Flathead County

Community Wildfire Protection Plan

2011 Update

Prepared By

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Flathead County

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FLATHEAD COUNTY COMMUNITY WILDFIRE PROTECTION PLAN

1.0 EXECUTIVE SUMMARY

1.1. OVERVIEW

Flathead County is located in Northwest Montana, bordered by Canada on the North, the county encompasses 3,361,810 acres or 5,253 square miles. Approximately 94% of the land mass is National Parks, National or State Forest, agricultural and corporate timber land, thus confining development to the remaining 6% of the area. According to the 2010 Census, Flathead County is among the fastest growing, and the 4th most populated county in Montana, with 90,928 residents. There are 3 incorporated cities in the county, Kalispell, which is the largest, has a population of 19,927. Followed by Whitefish, with a population of 6,357 and Columbia Falls, with a population of 4,688. There are also several smaller full service communities in the county.

Flathead County has a high degree of potential for extended fire seasons ranging from March through October or November. Flathead County has rural fire districts, municipal fire departments and fire service areas providing fire and emergency services throughout Flathead County. Flathead County has the potential to interact with not only DNRC, but also Glacier National Park the Flathead NF, the Salish Kootenai Indian Reservation and Canada thus providing a high degree of interagency complexity. As with numerous counties in Montana, there is an increasing development of wildland-urban interface areas, with potential access problems and a general lack of understanding of the need for an asset protection zone to protect the improvements.

1.2. PROCESS OVERVIEW

The Flathead County Community Wildfire Protection Plan (2010 Update) -- hereafter known as “CWPP,” has been developed to assist Flathead County, Flathead County’s Fire Departments and the federal, state, tribal wildland agencies in the identification of private and public lands at risk of severe wildland fires and to explore strategies for the prevention and suppression of such fires. The CWPP is intended to outline the Flathead County’s plans and activities targeted at reducing the risk of a catastrophic wildland and/or wildland-urban interface (WUI) fire event in Flathead County. The intent of this planning document will ensure that the health, safety and welfare of Flathead County’s citizens remain secure from the threats of structural and wildland fires in the county.

1.3. Overall Goals

The CWPP will improve planning and fire suppression tools for county and the county fire departments alike, which will result in Flathead County providing its citizens with tools to live more safely in a fire prone ecosystem. The CWPP fosters the preservation of the economy of Flathead County by maintaining and improving the efficiency of fire protection in the County.

1.4. Methodology

Fire Logistics, Inc. was contracted to provide a five-year update of Flathead County's Community Wildfire Protection Plan. Specifically, the following changes were part of the CWPP's update:

- An Executive Summary was added.
- Major components were retained and updated.
- The 2005 Title page was deleted and replaced.
- The 2005 Approval Page was deleted and replaced with a new signature page
- The Table of Contents was revised.
- The 2005 Defining the Wildland-urban Interface was revised.
- The 2005 Plan Review and Summary were deleted.
- The 2005 Fire History Map, Figure 8 was deleted and replaced with a new fire history map in the Map Section.
- The 2005 Fire Regime Condition Class Maps, Figure 7 and 9 were deleted.
- The 2005 Glossary was removed, with a link to the NWCG Glossary added in the Appendicies.
- A new Chapter 10 – Mitigation Strategy – The Action Plan was added.
- The CWPP maintenance section was added with an emphasis on annual reviews.
- New appendices were added and extraneous information was removed.
- The 2005 Appendix A was moved to Section 12.2.
- The 2005 Appendix B was deleted.
- The 2005 Appendix C was deleted.
- The 2005 Appendix D was deleted and replaced with Sections 12.3 – Public Education and 12.4 – Resources.
- A Map Section was added in Section 12.5.
- Maps 16 and 16b were deleted and new WUI map was developed, which is included in the Map Section.
- Attachment 1 was revised to include the updated North Fork CWPP.
- Attachment 2 was added to include the Whitefish Area CWPP.
- Attachment 2 was added to include the Elkhorn CWPP.

The Flathead County Community Wildfire Protection Plan is a living, expandable document that will have new information added and changes made as needed. The plan's purpose is to improve wildland fire protection through projects and programs, and therefore, opportunities for changes and public involvement will exist as wildland fires occur and mitigation continues. Details on the plan's maintenance and continued public involvement are further outlined in Chapter 11.

1.5. Mitigation Strategy – The Action Plan

A summary of the specific action is provided, which were developed in the *mitigation plan* of Chapter 10 to include mitigation goals such as evaluate, upgrade, and maintain emergency wildfire protection

responsibilities, decrease fuels, etc. The planning priorities of the CWPP are: protect human health and life, protect critical community infrastructure, protect private property, and protect natural resources. The existing mitigation efforts are described, which include asset protection zones, neighborhood preparedness and fire protection response, and the coordination of prevention programs, protection projects and response plans. Several recommended projects and programs are included as part of the mitigation effort for Flathead County.

2.0 INTRODUCTION

In December 2003, the United States Congress enacted the Healthy Forests Restoration Act (HFRA). This landmark legislation recognizes the role local communities can play in comprehensive forest planning in partnership with federal agencies responsible for public land management. The HFRA gives the US Forest Service (USFS) and the Bureau of Land Management (BLM) the statutory incentive to consider the priorities of local communities as they develop forest management and hazardous fuel reduction projects across the landscape. In order for local communities to participate fully in the HFRA process and implement meaningful projects on the ground, it is necessary for these communities to develop a Community Wildfire Protection Plan (CWPP).

The CWPP process, as outlined in the HFRA, provides flexibility in development of the plan itself. One of the most important factors is the assembly and active participation of various stakeholders concerned with a collaborative process wherein the needs and priorities of the local communities can be clearly articulated and mutually accepted. This community-based approach allows for local delineation of the wildland-urban interface, communities at-risk and the prioritization of hazardous fuel reduction projects.

The wildland-urban interface (WUI) is commonly described as the zone where structures and other human development meet and intermingle with undeveloped wildland or forest fuels. This WUI zone poses tremendous risks to life, property, and infrastructure in associated communities and is one of the most dangerous and complicated situations fire fighters face.

For Flathead County, the wildland-urban interface is defined as that area in or immediately adjacent to wildland or forest fuels within 1.5 miles of residential structures, developments, or private properties suitable for development or for residential use. This zone may be adjusted based on site specific analysis and mapping using logical boundary locations such as geographic features or fuel breaks. When subdivision development is proposed or occurs that is physically outside the established wildland-urban interface area as adopted by Flathead County, then the wildland-urban interface boundary will automatically include the subdivision development.

Individual features that will also be included as wildland-urban interface include:

- municipal or community watersheds,
- access roads needed for evacuations,
- important infrastructure including utility corridors, transportation corridors, and electronic sites necessary for emergency operations.

The boundary of the WUI may be adjusted over time as property status or development changes.

The HFRA emphasizes the need for federal land management agencies to work collaboratively with the communities in developing hazardous fuel reduction projects, and it places a priority on treatment areas identified in the CWPP. In addition, the resultant CWPP provides local communities with an opportunity to influence where and how federal agencies implement fuel reduction projects on federal lands and how additional federal funds may be distributed for projects on adjacent non-federal lands.

This plan was developed using the eight-step process outlined in "Preparing a Community Wildfire Protection Plan – A Handbook for Wildland-urban Interface Communities"[1]. Additionally, this plan is intended to serve as an addendum to the Flathead County Pre-Disaster Mitigation Plan.

3.0 PLAN OVERVIEW

Beginning in the summer of 2004, the Flathead Community Wildfire Protection Plan Steering Committee (Steering Committee), with funds from the Northwest Regional Resource Conservation Development Area Incorporated (RC & D) and Flathead County, embarked on the development of the "Flathead County Community Wildfire Reduction/Migitation Plan" (FCWFR), now re-named the Flathead County Community Wildfire Protection Plan (CWPP). GCS Research, a Missoula-based geospatial information technology company, was contracted to assist the Steering Committee in the development of a comprehensive fuel reduction and mitigation plan. Emphasis was given to these goals:

1) community-based involvement in defining at-risk priority areas;
2) emphasis on involving local fire district chiefs responsible for community fire protection across the county;
3) collaboration and information exchange with responsible stakeholders interested in furthering the planning process (many of these parties are represented in the Steering Committee);
4) use GIS technology for data aggregation, analysis, and the public involvement process itself;
5) utilization of the best available GIS data for the study area;
6) utilization of existing homeowner fire protection programs such as FIREWISE;
7) the compilation of the planning results in a dynamic, digital document that would serve the community as it moves toward continued and meaningful fuel mitigation projects across Flathead County.

All GIS data associated with the priority areas within the County are hosted and maintained by Flathead County GIS department for delivery as an interactive, Web-based mapping application. The GIS data for this plan include the cadastral (land parcel) database for the study area. This allows for the calculation of at-risk land and structure values for individual or aggregated parcels within each of the identified priority areas identified in the plan. This will assist with obtaining FEMA (Federal Emergency Management Agency) fuel mitigation project funds necessary to reduce the risk of wildland fire to communities located in the study area.

Several citizen groups have already implemented community wildfire protection and fuel mitigation planning processes.[2] In some cases, on-the-ground hazardous fuel treatments projects have been implemented and/or are in the process of being implemented in zones assessed as at-risk priority areas. For these overlapping priority areas identified in this plan, special recognition should be given to the collaborative, public-private nature of the fuel treatment projects currently underway or in the planning process.

[1] www.safnet.org/policyandpress/cwpp.cfm

[2] The plans are included as attachments.

Homeowner awareness and the willingness to reduce risk across boundaries in meaningful, measurable, and closely monitored ways encapsulate the legislative intent and spirit of the HRFA, the National Fire Plan, and the 10-Year Comprehensive Strategy. Bottom-up, community-based forest management represents a viable means toward land stewardship and the ultimate goal of protecting lives and property within the growing wildland-urban interface.

In order to achieve a prime objective of the CWPP process, the plan's foundation rests upon the collaborative efforts of the Flathead County Steering Committee, which brings together diverse stakeholders from all levels of government and other interested parties. For the CWPP update, efforts were made to utilize the members of the Flathead County Steering Committee, which was reconstituted as the Flathead Interagency Fire Prevention Advisory Committee.

In addition to the solid collaborative starting-point for the plan as provided by the Steering Committee, one of the over-arching goals of the planning process was to engage local community members to assist in the prioritization process. To accomplish this, a series of 10 meetings were conducted throughout the planning process. Valuable community-based input was captured and is presented in this report.[3]

Specifically, local fire chiefs from Flathead County fire districts were asked to review and comment upon the fire hazard priority areas within each of the districts. Each Fire District was presented with an informational mailing, which included a fire district map, colored markers, and materials outlining the planning process. Fire district personnel were asked to identify their areas of concern on the supplied map. Follow-up meetings, open to the public were scheduled and held with each fire district. This interaction was valuable both in terms of improving the quality of priority area assessment and building consensus in the county-wide planning process. Priority areas identified by Fire District Chiefs have been digitized into GIS format and are hosted with the Flathead County GIS Department interactive internet map server.

The resultant report, analyses, priority area assessments, and fuel mitigation overview represent a geospatially-enabled Flathead County Community Wildfire Protection Plan.

[3] Detailed community outreach information includes public notices, newspaper articles, radio, television coverage, personalized mailings, emails and telephone calls.

4.0 VEGETATION OVERVIEW

The Flathead County CWPP assesses conditions for Flathead County, Montana. The area of interest is approx. 5,223 square miles (3,361,810 acres) and contains multiple communities across a diverse landscape. Flathead County is one of the faster growing areas in Western Montana, the 2010 census tallied the population of Flathead County at 90,929, a 22% increase from the 74,471 reported in the 2000 census.[4]

Climatically, the average annual temperature is 42.6° F, the winter average temperature is 36° F, and the summer average is 78° F. The average annual rainfall is 16.51 inches, average annual snowfall is 55.2 inches (ranging from 16 – 100 inches per year), and the average annual growing season for agricultural productivity ranges between 104-129 days. Given the extreme topographical diversity, elevations range from 2,000 feet to as high as 10,000 feet within the Northern Rocky Mountain cordillera. This elevation gradient produces a range of vegetative communities indicative of the Northern Rocky Mountain Forest-Steppe Coniferous Forest – Alpine Meadow eco-region province as defined by Bailey.[5]

Indicative of the moisture, temperature, topographical variation, and continental location, the biogeography of the region is diverse and represents a clear gradient of vegetative communities ranging from warm-dry habitat types to cold-wet habitat types. The dominant forest types within the study area include:

- dry montane forests
- moist montane forests
- lower subalpine forests
- upper subalpine forests

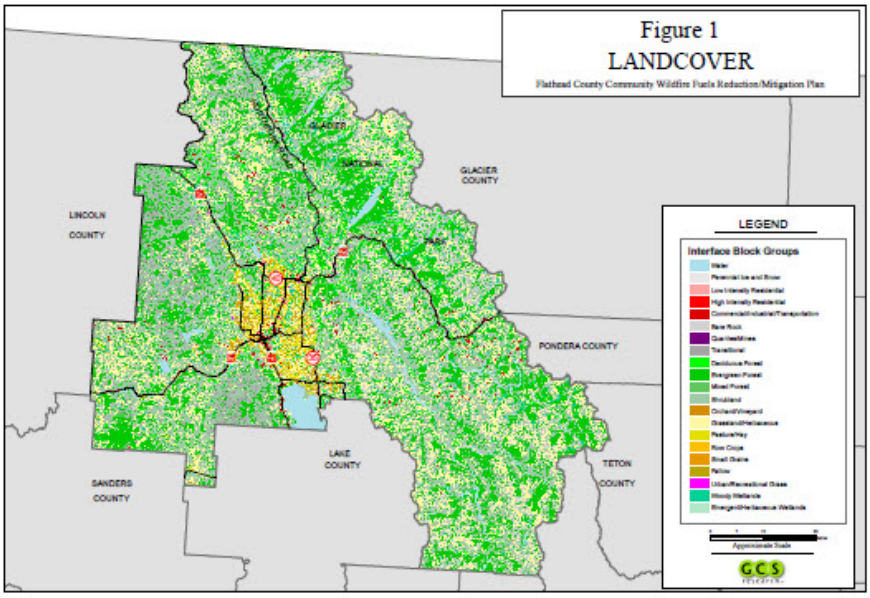

Figure 1: Flathead County study area showing landcover. From USGS National Landcover Dataset, 2000.

[4] http://www.census.gov/

[5] http://www.fs.fed.us/colorimagemap/images/m333.html

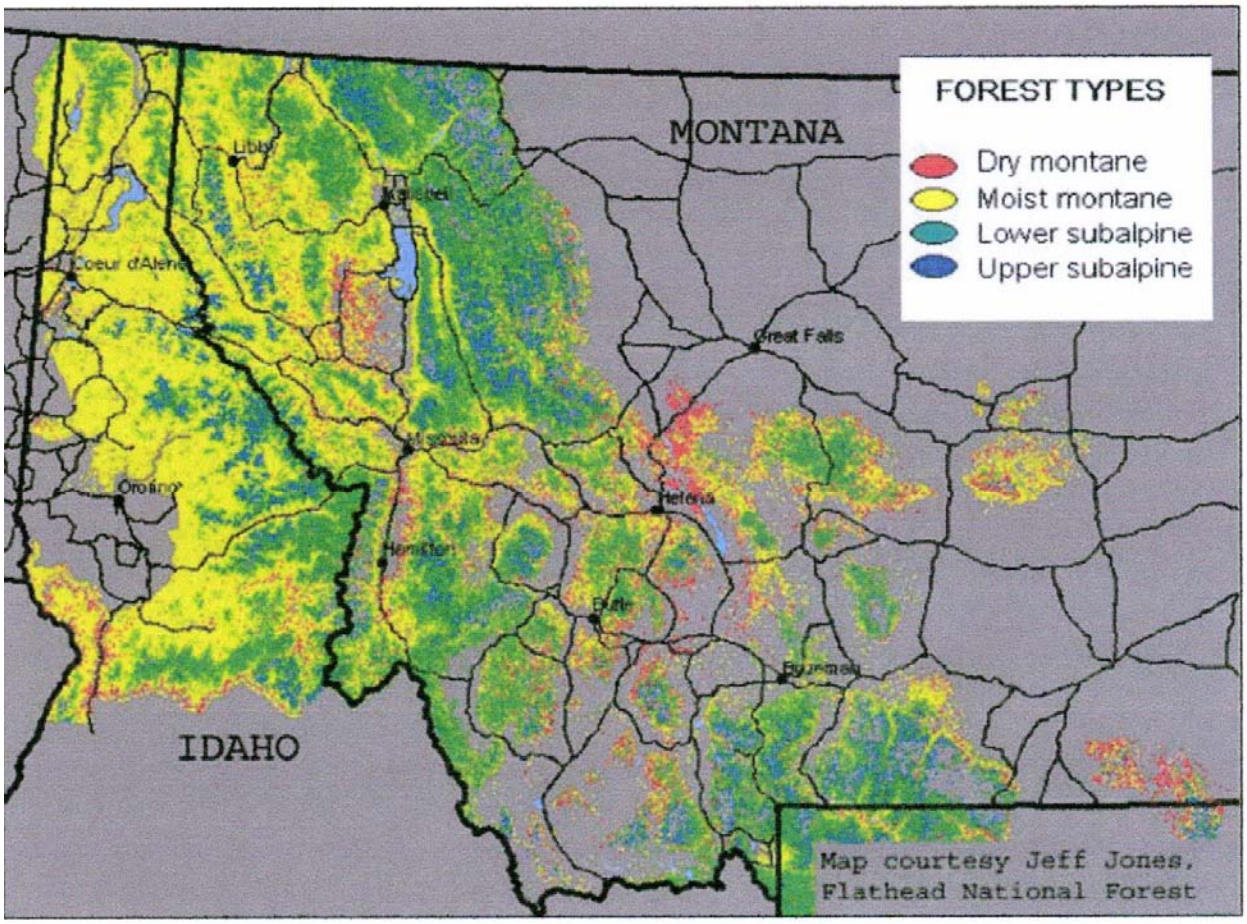

Figure 2: Forest Types across study area.

Each of these unique forest types represents complex successional pathways and disturbance regimes that define existing conditions across a landscape affected historically by long-term Native American inhabitation (ca. 12,000 B.P. – before present) and relatively recent Euro-American settlement (mid- to late-1800s to present).

4.1 Dry Montane Forests

Characterized by warm and dry conditions with less than 20 inches of rain per year, ponderosa pine, Douglas-fir, and western larch species dominate these portions of the study area. Depending on the actual rainfall totals and elevation, combinations of these forest types tend to be concentrated in the valley-bottoms and riparian corridors.

Dry montane forests throughout the study area typically experienced a frequent, low-intensity historical fire regime. Successful fire exclusion within many of these forest types has resulted in the accumulation of fuel, thereby altering fire behavior and effects.

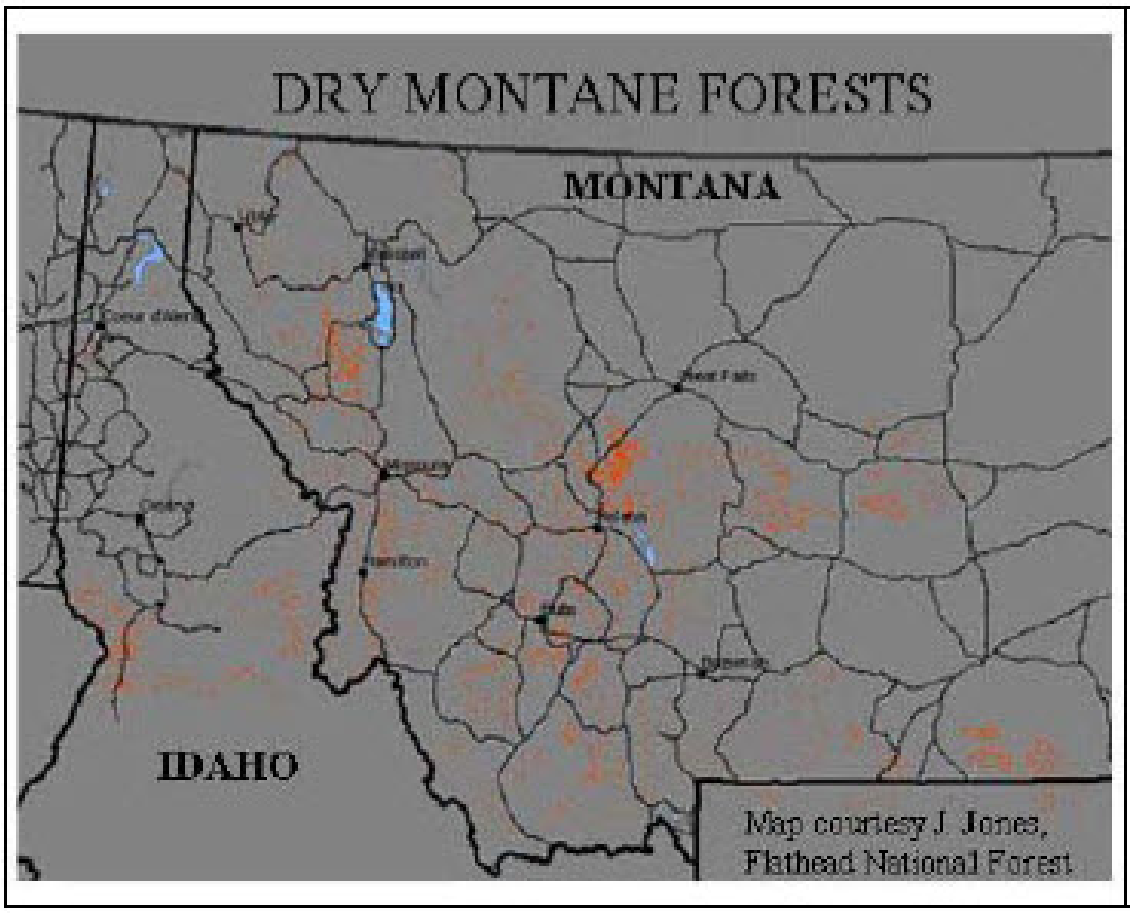

Figure 3: Dry Montane Forests across study area.

4.2 MOIST MONTANE FORESTS

As one progresses upward along the elevation gradient within the study area, the mid-elevation forest types are moist, receiving at least 20 inches of mean annual precipitation per year. These wetter conditions allow drought tolerant such as ponderosa pine, Douglas-fir, and western larch to intermingle with less drought-tolerant species such as grand fir, western redcedar, western hemlock, Englemann spruce, and subapline fir. These "mixed conifer" forests co-occur in varying combinations throughout the study areas and can be found generally in the 3000-7000 foot elevation bands. As is the case with each of the forest types, depending on actual precipitation, temperature, and soil conditions as well as disturbance regimes, varying concentrations and assemblages occur through the study area.[6] Compared

[6] Arno, S. F. 1979. Forest regions of Montana. USDA Forest Service, Intermountain Forest and Range Experiment Station, Research Paper INT-218; Cooper, S. V., K. E. Neiman, R. Steele, and D. W. Roberts. 1991 (rev.). Forest habitat types of northern Idaho: a second approximation. USDA Forest Service, Intermountain Forest and Range Experiment Station, General Technical Report, INT-236; Peet, R. K. 1988. Forests of the Rocky Mountains. Pp. 63-102 in M. G. Barbour and W. D. Billings, editors, North American Terrestrial Vegetation. Cambridge University Press, New York, New York, USA.

with the dry montane forest types, moist montane forests tend to burn less frequently (longer fire return interval), and with a higher severity. As such, they are typically characterized as being moderate-frequency and mixed-severity, resulting in a patchy mosaic indicative of much of the forest communities present across the study area.

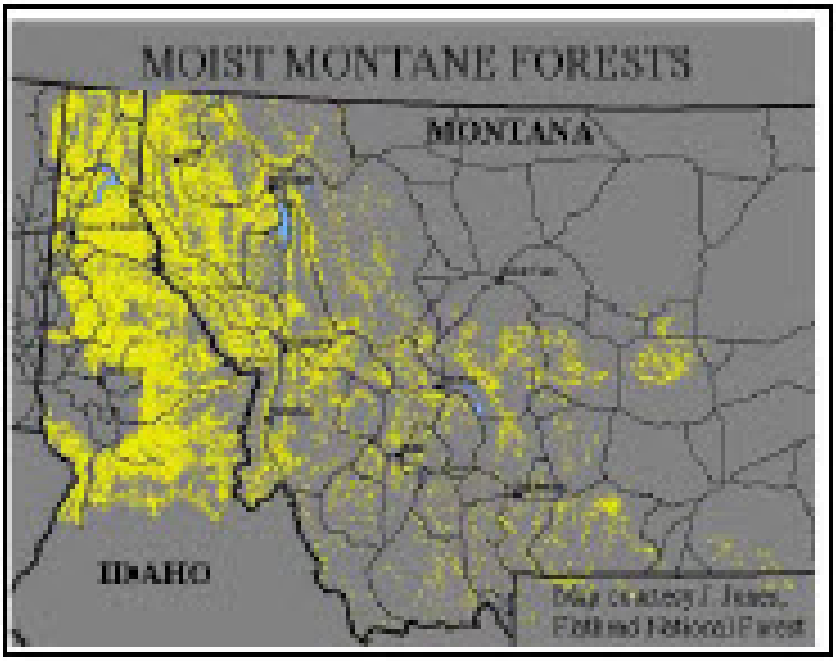

Figure 4: Moist Montane Forests across study area.

4.3 Lower Subalpine Forests

The third forest type found within the study area is lower subalpine forests located in generally cool, moist sites between 5,000 and 7,000 feet in elevation. Average July temperatures in this forest type fall between 60° and 64° F, and mean annual precipitation ranges from 20 to 50 inches. Much of the annual precipitation occurs in the form of snow. Englemann spruce and subalpine fire dominate many of the stands found in this forest type. Mountain hemlock and lodgepole pine stands are also present. In particular, continuous, pure stands of lodgepole pine occur in the study area in areas that are relatively cold and dry and wherein lodgepole pine is able to successfully out-compete other conifers based upon its particular evolutionary relationship with an infrequent, high-severity stand replacement fire regime.

Depending upon temperature and precipitation microclimates within the lower subalpine zone, Douglas-fir, western larch, western white pine, and whitebark pine are also found in the study area.[7] Lower subalpine forests are characterized as experiencing infrequent, mixed-severity to severe fire regimes.

[7] Arno, S. F. 1979. Forest regions of Montana. USDA Forest Service, Intermountain Forest and Range Experiment Station, Research Paper INT-218; Cooper, S. V., K. E. Neiman, R. Steele, and D. W. Roberts. 1991 (rev.). Forest habitat types of northern Idaho: a second approximation. USDA Forest Service, Intermountain Forest and Range Experiment Station, General Technical Report, INT-236; Pfister, R. D., B. L. Kovalchik, S. F. Arno, and R. C. Presby. 1977 (rev.). Forest habitat types of Montana. USDA Forest Service, Intermountain Forest and Range Experiment Station, Research Paper, INT-34.

One exception to the generalization is the pattern exhibited within certain lodgepole pine stands. Given the relatively dryness of lodgepole communities within the lower subalpine forests, it is possible to have more frequent understory burns occur. Moreover, given periodic disease and insect infestation disturbance cycles (e.g., mountain pine beetle), crown fire behavior is supported and often experienced within lodgepole pine dominated stands. Correlations between historical fire regime variation within lodgepole pine stands and insect infestation represent a unique example of the complexity associated with understanding the variety of permutations possible between forest type and historical fire regime condition class generalization within the study area.

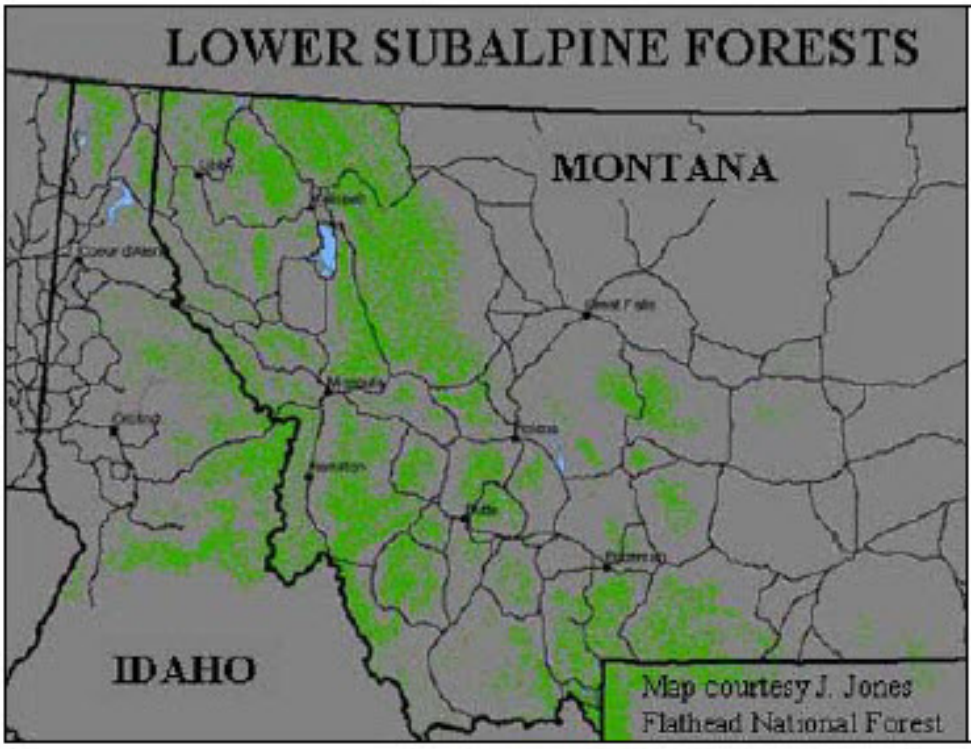

Figure 5: Lower Subalpine Forests across study area

4.4 Upper Subalpine Forests

The upper subalpine forests occur in the higher elevations of the study area, generally above 7,000 feet and extending to the upper timberline. Average July temperatures are cool and range from 50 to 60 F, and the mean annual precipitation ranges from 25 to 60 inches. The majority of the precipitation is received in the form of snow. Given the relatively harsh conditions present at these elevations, and the limited growing seasons, certain species such as ponderosa pine, Douglas-fir, western larch, and western white pine are generally not found. The most cold-tolerant species such as subalpine fir, Englemann spruce, alpine larch, lodgepole pine, and whitebark pine persist in the upper subalpine zone. In general,

and while there is notably an ecologically important variation around the mean, upper subalpine forest fires tend to occur infrequently with mixed-severity.[8]

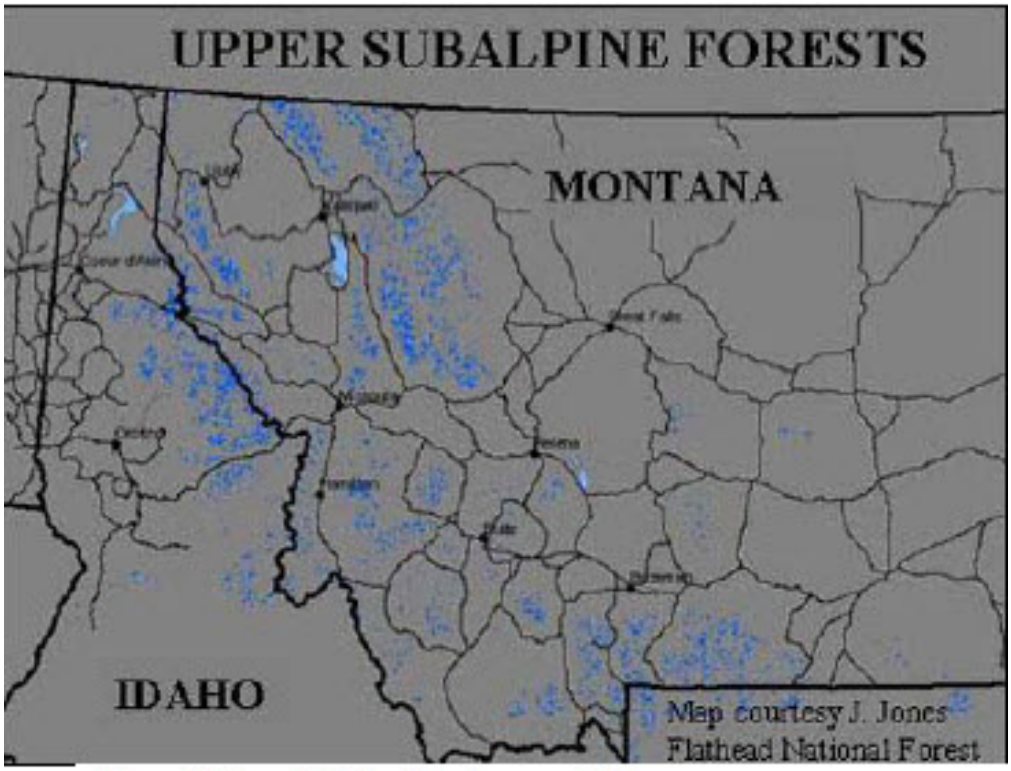

Figure 6: Upper Subalpine Forests across study area.

[8] Cooper, S. V., K. E. Neiman, R. Steele, and D. W. Roberts. 1991 (rev.). Forest habitat types of northern Idaho: a second approximation. USDA Forest Service, Intermountain Forest and Range Experiment Station, General Technical Report, INT-236; Pfister, R. D., B. L. Kovalchik, S. F. Arno, and R. C. Presby. 1977 (rev.). Forest habitat types of Montana. USDA Forest Service, Intermountain Forest and Range Experiment Station, Research Paper, INT-34.

5.0 Historical Fire Regimes and Fire Condition Class

5.1 Fire Regime

Within the study area, a basic understanding of fire regime by forest type is extremely significant because fire represented the dominant disturbance force affecting the structure and function of these forest communities.[9]

Fire history analysis between 1940 and 2003, as depicted in Figure 8, shows the extent of fires within the study area. This analysis is by no means complete or exhaustive, and does not take into account pre-1940 wildland fires that affected the area and contributed to the existing forest mosaic.[10]

The complex, combined legacy of alterations in fire regimes, changes in land use practices due to increased resource utilization and patterns of inhabitation, and federal land management practices (fire suppression) serve as the underlying necessity for the CWPP.

The landscape pattern of fire occurrence within a given forest type can be described as a fire regime. A fire regime consists of spatial (place) and temporal (time) factors. Within the Northern Rockies ecoregion and the encapsulated Flathead County study area, historical fire regimes are characterized by the frequency and severity of fires occurring within a forest type for a given geographical area and historical period. Frequency addresses the average return interval of a fire event for a particular geographical area. Severity, while defined in various ways, generally can be considered a measure of the effects of a fire event upon the both overstory and understory components of the forest type.[11]

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[9] Fischer, W. C., and A. F. Bradley. 1987. Fire Ecology of western Montana forest habitat types. USDA Forest Service, Intermountain Forest and Range Research Station, General Technical Report, INT-223.

[10] See http://www.fs.fed.us/r1/cohesive_strategy/datafr.htm. As stated in the metadata document for the fire history data: "Abstract - This layer was initiated to provide the National Fire Plan, Cohesive Strategy Team, with the best, currently available data on fire history in the Region One area. A regional fire history grid did exist, but newer data sets were available for 8 of the 13 forests. The previous data, and existing data for the remaining forests was less than complete or non-existent. Data was collected from many sources and combined into a common format across the region. Fire data was obtained from individual forests, a regional fire grid, historical records, and the 2000 and 2001 fire perimeters obtained from the R1 website. The information was collected and put into a polygon coverage to facilitate conversion to ArcGIS in the near future. An item for each of 7 decades, 40s, 50s, 60s, 70s, 80s, 90s, and 00, was populated with the year of each fire. This also allowed for multiple year fires. This coverage has some information lacking and it would be good to add better data as it becomes available to make the coverage more useful and consistent."

[11] Agee, J. K. 1990. The historic role of fire in Pacific Northwest forests. Pp. 25-38 in J. D. Walstad, S. R. Radosevich, and D. V. Sandberg, editors, Natural and prescribed fire in Pacific Northwest forests. Oregon State University Press, Corvallis, Oregon; Brown, J. K. 2000. Introduction and fire regimes. Pp. 1-7 in Wildland fire in ecosystems: effect of fire on flora. USDA Forest Service Rocky Mountain Research Station, General Technical Report RMRS-GTR-42-VOL-2.

Scientific research into fire history, short-term climatic variability (recent Holocene), and changes in successional pathways for these forest types provide a detailed assessment of historical fire regimes over the last four to five hundred year period.

Additional scientific examinations combining fire scar analysis, investigations of fossil pollen and charcoal (and palaeoclimatic variation) provide a longer-term understanding of the role fire has played in shaping modern forest communities. In sum, historical fire regimes provide a crucial baseline for assessing the ecological patterns and processes associated with fire as a dominate disturbance factor in the structure and function of modern forest types currently found within the study area.[12]

As a result of modern Euro-American inhabitation patterns and a variety of land-use practices in the Northern Rockies beginning in the mid-19th century, forest types and associated historical fire regimes have been increasingly altered. Against these relatively modern anthropogenic effects, it is important to note that long-term Native American inhabitation, associated land-use patterns, and resource utilization also impacted the nature of historical fire regimes within the Northern Rockies ecoregion for at least the last 12,000 years. However, significant alteration in historical fire regimes of the Northern Rockies began as a result of the legacy of the 1910 fire season.

The aforementioned forest types (dry montane, moist montane forests, lower subalpine and upper subalpine forests) found with the study area can be characterized as having experienced one or a combination of the following historical fire regimes:

- frequent, low-severity;
- moderate-frequency, mixed-severity;
- infrequent, mixed-severity;
- infrequent, high-severity fires.

Indicative of dry ponderosa pine, Douglas fir, and western larch stands, frequent, low-severity fires are those that recur, on average, approximately every 25-30 years or less. The fire return interval may actually be as low as 5 years. The fire effects are minimal and less than 80% of the overstory trees, i.e., Ponderosa pine, are killed. The fire generally carries through the understory vegetation and duff and litter concentrations deposited by the forest canopy.

As the dominant historical fire regimes within the study area, moderate-frequency, mixed-severity and infrequent, mixed-severity fire regimes have combined to produce the dominant forest patterns across the landscape study area. Often, these patterns are described as a patchy mosaic. Moderate-frequency, mixed-severity fire regimes are characterized by fires with an average fire-free interval ranging from approximately 30 to 100 years. Infrequent, mixed-severity fire regimes are characterized by fires that recur at average intervals greater than 100 years. Mixed-severity fire regimes often produce a mixture of lethal results for dominate overstory vegetation depending upon the individual species within the forest type. Severity is

[12] Arno, S. F. 1976. The historical role of fire in the Bitterroot National Forest. USDA Forest Service, Intermountain Forest and Range Experiment Station, Research Paper INT-187; Heyerdahl, E.K, L. B. Brubaker, and J. K. Agee. 2002. Annual and decadal climate forcing on historical fire regimes in the interior Pacific Northwest, USA. The Holocene 12:597-604.

an assessment of the immediate effects of the fire upon vegetation, litter or soils. Thus, it is an assessment of fire effects on the forest community.[13]

Infrequent, high-severity fires, which do occur within the study area with increasing frequency, tend to occur at intervals ranging from 100 to 400 years. The conditions for these types of fires are the result of topographic features, extreme meteorological conditions, prolonged fuel accumulations, forest type conditions, and other factors that are the focus of intense scientific analysis given the hazards they pose to human communities within the WUI. One of the distinguishing characteristics of an infrequent, high-severity fire is that few overstory trees survive (lethality >80%).

These types of fire are generally described as "stand-replacement" in nature as they result in a recycling of primary successional processes and complete forest regeneration. These fires also exhibit crown-fire behavior, can consume vast amounts of acreage, and result in extensive alteration of the forest community. Depending upon the circumstances associated with these types of fires, slow-moving fires that are transported primarily through the understory fuel can also be described as being infrequent and high-severity. Again, this is based upon the fact that slow-moving fires, while technically less intense than a crown fire, can produce a great deal of heat over an extended period of time resulting in high-percentage mortality to the overstory vegetation, thereby resulting in stand-replacement effects.[14]

It is important to note that based upon an understanding of historical fire regimes within the study area, large-scale, severe stand-replacement fires of varying frequency occur within the study area.

5.2 Fire Condition Class

Change in fire regimes represents a comparison of the historical and contemporary disturbance mechanisms. Generally, these comparisons show change in the patterns of fire frequency and effects within particular forest types. Prior to 1910, and the catastrophic fires experienced throughout large portions of the Northern Rockies during this year, each of the previously described forest types experienced a particular historical fire regime or mixture of fire regimes. Reacting to the devastating impacts of the 1910 fires upon human communities, federal land policy regarding wildland fire shifted toward a program of complete suppression.

As this policy became substantiated across the Northern Rockies and expressed on the ground within the Flathead County study area, significant alterations in historical fire regimes also occurred. Simultaneously, forest resource utilization increased dramatically, especially following the end of World War II and the massive growth in wood product utilization experienced during the 1950s.

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[13] Fire severity and fire intensity are commonly confused. They are distinct assessment of fire effects and behavior as detailed in a fire regime description. "Fire intensity refers to the rate at which a fire produces heat at the flaming front and should be expressed in terms of temperature or heat yield. Fire severity, on the other hand, describes the immediate effects of fire on vegetation, litter, or soils." http://www.northernrockiesfire.org/history/fireis.htm; See also, Robichaud, P. R., J. L. Beyers, and D. G. Neary. 2000. Evaluating the effectiveness of postfire rehabilitation treatments. USDA Forest Service, Rocky Mountain Research Station, General Technical Report, RMRS-GTR-63. Available online at http://www.fs.fed.us/rm/pubs/rmrs_gtr63.pdf.

[14] Brown, J. K. 1995. Fire regimes and their relevance to ecosystem management. Pp. 17 1-178 in Proceedings of Society of American Foresters National Convention; 1994 Sept. 18-22; Anchorage, Alaska. Society of American Foresters, Bethesda, Maryland, USA; Ibid. 2000. Introduction and fire regimes. Pp. 1-7 in Wildland fire in ecosystems: effect of fire on flora. USDA Forest Service Rocky Mountain Research Station, General Technical Report RMRSGTR-42-VOL-2.

In sum, the 20th century period ushered in a series of overlapping, compounding alterations of historical fire regimes within forest communities within the study area. For certain locations and time periods, these changes have been more dramatic and the deviation from the historical baseline more extreme. In other areas, ecological processes, while constantly changing independent of readily identifiable alteration, remain consistent with historical norms.

While it is impossible to fully detail how these socio-economic and ecological processes interacted, human communities within the study area exist within an altered landscape comprised of a matrix of managed lands. Ecological processes within the defined forest types continue and a variety of fire patterns continues to impact local communities.

One contemporary measure of the degree of change from historical fire regime is the fire regime condition class (FRCC). A fire regime condition class is a classification of the amount of the departure from the historical fire regime (natural regime).

Currently, there are three primary FRCC classes: low, moderate, and high.[15] Fire Regime Condition Class is defined as follows: FRCC 1 represents ecosystems with low (<33 percent) departure from a defined reference period – that is, landscapes still within the natural or historical range of variation; FRCC 2 indicates ecosystems with moderate (33 to 66 percent) departure; and FRCC 3 indicates ecosystems with high (>66 percent) departure from reference conditions.

The five natural (historical) fire regimes are classified based on average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation. These five regimes include: [16]

Group	Frequency	Severity	Severity description
I	0 – 35 years	Low / Mixed	Generally low-severity fires replacing less than 25% of the dominant overstory vegetation; can include mixed-severity fires that replace up to 75% of the overstory
II	0 – 35 years	Replacement	High-severity fires replacing greater than 75% of the dominant overstory vegetation
III	35 – 200 years	Mixed / Low	Generally mixed-severity; can also include low severity fires
IV	35 – 200 years	Replacement	High-severity fires
V	200+ years	Replacement / any serverity	Generally replacementseverity; can include any severity type in this frequency range

Note: These regime groups have been modified slightly from earlier version of this CWPP.

For current fire regime condition class maps, consult the Flathead National Forest.

[15] Please see: http://www.fire.org/niftt/released/FRCC_Guidebook_2010_final.pdf

[16] Ibid

Fire Regime Condition Class Description Potential Risks[17]

Condition Class 1:

"Fire regimes are within the natural or historical range and risk of losing key ecosystem components is low. Vegetation attributes (composition and structure) are well intact and functioning."

Condition Class 2:

"Fire regimes have been moderately altered. Risk of losing key ecosystem components is moderate. Fire frequencies may have departed by one or more return intervals (either increased or decreased). This departure may result in moderate changes in fire and vegetation attributes."

Condition Class 3:

"Fire regimes have been substantially altered. Risk of losing key ecosystem components is high. Fire frequencies may have departed by multiple return intervals. This may result in dramatic changes in fire size, fire intensity and severity, and landscape patterns. Vegetation attributes have been substantially altered."

[17] Ibid

6.0 LAND OWNERSHIP

The CWPP covers an extensive land base. Approximating 5,252 square miles, Flathead County is roughly the size of the State of Connecticut. This plan encompasses an expansive and diverse land base with a growing human population.

Owner	Acres	Square Miles	Percentage of
U.S. Forest Service	1,760,584	2,750.9	52.4%
National Park Service	619,612	968.1	18.4%
Private	415,237	648.8	12.3%
Industrial Timber Lands	297,580	464.9	8.8%
State Trust Land	130,239	203.5	3.9%
Water	94,942	148.3	2.8%
Tribal Land	28,641	44.8	0.9%
US Fish and Wildlife Service	11,472	17.9	0.3%
Other State Land	2,889	4.5	0.1%
Other Federal	292	0.5	0.0%
Private Conservation	168	0.3	0.0%
Local Government	155	0.2	0.0%
Totals:	3,361,810	5,252.8	100%

Table 1: Source: Montana Natural Resource Information System. Industrial timber Lands and Private Lands were modified to reflect some timber lands categorized as private.

The largest land owner in Flathead County is the USFS. Any effective and sustainable wildland fire and fuel hazard mitigation plan requires collaboration between citizens and this land management agency. While the majority of the human population for Flathead County is concentrated in the central valley floor on private land, historical and contemporary growth patterns show an increase in population within the wildland-urban interface (WUI). The Wildland-Urban Interface (WUI) is the area where houses meet or intermingle with undeveloped wildland vegetation. An increasing number of land ownership configurations exist wherein private land holders, structures, and entire subdivisions are adjacent to USFS managed forest lands fuel components and, therefore, are at risk for wildland fire events.

This ownership matrix requires effective, transboundary strategies for targeted fuel treatment prescriptions that maximize the risk reduction to private property while at the same time meet the management objectives of the agency. The same can be said for other federal and state lands as well as the industrial forestlands properties located in the study area.

Throughout the planning process, and based upon the federal stakeholders' representation on the Flathead Steering committee, numerous, on-going efforts are attempting to address effective fuel treatment and hazard mitigation strategies within a number of geographical locations across the county. These efforts will be discussed in more detail in the prioritization discussion. Nevertheless, all parties are encouraged to continue these existing, collaborative efforts for community-based forest management to help reduce the risk associated with wildland fire with the localized WUI boundaries.

In addition to targeted fuel reduction plans for prioritized areas, it is also important to note that continued, on-going efforts toward homeowner education using programs such as FIREWISE are key to addressing risk reduction with mixed or multi-ownerships settings. Homeowners working together in a collaborative effort are much more effective than an individual homeowner, this is a key strategy to protecting community from large-scale fires that increasingly threaten homes across the study area. There are several local FireSafe Councils, such as the Whitefish Area FireSafe Council, that are working to educate homeowners.

One of the keys to this type of FIREWISE awareness is using GIS data currently available to the public on the Flathead County Internet Map Server. In addition to ownership information, this application hosts all of the priority and risk data for the CWPP as well as the full library of the County's GIS data. Furthermore, the County and rural fire districts can use this information to efficiently organize and prioritize their efforts. Detailed geospatial information can be shared via the Internet through interactive, web-based mapping applications maintained by Flathead County GIS Department.[18] As shown in Figure 11, it is currently possible for detailed fire district priority areas, Flathead National Forest Analysis areas, ownership, population, and parcel data to be determined for any area in the County.

[18] Please see: http://maps.co.flathead.mt.us/flathead/default.htm.

Flathead County

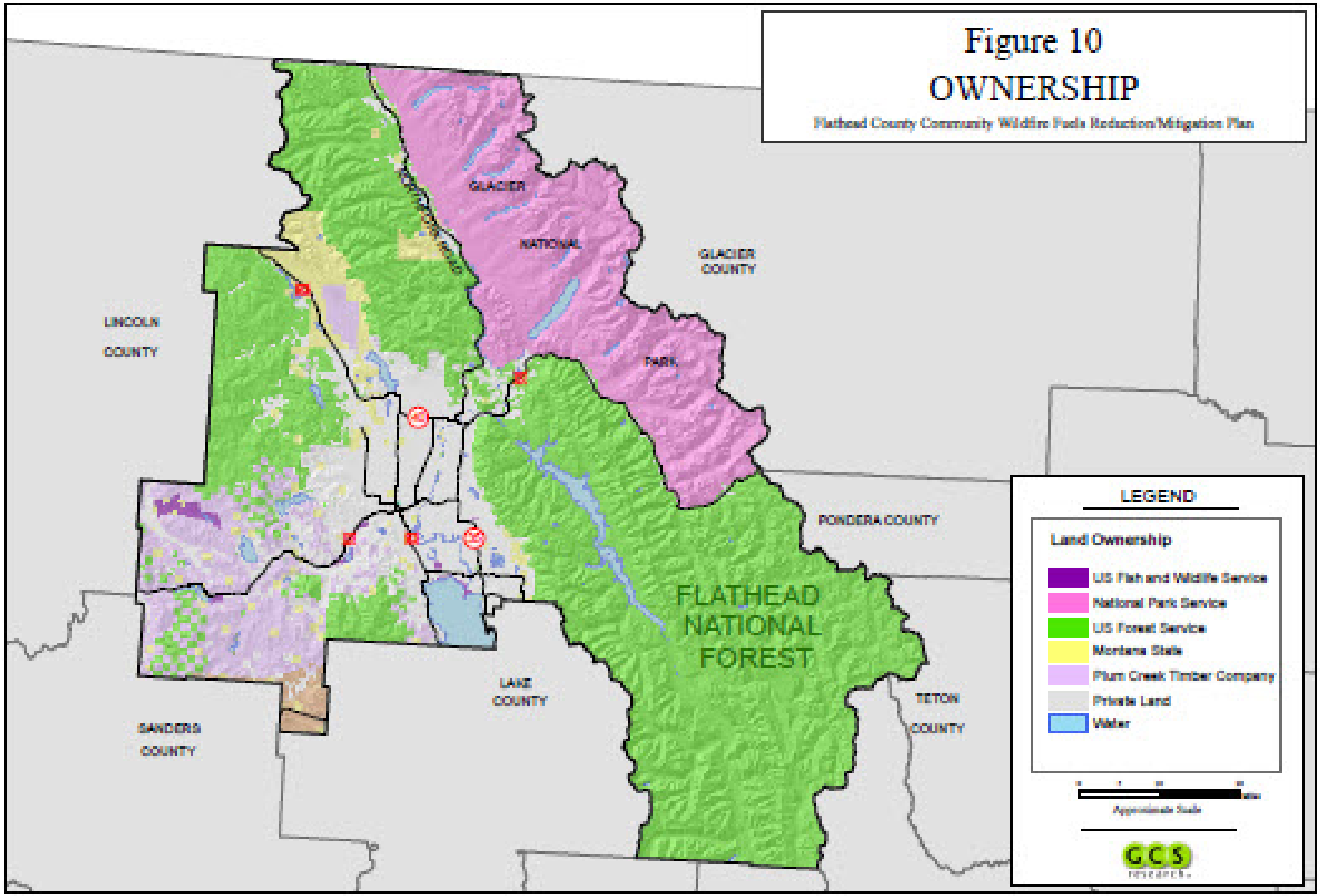

Figure 10: Flathead County major ownership classes for study area.

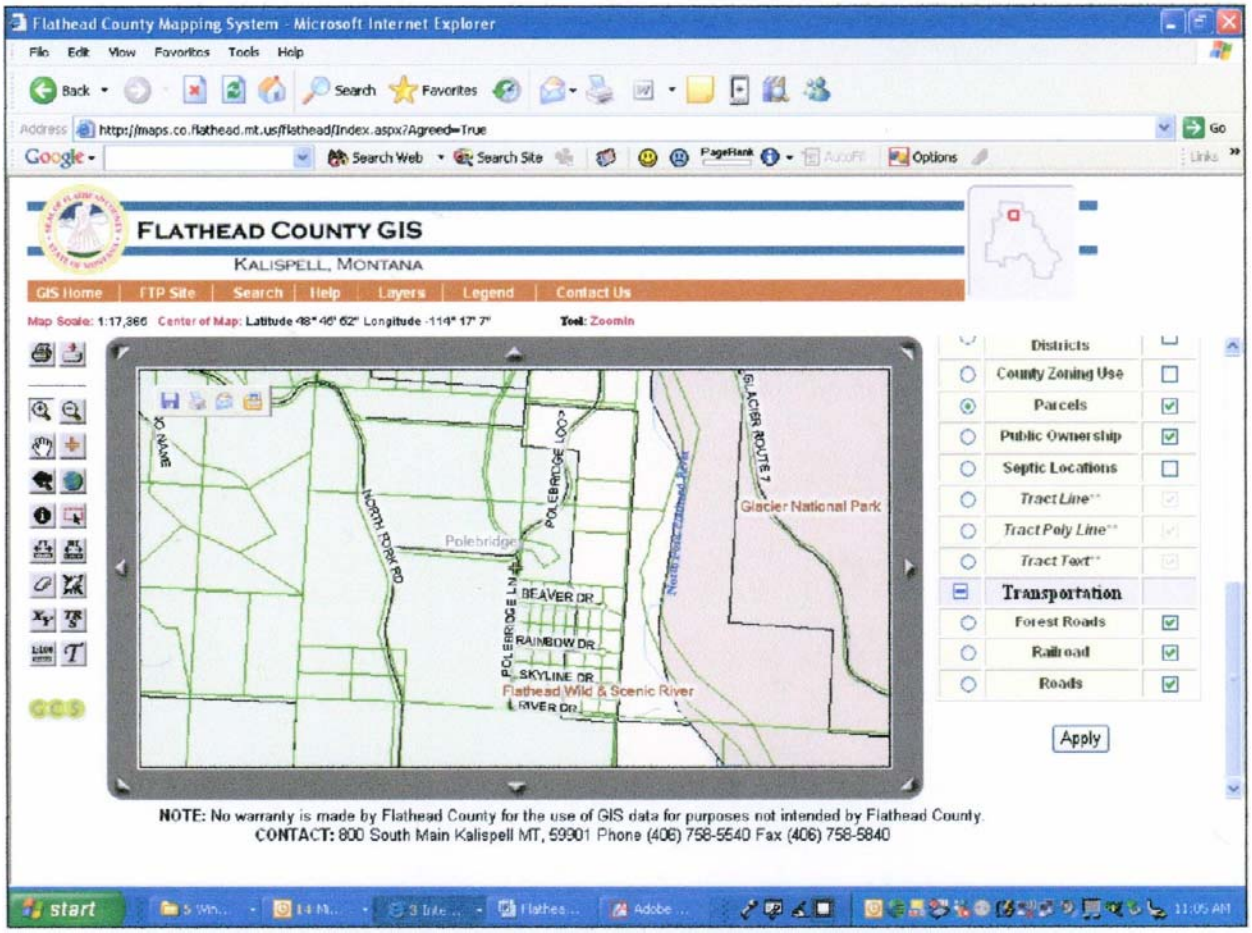

Figure 11: Flathead County web-based mapping application allows members of the public to zoom into any location within the county to examine parcel and land ownership information. GIS data from the CWPP planning process is hosted by this system. It is also possible for National Fire Protection Association (NFPA) 1144 home evaluation information to be included as part of the Flathead County geodatabase. Area shown is Polebridge, MT.

7.0 Population

The 2010 Census showed a total population of 90,928 and the county has a lot of seasonal residents. As shown in Figure 12, the population density of Flathead County is concentrated in the main Flathead Valley bottom. Of course, this is based upon the presence of the major urban areas of the county: Kalispell, Columbia Falls, and Whitefish.

A final GIS map, Figure 13, shows the population density in relationship to major ownership classes in the Flathead study area. This type of analysis helps define the WUI across the study area and focus hazard mitigation efforts. However, it is important to realize that these types of geospatial analysis will require frequent updates and modifications in order to assess the rapid growth being experienced in various areas across Flathead County.

Each new subdivision, development, or other form of population increase in proximity to or within forested lands in effect increases the amount of land area within the WUI. Ideally, proposed

developments should consider fuel mitigation strategies and FIREWISE approaches prior to actual development and inhabitation in order to reduce the risk associated with wildland fire and help protect life and property within potentially volatile conditions.

Flathead County

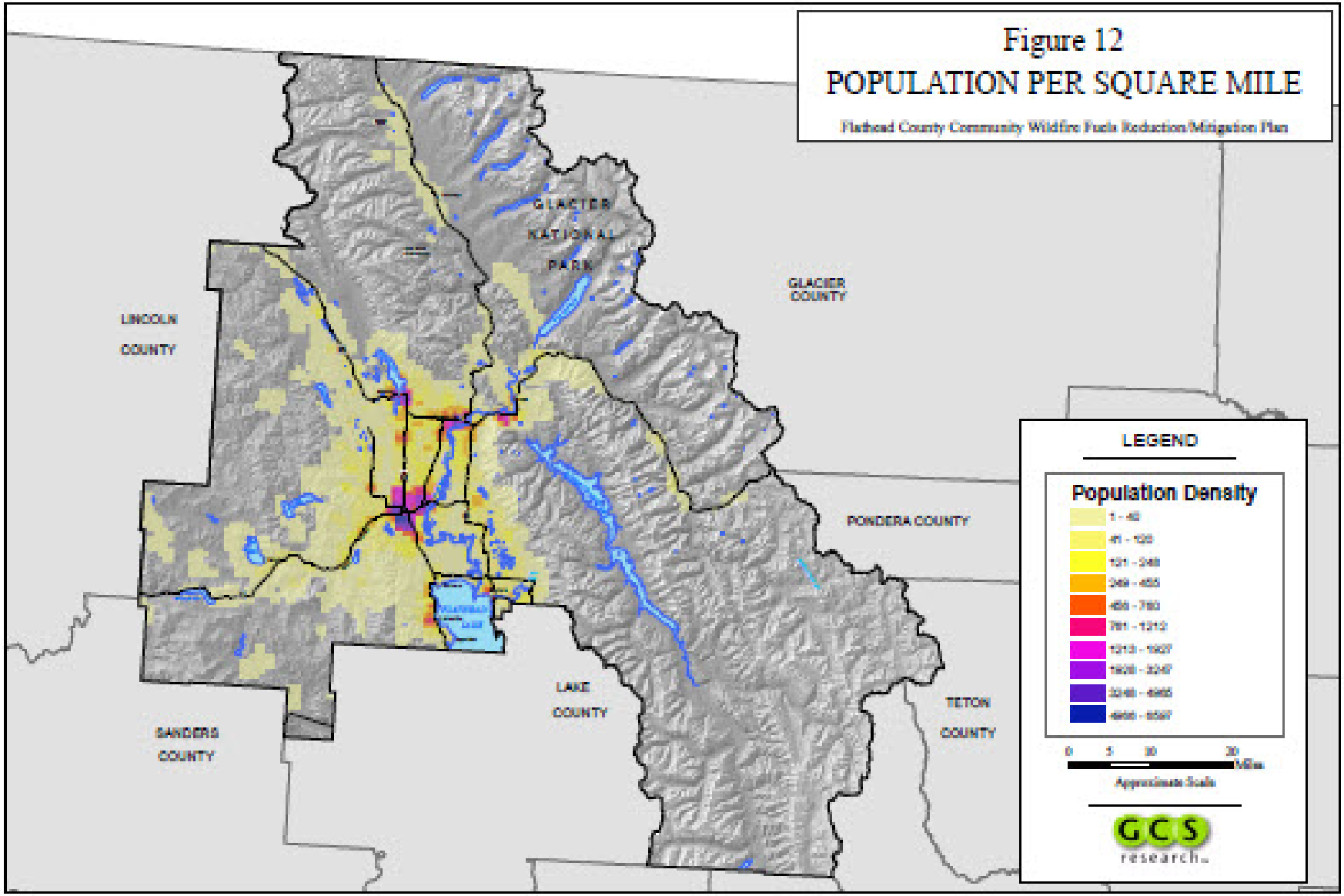

Figure 12: Flathead County study area showing population density per square mile.

Flathead County

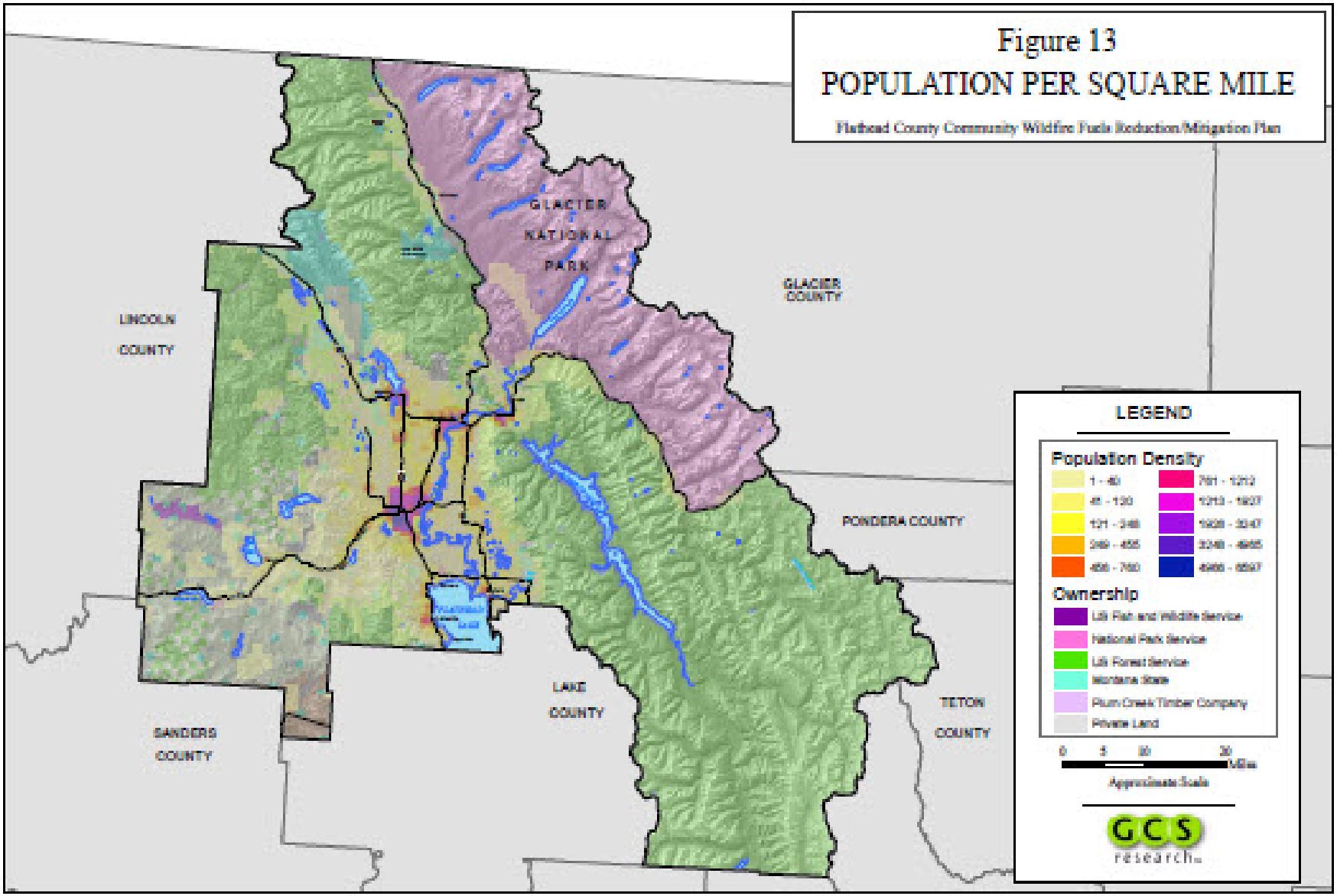

Figure 13: Population Density and Major Ownership Classes, Flathead County.

8.0 THE WILDLAND-URBAN INTERFACE

A central component of this planning process involved the utilization of the best available GIS data and analysis to determine estimations of the Wildland-Urban Interface (WUI) and the communities at-risk within the WUI. In the following chapter, three unique geospatial methodologies for WUI definition and community risk assessment are described and documented.

As detailed in the HFRA, a commonly accepted definition of the Wildland-Urban Interface is the zone where structures and other human developments meet and intermingle with undeveloped wildland and vegetative fuel. As the WUI zone has expanded tremendously with population growth across the Intermountain West during the past 20 years, the risk to property and life has increased as well. This scenario is occurring in the Flathead County study area and will continue into the foreseeable future as increasing numbers of people seek the experience of living in a quasi-natural setting.

As a key goal of the Flathead County CWPP, the Steering Committee actively pursued local-community involvement in the definition of the WUI and community risk assessment within the WUI. This is one of the clearly stated benefits of developing a CWPP. It provides local communities with the flexibility to define their own WUI, assess risk, propose treatments and prioritize fuel mitigation projects based upon a range of factors and values of important to people on the ground. To implement this process, a number of key steps were identified during the evolution of the project.

First, the most readily available WUI definition and community risk assessment for the entire study area was aggregated and processed. In large part, this resulted from effective collaboration with USFS Flathead National Forest and the utilization of spatial data developed by USFS Northern Region National Fire Plan Cohesive Strategy Team.

In the 2005 version of the CWPP, community meeting participants utilized the extensive and well-documented USFS “Communities at Risk” analysis for initial examination, discussion, and evaluation.[19]

Citing directly from the Cohesive Strategy Team geospatial metadata documentation:[20]

Abstract:

“Estimating the relative risk of communities to wildland fire requires the consideration of 3 factors: (1) the likelihood of fire occurrence; (2) the likely fire behavior should a given site catch fire; and (3) human settlement patterns. A spatial theme of ignition probability was derived from 20-years of fire occurrence data by interpolating between known fire locations and counting the number of fires within a 4-km2 neighborhood. Probable fire type (i.e., surface, passive crown, and active crown) during extreme fire

[19] See http://www.fs.fed.us/r1/cohesive_strategy/datafr.htm for detailed geospatial metadata for USFS “Communities at Risk” assessment.

[20] http://www.fs.fed.us/r1/cohesive_strategy/datafr.htm

weather was derived from plot-level data that was processed using the Fire and Fuels Extension to the Forest Vegetation Simulator (FFE/FVS). The model outputs for these plot data were then spatially extrapolated to similar biophysical settings. Human population density from the 2000 census was used as a proxy to the "wildland-urban interface". The raw population data were reassigned to smaller geographic units using a sequence of GIS filters including land ownership, land use, land cover, and slope. Lastly, we developed rule sets that integrated these 3 data themes into an estimate of the relative risk of the wildland-urban interface to wildland fires throughout northern Idaho and western Montana.

Purpose:

Communities-at-Risk was derived to illustrate the relative risk to human communities e.g., structures) should a wildland fire occur. These data were derived to characterize broad-scale patterns for regional and subregional assessments. The 90-meter raster data could be used to highlight the general vicinity of where risks occur, but the data was intended to be summarized across subwatersheds or other larger reporting units.

General Limitations:

Ignition probability was derived using a 4-km2 neighborhood. In addition, the probability surface was estimated using a specific geographic area; probabilities will vary relative to the geographic extent. Thus, do not use this layer for any other geographic extent. Although the resolution of the data is a 90-meter cell size, the expected accuracy does not warrant their use for analyses of areas smaller than about 10,000 acres (for example, assessments that typically require 1:24,000 data). These data are more appropriately used at mapping scales exceeding 1:100,000."

Secondly, a WUI definition and risk assessment analysis for the study area was used based upon the methodologies and algorithms developed by the SILVIS Lab at the University of Wisconsin-Madison. The purpose of this additional analysis was to provide a contrasting perspective of WUI and risk assessment modeling as a means of stimulating further debate during the process.[21]

[21] See http://silvis.forest.wisc.edu/Library/ for metadata on SILVIS Lab methodology.

Flathead County

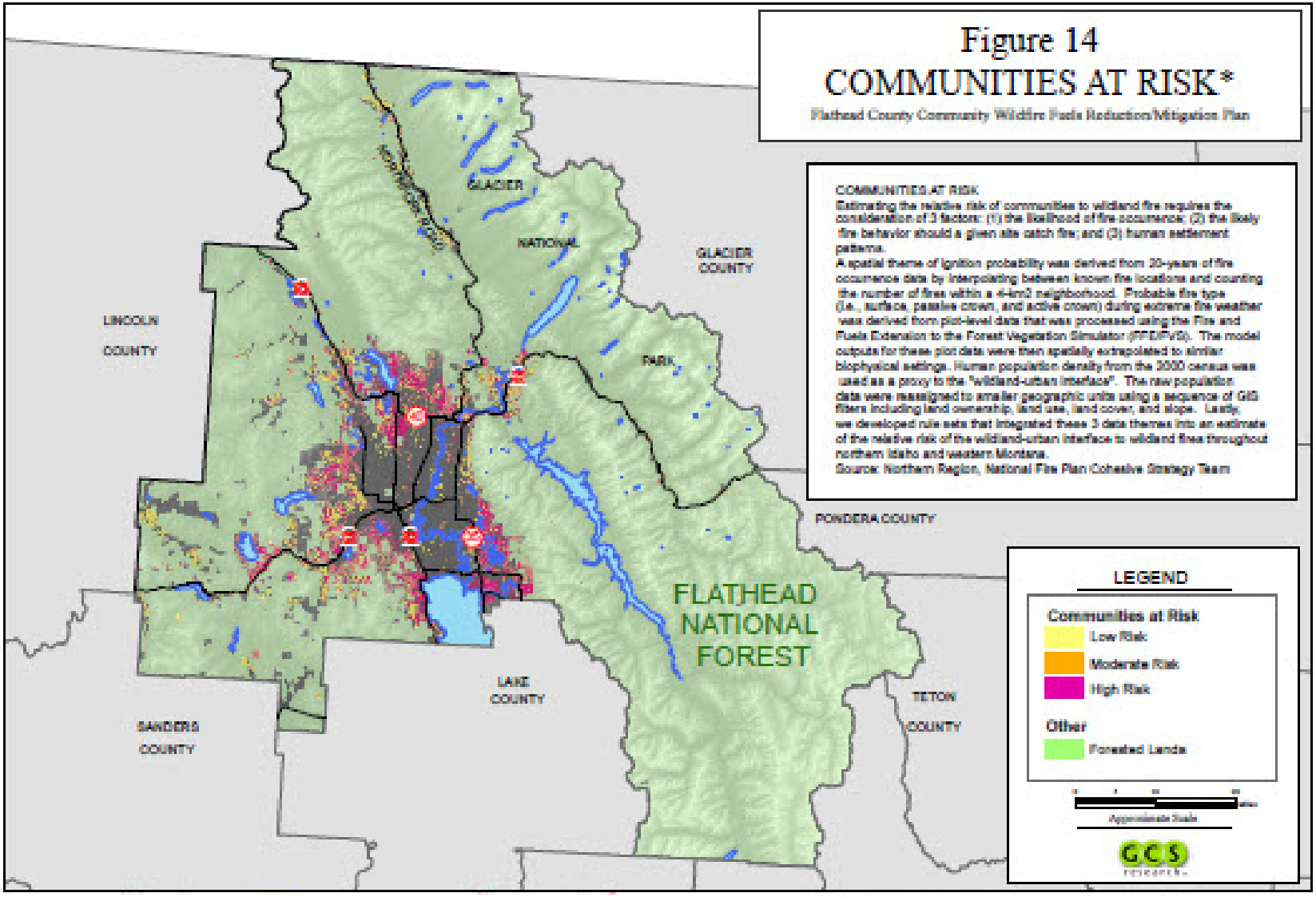

Figure 14: "Communities at Risk" - Flathead County. Data and analysis by USFS.

SILVIS WUI Definition and Geospatial Analysis Summary:

The Wildland-Urban Interface:

> *"The Wildland-Urban Interface (WUI) is the area where houses meet or intermingle with undeveloped wildland vegetation. This makes the WUI a focal area for human-environment conflicts such as wildland fires, habitat fragmentation, invasive species, and biodiversity decline. Using geographic information systems (GIS), we integrated U.S. Census and USGS National Land Cover Data, to map the Federal Register definition of WUI (Federal Register 66:751, 2001). These data are useful within a GIS for mapping and analysis at national, state, and local levels.*

Housing Density:

> *Housing density information was derived from U.S. Census data. Analysis was conducted at the finest demographic spatial scale possible, Census blocks, from the 2000 Census. All measures of housing density are reported as the number of housing units per square kilometer.*

Landcover:

> *We utilized the National Land Cover Dataset, a satellite data classification produced by the USGS with 30m resolution based on 1992/93 imagery and available for the entire U.S. (Vogelmann et al. 2001) to identify 'wildlands'. Our definition of 'wildlands' encompasses a range of management intensities. NLCD classes that we included as 'wildlands' are forests (coniferous, deciduous and mixed), native grasslands, shrubs, wetlands, and transitional lands (mostly clear-cuts). We exclude orchards, arable lands (e.g., row crops) and pasture.*

The Wildland-urban Interface (WUI):

> *WUI is composed of both interface and intermix communities. In both interface and intermix communities, housing must meet or exceed a minimum density of one structure per 40 acres (16 ha). Intermix communities are places where housing and vegetation intermingle. In intermix, wildland vegetation is continuous, more than 50 percent vegetation, in areas with more than 1 house per 16 ha. Interface communities are areas with housing in the vicinity of contiguous vegetation. Interface areas have more than 1 house per 40 acres, have less than 50 percent vegetation, and are within 1.5 mi of an area (made up of one or more contiguous Census blocks) over 1,325 acres (500 ha) that is more than 75 percent vegetated. The minimum size limit ensures that areas surrounding small urban parks are not classified as interface WUI.*

Buffer Distance for Interface:

> *The California Fire Alliance (2001) defined "vicinity" as all areas within 1.5 mi (2.4 km) of wildland vegetation, roughly the distance that firebrands can be carried from a wildland fire to the roof of a house. It captures the idea that even those homes not sited within the forest are at risk of being burned in a wildland fire. We adopt this buffer distance to identify interface areas. With minimum*

housing densities, vegetation types, and interface buffer distances determined, the operational definition of the WUI is complete."[22]

It is interesting to note that a comparison of the USFS and SILVIS Lab WUI definition and associated at-risk community assessments reveal a high degree of spatial similarity.

Thirdly an additional WUI and communities at risk analysis was generated based upon the best available spatial data from Flathead County and the State of Montana. This product utilized the following processes and spatial data to derive a WUI definition.

As a first step, the WUI zone was defined as a 1.5 mile buffer extending out from lands that were actively managed as forests and, therefore, represented inhabited areas at potential risk from wildland fire. This included State of Montana, the USFS, and U.S. National Park Service managed forest lands.

Secondly, the State of Montana cadastral and CAMA data (Computer Assisted Mass Appraisal) were queried for individual parcels with structures. This resultant layer was combined with US Census Population Density for the entire study area. Finally, parcels that met the structure criteria were mapped at .5, 1.0, and 1.5 miles from managed forested lands. The resulting GIS product is viewable as Figure 16, and was presented along with the USFS and SILVIS WUI definition and boundary assessments.[23]

Figure 16b represents the final WUI designation by the Flathead County Community Wildfire Fuels Reduction / Mitigation Plan Steering Committee. This WUI zone was generated by identifying all forested lands within 1.5 miles of private lands and then selecting those lands with 1.5 miles of a structure. Forested lands data was derived from the USGS National Land Cover Dataset and the private lands data was derived from ownership data from the Montana State Library Natural Resource Information System (NRI S). Structures data was derived from the Montana State Computer Assisted Mass Appraisal database (CAMA).

Figures 16 and 16B were deleted during the 2011 CWPP update and replaced with a new WUI map which is located in the Map Section.

During the 2011 update to the Flathead County CWPP, the WUI was revised to eliminate areas that had been designated as WUI on the valley floor that were 40 acres or less in size. Areas that were not designated WUI because they might not have had any forested land or were not within 1.5 miles of private land with structures, but were surrounded by WUI were included in the overall County WUI.

Based on the input of the fire personnel, county, state and federal personnel, and others the external and internal edges of the overall WUI were joined together and made into a continuous edge to reflect the wildland fire service experience with wildland fire in Flathead County.

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[22] **http://silvis.forest.wisc.edu/Library/WUIDefinitions2.asp**

[23] **All of these data used in the public involvement process have FGDC compliant metadata and are maintained by the Flathead County GIS Department.**

A buffer of 1.5 miles was created along the WUI boundary inside Glacier National Park as had been done previously with the USFS lands in the 2005 Flathead County CWPP. Critical infrastructure was identified, such as the Highway 2 corridor, the BNSF railroad line, and powerlines, and were included in the 1.5 mile buffer.

Flathead County

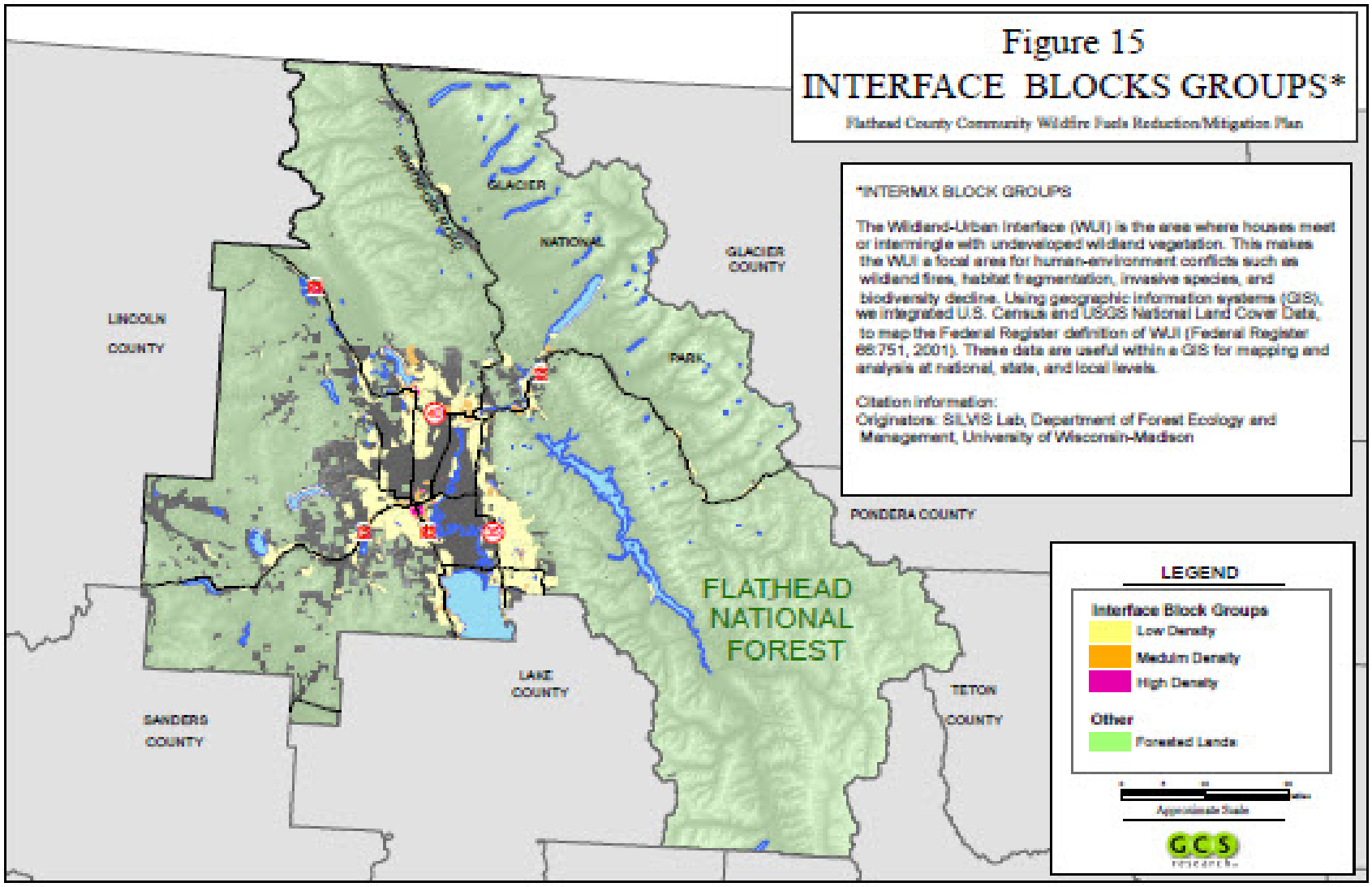

Figure 15: Wildland Urban Interface Block Groups. Data and analysis based upon SILVIS lab methodology for modeling WUI

9.0 Community Participation: The Process of Prioritization

One of the overarching goals of the CWPP is to identify priority areas for wildfire protection and fuel reduction-mitigation. A series of meetings were conducted during the planning process in order to solicit input from community members in the identification of priority areas at the ground level. Fire Districts were involved at the onset of the plan and encouraged to participate.

The three primary W U I and communities at risk analyses were presented to local citizens during a series of open public meetings held across Flathead County in partnership with the local fire chiefs responsible for fire protection within their respective fire districts. A total of ten public meetings were conducted between October 21 and December 7, 2004. The meeting locations were designed to solicit public input from all 20 existing fire districts in Flathead County.

Fire district chiefs from each fire district were provided with detailed paper maps to document their professional opinions regarding local prioritization of hazard areas. Fire Department personnel identified areas of concern on their respective maps and in most cases, prioritized those areas. This information was aggregated for each fire district and digitized into the Flathead GIS.

During these meetings, interested parties had the opportunity to review the initial analyses conducted and/or aggregated for the plan. Large-scale maps for respective meeting areas and fire districts were also created and presented in order to facilitate a more geographically detailed presentation of individual properties within the W U I zone. Local citizens had an opportunity to question the preliminary analysis, express their arguments for prioritization within their respective communities, and suggest modifications and alterations to the predefined W U I zones.

Flathead County

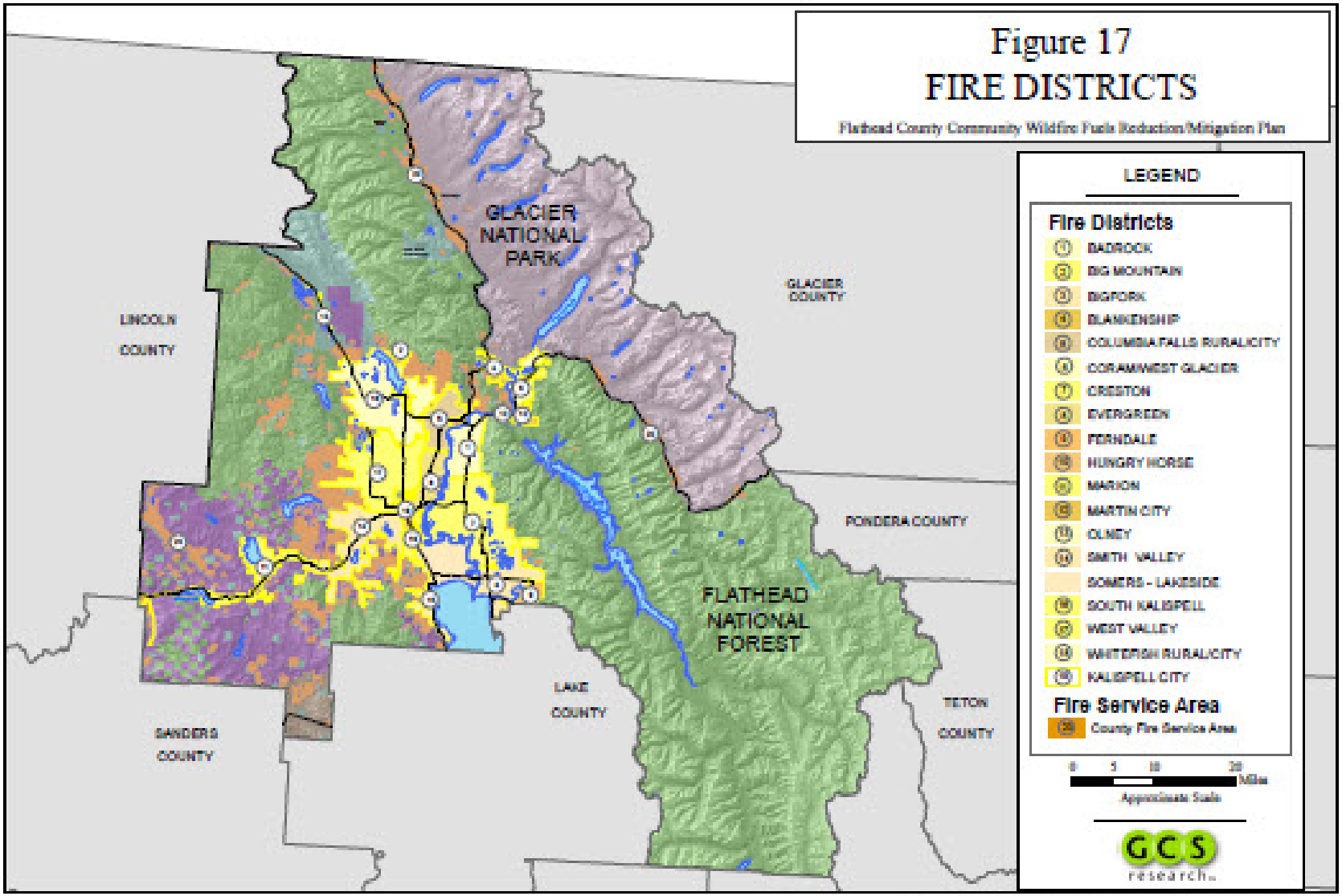

Figure 17: Fire Districts displayed with ownership, Flathead County.

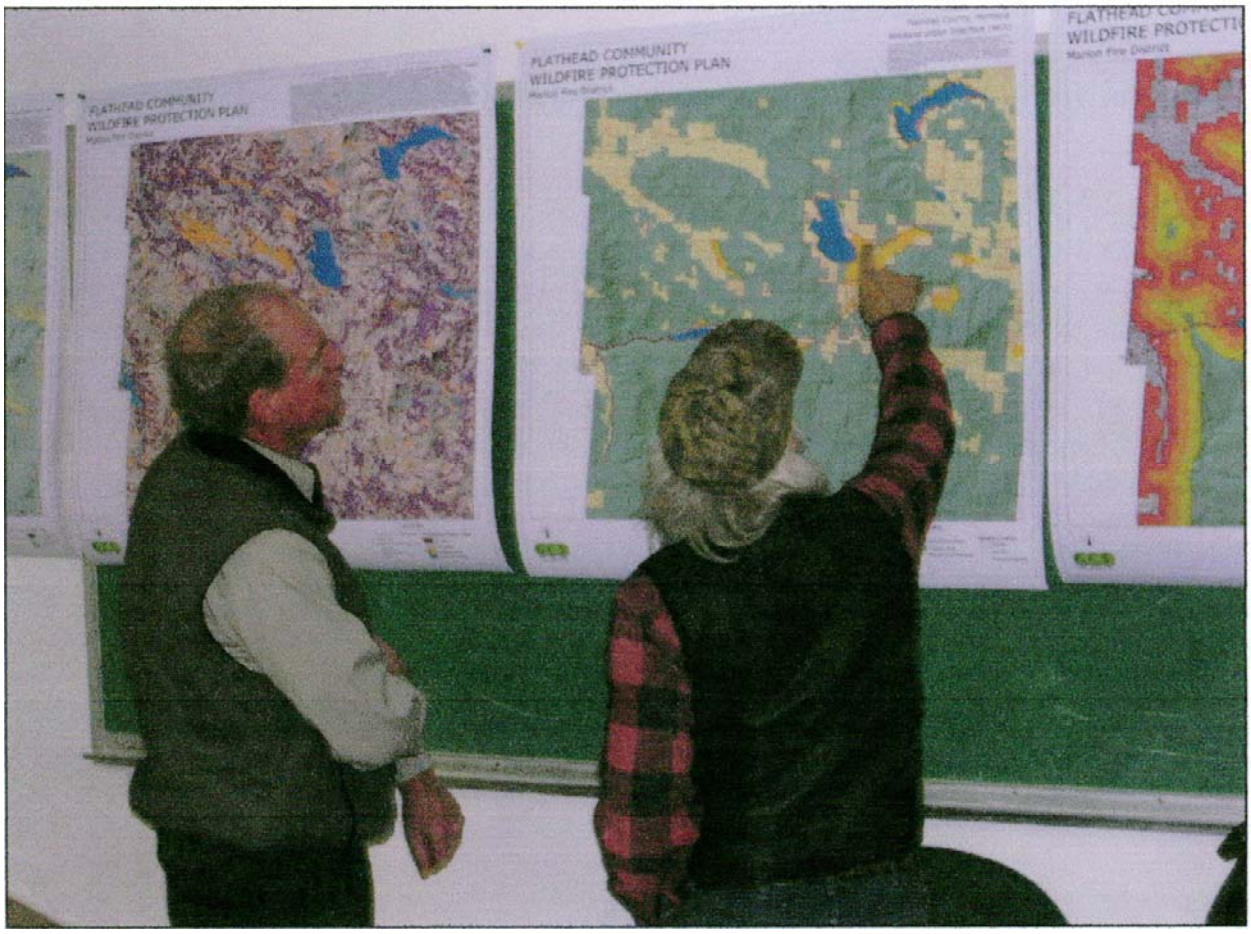

Photo 1: Marion Fire District Community Meeting. Fall 2004. CWPP Planning Process.

Most importantly, participants had the opportunity to determine priority areas for fuel treatment projects on federal and non-federal lands in the WUI. In many instances, meetings documented priority areas that had already been defined by local citizen groups working in collaboration with land management agencies to identify priority areas for fuel mitigation work.

Community Meetings Schedule, Locations, and Fire Districts:

1) Fire Districts: Bigfork, Creston, and Ferndale Fire Districts

   October 21, 2004

   Location: Bigfork Fire Hall

2) Somers – Lakeside Fire Districts

   October 22, 2004

   Location: Somers Fire Hall

3) Whitefish City Fire, Whitefish Fire Service Area, Big Mountain Fire District, and Olney Fire District
October 26, 2004

Location: Whitefish Fire Hall

4) Columbia Falls City Fire, Columbia Falls Rural Fire District, Badrock Fire District
October 27, 2004

Location: Columbia Falls Fire Hall

5) Coram – West Glacier Fire District, Martin City Fire District, Hungry Horse Fire District, and Fire Service Area (West)

October 28, 2004

Location: Canyon Community Church

6) Northfork Area, Fire Service Area (East)
October 29, 2004

Location: Sonderson Hall

7)

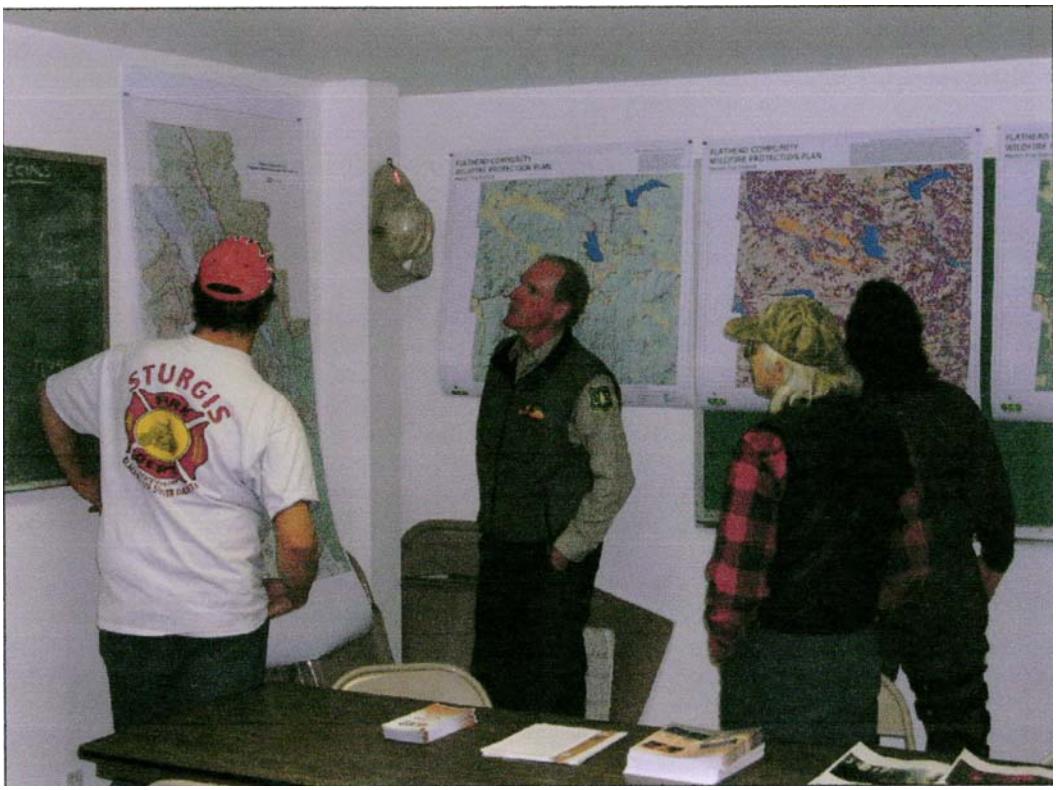

Photo 2: Marion Fire District Community Meeting – Marion, Fall 2004.

7) Marion Fire District
November 1, 2004

Location: Marion Fire Hall

8) West Valley Fire District, Smith Valley Fire District
November 3, 2004

Location: Smith Valley Fire Hall

9) Evergreen Fire District, South Kalispell Fire District, Kalispell City Fire
November 4, 2004

Location: Smith Valley Fire Hall

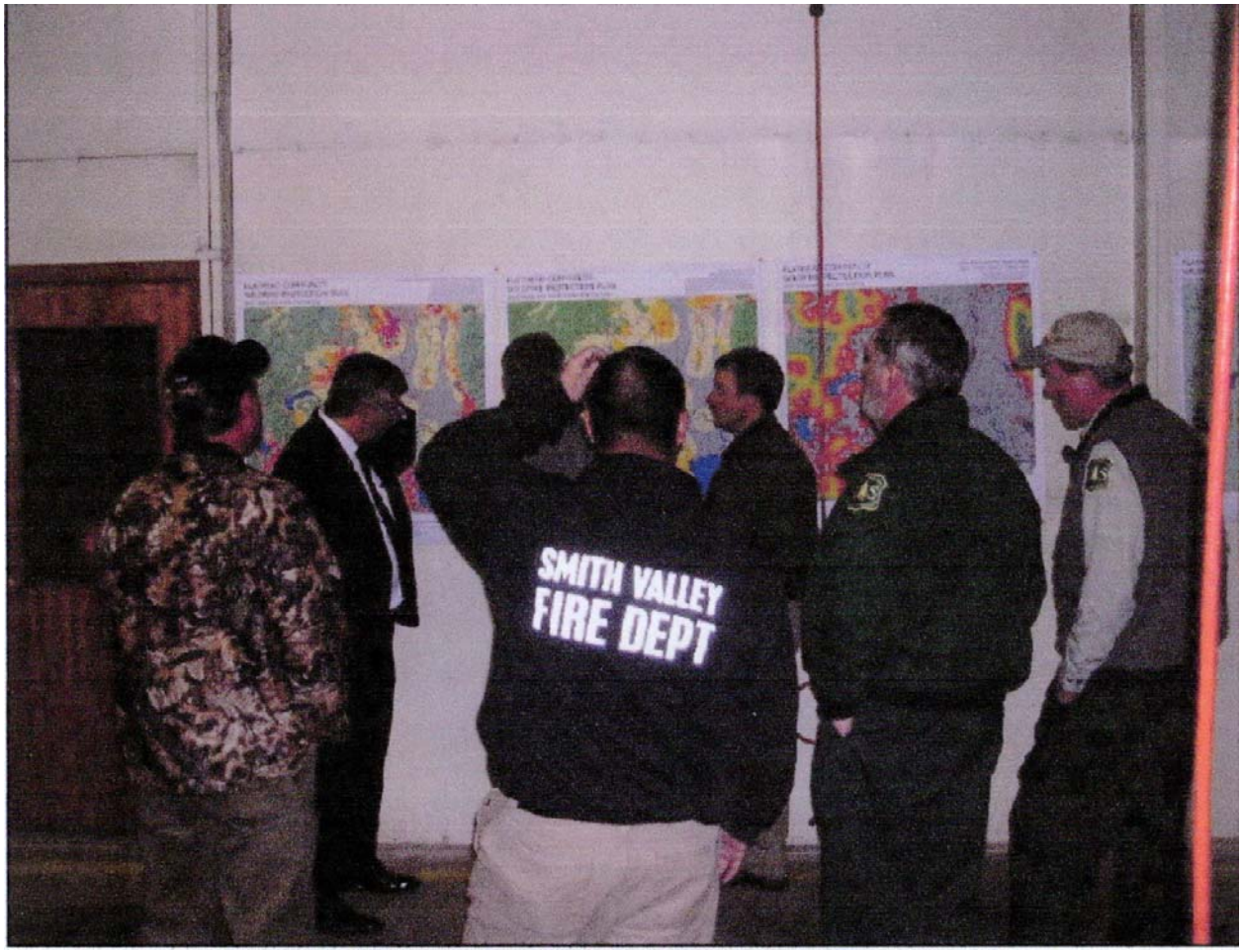

Photo 3: Smith Valley Rural Fire District Community Meeting. Fall 2004.

Final Review of Priority Areas (All Fire Districts) December 7, 2004

Location: Hampton Inn, North Fork Room, Kalispell

This process highlights the significance of the community-based fire protection planning. Despite the relative uniformity and consistency associated of the geospatial analysis described above (USFS, SILVIS, GCS Research), there are inherent limitations to a top-down process devoid of community input. As noted, the remotely sensed data inherent to specific geospatial analysis is at such a coarse scale as to be inappropriate for use below certain scales, i.e., 1:100,000.

Secondly, it is difficult in all instances to quantify additional values at risk, professional local knowledge and expertise of fire risk at local scales, and on-going efforts at fire risk prioritization and resultant fuel treatment efforts. The community meetings provided an opportunity for interested citizens to openly inform the process through an effective dialogue designed to capture localized definition of the WUI. As such, the Flathead Plan successfully executes the prime opportunity intended by the HFRA.

Rather than rejecting the WUI and communities at-risk geospatial definitions, community input on boundary definition generally confirmed the analysis while adding important clarifications, large-scale definitions, notable exceptions, and additional insights. These inputs were carefully documented on existing paper maps during and following the community meetings, and digitized into the Flathead Plan GIS. Against this solid backdrop of pre-existing geospatial analyses, it is the localized definition of the WUI and the prioritization of risk reduction projects, which serve as the most valuable outcome of the community-involvement process.

Flathead County

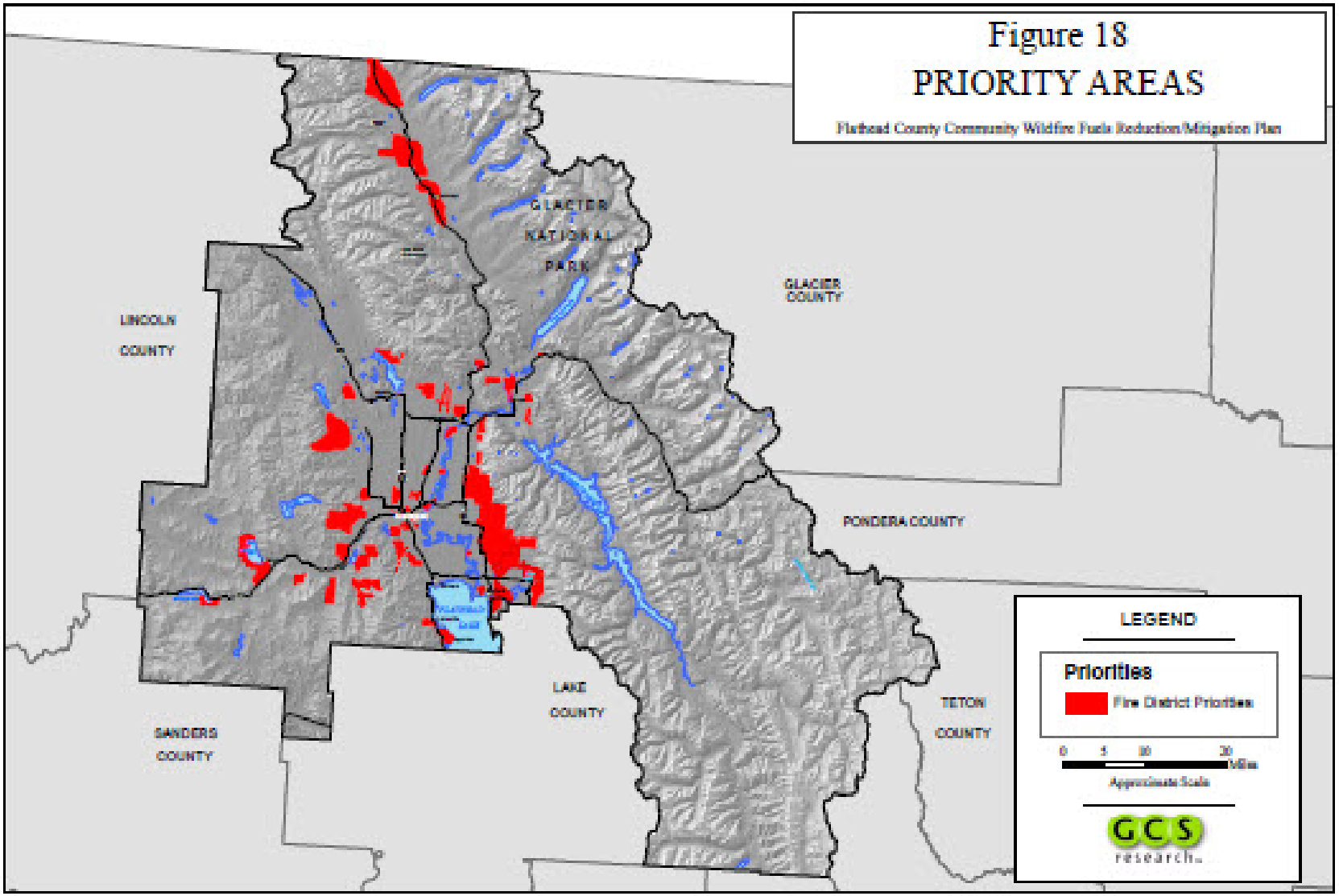

Figure 18: Flathead County Fire District Priority Areas - Coarse scale analysis

Detailed Prioritization Analysis within the WUI

The outcome of the community involvement process -- the solicitation of professional opinion and comments by local fire district chiefs and other participating stakeholders -- is a prioritization analysis for the entire study area. These areas reflect the community's prioritized area recommendations for fuel treatments projects and/or other wildland fire mitigation strategies for communities-at-risk within the modified WUI. The Flathead National Forest has also identified proposed areas for fuel reduction and mitigation. These areas were defined by the Flathead National Forest in both electronic GIS format and paper map format.

These detailed analyses are presented by fire district. In areas where existing fire districts had established existing priority areas for fuel mitigation projects, these reports are maintained in their entirety as appendices. There are two primary cartographic outputs in this series: 1) priority areas within defined fire district boundaries; and 2) priority areas as defined by ownership parcels where structures (buildings) are present.[24]

The methodology for the economic analysis for each priority area is as follows: Each priority area identified was digitized into the GIS. The priority area polygons were then used to identify parcels with structures either completely contained within the priority area, or intersected the priority area. These parcels were then used to calculate the average building value for a priority area. The dollar value for buildings were derived from the Montana Department of Revenue Computer Assisted Mass Appraisal (CAMA) database.[25]

The parcel maps also show ownership within and outside particular fire district boundaries. The intended purpose of this series of maps is to detail specific priority areas requiring attention across ownership jurisdictions.[26]

As of 2011, priority area confirmation and review documentation has not been received for the Olney and Hungry Horse Fire Districts.

It should also be noted that Big Mountain Fire District has developed and actively maintains its own fire plan for its area of responsibility. The document is available upon request from the Chief of the Big Mountain Fire District.

During the 2011 CWPP update, several meetings were held with the Flathead County Fire Chiefs' Association and no changes were made to the existing priority areas established in the 2005 plan. Values and the numbers of parcels were not updated in the 2011 version of the CWPP.

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[24] All of these GIS analysis outputs are available as .pdf documents and as ArcGIS .mxd project files and are delivered as the geospatial output components of the Flathead Community Wildfire Fuel Reduction/Mitigation Plan.

[25] http://gis.doa.state.mt.us/

[26] Parcels were queried to determine which parcels have buildings. These parcels with buildings were then selected by location, either falling completely within or intersecting the priority area. The data used for parcels was the State of Montana Cadastral dataset, with associated attribute information from the Computer Assisted Mass Appraisal (CAMA) database. All values should be considered approximate, since the priority areas themselves are sometimes generalized, and the CAMA data occasionally has duplicate records.

Badrock Fire District [27]

18,144 Acres

Priority Areas 1,813 Acres

Priority Area Number 1 – Kelley Road = 163 Acres

- 22 Parcels with buildings
- Low/high $37,948 - $268,172
- Average building value = $128,481

Priority Area Number 2 – Hems Road = 210 Acres

- 25 Parcels with buildings
- Low/high $16,910 – $257,380
- Average building value = $88,768

Priority Area Number 3 – Wapiti Meadows / Mooring Meadows = 713 Acres

- 72 Parcels with buildings
- Low/high $6,440 - $482,000
- Average building value = $147,137

Priority Area Number 4 – Spruce Mtn / Elk Park Roads = 217 Acres

- 11 Parcels with buildings
- Low/high $69,160 – $148,210

Priority Area Number 5 – Berne Road = 173 Acres

- 32 Parcels with buildings
- Low/high $8,060 - $179,644
- Average building value = $81,726

Priority Area Number 6 – Kokanee Bend = 338 Acres

- 23 Parcels with buildings
- Low/high $9,810 – $337,770
- Average building value = $120,900

Flathead County Fire Service Area (FSA)

The FSA is responsible for all lands outside of established fire districts. Since this area is not defined by polygonal boundaries, it is difficult to perform the same analysis as individual fire districts, each with a district boundary and clearly defined priority areas. The FSA can be divided into FSA-East, FSA-West, FSA-North

[27] All calculations are approximate and based upon best available GIS data and tax record information provided by State of Montana.

The FSA West priority areas are:

- Ashley Lake
- Pleasant Valley
- Hubbard and Sullivan Creek area

FSA-East priorities are:

- Middle Fork Essex Pinnacle Area

FSA-North priorities are:

- North Fork Area (See Addendum)
- Average building value = $119,033

Bigfork Fire District

22,035 Acres

Priority Areas 8,395 Acres

Priority Area Number 1 – Echo Lake = 5,517 Acres

- 472 Parcels with buildings
- Low/high $390 - $3,359,230
- Average building value = $123,176

Priority Area Number 2 – Swan Hill = 1,769 Acres

- 105 Parcels with buildings
- Low/high $2,040 – $1,738,220
- Average building value = $164,704

Priority Area Number 3 – East Shore Area = 844 Acres

- 50 Parcels with buildings
- Low/high $4,730 - $829,760
- Average building value = $189,045

Priority Area Number 4 – Chapman Hill = 265 Acres

- 129 Parcels with buildings
- Low/high $820 - $2,543,360
- Average building value = $294,767

Bigfork District Fire Chief Comments (Priority Area Review):

- Echo Lake area and the Swan Hill area as shown.
- Lesser areas of concern are the East Shore area and the Chapman Hill area.
- Excessive forest fuel loading and density are the primary concerns.
- A west facing slope adds problems to the Swan Hill area and some of the East Shore area.

- There are some access and water concerns but they are not nearly as significant as those priorities identified above
- Overall, I feel that our fire district is in better shape and of less risk than some of Flathead County's western and northern fire districts.

Big Mountain Fire District

1,443 Acres

Priority Areas 43 Acres

Priority Area Number 1 – Glades = 9 Acres

- 0 Parcels with buildings
- Low/high n/a
- Average building value = n/a

Priority Area Number 2 – Elk Meadows Phase 1 = 34 Acres

- 0 Parcels with buildings
- Low/high n/a
- Average building value = n/a

Blankenship Fire District

3,662 Acres

Priority Areas 1,212 Acres

Priority Area Number 1 = 517 Acres

- 7 Parcels with buildings
- Low/high $11,360 - $268,940
- Average building value = $120,811

Priority Area Number 2 = 320 Acres

- 16 Parcels with buildings
- Low/high $12,625 – $299,430
- Average building value = $93,755

Priority Area Number 3 – Spoon Lake = 375 Acres

- 61 Parcels with buildings
- Low/high $290 - $193,974
- Average building value = $70,003

Blankenship District Fire Chief Comments (Priority Area Review):

- Water. Only have one tender a 1954 vintage. The river is designated as wild and scenic and cannot put in a dry hydrant.

- Roads to houses… bad access, the Teakettle Road is bad, it forks into three different Teakettle Roads
- Consider a piping system with dry hydrant out of Spoon Lake.
- Need Fuel reduction on adjacent USFS lands.

Columbia Falls Rural Fire District

16,421 Acres

Priority Areas 1,123 Acres

Priority Area Number 1 – Trumbull Canyon Road = 170 Acres

- 54 Parcels with buildings
- Low/high $1,840 - $213,012
- Average building value = $69,953

Priority Area Number 2 – Subdivision = 879Acres

- 180 Parcels with buildings
- Low/high $490 – $244,200
- Average building value = $68,379

Priority Area Number 3 – Witty Lane = 74 Acres

- 68 Parcels with buildings
- Low/high $3,670 - $269,020
- Average building value = $86,564

Coram / West Glacier Fire District

9,902 Acres

Priority Areas 890 Acres

Priority Area Number 1 – Railroad Crossings and One Way in/out = 598 Acres

- 96 Parcels with buildings
- Low/high $360 - $184,920
- Average building value = $40,538

Priority Area Number 2 – Coram Experimental Forest = 284 Acres

- 4 Parcels with buildings
- Low/high $32,210 – $163,854
- Average building value = $78,587

Priority Area Number 3 – Historical Structure = 7 Acres

- 1 Parcels with buildings
- Low/high $207,700
- Average building value = $207,700

Priority Area Number 4- Railroad Crossing = 0.7 Acres

- 0 Parcels with buildings
- Low/high n/a
- Average building value = n/a

Creston Fire District

53,547 Acres

Priority Areas 22,853 Acres

Priority Area Number 1 – Many Lakes = 3,902 Acres

- 404 Parcels with buildings
- Low/high $4,590 - $837,140
- Average building value = $124,144

Priority Area Number 2 – Foothill Road = 5,980 Acres

- 279 Parcels with buildings
- Low/high $1,930 – $1,498,160
- Average building value = $96,321

Priority Area Number 3 – Lindsay Lane / South Echo Lake = 4,921 Acres

- 312 Parcels with buildings
- Low/high $290 - $1,741,490
- Average building value = $143,490

Priority Area Number 4- Bachelor Grade / North Lake Blaine = 7983 Acres

- 597 Parcels with buildings
- Low/high $390 – $698,910
- Average building value = 130,751

Priority Area Number 5 - Ranchettes = 67 Acres

- 30 Parcels with buildings
- Low/high $1,500 – $168,838
- Average building value = $63,532

Creston District Fire Chief Comments (Priority Area Review):

Many Lakes:

Large population, “one way in/outs” dead end roads. Heavy smoke potential, slope in many places. Water supply, narrow driveways, few refuge areas. LARGE POTENTIAL FOR LIVES LOST.

Foothill Road:

Heavy Timber, Main Road artery, direct path of fire spread from Echo / Many lakes. Water supply, dificult to “reach from the back”.

Lindsay Lane / South Echo Lake:

Heavy timber, narrow driveways, some slope issues, access issues- limited. Growing population, contiguous with federal and state lands. Heavy smoke potential, few refuge areas.

Bachelor Grade South / Lake Blaine- Slope on Eastern Side:

Growing population. Many narrow roads, dead ends. Water supply. City dwellers in the country.

Ranchettes:

Many homes in small wooded area. Short term event. All access from downwind side.

Evergreen Fire District

14,734 Acres

Priority Areas 683 Acres

Priority Area Number 1 –USFWS lands = 170 Acres

- 2 Parcels with buildings
- Low/high $11,400 - $61,930
- Average building value = $36,665

Priority Area Number 2 – Campground on River = 44 Acres

- 1 Parcels with buildings
- Low/high $263,700
- Average building value = $263,700

Priority Area Number 3 – Glacier Subdivision = 210 Acres

- 4 Parcels with buildings
- Low/high $18,630 - $439,500
- Average building value = $169,712

Priority Area Number 4- End of Bayou Road = 136 Acres

- 18 Parcels with buildings
- Low/high $93,020 – $320,360
- Average building value =

Priority Area Number 5 – Plum Creek Mill = 123 Acres

- 7 Parcels with buildings
- Low/high $100,100 - $983,100
- Average building value = $352,386

Evergreen District Fire Chief Comments (Priority Area Review):

- *USFWS River Area:*

  Access: Limited access …main owner is USFWS, swampy brush No access… campground on river

- *Glacier Subdivision:*

A new development that will have 64 acres of parkland and houses in the timber. Fire Chief will watch this one as it develops.

- *End of Bayou Road:*

  End of Bayou Road, gated and posted. There are houses. Plum Creek Mill

Ferndale Fire District

5,585 Acres

Priority Areas 1,273 Acres

Priority Area Number 1 – Bear Creek Area = 958 Acres

- 38 Parcels with buildings
- Low/high $42,440 - $607,580
- Average building value = $236,637

Priority Area Number 2 – Tamarack Lane = 315 Acres

- 14 Parcels with buildings
- Low/high $3,120 – $178,995
- Average building value = $84,505

Ferndale District Fire Chief Comments (Priority Area Review):

- *Bear Creek Area:*

  Sloped, borders NF, access-one road

- *Tamarack Lane:*
- Houses on slopes, borders NF, Access- one road

Hungry Horse Fire District

808 Acres

Priority Areas have not been defined.

According to the Forest Service fire specialist who talked with the then-Hungry Horse Fire Chief when the Hungry Horse-to-West Glacier project was being put together, the area that Hungry Horse was worried about was the acreage south of the highway just over (on the Hungry Horse side) the US Highway 2 bridge across the South Fork of the Flathead River. The area is currently being treated by the Forest Service.

Kalispell Fire Department[28]

Priority Areas 1,219 Acres

[28] The GIS data provided by the County does not have the Kalispell Fire Department boundary in polygon format, accurate calculation of acres is not feasible with existing data resources.

Kalispell Fire Department Comments (Priority Area Review) (Number refers to number on map – Figure 40)

1) Primarily grass and no slope on the west side. East side has an east aspect, is brush and trees along the Stillwater River.
2) Grass, some brush, with an east slope
3) Grass, some brush, south slope. BNSF RR.
4) This is airport property and is no slope grass, with interspersed wood buildings
5) Grass, no slope
6) While this area is not in the city, it is surrounded by the city. Property is a flood plain of Ashley Creek, has brush, dificult access, and some grass.
7) Grass, no slope.
8) Brush, some grass, no slope, BNSF RR.
9) Brush, creek frontage. No slope. Dificult access.
10) Surrounded by commercial and residential. Grass, with a high angle west slope on the east side. Dificult access.
11) Grass, some brush. West and east slope.
12) Grass, both in the city and outside the city. South and west slope. High density residential to the east and south.
13) Grass, with east, north, and west slope in the southwest corner. Otherwise no slope.

    Property is undergoing commercial development in the Northwest corner. Has irrigated athletic fields in the Southeast corner.
14) South slope, grass, brush, and trees. Dificult access.
15) East slope, grass and brush. Dificult access.
16) This is undeveloped park land. Slopes are east and north. Heavy brush, dead timber, and no access.

Marion Fire District

19,141 Acres

Priority Areas 3,982 Acres

Priority Area Number 1 –McGregor Lake = 522 Acres

- 44 Parcels with buildings
- Low/high $2,570 - $223,120
- Average building value = $58,191

Priority Area Number 2 – Marion Mountain = 1,640 Acres

- 66 Parcels with buildings
- Low/high $1,360 – $159,616
- Average building value = $66,236

Priority Area Number 3- Bitterroot Lake = 1,820 Acres

- 178 Parcels with buildings

- Low/high $490 – $977,230
- Average building value = $89,507

Marion District Fire Chief Comments (Priority Area Review):

- *McGregor Lake*

  This subdivision has a grant pending for fuel mitigation, and is a high priority because it is heavily timbered; many houses are close together and have older frame construction. There is a small strip of State land on the south shore of the lake with several leased parcels with structures bunched together with timber and brush encroaching. This area borders Plum Creek and is considered high risk because of the prevailing wind direction and the fact a there is potential for a large fire to occur on the Plum Creek and State land to south and west and move into this subdivision.

  Other Concerns:

  One way in – one way out. 6 inch hydrant.

- *Bitterroot Lake:*

  The north west and south west side of the lake have subdivisions, a lot of new construction: heavily timbered; high density of houses. Both one way in one way out for both subdivisions. There is talk of connecting the two roads. There is a 10-15 minute drive / response time to the north end of the lake from the fire station.

  Getting water from the lake is an issue because of access to draft sites on the lake. On the north end, need to widen the canopy along the road, and need to develop a safety zone in the subdivision, near the end: 300' radius.

  Other Concerns:

  Need to get home owners to create defensible space, brush and timber encroach many homes.

  Recommendation for Firewise Outreach

  This site is directly adjacent to Plum Creek and State lands, the site is to the west and the wind direction is from west to east, putting this community at risk should a large fire occur on PC or state lands.

- *Marion Mountain* Best to treat individual homes.

  There are other areas with a density of homes and fuel, identified by the assistant fire chief as priorities.

  Northeast of McGregor Lake, on the north side of highway 2; south and south east of Bitterroot Lake including Marion Mtn. There is a substation in timber see map.

Martin City Fire District

3,483 Acres

Priority Areas 146 Acres

Priority Area Number 1 – Forest Service Lands = 56 Acres

- 2 Parcels with buildings
- Low/high $26,070 - $169,600
- Average building value = $97,835

Priority Area Number 2 – Coram Experimental Forest = 90 Acres

- 2 Parcels with buildings
- Low/high $47,790 – $115,240
- Average building value = $81,515

Martin City District Fire Chief Comments (Priority Area Review):

- *US Forest Service Boundary Comments:*

The number one priority is an area in the south east part of the district. There are only a few homes in this area, but it is thick with forest, the adjacent land owner is the FS.

Number two priority is fuel reduction on the Coram Experimental Forest. On the east side of the district boundary. No one expects this to happen.

Olney Fire District

1,018 Acres

Priority Areas have not been defined

South Kalispell Fire District

7,073 Acres

Priority Areas 683 Acres

- All of the priority areas in the South Kalispell Fire District are access and safety zone issues. See map for details.

South Kalispell District Fire Chief Comments (Priority Area Review):

- No need for fuel reduction. A lot of work has already been done.
- Egress issues and need for water. If FEMA money is available, a well with a pump would be ideal for a fill site.

Smith Valley Fire District

35,449 Acres

Priority Areas 1,365 Acres

Priority Area Number 1 – Upper Batavia = 524 Acres

- 188 Parcels with buildings
- Low/high $460 - $1,057,790
- Average building value = $109,721

Priority Area Number 2 – Hoffman Draw = 135 Acres

- 102 Parcels with buildings
- Low/high $19,008 – $64,254
- Average building value = $37,383

Priority Area Number 3- Rogers Lake = 43 Acres

- 53 Parcels with buildings

- Low/high $1,570 – $228,500
- Average building value = $110,277

Priority Area Number 4- Browns Meadow = 142 Acres

- 67 Parcels with buildings
- Low/high $2,060 – $253,880
- Average building value = $105,385

Priority Area Number 5 – Coons Hollow–Emmons Canyon–Truman Creek = 202 Acres

- 191 Parcels with buildings
- Low/high $820 – $344,620
- Average building value = $88,484

Priority Area Number 6 – Spring Hill = 115 Acres

- 41 Parcels with buildings
- Low/high $1,360 – $200,260
- Average building value = $85,829

Priority Area Number 7 - Haywire = 80 Acres

- 59 Parcels with buildings
- Low/high $830 – $170,100
- Average building value = $67,148

Priority Area Number 8 – Foys Canyon = 64 Acres

- 124 Parcels with buildings
- Low/high $2,950 – $613,140
- Average building value = $172,954

Priority Area Number 9 – Valley View = 61 Acres

- 29 Parcels with buildings
- Low/high $51,650 – $787,660
- Average building value = $242,476

Smith Valley District Fire Chief Comments (Priority Area Review):

1) *Upper Batavia:*

   Most roads are narrow and grown over, and steep. Ingress/egress is poor. Very high interface area - major BPA line in area.

2) *Hoffman Draw:*

   Most roads are narrow and grown over, and steep. Ingress/egress is poor. Very high interface area - major BPA line in area. Poor addressing of homes, travel times are getting longer.

3) *Haywire:* Very high density of fuel types, ingress, egress- no water supply
4) *Valley View:* Fuel types, slope, ingress/egress
5) *Foy's Canyon:* Poor ingress / egress in areas, slope, water supply.

6) *Rogers Lake:* High housing density, most are vulnerable, lots of beetle kill
7) *Spring Hill:* Density, slope, poor ingress, egress, thick mistle toe in areas, no water supply
8) *Browns Meadow:* High housing density, longer travel time, poor area for water supply
9) *Coon Hollow:*High density, long travel times, limited water supply, access: one way in, one way out, steep slopes.
10) *Emmons Canyon:* Same as Coon Hollow
11) *Truman Creek:* Same as Coon Hollow

Somers / Lakeside

27,474 Acres

Priority Areas 1,711 Acres

Priority Area Number 1 – Angel Point = 1,206 Acres

- 140 Parcels with buildings
- Low/high $412 – $1,518,580
- Average building value = $178,720

Priority Area Number 2 – Blacktail = 506 Acres

- 90 Parcels with buildings
- Low/high $22,960 – $519,760
- Average building value = $122,769

Somers-Lakeside District Fire Chief Comments (Priority Area Review):

1) *Angel Point:*

   Mixed ownership, need to remove fuel along main Angle Pt. Road, Overall need for fuel reduction, one way in, one way out. Access, slopes, gullies, need a safety zone at Whipps Lane. Only a few homes are Firewise.[29]

2) *Blacktail:* Subdivisions, home density, needs fuel reduction, some work done…needs more.

West Valley Fire District

43,051 Acres

Priority Areas 8,414 Acres

Priority Area Number 1 = 7,635 Acres

- 42 Parcels with buildings
- Low/high $3,110 – $339,000
- Average building value = $96,204

Priority Area Number 2 = 780 Acres

[29] **Please see Angel Point photo number 8.**

- 28 Parcels with buildings
- Low/high $52,710 – $295,530
- Average building value = $152,248

Whitefish Fire Service Area

50,139 Acres

Priority Areas 3,043 Acres

Priority Area Number 1 – East Lakeshore of Whitefish Lake = 837 Acres

- 116 parcels with buildings
- Low/High $841 - $2,592,185
- Average building value $213,710

Priority Area Number 2- Haskill Basin = 1191 Acres

- 89 Parcels with buildings
- Low/High $997 - $896,970
- Average building value $120,913

Priority Area Number 3- Twin Lakes = 1015 Acres

- 37 Parcels with buildings
- Low/High $2,870 - $276,800
- Average building value $119,70

Flathead County

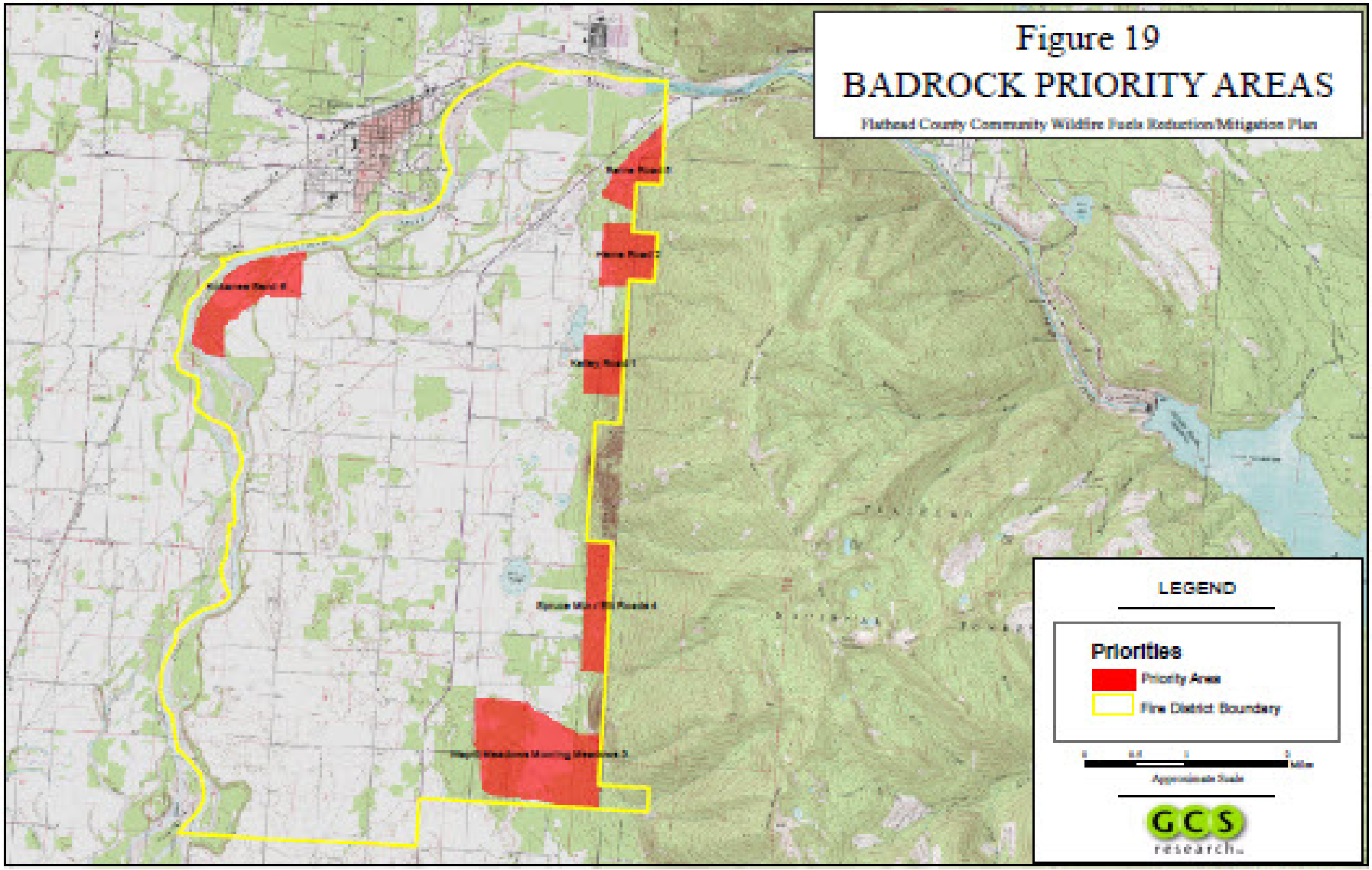

Figure 19: Badrock Priority Areas

Flathead County

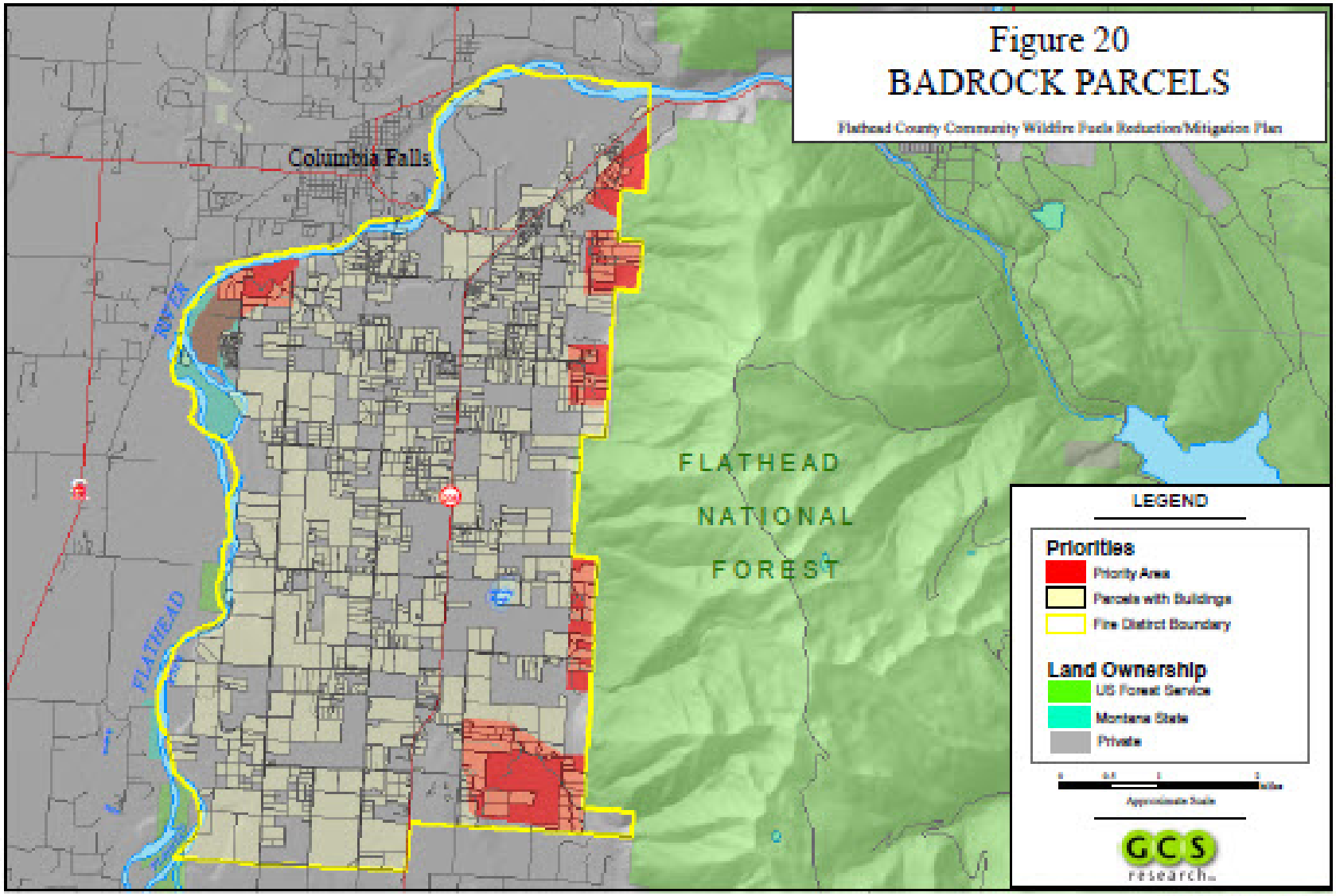

Figure 20: Badrock Parcels

Flathead County

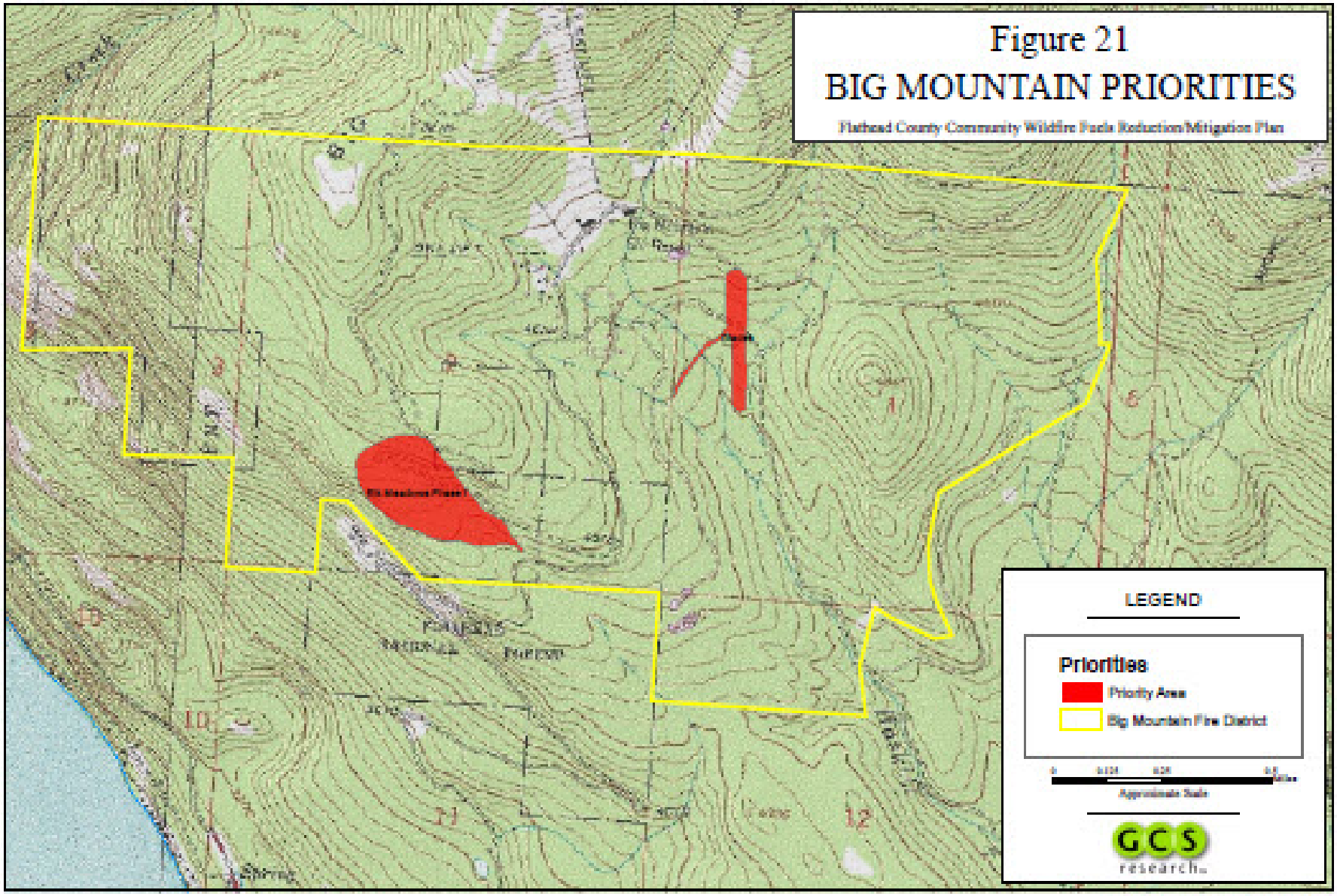

Figure 21: Big Mountain Priorities

Flathead County

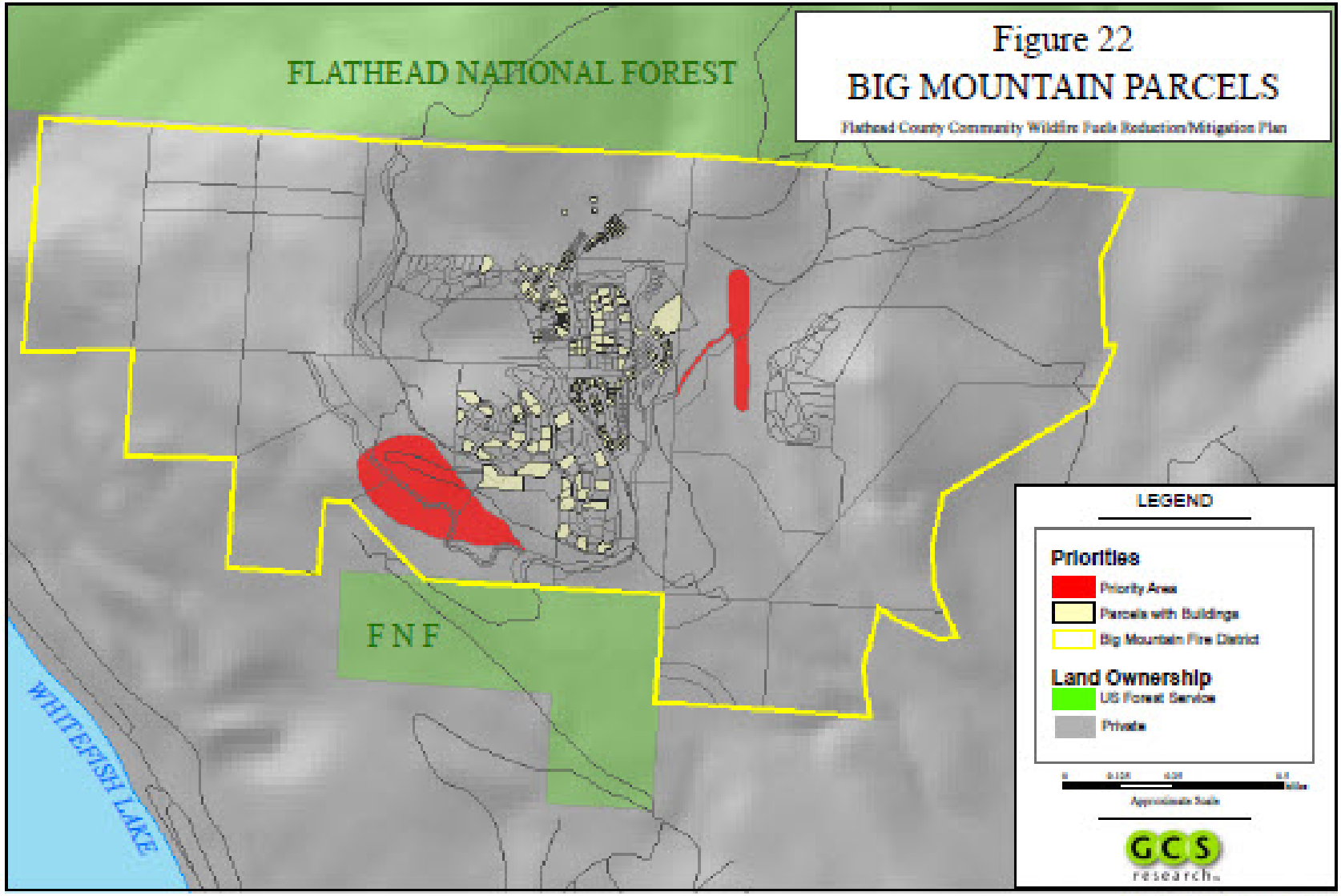

Figure 22: Big Mountain Parcels

Flathead County

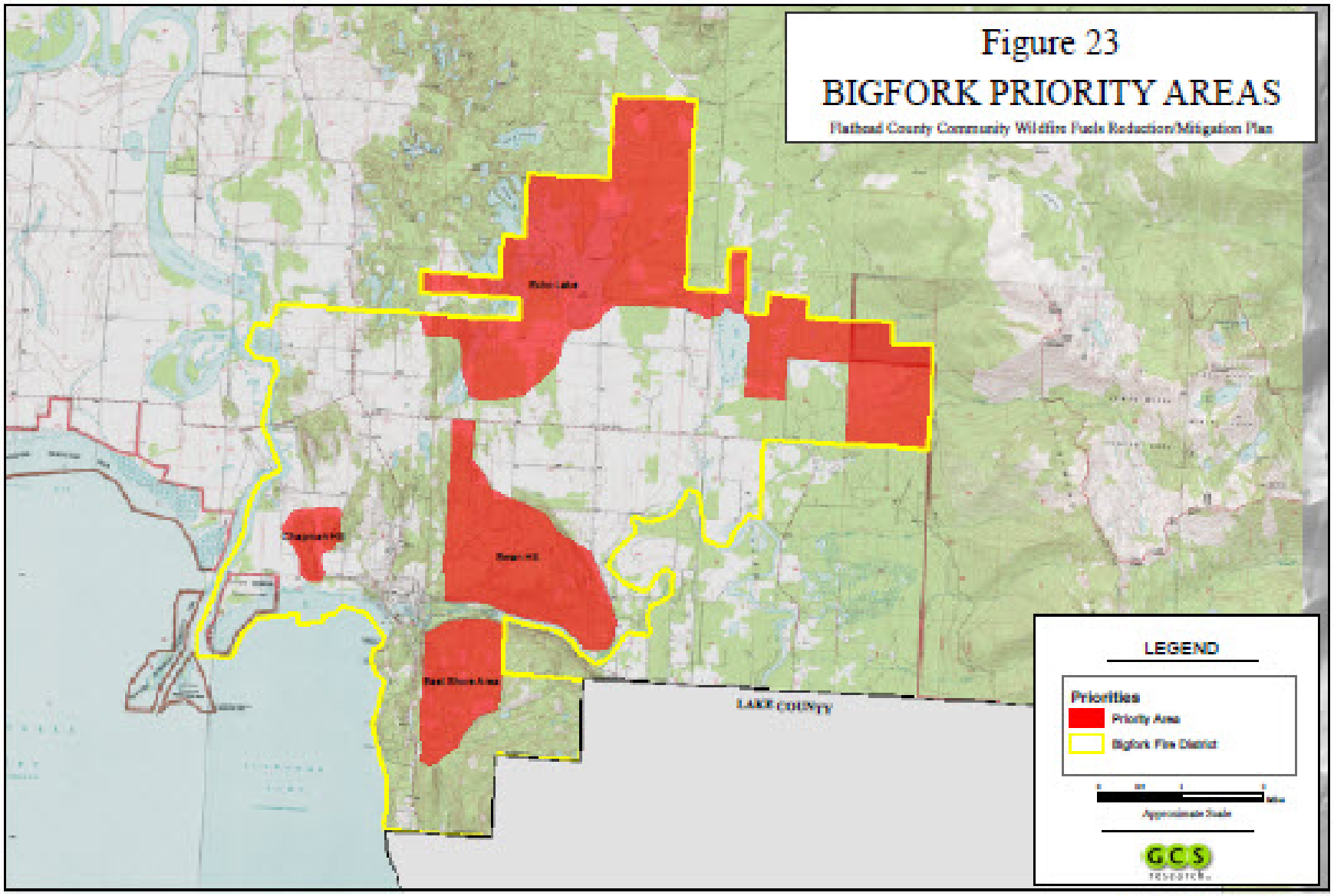

Figure 23: Bigfork Priority Areas

Flathead County

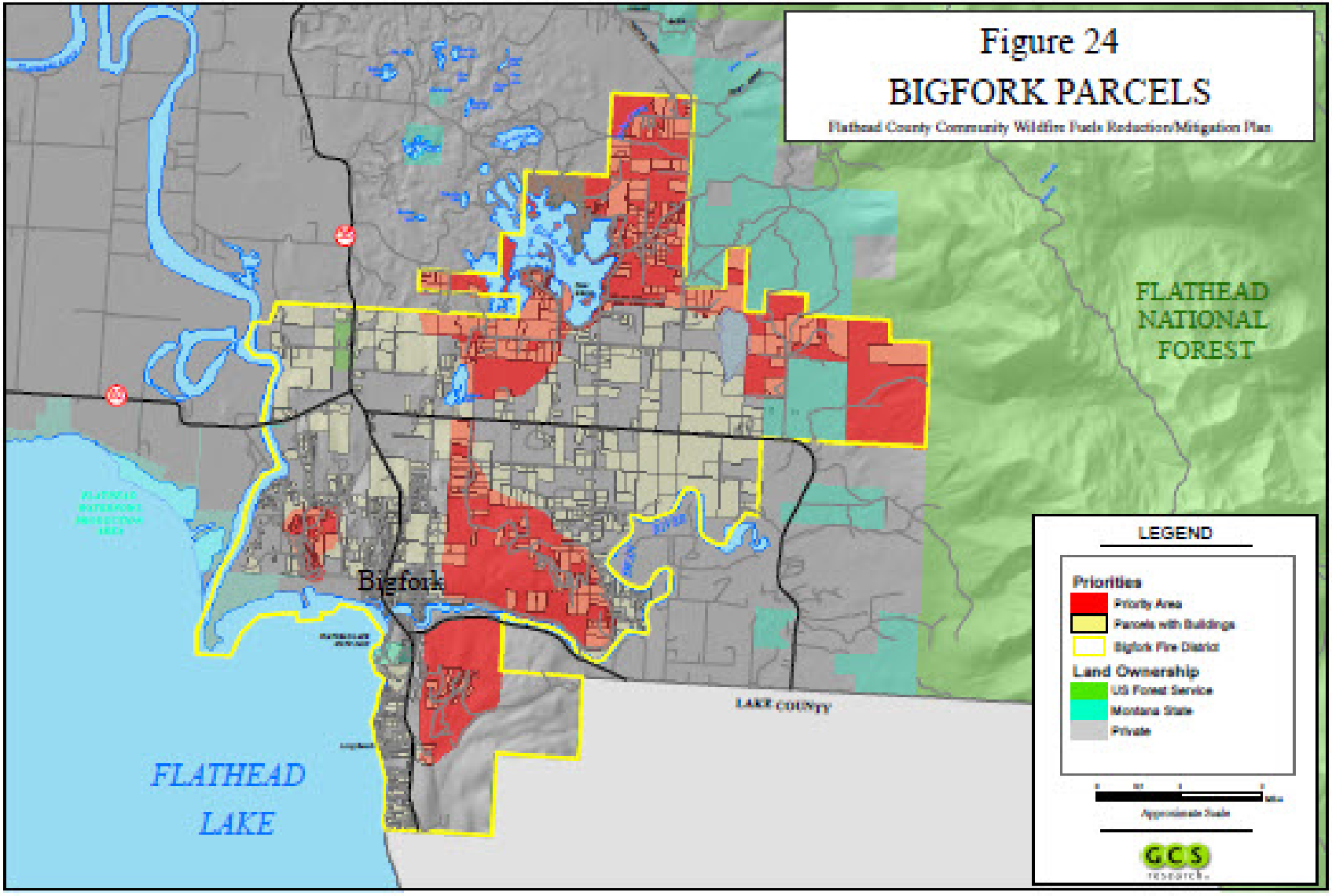

Figure 24: Bigfork Parcels

Flathead County

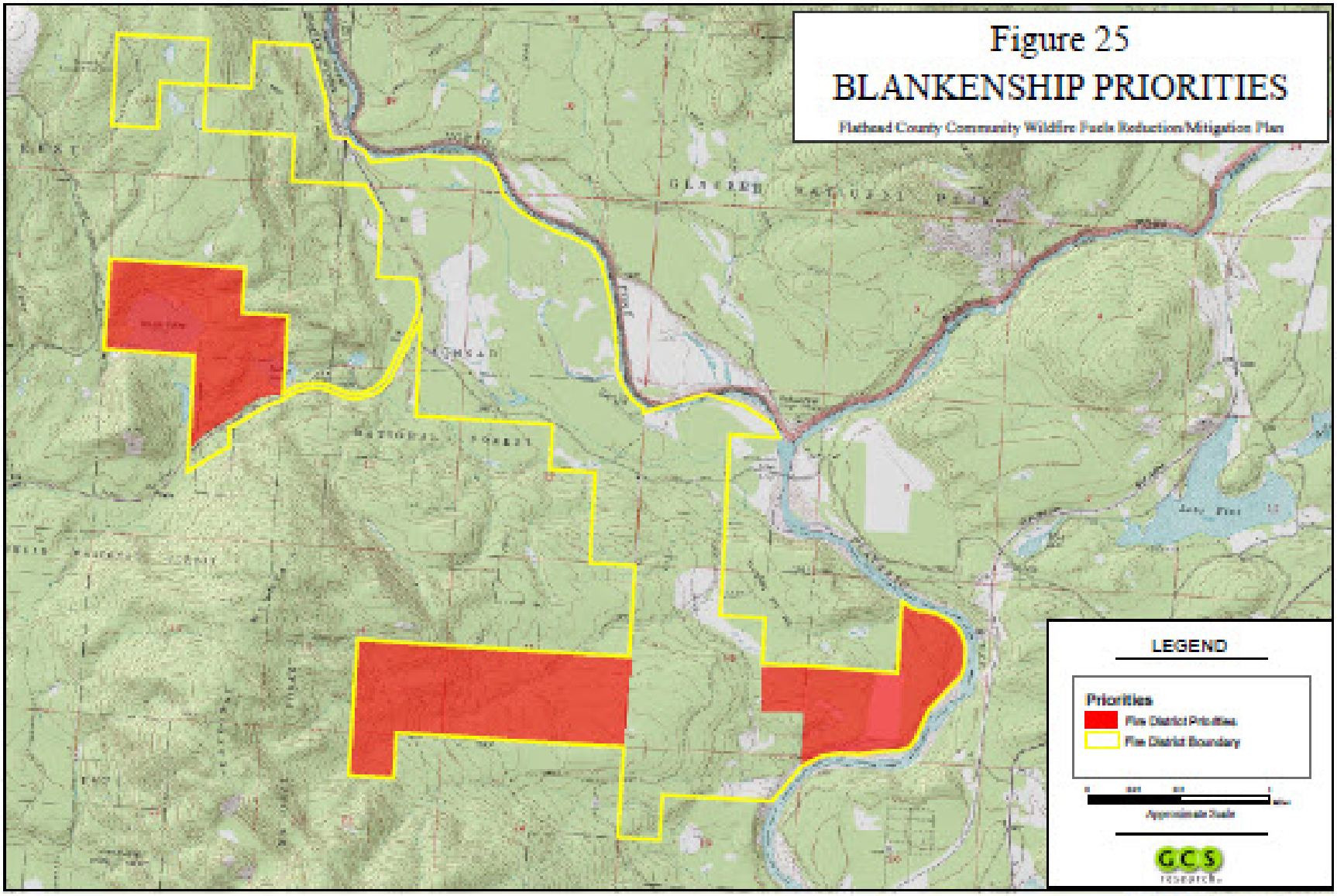

Figure 25: Blankenship Priorities

Flathead County

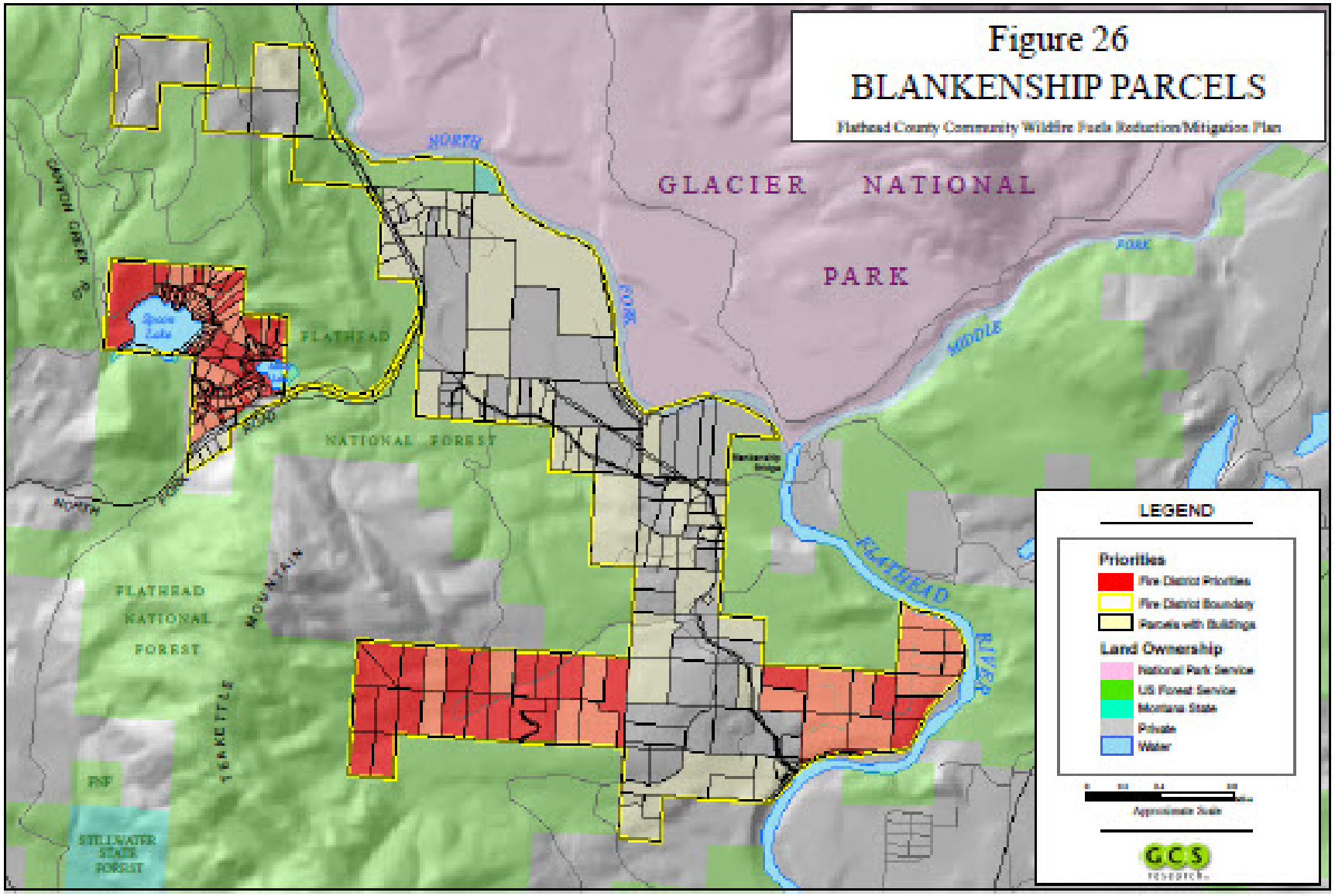

Figure 26: Blankenship Parcels

Flathead County

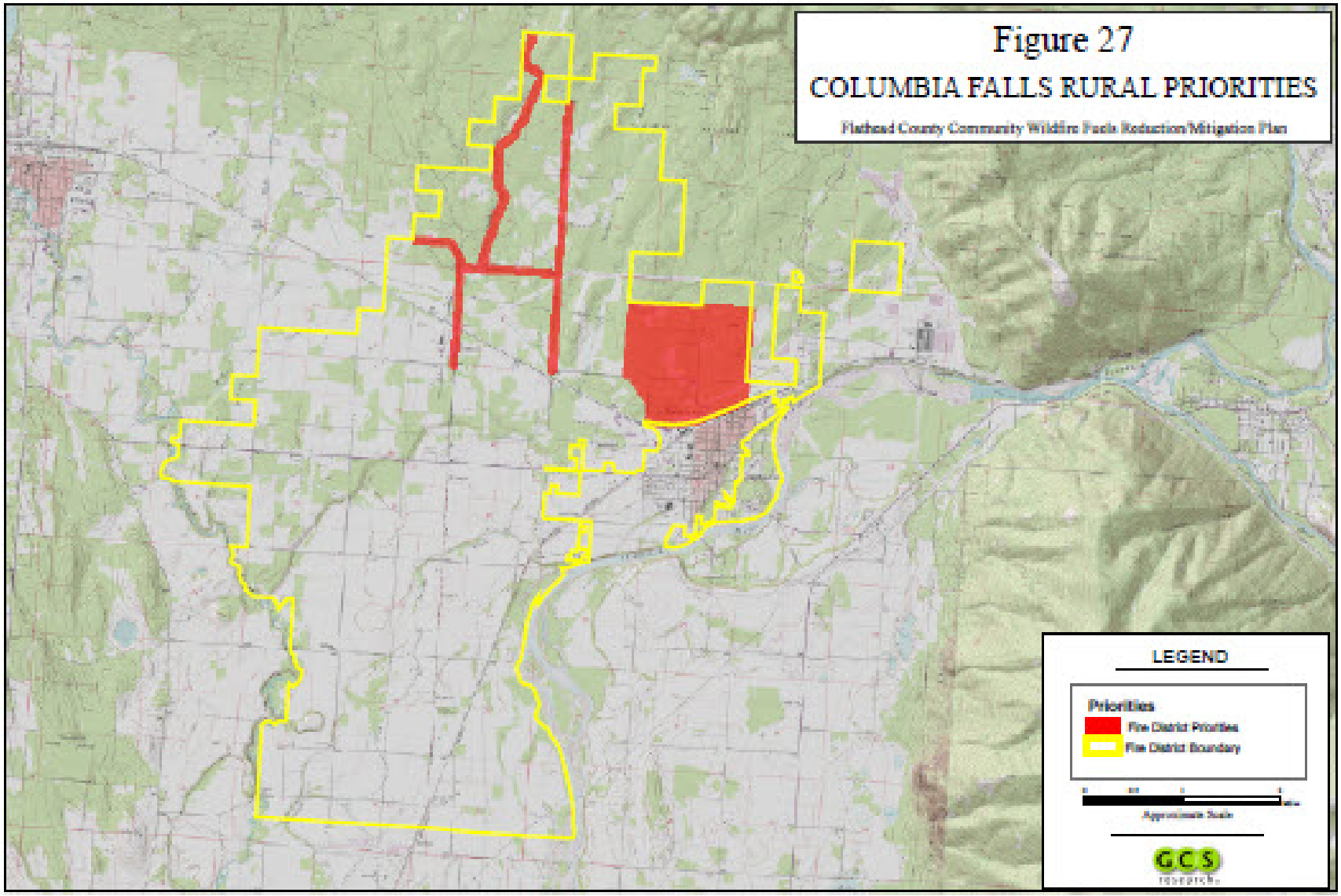

Figure 27: Columbia Falls Rural Priorities

Flathead County

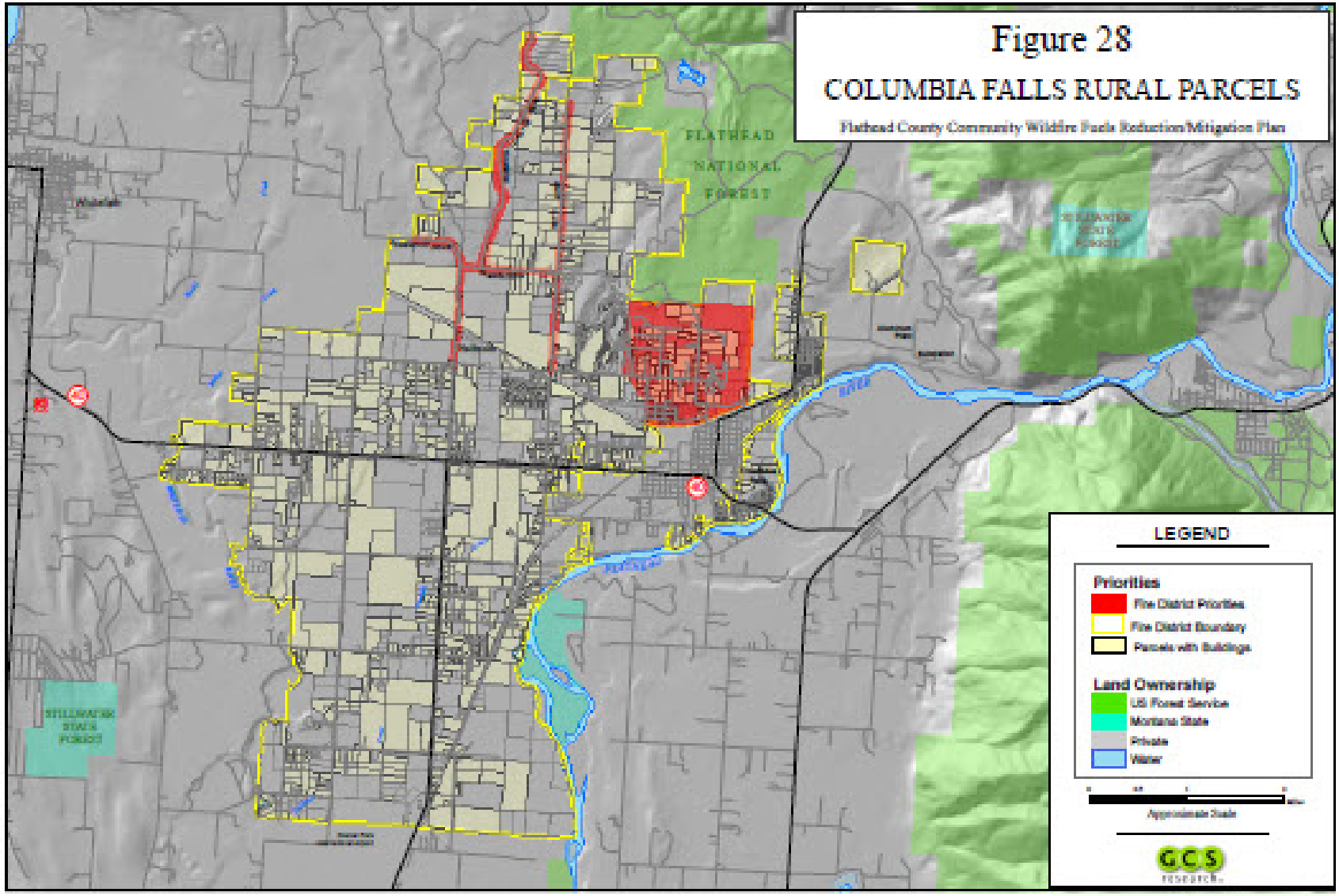

Figure 28: Columbia Falls Rural Parcels

Flathead County

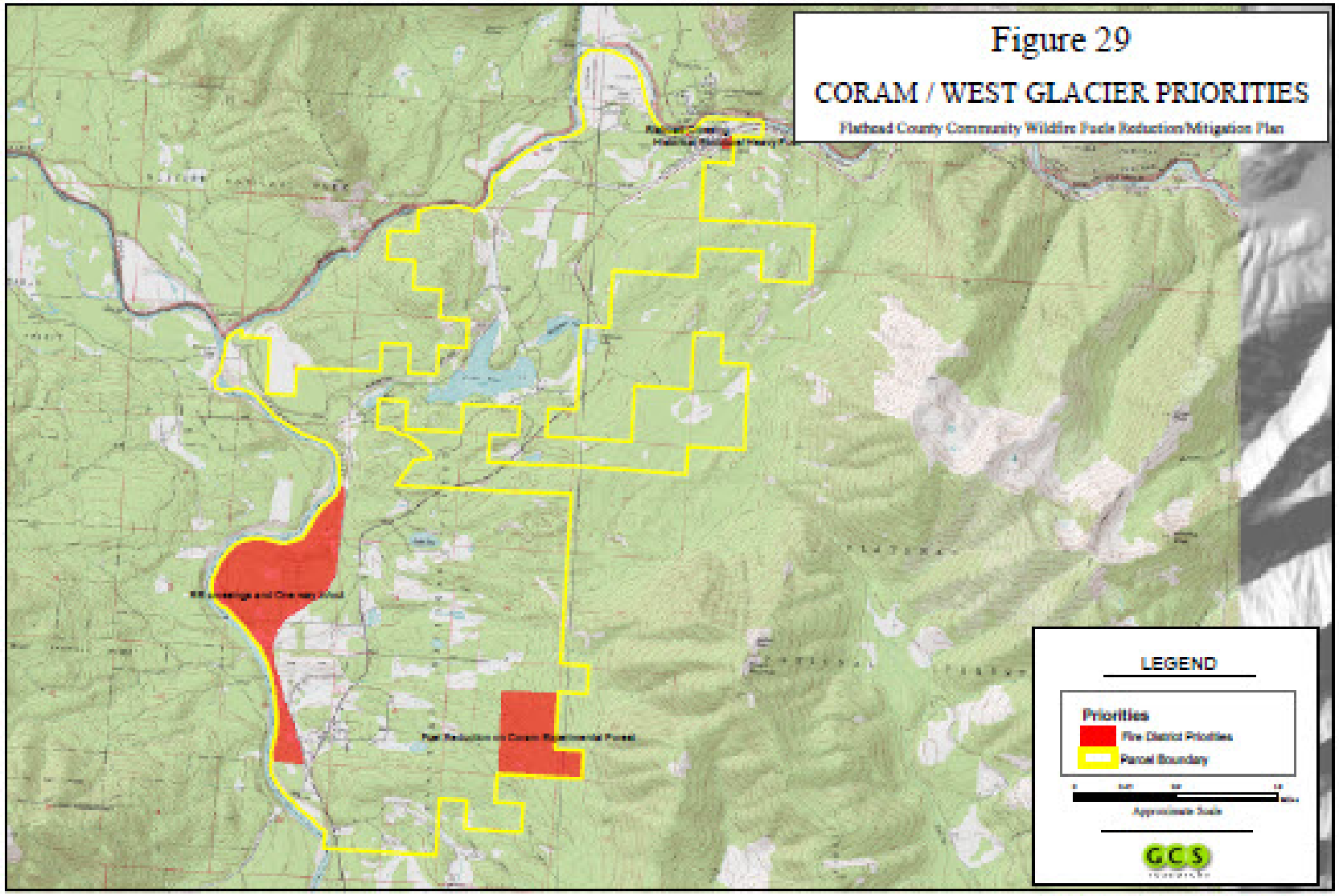

Figure 29: Coram / West Glacier Priority Areas

Flathead County

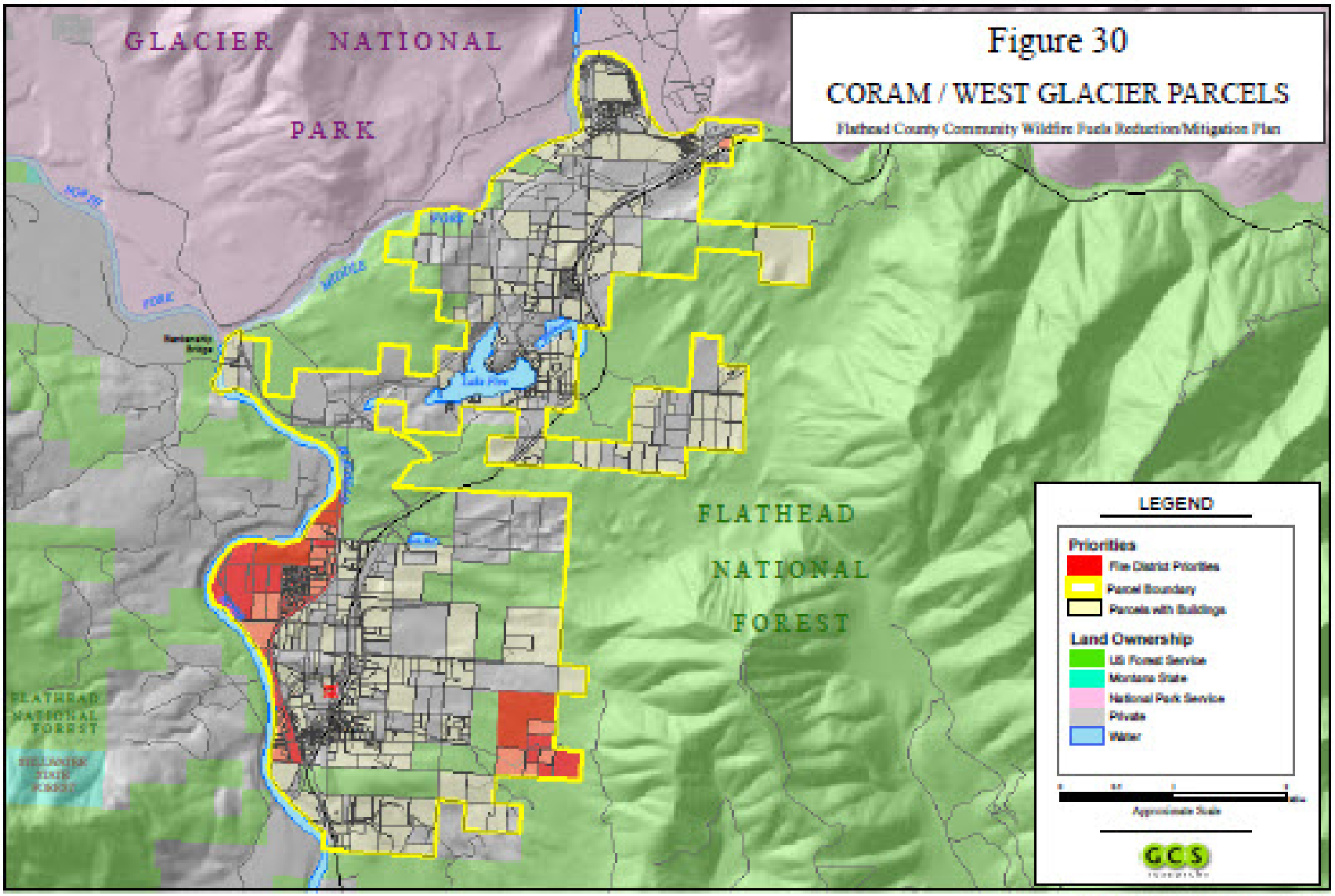

Figure 30: Coram / West Glacier Parcels

Flathead County

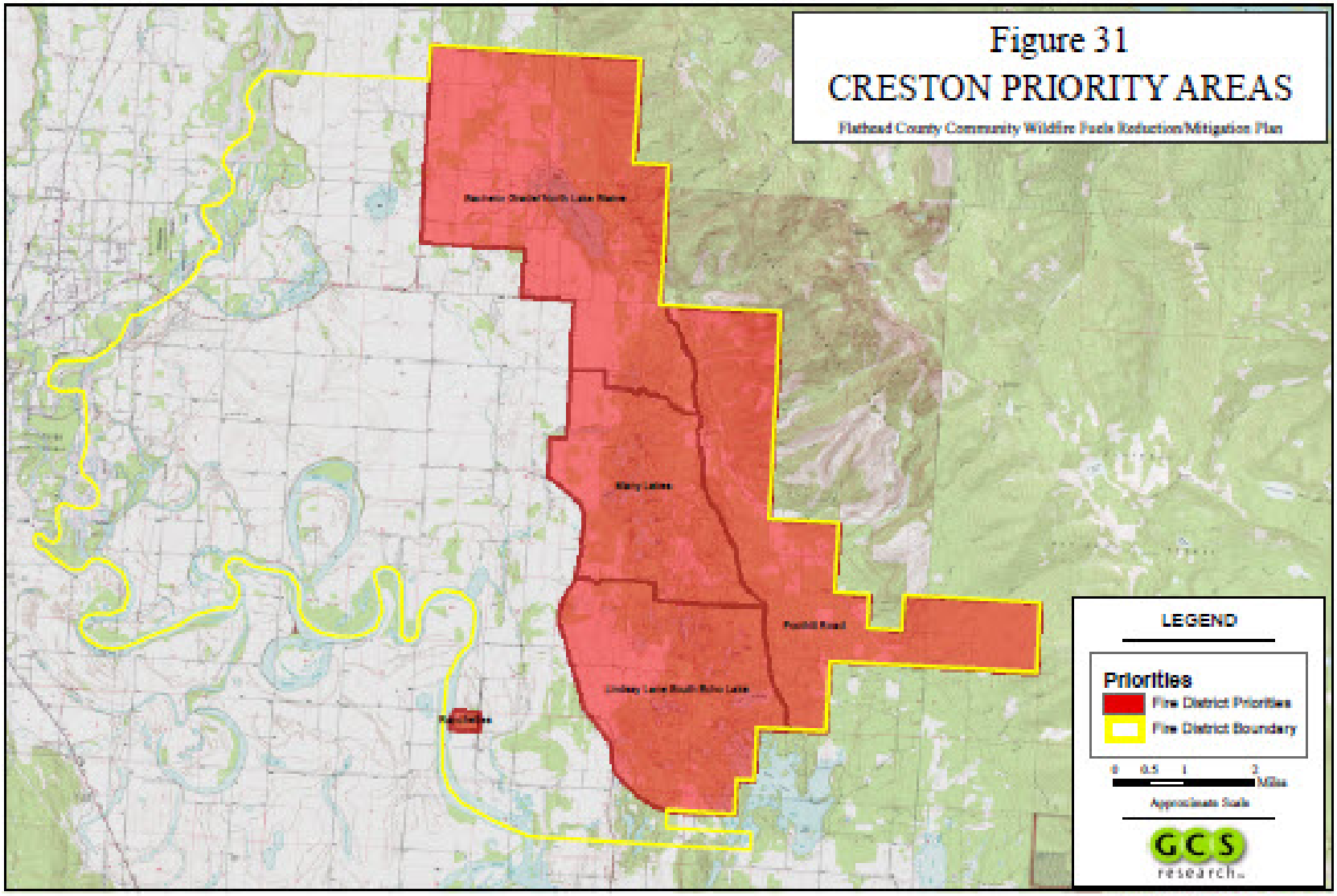

Figure 31: Creston Priority Areas

Flathead County

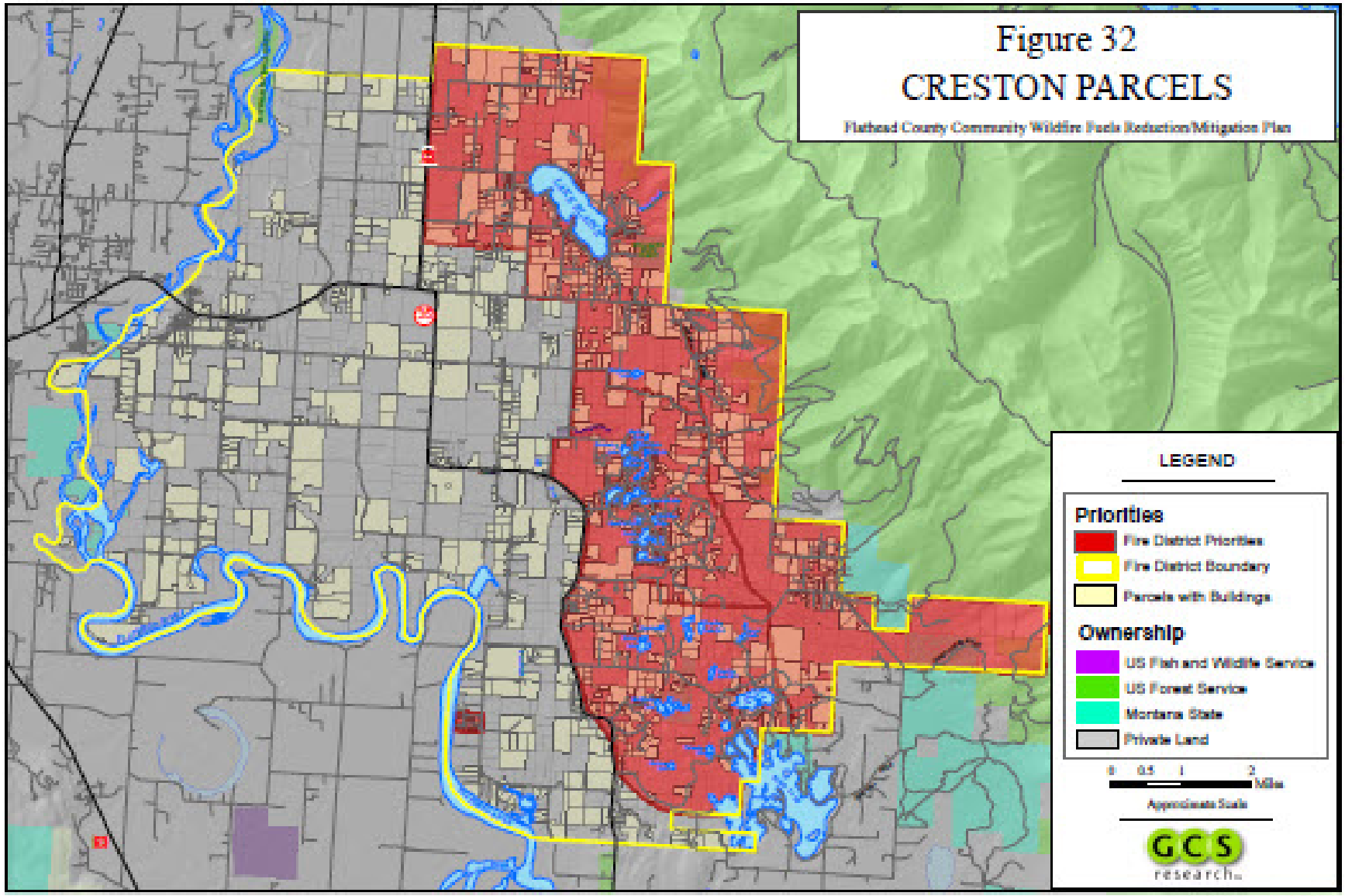

Figure 32: Creston Parcels

Flathead County

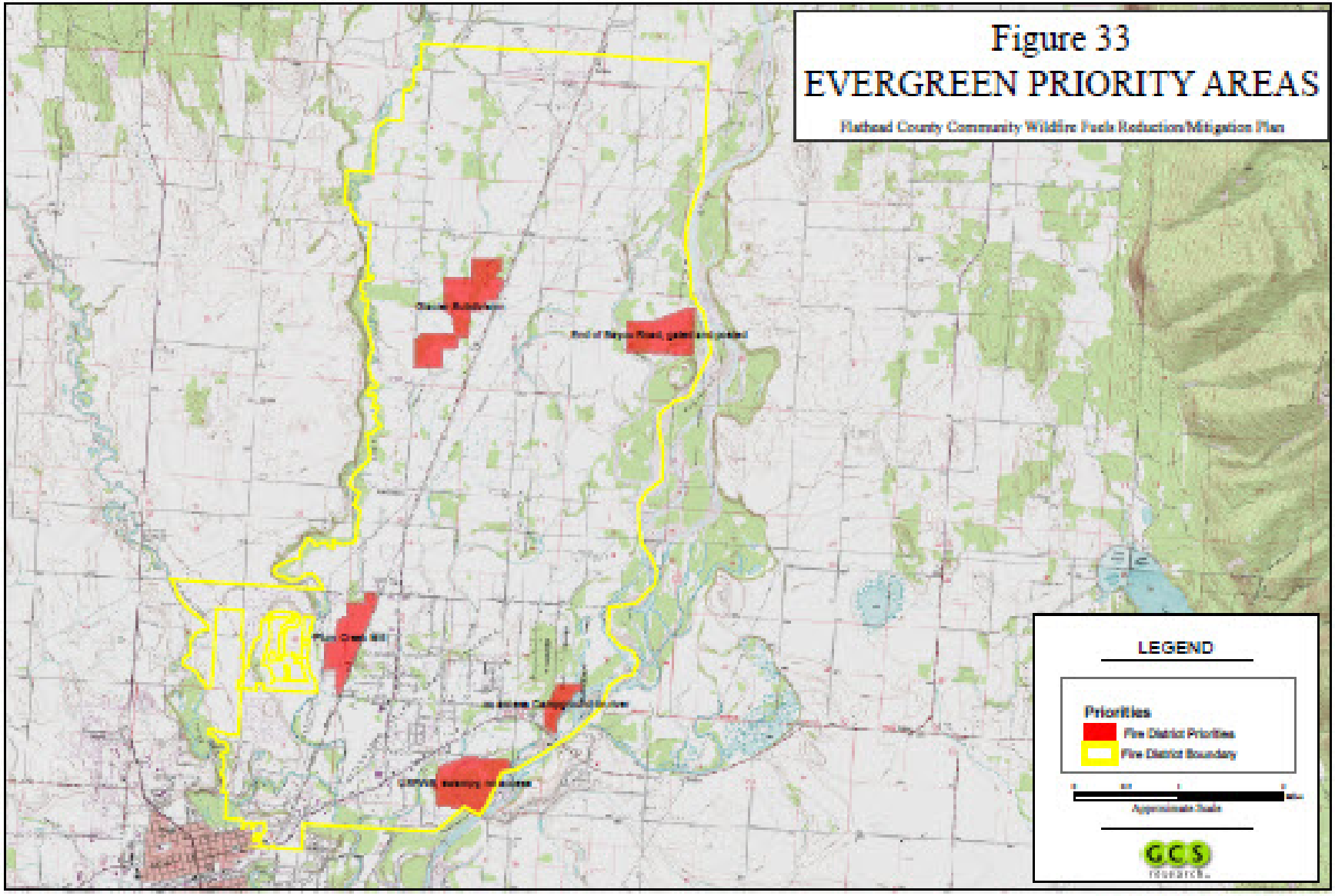

Figure 33: Evergreen Priority Areas

Flathead County

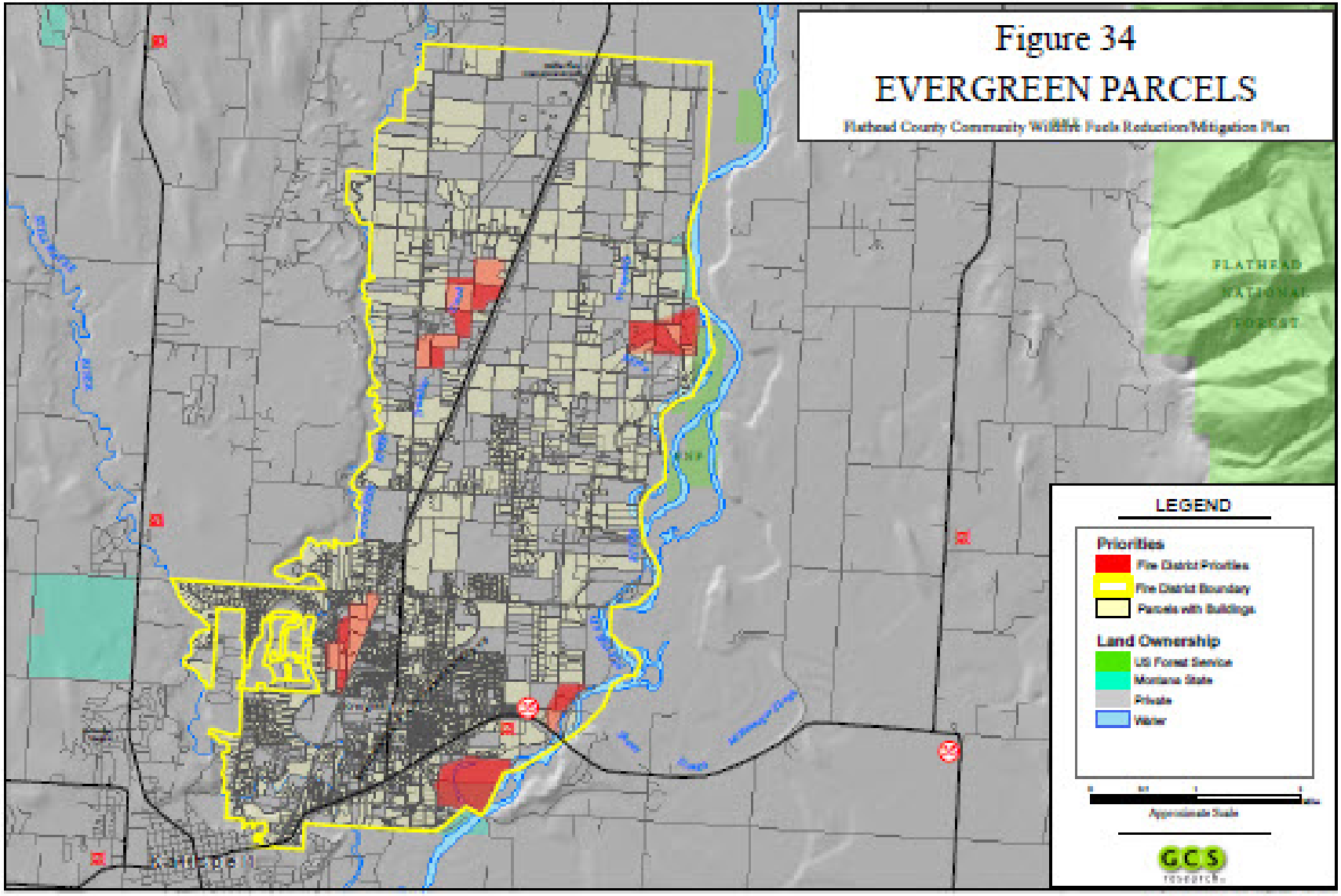

Figure 34: Evergreen Parcels

Flathead County

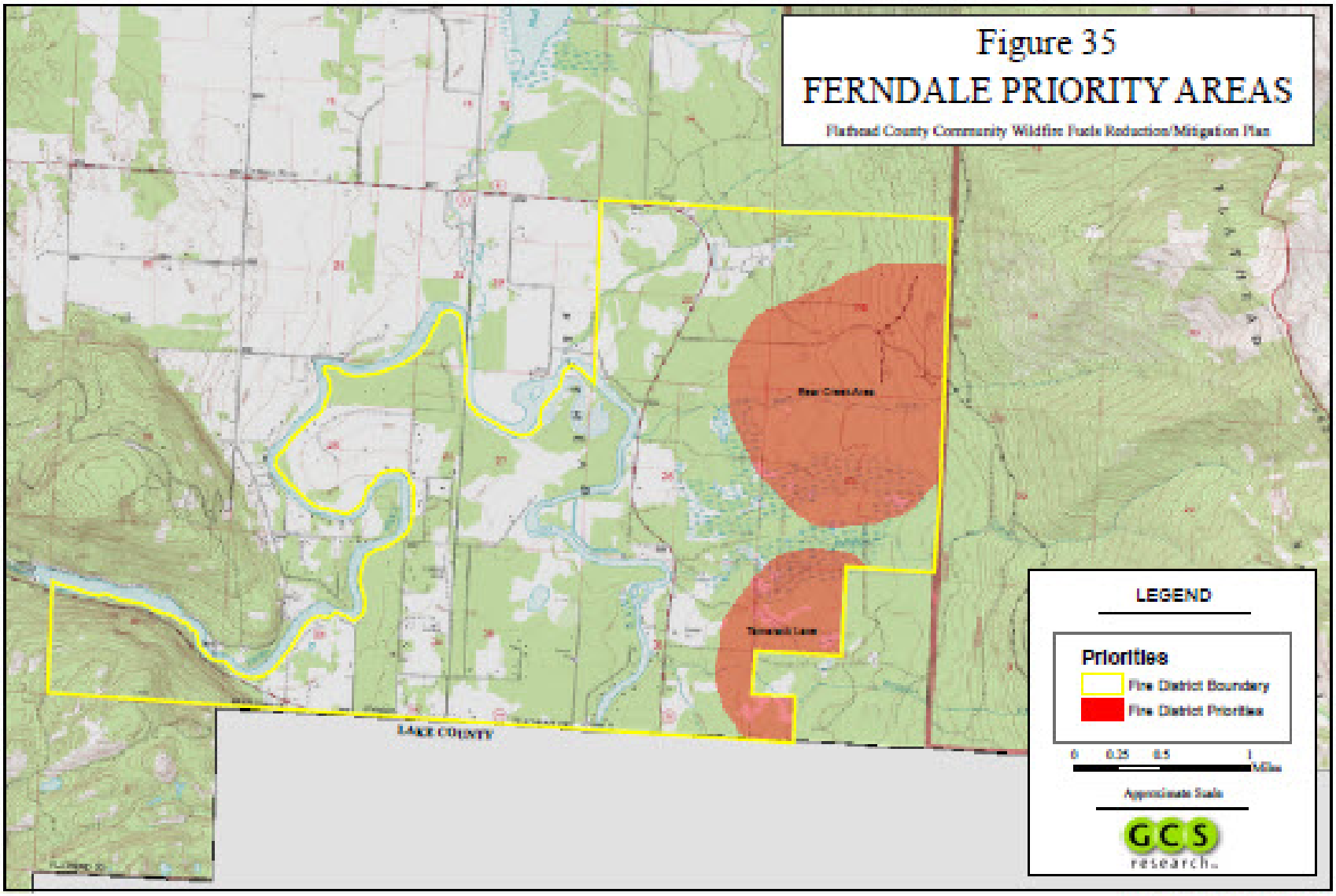

Figure 35: Ferndale Priority Areas

Flathead County

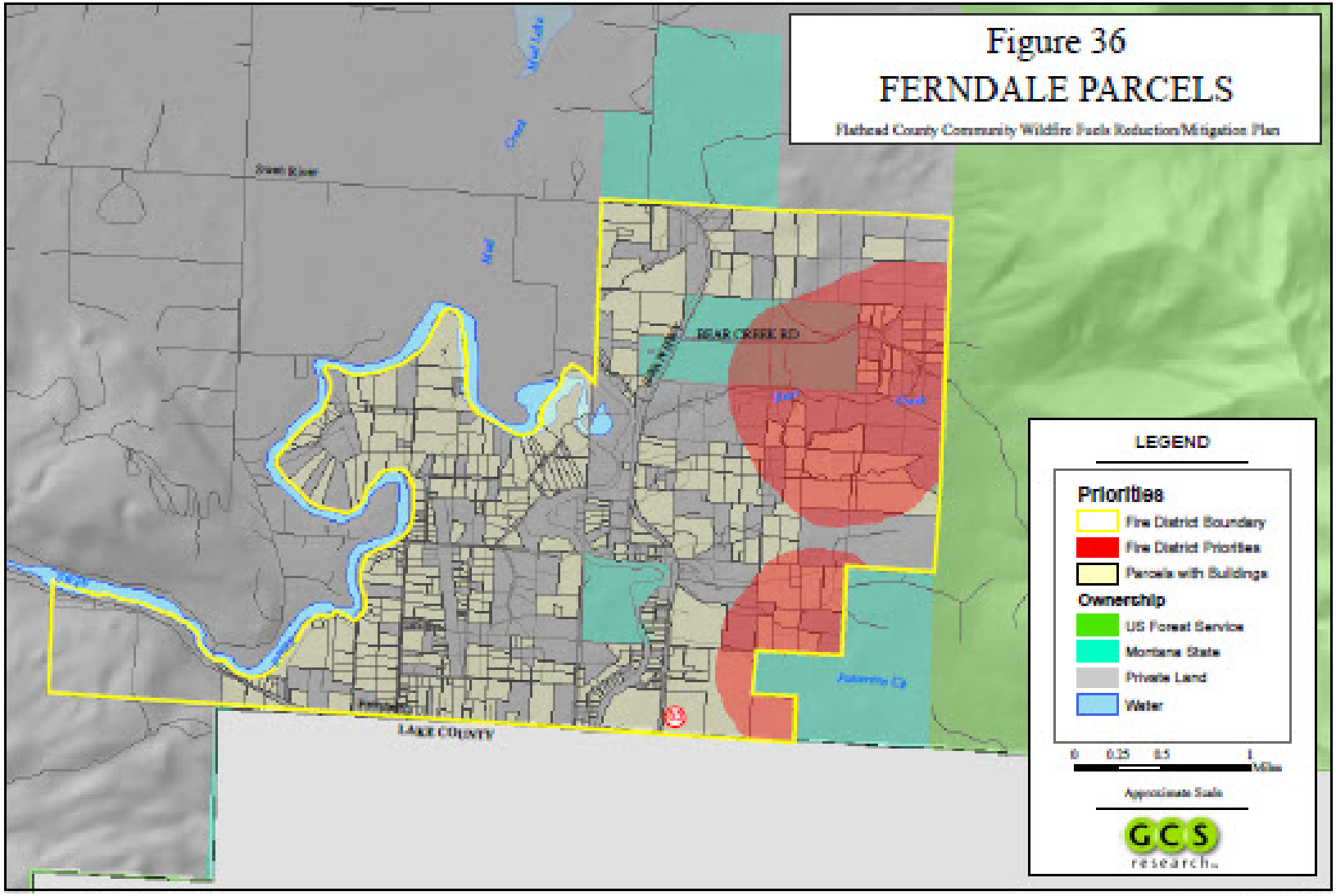

Figure 36: Ferndale Parcels

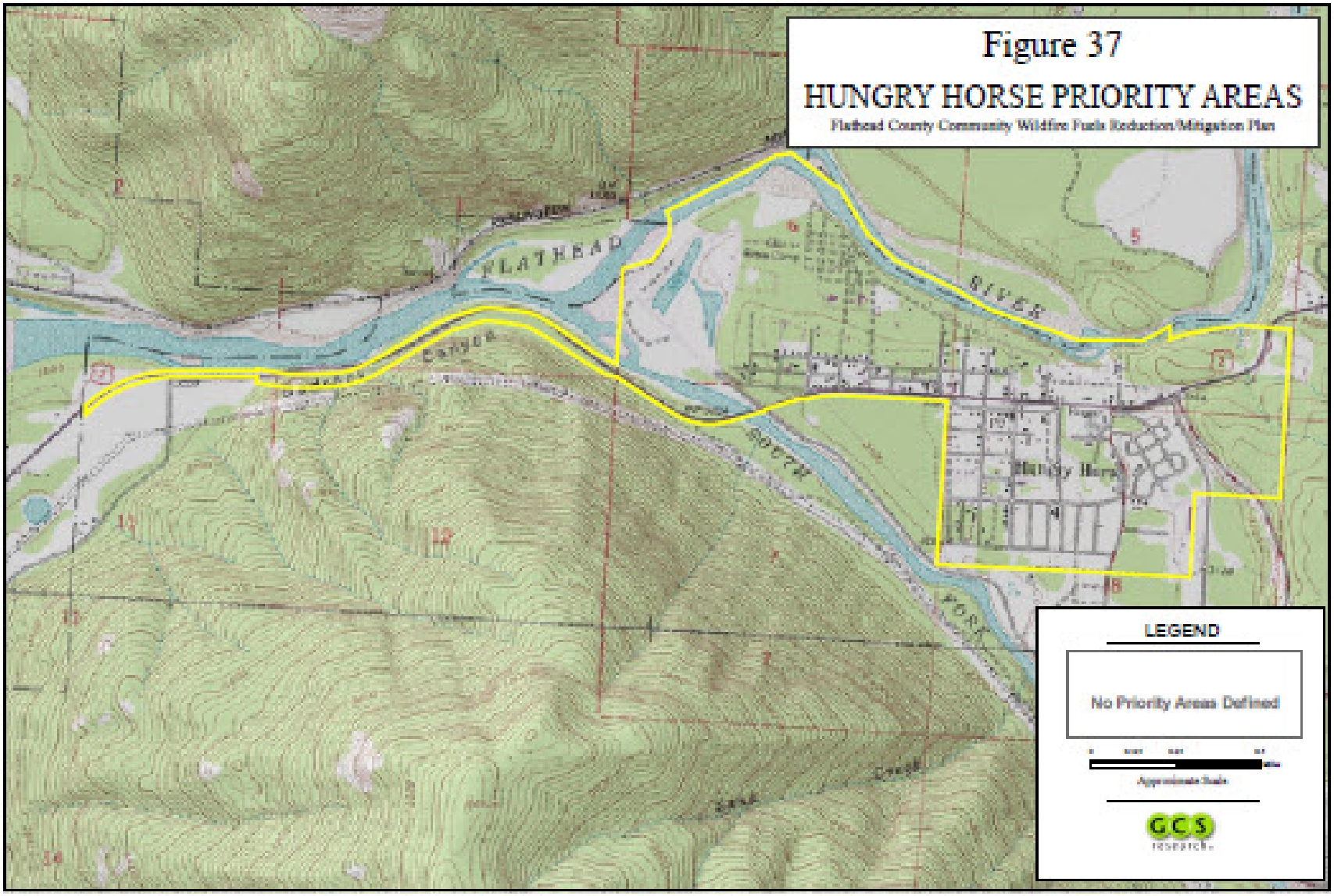

Figure 37: Hungry Horse Priority Areas

Flathead County

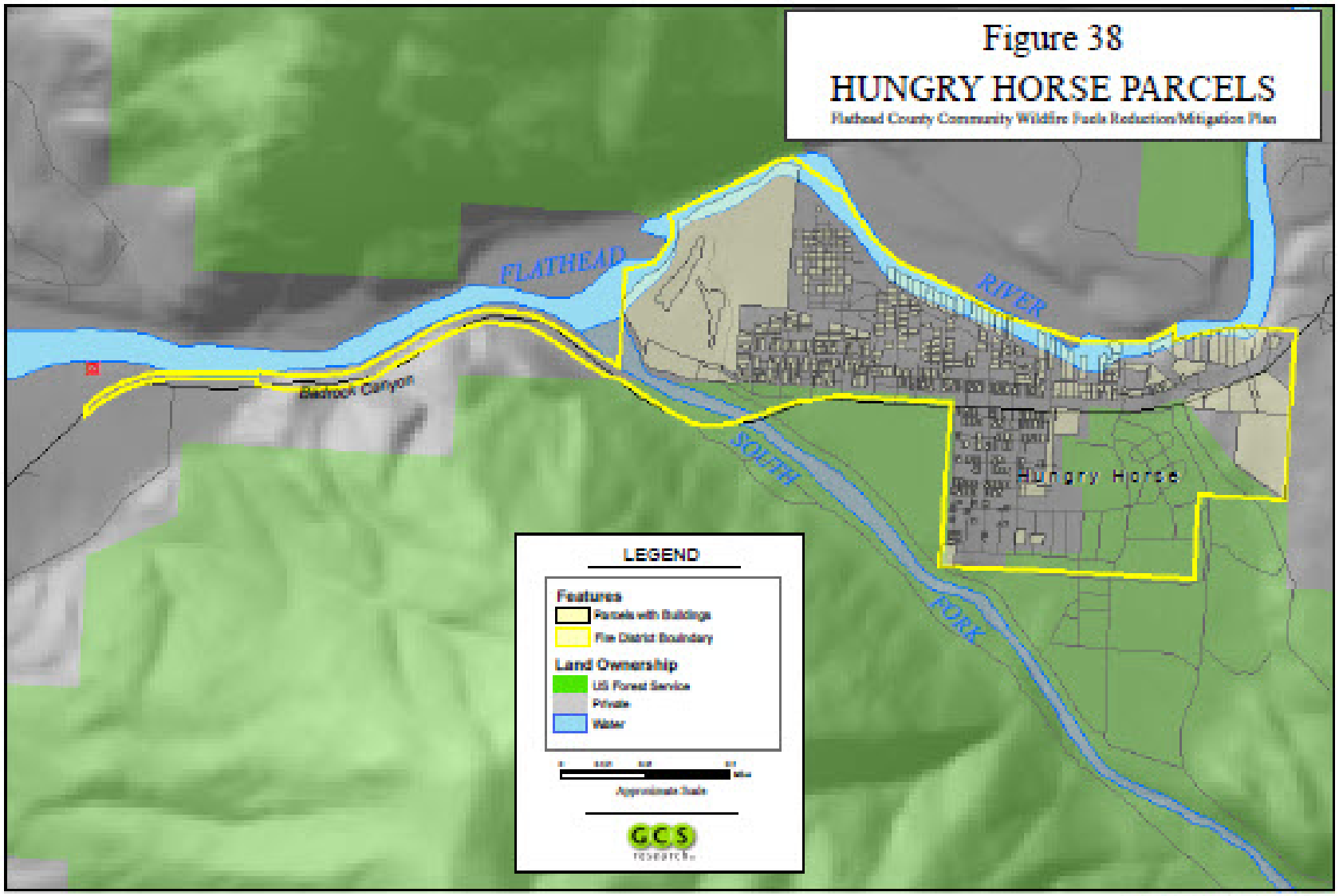

Figure 38: Hungry Horse Parcels

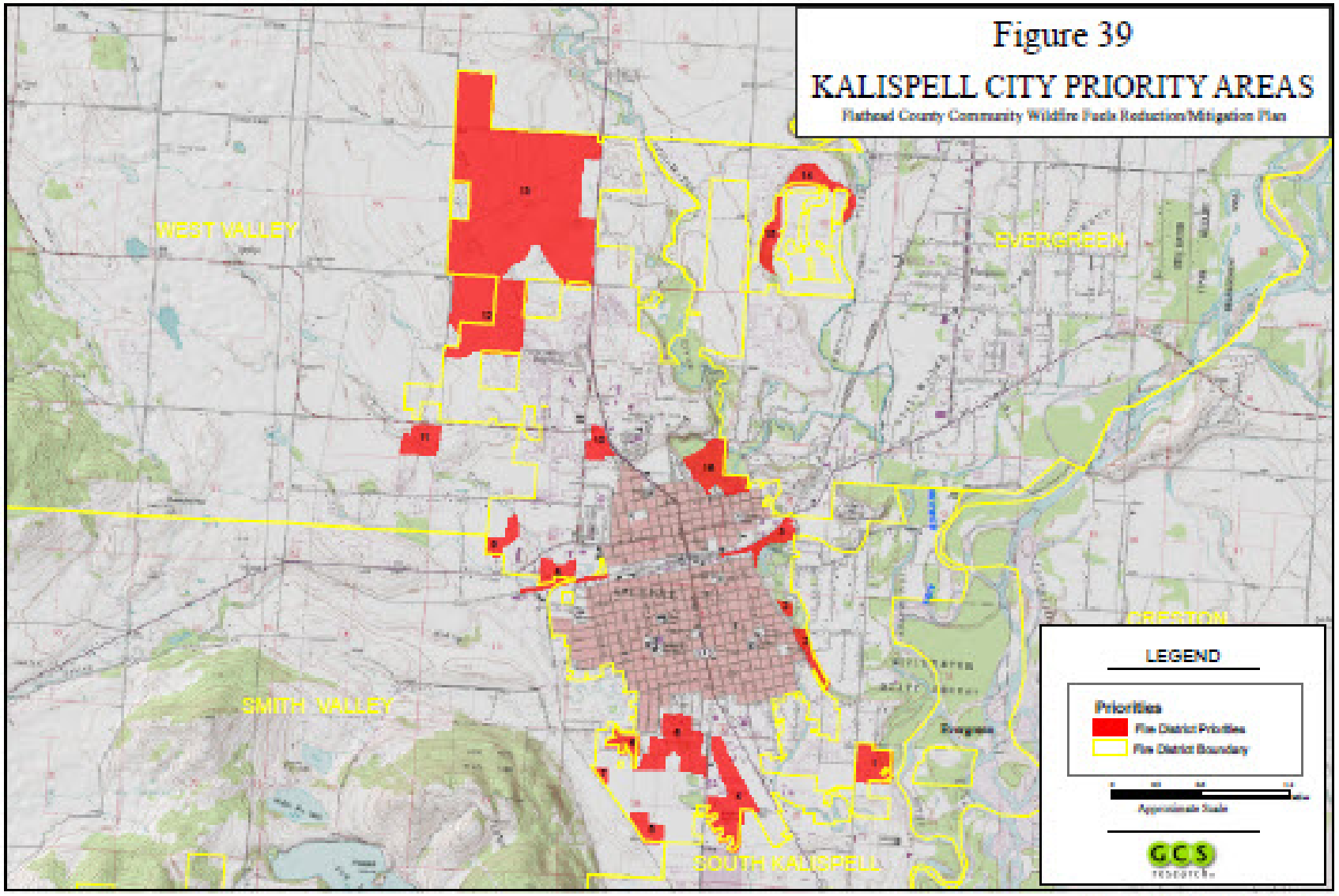

Figure 39: Kalispell City Priority Areas

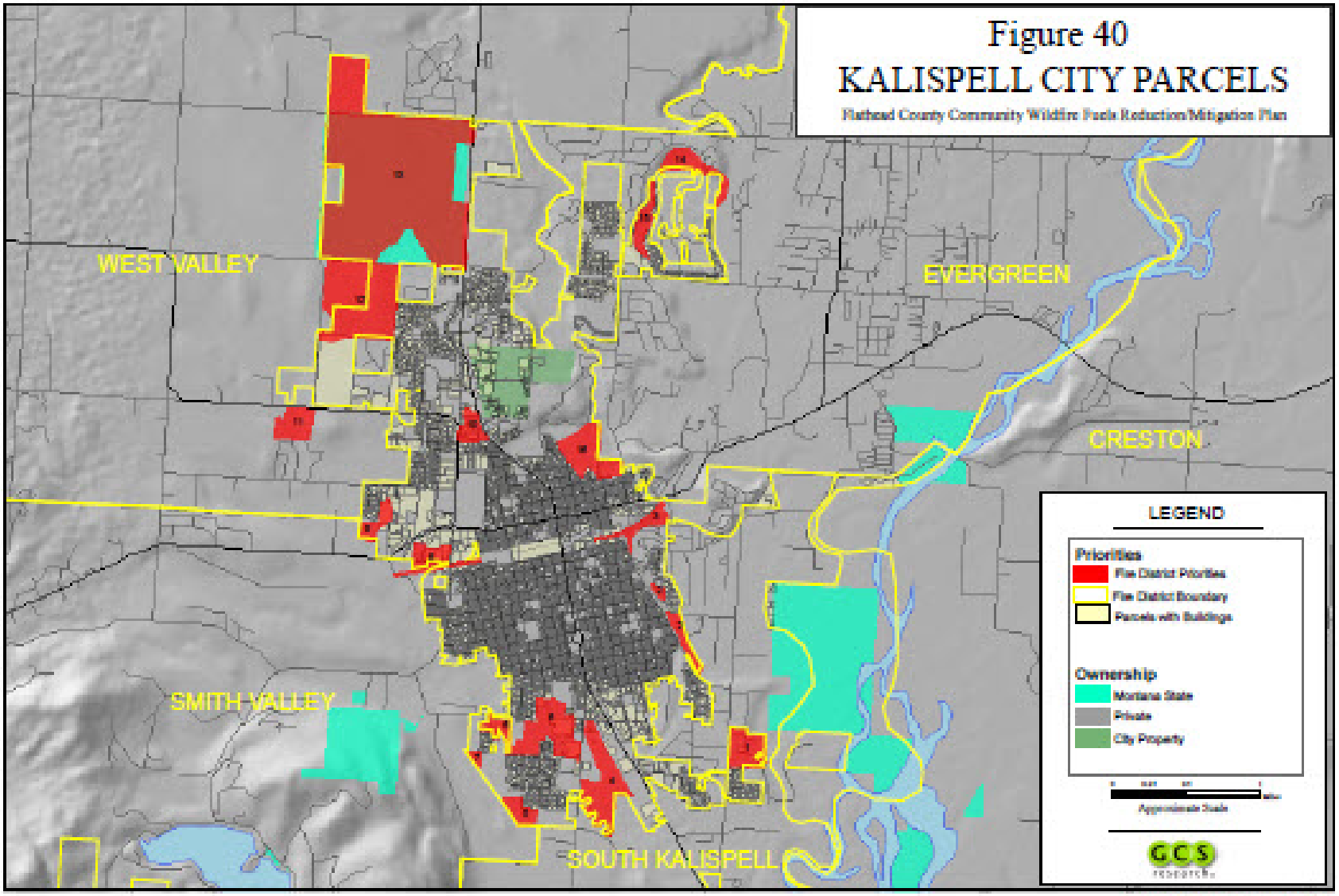

Figure 40: Kalispell City Parcels

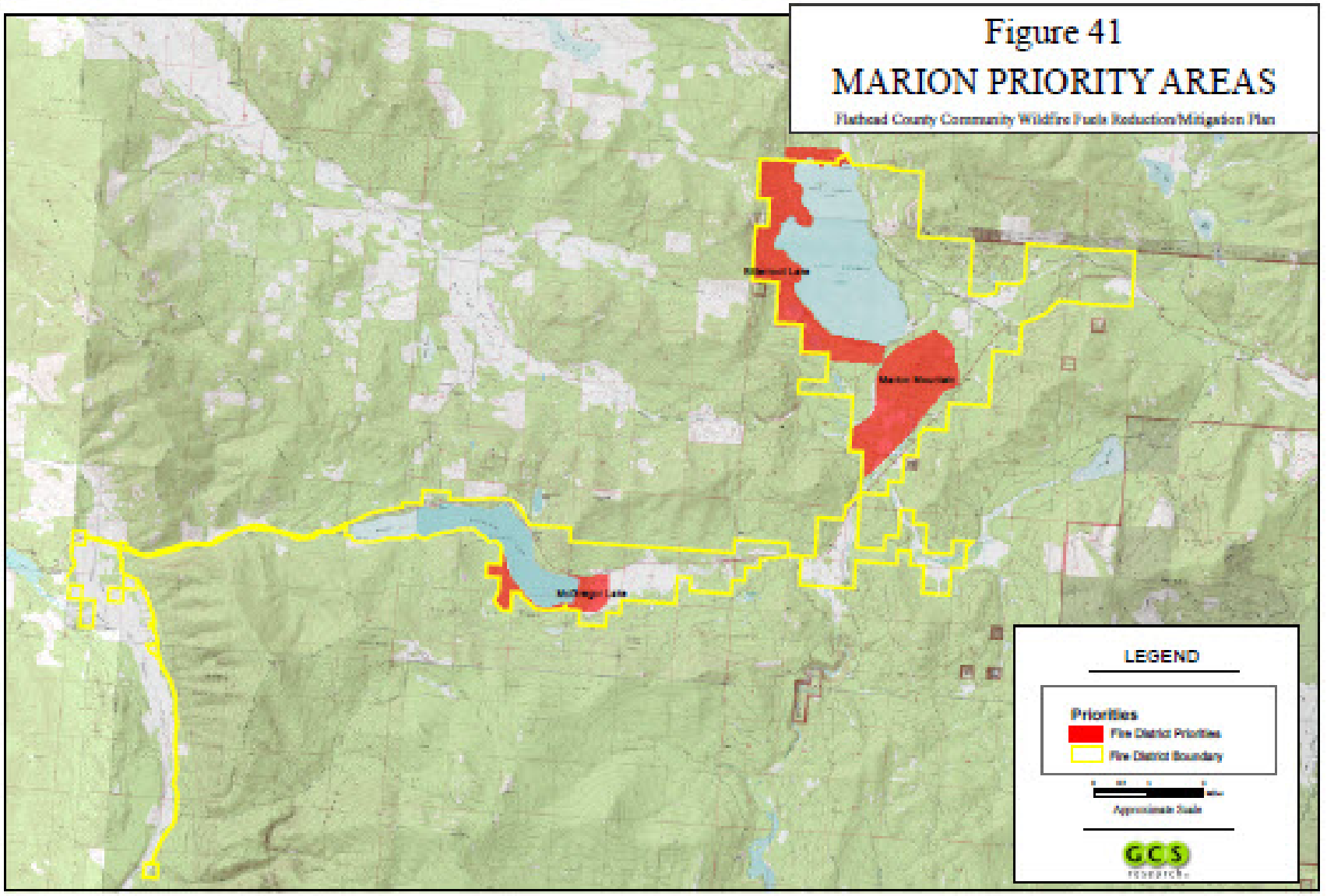

Figure 41: Marion Priority Areas

Flathead County

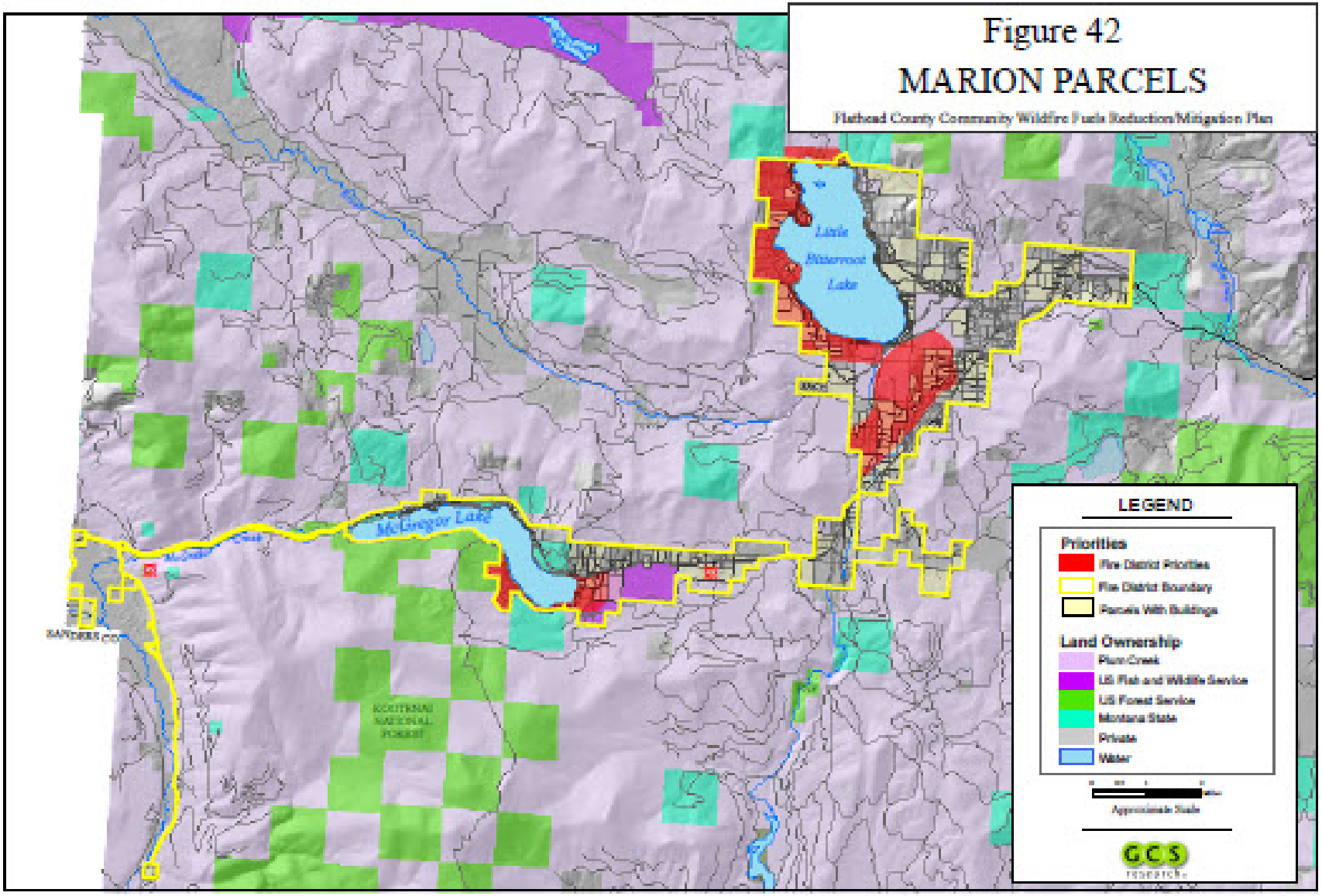

Figure 42: Marion Parcels

Flathead County

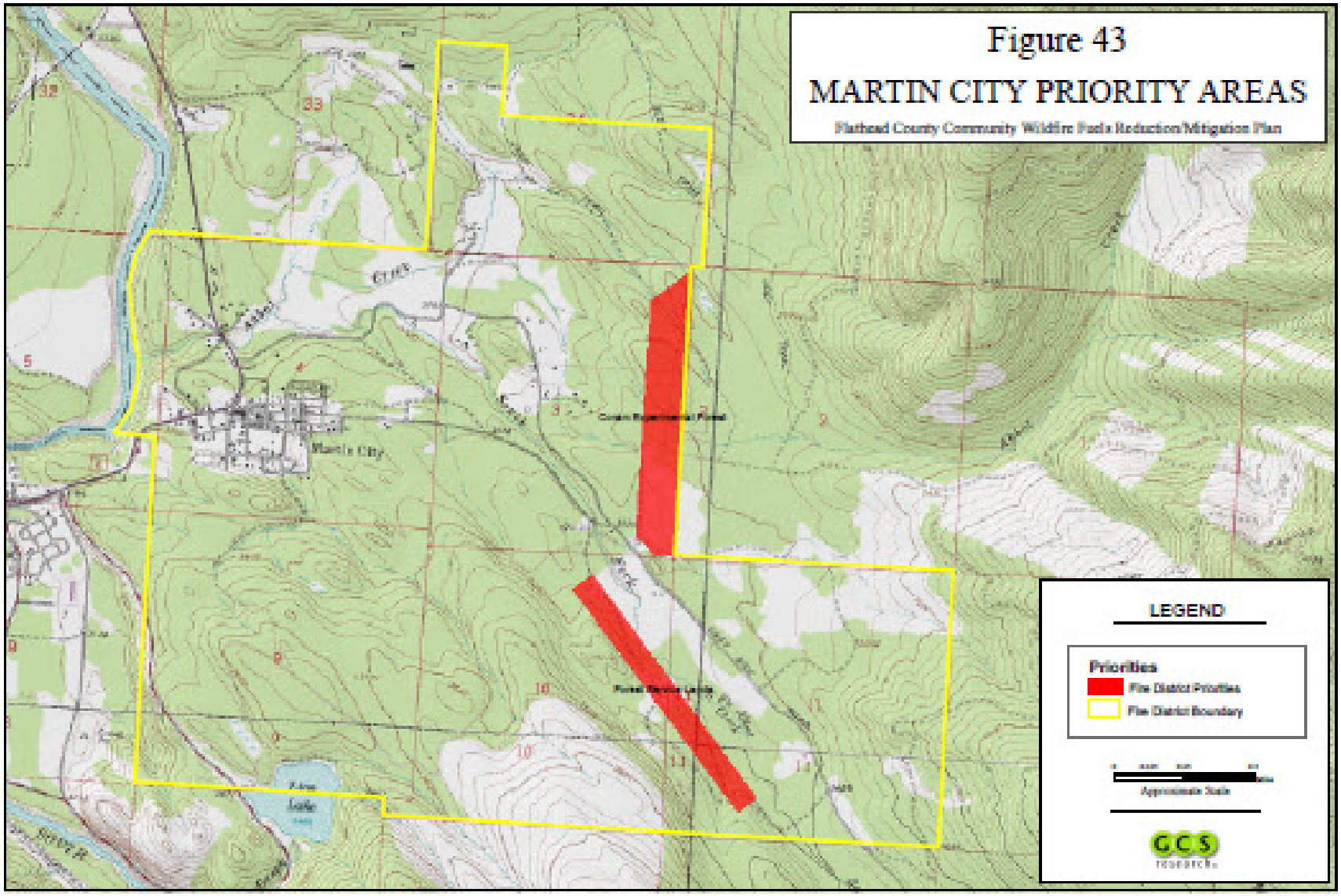

Figure 43: Martin City Priority Areas

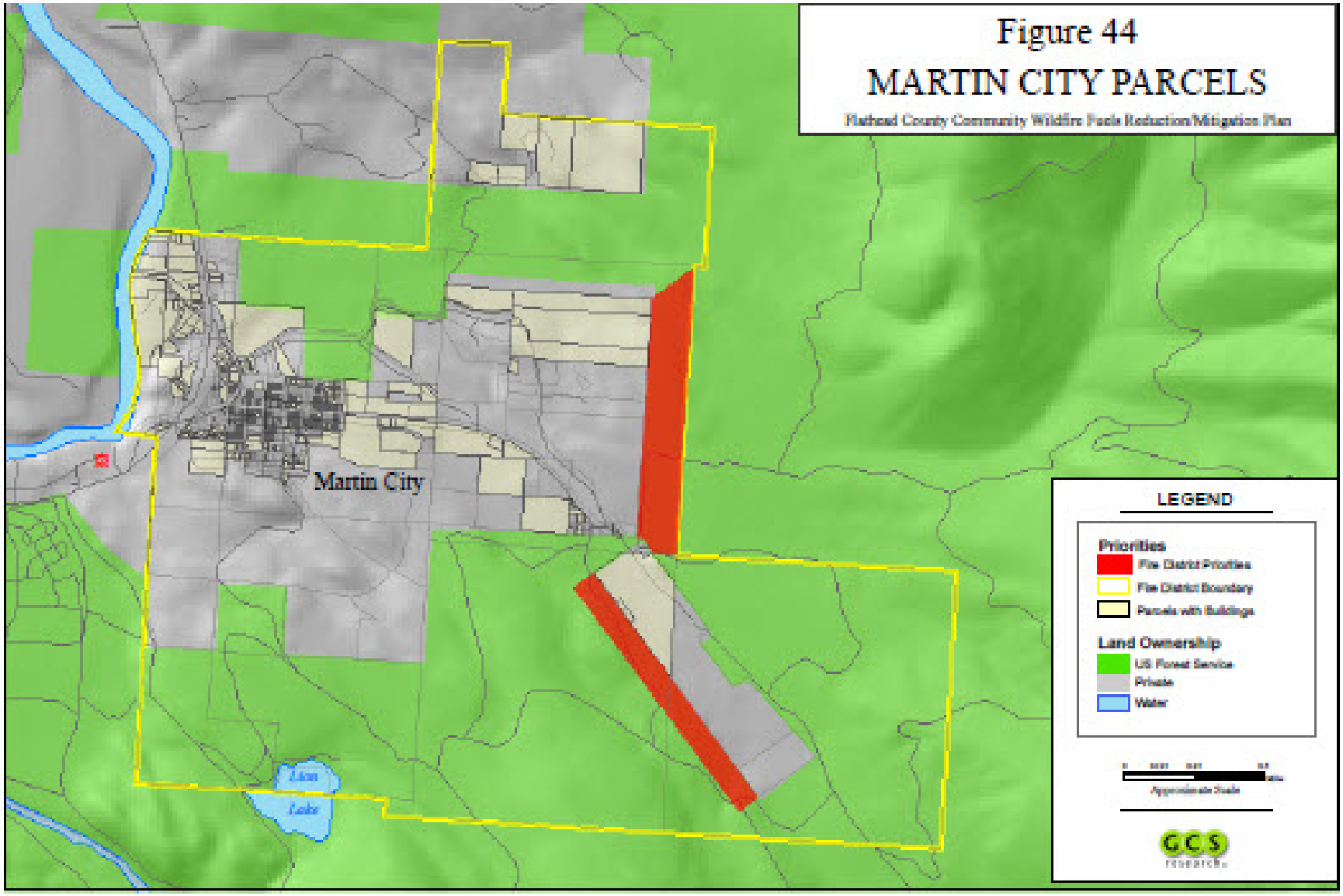

Figure 44: Martin City Parcels

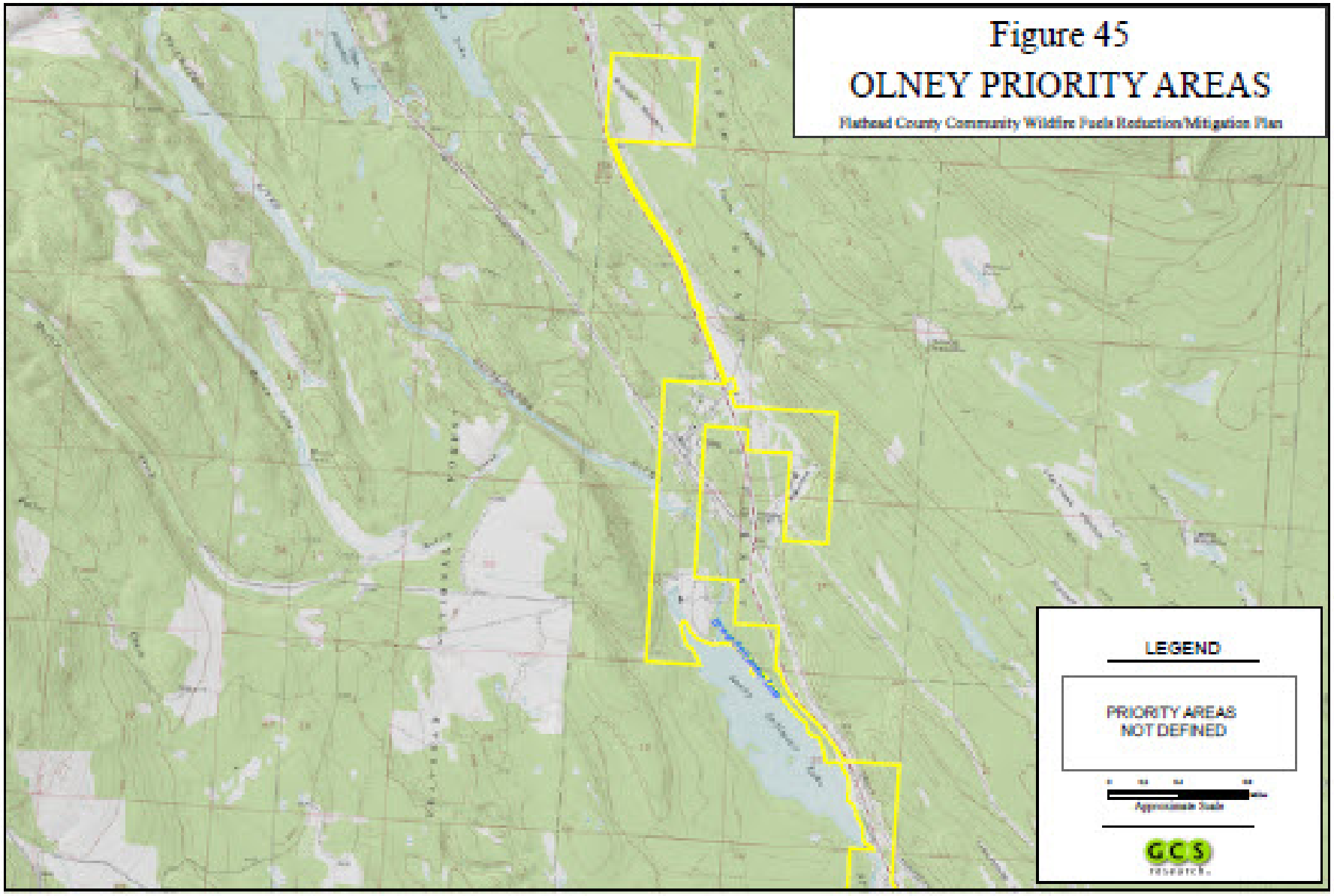

Figure 45: Olney Priority Areas

Flathead County

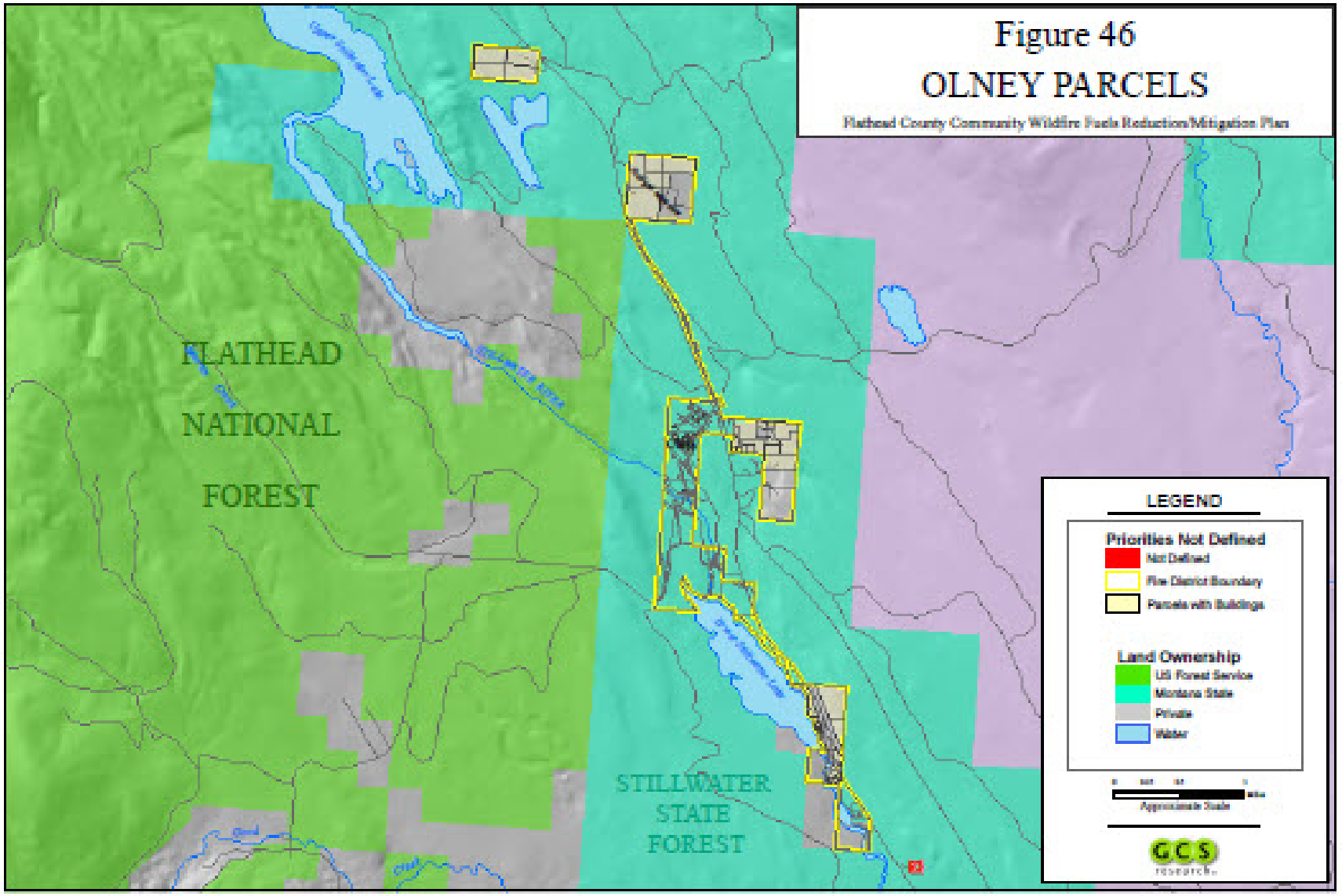

Figure 46: Olney Parcels

Flathead County

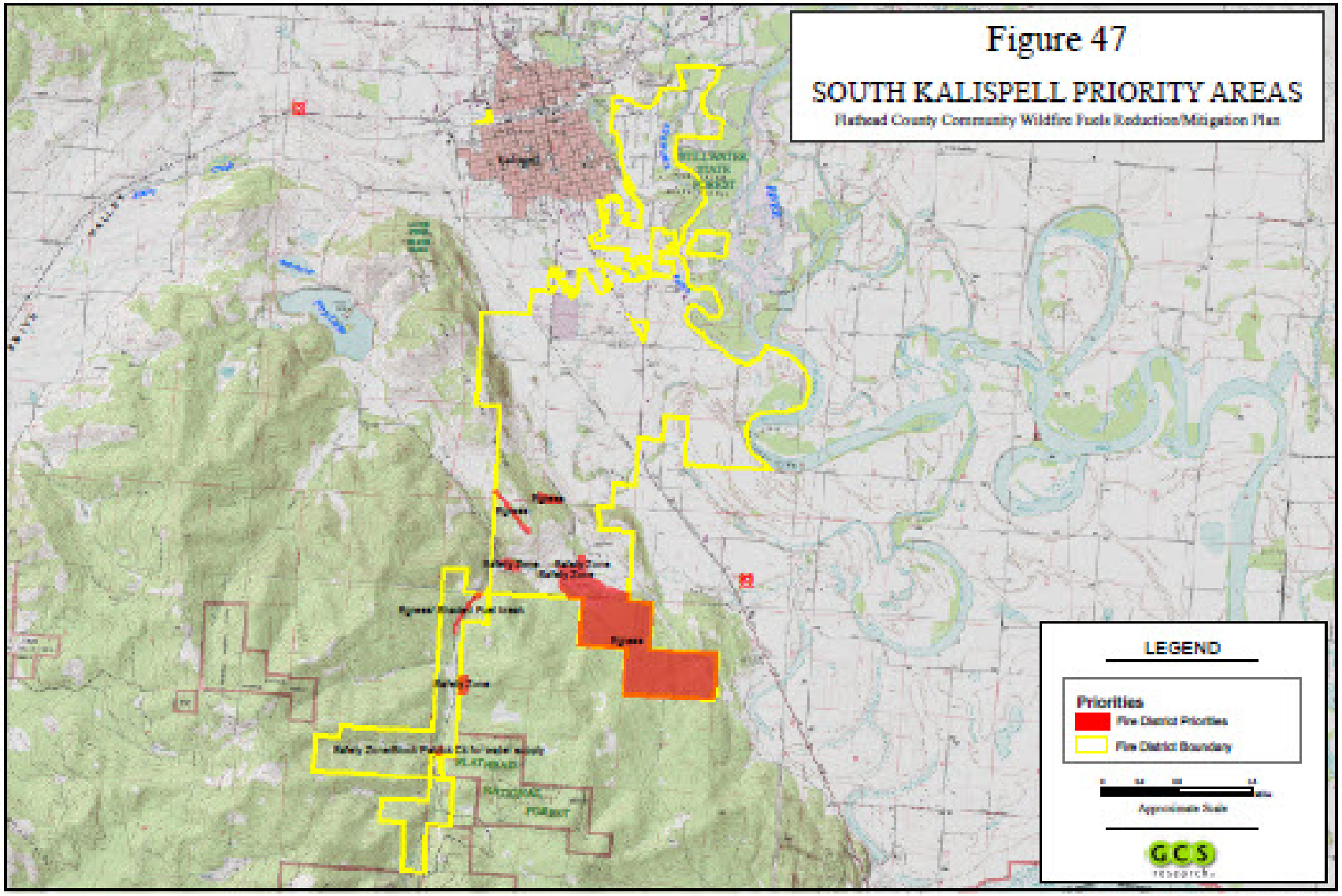

Figure 47: South Kalispell Priority Areas

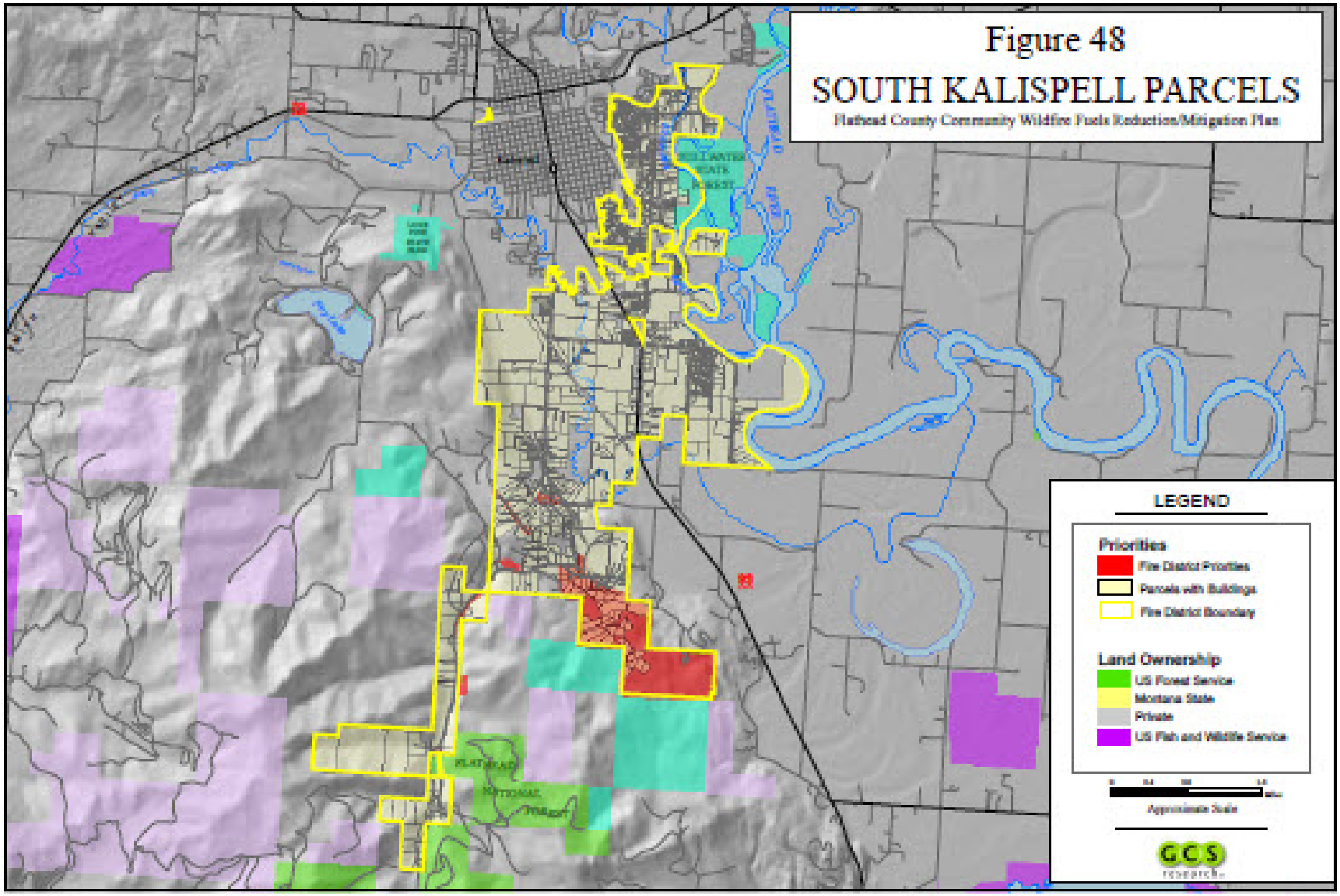

Figure 48: South Kalispell Priority Areas

Flathead County

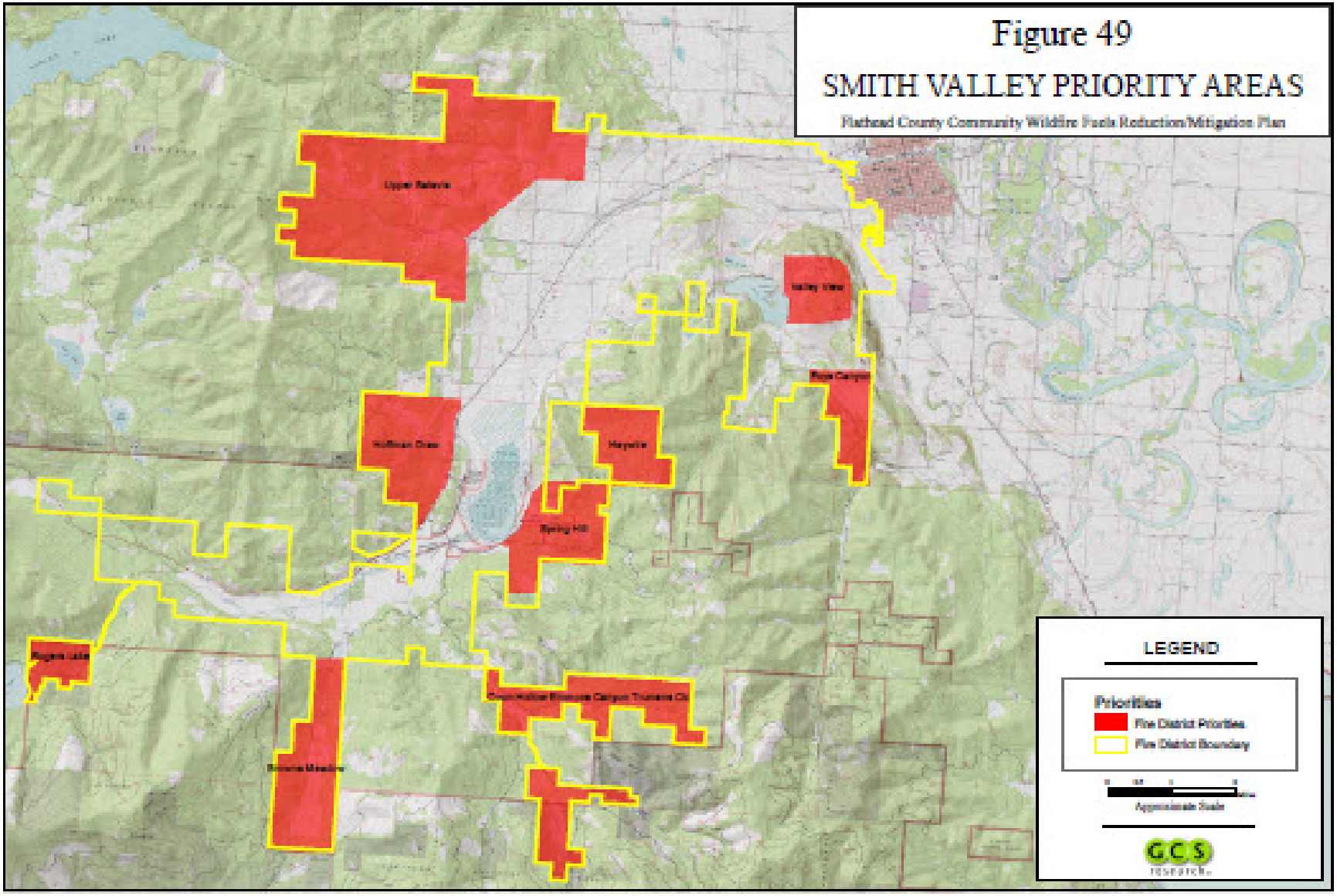

Figure 49: Smith Valley Priority Areas

Flathead County

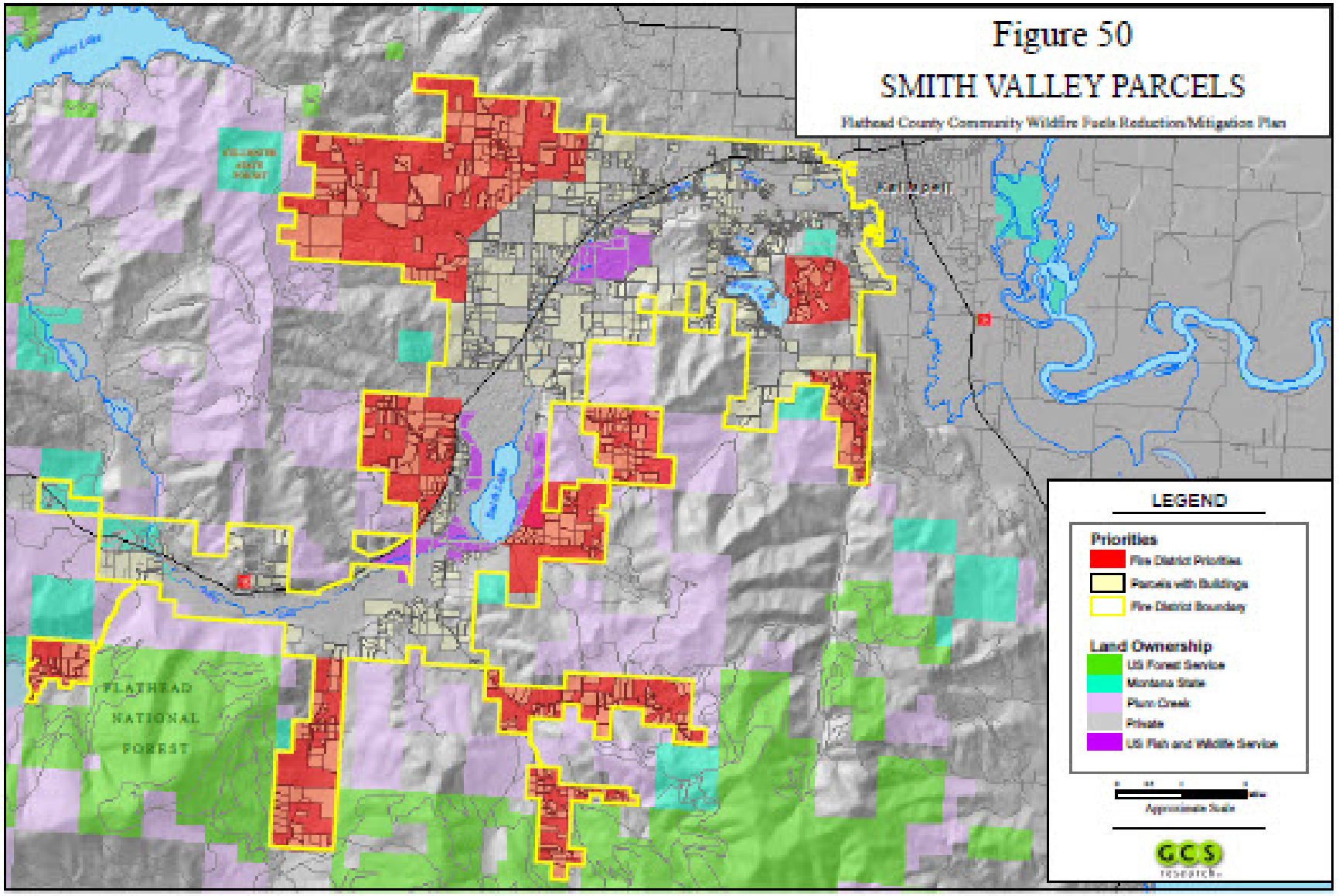

Figure 50: Smith Valley Parcels

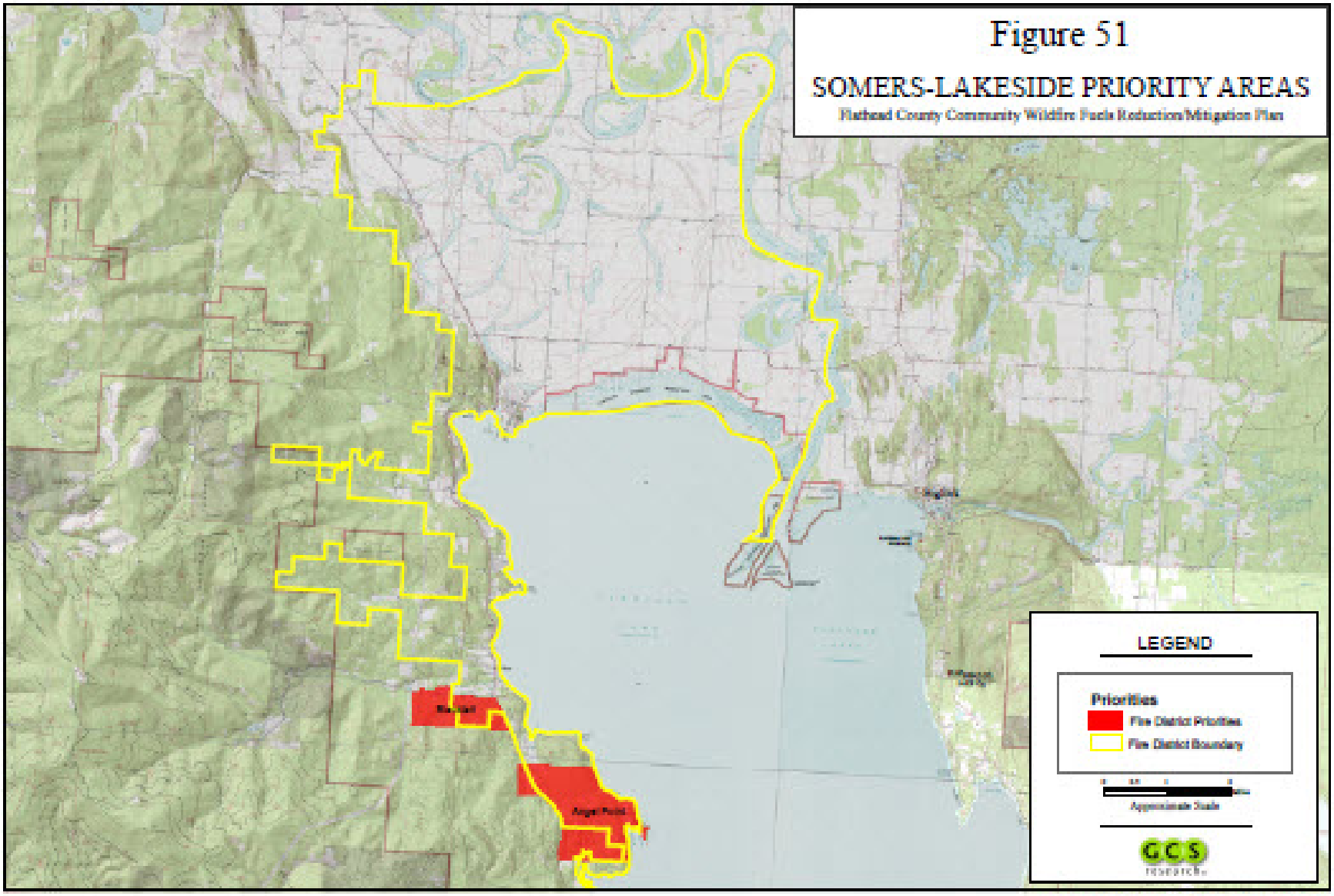

Figure 51: Somers - Lakeside Priority Areas

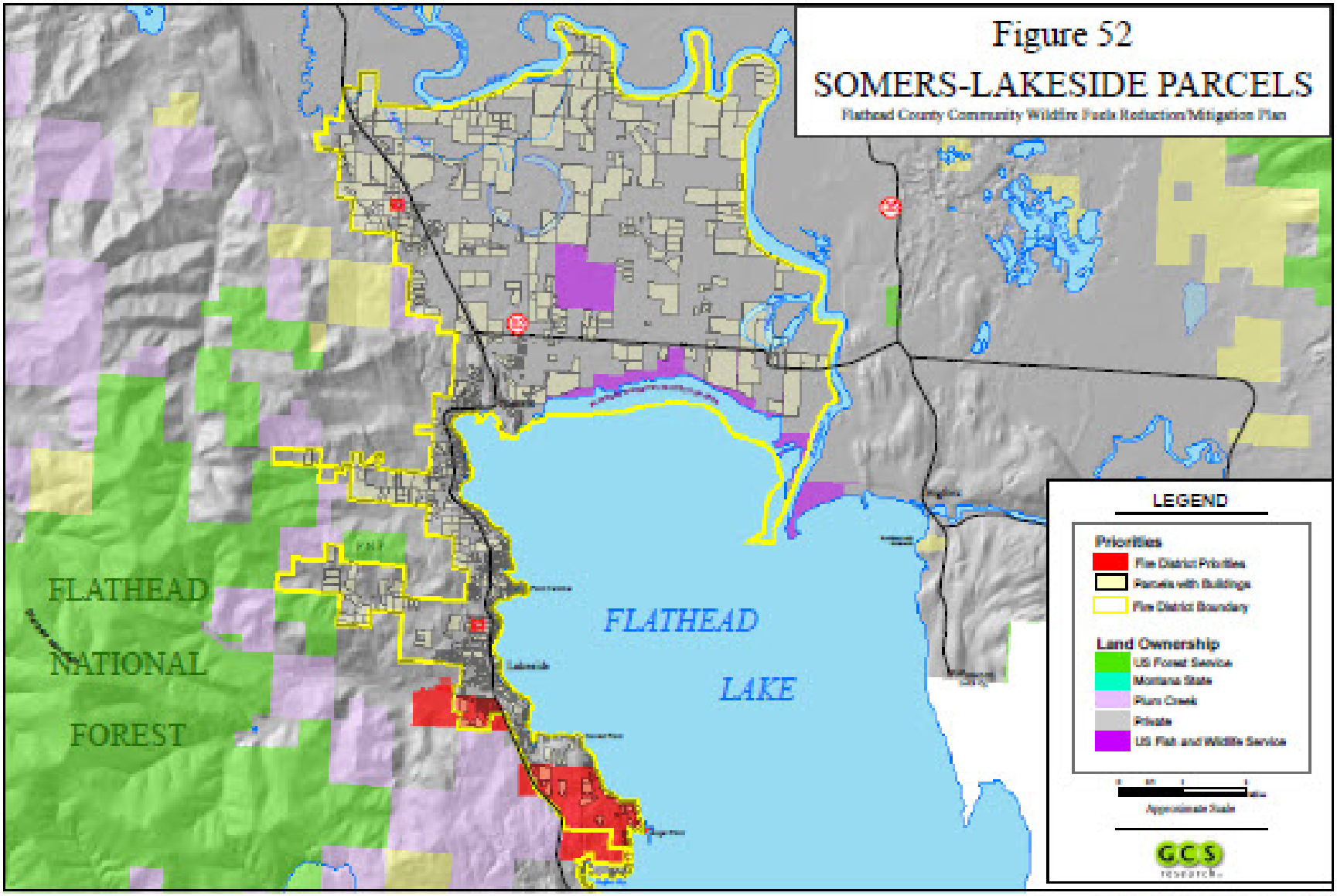

Figure 52: Somers - Lakeside Parcels

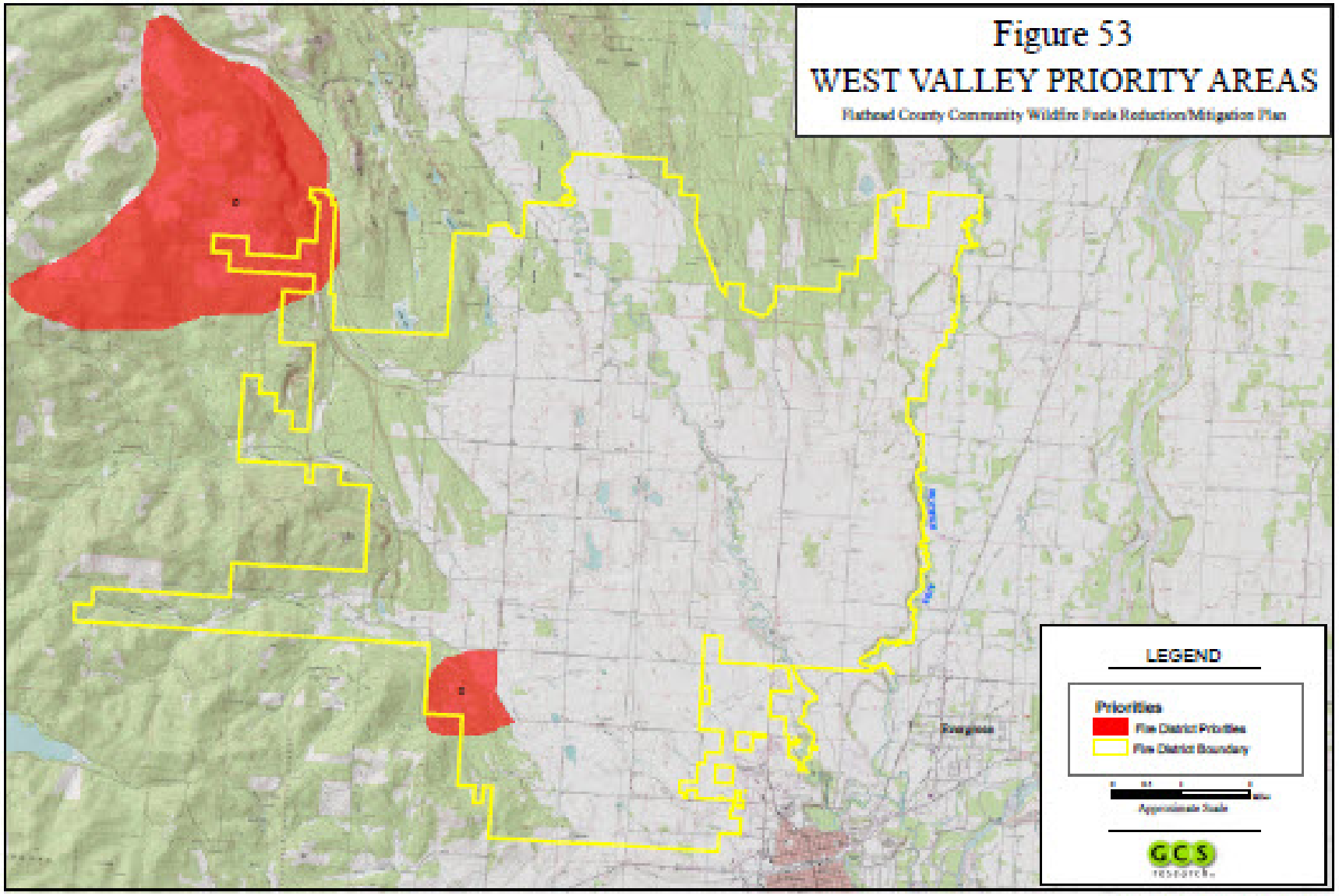

Figure 53: West Valley Priority Areas

Flathead County

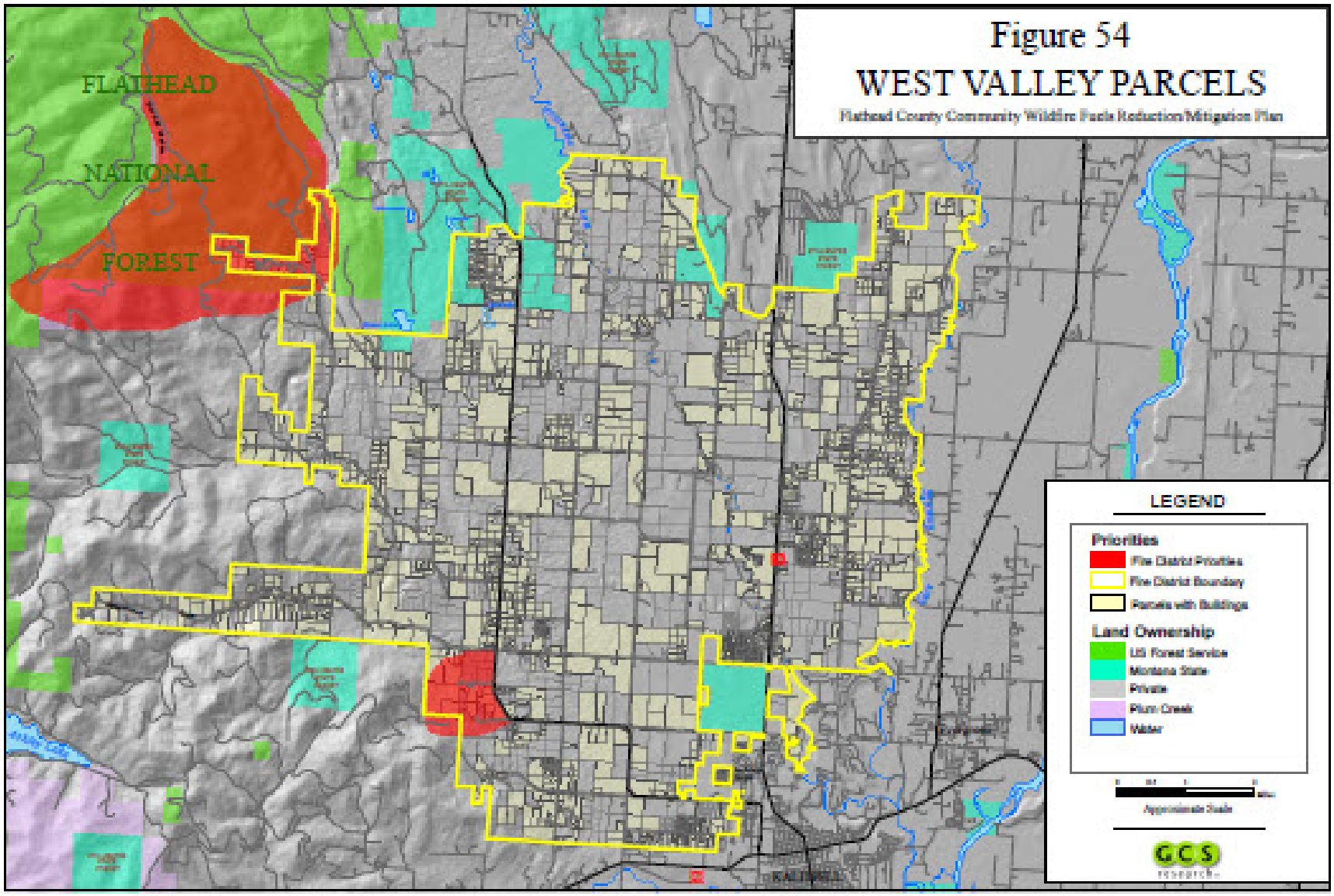

Figure 54: West Valley Parcels

Flathead County

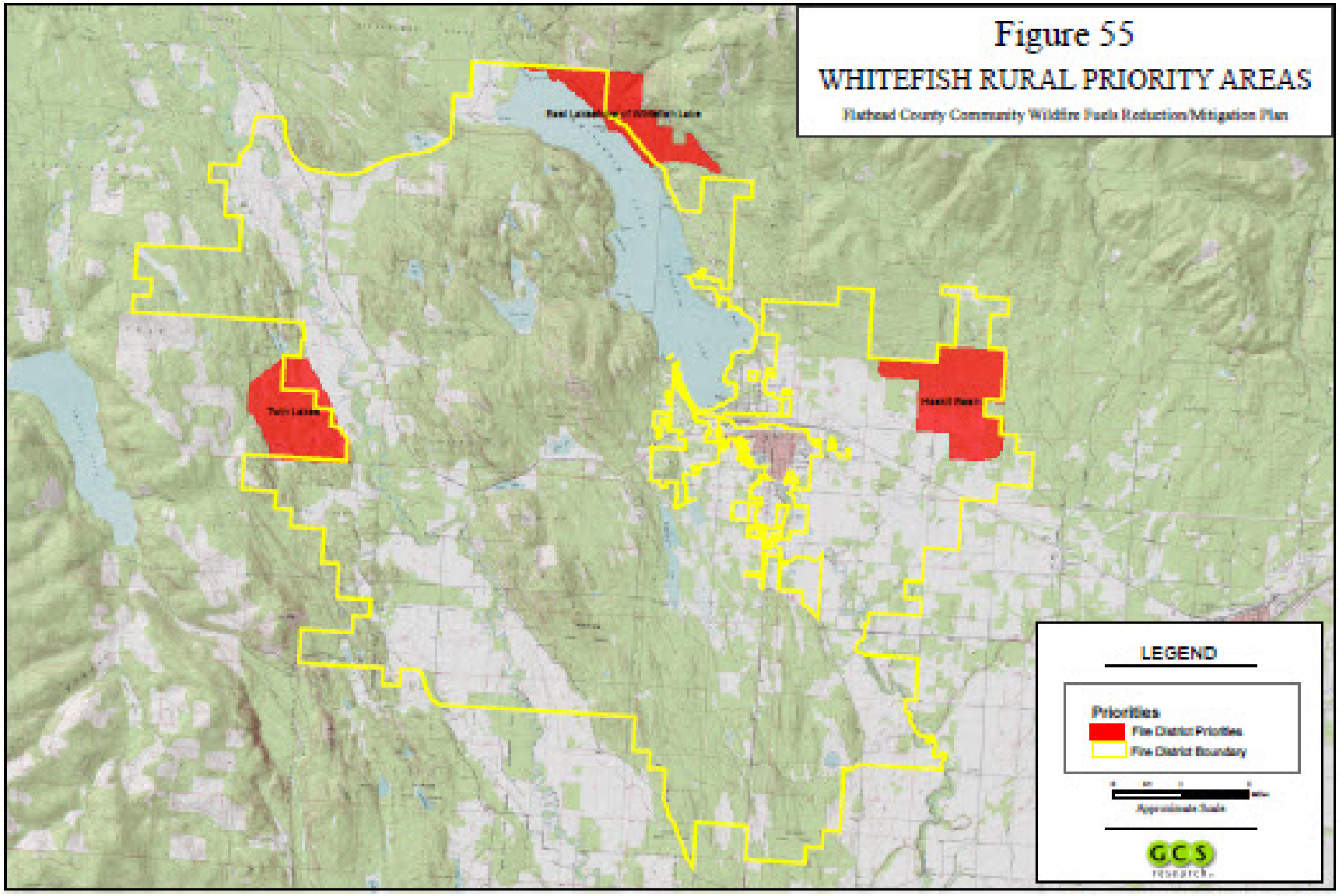

Figure 55: Whitefish Rural Priority Areas

Flathead County

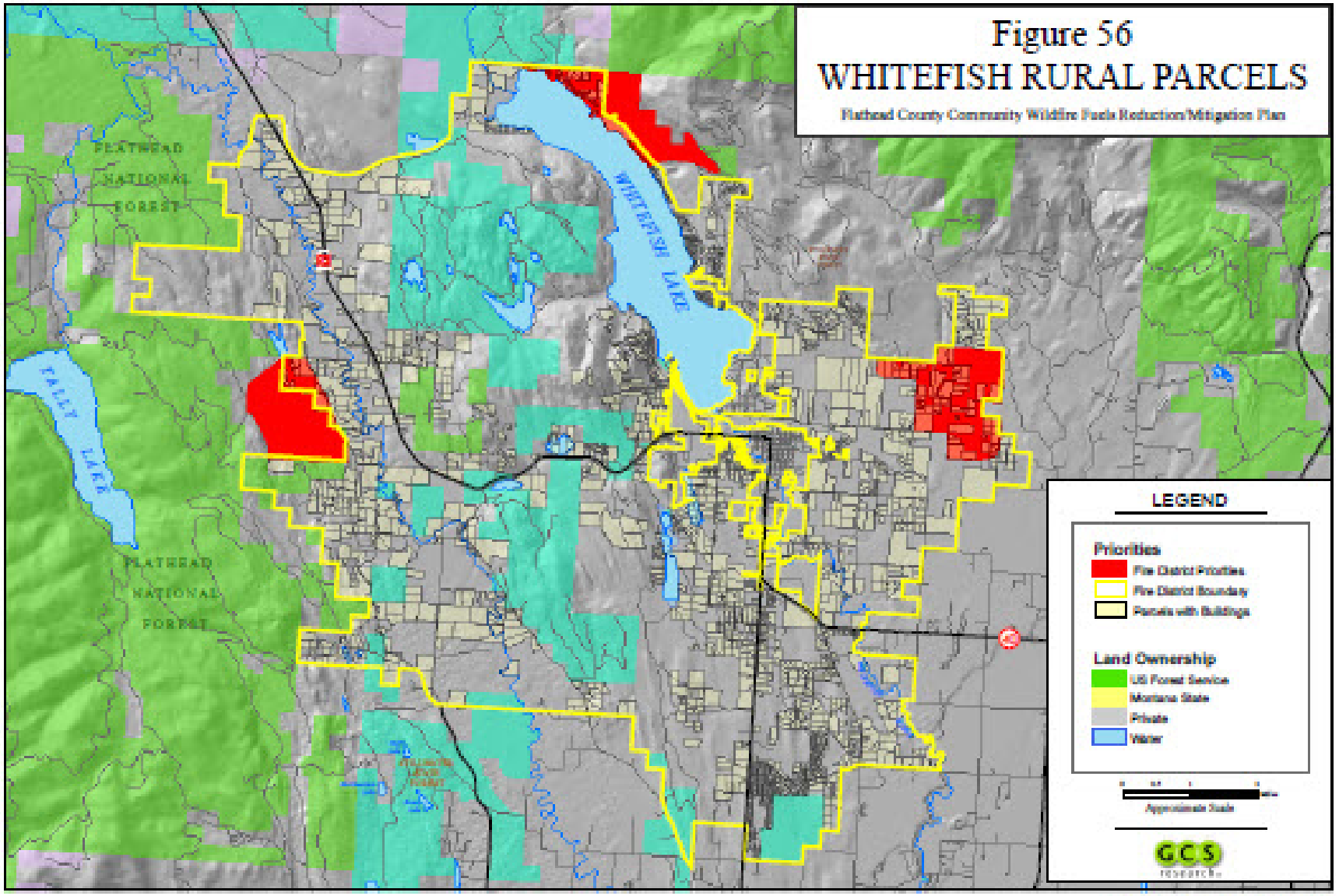

Figure 56: Whitefish Rural Parcels

10.0 MITIGATION STRATEGY -- THE ACTION PLAN

This Chapter provides the steps that are being taken or should be taken in Flathead County to reduce the wildland and structure fire threats to the public, fire fighters and other values at risk.

10.1. MITIGATION GOALS

An overarching principle of this Community Wildfire Protection Plan is that fire fighter and public safety is the highest priority!

The mitigation goals of this Community Wildfire Protection Plan are to:

- Identify, designate and map areas of wildland-urban interface in the county.
- Evaluate, upgrade and/or maintain community wildland and structural fire preparation and response facilities, water supplies, and equipment to suppress and mitigate wildland fire risks with, when possible, financial assistance through competitive grants.
- Prevent threats to and destruction of property from wildland fire by adopting subdivision regulations, which address access, water supply, asset protection zones, and fire stations.
- Develop and propose regulations to ensure asset protection zones are created and maintained around structures and improvements in the county.
- Educate community members to prepare for and respond to wildland fire and to mitigate wildland fire damage.
- Improve training and qualifications of fire personnel to more efficiently manage incidents and to effectively interface with incoming Incident Management Teams deployed in the county.
- Identify, coordinate and implement fuels reduction projects between private landowners, local fire departments, the Northwest Regional RC & D, the DNRC, the Flathead NF, Glacier National Park, the Bureau of Indian Affairs, and the Blackfeet and Flathead Indian Reservations and any other organizations planning or administering fuels reduction projects in Flathead County.
- Position fire protection agencies, county leaders, rural communities, residents, and forest owners and managers to be better prepared to protect the County's residents and its natural resources from the potentially devastating impacts of wildland and wildland-urban interface fires.
- Identify economic development opportunities for fuel reduction and biomass utilization enterprises.
- Decrease the chances of a wildland fire spreading from onel ownership to another within the county.
- Reduce wildland fuel loads in and around our neighborhoods and communites and promote healthy forest and rangeland ecosystems by reduction of hazardous fuels; and
- Implement the Flathead County CWPP with ongoing monitoring, evaluation and revision as appropriate

Planning priorities of the CWPP in order of importance are:

- Protect human health and life

- Protect critical community infrastructure
- Protect private property
- Protect natural resources

10.2. Existing Mitigation Efforts

The following sections describe the existing mitigation measures that are being utilized in Flathead County to decrease the risks from wildland or wildland-urban interface fires. Flathead County and Flathead County fire agencies should ensure that these efforts are supported and continued.

10.2.1. Fuel Reduction Program

Over the past five years many fuel reduction projects have been completed by Northwest Regional RC & D, Flathead Economic Policy Center, Bigfork Fire Department, MT DNRC, the USFS – FNF, and private individuals. They are highlighted in the completed projects map (See Map in Map Section).

10.3. Coordinated Prevention, Protection Projects, and Response Plan

Planning and implementation of prevention, mitigation and response projects should be continue to be closely coordinated between Flathead County and their cooperating partners, i.e., DNRC, USFS, and Glacier National Park. It is likely that some projects would be more effective if implemented on the lands of two or more jurisdictions (cross boundary) rather than by a single entity. Cooperation and coordination will also result in avoiding duplicating efforts or overlooking opportunities to protect values at risk.

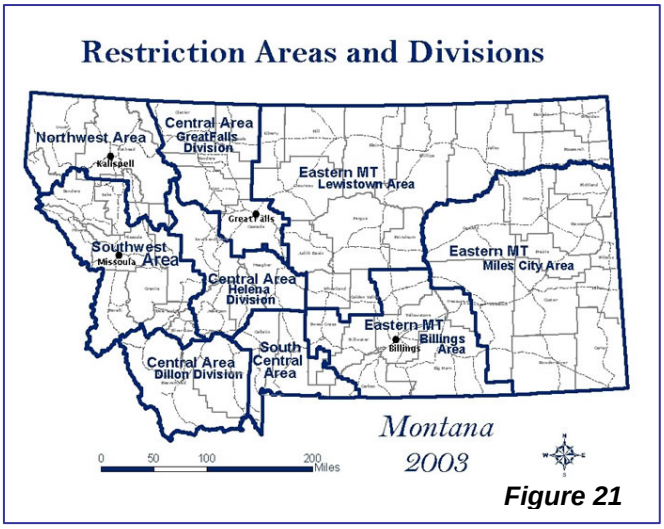

Figure 21

In an effort to reduce new fire starts during periods of very high or extreme fire danger, there is a statewide process for instituting fire restrictions and closures by zone in the Northern Rockies Geographic area (See Figure 21). Flathead County and its cooperators are coordinated in this process through the Northwest Zone, to ensure close communications and common actions occur during critical periods of fire danger.

10.4. Prioritization Process

Recommended projects have been prioritized based on the risk estimation established by the Detailed Priority Analysis, see page 44.

10.5. RECOMMENDED PROJECTS AND PROGRAMS

This section describes recommended projects and actions that address the mitigation goals of the Flathead County CWPP. The grant funding mechanism for both the State of Montana and the federal agencies is directed toward projects that show collaboration among private landowners and organizations, counties, tribes, state and federal partners.

The Flathead County CWPP serves as an umbrella document to the Northfork CWPP, Whitefish CWPP and the Elkhorn CWPP and fully supports projects identified in those CWPP's. Any future CWPP's that are created for a specific community or area within Flathead County will also be added to the Countywide CWPP as attachments.

In the event there is a conflict between a local CWPP and the Flathead County CWPP, the Flathead County CWPP will take precedence.

10.5.1 WILDLAND-URBAN INTERFACE POLICY

Recommended Project 10.5.1.1 – The Flathead County Board of County Commissioners should adopt the following policy regarding the wildland-urban interface in Flathead County:

When a subdivision development is proposed that is physically outside the established wildland-urban interface areas as adopted by Flathead County, then the wildland-urban interface boundary will automatically include the proposed development, when it meets the definition of wildland-urban interface.

The Flathead County wildland-urban interface map should be up-dated on a regular basis.

Project Coordinator – Flathead County Director of OES, Planning Department, Flathead County Fire Chiefs' Association

Recommended Project 10.5.1.2 – Flathead County should develop a standardized process for up-dating the wildland-urban interface map.

Project Coordinator – Flathead County OES, Planning Deparmten, Flathead County Fire Chiefs' Association, Flathead National Forest, Glacier National Park and DNRC

10.5.2. FUEL MODIFICATION PROJECTS

This section addresses specific actions to reduce fuel loads, whether in forests, brush, or grasslands.

Recommended Project 10.5.2.1 – Consider transitioning the Flathead Interagency Fire Prevention Advisory Committee to a countywide collaborative planning group (Flathead County Fire Safe Council) with the USFS, residents, DNRC, Flathead County fire agencies, Flathead County OES, Board of County Commissioners, power companies, BNSF and other cooperators to plan fuel reduction projects on a landscape basis, coordinate fire prevention activities, manage the interagency burn permit process, and etc.

Project Coordinator – Flathead County Fire Warden

10.5.2.1. Vegetation Management

Silvilcultural treatment of fuels is a technique used to eliminate a portion of the fuels in forested areas. Some of the smaller trees are cut and removed to create more growing space between the larger trees.

This basic forestry practice of thinning will usually increase timber values for the landowner by concentrating annual growth in a few larger trees rather than many small trees. When thinning stands, some small healthy trees should be retained so that the stand remaining after thinning is more vigorous.

Limbing is another technique accomplished by removing the lower branches of trees and like thinning it reduces the ladder fuels that allow a fire to climb from the ground up into the forest canopy. General litter cleanup is the removal of dead and downed woody debris on the forest floor that can contribute significantly to fire behavior, as these fuels tend to be very dry and readily combustible.

Recommended Project 10.5.2.1.1 – Reduce the vegetation in those areas within the Flathead County WUI where the continued presence of the fuels represents a clear potential to generate high fire intensities. Wildland fires burning under high intensities will pose the greatest threat to structures, their inhabitants or fire fighters. The county should start in those areas where fuel modification projects would have the most potential to positively impact the greatest number of people or structures and are located in a high priority area for the local fire agency.

Project Coordinator – Flathead County Fire Warden, USFS and DNRC

Recommended Project 10.5.2.1.2 – Educate the public and project areas on the value and importance of a fuels maintenance program. Once the fuels in an area have been reduced to an acceptable level it is critical that they not be allowed to return to the condition that they were in prior to treatment. All Project Coordinators, Grant Administrators, and Agencies shall emphasize the need for a maintenance plan to accompany any fuel treatment plan. This educational project shall remind projects and grantees of the advantages of fuels maintenance on a 5-10 year interval to determine if the fuels treatment would still be effective in slowing fire spread or crowning during a wildland fire. Most likely, if follow up work is required, if done on a 5-10 year interval the work would be done at a substantially lower cost and lower level of effort, as compared to a 20-30 year interval, where if left unchecked, the fuels will very likely return to pretreatment conditions that would require 100% of the treatment costs to retreat.

Project Coordinator: All Project Coordinators, Grant Administrators, and Agencies.

Recommended Project 10.5.2.1.3 – Develop a buffer zone on private lands around the Coram Experimental Forest to complement the work completed by the Flathed NF to prevent the spread of a wildland fire from the Coram Experimental Forest to the adjacent wildland land urban interface areas.

Project Coordinator – Flathead County OEM Director, Northwest RC & D and private landowners.

Recommended Project 10.5.2.1.4 – Develop a plan for fuel reduction and construction of asset protection zones around homes from Somers south to the Flathead County Line.

Project Coordinator – Somers and Lakeside Fire Chiefs & Flathead Fire Service Manager

Recommended Project 10.5.2.1.5 -- Develop a plan for fuel reduction and construction of asset protection zones around homes in the Middle Fork of the Flathead River.

Project Coordinator – Flathead County Fire Warden and USFS

Recommended Project 10.5.2.1.6 – Continue fuel modification efforts and construction of asset protection zones around homes in the North Fork of the Flathead River.

Project Coordinator – Flathead County Fire Warden and USFS, and North Fork Fire Mitigation Committee

Recommended Project 10.5.2.1.7 -- Develop a plan for fuel reduction and construction of asset protection zones around homes from Marion west to the Flathead County Line.

Project Coordinator – Marion Fire Chief, Flathead County Fire Warden, DNRC and USFS

Recommended Project 10.5.2.1.8 – Identify strategic fuel break locations, throughout the county, along county roads that are either mail routes or school bus routes to break up the continuity of fuels. The fuel breaks should be constructed as wide as possible along both sides of the county road to provide an opportunity to anchor or suppress a wildland fire.

Project Coordinator – Flathead County Fire Chiefs, Flathead County Road Department, Flathead County Fire Warden, DNRC, & USFS

Recommended Project 10.5.2.1.9 – Work with owners of cottonwood river bottoms where an early spring or late fall fire in the river bottoms will threaten residents and or communities to implement a fuel management prescription that would divide the cottonwood stands into 40 acres blocks separated by plowed lines that are at least 15 feet wide and for fuel mitigation projects.

Project Coordinator – Flathead County Fire Warden and MT DNRC

Recommended Project 10.5.2.1.10 – Develop and fund a program to provide assistance to low income residents of Flathead County to conduct fuel mitigation activities on their property.

Project Coordinator – Flathead County OEM Director

Recommended Project 10.5.2.1.11 – Continue to encourage the USFS – FNF to utilize stewardship contracting on USFS fuels projects where feasible.

Project Coordinator – Flathead Economic Policy Center, Montana Logging Association, Rocky Mountain Elk Foundation and Flathead County Board of County Commissioners

Recommended Project 10.5.2.1.12 – Continue and expand the fuel reduction projects on Big Mountain to ensure asset protection zones are created.

Project Coordinator – MT DNRC - Kalispell Unit, Big Mountain RFD Fire Chief, USFS – FNF, and Big Mountain Ski Resort

10.5.3. Industrial Resource Management

Recommended Project 10.5.3.1 – Work with the BNSF to develop fuel reduction and fire protection measures to ensure that wildland fires do not impact railroad facilities.

Project Coordinator – Flathead County OES Director

Recommended Project 10.5.3.2 – Ensure that railroads within the county control the fire hazard along their right-of-way according to Section 69-14-721 MCA. If a fire occurs as a result of an ignition along the railroad right-of-way, the Flathead County Fire Departments should ensure that a fire investigation occurs to document that the cause and origin of the fire was the railroad and then bill the railroad for suppression costs for all railroad fires.

Project Coordinator – Flathead County Fire Warden

10.5.4. Biomass Utilization

Figure 22

Recommended Project 10.5.4.1 – Explore any opportunities to dispose of biomass material on either a profit or break even basis. If there is no market for chips or hog fuel in the area and no possibility of utilization for posts or poles, look at designating a site or sites where material can be safely piled and burned during low fire danger periods.

Project Coordinator – Northwest Regional RC & D and Montana West Economic Development

Recommended Project 10.5.4.2 – Explore involving the Northwest Regional RC & D or other economic development agencies within northwest Montana to develop companies which might utilize the biomass generated from the fuel reduction projects (See Figure 22).

Project Coordinator – Economic Development Groups in Flathead County

10.5.5. Safety Zones

Location of safety zones within some of the subdivisions is probably the best approach to protecting human life during a fast moving fire, especially when residents are faced with the alternative of trying to navigate narrow roads under smoky conditions. Any required clearance work on these identified areas should be accomplished prior to fire season as labor and equipment become available. One important point is to insure that developed procedures, such as when to occupy the safety zones, and what should and should not be taken into them, are clearly understood by anyone who may need to use the safety zones.

Recommended Project 10.5.5.1 – Develop safety zones, where appropriate, in lands dedicated for parks during the subdivision process or other suitable areas.

Project Coordinator – Flathead County Fire Warden, Fire Agencies, Northwest Regional RC & D, and Flathead County Planning Department

Recommended Project 10.5.5.2 – Develop safety zones in the Many Lakes Subdivision, where appropriate.

Project Coordinator – Creston RFD, RC & D

10.5.6. Infrastructure Improvements

Improvements to improve local infrastructure are discussed in this section.

10.5.6.1. Water Supply

Although water supply is not a direct function of the Flathead County fire agencies, water supply unquestionably impacts the structure fire suppression performance of the department. Water supply, or

lack of water supply, indirectly affects the whole community through its effects on the insurance rates the property owners pay.

Recommended Project 10.5.6.1.1 – Prepare a strategic water source plan for the county, which shows the most efficient sources of water needed to support wildland firefighting efforts. It may be necessary to develop new sources in some isolated dry locations in order to reduce refill times to an acceptable level. Explore opportunities to use dry hydrants and stored water facilities. GPS the location of water supply points to develop a water supply map for Flathead County.

Project Coordinator – Flathead County Fire Warden and Flathead County Planning Department

Recommended Project 10.5.6.1.2 – Continue to encourage individuals to develop water sources and access that can be used by fire protection personnel.

Project Coordinator – Flathead County Fire Chiefs

Recommended Project 10.5.6.1.3 – Install two water tender fill stations in the Marion RFD.

Project Coordinator – Marion RFD Fire Chief and MT DNRC – Kalispell Unit.

10.5.6.2. Utilities

Recommended Project 10.5.6.2.1 – The Flathead County fire agencies should work with the Flathead Electric Cooperative, Lincoln Electric Cooperative, Northwest Energy, and the Bonneville Power Administration to ensure that the required clearances are maintained for all electrical transmission lines in the Flathead County.

Project Coordinator – Flathead County Fire Warden

Recommended Project 10.5.6.2.2 – Encourage the use of underground power lines in areas of Flathead County where the power lines are routinely exposed to wildland fire.

Project Coordinator – Flathead County Planning Dept, Flathead County Fire Chiefs Association and Power Company Managers

Recommended Project 10.5.6.2.3 – Northwestern Energy, Lincoln Electric Cooperative and Flathead Electric Cooperative should continue to provide power line safety demonstrations to the Flathead County fire agencies and subdivision and homeowner associations on a biannual basis.

Project Coordinator – Flathead County Fire Chiefs Association and Power Company Managers

10.5.6.3. Emergency Response

Emergency response to wildland, wildland-urban interface and structure fires includes the placement of stations, apparatus and personnel to meet the needs of the community.

Recommended Project 10.5.6.3.1 – All the fire departments should develop capital improvement plans to up-grade fire apparatus and equipment, within their fire agencies.

Project Coordinators – Flathead County Fire Warden, Fire Chiefs and Boards of Trustees.

Recommended Project 10.5.6.3.2 – The Flathead County fire agencies should continue to maintain and enhance the interagency cooperation between the emergency services in Flathead County and neighboring counties and entities.

Project Coordinator – Flathead County OEM Director, emergency services agencies, structural and wildland fire service agencies.

Recommended Project 10.5.6.3.3 – Purchase additional satellite phones for the agencies that are responsible for emergency services along the Highway 2 corridor to insure affirmative communications with the county dispatch center.

Project Coordinator – Flathead County DES Coordinator

Recommended Project 10.5.6.3.4 – Develop and provide an educational program that communicates information about the levels of service of the county's fire protection agencies to the public.

Project Coordinator – Flathead County DES Coordinator

10.5.6.3.1. Fire Stations

Recommended Project 10.5.6.3.1.1 – All fire stations should have a well maintained asset protection zone constructed around the fire stations.

Project Coordinator – Fire Department Fire Chiefs

Recommended Project 10.5.6.3.1.2 – Flathead County FSA should construct a fire station in the Ashley Lake area.

Project Coordinators – Flathead County FSA Manager & Board of Trustees of the Flathead County FSA

Recommended Project 10.5.6.3.1.3 – Flathead County FSA should construct a fire station in the North Fork of the Flathead River area.

Project Coordinators – Flathead County FSA Manager & Board of Trustees of the Flathead County FSA

10.5.6.3.2. Training, Certification, and Qualification

Recommended Project 10.5.6.3.2.1 – Develop a training program which encompasses County Fire Wardens, County Sheriff's, Disaster and Emergency Service officials, Mayors, City Councils and Fire Chiefs, and other government officials, to maintain currency with their fire program to include their roles and responsibilities as government officials. This training would provide the skill level to determine the appropriate level of Incident Management Team (IMT) and the ability to write a delegation of authority to the IMT, which would include the management objectives of the local government for the emergency incident.

Project Coordinator – Flathead County Fire Warden in association with MT County Fire Wardens Association

10.5.6.3.3. Operational Procedures & Programs

Recommended Project 10.5.6.3.3.1 – Adopt a web based approach to issuing burning permits in Flathead County.

Project Coordinator – Flathead Interagency Fire Prevention Advisory Committee (Flathead County FireSafe Council)

10.5.6.3.4. Staffing

Recommended Project 10.5.6.3.4.1 – Continue a recruiting and retention program for the Flathead County Fire agencies.

Project Coordinator – Flathead County Rural Fire Council

Recommended Project 10.5.6.3.4.2 – Hire a fire prevention and fuels/mitigation coordinator to manage the implementation of the mitigation and fuels projects recommended in this CWPP.

Project Coordinator – Flathead County OEM Director

10.5.6.4. Access

Access is a critical component of the emergency response system in Flathead County, as such roads should be designed and constructed to county standard with appropriate road signage.

Recommended Project 10.5.6.4.1 – As road signs are replaced throughout the county, they should be non-combustible reflective road signs that would withstand a wildland fire.

Project Coordinator – Flathead County Road Department and Flathead County Commissioners

Recommended Project 10.5.6.4.2 – Install road name signs that are non-combustible and reflective on all roads that currently do not have signs.

Project Coordinator – Flathead County Road Department

Recommended Project 10.5.6.4.3 – Acquire and develop an additional access route for the Many Lakes Subdivision to mitigate the single access point for the subdivision.

Project Coordinator – Creston Rural Fire District Fire Chief and Flathead County OEM Director

10.5.7. Asset Protection Zone (Defensible Space)

One of the single most important mitigating factors to increase the chances for the home's survival during a wildland-urban interface fire is the creation and maintenance of an asset protection zone (defensible space). An asset protection zone refers to an area around the home where the native vegetation has been modified to reduce the wildland-urban interface fire's threat to the home and provides a safe area for fire fighters to work effectively.

Slope and fuels affect the needed size of the asset protection zone. Homes near steep slopes and in heavy fuels will need to clear additional vegetation to mitigate the effects of the radiant and convective heat currents and flame lengths. The slopes should be planted to native vegetation that is fire resistant.

Recommended Project 10.5.7.1 - The Flathead County Commissioners have adopted the Flathead County Development Regulations, which should be amended to include requirements for asset protection zones (defensible space) and fuel management in designated wildland-urban interface areas (See Asset Protection Zone Guidelines in Resources Section 10.4 of CWPP).

Project Coordinator – Flathead County Fire Warden and Flathead County Planning Department

Recommended Project 10.5.7.2 – The cities of Columbia Falls and Whitefish should ensure that residences adjacent to wildland areas in the communities of Columbia Falls and Whitefish are provided with adequate asset protection zones.

Project Coordinator – Fire Department Fire Chiefs

10.5.8. Recommended Building Materials/Firewise Construction

A home may be vulnerable to a wildland-urban interface fire because of its design, construction and/or location. There are steps a homeowner or developer can take to reduce the chance of the home catching fire, or resist further damage if it does catch fire.

Recommended Project 10.5.8.1 – Recommend the use of Firewise Construction, Design and Materials[30] and Firewise Construction Checklist[31] to developers and homebuilders. See Resources Section 12.4 of CWPP.

Project Coordinator – Flathead County Fire Warden

10.5.9. Fire-Resistant Landscaping

The homeowner's landscaping plan is an integral component of the defensible space developed by the homeowner. Each lot should be thought of in terms of four zones, with each zone having a different purpose and emphasis in the overall defensible space concept for the property (See Figure 23).

Zone A consists of the area from immediately next to the home to a distance of approximately five feet. The primary purpose of this zone is to have the least flammable type of landscaping immediately adjacent to the home to prevent ignition from firebrands and direct flame contact.

Figure 23

Zone B lies between five feet and at least 30 feet from the home. This zone provides the critical area where fire fighters can defend the home and where the fuels have been substantially reduced in height and volume.

Zone C represents the lot from 30 feet to approximately 60 feet from the structure. This area lies outside the formal landscape area and should be modified as described in the asset zone guidelines, which are attached (See Asset Protection Zone Guidelines in Resources Section 12.4 of CWPP).

Zone D is the property perimeter buffer which is 60 feet to the property line for lots 2.5 acres or less or 60 feet to 200 feet around the perimeter of lots larger than 2.5 acres. This serves as a transition zone where you want to reduce the wildfire rate of spread and intensity, begin bringing the fire from a crown fire to a ground fire so that fire department resources can safely respond.

Provisions should be made as each phase is submitted for review to ensure the landscaping plans are reviewed for their appropriateness as a component of the defensible space requirement for the property. Provisions also need to be made by the developer to ensure long-term continuing maintenance for the defensible space surrounding the homes and businesses in the project (See Asset Protection Zone Guidelines in Resources Section 10.4 of the CWPP).

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[30] *Firewise Construction, Design and Materials, Stack, Colorado Forest Service*

[31] www.firewise.org.

Recommended Project 10.5.9.1 – Make available the Firewise Landscaping Checklist[32] and Fire and Your Landscape, Fire Scaping Resources for Montana Homeowners[33] (See Resources Section 10.4 of the CWPP).

Project Coordinator – Flathead County Fire Warden

Recommended Project 10.5.9.2 – Provide Firewise landscaping information to nurseries, landscaping companies and greenhouses to involve and encourage them in developing Firewise landscapes for their customers.

Project Coordinator – Flathead County Fire Warden, MT DNRC Fire, USFS Fire Management and the Flathead Building Association.

10.5.10. Evacuation Plan

Getting people out of harms way in a fire is critical. This section addresses specific projects designed to move people quickly, safely, and effectively.

Recommended Project 10.5.10.1 – Update evacuation plans and conduct a tabletop exercise biannually.

Project Coordinator – Flathead County Sheriff & Flathead County OEM Director

10.5.11. Public Education

Educating residents about wildland fire issues is one of the most effective ways to reduce fire hazards and ensuring the public's safety, whether that be in K-12 schools, or programs designed for adults.

Recommended Project 10.5.11.1 – Sponsor a Firewise or FireSafe Community Program locally within the county for the public and conduct it biannually. Integrate weed and fire management into any public education that is conducted during the Firewise/FireSafe Community Program.

Project Coordinator – Flathead County OEM Director

Recommended Project 10.5.11.2 – Utilize a program such as the "Living with Fire in Montana" developed by Missoula County Fire Protection Association to educate residents, Realtors, fire and government officials about living in a wildland fire environment.

Project Coordinator – Flathead County Fire Warden and local FireSafe Council(s)

Recommended Project 10.5.11.3 – Implement the "Ready, Set, Go!" program developed by the International Association of Fire Chiefs throughout Flathead County.

Project Coordinator – Flathead County Fire Warden

Recommended Project 10.5.11.4 – Install additional fire danger rating signs along major highways and at entrances to major subdivisions or residential areas.

Project Coordinator – Flathead Interagency Fire Prevention Advisory Committee (Flathead County FireSafe Council)

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[32] www.firewise.org

[33] *Montana Nursery & Landscape Assoc. 2003*

Recommended Project 10.5.11.5 – Utilize the public access television channel and commercial stations to air quarterly fire or fire prevention segments covering open burning, fire prevention messages, interagency fire operations, holiday fire safety, fireworks safety, campfire safety, CWPP process, and other fire messages.

Project Coordinator – Flathead Interagency Fire Prevention Advisory Committee (Flathead County FireSafe Council)

Recommended Project 10.5.11.6 – Develop and implement a fireworks awareness and safety campaign in cooperation with all fire agencies to highlight fire and burn prevention and the number of fireworks-related fires that occur in Flathead County.

Project Coordinator – Flathead Interagency Fire Prevention Advisory Committee (Flathead County FireSafe Council)

10.5.12. LEGAL REQUIREMENTS

10.5.12.1. Subdivision Regulations

Recommended Project 10.5.12.1.1 – Adopt appropriate subdivision regulations which address the wildland-urban interface (See Wildland-urban Interface Guidelines)[34].

Project Coordinator – Flathead County Board of County Commissioners

Recommended Project 10.5.12.1.2 – The county fire warden, fire chiefs and MT DNRC need to ensure that wildland fire concerns are addressed in the subdivision review process for any future planned subdivision. The purpose for this input is to avoid creation or perpetuation of any untenable situations, from a fire protection standpoint. Issues such as road systems, water supply, building materials, asset protection zone and covenants covering vegetation management are all of concern to the fire warden and the fire chiefs and they can directly affect their ability to be effective.

Project Coordinator – Flathead County Fire Chiefs, MT DNRC, Flathead County Planning Department and Flathead County Board of County Commissioners

Recommended Project 10.5.12.1.3 – Develop a mechanism to track new development and structures, which are in the wildland-urban interface areas of the county to enable fire agencies to pre-plan evacuations and response activities.

Project Coordinator – Flathead County Fire Warden and Planning Board

Recommended Project 10.5.12.1.4 – Ensure that dedicated park lands in subdivisions are required to be maintained in a fire resistive state with on-going fuel management actions. If appropriate utilize dedicated park lands as a “safety zone” during a wildland fire.

Project Coordinator – Flathead County Weeds, Parks and Recreation

10.5.12.2. Agreements, MOU’s & Operating Plans

[34] See http://dnrc.mt.gov/forestry/Fire/Prevention/Documents/GuidelinesFINAL.pdf

Recommended Project 10.5.12.2.1 – Review all agreements and memorandums of understanding with cooperators. Follow up on those that have not yet been up-dated and insure annual operating plans are completed when specified.

Project Coordinator – Flathead County Fire Warden

10.6. Prioritized Actions, Implementation Timeline

Recommended Project	Short Term (< 1 Year)	Medium Term (1-3 Years)	Long Term (3+ Years)	On-Going
10.5.1.1	X			
10.5.1.2	X			
10.5.2.1	X			
10.5.2.1.1			X	
10.5.2.1.2			X	
10.5.2.1.3			X	
10.5.2.1.4		X		
10.5.2.1.5		X		
10.5.2.1.6		X		
10.5.2.1.7		X		
10.5.2.1.8			X	
10.5.2.1.9			X	
10.5.2.1.10	X			
10.5.2.1.11				X
10.5.2.1.12				X
10.5.3.1		X		
10.5.3.2	X			
10.5.4.1				X
10.5.4.2				X

Recommended Project Table (continued)

Recommended Project	Short Term (< 1 Year)	Medium Term (1-3 Years)	Long Term (3+ Years)	On-Going
10.5.5.1		X		
10.5.5.2		X		
10.5.6.1.1			X	
10.5.6.1.2				X
10.5.6.1.3		X		
10.5.6.2.1				X
10.5.6.2.2		X		
10.5.6.2.3				X
10.5.6.3.1		X		
10.5.6.3.2				X
10.5.6.3.3		X		
10.5.6.3.4		X		
10.5.6.3.1.1	X			
10.5.6.3.1.2		X		
10.5.6.3.1.3		X		
10.5.6.3.2.1			X	
10.5.6.3.3.1	X			
10.5.6.3.4.1	X			
10.5.6.3.4.2		X		
10.5.6.4.1		X		
10.5.6.4.2			X	
10.5.6.4.3		X		
10.5.7.1		X		

Recommended Project Table (continued)

Recommended Project	Short Term **(< 1 Year)**	Medium Term **(1-3 Years)**	Long Term **(3+ Years)**	**On-Going**
10.5.7.2			**X**	
10.5.8.1	**X**			
10.5.9.1	**X**			
10.5.9.2		**X**		
10.5.10.1		**X**		
10.5.11.1		**X**		
10.5.11.2			**X**	
10.5.11.3		**X**		
10.5.11.4			**X**	
10.5.11.5			**X**	
10.5.11.6		**X**		
10.5.12.1.1		**X**		
10.5.12.1.2	**X**			
10.5.12.1.3	**X**			
10.5.12.1.4		**X**		
10.5.12.2.1		**X**		

11.0 Plan Monitoring and Review

11.1. TIMELINE (5 YEARS)

DMA 2000 requires that similar plans be updated every five years. This does not mean you have to rewrite it or redo this entire process. Rather, you are required to review your mitigation plan.

Recommended projects should be updated as the keeper of the plan becomes aware of new projects that might be implemented to mitigate a wildland fire problem. The prioritized project list should be revised every year based on new data and available dollars. The entire plan should be updated or reviewed on the same cycle as the pre-disaster mitigation plan.

11.1.1 Timeline (10 years)

Conduct a complete risk assessment of the fuels and the wildland-urban interface in Flathead County.

11.2. INCORPORATION INTO LOCAL JURISDICTIONAL PLANS

This plan should be adopted by the Flathead County Board of County Commissioners and the recommendations be coordinated with other planning mechanisms, such as a County Growth Policy and Pre-Disaster Mitigation Plan.

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12.2. GLOSSARY

See the following link for a Wildland Fire Glossary: http://www.nwcg.gov/pms/pubs/glossary/index.htm

12.3. PUBLIC EDUCATION MATERIALS

This Section provides background information to the citizens and makes suggestions for what they can do individually and collectively to survive a wildland fire.

12.3.1. COMMUNITY EMERGENCY RESPONSE TEAMS

Community-based preparedness planning allows us to prepare for and respond to anticipated disruptions and potential hazards following a disaster. As individuals, we can prepare our homes and families to cope during that critical period. Through pre-event planning, neighborhoods and worksites can also work together to help reduce injuries, loss of lives, and property damage. Neighborhood preparedness will enhance the ability of individuals and neighborhoods to reduce their emergency needs and to manage their existing resources until professional assistance becomes available.

With training and information, individuals and community groups can be prepared to serve as a crucial resource capable of performing many of the emergency functions needed in the immediate post-disaster period. The Community Emergency Response Team (CERT) program is designed to help communities prepare for effective disaster response through training and planning.

If available, emergency services personnel are the best trained and equipped to handle emergencies, and you should use them. However, following a catastrophic disaster, you and the community may be on your own for a period of time because of the size of the area affected, lost communications, and impassable roads.

CERT training is designed to prepare you to help yourself, your family, and your neighbors in the event of a catastrophic disaster. This training covers basic skills that are important to know in a disaster when emergency services are not available. With training and practice and by working as a team, you will be able to do the greatest good for the greatest number of victims after a disaster, while protecting yourself from becoming a victim. CERT training is available through the Federal Emergency Management Agency and the Governor's Office of Community Involvement.

As each CERT is organized and trained and in accordance with standard operating procedures developed by the sponsoring agency, its members select a team leader and an alternate and identify a meeting location, or *staging area*, to be used in the event of a disaster.

The CERT program can provide an effective first-response capability. Acting as individuals first, then later as members of teams, trained CERT volunteers can fan out within their assigned areas, extinguishing small fires, turning off natural gas inlets to damaged homes, performing light search and rescue, and rendering basic medical treatment. Trained volunteers also offer an important potential workforce to service organizations in non-hazardous functions such as shelter support, crowd control, and evacuation.

12.3.2. EMERGENCY COMMUNICATION

All fires or emergencies should be immediately reported to 911!

Helpful information to provide to the dispatcher when calling 911 includes:

- Type of incident (fire, medical emergency, rescue)
- Location of incident (address, mile marker)
- Directions
- Your name, address or location, and a phone number where you can be reached.

12.3.3. Agency Fire Response Plan

Response to a structure or wildland fire in the Flathead County does not depend upon whose land the fire started on, but rather in which agency's jurisdiction the incident is located. Typically during the summer fire season, the DNRC, GNP, USFS and/or Flathead County Fire Departments will respond and suppress the fire and determine jurisdiction later.

Department of Natural Resources and Conservation and United States Forest Service personnel are not trained, equipped, or authorized to enter burning structures, but they can take action on the exterior of a structure and will assist the Flathead County Fire Departments in protecting exposures and surrounding wildland fuels.

The first few hours of a wildland fire may be chaotic as crews try to accurately assess the situation (public safety, cause, terrain, access, fire behavior, values at risk, weather, etc.). It is important that residents and visitors stay away from a fire incident, especially during the initial phases of the fire. Significant incident management problems arise when:

- Fires threaten human lives or public safety.
- The fire grows or fire behavior changes faster than crews are deployed or redeployed.
- There are multiple lightning strikes in the area.
- Emergency vehicle access is restricted.
- Unanticipated events occur such as a second large wildland fire or a fire fighter fatality.
- There is a shortage of resources or resources are being prioritized on a Regional or National basis.

12.3.4. Escape Routes and Evacuation

The decision to recommend an evacuation of any area of Flathead County is made by the Agency Administrators responsible for public safety and may be predicated by the ingress-egress access routes and the number of lives potentially at risk from a wildland fire incident. It is always a hard call to balance the potential liability of possible loss of life or property with a desire to warn, but not necessarily displace, residents and visitors.

If an evacuation is ordered, do the following:

- Leave when requested to do so, taking medications and other necessary personal items, and valuables that you cannot replace.
- Implement your pet or livestock plan
- Report to the evacuation center even if you are not going to stay there, so you can be accounted for. This may be your mechanism to confirm your safety with family and friends.
- Road closures and roadblocks will be maintained, so don't try to re-enter the evacuated area.
- Return when authorized by the Sheriff's Office.

12.3.5. PREPARING PETS AND LIVESTOCK FOR EMERGENCIES AND EVACUATION

Our pets and some livestock enrich our lives in more ways than we can count. In turn, they depend on us for their safety and well-being. Here's how you can be prepared to protect your pets and livestock when disaster strikes.

12.3.5.1. Prepared with a Disaster Plan

The best way to protect your family from the effects of a disaster is to have a disaster plan. If you are a pet owner, that plan must include your pets. Being prepared can save their lives.

In the event of a disaster, if you must evacuate, the most important thing you can do to protect your pets is to evacuate them, too. Leaving pets behind, even if you try to create a safe place for them, is likely to result in their being injured,lost,or worse.

12.3.5.1.1. Have a Safe Place to Take Your Pets

It may be difficult, if not impossible, to find shelter for your animals in the midst of a disaster, so plan ahead. Do not wait until disaster strikes to do your research.

- Contact hotels and motels outside your immediate area to check policies on accepting pets and restrictions on number, size, and species. Ask if "no pet" policies could be waived in an emergency. Keep a list of "pet friendly" places, including phone numbers, with other disaster information and supplies. If you have notice of an impending disaster, call ahead for reservations.
- Ask friends, relatives, or others outside the affected area whether they could shelter your animals. If you have more than one pet, they may be more comfortable if kept together, but be prepared to house them separately.
- Prepare a list of boarding facilities and veterinarians who could shelter animals in an emergency; include 24-hour phone numbers.
- Ask local animal shelters if they provide emergency shelter or foster care for pets in a disaster. Animal shelters may be overburdened caring for the animals they already have as well as those displaced by a disaster, so this should be your last resort.

12.3.5.1.2. Assemble a Portable Pet & Livestock Disaster Supplies Kit

Whether you are away from home for a day or a week, you'll need essential supplies. Keep items in an accessible place and store them in sturdy containers that can be carried easily (duffle bags, covered trash containers, etc.). Your pet disaster supplies kit should include:

- Medications and medical records (stored in a waterproof container) and a first aid kit.
- Sturdy leashes, harnesses, and/or carriers to transport pets safely and ensure that your animals can't escape.
- Current photos of your pets in case they get lost.
- Food, potable water, bowls, cat litter/pan, and can opener.
- Information on feeding schedules, medical conditions, behavior problems, and the name and number of your veterinarian in case you have to foster or board your pets.
- Pet beds and toys, if easily transportable.

12.3.5.1.3. Develop a Livestock Evacuation Plan

Your evacuation plan should outline each type of disaster and determine specific scenarios best suited for

each situation. It should include a list of resources such as trucks, trailers, pasture and/or feed which might be needed in an evacuation as well as a designated person who will unlock gates and doors and make your facility easily accessible to emergency personnel.

- Post your plan in a clearly visible place.
- Make sure that everyone who lives, works or boards at your facility is familiar with the plan.
- Get to know your neighbors and their animals.
- Select a Neighborhood Coordinator who is familiar with your evacuation plan and will be ready to assist should a disaster occur when you are not at home.
- Learn to handle your neighbors' animals and identify those which have special handling needs (i.e. stallions).

Post an updated phone list (home and office) of all neighbors and anyone who boards at your facility.

12.3.6. When a Wildland Fire Approaches – A Checklist for Action at Home

Should your home be threatened by a wildland fire, you may be advised to evacuate to protect yourself from life-threatening circumstances. Homeowners, however, have the right to stay on their properties if they desire to do so, as long as their activities do not hinder fire-fighting activities. If homeowners and visitors are not contacted in time to evacuate, or if owners decide to stay with their homes, these suggestions will help them protect themselves and their property.

- Evacuate, if possible, all family members not essential to protecting the home, as well as all pets and livestock.
- Assign tasks to all family members who will be assisting with protecting the home. These should be assigned and practiced, if possible, prior to the event.
- Contact a friend or relative and relay your plans to them.
- Arrange a meeting place and ensure family members are aware of its location.
- Tune into a local radio station and listen for instructions and/or updates.
- Wear only cotton or wool clothes. Proper attire includes long pants, long sleeved shirt or jacket, hat and boots. Carry gloves, a handkerchief to cover your face, water to drink, and goggles.
- Place vehicles in the garage, have them pointing out, roll up windows, and leave keys in the vehicles.
- Place valuable papers and mementoes in the vehicles.
- Close the garage door, but leave it unlocked. Disconnect electric garage doors so they can be opened manually.
- Prepare the outside of the home
    - Gather fire tools, such as rakes, shovels, hoses, ladders and hoes.
    - Prop ladder against the house to provide easy access to the roof.
    - Make sure garden hoses are connected to faucets and the attached nozzle is set to “spray.”
    - Soak rags, towels, burlap sacks, or small rugs with water to use in beating out embers or small fires.
    - Fill garbage cans, buckets and other containers with water.
    - Place combustible patio furniture in the house or garage, or move away from the home.
    - Shut off propane tank.
    - Close or cover all exterior vents. Seal attic and ground vents with pre-cut plywood or commercial seals.
    - Attach pre-cut panels to the exterior side of windows and glass doors or close shutters, if available.
- Prepare the inside of the home.
    - Turn off pilot lights on all gas appliances.
    - Fill the bathtub, sinks and other containers with water. Remember that the hot water

heater and toilet tank(s) are sources of water!
  - Close all exterior doors and windows and draw Venetian blinds, shutters or non-combustible window coverings and heavy drapes.
  - Remove lightweight and/or non-fire resistant curtains and other combustible materials from around windows.
  - Open the fireplace damper, but place the screen over the fireplace opening to prevent sparks and embers from entering the home.
  - Close all interior doors.
  - Leave a light on in each room to increase visibility of your home in heavy smoke conditions.
- When the fire hits
  - Continually check the roof and attic for embers, smoke or fires.
  - Monitor the exterior of the home for small fires and embers.

Most importantly stay calm!

12.3.7. READY, SET, GO!

Implement the Ready, Set, Go! program throughout Flathead County. The program teaches residents of the wildland-urban interface—the area where development meets natural vegetation—how to prepare their homes against the threat of a wildland fire, assemble emergency supplies and maintain awareness when threatened by a wildland fire and, finally, how to evacuate early to keep their families safe and allow emergency responders the room they need to operate safely.

Core concepts of the Ready, Set, Go! program are:
READY Teach the public to prepare well in advance of a wildland fire. Tell people how to retrofit their homes and take preventive actions to mitigate the effects of ember intrusion in the home ignition zone using Firewise and similar principles.
SET Teach the public to elevate their families' situational awareness when fire weather occurs or when wildland fires are burning and to monitor the environment and be ready to implement a family disaster plan.
GO This is the simplest step: Encourage the public to implement a family disaster plan by leaving early, well before the fire arrives.
The RSG Action plan also includes information to educate people how to survive if trapped by a wildland fire[35].

[35] http://www.iafc.org/displaycommon.cfm?an=1&subarticlenbr=1229

12.4 RESOURCES

12.4.1 ASSET PROTECTION ZONE GUIDELINES

12.4.2 FIREWISE CONSTRUCTION - DESIGN & MATERIALS

12.4.3 IS YOUR HOME PROTECTED – A GUIDE TO WILDFIRE RETROFIT

12.4.4 FIREWISE CONSTRUCTION CHECKLIST

12.4.5 FIREWISE CONSTRUCTION TIPS

12.4.6 FIRE AND YOUR LANDSCAPING

12.4.7 FIRE-RESISTANT PLANTS FOR MONTANA LANDSCAPES

12.4.8 FIREWISE LANDSCAPING CHECKLIST

12.4.9 FIREWISE LANDSCAPING TIPS

12.4.10 LIVING WITH FIRE

12.5 MAPS

ATTACHMENT 1 — NORTH FORK CWPP

ATTACHMENT 2 – WHITEFISH AREA CWPP

ATTACHMENT 3 – ELKHORN CWPP