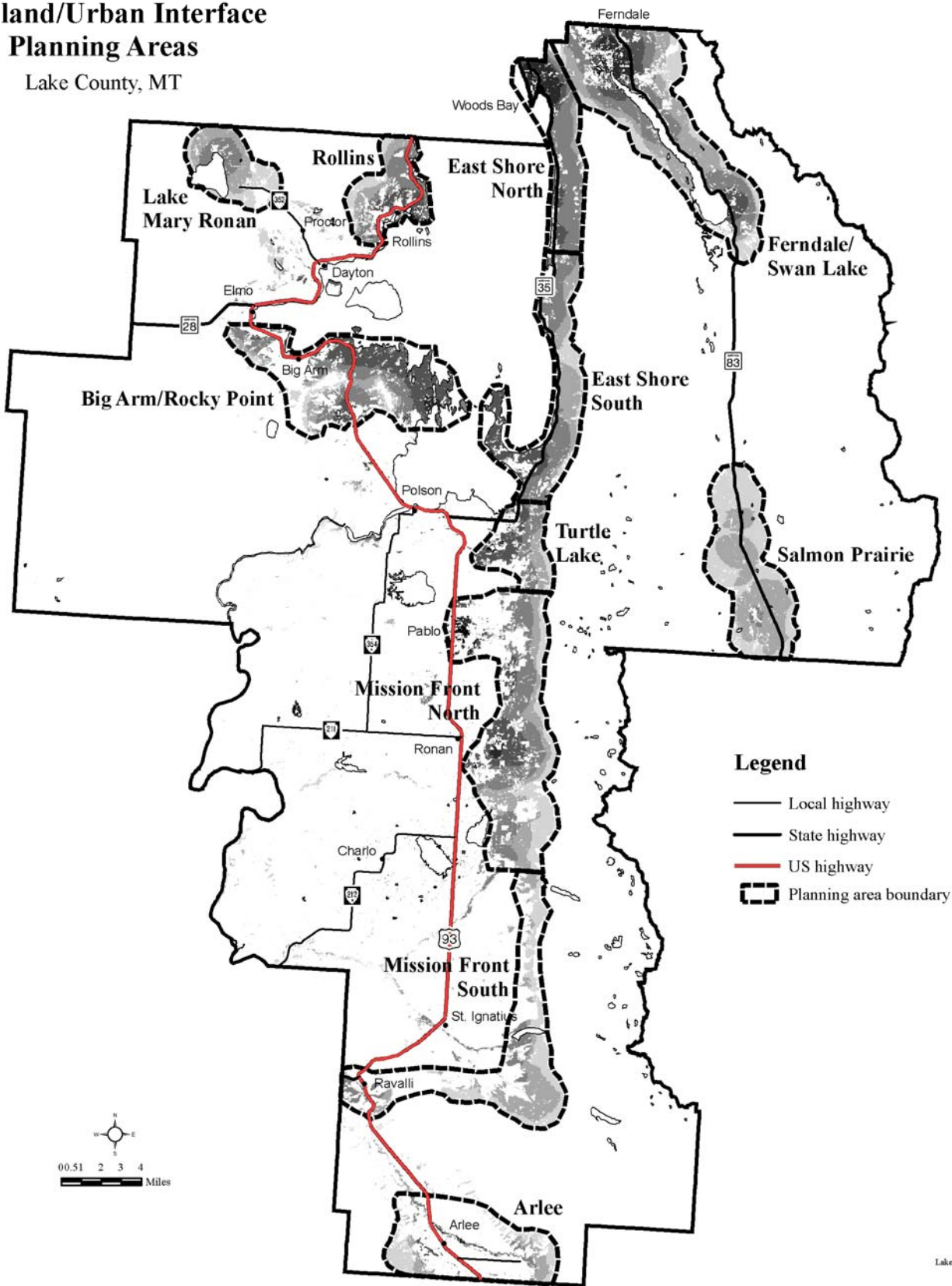
# Residential Density in Forested Areas

Lake County, MT



# Wildland/Urban Interface Planning Areas

Lake County, MT



Lake County GIS Dept.  
AMB/0 fireplan  
11/1/04

## APPENDIX B: SAMPLE HOMEOWNER MATERIALS

- Pages 70-73 “Firewise Landscaping for Woodland Homes”  
Keep Montana Green Association
- Pages 74-75 “Protect Your Home and Family from Wildfire”  
Montana Department of Natural Resources and Conservation
- Pages 76-77 “Home Fire Safety News”  
Montana Department of Natural Resources

## *Vegetation Management for Communities*

Because wildfires usually spread from one home to another, the condition of your neighbor's landscape may put you at risk. Encouraging your neighbors to create fire-wise landscaping increases the fire safety of your home and your community. If you live in a planned community, encourage other homeowners to maintain a greenbelt around your community. This greenbelt can be a lawn or an arrangement of shrubs and low growing plants that can slow the spread of fire from the surrounding wildland.

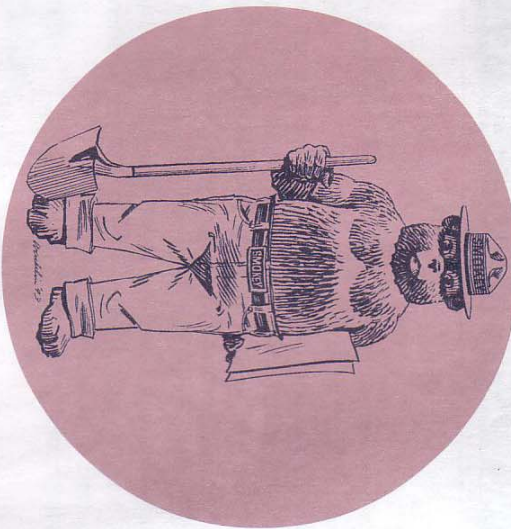
Your community can greatly reduce the risk of wildfire disasters through proper zoning, access and escape route planning, vegetation management, public education, and organized voluntary citizen action. In some high-risk forest and grassland areas, vegetation management practices such as prescribed burning and thinning can be effectively used to minimize the wildfire threat and ensure the health and long-term sustainability of these ecosystems.

## *Noxious weeds*

Noxious weeds in Montana are non-native plants that seriously impact native plant communities and adversely affect wildlife, agriculture, and recreation. For assistance in identifying or controlling noxious weeds, contact your local extension service or weed control district.



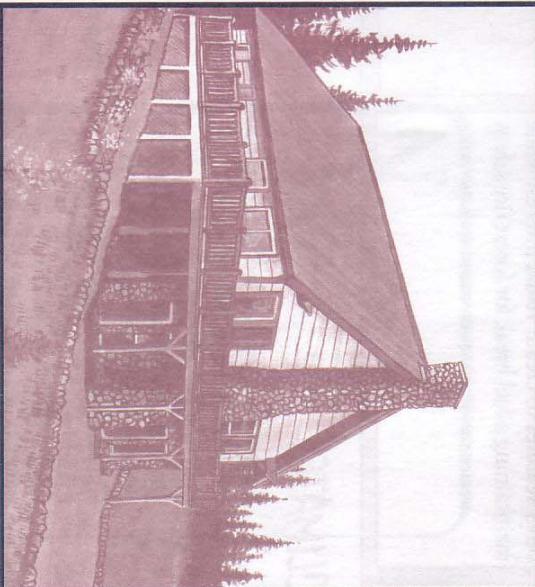
*Persons with disabilities who need an alternative, accessible format of this document should contact DNRC at the address shown. Phone 406 751-2269 or fax 406 751-2288.*



*To make an appointment for an on-site evaluation of your home and property, or for a presentation addressing the issues and concerns of living in forested wildland, call or write:*

*5,000 copies of this public document were published at an estimated cost of \$0.21 per copy, for a total cost of \$1,050.00, which includes \$1,050.00 for printing and \$.00 for distribution.*

# **FIREWISE** *Landscaping For Woodland Homes*



**You Need Defensible Space!**  
*Become involved in fire safety in your community.*



LARGE OR SMALL HARDWOOD TREE

EVERGREEN TREE

NON-EVERGREEN SHRUB

HERBS, VEGETABLES, GROUND COVERS, ANNUAL OR PERENNIAL FLOWERS

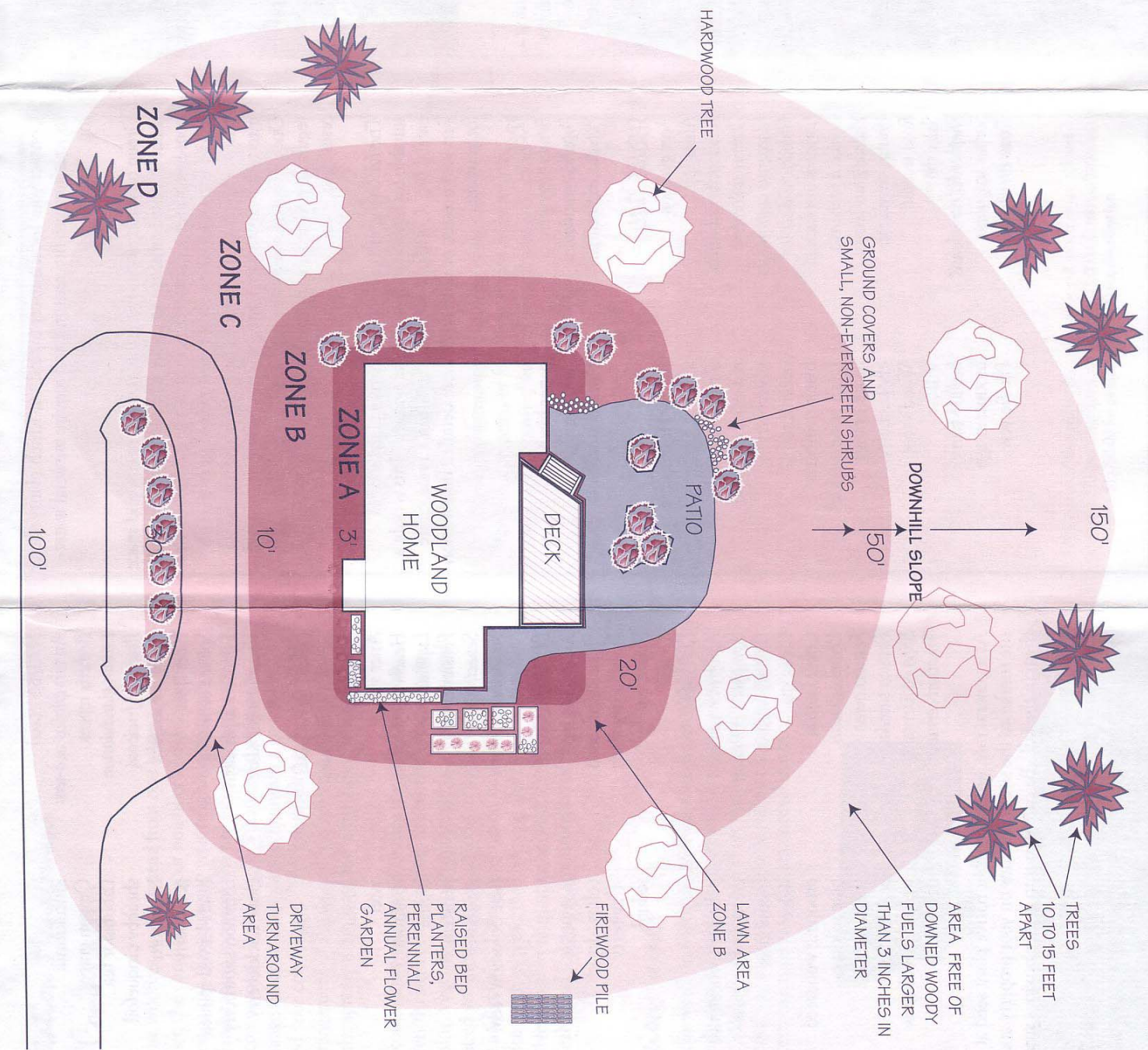
RAISED BEDS

N

**EXPLANATION**

Due to the slope, distances are increased on the north side of the house, which slopes downhill. Minimum distances are displayed on the south side of the house, where the terrain is flatter. The ZONES show the distances as measured from the house.

Steep Slope Zones		Flat Slope Zones	
A: First 3 feet	B: 3 to 20 feet	A: First 3 feet	B: 3 to 10 feet
C: 20 to 50 feet	D: 50 to 150 feet	C: 10 to 30 feet	D: 30 to 100 feet



# WOODLAND HOME ZONES

## ZONE A

This area, closest to the house, is the most critical for fire protection. Have nothing flammable, including tall grass, evergreen trees, and shrubs, next to the house. Also, avoid trees that overhang the house or deck as well as leaves, brush, firewood piles, bark, mulch, and other burnables. Clean gutters, roof, and deck of flammable debris. This area does not have to be barren. Maintain a well-kept lawn, or use crushed brick or river stone gravel instead of mulch. Use raised beds, large decorative rocks, stone walkways, patios, or other features to create visual interest while maintaining a fuel break for forest fire safety.

## ZONE B

Maintain a well-kept lawn, and avoid evergreens that catch fire easily and burn quickly. Occasional trees and shrubs should be at least 10 feet from the house and up to 20 feet away on the downhill side. Remove all downed woody fuel, such as logs or branches, and avoid using railroad ties or other flammable material in your landscaping. Freshly tilled flower beds, herb or vegetable gardens, rock gardens, stone walls, and driveways can also act as fire breaks.

## ZONE C

Rake or use a leaf blower to remove needles, leaves, and twigs at least 20 feet from the house and up to 50 feet on the downhill side. Firewood and other burnables should be stored at least 30 feet from the house. Maintain surface vegetation at 3 inches high or less. This will help keep fire from spreading to or from your house. It also provides a space for fire fighters to defend your home from fire.

## ZONE D

Space trees with 10 to 15 feet between tree crowns, and prune trees 10 to 15 feet up from the ground or one-third the total live crown height, whichever is less. Also, avoid fire ladders, where fire can climb from the ground into tree branches. Do this by pruning trees, spacing tall trees away from medium-sized trees, and using ground cover or small plants under tall trees. Shrubs should be well-maintained, kept free from dead material, and kept small. Control brush and weeds annually, and remove all downed woody fuels more than 3 inches in diameter.

## CLIMATE

- Summer heat and lack of precipitation lower the moisture levels in plant tissues.
- Dry winds evaporate plant and soil moisture. By mid to late summer, dry vegetation, dead leaves, and brush accumulate, leaving conditions ripe for a wildfire.
- Winds directly contribute to the intensity of fires. In grass, fire can move as quickly as the wind can spread it.
- Grasses on south- and west-facing slopes that turn brown earlier are more susceptible to dry winds blowing from these directions. These sides of your property need a greater amount of clearance of flammable vegetation.
- Heat from a flame travels farther in warmer conditions than in cooler temperatures.

## TOPOGRAPHY

Topography is another factor that contributes greatly to the severity and spread of wildfires.

- Fire spreads rapidly in narrow canyons. Proximity to canyon walls facilitates the spread of embers by the wind.
- Fire travels quickly up steep hills. Homes situated on hillsides must have a clearing of 150 feet or more that is free of downed woody fuels around the home. This reduces the fire's intensity and its rate of spread up a slope to a home. The steeper the hill, the faster fire travels, because rising heat preheats vegetation, dries it out, and makes it easier to ignite.

## VEGETATION

Flammable vegetation is often responsible for the intensity and spread of wildfires. By removing flammable native or ornamental plants, you can create a more fire-resistant landscape.

- Plants that are not highly flammable may become so if dead leaves, twigs, and other plant litter are not removed. This litter provides added fuel for fires.
- Flammable shrubs such as juniper and sage brush have oily resins that make them highly combustible. Along with pines and conifers, these should be removed or trimmed.
- Homesites situated along heavily vegetated areas create urban forests, which provide a lot of fuel for wildfires to burn.

# THE FIRESCAPE

A home in a woodland setting is a home surrounded by forest fire fuel and in real danger if a wildfire is on the loose.

Firewise landscaping can create a line of defense against the threat of wildfire by creating a safety zone or defensible space around your home.

The goal is to break the chain of flammable fuel between your home and the forest. Examine the yard. What can catch fire and carry it to the house? Do firefighters have a safety zone for battling the flames? Are you sure firefighters can safely find and reach your home?

## WHAT ARE WE GOING TO DO WITH THIS PIECE OF LAND?

You can landscape for fire protection while maintaining a natural look to your surroundings. Work with the plants native to the site, using the patterns found in nature.

Also, consider hardness zones and planting sites when choosing new plants. Where plants and trees are placed in your yard is just as important as the species when planning fire safety.

## ALL PLANTS BURN!

There are no fireproof plants, but some plants are more fire-retardant than others. Use these considerations when choosing plants and trees for your yard.

### Choose plants and trees with:

- A high moisture content in the leaves (leaves stay moist)
- A low oil or resin content (avoid pines)
- Minimal litter and accumulating debris
- Limited foliage, and few dead branches
- A lower overall height
- An open, loose branching habit
- Easy maintenance and pruning
- Drought resistance

Contact your local nursery to find out which plants native to your area are fire-resistant and require minimal watering.

Group together plants with similar water needs, and space them in your landscape to create a "fuel mosaic" that will conserve water and protect against a "fire ladder." (A fire ladder is created when plants are arranged next to each other in a way that conducts flames from the ground up into taller vegetation, where it is more difficult to stop.) Once a firewise landscape has been installed, it must be regularly watered and maintained to preserve its fire resistance.

The following are examples of native plant species suitable for landscaping woodland homes. This is only a partial list. Contact your local extension service, State Service Forester, or nursery for more detailed information for your site.

### TREES

- Betula papyrifera*
- Populus tremuloides*
- Populus trichocarpa*

### SHRUBS (Tall)

- Acer glabrum*
- Alnus* spp.
- Amelanchier alnifolia*
- Cornus stolonifera*
- Elaeagnus commutata*
- Holodiscus discolor*
- Lonicera involucrata*
- Lonicera wuhanensis*
- Philadelphus lewisii*
- Prunus virginiana*
- Rosa woodsii*
- Salix* spp.
- Shepherdia canadensis*
- Sorbus scopulina*
- Taxus brevifolia*

- paper birch
- quaking aspen
- black cottonwood
- Rocky Mountain maple
- alder
- serviceberry
- red-osier dogwood
- silverberry
- oceanspray
- black twinberry
- Utah honeysuckle
- mock orange
- chokecherry
- Wood's rose
- willow
- buffalo berry
- mountain ash
- Pacific yew

### SHRUBS (Low)

- Arctostaphylos uva-ursi*
- Berberis repens*
- Ledum glandulosum*
- Potentilla fruticosa*
- Rhamnus alnifolia*
- Ribes* spp.
- Spiraea betulifolia*
- Symphoricarpos albus*
- Vaccinium globulare*

- kinnikinnik
- Oregon grape
- Laborador tea
- shrubby cinquefoil
- buckhorn
- gooseberry
- birch-leaved spiraea
- common snowberry
- globe huckleberry

### FORBS (perennial)

- Achillea millefolium*
- Arnica* spp.
- Aster* spp.
- Heuchera cylindrica*
- Lupinus* spp.
- Penstemon* spp.
- Senecio* spp.
- Smilacina racemosa*

- yarrow
- arnica
- aster
- alumnroot
- lupine
- penstemon
- groundsel
- false Solomon's seal

### GROUND COVERS

- Anemaria* spp.
- Dryas drummondii*
- Fragaria virginiana*
- Sedum* spp.

- pussy-toes
- yellow dryad
- strawberry
- sedum

### GRASSES

- Agropyron caninum*
- Agropyron cristatum*
- Bromus vulgaris*
- Carex* spp.
- Cinna latifolia*
- Elymus glaucus*
- Festuca ovina*
- Festuca subulata*
- Stipa occidentalis*
- Trisetum cernuum*

- pubescent wheatgrass
- crested wheatgrass
- brome grass
- sedge
- drooping woodreed
- blue wildrye
- sheep fescue
- bearded fescue
- western needlegrass
- trisetum

As a general rule, one can gather native plant seed at a site similar to the site conditions on your property and sow them in the fall. Be careful not to gather noxious species.

# PROTECT YOUR HOME AND FAMILY FROM WILDFIRES

People living on forested homesites should be prepared for wildfires.

The Department of Natural Resources and Conservation distributes this checklist to help residents of rural homesites reduce fire hazards endangering their property. By following the measures outlined here, homeowners will reduce the risk that an accidental fire will start on their property. They will also prevent fires that start elsewhere from spreading onto their homesites.

This information is provided as a public service. Following it will help you protect your home against wildfire. The guidelines are intended to be general. Often, other specific measures may be necessary or advisable for your particular home and property.

The Department of Natural Resources and Conservation cannot guarantee, and does not accept liability for, the fire safety of your home and property.

**LEARN TO LIVE  
SAFELY WITH THE  
THREAT OF  
WILDLAND FIRES!**



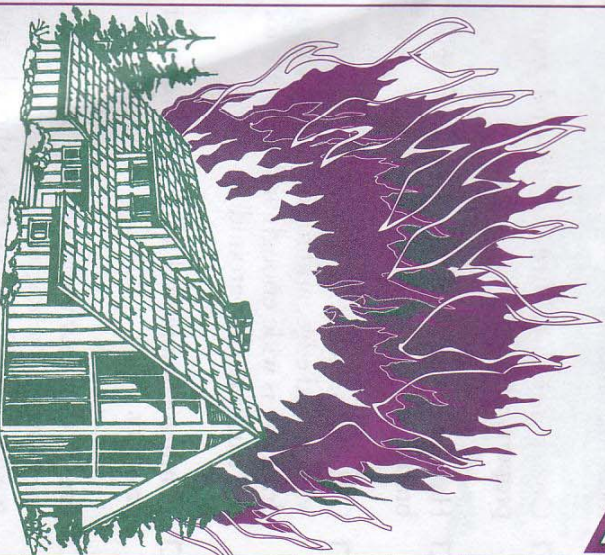
**FOR HELP  
OR INFORMATION,  
CALL THE**

Montana Department of  
Natural Resources and Conservation



# PROTECT YOUR HOME AND FAMILY FROM

# WILDFIRES





# FORESTED HOMESITE FIRE PREVENTION CHECKLIST



- Reduce the forest density around your home by thinning, or by harvesting posts, poles, and firewood. Space your trees so that there is 15 feet between the crowns. This spacing will reduce the chance that a fire will spread from tree to tree.
- Remove "ladder fuels." Prune dead branches from the lower portions of all trees and shrubs. On larger trees, prune all branches up to 10 feet above the ground. This will reduce the chance that a fire will spread from the ground to the tree tops.
- Dispose of all slash and flammable debris from your property. If you intend to burn debris, obtain a burning permit from your local fire officials.
- Construct fuel breaks around your property's boundaries.
- Have the power company cut overhanging branches away from power lines.
- Clear brush back 10 feet from your driveway or road edge, and make sure that your driveway is wide enough and adequate for fire trucks to turn around.
- Eliminate dumps and trash piles from your property.
- Ensure that your water supply is usable during a fire emergency, and keep garden hoses readily available. Keep rakes, shovels, and buckets in a handy location.

- Stack your firewood at least 100 feet away from the house, and not on the downhill side.
- Provide a 30-foot "safety zone" around your home by landscaping with fire-resistant plants and planting a lawn. If you live on a slope, the safety zone should be larger. Keep lawns watered and mowed, and remove the clippings. These measures will prevent fire from reaching your house.



- Clean needles, leaves, branches, and other flammable debris from the roof and gutters.
- The roof should be made of fire-resistant material. If you have a wood shake roof, install a sprinkler system on the roof.
- Provide a 15-foot clearance between your chimney and the nearest tree.
- Make sure your chimney extends 3 feet above your roof, and cover it with a mesh screen or spark arrestor.
- Locate the propane tank at least 10 feet away from the house, so that the tank can be shut down in case of fire.
- Keep storage areas clean, and do not allow oily rags, flammable materials, or newspapers to accumulate.
- Wet down fireplace or stove ashes, and dispose of them in a metal can.
- Display your name and house number in front of your property to assist firefighters in locating your home.
- To keep out hot embers, enclose open spaces beneath features such as decks, balconies, and stilts. Screening is sufficient.

*Date of the last fire prevention check*

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# Home Fire Safety News

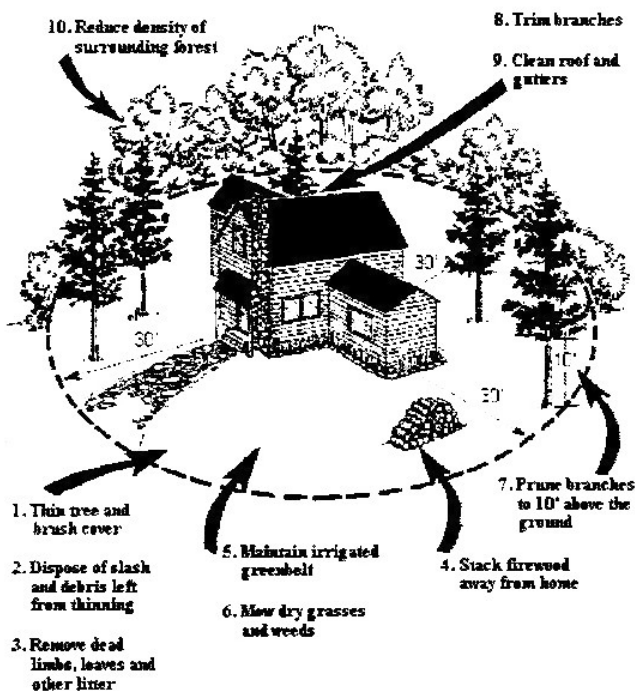
Wildland Fire Prevention



July 2000

## Could your home survive a wildfire?

Many homes are destroyed by wildland fires each year. Often, these homes could have survived had the owners taken preventative action beforehand. Don't let your home become part of the fuel of a wildfire! Follow these fire prevention tips and become "Firewise."



## Firewise Landscaping

Firewise landscaping can create a line of defense against the threat of wildfire by creating a safety zone or "defensible space" around your home.

The goal is to **break the chain** of flammable fuel between your home and the forest. Examine the yard. What can catch fire and carry it to the house? Do firefighters have a safety zone for battling the flames? Are you sure firefighters can safely find and reach your home?

You can landscape for fire protection while maintaining a natural look to your surroundings. Having firewise landscaping does not mean you are left with a barren landscape. Work with the plants native to the site, using the patterns found in nature. Also, consider hardiness zones and planting sites when choosing new plants.

There are no fireproof plants, but some plants are more fire-retardant than others. Use these considerations when choosing plants and trees for your yard.

Group together plants with similar water needs, and space them in your landscape to create a "fuel mosaic" that will conserve water and protect against a "fire ladder." (A fire ladder is created when plants are arranged next to each other in a way that allows flames to move from the ground up into taller vegetation, where it is more difficult to stop.) Once a firewise landscape has been installed, it must be regularly watered and maintained to preserve its fire resistance.

Be sure to visit the Firewise website at [www.firewise.org](http://www.firewise.org)

# Firewise Checklist

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- Display your name and house number in front of your property to assist firefighters and other emergency personnel in locating your home.

## Within three feet of structures:

- Maintain an area of non-combustible material within 3 feet of structures—flowers, plants, concrete, gravel, mineral soil, etc.

## Within 10 feet of structures (increase distance below structure if slope is greater than 10%):

- Maintain surface vegetation at 3" or less in height.
- Remove all downed trees, brush, limbs, etc.

## From 10 to 30 feet of structures (increase distance below structure if slope is greater than 10%):

- Thin trees to 10 feet between crowns.
- Prune limbs of remaining trees to 15 feet in height or one-third of total live crown, whichever is less.
- Maintain surface vegetation at 3 inches in height or less.
- Remove all downed trees, brush, limbs, etc.

## Thirty feet from structures and beyond:

- Thin trees to 10 to 15 feet between crowns.
- Prune limbs on remaining trees to 15 feet above the ground

## Other Practices:

- Clear or reduce vegetation from alongside your driveway or road edge, and make sure your driveway is wide enough and adequate for fire trucks to turn around.

- Have the power company cut overhanging branches away from power lines.

- Dispose of all slash and flammable debris from your property. If you intend to burn, follow all applicable open burning regulations and requirements.

- Clean the roof and gutters of needles, leaves, branches, and other combustible debris.

- Provide a 15 foot clearance between your chimney and the nearest branches.

- Make sure your chimney extends 3 feet above the roof and is capped with an approved spark arrester.

- Your roof should be of fire-resistant material. A wood shake roof should be treated with UL approved fire retardant chemical or replaced.

- Enclose open spaces beneath features such as decks, balconies, and stilts to keep out hot embers.

- Locate the propane tank at least 10 feet from the structure and within a 10 foot clearing.

- Stack your firewood at least 100 feet from the house, and always on the uphill side.

- Ensure that your water supply is usable during a fire emergency. Keep garden hoses readily available.

- Keep storage areas clean. Do not allow oily rags, flammable chemicals, or newspapers to accumulate.

- Make sure your motorized garden equipment, such as lawnmowers and chainsaws, have approved and functioning spark arresters.

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This checklist is provided to help reduce fire hazards endangering your property. By following the suggestions listed here, you can help yourself to reduce the risk that an accidental fire could start on your property, and also the risk that a fire starting elsewhere could cause damage to your property.

If you would like additional information, or if you have further questions, please contact your local USDA Forest Service, Montana DNRC, or Fire Department Office.





**APPENDIX C – ANNUAL OPERATING PLANS**