Pre-Disaster Mitigation Plan
2016

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LIST OF ACRONYMNS

BIA	Bureau of Indian Affairs
CDBG	Community Development Block Grant
CDP	Census Designated Place
CPRI	Calculated Priority Risk Index
CRS	Community Rating System
CSKT	Confederated Salish and Kootenai Tribes
CWPP	Community Wildfire Protection Plan
DES	Disaster and Emergency Services
DFIRM	Digital Flood Insurance Rate Maps
DMA	Disaster Mitigation Act
DNRC	Montana Department of Natural Resources and Conservation
DPHHS	Montana Department of Public Health and Human Services
EAP	Emergency Action Plan
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
FEMA	Federal Emergency Management Agency
FIS	Flood Insurance Study
GIS	Geographic Information Systems
HAZUS-MH	Hazards of the United States – Multi-
Hazard HMGP	Hazard Mitigation Grants Program
IBC	International Building Code
IFC	International Fire Code

LIST OF ACRONYMNS (continued)

IRC	International Residential Code
LEPC	Local Emergency Planning Committee
MBMG	Montana Bureau of Mines and Geology
MDOR	Montana Department of Revenue
MVP	Mission Valley Power
NCDC	National Climatic Data Center
NFIP	National Flood Insurance Program
NID	National Inventory of Dams
NOAA	National Oceanic and Atmospheric Administration
NRIS	Natural Resource Information System
NWS	National Weather Service
OEM	Office of Emergency Management
PDM	Pre-Disaster Mitigation
PDMC	Pre-Disaster Mitigation Competitive (grants program)
SHELDUS	Spatial Hazard Events and Losses Database for the United
SHMO	State Hazard Mitigation Officer
TERC	Tribal Emergency Response Commission
TRI	Toxic Release Inventory
USFS	United States Forest Service
USGS	United State Geological Survey
VFD	Volunteer Fire District
WUI	Wildland Urban Interface

1.0 INTRODUCTION

The effects from several natural and man-made hazards may directly impact the safety and wellbeing of residents of the Confederated Salish and Kootenai Tribes (CSKT) on the Flathead Reservation. Historically, CSKT residents have dealt with floods, wildfire, harsh winter storms with extreme cold and blizzards, severe summer storms with damaging thunderstorms and hazardous material incidents. While most hazards cannot be eliminated, the effects from them can be mitigated.

CSKT completed and adopted a Pre-Disaster Mitigation (PDM) Plan in 2005 to help guide and focus hazard mitigation activities. CSKT, working together with Risks & Rewards Management Group, LLC has prepared an update to their PDM Plan to satisfy the federal requirement that PDM Plans be updated every five years. In an effort to coordinate and maximize mitigation efforts CSKT and Risks and Rewards Management Group, LLC have integrated the update to the 2005 CSKT plan with the 2010 Lake County PDM plan and other on-going DES projects and goals throughout the Reservation. The updated CSKT PDM Plan profiles significant hazards to the community and identifies mitigation projects that can reduce those impacts. The purpose of the updated PDM Plan is to promote sound public policy designed to protect residents, critical facilities, infrastructure, private property and the environment from natural and man-made hazards. The updated CSKT PDM Plan includes resources and information to assist residents, organizations, local government and others interested in participating in planning for natural and man-made hazards. This 2016 updated PDM Plan supersedes the 2005 PDM Plan.

1.1 AUTHORITY

The Disaster Mitigation Act of 2000 (DMA 2000) (P.L. 106-390) provides an opportunity for States, local governments and sovereign nations to take a new and revitalized approach to mitigation planning. DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Act) by repealing the previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322). This new section emphasizes the need for State and local entities to closely coordinate mitigation planning and implementation efforts. To implement the DMA 2000 planning requirements, the Federal Emergency Management Agency (FEMA) published an Interim Final Rule in the Federal Register on February 26, 2002. This rule (44 CFR Part 201) established the mitigation planning requirements for States and local communities.

The CSKT PDM Plan update has been developed pursuant to the requirements outlined in the March 2010 update of the Tribal Multi-Hazard Mitigation Planning Guidance and by 44 CFR 201.7(d)(3) which requires an Indian Tribal government to revise its plan to reflect progress in tribal mitigation efforts and changes in priorities and to resubmit the plan for approval within 5 years in order to continue eligibility for FEMA assistance.

The CSKT Tribal Council has adopted this PDM Plan, which includes the council districts of Dixon, Ronan, St. Ignatius, Arlee, Polson, Hot Springs and Elmo. This governing body has the authority to promote sound public policy regarding natural and man-made hazards in their jurisdiction. Copies of the signed resolutions are included as **Appendix A** to this plan. The PDM Plan was adopted by CSKT at the regularly scheduled CSKT Council meetings, which were open to the public and advertised through the typical process the jurisdictions use for publicizing meetings.

CSKT Disaster Emergency Services will be responsible for submitting the adopted PDM Plan to FEMA for review. Upon accepted by FEMA, CSKT will remain eligible for mitigation project grants and post-disaster hazard mitigation grant projects.

1.2 ACKNOWLDGEMENTS

Many groups and individuals have contributed to development of the CSKT PDM Plan. In order to more easily facilitate multi-government cooperation, the Lake County PDM Plan served as a foundation for the updated CSKT PDM Plan. The CSKT Disaster Emergency Services provided support for all aspects of plan development. The PDM Planning Team met on a regular basis to guide the project, identify the hazards most threatening to CSKT, develop and prioritize mitigation projects, review draft deliverables and attend the public meetings. The local communities participated in the planning process by attending public meetings and contributed to plan development by reviewing and commenting on the draft plan.

1.3 SCOPE AND PLAN ORGANIZATION

The process followed to prepare the CSKT PDM Plan update included the following:

- Review and prioritize disaster events that are most probable and destructive,
- Update and identify new critical facilities,
- Review and update areas within the community that are most vulnerable,
- Update and identify new goals for reducing the effects of a disaster event,
- Review and identify new projects to be implemented for each goal,
- Review and identify new procedures for monitoring progress and updating the PDM Plan,
- Review the draft PDM Plan and
- Adopt the updated PDM Plan.

The PDM Plan is organized into sections that describe the planning process (Section 2), community profile (Section 3), risk assessment (Section 4), mitigation strategies (Section 5), a capability assessment (Section 6) and plan maintenance (Section 7). Appendices containing supporting information are included at the end of the plan.

1.4 PLANNING ASSUMPTIONS

When preparing this update Risk and Rewards Management, LLC and the other contributors gathered information from a variety of sources. Many of these sources were government sponsored—like United States Census Data, Montana State Property Value Data and Montana State Cost Analysis Data, among others. Where available the planning team used data gathered directly by CSKT. In many places throughout this plan data gathered by State and local governments is accepted, within a reasonable margin of error, for similar areas or populations on CSKT. For example, data collected for the incorporated communities of Polson, Ronan and St. Ignatius has been used to plan for Tribal Council Districts corresponding to roughly the same area and population. Data will be updated in the plan as more specific information becomes available.

Throughout the plan, references to CSKT include all Tribal Council Districts, their respective populations, both Tribal and non-Tribal, and all land within Flathead Reservation boundaries unless otherwise specified.

2.0 PLANNING PROCESS

The updated CSKT PDM Plan is the result of a collaborative effort primarily between CSKT, Lake County and the CSKT Climate Change Oversite Committee (CCOC), with additional assistance from Sanders County, Missoula County and Flathead County, the incorporated communities of Polson, Ronan, and St. Ignatius, utilities, local agencies, non-profit organizations, businesses, and regional, state and federal agencies. The planning effort was facilitated by the contractor, Risks & Rewards Management Group, LLC. Public participation played a key role in development of goals and mitigation projects, as outlined below. For the purposes of this planning effort, the public is defined as both Tribal and Non-Tribal residents of the Flathead Reservation, local departments, state and federal agencies that support activities on the Reservation, neighboring communities and local partners. Although Non-Tribal entities were invited to participate in the planning process, CSKT is the only entity seeking FEMA approval for this plan.

2.1 MITIGATION PLANNING TEAM

The CSKT Disaster Emergency Services Coordinator requested a committee of local leaders and interested members of the public to assist with development of the PDM Plan. These individuals are listed in **Appendix B**. Participants involved with the PDM Planning Team are presented in **Table 2.1-1.**

TABLE 2.1-1
AGENCIES REPRESENTED ON THE PDM PLANNING TEAM

Organization	Type of Organization
Confederated Salish & Kootenai Tribes Disaster & Emergency Services	Tribal Government
Sanders County Office of Emergency Management	County Government
Lake County Office of Emergency Management	County Government
CSKT Natural Resources Department Environment Protection	Tribal Government
CSKT Forestry Department	Tribal Government
Montana Disaster & Emergency Services, District 1 Rep.	State Government

Responsibilities of the Planning Team included attending meetings to discuss plan development, providing data for analysis in the risk assessment, attending public meetings, providing input and feedback on mitigation strategies, review of the draft plan document and supporting the plan throughout the adoption process. The PDM Planning Team will assist the CSKT Disaster Emergency Services Coordinator in updating the plan in the future.

Draft materials were available to the Planning Team while the plan was being drafted. In advance of each public meeting, an agenda and/or materials to be discussed (i.e. example mitigation strategies, examples of project eligible for FEMA funding, etc.) were provided to meeting participants.

During the kick-off meeting and subsequent actions, the Planning Team reviewed and analyzed each section of the draft PDM plan, as described in **Table 2.1-2.**

TABLE 2.1-2
REVIEW AND ANALYSIS OF 2005 PDM PLAN

2005 PDM Sections	How Reviewed and Analyzed
Section 1 - Introduction	Reviewed existing section through discussion at kick-off meeting. No analysis needed.
Section 2 - Planning Process	Reviewed and analyzed existing section through discussion at kick-off meeting. Planning process expanded by utilizing project website and scoring hazards using Calculated Priority Risk Index.
Section 3 – Hazard Evaluation and Risk Assessment	Reviewed and analyzed existing section through discussion during kick-off meeting and Planning Team conference calls. Reviewed and updated hazards, critical facilities and vulnerable populations. Updated section with recent hazard data.
Section 4 - Mitigation Strategy	Reviewed by Planning Team during the course of kick-off meeting and subsequent conference calls. New projects developed, existing projects re-worded and/or deleted, completed projects documented.
Section 5 - Plan Maintenance Procedures	Reviewed and analyzed existing section through discussion during kick-off meeting and Planning Team conference calls. Determined that plan maintenance procedures outlined in previous plan had not been implemented.

2.2 PROJECT STAKEHOLDERS

The planning process was initiated by preparing a stakeholders list of individuals whose input was needed to help prepare the PDM Plan. Planning partners on the stakeholders list received a variety of information during the project including meeting notices, documents for review and the draft mitigation strategy. **Appendix B** presents the stakeholders list for this project.

In an effort to coordinate mitigation efforts and maximize resources across Tribal and Non-Tribal entities, all residents, governments, utilities, and non-government agencies associated with CSKT and the Flathead Reservation were invited to participate in the planning process.

On the Tribal level, project stakeholders include each Tribal Councilperson and their Districts, along with the Culture Committees of the Salish and Kootenai Tribes and the CCOC. The existing Local Emergency Planning Committee (LEPC) and Tribal Emergency Response Committee (TERC) was a primary vehicle to reach key stakeholders.

On the County level, project stakeholders included representatives from: Office of Emergency Services (OEM), Planning Department, Planning Board, Public Health Department, Road Department, Sheriff's Office, Environmental Health, the Floodplain Administrator and Geographic Information System (GIS) Coordinator. These entities participated in the planning process by either providing data, attending public meetings and/or reviewing the draft PDM Plan.

Stakeholders from the districts of Polson and Ronan, and St. Ignatius included: Elected officials, City/Town Council members, Clerks, Volunteer Fire Departments, Police Departments, Building Departments, Water and Sewer Departments, and Street (Public Works) Departments. These entities participated in the planning process by either providing data, attending public meetings and/or reviewing the draft PDM Plan.

Stakeholders from federal agencies included representatives from: the National Weather Service (NWS), and the Bureau of Indian Affairs (BIA) Safety of Dams and Fire Management. These entities participated in the planning process by either providing data and/or reviewing the draft PDM Plan.

Stakeholders from state agencies included representatives from: the Montana Department of Transportation, Montana Department of Natural Resources and Conservation (DNRC) and the Montana Disaster and Emergency Services (DES) District 1 Representative. These entities participated in the planning process by attending the public meetings and/or reviewing the draft PDM Plan.

Utilities invited to participate in the planning process included: Century Link, Mission Valley Power and PPL Montana. These entities participated in the planning process by either providing data, attending the public meetings and/or reviewing the draft PDM Plan.

Non-governmental stakeholders including non-profits and businesses consisted of representatives from the American Red Cross and local media. These entities attended the public meetings.

Planning partners from adjoining towns and counties included: the Flathead County OEM, Sanders County OEM, and the Confederated Salish and Kootenai Tribes Disaster and Emergency Services (DES). On the County level, these entities did not offer input on the PDM Plan update. The draft plan was presented to neighboring jurisdictions through LEP/TERC. CSKT provided data for analysis and attended the public meetings.

2.3 REVIEW OF EXISTING PLANS AND STUDIES

At the initiation of the PDM updating project, planning documents and studies completed for the project area were provided to the contractor to review in order to determine how mitigation could be integrated into this planning process and future local planning mechanisms and programs. Contributing plans/ordinances provided to the contractor included:

DAMS

- Emergency Action Plan, Black Lake Dam
- Emergency Action Plan, Jocko Dam
- Emergency Action Plan, Sėliš Ksanka Qĺispė Dam
- Emergency Action Plan, Kicking Horse Dam
- Emergency Action Plan, Lower Crow Dam
- Emergency Action Plan, McDonald Dam
- Emergency Action Plan, Mission Dam
- Emergency Action Plan, Ninepipe Dam
- Emergency Action Plan, Pablo Dam
- Emergency Action Plan, Tabor Dam

- Emergency Action Plan, Upper Dry Fork Dam (Sanders County)
- Emergency Action Plan, Lower Dry Fork Dam (Sanders County)
- Emergency Action Plan, Hungry Horse Dam (Flathead County)

EMERGENCY OPERATIONS

- CSKT Emergency Operations Plan, Hazard Specific Annexes

FLOODPLAIN STUDIES

- Flood Insurance Study, Lake County, 1987

GROWTH POLICIES, ORDINANCES & REGULATIONS

- Comprehensive Growth Policy
- Comprehensive Resource Plan
- Comprehensive Growth Policy
- Comprehensive Economic Development Strategy Plan
- CSKT Resource and Land Use Plan
- CSKT Noxious Weed Management Program Plan
- Transportation Development Plan for The Flathead Reservation
- Shoreline Protection Ordinance
- Montana Subdivision and Platting Act
- Montana Building Codes
- Tribal/Montana Sanitation in Subdivision
- Lakeshore Protection Regulations
- City of Polson Growth Policy, 2006
- City of Polson Subdivision Regulations, 2005
- City of Polson Development Code, 2010
- City of Polson Zoning Ordinance
- City of Ronan Growth Policy, 2008
- City of Ronan, Zoning Ordinance, 2008
- Town of St. Ignatius Growth Policy, 2001

HAZARD MITIGATION

- CSKT Pre-Disaster Mitigation Plan, 2005
- CSKT Community Wildfire Protection Plan, 2005
- Lake County Pre-Disaster Mitigation Plan, 2013

The data obtained from the plan and regulation review was incorporated into various sections of the PDM Plan. *Section 4.0* contains reference to the plans and ordinances affecting management of the hazard. *Section 7.3* includes a discussion on how mitigation can be implemented through existing programs.

2.4 PROJECT MEETINGS

The planning process began in April of 2015 and took approximately 18 months to complete. The project had roughly 21 different public meetings from TERC/LEPC discussions to Tribal council presentations in addition to COCC meetings in 2016, and then public outreach meetings in every council district on the reservation. Sign-in sheets for the public outreach meetings are included in **Appendix B**.

2.5 PLAN REVIEW

The public was provided at numerous opportunities for comment prior to adoption of the plan. The first opportunity was during the drafting process in all the district meetings. The draft PDM Plan was made available via the CSKT DES website. A hard copy of the PDM Plan was available for review at the CSKT DES office. An e-mail announcement was sent to the project stakeholders list announcing the availability of the draft PDM Plan for review with instructions on how to comment.

Reviewers were asked to submit their comments on the draft plan to the CSKT DES office or via email after a 30-day review period. The CSKT DES Director reviewed the comments and in consultation with the Planning Team submitted a consolidated list of comments. Comments were incorporated into a final draft document and the PDM Plan was submitted to the State Hazard Mitigation Officer (SHMO) and FEMA for compliance with the Region 8 Crosswalk.

Comments received from the SHMO and the FEMA were addressed and the final plan was produced and posted to the project website. At this point a second opportunity was provided to the public to comment on the PDM Plan. The final plan was posted on the website and stakeholders were notified of its availability via an e-mail message and press release. Final comments were addressed in a second plan revision and the final plan was posted on the website and provided to the CSKT Council members. After adoption, final copies of the plan were submitted to the SHMO and FEMA.

Future comments on the PDM Plan should be addressed to:

CSKT Disaster Emergency Services
P.O. Box 278
Pablo, MT 59855

3.0 COMMUNITY PROFILE

3.1 PHYSICAL SETTING

Located in northwestern Montana, CSKT has a land area of 1,938 square miles and has land on four Montana counties: Lake, Sanders, Missoula and Flathead. The Flathead Reservation is home to the Confederated Salish and Kootenai Tribes (CSKT) of the Flathead Nation. Pablo is the location of the main Tribal government buildings and Tribal Council Districts include: Arlee, St. Ignatius, Dixon, Ronan, Hot Springs, Polson and Elmo. Flathead Lake, the largest fresh water lake west of the Mississippi, is located within the boundaries of the Reservation. Sėliš Ksanka Q̓lispė Dam is located on the southwestern tip of Flathead Lake on the Flathead River. The Flathead River flows into the Clark Fork River downstream from the dam. **Figure 1** presents a location map of the Flathead Reservation and relevant surrounding counties.

The eastern part of the Flathead Reservation is characterized by the steeply sloping west face of the Mission Mountains. The western reaches of the Reservation contain the Salish Range, which is lower in elevation, and also has steep slopes. The central portion of the Flathead Reservation is characterized by broad glaciated valleys with alluvial fans, stream terraces and rough badlands along the Flathead River. Elevations on the Reservation range from approximately 2,900 feet to 9,800 feet above sea level. The city of Polson is located on the valley floor at about 2,900 feet above sea level. McDonald Peak, located approximately 10 miles straight-line distance northeast of St. Ignatius, is the tallest peak on the Reservation at approximately 9, 800 feet.

The Flathead Reservation is situated at the southern end of the Flathead Basin, a watershed that drains approximately six million acres of northwestern Montana and southeastern British Columbia. Waters from this basin flow into the Clark Fork River and eventually into the Columbia River. The most prominent surface water features on the Reservation are the southern two-thirds of Flathead Lake, the Flathead River, Mission Creek, Post Creek and the Jocko River. Other sizeable lakes include McDonald, Loon, and St. Mary's Lakes. The Flathead Reservation also contains several large reservoirs, including Pablo, Kicking Horse, Lower Crow, Mission, Ninepipe and numerous small reservoirs which are important for wildlife and agriculture.

There are a number of large landowners within the Reservation boundaries. The Tribes are the largest single landowner (30.4 percent), followed by the Federal Government (17.8 percent), the State of Montana (6.2 percent), and Plum Creek Timber (6 percent). The Forest Service owns large blocks of timberland along the west front of the Swan Range and the eastern side of the Missions off of the Reservation. Lakes and streams cover slightly more than 100,000 acres of CSKT, or roughly 9.4 percent of the total area. According to the 2010 census, CSKT has 19.3 persons per square mile compared to 6.8 for the State of Montana. **Figure 2** presents ownership and **Figure 3** presents population density on the Flathead Reservation.

3.1.2 Cultural Values

The Tribes have always placed great value on wildlands or wilderness. These protected areas are essential for the perpetuation of Tribal cultures and traditional practices. The settlement and development that came after the Allotment Act altered much of the Reservation's natural landscape. Settlers destroyed sacred cultural sites and built roads and buildings on pristine lands. Many of the wild and untamed areas that remain are in the mountains, and it is there that Indian people find a bridge that links the past with the present.

To preserve the cultural, spiritual and recreational values of some of these mountain lands, the Tribal Council passed Resolution 4575, in 1974. The resolution designated the area surrounding the South Fork of the Jocko River as a Primitive Area, and described it as "one of the last vestiges of unspoiled land on the Flathead Reservation where Tribal members can have the opportunity for solitude and an unconfined type of recreation." In October of 1979 the Council put the boundaries and a member-only use designation for the South Fork Primitive Area to a vote of the Tribal membership. The Council did the same for another area, known as Mill Creek or Lozeau, in the northwest corner of the Reservation. The membership approved both measures (Resolutions 2-79 and 3-79). Almost thirteen years later, on January 17, 1992, the Tribal Council approved Resolution 92-74, which expanded the South Fork Primitive Area to the west.

In 1979, the Tribal Council initially designated the Mission Mountains Tribal Wilderness, which lies along the eastern boundary of the Reservation. In 1982, they approved Ordinance 79A and Resolution 82-173 further defining the area and its management direction. The Council's action was historic; it was the first time in the United States that a Tribal government had designated a wilderness area. In recognition of the fact that outside influences can affect the wilderness, the Council established a wilderness buffer zone in 1987 to protect and preserve the integrity of the area. For the Tribes, these primitive and wilderness areas provide sanctuaries where Tribal members can rest, hunt, fish, worship, practice cultural traditions, and recreate. They provide scenic amenities and places for educational and scientific study. They offer protection for fish, wildlife, sensitive plants, air and water, and cultural resources.

Important cultural sites have been destroyed over time. Often, when the Tribes or others have disclosed their locations, visitors have stolen from or vandalized them. Many people do not understand the value of these resources to the Tribes.

Because the management of cultural resources is extremely sensitive, the Confederated Salish and Kootenai Tribes have many concerns; the include (but are not limited to) the following:

- Resource management; protection of non-renewable cultural resources such as historic sites and sensitive plant harvesting areas; reduction or avoidance of impacts to these sensitive areas from livestock grazing, forest management, cropping, pesticide use and other land uses, and establishment of cultural site protection standards from all ground-disturbing activities.
- Protection of cultural sites from vandalism.
- Prevention or mitigation of off-Reservation cultural site disturbance.
- Sustained availability of all resources through traditional efficient and non-destructive uses.
- Protection of the River Corridor from development and other land use impacts.

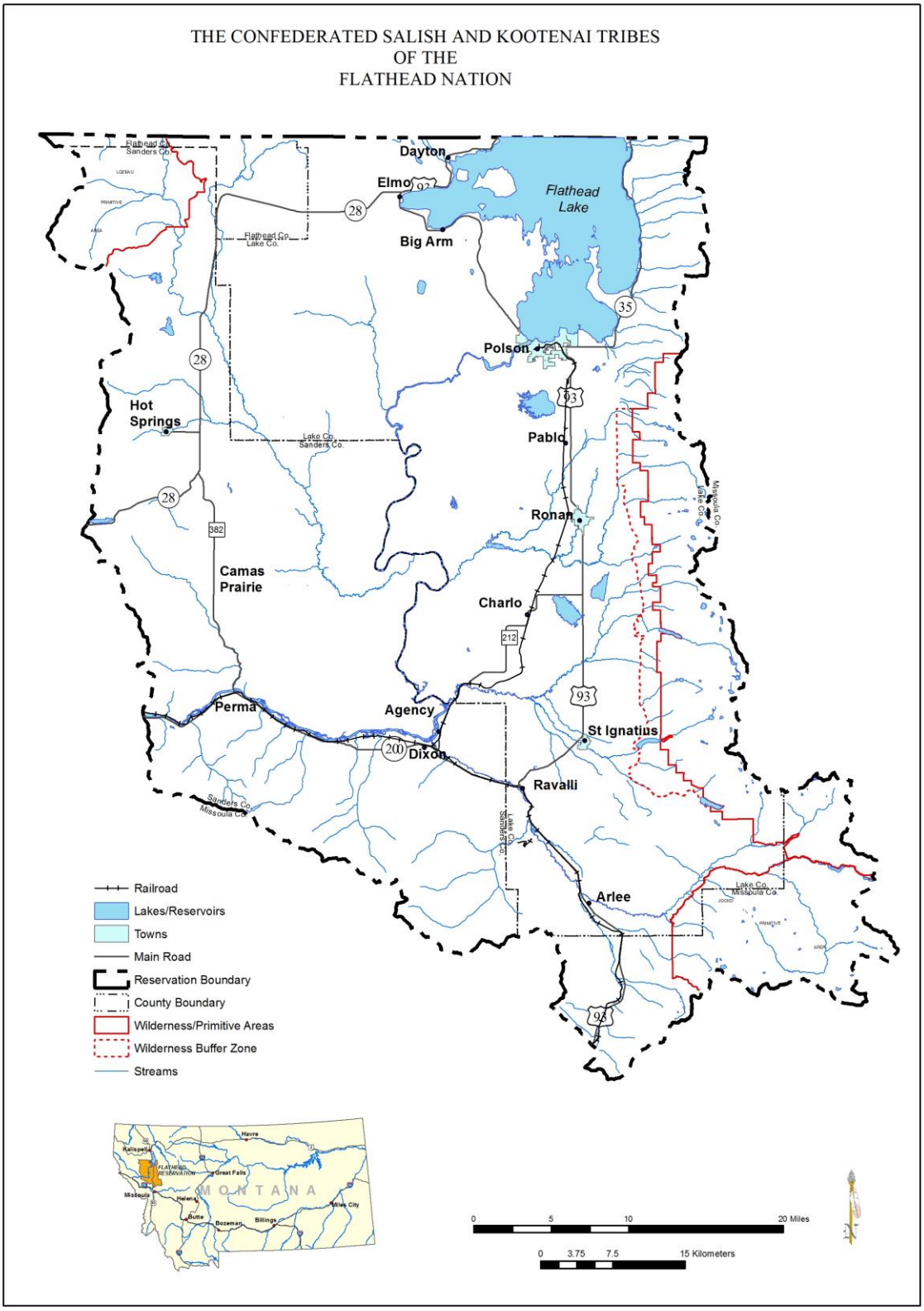


Figure 1 | Flathead Reservation Location Map

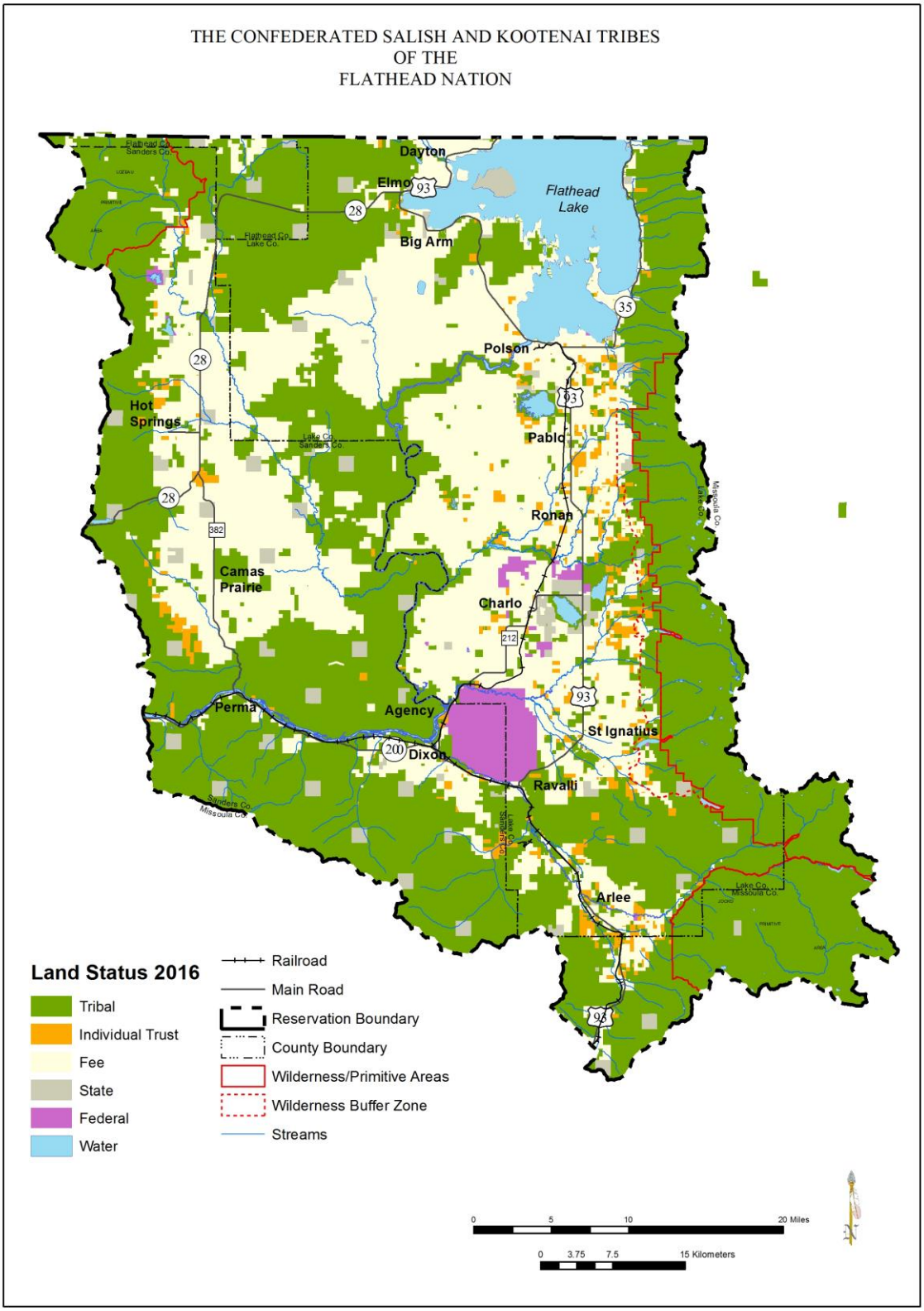


Figure 2 | Flathead Reservation Land Ownership

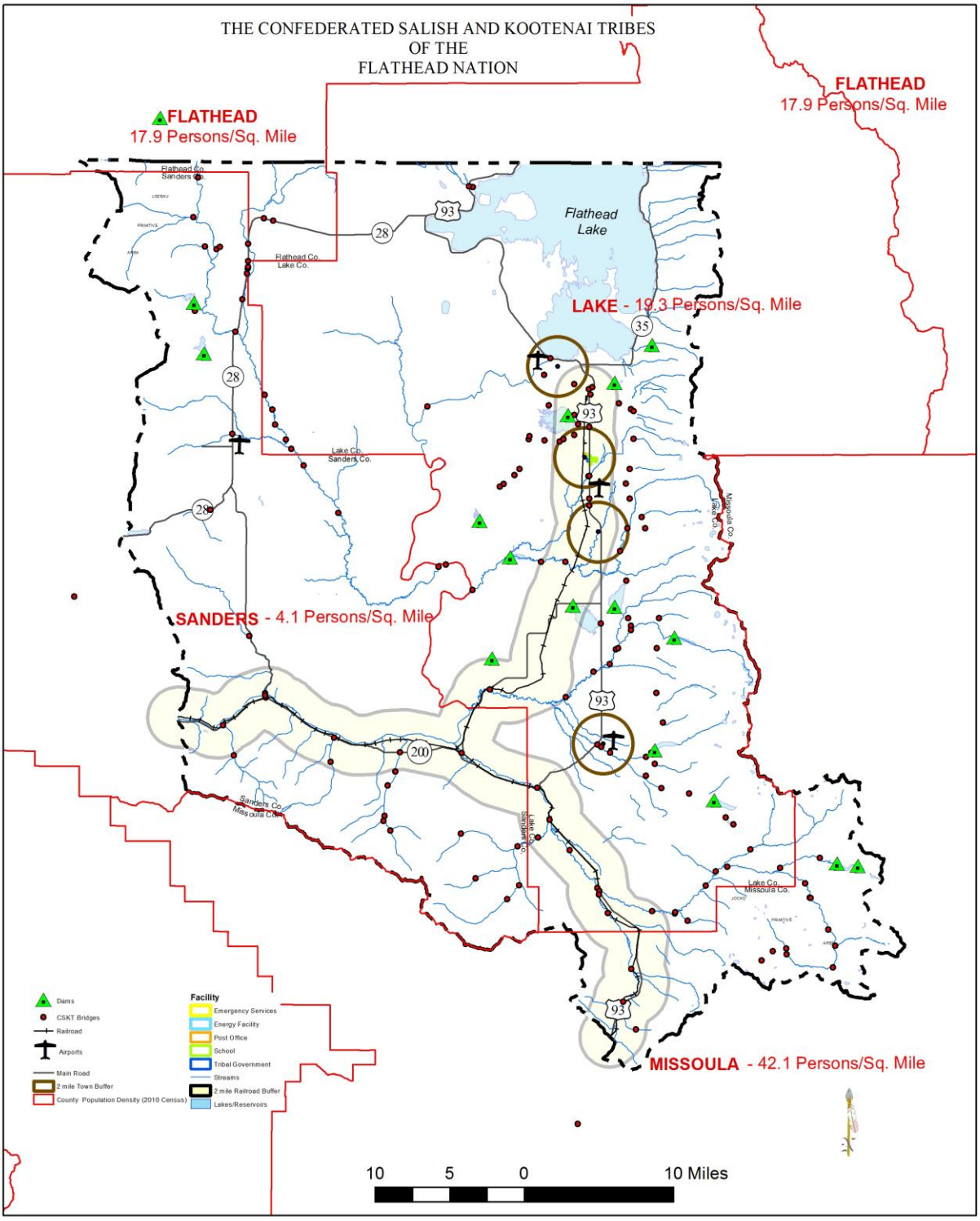


Figure 3 | Flathead Reservation and Surrounding County Population Densities

3.2 CLIMATE

Western Montana, like the remainder of the northwest U.S., is heavily influenced by the predominant mid-latitude westerly flow aloft. Storm systems embedded in this flow are most frequent and potent in the Winter and Spring months, and with convection increasing during the warm Spring. May and June are typically the wettest months.

The complex terrain also plays a big role in amount and distribution of precipitation. Uplift over the terrain causes increased amounts in the mountains, while down slope drying can greatly reduce amounts in the valleys depending on the flow direction. Therefore, the mountains in western Montana generally receive in excess of 50 inches of water equivalent precipitation annually, while the major valleys get less than 20 inches a year. The Mission Mountains within the Reservation are particularly good orographic precipitation producers with annual amounts exceeding 80 inches.

Temperatures are relatively mild in western Montana compared to locations east of the Continental Divide. Arctic intrusions do occur from the north and east generally a few times every Winter, but the cold air rarely lasts long due to the usually active flow from the west. During these arctic events, however, temperatures can drop well below zero. Summers can be hot in the valleys. While average highs are in the 80s in July and August, individual days often rise into the 90s and even low 100s. Flathead Lake does tend to moderate temperatures somewhat (a little warmer at night and cooler during the day), but the influence generally extends only a few miles from shore. **Table 3.2-1** presents a summary of top weather events in Polson.

TABLE 3.2-1
TOP WEATHER EVENTS, POLSON, CSKT

Hottest Days		Coldest Days		Wettest Days	
104° F	7/19/1960	-30° F	1/31/1950	2.00 inches	5/30/1985
104° F	7/28/1934	-27° F	2/17/1936	2.50 inches	6/8/1964
104° F	7/16/1919	-27° F	2/16/1936	2.43 inches	6/20/1916
102° F	7/6/2007	-26° F	1/27/1957	2.30 inches	7/3/2000
		-26° F	1/26/1957		
Wettest Years		**Driest Years**		**Longest Dry Spells**	
21.61 inches	2010	10.17 inches	1931	50 days	1910
21.39 inches	1947	10.38 inches	1952	46 days	1926
20.94 inches	1916	10.55 inches	1939	44 days	1955
20.68 inches	1951	10.77 inches	1928	43 days	1922
20.31 inches	1915	11.01 inches	1960	42 days	1914

Source: National Weather Service, 2012

3.3 CRITICAL FACILITITES AND INFRASTRUCTURE

Critical facilities are of particular concern because they provide essential products and services that are necessary to preserve the welfare and quality of life and fulfill important public safety, emergency response and/or disaster recovery functions. Critical facilities include: 911 emergency call centers, emergency operations centers, police and fire stations, public works facilities, sewer and water facilities, hospitals and shelters and facilities that, if damaged, could cause serious secondary impacts (i.e., hazardous material facilities, communications facilities). Critical facilities also include those facilities that are vital to the continued delivery of community services or have large vulnerable populations. These facilities may include: buildings such as the jail, law enforcement center, public services buildings, senior centers, community corrections center, the courthouse and juvenile services building as well as other public facilities such as hospitals, nursing homes and schools.

Critical facilities in CSKT are identified in **Appendix C.** Replacement values were collected where readily available; however, time and resource constraints prohibited the collection of values for all structures. A GIS layer of the critical facilities was used in the hazard risk assessment. This GIS layer should be updated on a regular basis for use in future analysis. It should be noted that many of the municipal water sources are missing from the critical facility layer with the exception of the City of Ronan and Tribal facilities. This data should be collected for future updates of this plan. Further details on CSKT's critical facilities and infrastructure are presented below.

Water and Wastewater Services

According to the CSKT Growth Policy (2003), Polson, Ronan and St. Ignatius have municipal water systems. Citizens of Charlo and Pablo have formed water districts to operate the existing water systems. The community of Arlee has formed water districts to finance water system improvements. Most of the rural residences in CSKT have individual wells, but some residents use surface water from Flathead Lake or local creeks as their water source. The CSKT Housing Authority operates 14 water systems in Reservation communities that serve both Tribal and non-Tribal members.

According to the CSKT Growth Policy (2003), most of the rural residents on the Flathead Reservation use individual sewage disposal systems (septic tanks and drain fields) for sewage disposal. A number of municipal and public wastewater treatment systems exist in CSKT and more are in the planning stages. The City of Polson's topography requires that all sewage generated in Polson be pumped to the treatment system. The treatment plant consists of three aerated lagoons, a polishing pond, and a surface discharge of treated effluent to the Flathead River. The City of Ronan sewage treatment includes a three-cell aerated lagoon that is discharged into Crow Creek.

The Town of St. Ignatius has a single-cell aerated lagoon with a settling pond that is discharged into Matt Creek. The area north of Mission Creek is served by the town sewer system while the area south of Mission Creek is on a Tribal sewer system. The citizens of Arlee have formed a sewer district to construct

facilities in that community. The Charlo Sewer District operates a three acre, single-cell aerated lagoon that discharges into Mission Creek. A number of tribal wastewater treatment systems are also present in CSKT (CSKT Growth Policy, 2003).

In January of 1982, the Tribal Council established the Tribal Water Resources Program to quantify the volume of water arising on and flowing through the Flathead Reservation. Tribal hydrologists and technicians planned and established a network of non-recording gaging stations on the Reservation. The USGS also installed eleven continuous-recording stations; ten are in operation. These are in addition to one USGS recorder that has operated below Kerr Dam since 1907. The USGS publishes data from the stations in the annual Water Resources Data reports for Montana. In 1991 and 1993, the Tribes installed seventy additional continuous-recording stations on the Reservation.

The following Tribal programs evaluate and monitor the Reservation's water resources:

Water Management

The Tribal Water Management Program is responsible for a network of surface and groundwater monitoring stations. Under a Memorandum of Agreement with the Soil Conservation Service, the Tribes also monitor Reservation snowcourses (these include three manual measurement sites and four SNOTEL sites. SNOTEL sites measure total precipitation, snow water content and air temperature on a continual basis and transmit this information by radio signal).

The Water Management Program has also been providing hydrologic information to the Flathead Agency Irrigation Division (FAID) for management of the irrigation system.

Water Administration

The Water Administration Program monitors the water permitting and planning activities of the State of Montana.

Safety of Dams

Due to the hazard potential of the existing FAID reservoir dams, the BIA contracted with the Confederated Salish and Kootenai Tribes in 1989 to conduct a Safety of Dams Program on the Reservation. This agreement, authorized under Public Law 93-638, is designed to correct deficiencies that threaten the integrity of the dams. Following data collection and analysis, the program will complete a final design and field construction. The Tribes have contracted with the Bureau of Reclamation to assist in the design and construction phase of the program.

As a safety precaution, Safety of Dams has installed early warning systems at 10 dams to monitor and transmit information used to predict dam failure. The agency has mapped the areas susceptible to flooding if any of the dams fail and is developing emergency preparedness plans.

Water Quality

Tribal programmatic involvement regarding water quality began in 1983 with the adoption of the Shoreline Protection Ordinance, #64A (Revised) and its corresponding regulations. This stemmed from the Tribes' concern about the environmental problems caused by unrestricted construction activities in and along the waters of the Reservation. In 1987 the Tribes enacted the Aquatic Lands Conservation Ordinance, #87A, to insure the protection of all aquatic lands, including wetlands. On-going water quality mitigation is a primary concern for CSKT, particularly in regard to aquatic invasive species. Specific strategies for AIS are outlined in **Appendix E** and will be incorporated fully into updates to this plan.

Shoreline Protection. The Tribal Council established the Shoreline Protection Office and Shoreline Protection Board in 1983. The seven-member board composed of Tribal members and non-members, stipulates all construction projects that fall under Ordinances 64A and 87A.

Salish and Kootenai Housing Authority. The community Housing Services Department of the Salish and Kootenai Housing Authority is responsible for the installation and maintenance of housing-related water and sewer systems on the Reservation. They work closely with the federal Indian Health Service that designs systems to federal standards.

In addition to these programs, the BIA manages the Reservation's irrigation network.

Utilities

Mission Valley Power (MVP), located in Pablo, is a federally-owned utility that is operated under contract by CSKT. MVP provides electricity to all of CSKT. The utility owns the power distribution network and relies on hydroelectric power sources including Sėliš Ksanka Qlispė Dam, located on the Flathead River and operated by Energy Keepers, Inc. and the Boulder Creek Hydroelectric Project, built by the Tribes.

There is no natural gas service on the Reservation.

Public Safety

The Tribal Police Department is the primary public safety agency for CSKT members. The department is divided into patrol, investigative and administrative units. The Lake County Office of Emergency Management (OEM) runs a 911 call center with ten dispatch officers. The center fields calls from the entire county and routes them to appropriate state, city, and Tribal law enforcement agencies. The Polson Police Department also provides law enforcement services.

Twelve (12) volunteer fire protection districts (VFDs) provide fire protection throughout CSKT. The incorporated cities of Polson, Ronan and St. Ignatius provide fire protection within the corporate limits, as well as the surrounding rural districts. The Polson Fire District has a substation in Big Arm. Most of the districts have between 20 to 30 volunteers. The Polson Fire Chief/Marshall holds a full-time paid position. All of the fire districts and the wildland fire protection agencies belong to the Lake County Rural Fire Association.

The Polson Fire Department provides fire protection, public education, fire prevention and code management to the citizens of Polson and the surrounding 129 square miles. The department operates out of two fire stations. St. Ignatius is served by three full time police officers, as well as county sheriff, Tribal police and state highway patrol officers when the need arises.

3.4 POPULATION AND CITY EXPANSION TRENDS

Due to the complications of using census data collected from an open boundary reservation, like the Flathead Reservation, Lake County census data was used for the purposes of this plan. Using this data does not negatively impact budgeting as both tribal and non-tribal residents are included in the data of Lake County's census. According to the 2010 U.S. Census, Lake County, the primary county within the Flathead Reservation, is the 9th most populous county in Montana with a population of 28,746. The Reservation is more densely populated than Montana as a whole. The average population density of CSKT is 19.3 people per square mile, while the average population density of Montana is 6.8 people per square mile. **Table 3.4-1** illustrates the change in population in CSKT compared to the State of Montana and United States.

TABLE 3.4-1
CSKT, COUNTY, STATE AND NATIONAL POPULATION TRENDS

Year	CSKT Population	% change from previous census	State of Montana Population	% change from previous census	United States Population	% change from previous census
2010	28,746	8%	989,415	9%	308,745,538	9%
2000	26,507	21%	902,190	11%	281,424,602	12%
1990	21,041	9%	799,065	2%	248,709,873	9%
1980	19,056	24%	786,690	12%	226,542,199	10%
1970	14,445	9%	694,409	3%	203,302,031	12%

Source: Montana Census and Economic Information Center, 2011

Approximately 25 percent of CSKT's population lives within the incorporated communities of Polson, Ronan and St. Ignatius and 75 percent lives in the unincorporated areas of Arlee, Charlo, Pablo, Elmo, Big Arm, Dayton, Finley Point and Ravalli. According to the 2010 U.S. Census, Polson is the State's 18th largest city, with a population of 4,488. **Table 3.4-2** presents population statistics for the incorporated communities within CSKT and the Census Designated Places (CDP).

TABLE 3.4-2
CSKT POPULATION TRENDS – CITIES, TOWNS AND CENSUS DESIGNATED PLACES

City/Town or CDP	1970	1980	% Change Since Last Census	1990	% Change Since Last Census	2000	% Change Since Last Census	2010	% Change Since Last Census
Arlee CDP	-	-	-	489	-	602	18.8%	636	5.3%
Big Arm CDP	-	-	-	-	-	131	-	177	26.0%
Charlo CDP	-	-	-	358	-	439	18.5%	379	-15.8%
Dayton CDP	-	-	-	-	-	95	-	84	-13.1%
Elmo CDP	-	-	-	-	-	143	-	180	20.6%
Finley Point CDP	-	-	-	395	-	493	19.9%	480	-2.7%
Jette CDP	-	-	-	-	-	267	-	253	-5.5%
Sėliš Ksanka Q̓ispė CDP	-	-	-	-	-	17	-	251	93.2%
Kicking Horse CDP	-	-	-	281		80	-251.3%	286	72.0%
King's Point CDP	-	-	-	-	-	169	-	151	-11.9%
Lindisfarne CDP	-	-	-	-	-	-	-	284	
Pablo CDP	-	-	-	1,298	-	1,814	28.4%	2,254	19.5%
Polson	2,464	2,798	11.9%	3,291	15.0%	4,041	18.6%	4,488	10.0%
Ravalli CDP	-	-	-	-	-	119	-	76	-56.6%

TABLE 3.4-2
CSKTPOPULATION TRENDS – CITIES, TOWNS AND CENSUS DESIGNATED PLACES

City/Town or CDP	1970	1980	% Change Since Last Census	1990	% Change Since Last Census	2000	% Change Since Last Census	2010	% Change Since Last Census
Rocky Point CDP	-	-	-	-	-	107	-	97	-10.3%
Ronan	1,347	1,530	12.0%	1,547	1.1%	1,812	14.6%	1,871	3.2%
St. Ignatius	925	877	-5.5%	778	-12.7%	788	1.3%	778	-1.3%
Turtle Lake CDP	-	-	-	-	-	194	-	209	7.2%

Notes: CDP = Census Designated Place; -- = data not available; Changes in Place population between years may be due to population growth or decline, due to significant boundary changes, or a combination of factors.
Source: U.S. Census Bureau, 2011

In 1979, the Polson city boundaries encompassed 838 acres. By 1990, the city had expanded to cover 1,152 acres, a 37 percent increase over the previous ten-year period. Between 1990 and 2000, the city grew by 50 percent to encompass 1,733 acres. Between 1990 and 2000, the city extended its boundaries to the northeast along the lakeshore and along Highway 35. The city also expanded to the east, the southeast, and the west along the Flathead River (Polson Growth Policy, 2006).

3.5 HOUSING STOCK

The U.S. Census estimates that in 2000, Lake County had 13,605 housing units. The median value of the occupied housing units was $17,200. A further breakdown of the housing units from the census is presented in **Table 3.5-1.**

TABLE 3.5-1
2000 U.S. CENSUS HOUSING DATA, LAKE COUNTY

	Lake County	Polson	Ronan	St. Ignatius
Total Number of Housing Units	13,605	1,938	762	331
Median Value of Housing Units	$17,200	$88,100	$83,100	$75,600
Year Structure Built				
1999 to March 2000	426	43	5	7
1995 to 1998	1,315	164	53	4
1990 to 1994	1,408	223	50	13
1980 to 1989	2,408	308	119	61
1970 to 1979	3,156	390	163	54
1960 to 1969	1,642	255	77	64
1940 to 1959	1,579	279	158	73
1939 or earlier	1,671	276	137	55

3.6 ECONOMY AND SOCIOECONOMICS

According to the CSKT Growth Policy (2003), farming and ranching, forestry, local and tribal governments and tourism all figure significantly in the economy of CSKT. The three largest commerce centers are Polson, Ronan and St. Ignatius, all of which are bisected by Highway 93. **Table 3.6.1** presents the top private employers in CSKT in 2009 as well as other economic indicators.

TABLE 3.6-1
ECONOMIC & SOCIOECONOMIC DATA, LAKE COUNTY

Indicator	State of Montana (2009 data)	Lake County (2009 data)	Polson (2000 data)	Ronan (2000 data)	St. Ignatius (2000 data)
Per capita income	$22,881	$19,357	$13,777	$11,678	$12,336
Median household income	$42,222	$35,888	$21,870	$22,422	$25,682
Persons living below poverty level	15.0%	20.9%	19.8%	24.8%	19.5%
Number of private non-farm establishments (2008)	36,326	825	--	--	--
Top private employers in CSKT(including railroad and government) (2009 data)	St. Luke Community Hospital, Jore Corp., Mission Mountain Enterprises, St. Joseph Hospital, Super 1 Foods, Wal-Mart, Community Bank, Drs Technical Svc, McDonald's of Polson & Ronan, Mission Valley Power, S&K Electronics, Safeway				

Source: MT Dept. Labor, Research & Analysis Bureau & MT Dept. Commerce, Census and Economic Information Center

Major Polson employers currently include the area school districts, CSKT, various construction contractors, Mission Valley Power, the hospital, and city, county and Tribal governments. Some Polson residents work primarily out of their homes and travel only periodically to their place of business. However, the current local job market tends to be cyclical and seasonal in nature (City of Polson Growth Policy, 2006).

According to the Montana Department of Labor, the unemployment rate in CSKT was 8.4 percent in 2013. The State labor numbers show that out of Lake County's civilian workforce of 11,354, there were 10,395 individuals with jobs and 959 individuals were unemployed. The U.S. Census Bureau estimated that in 2013, 20.9 percent of the County population was living below the poverty level.

3.7 LAND USE AND FUTURE DEVELOPMENT

The majority of land on the Flathead Reservation has historically been, and continues to be, used for agricultural (crop and livestock production) and timber production. Croplands primarily produce small grains and hay. Native rangeland and planted pastures provide forage for livestock. Livestock obtain water from dugout impoundments, wells and surface water. According to the CSKT Growth Policy, if commodity prices do not rise and stabilize in the coming years, CSKT is likely to see far fewer viable agricultural operations and more subdivisions and ranchettes.

While much of the commercial/industrial development is located within the limits of Polson and Ronan, development has crept north and south of both due to exposure along the highway. In

general, retail businesses are located in the centers of the communities, while light manufacturing, mini storage, some services and retail sales such as auto dealers are located at and beyond the edges of the communities. Due to the volume of recreational traffic using and passing through CSKT there are many gas and convenience-type stores located along U.S. Highway 93, particularly around Polson.

According to the CSKT Growth Policy (2003), recent development has been concentrated along the Highway 93 corridor from Arlee to Polson, on the east and west shores of Flathead Lake. From 1993-2002, more than 1,600 new lots were recorded in Lake County. Approximately 400 of these were created outside of the subdivision process.

3.7.1 Land Use Implementation Tools

CSKT currently employs a number of regulations and policies to provide for safe and sound development. Industrial, commercial and residential land use is managed with floodplain, subdivision, lakeshore protection, sanitation and zoning regulations in accordance with guidelines set forth in the county and city growth policies. Building codes also play an important role to ensure structures are constructed to safety standards.

CSKT does review development proposals on Tribal lands (land held in individual or tribal trust status). The Tribes have a planner who coordinates review with the tribal environmental and cultural programs and the Tribal Council.

Growth Policies

CSKT adopted a Growth Policy in 2003 to help address growth pressures. Growth policies were also completed to guide land use decisions in the Cities of Polson (2006) and Ronan (2008) and Town of St. Ignatius (2001). Details from these growth policies as they apply to hazard mitigation are summarized in the section below.

The **CSKT Growth Policy** has a goal and objective consistent with mitigation of the wildfire hazard:

Natural Resources Goal 8: Protect lives and property from damage caused by wildfire.

- Work with fire district personnel, land managers and the public to strengthen standards for residential development in the urban-wildland interface including requiring mitigation measures when appropriate.
- Compile and distribute best management practices to landowners.

The **City of Polson Growth Policy** identifies two goals and objectives consistent with mitigation of

the landslide and transportation accident/hazardous material incident hazards.

Goal 2: Identify appropriate areas for outward expansion.

- Require engineered designs in areas with steep slope or erodible soil.

Goal 17: Address the community's need for a U.S. 93 bypass.

- Engage in community discussions to determine level of support for a U.S. 93 bypass.
- Consider appropriate development restrictions to preserve a potential U.S. 93 bypass corridor.

The **City of Ronan Growth Policy** identifies one goal and objective consistent with mitigation of the flood hazard.

Goal 20: Restore segments of Spring Creek as resources allow and map the 100-year floodplain.

- Seek to have the 100-year floodplain delineated to protect life and property as a part of the Highway 93 upgrade and/or through other measures.
- Ensure that proposed development along Spring Creek does not increase flood levels or result in loss of life and property.

Town of **St. Ignatius Growth Policy**

Goals & Objectives

- Protect and maintain the natural character and function of the Mission Creek floodplain by prohibiting development in established floodplain areas.
- Develop policies to protect life and property from hazards associated with characteristics of geology, soils, topography and groundwater based on current measureable technical parameters; maintain the natural characteristics of these areas to the avoidance of known hazards.

Policies - Surface Water

- To reduce risk of flood damage and to protect our streams and wetlands, new development shall be situated away from surface water and floodplains and shall incorporate measures to protect them.

Zoning Ordinances

Zoning is a tool used by local government to control and direct land use in communities, in order to protect the public health, safety and welfare. Development within areas of CSKT and the incorporated communities of Polson, Ronan, and St. Ignatius are subject to municipal zoning regulations. Generally, the zoning regulations outline specific areas for residential, commercial and

industrial development. Details from these regulations, as appropriate, are presented in the hazard profiles in *Section 4.*

The CSKT Planning Department maintains 10 zoned areas in addition to the incorporated areas; seven of these areas are located on Flathead Lake. Other areas of the county are not zoned, except as outlined in the Polson Development Code. The City of Ronan's Growth Policy (2008) states that existing zoning codes lack flexibility and are outdated. Zoning is referenced in the St. Ignatius Growth Policy as the tool used to prevent development in the floodplain and on steep slopes.

Subdivision Regulations

Landowners wishing to subdivide tracts of land in or out of incorporated cities must follow the subdivision regulation process outlined by the respective communities (Polson or Ronan) and the CSKT Subdivision Regulations. Details from these regulations are presented in the hazard profiles in *Section 4.* Lake County's regulations do not provide oversight on nontribal land in the unincorporated areas. Polson subdivision regulations are addressed in the City's Development Code. Up until recently, the Town of St. Ignatius has followed the CSKT Subdivision Regulations.

Building Codes

Building codes are also a tool to control future development. The main purpose of building codes are to protect public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures. They comprise a set of rules that specify the minimum acceptable level of safety for buildings and often contain requirements for snow and wind loads, roof construction, and seismic risk. Building codes are generally intended to be applied by architects and engineers, but are also used by building inspectors. Building codes have not been adopted by CSKT or the communities of Polson, Ronan or St. Ignatius. The State of Montana's Building Codes are used in lieu of local codes.

Development Codes

The City of Polson adopted a Development Code in 2010 to promote the health, safety and general welfare of the people of Polson and the County by implementing the applicable goals, objectives and policies of the Polson and CSKT Growth Policies. The Development Code establishes zoning districts in the city and surrounding county jurisdictional area; adopts an official zoning map; provides for permitted and special permit land uses; and includes specification and performance standards for each district. It also establishes the requirement for a permit for all land development and building activity in the city and surrounding jurisdictional area; and establishes procedures for the administration of the zoning regulations. In addition, the Building

Code establishes the rules, procedures and requirements for the subdivision of land. Subdivision regulations in the Polson Development Code are consistent with those in the CSKT Subdivision Regulations.

Floodplain Regulations

CSKT works with Lake County representatives in a coordinated effort to uphold the Lake County Floodplain Regulations that were adopted in 1991 in order to comply with the Montana Floodplain and Floodway Management Act. The regulations apply only to nontribal land held in fee status within the 100-year floodplain of any river or stream in the county that was recognized during the FEMA's 1987 flood insurance study. The regulations require a permit for development work within the floodplain and prohibit residential, commercial or industrial structures and development that is likely to increase a flood's velocity and volume. Details from these regulations are presented in the flooding profile in *Section 4.*

Lakeshore Protection Regulations

Lake County's Lakeshore Protection Regulations along the southern shores of Flathead Lake by establishing a permit process that governs the type and extent of work that can take place in their immediate vicinity. On the Flathead Reservation, the regulations apply to the area from the high water mark of Flathead Lake to 20 feet landward. (The Tribes are responsible for the bed of the lake to the high water mark.) Off the Reservation, the Lakeshore Protection Regulations include the bed of lakes and cover the area 20 feet inland from the high water mark.

3.7.2 Future Development

As CSKT and the incorporated communities choose appropriate areas for future growth, factors to consider include the location and relative vulnerability of natural resources and current agricultural land uses. In addition to resource concerns, future growth may be shaped by the area's suitability for development in terms of slope and flood risk. Because Polson is bounded on the north by Flathead Lake, residential development will likely continue to spread to the west, southwest, south, southeast, and east of the city. Development could also expand to the northwest and northeast along the shoreline of Flathead Lake.

With continued revitalization efforts, the central Polson business district could strengthen and expand. The two commercial/industrial districts located in the city center and along the east bank of the Flathead River are logical areas for future development. Sites along U.S. 93 will likely continue to host future developments, especially tourism-related businesses. The City of Polson is working in partnership with the CSKT to develop recreational opportunities at Salish Point featuring lake-based activities, picnic grounds, open space, and trail components.

According to the CSKT Environmental Health Department, the entire west shore of Flathead Lake, the area from Polson to Ronan, and the Finley Point area are receiving the most dramatic growth pressures outside of the incorporated areas. Infill development within the cities and towns on land already served by sewer and water along will likely occur in addition to outward expansion where no environmental constraints exist. Large agricultural or vacant parcels along U.S. Highway 93 and Montana Highway 35 may be suitable for future commercial and industrial development but land use conflicts could exist.

Plum Creek Timber owns and manages approximately 64,000 acres of timberlands in Lake County, both on and off the Reservation. Plum Creek typically manages its holdings for long term timber production and permits the public to use them for recreation. It also assesses lands to determine the "highest and best use." In some cases, this assessment has shown that recreation and residential development are higher than the values for timber production. When this occurs, the company may sell land, as it recently did in the Swan Valley.

4.0 RISK ASSESSMENT AND VULNERABILITY ANALYSIS

CSKT is exposed to many hazards both natural and man-made. A risk assessment and vulnerability analysis was completed to help identify where mitigation measures could reduce loss of life or damage to property on the Reservation.

This section includes a description of the risk assessment methodology and a hazard profile for 10 hazards organized from high to low by Tribal priority: wildfire, transportation accidents (including hazardous material incidents), landslides, structure fire, severe winter weather, flooding, communicable disease, severe summer weather, earthquakes and dam failure. The section is concluded with a risk assessment summary and discussion on the location of future development projects. Supporting documentation is presented in **Appendix C**.

4.1 RISK ASSESSMENT METHODOLOGY

A risk assessment was conducted to address requirements of the DMA 2000 for evaluating the risk to CSKT from natural and man-made hazards. DMA 2000 requires measuring potential losses to critical facilities and property resulting from natural hazards by assessing the vulnerability of these facilities to natural hazards. In addition to the requirements of DMA 2000, the risk assessment approach taken in this study evaluated risks to vulnerable populations and also examined the risk presented by several man-made hazards. The goal of the risk assessment process is to determine which hazards present the greatest risk and what areas are the most vulnerable to hazards.

The risk assessment approach used for this plan entailed using geographic information system (GIS) software and data to develop vulnerability models for people, structures, critical facilities and evaluating those vulnerabilities in relation to hazard profiles that model where hazards exist. This type of approach to risk assessment is dependent on the detail and accuracy of the data used during the analysis. Additionally, some types of hazards are extremely difficult to model. Data limitations are described in *Section 4.1.7*.

4.1.1 Critical Facilities and Building Stock

Critical facilities were mapped using coordinates provided by CSKT and Lake County. Mapping of these facilities allowed for the comparison of their location to the hazard areas where such hazards are spatially recognized. Construction type of critical facilities (e.g. steel, wood, masonry, etc.) has not been compiled and was therefore, not considered in the analysis. This data should be collected for future updates of this plan.

Infrastructure, including bridges, water and wastewater facilities and communication sites had digital mapping available and were therefore included in the analysis. Bridge data was obtained from the

Montana Natural Resource Information System (NRIS) transportation GIS layer while other data was obtained from the Tribe and Lake County. Replacement values of critical facilities were used in the risk assessment as this information was readily available from the county, cities, towns and school districts. Bridge replacement values were extrapolated using unit costs (developed by Lewis and Clark County) for span length and width. **Figure 4** presents the bridge locations on the Reservation.

Building stock data was obtained from the Montana Department of Revenue's (MDOR) cadastral mapping program. This system spatially recognizes land parcels within the Reservation with a distinction between residential and other properties. Appraised building values are available on the parcel level and were used to determine exposure. The "other" building type includes all properties not designated as residential and in this study and consists of commercial, agricultural and industrial properties. Data used for this analysis was from 2012. The analysis for this project only included "fee" land and therefore, did not include developments on the Flathead Reservation that are in trust to the CSKT.

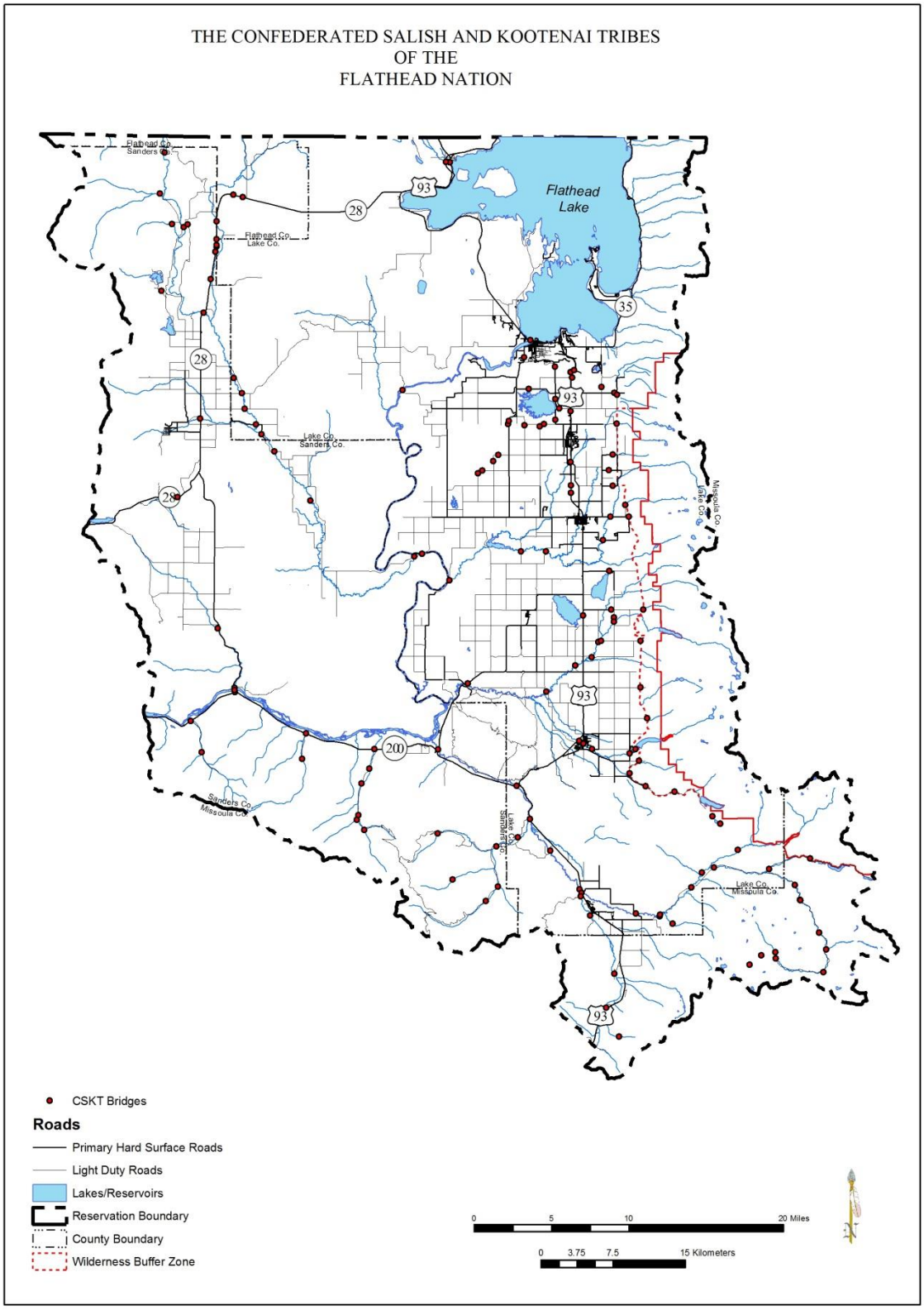


Figure 4 | Flathead Reservation Bridge Locations

4.1.2 Vulnerable Population

Data from the 2010 census was used in the analysis to determine vulnerable populations at risk in the hazard areas, as available. Census data was downloaded from the U. S. Census Bureau's website. Downloaded data included total population (by census block) and number of individuals under the age of 18 for the incorporated communities, the County, CDPs and Commissioner Districts. This data was then extrapolated for tribal council districts. Data for populations over the age of 65 and for individuals living below the poverty level were not yet available for Census 2010; therefore, this information should be included in the 2021 PDM Plan update.

4.1.3 Hazard Identification

The 2005 PDM Plan identified 11 hazards affecting CSKT (floods, winter storms, wildfire, rain- hail-wind, human-caused technological hazards (terrorism, hazardous material incidents), dam failure, drought, vector-borne diseases, food-borne diseases, earthquake and civil unrest. Hazards for the 2016 PDM update were identified by the Planning Team who reviewed a history of past events on the Reservation that were compiled from: internet research, available GIS data, public meeting input, past disaster declarations, the 2005 PDM Plan and the State of Montana Multi-Hazard Mitigation Plan.

Hazards included in the 2016 update generally included those profiled in the 2005 PDM Plan with the consolidation of vector-borne and food-borne diseases under the communicable disease hazard, hazardous material incidents under the transportation accident hazard and the rain-hail-wind hazard under severe summer weather. It was determined that the drought and civil unrest hazards should not be carried forward in the 2016 PDM Plan because these hazards do not frequently impact CSKT residents and/or are managed at the State and Federal levels. Several additional hazards are profiled in the 2016 CSKT Plan including structure fire, transportation accidents and landslides. Hazards in the 2016 update were re-ranked using the Calculated Priority Ranking Index (CPRI) presented in **Table 4.1-1** (see *Section 4.1.5*).

4.1.4 Hazard Profiles

Hazard profiles were prepared for each of the identified hazards and are presented within this section according to their prioritized rank (see *Section 4.1.6*). The level of detail for each hazard is generally limited by the amount of data available.

Each hazard profile contains a description of the hazard and the history of occurrence, the vulnerability and area of impact, the probability and magnitude of future events and an evaluation of how future development is being managed to reduce risk. The methodology used to analyze each of these topics is further described below.

Description and History

A number of databases were used to describe and compile the history of hazard events profiled in this plan. This data was supplemented by input from the public, local officials, newspaper accounts, and internet research. The two primary databases used included the National Climatic Data Center (NCDC) Storm Events Database and Spatial Hazard Events and Losses Database for the United States (SHELDUS).

The NCDC Storm Events database receives Storm Data from the National Weather Service. The NWS service receives their information from a variety of sources, including county, state and federal emergency management officials, local law enforcement officials, sky-warn spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public. Storm Data is an official publication of the National Oceanic and Atmospheric Administration (NOAA) which documents the occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage and/or disruption to commerce.

SHELDUS is a county-level hazard data set for the United States that records 18 different natural hazard event types. For each event the database includes the date, location, property losses, crop losses, injuries and fatalities that affected each county. The database includes every loss causing and/or deadly event from 1960 to 1975 and from 1995 onward. Between 1976 and 1995, SHELDUS reflects only events that caused at least one fatality or more than $50,000 in property or crop damages.

Vulnerability and Area of Impact

Vulnerabilities are described in terms of critical facilities, structures, population, and socioeconomic values that can be affected by the hazard event. Hazard impact areas describe the geographic extent a hazard can impact a jurisdiction and are uniquely defined on a hazard-by-hazard basis. Mapping of the hazards, where spatial differences exist, allows for hazard analysis by geographic location. Some hazards can have varying levels of risk based on location. Other hazards cover larger geographic areas and affect the area uniformly.

Probability and Magnitude

Probability of a hazard event occurring in the future was assessed based on hazard frequency over a 100 year period. Hazard frequency was based on the number of times the hazard event occurred divided by the period of record. If the hazard lacked a definitive historical record, the probability was assessed qualitatively based on regional history and other contributing factors. Probability was broken down as follows:

- Highly Likely – greater than 1 event per year (frequency greater than 1).
- Likely – less than 1 event per year but greater than 1 event every 10 years (frequency greater than 0.1 but less than 1).
- Possible – less than 1 event every 10 years but greater than 1 event every 100 years (frequency

greater than 0. 01 but less than 0.1).

- Unlikely – less than 1 event every 100 years (frequency less than 0.01)

The magnitude or severity of potential hazard events was evaluated for each hazard. Magnitude is a measure of the strength of a hazard event and is usually determined using technical measures specific to the hazard. Magnitude was calculated for each hazard where property damage data was available. Magnitude is:

- (Property Damage / Number of Incidents) / $ of Building Stock Exposure = Magnitude expressed as a percentage.

Future Development

The impact to future development was assessed based on potential opportunities to limit or regulate development in hazardous areas such as zoning and subdivision regulations. The impacts were assessed through a narrative on how future development could be impacted by the hazard. Plans, ordinances and/or codes currently in place were identified that could be revised to better protect future development in the county from damage caused by natural and man-made hazards.

4.1.5 Hazard Ranking and Priorities

In ranking the hazards, the Planning Team completed a Calculated Priority Risk Index (CPRI) Work Sheet for each hazard. The CPRI examines four criteria for each hazard (probability, magnitude/severity, warning time, and duration); the risk index for each according to four levels, then applies a weighting factor (**Table 4.1-1**). The result is a score that has been used to rank the hazards. Each hazard profile presents its CPRI score with a cumulative score sheet included in **Appendix C**. **Table 4.1-2** presents the results of the CPRI scoring for all hazards.

TABLE 4.1-1
CALCULATED PRIORITY RISK INDEX

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
Probability	Unlikely	▪ Rare with no documented history of occurrences or events. ▪ Annual probability of less than 0.01.	1	45%
	Possibly	▪ Infrequent occurrences with at least one documented or anecdotal historic event. ▪ Annual probability that is between 0.1 and 0.01.	2	
	Likely	▪ Frequent occurrences with at least two or more documented historic events. ▪ Annual probability that is between 1 and 0.1.	3	
	Highly Likely	▪ Common events with a well documented history of occurrence. ▪ Annual probability that is greater than 1.	4	
Magnitude/ Severity	Negligible	▪ Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses are treatable with first aid and there are no deaths. ▪ Negligible quality of life lost. ▪ Shut down of critical facilities for less than 24 hours.	1	30%
	Limited	▪ Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses do not result in permanent disability and there are no deaths. ▪ Moderate quality of life lost. ▪ Shut down of critical facilities for more than 1 day and less than 1 week.	2	
	Critical	▪ Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses result in permanent disability and at least one death. ▪ Shut down of critical facilities for more than 1 week and less than 1 month.	3	
	Catastrophic	▪ Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses result in permanent disability and multiple deaths. ▪ Shut down of critical facilities for more than 1 month.	4	
Warning Time	Less than 6 hours	Self explanatory.	4	15%
	6 to 12 hours	Self explanatory.	3	
	12 to 24 hours	Self explanatory.	2	
	More than 24 hours	Self explanatory.	1	
Duration	Less than 6 hours	Self explanatory.	1	10%
	Less than 24 hours	Self explanatory.	2	
	Less than one week	Self explanatory.	3	
	More than one week	Self explanatory.	4	

TABLE 4.1-2
CSKT CALCULATED PRIORITY RANKING INDEX SUMMARY

Hazard	Probability	Magnitude and/or Severity	Warning Time	Duration	CPRI Score
Wildfires	Highly likely	Critical	< 6 hours	> 1 week	3.70
Highway Accident	Highly likely	Limited	< 6 hours	< 24 hours	3.20
Landslides	Likely	Limited	< 6 hours	> 1 week	2.95
Structure Fire	Likely	Limited	< 6 hours	< 24 hours	2.75
Severe Winter Weather	Highly likely	Limited	6-12 hours	< 1 week	2.70
Severe Summer Weather	Likely	Limited	6-12 hours	< 24 hours	2.60
Communicable Disease - Public Health	Possibly	Limited	< 6 hours	> 1 week	2.50
Earthquake	Likely	Negligible	< 6 hours	< 6 hours	2.35
Dam Failure	Unlikely	Critical	< 6 hours	> 1 week	2.35
Railroad Accident	Unlikely	Critical	< 6 hours	> 1 week	2.35
Hazardous Materials Incidents	Possibly	Limited	< 6 hours	< 24 hours	2.30
Volcanic Ash	Unlikely	Critical	6-12 hours	> 1 week	2.20
Flooding	Possibly	Negligible	> 24 hours	> 1 week	1.75
Aircraft Accident	Unlikely	Limited	< 6 hours	< 6 hours	1.75
Terrorism/Violence	Unlikely	Negligible	< 6 hours	< 1 week	1.65
Communicable Disease - Livestock/Ag	Unlikely	Limited	> 24 hours	> 1 week	1.60
Drought	Unlikely	Limited	> 24 hours	> 1 week	1.60

The Calculated Priority Risk Index scoring method has a range from 0 to 4. "0" being the least hazardous and "4" being the most hazardous situation.

The Planning Team determined that five hazards scored using the CPRI should be de-emphasized in the PDM Plan for the reasons cited below:

- Volcanic Ash – Hazard does not often occur and not likely to significantly impact CSKT.
- Aircraft Accidents – Hazard not likely to cause mass casualties when occurring in CSKT.
- Terrorism/Violence – Significant events are not likely to occur in CSKT.
- Communicable Disease-Livestock/Agriculture – Hazard not likely to impact CSKT.
- Drought – Mitigation of this hazard managed under State and Federal programs.

These hazards will not be further addressed in the body of this Plan.

The Planning Team felt that the CPRI ranking did not accurately represent CSKT's priorities; therefore, the list of hazards was re-prioritized as shown below. The remainder of this section contains the hazard profiles in this order:

1 – Wildfire (*Plan Section 4.2*)
2 – Transportation Accidents including Hazardous Material Incidents (*Plan Section 4.3*)
3 – Landslides (*Plan Section 4.4*)
4 – Structure Fire (*Plan Section 4.5*)
5 – Severe Weather (*Plan Section 4.6*)

6 – Flooding (*Plan Section 4.7*)
7 – Communicable Disease (*Plan Section 4.8*)
8 – Severe Summer Weather (*Plan Section 4.9*)
9 – Earthquakes (*Plan Section 4.10*)
10 – Dam Failure (*Plan Section 4.11*)

4.1.6 Assessing Vulnerability – Estimating Potential Losses

The methodology used in the vulnerability analysis presents a quantitative assessment of the building stock, population and critical facility exposure to the individual hazards. Building stock data, available from the Montana Department of Revenue's cadastral mapping program, was used in the analysis. This data spatially recognizes land parcels along with the appraised value of building stock. Using GIS, hazard risk areas were intersected with the building stock data to identify the number of structures and exposure due to each hazard. Using GIS, hazard risk areas were also intersected with critical facility data to determine the number and exposure of critical facilities to each hazard. Various infrastructures (e.g. water systems, wastewater systems) were analyzed as part of the critical facility vulnerability analysis. A separate analysis was completed for the Reservation's bridges.

Population exposure was computed using data from the 2010 census and the percentage of the census blocks located in each hazard area. Population exposure is reported according to total population living in the hazard area and a subset of this data, individuals under the age of 18 years. Using GIS, total population for the census blocks was intersected with the hazard maps to determine the population at risk. It should be noted that there are some inherent inaccuracies using this approach. Using a percentage of census block population to compute the number of individuals living in the hazard area may include more persons than actually reside in the hazard area where census blocks are large.

For hazards that are uniform across the jurisdiction (i.e. severe summer weather, structure fires and severe winter weather) the methodology presented below was used to determine annualized property loss.

- Exposure x Frequency x Magnitude

Where:

- Exposure = building stock, vulnerable population, or critical facilities at risk
- Frequency = annual number of events determined by calculating the number of hazard events / period of record
- Magnitude = percent of damage expected calculated by: (property damage/# incidents)/ building stock or critical facility exposure

For hazards that are not uniform across the jurisdiction and instead occur in specific areas (e.g.

flooding, wildfire, hazardous material incidents, dam failure, etc.) the hazard area factored into the loss estimation calculations.

For hazards without documented property damage, magnitude could not be calculated and therefore, only the exposure of the building stock or population was computed. Annualized loss estimates cannot be calculated without property damage using this risk assessment approach.

4.1.7 Data Limitations

Risk assessment results are only a general representation of potential vulnerabilities and there are many inherent inaccuracies with the risk assessment methodology used. Output is only as good as the data sources used and CSKT may wish to consider alternate data for future PDM Plan updates.

The remainder of this section presents hazard profiles organized by CSKT priority followed by a risk assessment summary. Loss estimates, where applicable, are summarized at the end of this section.

4.2 WILDFIRE

CPRI SCORE = 3.7

Description and History

A wildfire is an unplanned fire, a term which includes grass fires, forest fires and scrub fires, both man-caused and natural in origin. Severe wildfire conditions have historically represented a threat of potential destruction within the region. Negative impacts of wildfire include loss of life, property and resource damage or destruction, severe emotional crisis, widespread economic impact, disrupted and fiscally impacted government services, and environmental degradation.

Wildfire risk is the potential for a wildfire to adversely affect things that residents value- lives, homes, or ecological functions and attributes. Wildfire risk in a particular area is a combination of the chance that a wildfire will start in or reach that area and the potential loss of human values if it does. Human activities, weather patterns, wildfire fuels, values potentially threatened by fire and the availability (or lack) of resources to suppress a fire all contribute to wildfire risk. Summer on the Flathead Reservation typically brings the fire season, the result of low rainfall, high temperatures, low humidity and thunderstorms with lightning. However, major wildfires can occur at any time of the year. Varied topography, semi-arid climate and numerous human-related sources of ignition make this possible.

Forest covers most of the Tribal land base. They encompass about four hundred and fifty thousand acres on the Reservation. The hills and mountains along the perimeter and central portions of the Reservation are generally timbered, as are many areas along the Flathead River. Forests range from dry ponderosa pine and Douglas fir types to subalpine fir and alpine larch.

The Tribes manage forests for timber, fish, wildlife, recreation, range, cultural and scenic resources, and watershed protection. The Tribes manage about 75 percent of the total forest base for timber production.

Timber harvest is the second largest revenue generating activity on Tribal lands. The forest products industry is a major component of the Reservation economy and supports about 192 person years (one person-year is equivalent to one person employed for twelve months) of Tribal member employment each year. Reservation forest products are crucial to the stability of local sawmills, as well as Tribal members who make a living in the industry. The volume cut from the Reservation is about 3 percent of the statewide harvest.

Although timber revenues are important to the Tribal economy, so are other forest values. The protection of cultural sites, air and watershed values, and fish and wildlife is one of the Tribes highest priorities.

Wildfires can create devastating timber losses in a commercial forest. The largest recent catastrophic loss occurred in 1960 when several fires burned about 3,100 acres in and near the Jocko River drainage. The

fires of 1910 burned about ten million board feet of timber in the southern and western portions of the Reservation.

In the past 20 years, CSKT has had a number of wildfires that have destroyed property and affected wildlife habitat, scenic resources, and air quality. Table 4.2-1 presents a summary of the wildfires on the Flathead Reservation (in Lake, Sanders, and Missoula Counties) over the past 38 years indicating a total of 4,043 fires that burned 174,281 acres. Table 4.2-2 presents the wildfires in CSKT over 10 acres from 1980 to 2011 reported by the Montana DNRC indicating the number of structures burned and saved (where this data is available).

TABLE 4.2-1
CSKT REPORTED WILDFIRE STATISTICS: 1973 - 2011

Year	# of Fires	Total Acres	Year	# of Fires	Total Acres	Year	# of Fires	Total Acres
1973	98	1771.5	1986	64	2,105.8	1999	210	3,047.9
1974	88	985.8	1987	43	72.4	2000	152	24,415.5
1975	34	35.6	1988	57	163.6	1001	163	1,890.9
1976	45	105.4	1989	40	422.3	2002	204	2,557.8
1977	67	89.3	1990	73	169.6	2003	243	13,132.6
1978	20	9.7	1991	50	169.8	2004	93	7,982
1979	62	253.9	1992	53	1120.4	2005	85	14,728.2
1980	36	43.3	1993	42	32.4	2006	372	7,977.6
1981	82	336	1994	88	15,203.4	2007	156	43,846
1982	34	59.5	1995	50	732.7	2008	284	14,241.5
1983	23	42.8	1996	45	1,505.5	2009	194	2,170.3
1984	55	158.9	1997	84	800	2010	153	8,636
1985	36	450	1998	153	3,560	2011	214	265.3

Source: CSKT, 2012

TABLE 4.2-2
MONTANA DNRC REPORTED WILDFIRES OVER 10 ACRES ON CSKT, 1980-2010

Date	Name	Size in Acres	Homes & Outbuildings Lost	Homes Saved	Outbuildings Saved
8/27/1984	Red Owl	934	0	-	-
5/10/1987	Unit 10	19	0	-	-
8/17/1988	Squeezer Face	52	0	-	-
8/9/1994	Soupy Ridge	65	0	-	-
5/3/1998	Goat Creek	235	0	-	-
6/20/1999	Hog Heaven	12	0	-	-
11/11/2001	Salmon Prairie	17	0	-	-
7/13/2007	Indian Springs	17	0	1	5
5/12/2007	Salmon Prairie	18	0	1	2

Source: Montana Department of Natural Resources and Conservation, 2012

Wildfire disasters were declared in CSKT in 1994 and 2000. State-wide wildfire disasters have been declared in 1979, 1988, 1991, 1992, 1996, 1998, 1999 and 2003 (DMA, 2011).

In CSKT there are three wildland fire protection entities: the U.S. Forest Service (USFS), DNRC, and the Tribe Division of Fire. The Tribal Division of Fire, located in Ronan, has an agreement with the State to provide protection on forested fee land. The Tribal unit also provides training for local fire departments. These entities and coordination with the 13 Volunteer Fire Districts (VFDs) provides for efficient wildland fire protection in Lake County.

Vulnerability and Area of Impact

Fire suppression has changed the vegetation patterns, structure and composition of forests. Therefore, the role that fire plays in these ecosystems has also been altered. The last decade on the Flathead Reservation has seen new homes and other structures built near and around national forests. Should fires occur, these structures within the wildland-urban interface (WUI) are very vulnerable. The WUI is defined as the line, area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. A WUI exists anywhere that structures are located close to natural vegetation and where a fire can spread from vegetation to structures, or vice versa. A WUI can vary from a large housing development adjacent to natural vegetation to a structure, or structures, surrounded by vegetation. As people, homes and structures continue to occupy the WUI and as hazard fuels continue to accumulate, a high risk and volatile situation needs to be addressed. Long periods of warm dry summer weather combined with lightning storms are often causes associated with wildfire. Risks associated with wildfire relate to fuels, slope, orientation, access, the availability of an adequate water supply, the availability of trained personnel and fire apparatus and resource values (i.e., natural resources and property).

Homes are often located at the forest edge or in the forest itself; built out of flammable materials (wood siding and other flammable materials); constructed near the end of gulches with only one escape route or on steep hillsides with narrow, winding roads; and built on lands without adequate water. While the site or building material may be chosen for its aesthetic merit, it often has few or none of the qualities essential for the safety of both the home and its occupants in the event of a fire.

Problems with wildfire occur when combined with the human environment. People and structures near wildfires are threatened unless adequately protected through evacuation or mitigation. Most structures are flammable, and therefore, are threatened when wildfire approaches. In addition, a significant loss of life could occur to residents, firefighters and others who are in the wildfire area and do not evacuate. Infrastructure such as electric transmission lines, fuel tanks and radio transmission towers are not often equipped to withstand the heat from a wildfire. Timber resources, animal habitats and waterways can all be damaged leading to negative economic and environmental impacts.

There is a changing complexion in the ownership of private forest land holdings which could result in subdivisions and new housing developments in the WUI. The DNRC has started inventorying fire risk along the southern shores of Flathead Lake. Recent actions along the Mission Front and in the Jette area to reduce the likelihood of catastrophic wildfire include fuel thinning and controlled burns.

CSKT has a non-regulatory Community Wildfire Protection Plan (CWPP) and diligent efforts are underway to reduce the wildfire hazard through education and fuel reduction projects. **Appendix E** contains a copy of the CSKT CWPP. Mitigation projects identified in this plan are incorporated herein by reference.

Probability and Magnitude

Property damage is difficult to obtain for wildfires since it is typically the forest resource that sustains the damage. DNRC has collected data on structure loss from wildfires since 2003 (**Table 4.2-2**). This source indicates that in the past 10 years, wildfire has not claimed any residential structures on the Flathead Reservation.

Table 4.2-3 presents the wildfire events in CSKT with reported property damages from the DES database of State and Federal disaster declarations.

TABLE 4.2-3
CSKT WILDFIRE EVENTS WITH DAMAGES

Date	Injuries	Fatalities	Property Damage	Remarks
1994	--	--	$340,245*	Presidential Declaration
2000	--	--	$1,831,472*	Presidential Declaration
TOTAL			$2,171,717	

* Prorated amount for multi-county Presidential Disaster Declaration adjusted for inflation.

Source: DES, 2011

Wildfire does not present a uniform risk across the reservation. **Figure 5** presents a wildfire risk map showing the WUI and the CSKT critical facilities. The WUI layer used for this analysis consists of the risk areas determined by the 2005 CSKT/CWPP, which were provided in digital format by the CSKT Planning Department.

To complete the vulnerability analysis for this project, GIS was used to intersect the resulting WUI layer with both the critical facility and MDOR cadastral parcel datasets. Estimates of vulnerable population

were calculated by determining the percent exposure in each census block for the hazard area. Exposure values are presented in **Table 4.2-4**. Annualized loss estimates were calculated by applying frequency and magnitude to building stock exposure, and are presented on the Risk Assessment Summary tables in *Section 4.12* (**Tables 4.12-1 through 4.12-4**). Building exposure reflects only the monetary structure value and does not account for improvements or personal effects that may be lost to wildfire. The *Wildfire Section* in **Appendix C** presents supporting documentation from the risk assessment including a list of critical facilities in the WUI.

GIS analysis of the wildfire risk to the Flathead Reservation indicates that over 213,864 acres are within the WUI. According to the vulnerability analysis, 6,265 residences, 927 commercial, industrial and agricultural buildings, and 21 critical facilities are located in the WUI. Digital data on construction type for the facilities is not available but will be considered in future PDM updates.

The history of wildfires and terrain has prompted CSKT to identify wildfire as a significant hazard. Smoke from fires both within and outside of the Reservation can create poor air quality. Sensitive groups, such as the elderly and asthmatics, can be affected. Wildfires can also have a significant impact on the regional economy with the loss of timber, natural resources, recreational opportunities, or tourism. Although the primary concern is to structures and the interface residents, most of the costs associated with fires, come from firefighting efforts. As past events have also shown, infrastructure such as power transmission lines can also be threatened.

Wildfires generally occur more than once per year on the Reservation and therefore, the probability of future events are rated as “highly likely”.

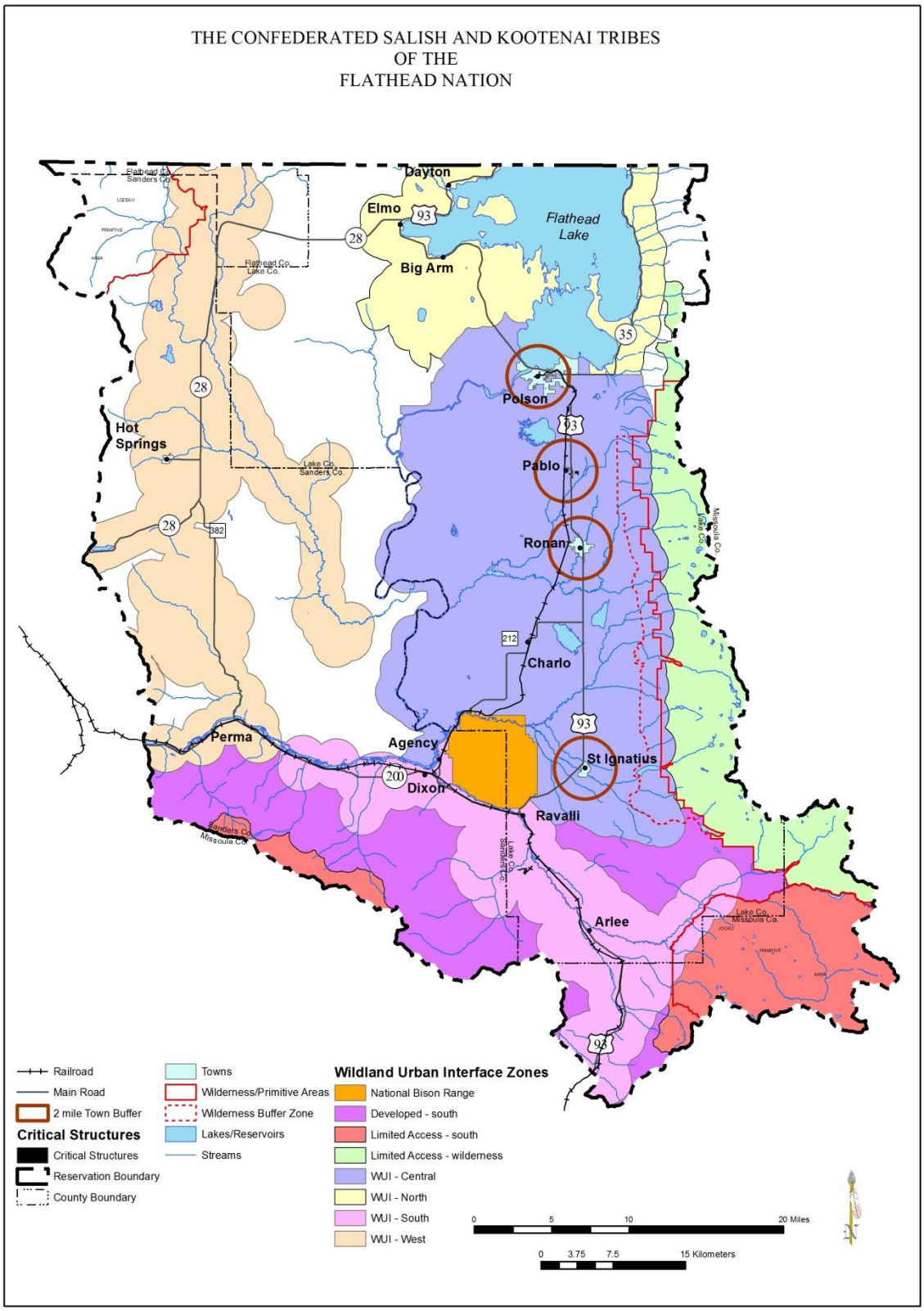


Figure 5 | Flathead Reservation WUI and Wildfire Risk

TABLE 4.2-4
CSKT VULNERABILITY ANALYSIS – WILDFIRE

JURISDICTION	RESIDENTIAL PROPERTY EXPOSURE $	# RESIDENCES AT RISK	COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTY EXPOSURE $	# COMMERCIAL, INDUSTRIAL & AGRICULTUAL PROPERTIES AT RISK	CRITICAL FACILITIES EXPOSURE RISK $	# CRITICAL FACILITIES AT RISK	BRIDGE EXPOSURE $	# BRIDGES AT RISK	PERSONS AT RISK	PERSONS UNDER 18 AT RISK
Incorporated Communities & County										
Polson	$0	0	$0	0	$0	0	$0	0	0	0
Ronan	$989,415	7	$0	0	$0	0	$0	0	27	12
St. Ignatius	$0	0	$0	0	$0	0	$0	0	0	0
Remainder of County	$1,239,691,127	6,265	$71,969,078	927	$69,358,669	21	$3,787,396	35	14,024	3,507
CENSUS Designated Places										
Arlee CDP	$15,385,873	151	$9,733,532	65	$5,578,791	5	$240,184	2	636	187
Bear Dance CDP	$66,399,442	244	$1,948,114	25	$0	0	$0	0	275	54
Big Arm CDP	$22,369,725	126	$4,629,812	43	$ not available	2	$0	0	177	39
Charlo CDP	$0	0	$0	0	$0	0	$0	0	0	0
Dayton CDP	$0	0	$0	0	$0	0	$0	0	0	0
Elmo CDP	$0	0	$0	0	$0	0	$0	0	68	16
Finley Point CDP	$231,936,697	909	$2,679,845	104	$0	0	$0	0	480	76
Jette CDP	$0	0	$0	0	$0	0	$0	0	0	0
Sėliš Ksanka Qĺispė CDP	$0	0	$0	0	$0	0	$0	0	0	0
Kicking Horse CDP	$2,046,669	15	$23,780	3	$ not available	1	$26,840	1	286	71
King's Point CDP	$48,709,003	276	$105,948	15	$0	0	$0	0	136	24
Lindisfarne CDP	$77,983,856	443	$1,148,242	54	$0	0	$0	0	284	56
Pablo CDP	$32,898,978	340	$9,782,087	101	$62,567,543	6	$0	0	2074	695
Ravalli CDP	$4,172,219	52	$1,303,480	25	$0	0	$0	0	76	12
Rocky Point CDP	$0	0	$0	0	$0	0	$0	0	0	0
Turtle Lake CDP	$746,239	6	$0	0	$0	0	$0	0	209	88

Future Development

The CSKT Subdivision Regulations contain standards designed to minimize the risk of destructive fire to life and residential property. They address design and improvement standards for new subdivisions in WUI areas in order to: improve access to developments, homes and other property; minimize the potential spread of fire from wildland areas to structures and from structure fires to wildland areas; permit efficient suppression of fires; insure that new subdivisions in the WUI provide water supply systems with suitable access for firefighting crews and apparatus; and educate property owners, residents and people that they have a responsibility for prevention of wildland fire on their own property.

All subdivisions must be planned, designed, constructed and maintained so as to minimize the risk of fire and to permit the effective and efficient suppression of fires in order to protect persons, property and forested areas including: the placement of structures so as to minimize the potential for flame spread and to permit adequate access for firefighting equipment; the presence of adequate firefighting facilities either on site or in the vicinity of the subdivision, including an adequate water supply and distribution system; and the availability, through a fire protection district or other means, of fire protection services adequate to respond to fires that may occur within a subdivision.

For unincorporated areas of the Reservation, a Fire Risk Rating Form must accompany the submission of any application for preliminary plat approval. The risk rating determines access requirements, minimum lot sizes, building spacing, water supply requirements and vegetative treatments. The subdivider must also provide a Fire Prevention and Control Plan to provide a strategy for reducing fire potential and provides safe working areas for emergency responders fighting fire.

4.3 TRANSPORTATION ACCIDENTS (INCLUDING HIGHWAY & RAILROAD ACCIDENTS AND HAZARDOUS MATERIAL INCIDENTS)

CPRI SCORES:
HIGHWAY ACCIDENTS = 3.2
RAILROAD ACCIDENTS = 2.3
HAZARDOUS MATERIAL INCIDENTS = 2.3

Description and History

There are nearly 4,360 miles of roadways on the Reservation, including Tribal, BIA, other Federal, State, city and county roads. CSKT is responsible for maintaining 485 miles of regularly traveled public roads and an additional 2,580 miles of Tribal Forest Roads (Flathead Reservation Transportation Improvement Program [TIP] 2016-2020). CSKT also maintains approximately 100 bridges. Montana Rail Link traverses the south portion of the Reservation for 15 miles. Rail service along a spur line running from Dixon to Polson was discontinued in 2011.

No interstate highways traverse the Reservation. U.S. Highway 93, a north-south route extending the entire length of the Reservation, is part of the National Highway System and is classified as a principal arterial. U.S. Highway 93 between Hamilton and Polson is the most heavily traveled non-interstate corridor in Montana. The highway carries a mix of traffic including passenger automobiles, commercial vehicles, logging trucks, recreational vehicles and agricultural vehicles. On the Reservation there is substantial visitor traffic in the summer between Missoula and Kalispell/Glacier Park. Montana Highway 35, on the east side of Flathead Lake, is part of Montana's primary highway system and act as a minor arterial.

The source and location of highway accidents vary but the response is typically the same. Response is focused on determining the presence of hazardous materials and then assisting the injured. Statistics on highway accidents in the reservation over the past 9 years were provided by the Montana Highway Patrol, and are presented in **Table 4.3-1**. Information is not available on whether these incidents involved a hazardous material response.

TABLE 4.3-1
CSKT HIGHWAY ACCIDENT STATISTICS; 1/2002 to 12/2010

Number of Accidents	Fatalities	Injuries	# Involving Property Damage	Total Property Damage
3,933	101	2,340	768	>$426,750

Sources: Montana Highway Patrol, 2012

A hazardous material release is the contamination of the environment (i.e. air, water, soil) by any material that, because of its quantity, concentration, or physical or chemical characteristics threatens human health, the environment or property. Hazardous materials, including petroleum products and agricultural chemicals, are commonly stored and used on the Reservation and are regularly transported via the regions roadways and railroads. A release of hazardous materials from both fixed and transportation incidents pose possible threats to CSKT. Hazards range from small spills on roadways to major transportation releases on railways. Records of hazardous material events in Lake County, available from the National Response Center database, are summarized in **Table 4.3-2**

TABLE 4.3-2
CSKT HAZARDOUS MATERIAL INCIDENTS

Incident Date	Type Of Incident	Incident Cause	Location	Nearest City	Suspected Responsible Company	Medium Affected	Material Name
6/28/1991	Unknown Sheen	Unknown	Flathead Lake Dayton Yacht Harbor	Polson		Water	Unknown Oil
6/12/1992	Mobile	Operator Error	Highway 35	Polson	Columbia Falls Alum Co	Land	Sodium Cyanide
10/10/1996	Mobile	Accident	Hwy 93, MM: 38	St. Ignatius	Wilbert Ellis	Land	Unknown Material
2/25/1997	Fixed	Other	Hwy 93	Ronan	Ford Motor Co.	Water	Waste Oil; Ethylene Glycol
2/25/1997	Fixed	Unknown	#5 Third Ave. NW Ronan, Mt.	Ronan	Don Aadsen	Water	Oil, Fuel: No. 2-D; Waste Oil
9/22/1997	Unknown Sheen	Unknown	Hwy 93 North MM:17	Missoula		Water	Unknown Oil
8/1/2000	Fixed	Dumping	Flathead River	Polson	City Of Polson Water Dept	Water	Raw Sewage
5/27/2001	Vessel	Dumping	Woods Bay Marina Area			Water	Oil, Misc: Motor; Oil, Fuel: No. 2-D
9/25/2001	Fixed	Unknown	Unknown	Pablo		Air	Tires
5/22/2003	Storage Tank	Equipment Failure	305 5th Ave. E.	Pablo		Land	Oil, Fuel: No. 2
1/24/2004	Mobile	Accident	Off Hwy 83 Into Swan Lake		Eagle Express Lines	Water	Motor Oil
3/23/2004	Storage Tank	Unknown	Courville Trail	Polson		Land	Drug Residue; Unknown Oil
4/13/2004	Mobile	Accident	I-93, MM 45N	Ronan	N.A.Van Lines	Land	Diesel
4/19/2004	Mobile	Accident	MM 90 Near Rollins	Rollins		Water	Motor Oil
8/19/2004	Mobile	Operator Error	Flathead Lake			Water	Motor Oil
10/21/2004	Storage Tank	Equipment Failure	Pacific Pride	Polson	CHS Transport	Other	Unleaded Gasoline
1/26/2006	Storage Tank	Other	111 5th Avenue W.	Polson		Water	Home Heating Oil
7/4/2006	Mobile	Other	Hwy 35, MM 17.3	Big Fork		Water	Unleaded Gasoline
7/11/2006	Mobile	Equipment Failure	Polson Bridge On Hwy 93	Polson	Rocky Mountain Veterinary Service	Water	Diesel
10/19/2006	Storage Tank	Operator Error	Polson Co-Op 808 Main St.	Polson	Cenex Harvest States	Land	Oil, Fuel: No. 1-D
1/29/2007	Fixed	Equipment Failure	Sėliš Ksanka Qlispė Dam	Polson	American Hydro	Water	Mobile Heavy Turbine Oil
3/13/2008	Fixed	Dumping	Alco Auto Sales 57730 Hwy 93 North	Pablo		Land	Oil, Misc: Motor; Ethylene Glycol
4/2/2008	Mobile	Unknown	Montana Hwy 35 MM 5.5	Polson	Keller Transport Inc.	Soil	Unleaded Gasoline
3/23/2009	Storage Tank	Other	316 First St. East	Polson		Soil	Oil: Diesel
10/3/2009	Vessel	Vessel Sinking	Off Rocky Point Flat Head Lake	Polson		Water	Unleaded Gasoline
8/16/2010	Fixed	Equipment Failure	49708 US Hwy 93	Polson	Kwataqnuk	Water	Unleaded Gasoline
10/25/2010	Fixed	Dumping	Hwy 93 South, 16 Mi. NW of Polson	Big Arm		Water	Raw Sewage
4/1/2010	Fixed	Other	52469 Camp Tuffit Rd	Proctor	Camp Tuffit LLC	Water	Sewage; Unleaded Gasoline

Source: National Response Center, 2011

Major toxic spills into Flathead Lake in recent years include the 2001 sinking of a barge on the lake that resulted in the spill of a significant amount of diesel fuel at Woods Bay, and the 2008 crash of a tanker truck on Highway 35 that spilled 6,400 gallons of gasoline on the East Shore south of Finley Point. After the 2008 spill, a local group encouraged the Montana Department of Transportation (MDT) to undertake a comprehensive analysis of highway conditions and use (including the amount and kinds of hazardous materials transported), impacts and costs of the spill, documentation of previous spills, and a thorough evaluation of various alternative remedies (including potential highway improvements, limiting speeds in areas in proximity to the lake, prohibiting "pup" trailers, limiting hazardous materials transport, and increasing enforcement of regulations). The MDT conducted a limited analysis and made some changes, including expanding "no passing zones". The PDM Planning Team indicated that the 2008 tanker truck spill caused over $10 million in damages.

Another hazardous material incident reported by the PDM Planning Team was a 1996 crash between an agricultural tanker and car in the Post Creek area. Products mixed together and resulted in closure of S. Highway 93 for 24 hours.

Locations of chemical/petroleum storage in CSKT with regulatory reporting requirements include:

- AT&T, Ravalli and Polson
- Polson Propane, Polson
- Northern Energy, Polson
- CHS Inc. – Mountain West Cooperative, Polson
- CHS Inc. – Energy Partners, Ronan and Polson
- Century Link, Polson

Vulnerability and Area of Impact

Transportation accidents are of primary concern on the Flathead Reservation. U.S. Highway 93 is a heavily traveled corridor that presents safety problems due to increased traffic and outdated design (in some areas). Although mass casualty events with busses have not occurred, several car crashes have resulted in four or more being killed.

Several kinds of hazardous materials are regularly transported through the Flathead Reservation. Thirty rail cars, each containing 33,000 gallons of gasoline, pass through the county daily along the 15 miles of railroad track. A problem with even one rail car filled with gasoline could cause a significant spill affecting the Jocko and/or Clark Fork Rivers in the Arlee and Ravalli areas. In addition, semi-trucks loaded with agricultural herbicides and pesticides travel the local highways. CSKT has an agreement with the haz-mat Team in Missoula and Flathead Counties to assist in the event of any major incidents. At this time the Tribes do not have individuals trained in dealing with hazardous materials (CSKT Growth Policy).

Both the Emergency Planning and Community Right-to-Know Act (EPCRA) were enacted in 1986 to inform communities and citizens of chemical hazards in their areas. Sections 311 and 312 of EPCRA require businesses to report the locations and quantities of chemicals stored on-site to state and local governments in order to help communities prepare to respond to chemical spills and similar emergencies. EPCRA Section 313 requires the EPA and the states to annually collect data on releases and transfers of certain toxic chemicals from industrial facilities, and make the data available to the public in the Toxics Release Inventory (TRI). In 1990 Congress passed the Pollution Prevention Act, which required that additional data on waste management and source reduction activities be reported under TRI. The goal of TRI is to empower citizens, through information, to hold companies and local governments accountable in terms of how toxic chemicals are managed. There are no TRI facilities on the Reservation.

To model the spatial distribution of hazardous material incident risk a GIS data layer of transportation arteries was used, which included highways, major roadways and railroads. Facilities in the Reservation with hazardous materials or petroleum reporting requirements were added to this layer and it was then buffered by 0.25 miles. Building exposure was calculated by intersecting the hazardous material buffer with the MDOR parcel and critical facility GIS layers. Population exposure was calculated by intersecting the hazardous material buffer with census block data. **Figures 6A through 6E** present the hazardous material buffer for the Reservation and the Tribal council districts of Polson, Ronan, St. Ignatius, and Pablo, respectively, and indicate the vulnerability of critical facilities to hazardous material incidents. **Table 4.3-3** presents the exposure risk in these hazard areas.

The GIS analysis indicates that there are 81,543,000 acres within the Reservation boundaries. Within the hazardous material buffer there are 5,847 residences, 1,848 commercial, industrial and agricultural buildings, and 57 critical facilities. The *Hazardous Material Incident Section* in **Appendix C** lists the critical facilities within the hazardous material buffer and presents other supporting documentation from the risk assessment.

Probability and Magnitude

The Reservation is vulnerable to all types of transportation emergencies. The two major effects of transportation accidents are human injury and hazardous materials releases. There have been no Presidential Disaster Declarations or State emergency declarations associated with the Transportation Accident hazard on the Reservation and the likelihood of a significant event resulting in a disaster declaration is considered low.

Transportation accidents have caused well over $400,000 dollars in property damage over the past nine years and resulted in 101 fatalities and over 2,340 injuries. There have been 28 hazardous material incidents over the past 21 years on the Reservation with one accident resulting in over $10 million in damages. Since transportation accident/hazardous material incident hazard occurs more than once per

year, the probability of future events is rated as "highly likely". The PDM Planning Team rated the hazardous material incident hazard as "possible" using the Calculated Priority Risk Index.

Future Development

CSKT does not have any ordinances or regulations requiring special considerations to mitigate the effects of transportation accidents. There are no land use regulations that restrict building around industrial facilities or along transportation routes or in the vicinity of facilities that store large quantities of hazardous materials/petroleum products.

The Polson Development Code states that any development that generates, handles, stores, or disposes of hazardous materials shall demonstrate continuing compliance with state or federal requirements for such activities, and, within the city limits, with the applicable requirements of the city's fire and building codes. In addition, all applications for permits for such uses shall be accompanied by an initial list of hazardous chemicals, or the materials safety data sheets for such chemicals, proposed to be on the site. No permit shall be approved until the fire department has reviewed this list and indicated that it has the capability to effectively respond to an emergency at the proposed development. No development to which the fire department cannot effectively respond shall be approved.

The Polson Development Code also includes a goal to address the community's need for a U.S. Highway 93 bypass that could require that hazardous material transport bypass the main business district.

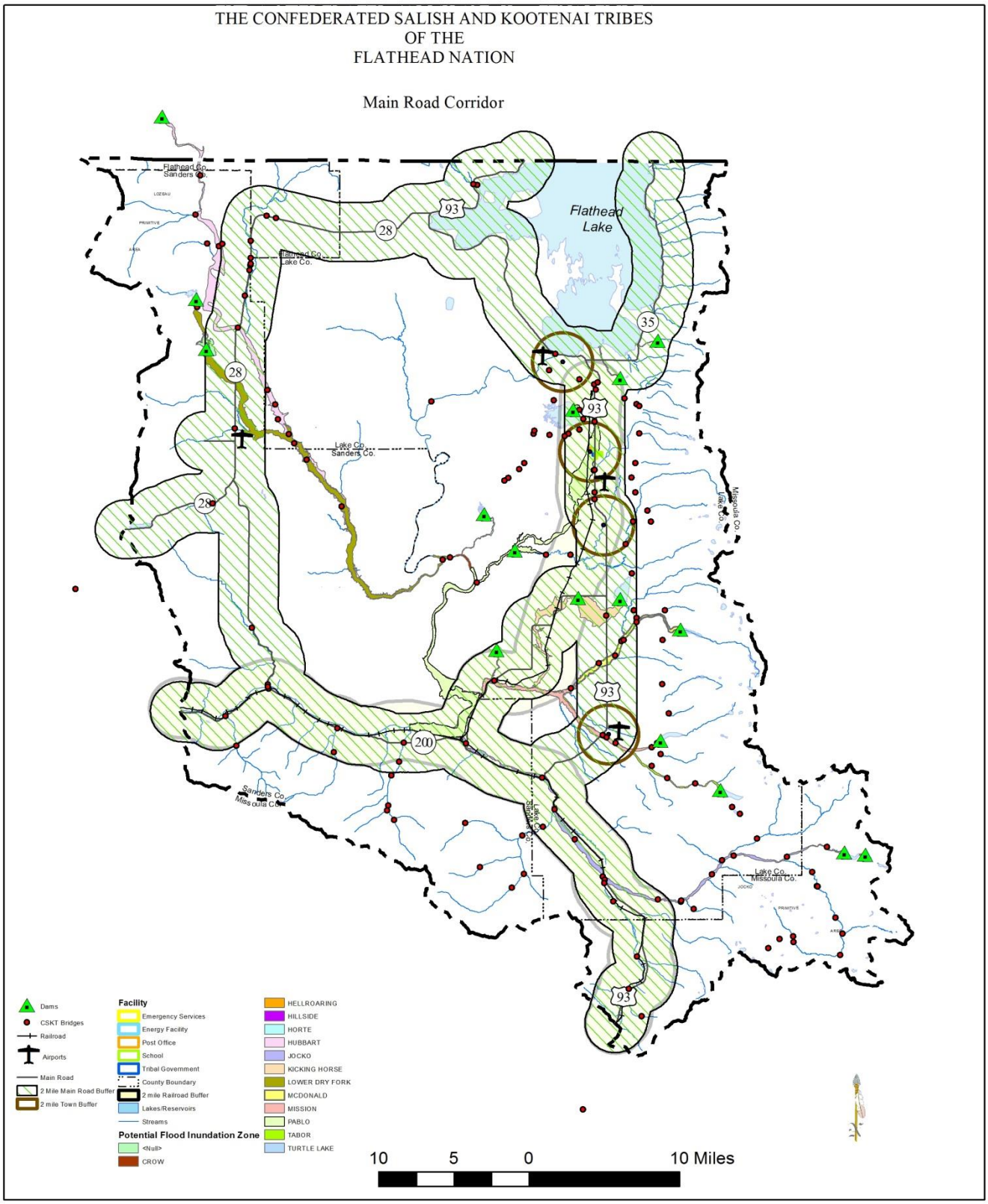


Figure 6A | Flathead Reservation Hazardous Material Corridors and Critical Facilities

Figure 6B | Polson Hazardous Material Corridor and Critical Facilities

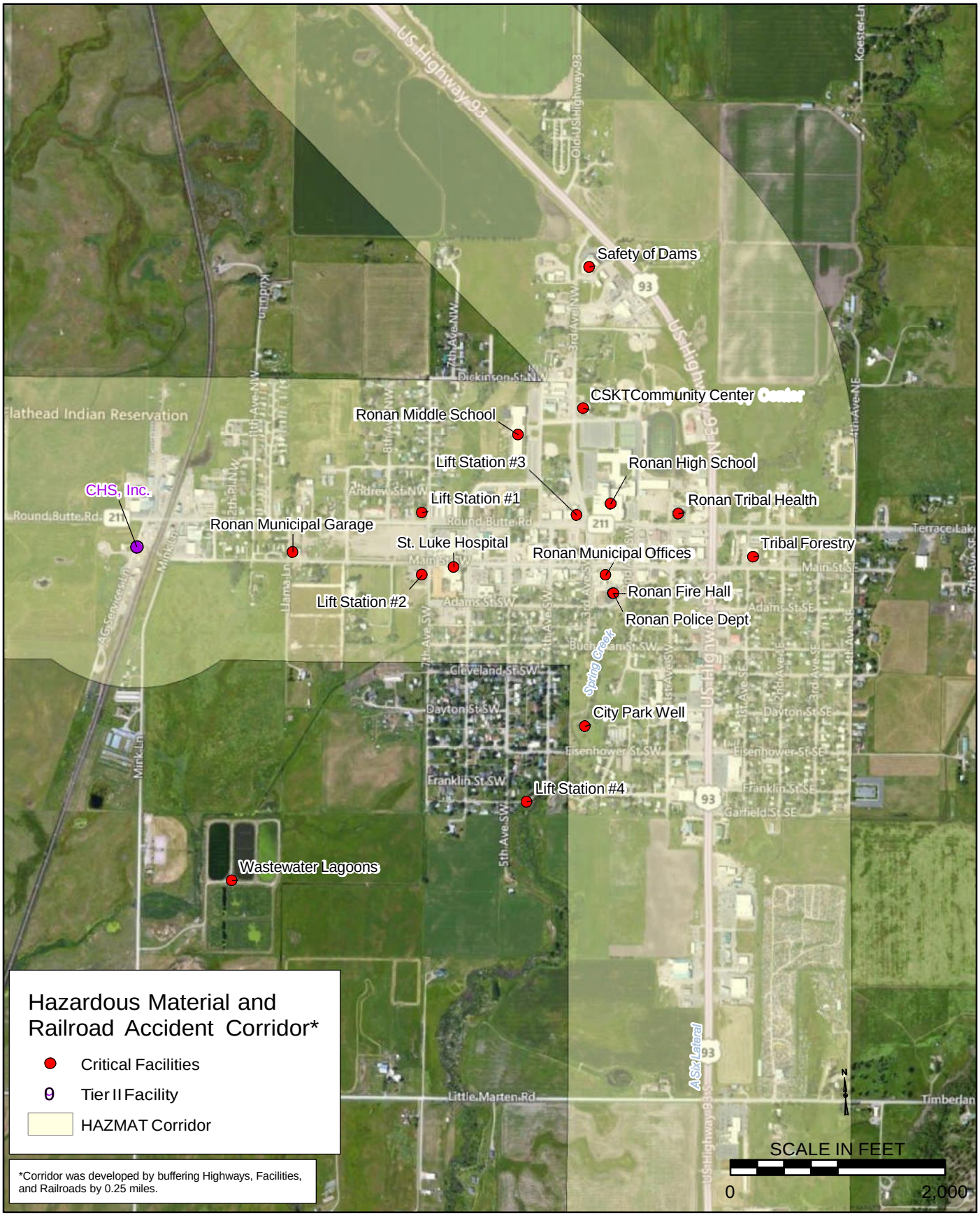


Figure 6C | Ronan Hazardous Material Corridor and Critical Facilities

Figure 6D | St. Ignatius Hazardous Material Corridor and Critical Facilities

Figure 6E | Pablo Hazardous Material Corridor and Critical Facilities

TABLE 4.3-3
CSKT VULNERABILITY ANALYSIS – TRANSPORTATION ACCIDENTS/HAZARDOUS MATERIAL INCIDENTS

JURISDICTION	RESIDENTIAL PROPERTY EXPOSURE $	# RESIDENCES AT RISK	COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTY EXPOSURE $	# COMMERCIAL, INDUSTRIAL & AGRICULTUAL PROPERTIES AT RISK	CRITICAL FACILITIES EXPOSURE RISK $	# CRITICAL FACILITIES AT RISK	BRIDGE EXPOSURE $	# BRIDGES AT RISK	PERSONS AT RISK	PERSONS UNDER 18 AT RISK
Incorporated Communities & County										
Polson	$90,923,471	890	$149,850,759	517	$31,062,173	11	$3,277,204	1	2,721	611
Ronan	$50,690,419	683	$110,298,707	420	$57,042,214	12	$0	0	1,617	432
St. Ignatius	$11,038,483	122	$4,050,397	34	$0	0	$0	0	315	76
Remainder of County	$878,162,473	5,847	$354,779,480	1,848	$163,529,316	57	$6,828,276	32	17,342	4,371
CENSUS Designated Places										
Arlee CDP	$11,301,631	119	$9,727,230	62	$5,578,791	5	$240,184	2	588	169
Big Arm CDP	$21,426,322	122	$4,615,489	40	$ not available	2	$0	0	175	39
Charlo CDP	$13,566,621	168	$3,485,537	53	$53,611	4	$0	0	377	105
Dayton CDP	$9,690,596	66	$29,244,973	125	$ not available	1	$0	0	65	7
Elmo CDP	$6,886,918	43	$646,874	35	$ not available	1	$0	0	180	44
Finley Point CDP	$37,854,239	142	$758,545	17	$0	0	$0	0	224	35
Jette CDP	$7,428,780	49	$155,470	2	$0	0	$0	0	165	27
Sėliš Ksanka Qlispė CDP	$14,904,728	77	$22,277	2	$0	0	$44,400	1	241	67
Kicking Horse CDP	$0	0	$0	0	$0	0	$0	0	6	1
King's Point CDP	$0	0	$0	0	$0	0	$0	0	0	0
Lindisfarne CDP	$21,804,345	116	$490,667	13	$0	0	$0	0	146	31
Pablo CDP	$16,863,540	180	$6,437,841	53	$29,867,535	5	$0	0	1,484	510
Ravalli CDP	$4,172,219	52	$1,303,480	25	$0	0	$0	0	76	12
Rocky Point CDP	$0	0	$0	0	$0	0	$0	0	0	0
Turtle Lake CDP	$0	0	$0	0	$0	0	$0	0	0	0

4.4 Landslide

CPRI SCORE = 2.95

Description and History

A landslide is the movement of a soil and/or rock mass down a slope. Any area composed of very weak or fractured materials resting on a steep slope can and likely will experience landslides. Landslides or debris flows are often difficult to distinguish from flash floods and possess similar destructive potential and rapid onset. Debris flows generally occur during periods of intense rainfall or rapid snowmelt. They usually start on steep hillsides as shallow slides that liquefy and accelerate. The consistency of debris flows range from watery mud to thick, rocky mud that can carry large items such as boulders, trees and cars. When the flow reaches flatter ground, debris can spread over a broad area, sometimes accumulating in thick deposits.

Any given mass movement is triggered by a single event. The two most common triggers are earthquakes and heavy rainfall. Slope failure occurs when the gravitational force of slope materials exceed resisting forces due to strength, friction and cohesion of the supporting materials. Slope properties, such as steepness, layering, fracturing of materials or lack of vegetation, can make them inherently susceptible to failure. Factors such as moisture, overloading and undercutting, can make matters worse. These factors can occur naturally or induced by development activity. Slope failures are distinguished by five types: falls or free drops from steep cliffs; slides or movement of unconsolidated materials along slip surfaces of shear failure; slumps or movements of consolidated materials along the surface of shear failures; flows; and the slow or rapid fluid-like movement of soils and other unconsolidated materials. Very slow down-slope flow of soil is referred as creep. The average flow rate of materials can range from a fraction of an inch to 4 to 5 inches a week. Factors that influence creep include growing vegetation, freezing and thawing, and burrowing animals. Lateral spreads may occur on flat or gently sloping land due to liquefaction of underlying materials.

Vulnerability and Area of Impact

CSKT has many areas where slopes are too steep for development. These areas occur along the slopes of the Mission and Salish Ranges and along some parts of the shore of Flathead Lake. Steep slopes, including stretches of Montana Highway 35 along the east side of Flathead Lake, are prone to falling rock Landslides appear to have a stronger association with faulting than with any specific geologic unit; however, some slides are most common where the underlying bedrock is sedimentary or volcanic. Volcanic-derived soils contain significant amounts of clay that can be susceptible to failure when wet or disturbed. Small slides and slumps can also occur along the steeper slopes of gullies and drainages. Steep slopes may be most vulnerable to debris flow, especially if the area were to burn.

According to the CSKT Growth Policy, slopes up to 8 percent are generally the most suited for development. Slopes between 25-35 percent have extensive engineering limitations. Slopes over 35 percent are generally not suitable for development. Building on steep slopes must factor in soil erosion

rates, falling rock and slope instability. Rain or ice on steep slopes presents additional safety concerns, particularly where emergency access is concerned.

The PDM Planning Team indicated that Sėliš Ksanka Qİispė Dam was impacted by a landslide in the past and in 2011, a landslide occurred on the East Shore of Flathead Lake causing road damage.

Probability and Magnitude

Landslide risk was determined by using GIS data provided in the Montana State Hazard Mitigation Plan (Montana DES, 2010). Shape files used for the GIS layer included areas of mapped historic landslides, available from the Montana Bureau of Mines and Geology (MBMG) and slopes greater than 55 degrees, based on methodology developed by the USFS for a delineation of landslide-prone areas in the Clearwater-Nez Perce National Forest. Landslide-prone areas along Montana Highway 35 (**Figure 7**) were digitized and added to the analysis area. The landslide-prone areas were intersected with the critical facility and MDOR parcel datasets to determine exposure. Population exposure was calculated by the percent of the landslide-prone area in each census block.

The GIS analysis indicates that there are 50,840 acres prone to landslides in the Reservation including 384 residences and 71 commercial, industrial, and/or agricultural buildings, and 1 critical facility. The *Landslide Section* in **Appendix C** presents supporting documentation from the vulnerability analysis.

Based on the frequency of small landslide/slope failure events on the Flathead Reservation, the probability for a more significant event in the future is rated as “possible”. Using the Calculated Priority Risk Index, the PDM Planning team rated the landslide probability as “likely”.

Future Development

It is the responsibility of those who wish to develop their property to assess the degree of hazard in their selection of development sites. Although the physical cause of many landslides cannot be removed, geologic investigations, good engineering practices, and effective enforcement of land-use management standards can reduce landslide hazards.

The Lake County Subdivision Regulations have development standards for subdivisions containing areas of steep slopes, in areas containing sustained slopes of 100 feet or longer that average 20 percent. The developer must demonstrate that the proposed subdivision will not have adverse impact on conditions that relate to the public health and safety including rock falls or landslides, unstable soils or steep slopes. In areas where there is potential for landslides or slope instability, an erosion and sedimentation control plan, prepared by a registered engineer, is required with the preliminary plan application. The plan must include a description of protection measures for long-term slope stability.

Figure 7 | Flathead Reservation Landslide Potential along Highway 35

4.5 STRUCTURE FIRE

CPRI SCORE = 2.75

Description and History

Structure fires are usually individual disasters and not community-wide events; however, the potential exists for widespread structure fires that displace several businesses or families. Urban blocks, commercial structures and apartment buildings are especially vulnerable. Statistics from the structure fires on the Flathead Reservation over the past 11 years are presented in **Table 4.5-1.**

TABLE 4.5-1
CSKT STRUCTURE FIRE STATISTICS; 1/1/2001 to 12/31/2011

Property Type	Fires	Fire Fighter Deaths	Fire Fighter Injuries	Civilian Deaths	Civilian Injuries	Property Loss
Residential	292	0	1	3	1	$4,155,300
Commercial	27	0	0	0	6	$696,200
Industrial	56	0	0	0	0	$692,150
TOTAL	375	0	1	3	7	$5,543,650

Sources: State Fire Marshal, 2012

Below are accounts of two recent structure fires on the Reservation.

January 18, 2012 – When firefighters showed up at a structure fire at 806 14th Ave. E. in Polson, there was smoke coming out of the basement. "We believe the cause was electrical in nature, but so much damage was done to the basement, we can't pinpoint a specific cause," Polson VFD public information officer Karen Sargeant reported. Damages to the building are $30,000 to $40,000, Sargeant estimated with at least an extra $20,000 for contents. (*Structure Fire Damages Polson Home*, Valley Journal [Berl Tiskus], January 18, 2012).

March, 1, 2012 - A mountain home near Pablo burned to the ground late Sunday afternoon. The fire started around 4:45 p.m. and by the time crews responded to the blaze on Snyder Hill Lane at the base of the Mission Mountains, the house was completely engulfed in flames. "It was a total loss," Ronan Fire Chief Mark Clary said. "When we arrived, there were flames wall to wall." The Ronan Fire Department had four engines, a heavy rescue vehicle and a water tender on the scene and received mutual aid from the Polson Fire Department, which brought two engines and a water tender. (*Structure Fire Destroys Home*, Lake County Leader [Dylan Kitzan], March 1, 2012).

Structure fire protection services are provided by several entities on the Flathead Reservation. These organizations include 13 Volunteer Fire Districts (VFDs) throughout the Reservation. The incorporated cities of Polson, Ronan and St. Ignatius provide fire protection within their corporate limits, as well as the surrounding rural districts. Mutual-aid agreements have been developed between fire protection entities. The agreements have proven essential to increasing the level of service provided to the constituents of the area. The mutual-aid structure provides for assistance among fire departments, thus expanding the equipment and personnel resources available to respond to an incident. This mechanism allows for increased utilization of the expensive capital equipment that is necessary for fire protection service and achieves a higher level of service in the county than could be achieved by any one fire protection entity.

Vulnerability and Area of Impact

Based on review of historic structure fire data and consultation with the State Fire Marshal, the entire project area has been classified with a uniform risk for structure fire since vulnerable structures are not restricted to a specific area within the Reservation. Structure fires have resulted in over $5.5 million dollars in property loss over the past 11 years. Annualized loss estimates are presented in the Risk Assessment Summary Tables in *Section 4.12* (**Tables 4.12-1 through 4.12-4**).

According to the CSKT, a number of challenges make residential firefighting difficult for the VFDs. Construction in the wildland urban interface does not typically have adequate fire provisions. Such provisions include a defensible space around homes, fire resistant roof materials, and private roads wide enough for fire trucks to be used to access structures and maneuver effectively and safely. Another challenge has been a limited water supply. However, with the addition of two new wells in Polson and the six dry hydrants that have recently been installed throughout Lake County, there should be significant improvement in this area. Other tribal council districts still need to explore ways to improve fire provisions in the WUI.

Probability and Hazard Magnitude

History has shown that structure fires are a serious concern for CSKT. The losses, primarily covered by insurance, have not resulted in a Presidential Disaster Declaration, but have resulted in other negative impacts, such as economic losses for the area.

With over 375 structure fires in the 11 period of record, the probability of this hazard occurring in the future is rated as “highly likely”.

Future Development

CSKT is considering adopting the IFC code. The IFC is a comprehensive code that includes regulations governing the safeguarding of life and property from all types of fire and explosions hazards.

Topics include general precautions against fire, emergency planning and preparedness, fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, hazardous materials storage and use, and fire safety requirements for new and existing buildings and premises.

4.6.1 SEVERE WEATHER

CPRI SCORE = 2.7

The winter weather hazard profiled below includes several weather conditions that generally occur from November through April. Snow, blizzards, extended cold and high winds frequently occur together but also independent of one another during these months.

Description and History

Winter Weather

Winter storms and blizzards follow a seasonal pattern that begins in late fall and lasts until early spring. These storms have the potential to destroy property, and kill livestock and people. Winter storms may be categorized as sleet, ice storms or freezing rain, heavy snowfall or blizzards and low temperatures. Blizzards are most commonly connected with blowing snow and low visibility. Winter also brings sustained straight-line winds that can be well over 50 mph.

A severe winter storm is generally a prolonged event involving snow or ice and extreme cold. The characteristics of severe winter storms are determined by the amount and extent of snow or ice, air temperature, wind speed and event duration. Severe winter storms create conditions that disrupt essential regional systems such as public utilities, telecommunications and transportation routes.

A combination of temperatures below zero and high winds can close roads, threaten disruption of utilities, limit access to rural homes, impede emergency services delivery and close businesses. Such storms also create hazardous travel conditions, which can lead to increased vehicular accidents and threaten air traffic. Additionally, motorists stranded due to closed roads and highways may present a shelter problem.

The National Weather Service provides short-term forecasts of hazardous weather to the public by producing regularly-scheduled severe weather outlooks and updates on various forms of hazardous weather including blizzards and wind chill. Warning and Advisory Criteria for winter weather is presented in **Table 4.6-1**.

TABLE 4.6-1
WARNING AND ADVISORY CRITERIA FOR WINTER WEATHER

Winter Weather	Winter Weather Advisory	Winter Storm/Blizzard Warning
Snow	2-5 inches of snow in 12 hours	6 inches or more in 12 hours, or 8 inches in 24 hours
Blizzard	(see blowing snow)	Sustained winds or frequent gusts to 35 mph with visibility below a ¼ mile for three hours or more
Blowing Snow	Visibility at or less than a ½ mile.	Visibility at or less than a ½ mile in combination with snowfall at or greater than 6 inches and/or freezing precipitation

TABLE 4.6-1 WARNING AND ADVISORY CRITERIA FOR WINTER WEATHER		
Ice/Sleet	(see freezing rain/drizzle)	Accumulations of ¼ inch or more of ice.
Freezing Rain/Drizzle	Light precipitation and ice forming on exposed surfaces.	None
Wind Chill	Wind chills of -20 to -39 degrees with a 10 mph wind in combination with precipitation	Wind chills -40 degrees or colder with a 10 mph wind in combination with precipitation.

Source: National Weather Service (NWS, 2011)

Snowstorms and bitterly cold temperatures are common occurrences throughout the Flathead Reservation and generally do not cause any problems as residents are used to winter weather and are prepared for it. Sometimes, however, blizzards can occur and overwhelm the ability to keep roads passable. Heavy snow and ice events also have the potential to bring down power lines and trees. Extreme wind chill temperatures may harm residents if unprotected outdoors or if heating mechanisms are disrupted.

Table 4.6-2 presents winter weather events with reported damages from the SHELDUS and NCDC databases. The dataset used to populate SHELDUS typically includes every loss causing and/or deadly event between 1960 through 1975 and from 1995 onward. Between 1976 and 1995, SHELDUS reflects only events that caused at least one fatality or more than $50,000 in property or crop damages. The NCDC data contains sporadic damage figures, which were added to the dataset when they represented a unique damaging event.

TABLE 4.6-2
CSKT SEVERE WINTER WEATHER EVENTS WITH DAMAGES (~NOVEMBER - APRIL)

Date	Injuries	Fatalities	Property Damage	Crop Damage	Remarks
5/4/1961	0	0	$4,127	$0	Heavy Snow
2/22/1962	0	0	$73	$0	High Wind, Snow, Blowing Snow, and Cold
11/19/1962	0.07	0	$6,516	$0	High Winds
12/15/1964	0	0	$65,163	$0	High Wind, Blowing Snow, Severe Cold
1/15/1967	0	0	$6,082	$0	High Wind
4/30/1968	1	0	$36,111	$0	High Wind
1/1/1969	0	0	$537	$0	Cold And Snow
4/23/1969	0	0	$30,588	$0	Wind
5/10/1970	0	0	$14,444	$0	Heavy, Wet Snow and Strong Wind
3/3/1971	0	0	$912	$0	Wind, Snow
11/25/1971	0.37	0	$1,014	$0	Hoarfrost, Ice
12/5/1971	0	0	$27,368	$0	Heavy Snow
1/9/1972	0	0	$4,801	$0	Strong Winds
1/16/1972	0	0	$9,123	$0	Strong Winds
2/16/1972	0	0	$944	$0	High Wind
3/5/1972	0	0	$912	$0	High Winds
1/29/1974	0	0	$4,037	$0	Wind
12/26/1974	0	0	$780	$0	High Winds
10/21/1975	0	0	$2,080,000	$20,800	Snow
2/3/1976	0	0	$200,000	$0	Wind
1/18/1978	0	0	$173,333	$0	Heavy Snow

TABLE 4.6-2
CSKT SEVERE WINTER WEATHER EVENTS WITH DAMAGES (~NOVEMBER - APRIL)

Date	Injuries	Fatalities	Property Damage	Crop Damage	Remarks
11/4/1978	0	0	$0	$0	Strong Winds
11/9/1985	1	0	$53,061	$0	Wind
2/3/1986	3	1	$2,080	$0	Ice Storm
12/13/1988	0	0	$24,074	$0	Wind
1/31/1989	0	0	$27,645	$276	Blizzard
2/1/1989	0	0	$160,049	$160	Severe Cold
1/29/1990	0	0	$9,630	$0	Snow
4/27/1990	0	0	$2,796	$0	Winter Storm
11/22/1990	0	0	$23,423	$0	High Winds
11/23/1990	0	0	$9,630	$0	High Winds
12/18/1990	0	0	$5,778	$5,778	Blizzard, Heavy Snow
12/27/1990	0	0	$21,667	$0	Blizzard
10/16/1991	0	0	$21,667	$0	Wind
8/22/1992	0	0	$353	$35,326	Winter Storm
8/25/1992	0	0	$0	$1,425	Frost/Freeze
10/7/1993	0	0	$7,879	$0	Winter Storm
11/3/1993	0	0	$788	$7,879	High Winds
2/23/1994	0	0	$13,416	$0	Winter Storm
4/25/1994	0	0	$6,373	$0	Heavy Snow, Winter Storm
11/16/1994	0	0	$6,373	$0	Heavy Snow
11/25/1994	0	0	$10,924	$0	Heavy Snow
3/24/1995	0	0	$74,286	$0	Winter Storm
2/1/1996	0	0	$6,741	$0	Extreme Cold
11/18/1996	0.09	0.18	$0	$0	Winter Storm
2/15/2001	0.25	0.13	$0	$0	
6/3/2001	0	0	$974,936.44	$0	Heavy Snow
12/15/2006	0	0	$11,860	$0	High Wind
11/12/2007	2	0	$721,297	$0	High Wind
1/13/2008	0	0	$81	$0	Avalanche
6/10/2008	0	0	$1,052	$0	Heavy Snow
12/12/2008	0	0.25	$1,327	$0	Blizzard
1/1/2009	0	0	$1,387	$0	Winter Storm
TOTAL	**7.78**	**1.56**	**$4,867,438**	**$71,645**	

Source: SHELDUS, 2011 (adjusted to 2011 dollars); NCDC, 2011 (adjusted to 2012 dollars).

Note: Often casualties and damage information are listed without sufficient spatial reference. In order to assign the damage amount to a specific county, the fatalities, injuries and dollar losses were divided by the number of counties affected from this event.

The table above indicates that winter storms, high winds and heavy snow have caused property loss in CSKT. Planning Team members reported big snow years and cold in 1996 and 2002.

No Presidential Disaster Declarations have been granted for winter storms on the Flathead Reservation. State-wide winter storm disasters were declared in 1978, 1989 and 1996 (DMA, 2011).

Summer Weather

Severe summer weather includes thunderstorms, wind, hail, lightning, tornadoes and microbursts that typically occur between May and October of each year on the Flathead Reservation.

Description and History

A severe thunderstorm is defined by the National Weather Service as a thunderstorm that produces wind gusts at or greater than 58 mph (50 knots), hail 1-inch or larger, and/or tornadoes. Although not considered "severe", lightning and heavy rain can also accompany thunderstorms. Thunderstorms can produce intense downburst and microburst wind. In addition, strong winds, defined below, can occur outside of thunderstorms when the overall weather conditions are favorable.

Tornadoes are the most concentrated and violent storms produced by the earth's atmosphere. They are created by a vortex of rotating wind and strong vertical motion, which possess remarkable strength and can cause widespread damage. The most violent tornadoes are capable of tremendous destruction with wind speeds of 300 mph or more. Maximum wind speeds in tornadoes are confined to small areas and vary over short distances. Tornadoes are most common in the Great Plains, and are more infrequent and generally small west of the Rockies. Thunderstorms can produce deadly and damaging tornadoes.

A microburst is a very localized column of sinking air, producing damaging divergent and straight-line winds at the surface that are similar to, but distinguishable from, tornadoes. The scale and suddenness of a microburst makes it a great danger to aircraft due to the low-level wind shear caused by its gust front, with several fatal crashes having been attributed to the phenomenon over the past several decades. Microbursts in forested regions have flattened acres of standing timber. According to FEMA's wind zone classifications the entire county is in Zone I (130 mph Design Wind Speeds).

The National Weather Service provides short-term forecasts and warnings of severe summer weather to the public by producing regularly-scheduled severe weather outlooks and updates on various forms of hazardous weather including tornado warnings, as listed below.

- *Severe Thunderstorm Warning*: Any thunderstorm wind gust equal to or greater than 58 mph; any hail size 1-inch or larger.
- *High Wind*: Sustained winds of 40 mph for an hour or any gust to 58 mph (non-convective winds).
- *Tornado Warning:* A violently, rotating column of air extending from the base of a thunderstorm to the ground.

Since the 2005 CSKT PDM Plan was completed, several incidents of severe summer weather have affected CSKT. **Table 4.6-3** presents severe summer storm events from the NCDC database indicating the magnitude of these events.

TABLE 4.6-3
CSKT SEVERE SUMMER WEATHER REPORTS (~MAY-OCTOBER)

Date	Location	Event	Magnitude	Date	Location	Event	Magnitude
5/26/1961	Lake County	Tstm Wind	0 kts.	3/14/2003	Ronan	Tstm Wind	53 kts.
7/5/1962	Lake County	Hail	1.25 in.	5/25/2003	Arlee	Tstm Wind	61 kts.
8/20/1982	Lake County	Tstm Wind	0 kts.	6/10/2003	Arlee	Tstm Wind	63 kts.
8/27/1985	Lake County	Hail	1.00 in.	6/10/2003	Pablo	Tstm Wind	52 kts.
6/15/1987	Lake County	Tstm Wind	65 kts.	6/10/2003	Ronan	Hail	0.88 in.
6/17/1988	Lake County	Tstm Wind	70 kts.	8/5/2003	Arlee	Tstm Wind	52 kts.
8/17/1988	Lake County	Tstm Wind	65 kts.	8/3/2004	Arlee	Hail	1.00 in.
7/15/1989	Lake County	Hail	0.75 in.	8/6/2004	Polson	Tstm Wind	53 kts.
7/16/1989	Lake County	Hail	1.75 in.	8/19/2004	Proctor	Hail	0.75 in.
8/12/1989	Lake County	Tstm Wind	0 kts.	8/20/2004	Big Arm	Hail	0.75 in.
3/3/1991	Lake County	Tornado	F0	8/10/2005	Polson	Tstm Wind	50 kts.
5/31/1993	Swan Lake	Tstm Wind	0 kts.	4/5/2006	St. Ignatius	Heavy Rain	N/A
5/15/1994	Swan Lake	Tstm Wind	0 kts.	6/12/2006	St. Ignatius, Charlo, Ronan	Hail	1.00 in.
8/22/1994	Lake County	High Winds	60 kts.	6/13/2006	Polson, Ronan	Hail	1.00 in.
4/16/1996	St. Ignatius	Tstm Wind/Hail	60 kts.	3/13/2006	Moiese	Tstm Wind	60 kts.
6/15/1996	Arlee, Ronan, St. Ignatius	Tstm Wind	52 kts.	6/13/2006	Polson	Hail	0.75 in.
6/16/1996	Ronan	Hail	1.75 in.	6/16/2006	Ronan	Flood	N/A
7/2/1996	Finley Point	Hail	1.00 in.	8/8/2006	Ronan	Tstm Wind	60 kts.
6/16/1997	Ronan	Funnel Cloud	N/A	8/10/2006	Ronan	Tstm Wind	60 kts.
8/7/1997	Polson, St. Ignatius	Hail	0.75 in.	6/5/2007	St. Ignatius	Tstm Wind, Hail	63 kts.;1 in.
8/20/1997	St. Ignatius	Lightning	N/A	6/20/2007	St. Ignatius	Hail	0.75 in.
7/3/1998	St. Ignatius	Tstm Wind	52 kts.	6/29/2007	Polson, Ronan	Tstm Wind	52 kts.
7/4/1998	Big Arm	Hail	0.75 in.	7/17/2007	Ravalli	Tstm Wind	50 kts.
7/10/1998	Arlee	Tstm Wind	61 kts.	7/18/2007	Pablo	Tornado	
8/22/1998	Arlee	Tstm Wind	50 kts.	7/18/2007	Pablo	Tstm Wind	78 kts.
6/24/1999	Round Butte	Hail	0.75 in.	7/4/2008	Charlo, Ronan	Hail	0.88 in.
6/1/2001	Ronan Airport	Tstm Wind	50 kts.	7/4/2008	Swan Lake	Tstm Wind	52 kts.
6/27/2002	Charlo	Hail	1.75 in.	5/25/2009	Polson	Hail	0.88 in.
7/13/2002	Arlee	Tstm Wind	54 kts.	5/3/2010		High Wind	62 kts.
7/23/2002	Arlee	Hail	1.50 in.	7/22/2010	Elmo, Swan Lake	Tstm Wind	50 kts.
8/16/2002	Lake County	High Winds	69 kts.	7/31/2010	Charlo	Hail	1.75 in.

Source: National Weather Service (NCDC, 2010)
Notes: Tstm = Thunderstorm; kts. = knots; in. = inches

The PDM Planning Team indicated that there have been several microbursts on the reservation, including one on Melita Island which was reported as a tornado.

There have been no Presidential Disaster Declarations or State Disasters issued for the severe summer weather on the reservation. **Table 4.6-4** presents severe summer weather events on the Reservation with reported damages since 1960.

TABLE 4.6-4
CSKT SEVERE SUMMER WEATHER EVENTS WITH DAMAGES (~MAY-OCTOBER)

Date	Injuries	Fatalities	Property Damage	Crop Damage	Remarks
5/26/1961	0	0	$18,571	$186	Thunderstorm and Gusty Wind
6/6/1964	0	1.2	$0	$0	Heavy Rain
6/30/1965	0	0	$1,955	$195,489	Funnel Cloud, Hail
7/19/1968	0	0	$1,121	$0	High Wind, Thunderstorms
1/26/1969	0	0	$5	$0	Lightning
9/12/1970	0	0	$144,444	$0	Strong Winds
9/19/1971	0	0	$1,610	$0	Wind
9/12/1973	0	0	$16	$0	Wind Storm
7/26/1974	0	0	$754	$0	High Winds
6/1/1977	0.17	0	$30,952	$0	Wind
6/30/1978	0	1	$0	$0	Lightning
5/21/1980	0	0	$22,807	$0	Rain
9/13/1980	0	0	$136,842	$0	Wind
5/21/1981	0	0	$825,397	$0	Heavy Rains
6/20/1985	0.02	0	$2,468	$2,468	Hail/Wind
6/4/1986	0	0	$5,200	$520,000	Hail
7/18/1987	0	0	$0	$50,000	Heavy Rain
3/31/1991	0	0	$41,560	$0	Tornado
10/16/1991	0	0	$171,165	$0	Wind
5/31/1993	0	0	$783,464	$0	Swan Lake; Thunderstorm Winds
5/15/1994	0	0	$853,892	$0	Thunderstorm Winds
9/9/2000	2	0.25	$0	$0	Dust Storm
3/14/2003	0	0	$24,762	$0	Severe Storm/Thunderstorm, Wind
7/18/2007	0	0	$41,497	$0	Pablo: Tornado
7/4/2008	0	0	$19,236	$0	Hail
10/7/2008	0	0	$3,020	$0	Strong Wind
10/3/2009	0	0	$17,687	$0	High Wind
5/3/2010	0	0	$13,000	$0	Wind
7/22/2010	0	0	$6,240	$0	Severe Storm/Thunderstorm, Wind
7/31/2010	0	0	$6,240	$0	Hail
TOTAL	**2.19**	**2.45**	**$3,173,905**	**$768,142**	

Source: SHELDUS, 2011 (adjusted to 2011 dollars); NCDC, 2011 (adjusted to 2012 dollars)

Note: Often casualties and damage information are listed without sufficient spatial reference. In order to assign the damage amount to a specific county, the fatalities, injuries and dollar losses were divided by the number of counties affected from this event.

Vulnerability and Area of Impact Winter Weather

The Reservation is equally exposed to effects of extended cold and storms during the winter months. During this time, winter storm events may affect the higher regions with more snowfall. But because the population is concentrated in the lower elevations, the hazard risk area for winter storms is considered uniform for the entire Reservation. Annualized loss estimates are presented in the Risk Assessment Summary Tables in *Section 4.12* (**Tables 4.12-1 through 4.12-4**). The Severe *Winter Weather Section* in **Appendix C** presents supporting documentation from the risk assessment.

Vulnerability and Area of Impact Summer Weather

On review of historic weather data, the entire project area has been classified with a uniform risk for severe summer weather events. Structures, utilities and vehicles are most at risk from the wind component of these storms, with crops and livestock being additionally threatened by hail. Mostly likely, though, only isolated areas would be affected by these types of storms rather than encompassing the entire Reservation. Annualized loss estimates are presented in the Risk Assessment Summary Tables in *Section 4.12* (**Tables 4.12-1 through 4.12-4**). The *Severe Summer Weather Section* in **Appendix C** presents additional information from the risk assessment.

Probability and Magnitude Winter Weather

Severe winter storms and extended periods of extreme cold occur on the reservation multiple times each year. Therefore, the probability of a severe winter storm event occurring in the future is rated as "highly likely". Using the Calculated Priority Risk Index, the PDM Planning Team scored the probability of the severe winter weather hazard as "likely".

Snow generally does not cause the communities to shut down or disrupt activities. Occasionally, though, extreme winter weather conditions can cause problems. The most common incidents in these conditions are motor vehicle accidents due to poor road conditions. Such incidents normally involve passenger vehicles; however, an incident involving a commercial vehicle transporting hazardous materials or a vulnerable population such as a school bus is also possible.

Since winter storms and cold spells typically do not cause major structural damage, the greatest threat to the population is the potential for utility failure during a cold spell. Although cold temperatures and snow are normal on the Reservation, handling the extremes can go beyond the capabilities of the community. Should the temperatures drop below -15 for over 30 days or several feet of snow fall in a short period of time, the magnitude of frozen water pipes and sewer lines or impassable streets could result in disastrous conditions for many people. If power lines were to fail due to snow/ice load, winds, or any other complicating factor, the situation would be compounded. In the event power or other utilities were disrupted, many homes could be without heat. With temperatures frequently dropping below zero in a typical winter, an event where heating systems failed could send many

residents to shelters for protection. Other residents may try to heat their homes through alternative measures and increase the chance for structure fires or carbon monoxide poisoning.

Sheltering of community members could present significant logistical problems when maintained over a period of more than a day. Transportation, communication, energy (electric, natural gas, and vehicle fuels), shelter supplies, medical care, food availability and preparation and sanitation issues all become exceedingly difficult to manage in extreme weather conditions. Local government resources could be quickly overwhelmed. Mutual aid and state aid might be hard to receive due to the regional impact of this kind of event.

Probability and Hazard Magnitude Summer Weather

Windstorms and microbursts affect areas with significant tree stands, as well as areas with exposed property, major infrastructure, and aboveground utility lines. Severe hailstorms can also cause considerable damage to buildings and automobiles, but rarely result in loss of life. Nationally, hailstorms cause nearly $1 billion in property and crop damage annually, as peak activity coincides with peak agricultural seasons.

The history of thunderstorm, wind, hail and microburst events on the Reservation indicate that they occur more than once per year. Therefore, the probability of this hazard occurring in the future is rated as “highly likely”.

Future Development

The State of Montana has adopted the 2009 International Building Codes (IBC) and these codes are recognized by CSKT as the standards for construction. The IBC includes a provision that buildings must be constructed to withstand a wind load of 75 mph constant velocity and three second gusts of 90 mph. Buildings must be designed to withstand a snow load of 30 pounds per square foot minimum. Only the incorporated cities of Polson and Ronan require structural building permits at this time.

4.7 FLOODING

CPRI SCORE = 1.75

Description and History

A flood is a natural event for rivers and streams. Excess water from snowmelt and rainfall accumulates and overflows onto the banks and adjacent floodplains. Floodplains are lowlands, adjacent to rivers and lakes that are subject to recurring floods. A flash flood generally results from a torrential (short duration) rain or cloudburst on a relatively small drainage area. Ice jam flooding occurs when pieces of floating ice carried by the streams current accumulate at an obstruction to the stream. The water held back can cause flooding upstream, and if the obstruction suddenly breaks, flash flooding can then occur downstream as well.

Hundreds of floods occur each year, making it one of the most common hazards in all 50 states. Floods kill an average of 150 people a year nationwide. Most injuries and deaths occur when people are swept away by flood currents and most property damage results from inundation by sediment-laden water. Faster moving floodwater can wash buildings off their foundations and sweep vehicles downstream. Pipelines, bridges and other infrastructure can be damaged when high water combines with flood debris. Basement flooding can cause extensive damage to the structure and systems of a building.

The National Weather Service provides short-term forecasts and warnings of hazardous weather to the public by producing regularly-scheduled severe weather outlooks and updates on various forms of hazardous weather including heavy rain and flooding. A "watch" is issued when conditions are favorable for severe weather in or near the watch area. A "warning" is issued when the severe weather event is imminent or occurring in the warned area. Warning and Advisory Criteria for flooding is presented below.

- *Flash Flood Warning:* Flooding is imminent, water levels rise rapidly with inundation occurring in less than 6 hours.
- *Flood Warning:* Flooding is expected to occur more than 6 hours after the causative event.

Typically, the most severe flooding on the Flathead Reservation occurs in the spring and early summer as a result of snowmelt and/or runoff from heavy rains. Occasionally, a long sustained rainfall will cause localized flooding. On rare occasions ice jams and log jams will cause localized flooding.

Aside from the Flathead and Little Bitterroot rivers, all tributaries flowing on the Reservation arise in headwaters located on Tribal land. These tributaries all flow into the Flathead River which flows off of the Reservation downstream from Perma. Together these tributaries comprise the lower one fifth of the Flathead River watershed, a basin known internationally for its abundant and clean water.

In the Jocko River Valley, U.S. Highway 93, south of Arlee, was flooded in two places by Agency Creek

during the 1964 flood. Many small bridges on County and Tribal roads were damaged, washed out, or sustained approach damage. Nearly 300 feet of the Northern Pacific Railway track was washed out by the Jocko River near the Jocko Cabin Camp. A local resident reported he had never seen flooding of this magnitude in the Jocko River Valley since 1915. Polson residents awoke to find an overnight rainstorm of 2½ inches had caused flooded basements and curb-high waters at intersections (FEMA, 1987).
There have been no Presidential disasters due to flooding on the Reservation; however, statewide flood disasters were declared in 1978, 1981, 1984, 1986, 1997, 1998, 2003, and 2011. CSKT received a State emergency declaration due to flooding in 1995 and for Ronan in 2005 (DMA, 2011).

The largest and most prominent surface water features are the south half of Flathead Lake and the Lower Flathead River, which leaves the lake at Polson. Other major watersheds include Mission and Crow Creeks, which drain the Mission Valley and the Jocko and Little Bitterroot Rivers, which drain their respective valleys.

Other large watersheds include Camas Creek, White Earth Creek and streams that flow directly into Flathead Lake or the Lower Flathead River.

The Reservation has an abundance of wetlands and riparian areas. It contains roughly twenty-two thousand acres of wetlands and holds another 75,840 acres of lakes and four thousand miles of streams and rivers. Riparian plant communities border most of the lakes, streams and rivers. Together, these habitats support most of the Reservation's fish and wildlife, and consequently are of enormous value to the Tribes.

Flood mitigation strategies should combine both structural and non-structural approaches to alleviating the hazard. Structural approaches include reservoir storage, channel modification, levees and flood walls, pumping stations and other engineering works designed to control floodwaters. Non-structural approaches include both preventive and corrective actions. Preventive actions involve comprehensive floodplain management techniques that prevent unwise and hazardous development of the floodplain. Corrective actions are directed mitigating flood damages and losses which result from unwise development of flood hazard areas.

Vulnerability and Area of Impact

The Natural Resource Conservation Service identifies four categories of flooding frequency: none, rare, occasional and frequent. Areas designated as occasional flood hazard have a 5 to 50 percent probability of flooding in any given year. Areas with occasional flooding on the Reservation include of East Bay on Flathead Lake, Post Creek, Crow Creek, Dry Creek and White Earth Creek. Areas with frequent flooding, defined as a 50 percent or greater chance of flooding in any year, include low lands along the Flathead River, Mission Creek at St. Ignatius and Moiese, the Jocko River at Ravalli and in the Jocko Valley north and south of Arlee and Dayton Creek. The Flathead River and Flathead Lake are controlled so flooding has historically been limited to minor seasonal flooding of some tributaries with little or no property

damage (Lake County, 2003).

According to the City of Ronan's Growth Policy the condition of Spring Creek and its floodplain needs to be addressed. The floodplain has not been mapped and could pose danger to life and property if a large scale flood were to occur. Spring Creek flows from the northeast to the southwest under U.S. Highway 93 and Community Bank and emerges in Bockman Park. The stream appears to have been straightened and does not include many natural stream features that support fish and wildlife including meanders, substantial riparian vegetation and fallen woody debris.

Flood Protection Measures

The Flood Insurance Study of CSKT and Incorporated Areas (FEMA, 1987) presents the following discussion on flood protection measures.

There are a number of reservoirs, ditches and diversion canals on the Flathead Reservation; however, they provide little flood protection. Mud Creek flows into Lower Crow Reservoir, but there are no upstream flood control structures. Crow Creek also flows into Lower Crow Reservoir. Upstream there is a diversion into Kicking Horse Reservoir, which has little effect on flooding.

Post Creek is controlled by McDonald Reservoir. The usable capacity of the reservoir is 8,220 acre-feet and is operated for water storage. There are several canals (Pablo Feeder and Kicking Horse) which divert water from Post Creek, but they have little effect on flood flows.

Mission Creek is controlled by Mission Reservoir and St. Mary's (Tabor) Lake on Dry Creek, which is a direct tributary to Mission Creek. Both of these reservoirs were designed for water conservation and have little flood control storage. The Pablo Feeder Canal diverts water from Mission Creek.

There are several canals that divert water from the Jocko River into Mission Reservoir and St. Mary's Lake; however, the amount of flood protection provided by the diversions in minimal.

Floodplain and Floodway Management

Preliminary Digital Flood Insurance Rate Maps (DFIRMs) are available for portions of CSKT and were used in the PDM analysis. The maps distinguish floodplains, floodways and floodway fringes. The floodway is the highest risk area consisting of stream channels and banks where most damage and destruction occurs. Residential and commercial development, mobile homes and septic systems are prohibited in this area. The DFIRMS are an update of the Flood Insurance Rate Maps (FIRMs) prepared in the late 1980s.

The National Flood Insurance Program (NFIP) encourages local governments to adopt "sound" floodplain management programs to reduce private and public property losses due to floods. CSKT and the

communities of Libby and Eureka are part of the NFIP under emergency provisions. **Table 4.7-1** presents statistics on flood insurance policies and losses. The City of Polson participates in the NFIP but doesn't have any policies in effect.

There are no repetitive loss properties or significant repetitive loss properties on the Reservation. A repetitive loss property is any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling ten-year period, since 1978. Severe repetitive loss properties have had at least four NFIP claim payments over $5,000 each and the cumulative amount exceeding $20,000; or, where at least two separate claim payments have been made with the cumulative amount exceeding the market value of the building.

TABLE 4.7-1
NATIONAL FLOOD INSURANCE PROGRAM STATISTICS (THROUGH 8/31/2011)

Jurisdictions	Policies in Force	Insurance in Force	Number of Losses	Total Payments
Lake County	123	$28,997,500	17	$53,318
City of Ronan	3	$234,200	0	--
Town of St. Ignatius	2	$630,000	0	--

Source: http://bsa.nfipstat.com/reports/1011.htm#MTT; http://bsa.nfipstat.com/reports/1040.htm#30

The NFIP's Community Rating System (CRS) recognizes community efforts (beyond minimum standards) by reducing flood insurance premiums for the community's property owners. CRS discounts on flood insurance premiums range from 5 percent up to 45 percent. Those discounts provide an incentive for new flood protection activities that can help save lives and property in the event of a flood. To participate in the CRS, a community can choose to undertake some of the 18 public information and floodplain management activities. Based on the total number of points a community earns, the CRS assigns you to one of ten classes. Your discount on flood insurance premiums is based on your class. Neither CSKT nor the incorporated communities currently participate in the CRS.

Probability and Magnitude

Flood listings with associated property damage from the SHELDUS database and Montana DES database of State and Federal disaster declarations are presented in **Table 4.7-2.**

TABLE 4.7-2
CSKT FLOOD EVENTS WITH DAMAGES

Date	Injuries	Fatalities	Property Damage	Crop Damage
3/17/1969	0	0	$5,366	$0
2/24/1986	0.04	0.04	$0	$144,444
11/24/1990	0	0	$41,600	$0
5/13/1991	0	0	$21,667	$0
5/18/1991	0	0	$20,968	$0
2/7/1996	0	0	$41,935	$0
5/1/1997	0	0	$151,337	$0
5/26/1998	0	0	$293,858	$0
6/2/2005	0	0	$260,282	$0
TOTAL	**0.04**	**0.04**	**$837,013**	**$144,444**

*Threshold amount of damage for Presidential Disaster Declaration
Source: SHELDUS, 2011 (adjusted to 2011 dollars); National Weather Service (NCDC, 2011)
Note: Often casualties and damage information are listed without sufficient spatial reference. In order to assign the damage amount to a specific county, the fatalities, injuries and dollar losses were divided by the number of counties affected from the event.

Preliminary DFIRM maps exist for the reservation and were used to create a flood hazard layer in GIS, as shown on Figures 8A through 8D for the Reservation, and the Tribal council districts of Polson, Ronan and St. Ignatius, respectively. The flood hazard area was intersected with the critical facility and MDOR parcel datasets using GIS (Table 4.7-3). Vulnerable population was calculated based on the percentage of flood risk area in each census block.

Annualized loss estimates are presented in the Risk Assessment Summary Tables in *Section 4.12* (**Tables 4.12-1 through 4.12-4**). The *Flooding Section* in **Appendix C** presents supporting documentation from the risk assessment.

The GIS analysis indicates that 111,033 acres on the Reservation are located in the 100-year flood hazard area including 2,389 residences, 287 commercial, industrial and agricultural buildings, and no critical facilities.

Based on the frequency of past events, the probability of flooding on the reservation is rated as “likely”; an event that may occur more than once per decade but not every year. The PDM Planning Team rated flooding as “possible” using the Calculated Priority Risk Index.

Future Development

CSKT adopted floodplain development regulations in 1991 which limit the development that can take place in the designated 100-year floodplains and floodway fringe areas of fee lands. The regulations

provide guidance for development in flood-prone areas by restricting uses that are dangerous to public health, safety and property. Uses are delineated as to which uses are permitted, permitted conditionally or prohibited, as outlined in the current floodplain regulations.

The CSKT and City of Polson Subdivision Regulations restrict subdivision of land for building or residential purposes if it is located in the floodway of a 100-year flood event or other land determined to be subject to flooding. If any portion of a proposed subdivision is within 2,000 horizontal feet and 20 vertical feet of a live stream draining an area of 25 square miles or more, and no official floodway delineation or floodway studies of the stream have been made, the subdivider shall provide to the Montana DNRC a flood hazard evaluation, including the calculated 100 year frequency water surface elevations and the 100 year floodplain boundaries. This detailed evaluation must be performed by a licensed professional engineer.

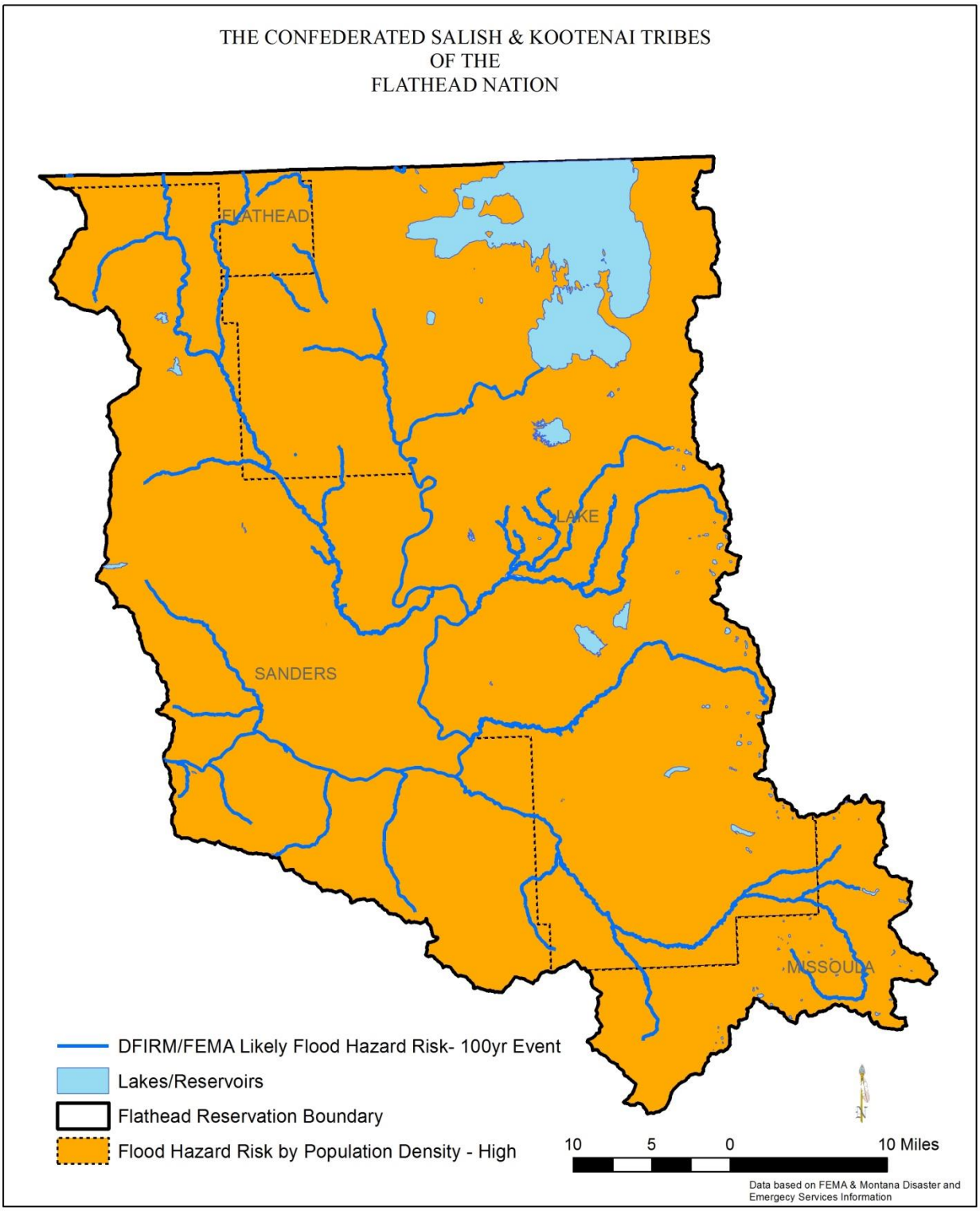


Figure 8A | Flathead Reservation 100 year Flood Hazard

Figure 8B | Polson 100 year Flood Hazard

Figure 8C | Ronan 100 year Flood Hazard

Figure 8D | St. Ignatius 100 year Flood Hazard

TABLE 4.7-3
CSKT VULNERABILITY ANALYSIS – FLOODING

JURISDICTION	RESIDENTIAL PROPERTY EXPOSURE $	# RESIDENCES AT RISK	COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTY EXPOSURE $	# COMMERCIAL, INDUSTRIAL & AGRICULTUAL PROPERTIES AT RISK	CRITICAL FACILITIES EXPOSURE RISK $	# CRITICAL FACILITIES AT RISK	BRIDGE EXPOSURE $	# BRIDGES AT RISK	PERSONS AT RISK	PERSONS UNDER 18 AT RISK
Incorporated Communities & County										
Polson	$10,314,441	49	$1,322,741	11	$0	0	$3,277,204	1	337	33
Ronan	$615,416	7	$14,259,884	16	$0	0	$0	0	94	26
St. Ignatius	$4,604,999	41	$181,280	7	$0	0	$40,232	1	251	71
Remainder of County	$608,995,285	2,389	$24,472,893	287	$0	0	$7,076,280	27	7,659	1,800
CENSUS Designated Places										
Arlee CDP	$2,327,944	24	$438,868	5	$0	0	$126,800	1	261	68
Big Arm CDP	$2,623,311	14	$194,951	6	$0	0	$0	0	76	12
Charlo CDP	$1,121,491	8	$0	0	$0	0	$0	0	118	33
Dayton CDP	$2,243,866	20	$1,170,056	8	$0	0	$78,028	1	32	0
Elmo CDP	$2,106,475	11	$93,200	11	$0	0	$0	0	68	16
Finley Point CDP	$125,650,735	582	$595,542	57	$0	0	$0	0	245	27
Jette CDP	$1,380,312	11	$70,671	2	$0	0	$0	0	56	5
Sėliš Ksanka Qlispė CDP	$1,656,606	5	$61,891	2	$0	0	$0	0	41	11
Kicking Horse CDP	$152,593	2	$553	1	$0	0	$0	0	71	26
King's Point CDP	$21,712,875	106	$25,149	7	$0	0	$0	0	110	17
Lindisfarne CDP	$23,987,580	129	$227,603	7	$0	0	$0	0	141	20
Pablo CDP	$1,310,237	11	$6,391	1	$0	0	$0	0	597	189
Ravalli CDP	$725,543	7	$0	0	$0	0	$0	0	14	0
Rocky Point CDP	$3,394,002	14	$27,433	2	$0	0	$0	0	44	8
Turtle Lake CDP	$0	0	$0	0	$0	0	$0	0	0	0

4.8 PUBLIC HEALTH

CPRI SCORE = 2.5

Description and History

Public health encompasses all health and medical hazards posed to the population on the CSKT Reservation. It is commonly comprised of two components: communicable diseases and social health crises, such as illicit drug and alcohol abuse. Communicable diseases are illnesses caused by organisms such as bacteria, viruses, fungi and parasites. Sometimes the illness is not due to the organism itself, but rather a toxin that the organism produces after it has been introduced into a human host. Communicable disease may be transmitted (spread) either by: airborne transmission from an infected person to another human, from an animal to a human, from an animal to an animal, or from some inanimate object (doorknobs, table tops, etc.) to an individual. A pandemic is a global disease outbreak. Human diseases, particularly epidemics, are possible throughout the nation and CSKT is not immune to this hazard. In addition, livestock and animal disease could have a devastating effect on the economy and food supply on the Reservation and beyond. Highly contagious diseases are the most threatening to both populations. Communicable disease or biological agents could be devastating to the population or economy of CSKT. Human diseases on an epidemic scale, can lead to high infection rates in the population causing isolation, quarantines and potential mass fatalities. Diseases that have been eliminated from the U.S. population, such as smallpox, could be used in bioterrorism attacks.

The following list gives examples of biological agents or diseases that could occur naturally or be used by terrorists as identified by the Centers for Disease Control and Prevention (2011).

Category A

Definition- The U.S. public health system and primary healthcare providers must be prepared to address various biological agents, including pathogens that are rarely seen in the United States. High-priority agents include organisms that pose a risk to national security because they:

- Can be easily disseminated or transmitted from person to person;
- Result in high mortality rates and have the potential for major public health impact;
- Might cause public panic and social disruption; and
- Require special action for public health preparedness.

Agents/Diseases

- Anthrax (*Bacillus anthracis*)
- Botulism (*Clostridium botulinum* toxin)
- Plague (*Yersinia pestis*)
- Smallpox (*variola major*)

- Tularemia (*Francisella tularensis*)
- Viral hemorrhagic fevers (*filoviruses* [e.g., Ebola, Marburg] and *arenaviruses* [e.g., Lassa, Machupo])

Category B

Definition- Second highest priority agents include those that:

- Are moderately easy to disseminate;
- Result in moderate morbidity rates and low mortality rates; and
- Require specific enhancements of Centers for Disease Control and Prevention's diagnostic capacity and enhanced disease surveillance.

Agents/Diseases

- Brucellosis (*Brucella* species)
- Epsilon toxin of *Clostridium perfringens*
- Food safety threats (e.g., *Salmonella* species, *Escherichia coli* O157:H7, *Shigella*)
- Glanders (*Burkholderia mallei*)
- Melioidosis (*Burkholderia pseudomallei*)
- Psittacosis (*Chlamydia psittaci*)
- Q fever (*Coxiella burnetii*)
- Ricin toxin from *Ricinus communis* (castor beans)
- Staphylococcal enterotoxin B
- Typhus fever (*Rickettsia prowazekii*)
- Viral encephalitis (alphaviruses [e.g., Venezuelan equine encephalitis, eastern equine encephalitis, western equine encephalitis])
- Water safety threats (e.g., *Vibrio cholerae*, *Cryptosporidium parvum*)

Category C

Definition- Third highest priority agents include emerging pathogens that could be engineered for mass dissemination in the future because of:

- Availability;
- Ease of production and dissemination; and
- Potential for high morbidity and mortality rates and major health impact.

Agents

- Emerging infectious diseases such as Westnile virus and hantavirus

These diseases/bioterrorism agents can infect populations rapidly, particularly through groups of people in close proximity such as schools, assisted living facilities, and workplaces.

Historically, the Spanish influenza outbreak after World War I in 1918-1919 caused 9.9 deaths per 1,000 people in the State of Montana (Brainerd and Siegler, 2002). Historical records from newspapers show that the influenza outbreak was so bad in 1918 that residents were quarantined from November 30 to December 17 after 18 people died and 53 new cases were discovered. In 1979 and again in late 2003, a flu epidemic hit the U.S. infecting hundreds of people. The swine flu (H1N1) pandemic of 2009 caused a number of fatalities in the country.

The Montana Department of Public Health and Human Services (DPHHS) manages a database of reportable communicable disease occurrences. The communicable disease summary for CSKT between 1997 and 2009 is presented in **Table 4.8-1**.

TABLE 4.8-1
CSKT COMMUNICABLE DISEASE SUMMARY

Disease	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Vaccine Preventable Diseases										
Hepatitis A	-	2	-	-	-	-	-	-		-
Pertussis	-	-	-	1	1	4	1	-	34	-
Tuberculosis	-	-	-	-	1	1	2	1	-	-
Varicella	-	-	-	-	-	-	-	-	-	1
Enteric Diseases										
Campylobacter	3	5	6	6	7	1	5	4	8	3
E Coli	1		1	-	-	-	1	-	-	-
Giardia	3	3	4	5	2	5	7	3	4	7
Salmonella	1	5	2	5	48	7	7	6	1	3
Other Communicable Diseases										
West Nile Virus	-	-	-	-	-	-	1	-	1	1
Lyme	-	-	-	-	-	-	-	-	2	-
Sexually Transmitted Disease	62	108	144	109	107	138	138	147	161	136
TOTAL	**70**	**123**	**157**	**126**	**166**	**156**	**162**	**161**	**211**	**151**

Source: Montana Department of Public Health and Human Services, 2015

A 2008 DPHHS report *on Foodborne, Waterborne, and Institutional Outbreaks* indicates that CSKT experienced two significant Norovirus outbreaks: 220 cases at the Arlee School and 14 cases at the Ronan Long Term Care Facility.

The PDM Planning Team recalled several instances where communicable disease has affected CSKT residents: there was a Salmonella outbreak at an Amish community near St. Ignatius which was caused by raw eggs in ice cream; and, contamination of the St. Ignatius water system required temporary chlorination.

Prior to the mid-1980s, Polson relied primarily on surface water from Hell Roaring Creek for the public water supply. Discoveries of *Giardia lamblia* cysts in the Hell Roaring Creek supply in 1985 led to temporary abandonment of the supply. The City of Polson began developing additional groundwater supplies to replace the surface water system and a shift to groundwater for the Polson public water

supply eliminated the contamination problem (Lake County, 2005).

Vulnerability and Area of Impact

Diseases threaten the population of the Reservation as opposed to structures. The entire population is at risk for contracting disease. The more urban nature of the population centers makes them more vulnerable to rapidly spreading and highly contagious diseases than other more rural parts of the Reservation and Montana. Another contributing factor is that CSKT has a higher percentage of persons over 65 years old than many other communities in Montana. Approximately 16.8 percent of the population is over 65, compared to 14.8 percent for the State of Montana. The number of fatalities on the Reservation would depend on the mortality (disease/agent attack) rate and the percentage of the population affected. The ability to control the spread of disease will be dependent on the contagiousness of the disease and movement of the population. Given the uncertain nature of diseases, CSKT is assumed to have the same communicable disease risk reservation-wide.

Probability and Magnitude

The probability of an epidemic on the Reservation is difficult to assess based on history and current data. Given the rural nature of most of the Reservation, the probability of rapid infection is somewhat less than in urban areas. Individual infectious diseases will likely be reported on an annual basis giving this hazard a probability rating of “highly likely”.

The magnitude of a communicable disease outbreak varies from common viral outbreaks to widespread bacterial infection. During the 1918 influenza pandemic, infection rates approached 28 percent in the United States (Billings, 1997). Other pandemics produced infection rates as high as 35 percent of the total population (World Health Organization, 2009). Such a pandemic affecting CSKT represents a severe magnitude event. Almost any communicable disease that enters the regional population could overwhelm local health resources as would any rapidly spreading bioterrorism event for which there is no available vaccine or containment capability.

Future Development

There are no land use regulations for future development that could impact the communicable disease hazard. New residents and population add to the number of people threatened on the Reservation but the location of such population increases would not increase their vulnerability to the hazard.

4.9 Climate Change

CPRI SCORE = 3.20

Climate change includes changes in flora, fauna, cultural practices and general physical change within the terrain due to increasing and changing weather and temperature patterns. CSKT Climate Change Committee planning efforts have been congruent with mitigation planning. The following is excerpted from the science, data and process of the joint planning efforts.

Description and History

Traditional Ecological Knowledge and Elders

The Tribes "understand that there is a direct relationship among everything in the natural environment. As such, Traditional Ecological Knowledge (TEK) is not only incorporating Tribal traditions and culture, but it is applying Salish, Pend d'Oreille, and Kootenai world views into decision-making." TEK informed the plan in several ways. By taking TEK into account when identifying management priorities, the project team ensured that the Tribes' values are represented by the plan. Additionally, by including Tribal Elders and TEK holders in the project team, CSKT is acting to effectively integrate TEK throughout future climate change planning. Finally, interviews conducted with Tribal Elders gave valuable insight into how climate change has already impacted the ecology of the CSKT homelands.

Local Climate Impacts

In order to better understand how climate will impact the Tribes, the project team drew on existing research of national, regional and local climate impacts. A major asset for the Tribes was the recently completed Missoula County Climate Action: Creating a Resilient and Sustainable Community Report, which provides detailed models and information for climate impacts to the local and adjacent Missoula County. Drawing from this data, several impacts were identified. Amongst them were changes to temperature and precipitation, changes in storm event intensity, reduction in snowpack, hydrological changes including increasing water temperatures, change to forest species composition, reduced air quality, increased wildfire activity and increased stress to fish and wildlife populations. Most recently, hydrological changes and amplified human mobility have created increased opportunities and risks for Aquatic Invasive Species (AIS). The Tribes take this threat seriously and have developed detailed action plans to address issues like invasive mussel species and other aquatic threats. This plan will need to be incorporated into future revisions of this mitigation plan and has been included in its entirety in **Appendix E** until the next scheduled revision of this plan.

Impacts and Vulnerability

The plan organizes the vulnerability assessment into nine categories that reflect Tribal management priorities. Climate impacts to each category are discussed in the plan, based on the climate data discussed above. The project team used a vulnerability matrix to place categories into one of three vulnerability rankings (low, medium or high), based on the level of risk to climate impacts and the adaptive capacity of each category. Brief descriptions of both the expected impacts to each category and the vulnerability of the category to climate changes are provided below.

Forestry

The Tribe identified wildfire's effects on forest and rangeland landscapes as a major climate impact. By analyzing existing fire regimes and using climate modeling across CSKT lands, the project team identified how fire regimes are likely to change in the near future. Projections show several impacts to forest ecosystems, including: fire regimes disturbing forest ecology, spread of invasive species, a decrease in water-holding capacities and increased timber mortality from insects. These impacts will occur across four fire regimes (areas categorized by general patterns of natural fires over time in an ecosystem): non-lethal, mixed, lethal and timberline. Lethal fire regimes are an area of high vulnerability because drought is expected to increase the severity of this fire regime. Conversely, non-lethal fire regimes have a much lower vulnerability, in part because this ecosystem type is more drought resistant. The differences in vulnerability—based on which fire regime is being discussed—demonstrate fine-scale climate impact data will help CSKT to adapt and mitigate climate impacts on forests.

Land

Both short and long-term climate impacts to ecosystem composition and function are a concern for the Tribes. A diverse set of ecosystems, including intermountain grasslands, riparian, prairies and croplands, make up CSKT lands, and each ecosystem has unique vulnerabilities. Of particular concern are vulnerabilities to native plants and ecosystems from by noxious weeds and agriculture that are projected to be magnified by climate impacts.

Fish

Fish habitat and health are expected to be impacted by climate in the short term (in the next ten years). Fish are highly vulnerable to climate impacts, and CSKT has identified fish habitat and species as having low adaptive capacity. Given that the impacts facing fish are slated to occur soon, this area is a high priority for the Tribes moving forward. Some effects on fish may be mitigated by restoring and improving the resiliency of fish habitat. AIS pose a particular threat to the native fish, their habitat, and overall water quality. Strategies to mitigate the spread of AIS are found in **Appendix E**, and will be fully integrated into future updates to this plan.

Wildlife

Major impacts facing wildlife center on habitats becoming drier. Wetlands are expected to experience desiccation (extreme dryness) more frequently, while alpine and grasslands ecosystems are also projected to become drier. These impacts are already becoming evident in CSKT lands. Because of the wide range of ecosystem and species types in CSKT lands, vulnerability is highly variable. Some ecosystems and associated species, such as wetlands and wetland dependent species, are highly vulnerable to climate impacts because of their sensitivity to changes in moisture. Conversely, more resilient ecosystems such as prairies have a medium vulnerability to the climate impacts identified above. In all instances, the plan identifies a trend in which impacts to wildlife will begin slowly and increase over time.

Water

Both water quality and water quantity will be impacted by climate change. Major concerns include decreases to snowpack and increases to water temperatures that may lead certain species to lose habitat and the invasion of non-native aquatic species that could be introduced to Reservation waters from incorrectly cleaned watercrafts or unwashed fishing gear. The plan notes that the water resources important to the Tribes extend beyond Reservation boundaries and that water impacts are therefore a regional, as well as local, issue. Water quality faces a high vulnerability to climate change impacts. This is in part because of existing stresses to the water supply from extensive agricultural production, and from urban water uses such as storm and wastewater runoff. Climate impacts, including changes in seasonality and amount of rainfall, will add further stress to water systems. Because of these vulnerabilities, risk to water quality is high; this has serious implications for aquatic species, human health and agriculture in the area. Water quantity faces a low vulnerability. While precipitation will change in seasonality, annual precipitation is not expected to dramatically decrease. Because of extensive existing infrastructure and the high priority that water quantity has in the community, the adaptive capacity of water quantity is high.

Issues related to wise water management on the Flathead Reservation include:

- Water quality impacts from fertilizers, nutrients, increased sediment loads, pesticides, heavy metals and petroleum products.
- The cumulative effects of water pollutants
- Hazardous materials spills
- Protection of wetlands and other riparian areas
- Safety of dams affecting the Reservation
- Small-scale hydroelectric development
- Flathead Agency Irrigation Division management impacts on fish, wildlife, and water quality and quantity
- Impacts on the quantity of surface and groundwater
- Wise management of all waters in the aboriginal territories of the Salish and Kootenai peoples
- Potential acid rain effects from the surrounding region
- Water rights

Tribal elders expressed concerns about:

- Land use impacts on water quality
- Artificial water level fluctuations created by FAID and Kerr Dam
- Lack of access to Flathead Lake and local streams
- Maintenance of high level of water quality and quantity for cultural and religious uses

Additional concerns raised by other agencies and community members include:

- Maintenance or improvement of water quality
- No additional dam development
- “Wild and scenic river” designations

- Use water conservatively; place shutoff valves on all flowing wells
- Investigate feasible opportunities for cooperative working relationships

Air Quality

Due to increased drought and wildfire events, air quality is projected to decrease in CSKT lands relatively soon (11-16 years). Both dust from dry topsoil and wildfire particulate pose human health risks. While higher particulate data has already been observed at monitoring stations, due to the adaptive capacity of the surrounding communities, who already employ dust mitigation techniques, the project team identified the air quality sector as medium vulnerability. The high adaptive capacity of local communities means that impacts to the air quality sector may be felt, but not as severely as they otherwise would be.

Infrastructure

The Tribes also studied climate impacts to power and housing, including Tribally owned housing. There are no projected impacts to power; it is expected that electricity supply for the community will be unaffected. There is no data available on potential impacts to housing.

People

Several issues affecting Tribal members, including social services, safety and tribal health and human resources are expected to be impacted by climate change. Social services include emergency welfare services to impoverished Tribal members. Given their fragile economic position, these vulnerable Tribal members will need extra care in facing climate impacts. Safety is a concern with regards to storms and floods potentially harming Tribal employees and Tribal members. Health and human resources address the impacts that climate change may have on providing support and healthcare to tribal members. Increased health risks and the potential for storms to disrupt transportation are possible impacts. These categories have highly variable vulnerability, as each subsection has several factors to consider. Some notable concerns include the high vulnerability of foster children and elderly people to climate impacts and a high vulnerability of people to increased pollution-related and heat-related diseases.

Culture

The culture of the Tribes—the Salish, Pend d'Oreille and Kootenai people—may be impacted by climate in several ways. Investigating how climate change will impact the Tribes' culture has two purposes, 1) to understand how climate impacts will affect the cultural survival of the Tribes, and 2) to provide explanations for climate change and adaptation using the Tribes' culture and worldview. Additionally, discussing climate change impacts to culture draws a critical eye to the mindset that enabled climate change; the CSKT hopes that their peoples' perspectives can demonstrate alternative viewpoints to current beliefs and practices about the natural world and human stewardship. Culture has a high likelihood of being impacted and is highly vulnerable to many climate impacts. The adaptive capacity of cultural practices is variable and in many cases uncertain. Given the importance of cultural practices to the identity, well-being and sovereignty of American Indian peoples, this category is an important priority for the Tribes.

4.10 EARTHQUAKE

CPRI SCORE = 2.2

Description and History

An earthquake is ground shaking and radiated seismic energy caused most commonly by a sudden slip on a fault, volcanic or magmatic activity or other sudden stress changes in the earth. An earthquake of magnitude 8 or larger on the Richter scale is termed a great earthquake. Fortunately, Montana has not experienced a great earthquake in recorded history. A great earthquake is not likely in Montana but a major earthquake (magnitude 7.0-7.9) occurred near Hebgen Lake in 1959 and dozens of active faults have generated magnitude 6.5-7.5 earthquakes during recent geologic time.

Earthquakes are measured by two variables, magnitude and intensity. The magnitude of an earthquake, as measured on the Richter scale, reflects the energy release of an earthquake. The intensity of an earthquake is gauged by the perceptions and reactions of observers as well as the types and amount of damage. The intensity of an earthquake is rated by the Modified Mercalli scale. This scale ranks the intensity from I to XII. An earthquake rated as a I, would not be felt except by very few people under especially favorable circumstances. An intensity rating of XII on the other hand would result in total destruction.

A belt of seismicity known as the Intermountain Seismic Belt extends through western Montana, from the Flathead Lake region to the Yellowstone National Park region where the borders of Montana, Idaho, and Wyoming meet. The Intermountain Seismic Belt continues southward through Yellowstone Park, along the Idaho-Wyoming border, through Utah, and into southern Nevada. In western Montana, the Intermountain Seismic Belt is up to 100 km wide. The Flathead Reservation is located within this belt. The map below shows the occurrence and magnitude of earthquakes within the northern portion of the Intermountain Seismic Belt. (Source: MBMG, 2010)

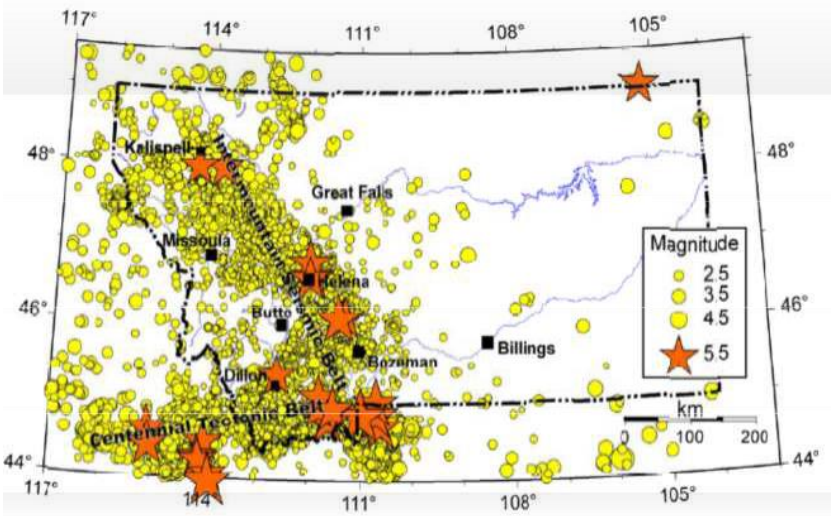


Table 4.10-1 shows the historic earthquakes that have occurred in Montana and the surrounding region since 1900 with a magnitude of 5.5 or greater. Although one significant earthquake occurred in eastern Montana in 1909, the majority have occurred along the Intermountain Seismic Belt and Centennial Tectonic Belt in western Montana.

TABLE 4.10-1
HISTORIC EARTHQUAKES OF MONTANA AND SURROUNDING REGIONS
WITH MAGNITUDES OF 5.5 OR GREATER SINCE 1900

Date	Magnitude	Approximate Location	Date	Magnitude	Approximate Location
05/16/1909	5.5	Northeast Montana	08/18/1959	6.0	Hebgen Lake
06/28/1925	6.6	Clarkston Valley, MT	08/18/1959	5.6	Hebgen Lake
02/16/1929	5.6	Clarkston Valley, MT	08/18/1959	6.3	Hebgen Lake
10/12/1935	5.9	Helena	08/19/1959	6.0	Hebgen Lake
10/19/1935	6.3	Helena	10/21/1964	5.6	Hebgen Lake
10/31/1935	6.0	Helena	06/30/1975	5.9	Yellowstone Park
07/12/1944	6.1	Central Idaho	12/08/1976	5.5	Yellowstone Park
02/14/1945	6.0	Central Idaho	10/28/1983	7.3	Challis, ID
09/23/1945	5.5	Flathead Valley	10/29/1983	5.5	Challis, ID
11/23/1947	6.1	Virginia City	10/29/1983	5.5	Challis, ID
04/01/1952	5.7	Swan Range	08/22/1984	5.6	Challis, ID
08/18/1959	7.5	Hebgen Lake	07/26/2005	5.6	Beaverhead County
08/18/1959	6.5	Hebgen Lake			

Source: Stickney and others, 2000

Major earthquakes are not common on the Flathead Reservation, although a number have been felt since the earliest historical occupation of the region. **Table 4.10-2 shows** earthquakes near CSKT which have occurred in the past 20 years.

TABLE 4.10-2
HISTORIC EARTHQUAKES IN CSKTIN THE PAST 20 YEARS

Date	Magnitude	Depth	Miles from Polson	Date	Magnitude	Depth	Miles from Polson
4/1/1992	4.0	3.1 mi.	24 mi.	4/15/1998	4.0	4.1 mi	30 mi
5/2/1995	4.5	5.6 mi	38 mi	12/22/1998	4.7	7.6 mi	55 mi
6/29/1995	4.1	3.1 mi	37 mi	6/28/2000	4.5	6.1 mi.	76 mi.

Source: http://www.city-data.com/county/Lake_County-MT.html

Vulnerability and Area of Impact

The Reservation lies at the north end of the Intermountain Seismic Belt. Small earthquakes (up to 3.5 on the Richter Scale) are common locally and are prevalent in the Arlee and Polson areas. Earthquakes of this magnitude may be felt, but are not serious enough to cause damage.

In the early 1990s the Mission Fault was discovered. This fault runs along the Mission Front from St. Mary's Lake (southeast of St. Ignatius) to around the Pablo latitude. Trenches were excavated across the fault by the U.S. Bureau of Reclamation to determine the time when the fault last moved. Radio carbon and other dating techniques determined that this occurred approximately 7,000 years ago with an event

the magnitude of 7.5 on the Richter scale. Most of the interseismic period for that fault, estimated to be between 5,000 and 8,000 years, has passed and a return event could occur. There is also a fault scarp along the Jocko Front, named the Jocko Fault. This fault is believed to be relatively young. No trenches have been dug to determine the seismic intervals, but this is another potentially active fault (CSKT Growth Policy, 2003).

The Big Arm area experienced earthquakes of a 4.9 magnitude in 1969 and 1971. Some structural damage, although not widespread, resulted from these quakes. The Montana Bureau of Mines and Geology (MBMG), which monitors seismic activity in Montana and beyond, reports a poor correlation between earthquake epicenters and known faults. Most of the quake activity is not associated with known faults. **Figure 9** indicates the general location of faults on the Reservation.

The U.S. Geologic Survey's (USGS) National Seismic Hazard Mapping Project has created peak ground acceleration maps. The maps show the strength of seismic shaking that has a 2 percent probability of being exceeded in a 50-year period. The strength of the shaking is measured as a percent of the acceleration of gravity (%g). **Figure 9** shows peak ground acceleration zones and the location of CSKT's critical facilities.

Peak ground acceleration increases across the Reservation from northwest to southeast indicating that portions of the Reservation from Polson south to Ronan and along the East Shore of Flathead Lake could experience seismic shaking between 40 and 50%g; enough to cause considerable damage and partial collapse in ordinary buildings. According to Qamar (2008), at 9.2%g the earthquake is felt by all with many frightened. Some heavy furniture is moved with a few instances of fallen plaster. Damage is considered slight. At 18%g, damage is negligible in buildings of good design and construction, slight to moderate in well-built ordinary structures, and considerable in poorly-built or badly designed structures. Some chimneys may be broken, and the shaking is noticed by people driving cars. At 34%g, damage is slight in specially designed structures, considerable in ordinary substantial buildings with partial collapse, and great in poorly built structures. Chimneys and walls may fall and heavy furniture is overturned.

Many structures, including critical facilities within CSKT, have not been seismically assessed. Many of the existing homes, businesses, and critical facilities may not be structured to withstand seismic shaking.

Probability and Hazard Magnitude

The population would have little and mostly likely no warning prior to an earthquake, so the impact to that population could be considered high with little time to take protective actions.

To complete the vulnerability analysis for the earthquake hazard, GIS was used to intersect the USGS peak ground acceleration maps with both the critical facility and MDOR cadastral parcel datasets.

Estimates of vulnerable population were calculated by determining the percent exposure in each census block for the hazard area. Exposure values are presented in **Table 4.10-3.** The *Earthquake Section* in **Appendix C** presents supporting documentation from the risk assessment including a list of critical facilities in the various seismic zones.

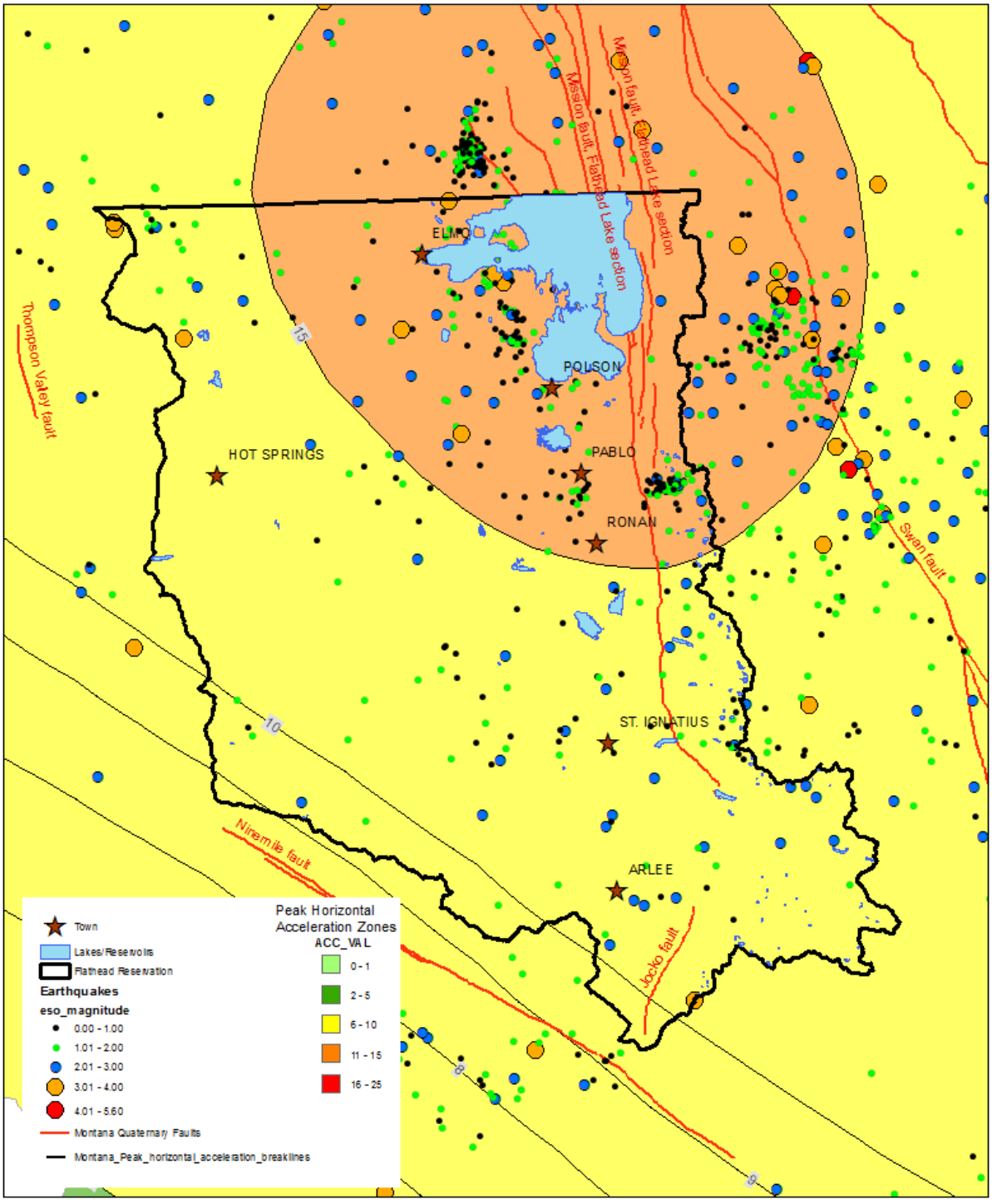
GIS analysis of the earthquake risk to the Reservation indicates that over 147,984 acres are within the 40-50%g zone of peak horizontal acceleration. According to the vulnerability analysis, 3,215 residences, 470 commercial, industrial and agricultural buildings, and 9 critical facilities are located in the 40-50%g zone. Digital data on construction type for the facilities is not available but will be considered in future PDM updates.

Hazard probability was assessed based on hazard frequency over a 10-year period. Since the earthquake hazard does not occur with an intensity to cause significant property damage or loss of life more than once every 10 years it was given a "possibly" probability rating. The PDM Planning Team rated this hazard as "likely" using the Calculated Priority Risk Index.

Future Development

Seismic risk is not addressed in policies outlined in the CSKT. Subdivision regulations also do not address seismic risk.

New construction must adhere to seismic provisions in the 2009 International Building Code (IBC) for commercial buildings and the 2006 International Residential Code (IRC) for residential dwellings, as adopted by the State of Montana. Only the incorporated cities of Polson and Ronan require structural building permits at this time.



Earthquake data from MBMG web server

Figure 9 | Flathead Reservation Earthquake Risk

TABLE 4.10-3
CSKT VULNERABILITY ANALYSIS – EARTHQUAKE (40 - 50% g PEAK GROUND ACCELERATION)

JURISDICTION	RESIDENTIAL PROPERTY EXPOSURE $	# RESIDENCES AT RISK	COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTY EXPOSURE $	# COMMERCIAL, INDUSTRIAL & AGRICULTUAL PROPERTIES AT RISK	CRITICAL FACILITIES EXPOSURE RISK $	# CRITICAL FACILITIES AT RISK	BRIDGE EXPOSURE $	# BRIDGES AT RISK	PERSONS AT RISK	PERSONS UNDER 18 AT RISK
Incorporated Communities & County										
Polson	$262,630,066	2,002	$186,321,779	640	$79,827,069	14	$3,277,204	1	4,471	1,084
Ronan	$0	0	$0	0	$0	0	$0	0	0	0
St. Ignatius	$0	0	$0	0	$0	0	$0	0	0	0
Remainder of County	$623,671,365	3,215	$40,303,575	470	$63,186,190	9	$4,003,148	16	8,346	2,083
CENSUS Designated Places										
Arlee CDP	$0	0	$0	0	$0	0	$0	0	0	0
Big Arm CDP	$0	0	$0	0	$0	0	$0	0	0	0
Charlo CDP	$0	0	$0	0	$0	0	$0	0	0	0
Dayton CDP	$0	0	$0	0	$0	0	$0	0	0	0
Elmo CDP	$0	0	$0	0	$0	0	$0	0	0	0
Finley Point CDP	$139,101,581	568	$2,204,591	71	$0	0	$0	0	480	76
Jette CDP	$0	0	$0	0	$0	0	$0	0	0	0
Kerr CDP	$0	0	$0	0	$0	0	$0	0	0	0
Kicking Horse CDP	$0	0	$0	0	$0	0	$0	0	0	0
King's Point CDP	$55,981,199	311	$109,662	19	$0	0	$0	0	151	24
Lindisfarne CDP	$32,886,119	156	$548,197	23	$0	0	$0	0	100	19
Pablo CDP	$37,391,847	388	$10,588,590	120	$62,567,543	6	$0	0	2,254	744
Ravalli CDP	$0	0	$0	0	$0	0	$0	0	0	0
Rocky Point CDP	$9,224,677	46	$58,498	6	$0	0	$0	0	88	17
Turtle Lake CDP	$746,239	6	$0	0	$0	0	$0	0	209	88

4.11 DAM FAILURE

CPRI SCORE = 1.6

Description and History

Dams have been placed around Montana for many reasons including recreation, flood control, irrigation, water supply, hydroelectricity and mining. Dams are built and owned by a variety of entities such as private individuals, utilities and the government. Dams come in all shapes and sizes from small earthen dams to large concrete structures. The structural integrity of a dam depends on its design, maintenance and weather/drainage situation. Problems arise when a dam fails and people and/or property lie in its inundation area. Dams can fail for a variety of reasons including seismic activity, poor maintenance, overwhelming weather and flow conditions, or by an intentional act. Dam failure can be compared to riverine or flash flooding in the area downstream from the dam, and sometimes for long distances from the dam, depending on the amount of water retained and the drainage area. Others may be located in areas that result in little if any damages during a failure.

The Bureau of Indian Affairs' (BIA) Flathead Agency Irrigation Division (FAID), located on the Flathead Indian Reservation, is the cornerstone of the predominately agricultural community located on the Reservation. The general economy of the area depends on agriculture, which has been greatly enhanced by the presence of the irrigation project. The FAID is characterized by man-made dams and reservoirs and many miles of irrigation canals, which are used to store and distribute water for irrigation.

The FAID facilities include seventeen dams and reservoirs on or near the Reservation to store water for use on the irrigation project. The majority of the dams were built along with the initial irrigation project, during the period 1910 to 1940. The dams and reservoirs are located at strategic locations throughout the project to provide collection and storage of spring runoff, and subsequent release of water during the summer irrigation season.

Examination and evaluation of the existing dams associated with the project reveal that fifteen of the dams are unsafe and pose a high risk to property and people downstream. Many of the reservoirs have spillways that cannot pass a large flood, resulting in flood waters overtopping the dam, creating the potential for dam failure. Several dams have extensive seepage through the earthen fill or foundation material, resulting in piping that may lead to failure of the dam. In addition, earthquakes may cause liquefaction at several of the dams, resulting in breaching of the dam and release of the stored water.

A Department of Interior Dam Safety Task Force, ranked eight of the Flathead dams in the top 150 (greatest hazards category) in the nation. The BIA recognized the hazard potential of the dams, and in 1989, contracted with the Confederated Salish and Kootenai Tribes to conduct a Safety of Dams (SOD) Program on the Reservation. The agreement is designed to correct or ameliorate deficiencies that threaten the integrity of the dams. The contractual agreement, effective March 1, 1989, between the BIA and the

CSKT is authorized under Public Law 93-638. The Agreement and subsequent SOD Program is designed to determine the hazards at the dams, beginning with data collection and analysis, conceptual design, and environmental assessment, final design, and conclude with field construction. The SOD Program is designed to correct SOD deficiencies at a rate of about "one dam per year", resulting in a total Program completion time of approximately fifteen years.

A goal of the Flathead SOD Program is to reduce the potential hazards of unsafe dams to downstream residents and property. To initiate measures to meet this goal, inundation maps based upon dam failure were completed for all of the dams. The inundated areas were field checked to determine total number of residents, and other facilities that would be flooded by dam failure. The maps and surveys determined that a total of 5,900 people live, work or attend school in areas downstream of the seventeen dams. Dam failure would affect two elementary, one middle, and two high schools. In addition, the Tribal college and governmental complex would be inundated. All dam failures would intersect at least one major highway, and one-half of the dams would flood a major railroad. Given the potential for a large loss of life if dam failure were to occur, and the lengthy time period to complete SOD corrections at all dams, the SOD Program constructed the Flathead Early Warning System (EWS) to reduce the potential for loss of life and property damage. The EWS is designed to provide this protection before, during, and after SOD corrections have been completed at all dams.

The Flathead EWS is designed to detect conditions upstream, at, and downstream of dams associated with the FAID that may cause dam failure, or indicate that a failure has occurred. The EWS will provide data, sound alarms and alert proper authorities so that necessary actions such as evacuation of downstream residents will occur, thus reducing or eliminating the loss of life and property damage. The EWS is a vital part of, and used in conjunction with the Emergency Action Plans (EAP), in that the EWS will provide notification that the EAP should be implemented.

The U.S. Army Corps of Engineers, National Inventory of Dams (NID) website keeps a record of dams across the country. Montana DES also keeps an extensive library of Emergency Action Plans (EAPs) for the state's high hazard dams. Hazard ratings are also given to those dams for emergency management planning purposes. These ratings, high, significant and low, are based on the potential for loss of life and property damage from the failure of the dam, not the condition or probability of the dam failing, as described below.

Low Hazard Potential: Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

Significant Hazard Potential: Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities or impact other concerns. Significant hazard

potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

High Hazard Potential: Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

Lake County, including area within the Flathead Reservation, has 10 high hazard dams and several significant or low hazard dams. There are also three dams in adjoining Flathead and Sanders Counties with the potential to impact human lives on the Flathead Reservation if a failure were to occur. **Figures 10A through 10C** shows the high hazard dam locations and their inundation areas on the Reservation, Polson and St. Ignatius, respectively. These dams are described in **Table 4.11-1,** below. No inundation areas would impact the City of Ronan.

Most of the dams on the Reservation were constructed for irrigation purposes many years ago. The average age of the dams on the Reservation is over 80 years. The flagship dam on the Reservation is Sėliš Ksanka Qĺispė Dam, which controls the outflows of Flathead Lake. Ownership of the Sėliš Ksanka Qĺispė hydroelectric facility is Energy Keepers, Inc. The Tribes assumed operations of the dam in the year 2015.

According to the CSKT Growth Policy, the Bureau of Reclamation, in cooperation with the Tribes and the BIA, prioritized the dams on the Flathead Reservation based on risk. Excluding Sėliš Ksanka Qĺispė Dam, which is under the jurisdiction of Federal Energy Regulatory Commission and was not included in the risk analysis, the dams in the county are not considered to be "high risk". The Tribes have installed an early warning system at each dam, which is monitored remotely 24 hours a day. According to the PDM Planning Team, several dams on the Reservation have restrictions because of maintenance issues. Pablo Dam was on the list for three years and Lower Crow Dam has a broken outtake works.

There is no record of failure of a high hazard dam on the Reservation.

TABLE 4.11-1
HIGH HAZARD DAMS IN AND WITH THE POTENTIAL TO IMPACT CSKT

Dam Name	Drainage	Height (feet)	Maximum Storage (acre-ft)	Drainage Area (sq mi)	Year Completed	Purpose	Owner
Sėliš Ksanka Qĺispė	Flathead River	186	1,960,000	7,096	1939	Hydroelectric	Energy Keepers, Inc.
Tabor	Dry Creek	53	23,300	12	1930	Irrigation	CSKT
Mission	Mission Creek	71	8,200	14	1935	Irrigation	CSKT
McDonald	Post Creek	40	8,220	21	1920	Irrigation	CSKT
Ninepipe	Dublin Gulch	38	15,150	8	1923	Irrigation	CSKT
Pablo	Pablo Canal	43	29,600	4	1914	Irrigation	CSKT
Lower Crow	Crow Creek	98	10,350	177	1933	Irrigation	CSKT
Kicking Horse	Dublin Gulch	27	8,350	2	1930	Irrigation	CSKT
Black Lake	Middle Fork Jocko River	60	5,200	4	1967	Irrigation	CSKT
Jocko	Middle Fork Jocko River	20	9,000	5	1937	Recreation	CSKT

Hubbart (Sanders County)	Little Bitterroot River	87	15,840	117	1923	Irrigation	CSKT
Lower Dry Fork (Sanders County)	Dry Fork Creek	26	4,270	19	1921	Irrigation	CSKT
Hungry Horse (Flathead County)	South Fork Flathead River	524	3,588,000	1,640	1953	Hydroelectric	DOI, BuRec

CSKT = Confederated Salish and Kootenai Tribe; DOI = U.S. Department of Interior; BuRec = Bureau of Reclamation

Vulnerability and Area of Impact

Dams that could have the greatest impact to life and property demonstrated by their NID hazard rating are the high hazard dams. Those areas directly downstream from these high hazard dams would be the areas most at risk for loss of life and structural damage. CSKT PDM has Emergency Action Plans for the high hazard dams that could affect CSKT.

To model the exposure from a breach of the high hazard dams on the Reservation, a GIS data layer was created for this project and figures created showing the dam failure hazard (**Figures 10A through 10C**). Inundation areas were digitized from the EAPs and intersected with critical facility and MDOR parcel datasets to determine building exposures. Vulnerable populations were calculated based on the percent census block in the inundation areas. Exposure values are presented in **Table 4.11-2.**

GIS analysis of the dam failure risk to CSKT indicates that over 118,836 acres are within the inundation areas of the high hazard dams, including 2,832 residences, 574 commercial, industrial and agricultural buildings, and 7 critical facilities. The *Dam Failure Section* in **Appendix C** presents supporting documentation from the risk assessment including a list of critical facilities in the inundation areas.

Probability and Magnitude

The probability of a significant dam breach on the Reservation was ranked as “unlikely” by the Planning Team.

Future Development

The CSKT regulations do not address new construction in dam inundation areas.

TABLE 4.11-2
CSKT VULNERABILITY ANALYSIS – DAM FAILURE

JURISDICTION	RESIDENTIAL PROPERTY EXPOSURE $	# RESIDENCES AT RISK	COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTY EXPOSURE $	# COMMERCIAL, INDUSTRIAL & AGRICULTUAL PROPERTIES AT RISK	CRITICAL FACILITIES EXPOSURE RISK $	# CRITICAL FACILITIES AT RISK	BRIDGE EXPOSURE $	# BRIDGES AT RISK	PERSONS AT RISK	PERSONS UNDER 18 AT RISK
Incorporated Communities & County										
Polson	$27,392,343	139	$31,785,452	74	$0	0	$3,277,204	1	543	71
Ronan	$0	0	$0	0	$0	0	$0	0	0	0
St. Ignatius	$4,577,891	35	$480,338	11	$0	0	$40,232	1	149	43
Remainder of County	$603,058,548	2,832	$58,782,990	574	$29,867,535	7	$6,408,838	30	7,422	1,847
CENSUS Designated Places										
Arlee CDP	$4,086,587	18	$394,668	4	$0	0	$126,800	1	203	64
Big Arm CDP	$10,332,194	64	$2,999,894	22	$0	0	$0	0	49	5
Charlo CDP	$8,638,650	103	$816,760	23	$ not available	1	$0	0	280	75
Dayton CDP	$16,904,379	128	$29,745,843	151	$ not available	1	$78,028	1	83	11
Elmo CDP	$6,632,461	42	$646,874	35	$0	0	$0	0	138	34
Finley Point CDP	$193,168,628	711	$995,192	67	$0	0	$0	0	346	50
Jette CDP	$9,150,542	55	$166,620	6	$0	0	$0	0	79	7
Sėliš Ksanka Qlispé CDP	$4,369,129	13	$61,891	2	$0	0	$0	0	48	12
Kicking Horse CDP	$0	0	$0	0	$0	0	$0	0	6	1
King's Point CDP	$38,764,343	187	$29,672	13	$0	0	$0	0	110	17
Lindisfarne CDP	$48,498,948	235	$478,624	20	$0	0	$0	0	196	30
Pablo CDP	$24,177,458	283	$9,681,452	106	$29,867,535	5	$0	0	2,071	683
Ravalli CDP	$1,137,479	12	$0	0	$0	0	$0	0	14	0
Rocky Point CDP	$9,702,350	38	$29,064	4	$0	0	$0	0	88	17
Turtle Lake CDP	$0	0	$0	0	$0	0	$0	0	60	12

4.12 RISK ASSESSMENT SUMMARY

This section summarizes the results of the individual risk assessments presented under the hazard profiles. Annual loss estimates are presented for each hazard where damage data is available. Future development projects on the Reservation are discussed as they relate to the hazard areas.

Vulnerability Analysis - Loss Estimation Summary

Estimating potential losses and calculating risk requires evaluating where hazard areas and vulnerabilities to them coincide, how frequently the hazards occur, and then estimating the magnitude of damage resulting from a hazard event. Annualized loss was computed for the hazards where damage data was available. *Section 4.1* presents the methodology for loss estimation calculations. **Tables 4.12-1 through 4.12-4.** Present annual loss for the various hazards for residential, commercial (including industrial and agricultural buildings), and critical facilities on the Reservation and incorporated communities. **Appendix C** contains supporting information.

Figures 11A through 11E present the composite of hazard prone areas on the Reservation, Polson, Ronan, St. Ignatius and Pablo, respectively. These figures show future development projects identified during the planning process and/or can be used to help locate future projects outside hazard-prone areas. **Table 4.12-5** presents a matrix of each identified future development project, showing which hazards they will be exposed to. Data on proposed construction method and estimated cost were not available.

TABLE 4.12-1
HAZARD VULNERABILITY SUMMARY; CSKT

Hazard	Residential Building Stock $ Exposure in Hazard Area	# Residential Structures in Hazard Area	Residential Building Stock $ Annual Loss	Commercial, Industrial & Agricultural Building Stock $ Exposure in Hazard Area	# Commercial, Industrial & Agricultural Structures in Hazard Area	Commercial, Industrial & Agricultural Building Stock $ Annual Loss	Critical Facility $ Exposure in Hazard Area	# Critical Facilities Exposure in Hazard Area	Critical Facilities $ Annualized Loss	Persons in Hazard Area	Under 18 in Hazard Area
Wildfire	$1,239,691,127	6,265	$55,614	$71,969,078	927	$3,229	$69,358,669	21	$3,112	14,024	3,507
Transportation Accidents/Hazardous Material Incidents	$852,497,082	5,619	NA	$349,089,825	1,767	NA	$163,529,316	57	NA	17,342	4,371
Landslides	$65,526,956	384	NA	$10,389,748	71	NA	$ not available	1	NA	2,266	448
Structure Fire	$1,900,032,008	10,026	$351,686	$152,796,089	1,713	$28,282	$72,839,343	37	$13,482	21,545	5,424
Severe Winter Weather	$1,900,032,008	10,026	$7,905	$152,796,089	1,713	$636	$72,839,343	37	$303	21,545	5,424
Flooding	$608,995,285	2,389	$5,122	$24,472,893	287	$206	$0	0	NA	7,659	1,800
Severe Summer Weather	$1,900,032,008	10,026	$42,215	$152,796,089	1,713	$3,395	$72,839,343	37	$1,618	21,545	5,424
Earthquakes	$623,671,365	3,215	NA	$40,303,575	470	NA	$63,186,190	9	NA	8,346	2,083
Dam Failure	$603,058,548	2,832	NA	$58,782,990	574	NA	$29,867,535	7	NA	7,422	1,847

NA = Not Available. Annual loss cannot be computed due to the absence of historic property damage figures that are required to calculate magnitude. See Section 4.1 on page 4-1 which describes risk assessment methodology for additional information.
Flooding exposure is presented for the 100-year event.
Earthquake exposure is presented for 40-50 %g peak ground acceleration
It should be noted that there are some inherent inaccuracies using a percentage of census block population to compute the number of individuals living in the hazard area. More persons than actually reside in the hazard area where census blocks are large.

TABLE 4.12-2
HAZARD VULNERABILITY SUMMARY; CITY OF POLSON

Hazard	Residential Building Stock $ Exposure in Hazard Area	# Residential Structures in Hazard Area	Residential Building Stock $ Annual Loss	Commercial, Industrial & Agricultural Building Stock $ Exposure in Hazard Area	# Commercial, Industrial & Agricultural Structures in Hazard Area	Commercial, Industrial & Agricultural Building Stock $ Annual Loss	Critical Facility $ Exposure in Hazard Area	# Critical Facilities Exposure in Hazard Area	Critical Facilities $ Annualized Loss	Persons in Hazard Area	Under 18 in Hazard Area
Wildfire	$0	0	NA	$0	0	NA	$0	0	NA	0	0
Transportation Accidents/Hazardous Material Incidents	$90,923,471	890	NA	$149,850,759	517	NA	$31,062,173	11	NA	2,721	611
Landslides	$0	0	NA	$0	0	NA	$0	0	NA	0	0
Structure Fire	$264,253,693	2,014	$48,912	$186,643,179	641	$34,547	$80,471,317	14	$14,895	4,488	1,085
Severe Winter Weather	$264,253,693	2,014	$1,099	$186,643,179	641	$776	$80,471,317	14	$335	4,488	1,085
Flooding	$10,314,441	49	$87	$1,322,741	11	$11	$0	0	NA	337	33
Severe Summer Weather	$264,253,693	2,014	$5,871	$186,643,179	641	$4,147	$80,471,317	14	$1,788	4,488	1,085
Earthquakes	$262,630,066	2,002	NA	$186,321,779	640	NA	$79,827,069	14	NA	4,471	1,084
Dam Failure	$27,392,343	139	NA	$31,785,452	74	NA	$0	0	NA	543	71

NA = Not Available. Annual loss cannot be computed due to the absence of historic property damage figures that are required to calculate magnitude. See Section 4.1 on page 4-1 which describes risk assessment methodology for additional information.
Flooding exposure is presented for the 100-year event.
Earthquake exposure is presented for 40-50 %g peak ground acceleration
It should be noted that there are some inherent inaccuracies using a percentage of census block population to compute the number of individuals living in the hazard area. More persons than actually reside in the hazard area where census blocks are large.

TABLE 4.12-3
HAZARD VULNERABILITY SUMMARY; CITY OF RONAN

Hazard	Residential Building Stock $ Exposure in Hazard Area	# Residential Structures in Hazard Area	Residential Building Stock $ Annual Loss	Commercial, Industrial & Agricultural Building Stock $ Exposure in Hazard Area	# Commercial, Industrial & Agricultural Structures in Hazard Area	Commercial, Industrial & Agricultural Building Stock $ Annual Loss	Critical Facility $ Exposure in Hazard Area	# Critical Facilities Exposure in Hazard Area	Critical Facilities $ Annualized Loss	Persons in Hazard Area	Under 18 in Hazard Area
Wildfire	$989,415	7	$44	$0	0	$0	$0	0	$0	27	12
Transportation Accidents/Hazardous Material Incidents	$50,690,419	683	NA	$110,298,707	420	NA	$57,042,214	12	NA	1,617	432
Landslides	$0	0	NA	$0	0	NA	$0	0	NA	0	0
Structure Fire	$68,159,449	869	$12,616	$111,261,523	428	$20,594	$59,905,388	16	$11,088	1,871	518
Severe Winter Weather	$68,159,449	869	$284	$111,261,523	428	$463	$59,905,388	16	$249	1,871	518
Flooding	$615,416	7	$5	$14,259,884	16	$120	$0	0	$0	94	26
Severe Summer Weather	$68,159,449	869	$1,514	$111,261,523	428	$2,472	$59,905,388	16	$1,331	1,871	518
Earthquakes	$0	0	NA	$0	0	NA	$0	0	NA	0	0
Dam Failure	$0	0	NA	$0	0	NA	$0	0	NA	0	0

NA = Not Available. Annual loss cannot be computed due to the absence of historic property damage figures that are required to calculate magnitude. See Section 4.1 on page 4-1 which describes risk assessment methodology for additional information.

Flooding exposure is presented for the 100-year event.

Earthquake exposure is presented for 40-50 %g peak ground acceleration

It should be noted that there are some inherent inaccuracies using a percentage of census block population to compute the number of individuals living in the hazard area. More persons than actually reside in the hazard area where census blocks are large.

TABLE 4.12-4
HAZARD VULNERABILITY SUMMARY; TOWN OF ST. IGNATIUS

Hazard	Residential Building Stock $ Exposure in Hazard Area	# Residential Structures in Hazard Area	Residential Building Stock $ Annual Loss	Commercial, Industrial & Agricultural Building Stock $ Exposure in Hazard Area	# Commercial, Industrial & Agricultural Structures in Hazard Area	Commercial, Industrial & Agricultural Building Stock $ Annual Loss	Critical Facility $ Exposure in Hazard Area	# Critical Facilities Exposure in Hazard Area	Critical Facilities $ Annualized Loss	Persons in Hazard Area	Under 18 in Hazard Area
Wildfire	$0	0	$0	$0	0	$0	$0	0	$0	0	0
Transportation Accidents/Hazardous Material Incidents	$11,038,483	122	NA	$4,050,397	34	NA	$0	0	NA	315	76
Landslides	$0	0	$0	$0	0	$0	$0	0	$0	0	0
Structure Fire	$28,062,140	323	$5,194	$11,480,359	98	$2,125	$10,134,008	7	$1,876	842	254
Severe Winter Weather	$28,062,140	323	$117	$11,480,359	98	$48	$10,134,008	7	$42	842	254
Flooding	$4,604,999	41	$39	$181,280	7	$2	$0	0	$0	251	71
Severe Summer Weather	$28,062,140	323	$623	$11,480,359	98	$255	$10,134,008	7	$225	842	254
Earthquakes	$0	0	$0	$0	0	$0	$0	0	$0	0	0
Dam Failure	$4,577,891	35	NA	$480,338	11	NA	$0	0	NA	149	43

NA = Not Available. Annual loss cannot be computed due to the absence of historic property damage figures that are required to calculate magnitude. See Section 4.1 on page 4-1 which describes risk assessment methodology for additional information.

Flooding exposure is presented for the 100-year event.

Earthquake exposure is presented for 40-50 %g peak ground acceleration

It should be noted that there are some inherent inaccuracies using a percentage of census block population to compute the number of individuals living in the hazard area. More persons than actually reside in the hazard area where census blocks are large.

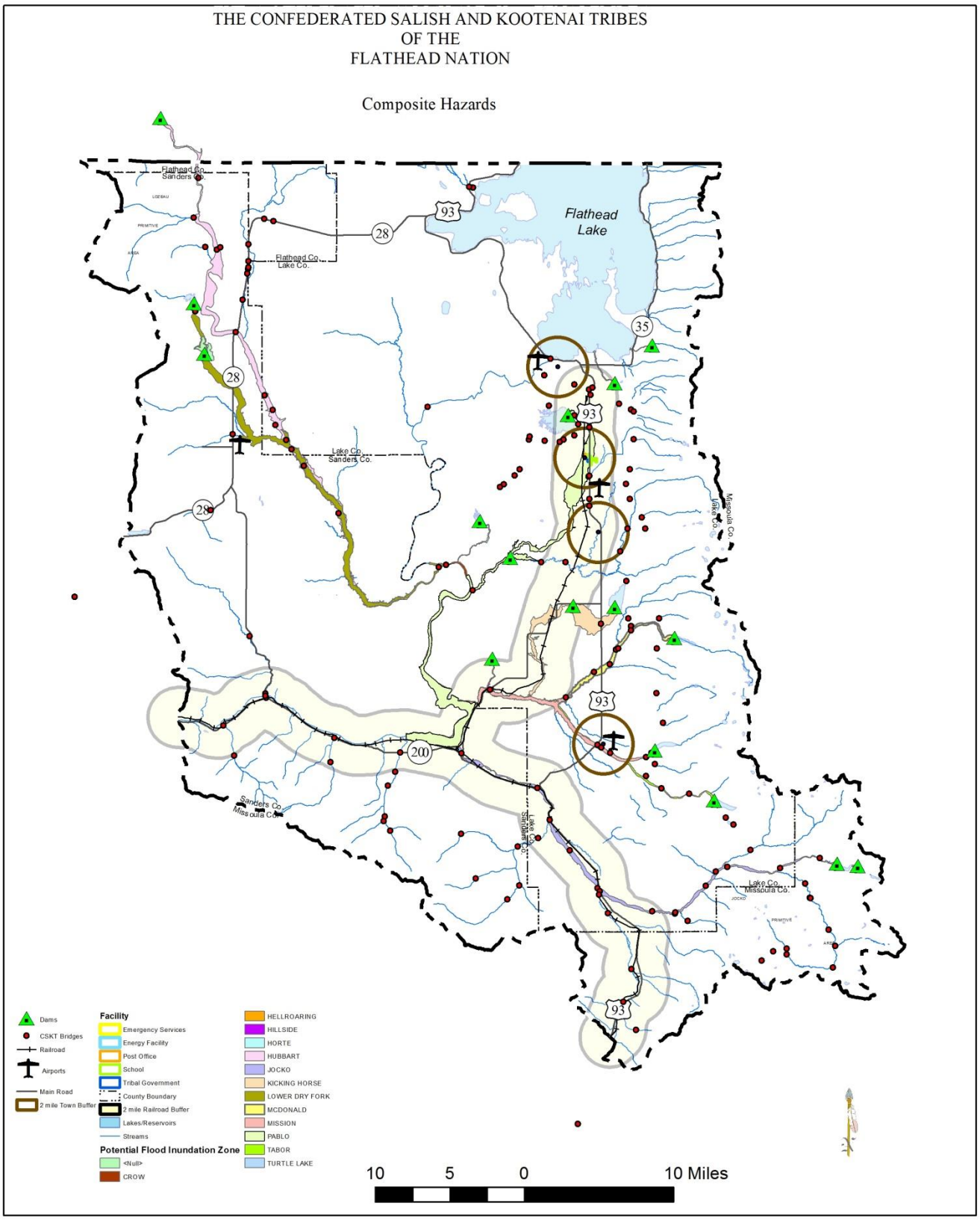


Figure 11A | Flathead Reservation Composite Hazards

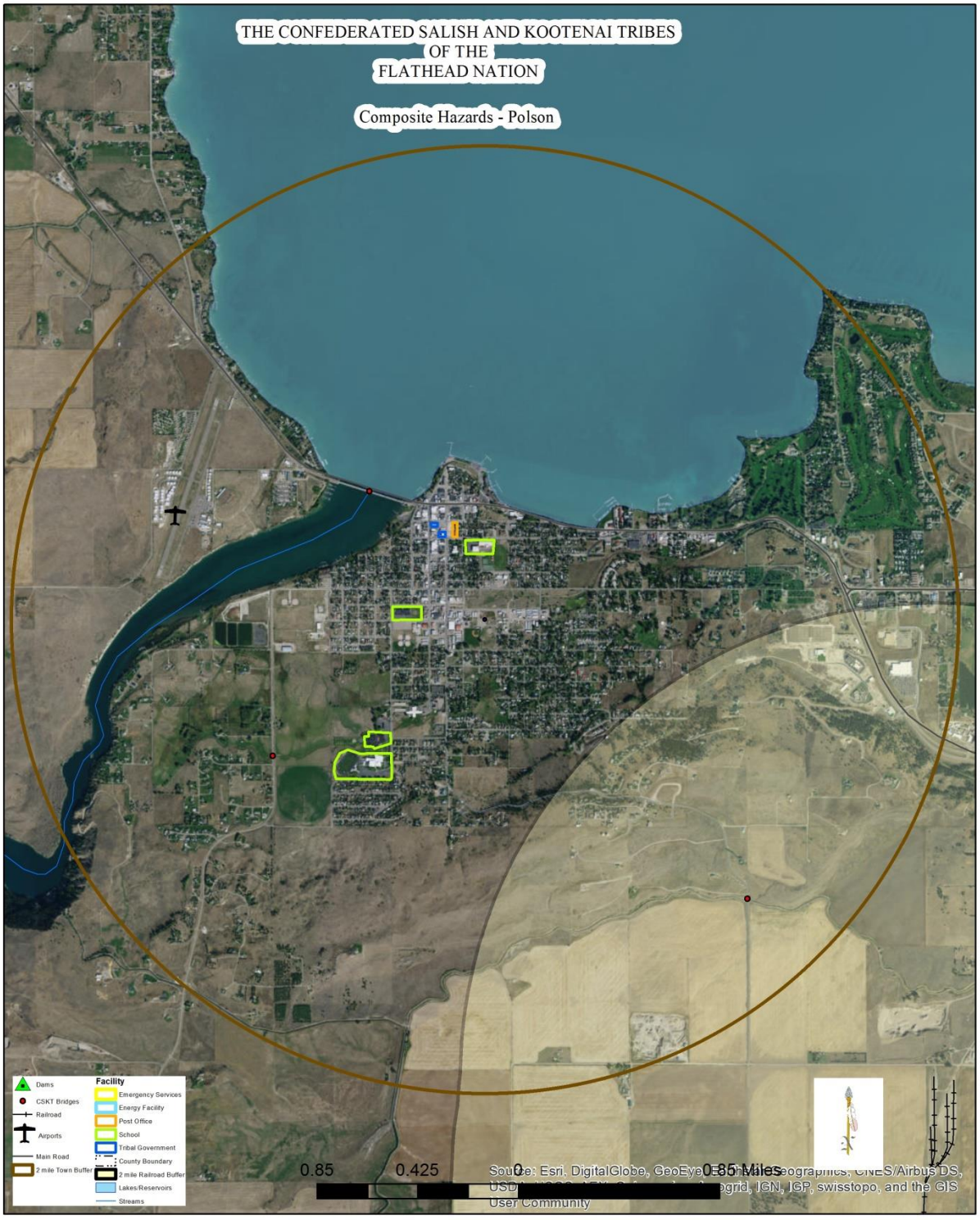


Figure 11B | Polson Composite Hazards

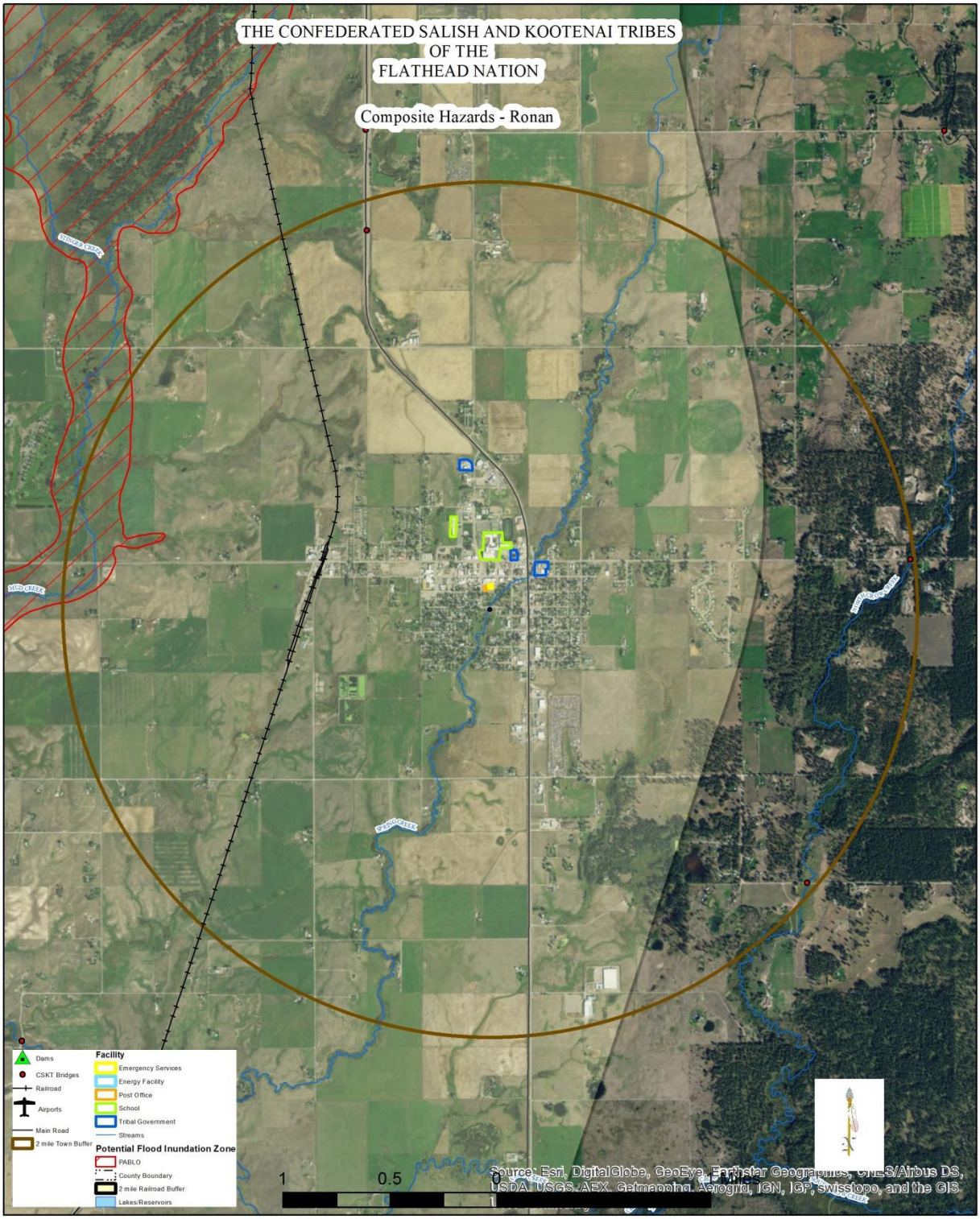


Figure 11C | Ronan Composite Hazards

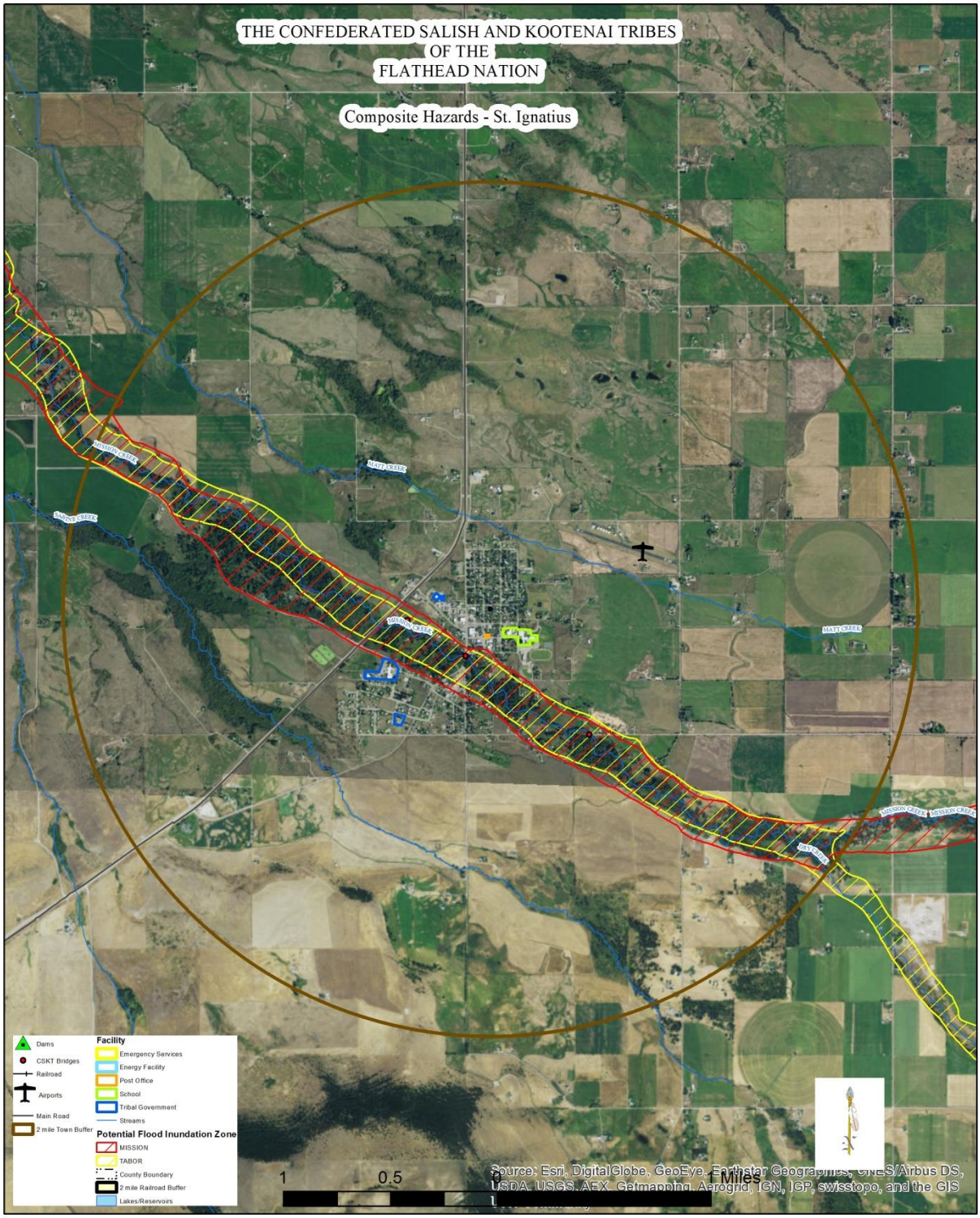


Figure 11D | St. Ignatius Composite Hazards

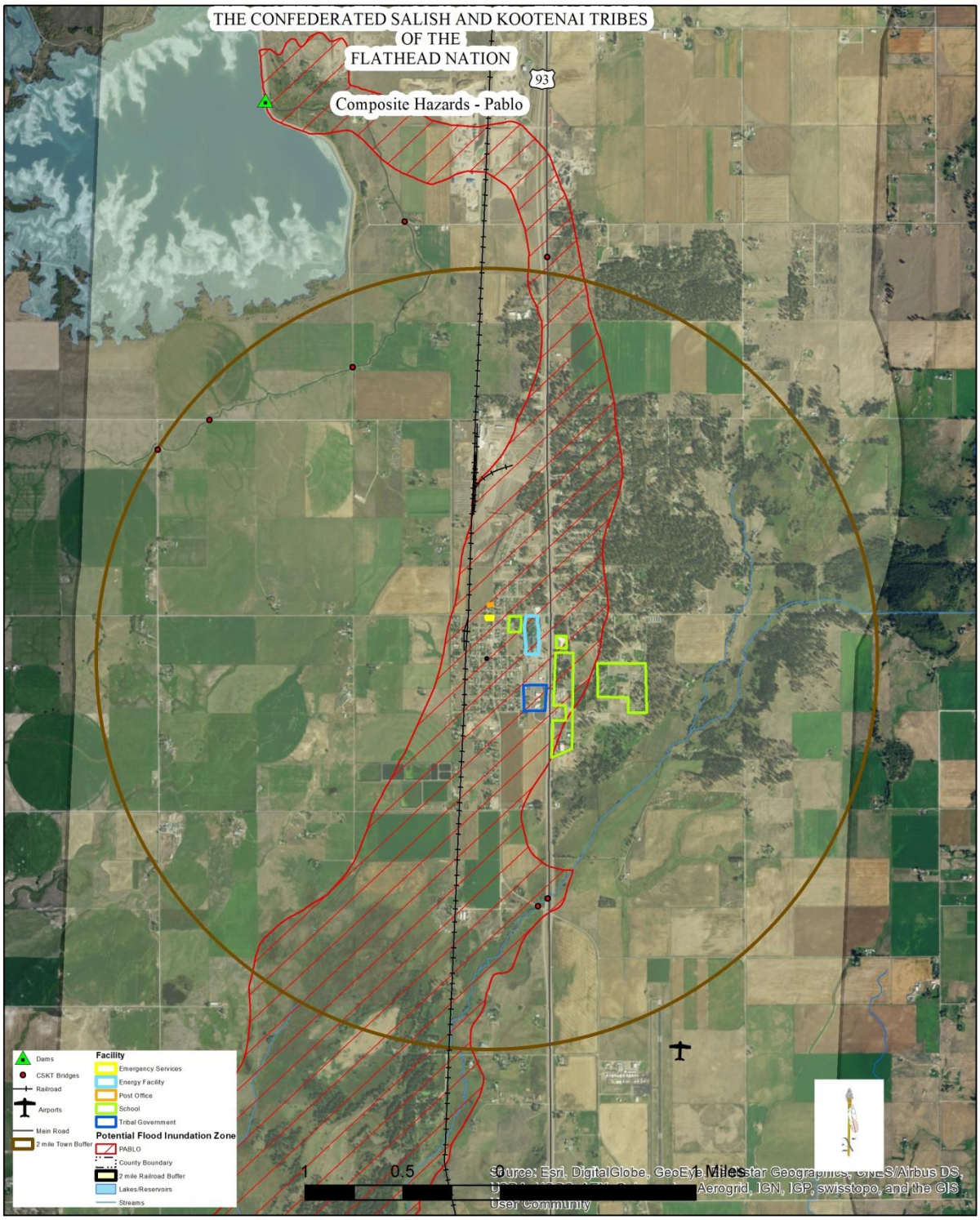


Figure 11E | Pablo Composite Hazards

TABLE 4.12-5
FUTURE DEVELOPMENT SUMMARY

Proposed Project	Hazard Areas									
	Wildfire	Transportation Accidents/Hazardous Material Incidents	Landslides	Structure Fire	Severe Winter Weather	Flooding	Communicable Disease	Severe Summer Weather	Earthquake (40-50%g)	Dam Failure
Ronan Lagoon System	No	Yes	No	Yes	Yes	No	Yes	Yes	No	No
Ronan Stormwater Treatment Facility	No	Yes	No	Yes	Yes	No	Yes	Yes	No	No
Core Motion Building Facility	No	Yes	No	Yes	Yes	No	Yes	Yes	No	No
St. Ignatius – Water System Update	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes
Polson Stormwater Treatment Facility	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes
Search and Rescue Building	No	Yes	No	Yes	Yes	No	Yes	Yes	No	No

5.0 MITIGATION STRATEGY

Hazard mitigation, as defined by the Disaster Mitigation Act of 2000, is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. The development of a mitigation strategy allows the community to create a vision for preventing future disasters, establish a common set of mitigation goals, prioritize actions and evaluate the success of such actions.

Specific mitigation goals and projects were developed for CSKT by the Planning Team and reviewed and enhanced at the public meetings. A matrix developed for project ranking emphasizing cost-benefit and input from local officials was used to determine project prioritization. Project implementation is discussed at the conclusion of this section. **Appendix D** contains supporting documentation for the mitigation strategy including: example mitigation projects and a mitigation action plan with individual project worksheets.

Working in conjunction with existing Lake County projects, the Tribes have identified the projects that have particular benefit to the Flathead Reservation and CSKT. In recognizing that the majority of CSKT residents are also Lake County residents and vice versa, the mitigation strategies presented are focused both on the Reservation specifically and, more broadly, CSKT residents as a whole. The mitigation strategy in this PDM Plan update has been expanded to include several additional hazards beyond what was developed in the 2005 Plan. **Appendix D** presents a table summarizing the status of the 2005 mitigation strategy, identifying completed projects and reconciling projects that were not carried forward to the 2012 strategy.

5.1 HAZARD MITIGATION GOALS

The PDM Plan goals describe the overall direction that CSKT can take to work toward mitigating risk from natural and man-made hazards and avoid long-term vulnerabilities to these hazards. Mitigation goals for this plan are listed below.

- Reduce Impacts from Wildfire
- Reduce Impacts from Transportation Accidents
- Reduce Impacts from Landslides
- Reduce Impacts from Structure Fires
- Reduce Impacts from Climate Change
- Reduce Impacts from Flooding
- Reduce Impacts from Public Health
- Reduce Impacts from Severe Weather
- Reduce Impacts from Earthquakes
- Reduce Impacts from Dam Failure
- Reduce Impacts from All Hazards
- Protect, Secure and maintain Cultural Sites and Customs

5.2 HAZARD MITIGATION OBJECTIVES AND PROJECTS

The Planning Team reviewed a wide range of mitigation projects prior to determining what actions to include in the CSKT PDM Plan (**Appendix D**). Particular attention was given to new and existing buildings and infrastructure, and developing appropriate mitigation strategies for these facilities. Prior to analyzing and prioritizing the mitigation actions, projects were grouped under the following objectives.

- Prevention
- Property Protection
- Public Education and Awareness
- Natural Resource Protection
- Structural Projects
- Emergency Services

Projects included in the 2012 CSKT mitigation strategy are presented in **Table 5.4-1**.

5.3 PROJECT RANKING AND PRIORITIZATION

Each of the proposed projects has value; however, time and financial constraints do not permit all projects to be implemented immediately. By prioritizing the actions, the most critical, cost effective projects can be achieved in the short term.

A cost-benefit matrix was developed to rank the mitigation projects using the following criteria. Each project was assigned a "high", "medium", or "low" rank for *Population Impacted, Property Impacted*, *Project Feasibility* and *Cost*, as described below:

- For the *Population Protected* category, a "high" rank represents greater than 50 percent of CSKT residents would be protected by implementation of the mitigation strategy; a "medium" rank represents 20 to 50 percent of CSKT residents would be protected; and, a "low" rank represents less than 20 percent of CSKT residents would be protected.

- For the *Property Protected* category, a "high" represents that greater than $500,000 worth of property would be protected through implementation of the mitigation strategy; "medium" represents that $100,000 to $500,000 worth of property would be protected; and, "low" would be less than $100,000 would be protected.

- For the *Project Feasibility* category a "high" rank represent that technology is available and implementation is likely; a "medium" rank indicates technology may be available but implementation could be difficult; and, a "low" rank represents that no technology is available or implementation would be unlikely.

- For the *Project Cost* category, a "high" represents that the mitigation project would cost more than $500,000; a "medium" rank represents the project cost would be between $100,000 and $500,000; and, "low" represents the project would cost less than $100,000.

The overall cost-benefit was then calculated by summing the total score for each project. **Table 5.3-1** presents the cost-benefit scoring matrix. The mitigation action plans in **Appendix D** present the scoring of each project.

TABLE 5.3-1
COST-BENEFIT SCORING MATRIX

	Population Protected	Property Protected	Project Feasibility	Cost
High	3	3	3	1
Medium	2	2	2	2
Low	1	1	1	3

After considering all mitigation projects, the Planning Team prioritized the projects as high, medium, or low based on which projects were most needed to protect life and property. Prioritization of the projects serves as a guide for choosing and funding projects. **Table 5.4-1** and the mitigation action plans in **Appendix D** present the County priority for each project.

5.4 PROJECT IMPLEMENTATION

The Planning Team reviewed the projects and assigned a corresponding county/city/town department responsible for its implementation. Cooperating organizations for implementation may also include local, federal or regional agencies that are capable of implementing activities and programs. The Planning Team identified a schedule for implementation and potential funding sources. The schedule for implementation included several categories including: "on-going" for projects that are part of the CSTK's emergency management program; "short-term" for projects to be completed within 1-2 years; "mid-term" for projects to be completed within 3-4 years; "long-term" for projects to be completed in 5 or more years; and "Year 1-5" for projects which will span the entire planning period. Implementation details are shown in **Table 5.4-1** and in the mitigation action plans in **Appendix D** with the understanding that all projects listed have some impact on the Tribe's ability to protect, maintain, and secure cultural sites and customs; but reflect the numbering and labeling from Lake County's most recent PDM plan in order to maintain continuity and increase efficiency for joint projects. Potential funding sources are discussed in *Section 6.3*. The CSKT DES will be responsible for the administration of mitigation projects. CSKT was awarded a planning grant to develop this plan update. Currently, CSKT has no other FEMA grants or programs.

TABLE 5.4-1
CSKT MITIGATION STRATEGY

Goal	Objective	Project	Ranking / Score County Priority	Jurisdictions	Responsible Agency / Department	Schedule	Potential Funding Source
Goal 1 - Reduce Impacts from Wildfire	Objective 1.1 - Enhance Emergency Services to Mitigate Impacts from Wildfire	1.1.1 - Identify and facilitate additional training for firefighters.	High / 11 points Medium Priority	Reservation Wide	CSKT Forestry	Ongoing	Grants, Fire Service Training School
	Objective 1.2 - Protect Property from Wildfire	1.2.1 - Continue to be proactive in fuel management reservation- wide.	High / 10 points Medium Priority	Reservation Wide	CSKT Forestry	Ongoing	CSKT Fuel Reduction Program
		1.2.2 - Support interagency collaboration on fuel management projects.	High / 11 points Medium Priority	Reservation Wide	CSKT Forestry	Ongoing	BIA
		1.2.3 - Continue to support and enhance reservation- fuel reduction programs.	High / 11 points Medium Priority	Reservation Wide	CSKT Forestry	Ongoing	CSKT Fuel Reduction Program, BIA
	Objective 1.3 - Provide Public Education and Awareness on Wildfire	1.3.1 - Provide wildfire mitigation information to urban interface landowners.	High / 11 points High Priority	Reservation Wide	CSKT Forestry	Ongoing	CSKT
Goal 2 - Reduce Impacts from Transportation Accidents	Objective 2.1 - Enhance Emergency Services to Mitigate Impacts from Transportation Accidents	2.1.1 - Coordinate emergency response activities between railroad, Tribes, counties and municipalities.	High / 10 points Medium Priority	Reservation Wide	TERC/LEPC, Fire Chiefs	Ongoing	CSKT, VFD
		Project 2.1.2 - Encourage local emergency responders to have adequate training to respond to hazardous material incidents consistent with local capabilities.	High / 10 points High Priority	Reservation Wide	TERC/LEPC, DES	Ongoing	CSKT
		2.1.3 - Work with State and County to enhance chain-up areas along Highway 93.	Medium/ 9 points Medium Priority	Hwy 93	TERC/LEPC	Ongoing	CSKT, State, Fed
		2.1.4 - Continue to work with MRL and encourage ongoing training with local responders.	Medium/ 7 points Medium Priority	Reservation Wide	DES	Ongoing	CSKT, County, Fed
	Objective 2.2 - Implement Actions to Prevent Impacts from Transportation Accidents	2.2.1 - Explore the possibility of a Polson Bypass for truck traffic carrying hazardous material loads and/or a signed hazardous material route to avoid population center.	Medium/ 9 points Low Priority	Polson District	Commissioners	Long-term	CSKT, County, Fed
		2.2.2 - Encourage truck traffic to use Highway 93 instead of Highway 35 around Flathead Lake.	High / 10 points Medium Priority	Hwy 93	DES, TERC/LEPC, RFDs	Ongoing	CSKT, County

TABLE 5.4-1
CSKT MITIGATION STRATEGY

Goal	Objective	Project	Ranking / Score County Priority	Jurisdictions	Responsible Agency / Department	Schedule	Potential Funding Source
Goal 2 - Reduce Impacts from Transportation Accidents	Objective 2.3 - Provide Public Education and Awareness on Transportation Accidents	2.3.1 - Increase public awareness of common hazardous materials stored, used or transported through the area.	High / 10 points Medium Priority	Reservation Wide	TERC/LEPC	Ongoing	CSKT, FED
Goal 5 - Reduce Impacts from Severe Weather	Objective 5.1 - Enhance Emergency Services to Mitigate Impacts from Severe Weather	5.1.1 - Develop coordinated management strategies for de-icing roads, plowing snow, clearing roads of fallen trees, and clearing debris from public and private property.	High / 10 points Medium Priority	Reservation Wide	County Road Dept., City Public Works, MDT, Tribal Housing	Ongoing	CSKT, FED, State County
		5.1.2 - Partner with responsible agencies and organizations to design and implement programs that reduce risk to life, property, and utility systems.	High / 11 points High Priority	Reservation Wide	DES, Commissioners, Cities, Tribe, MDT	Ongoing	CSKT, FED, State County
		5.1.3 - Continue to aggressively address rural locations within the county so people's residences can be found for rescue purposes.	Medium / 8 points High Priority	Reservation Wide	CSKT GIS, CSKT Planning	Ongoing	CSKT, FED, State County
		5.1.4 - Enhance weather monitoring to attain earlier severe winter storm warnings through collaboration with NWS.	Medium / 9 points Medium Priority	Reservation Wide	DES	Ongoing	CSKT, FED, State County

TABLE 5.4-1 CSKTMITIGATION STRATEGY							
Goal	**Objective**	**Project**	**Ranking / Score County Priority**	**Jurisdictions**	**Responsible Agency / Department**	**Schedule**	**Potential Funding Source**
Goal 5 - Reduce Impacts from Severe Weather	Objective 5.2 - Provide Public Education and Awareness on Severe Weather	5.2.1 - Continue to distribute educational material on how to prepare for winter.	High / 10 points Medium Priority	Reservation Wide	DES	Ongoing	CSKT, County, State
		5.2.2 - Conduct public outreach campaign where special needs residents would provide information on where they live and what they need. Explore software program to allow county and reservation to develop and maintain database with this	Medium / 8 points Medium Priority	Reservation Wide	County Public Health Dept., E911, DES, Tribe	Long-term	Grants
		5.2.3 - Promote the National Weather Service's Winter Weather Awareness Week (third full week in October).	High / 10 points Medium Priority	Reservation Wide	TERC/LEPC	Ongoing	County, NWS
Goal 6 - Reduce Impacts from Flooding	Objective 6.1 - Implement Actions to Prevent Impacts from Flooding	6.1.1 - Support FEMA's Map Modernization Program which will provide CSKT with updated floodplain mapping (DFIRMS).	Medium / 8 points High Priority	Reservation Wide	CSKT DNR	Ongoing	CSKT, Fed
		6.1.2 - Update flood regulations when DFIRMs are adopted to protect future development.	High / 10 points High Priority	Reservation Wide	CSKT	Short-term	CSKT, Fed
	Objective 6.2 - Implement Actions to Protect Natural Resources from Flooding	6.2.1 - Work with partner agencies to identify erosion and sediment control issues.	Medium / 6 points High Priority	Reservation Wide	CSKT DNR	Ongoing	CSKT, Fed
	Objective 6.3 - Implement Structural Projects to Reduce Impacts from Flooding	6.3.1 - Continue to resize and upgrade culverts in various locations throughout the county.	Medium / 9 points Medium Priority	Reservation Wide	CSKT, MDT, County	Ongoing	CSKT, FEMA, State
		6.3.2 - Identify locations throughout the county where culverts are needed.	High / 10 points Medium Priority	Reservation Wide	CSKT DNR	Ongoing	County, FEMA, State
	Objective 6.4 - Enhance Emergency Services to Mitigate Impacts from Flooding	6.4.1 - Continue to work with landowners, ranchers, and response agencies on flood response activities.	High / 11 points Medium Priority	Reservation Wide	CSKT DNR, DES	Ongoing	CSKT
		6.4.2 - GPS all homes along waterways.	Medium / 9 points Low Priority	Reservation Wide	CSKT DNR	Long-term	CSKT, Fed

TABLE 5.4-1
CSKT MITIGATION STRATEGY

Goal	Objective	Project	Ranking / Score County Priority	Jurisdictions	Responsible Agency / Department	Schedule	Potential Funding Source
Goal 6 - Reduce Impacts from Flooding	Objective 6.5 - Provide Public Education and Awareness on Flooding	6.5.1 - Continue to educate homeowners on purchasing flood insurance through the National Flood Insurance Program through availability of information.	High / 10 points Low Priority	Reservation Wide	County Planning Dept.	Ongoing	County, FEMA
		6.5.2 - Educate homeowners on flood concerns.	High / 11 points High Priority	Reservation Wide	DES	Ongoing	County
		6.5.3 - Publish and distribute floodplain maps to homeowners.	Medium / 9 points Medium Priority	Reservation Wide	County GIS, County Planning Dept.	Short-term	County
Goal 7 - Reduce Impacts from Public Health	Objective 7.1 - Provide Public Education and Awareness on Public Health	7.1.1 - Encourage and support local public health in preparing plans for biological hazards.	High / 10 points Medium Priority	Reservation Wide	County Public Health Dept.	Ongoing	County
		7.1.2 - Provide public awareness on Meth prevention.	High / 10 points Medium Priority	Reservation Wide	County Public Health Dept.	Ongoing	County
Goal 9 - Reduce Impacts from Earthquakes	Objective 9.1 - Protect Property from Earthquakes	9.1.1 - Encourage non-structural projects in schools and critical facilities.	High / 10 points Medium Priority	Reservation Wide	DES, TERC/LEPC, Schools	Year 1 – 5	CSKT, Fed
		9.1.2 - Encourage schools and critical facilities to identify the need for structural retrofits.	High / 10 points Medium Priority	Reservation Wide	DES, TERC/LEPC, Schools	Year 1 – 5	CSKT, Fed
		9.1.3 - Encourage homeowners to perform structural and non-structural retrofits on their homes.	Medium / 9 points Medium Priority	Reservation Wide	DES	Year 1 – 5	CSKT, Fed County, FEMA

TABLE 5.4-1 CSKT MITIGATION STRATEGY							
Goal	**Objective**	**Project**	**Ranking / Score County Priority**	**Jurisdictions**	**Responsible Agency / Department**	**Schedule**	**Potential Funding Source**
Goal 9 - Reduce Impacts from Earthquakes	Objective 9.2 - Provide Public Education and Awareness on Earthquakes	9.2.1 - Conduct educational earthquake awareness and preparedness in schools and for the general public.	High / 10 points Medium Priority	Reservation Wide	DES, TERC/LEPC	Year 1 – 5	County, FEMA
Goal 10 - Reduce Impacts from Dam Failure	Objective 10.1 - Implement Actions to Prevent Impacts from Dam Failure	10.1.1 - Consider using dam inundation as criteria for future subdivision review and require disclosure by developers to prospective buyers.	Medium / 9 points Medium-High Priority	Reservation Wide	CSKT	Year 1 – 5	County
	Objective 10.2 - Enhance Emergency Services to Mitigate Impacts from Dam Failure	10.2.1 - Coordinate with dam owners to exercise EAPs with responders.	Medium / 9 points Medium Priority	Reservation Wide	Energy Keepers, DES, TERC/LEPC	Ongoing	Dam Owners
		10.2.2 - Maintain Emergency Action Plans of high hazard dams and work with owners to keeps plans current.	Medium / 9 points Medium Priority	Reservation Wide	Dam Owners, DES	Ongoing	Dam Owners
Goal 11 - Reduce Impacts from All Hazards	Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards	11.1.1 - Buy weather radios for various critical facilities.	Medium / 9 points Medium Priority	Reservation Wide	DES	Ongoing	CSKT, Fed
		11.1.2 - Continue coordinating with public broadcasting stations with Early Alert System information.	High / 10 points High Priority	Reservation Wide	DES, Chief Elected Officials	Ongoing	CSKT, Fed
		11.1.3 - Continue to encourage that public facilities and schools obtain generators for backup power.	High / 10 points High Priority	Reservation Wide	DES, TERC/LEPC	Ongoing	CSKT, Fed, Schools, Cities
		11.1.4 - Identify emergency shelters and encourage them to obtain generators.	Medium / 6 points Medium Priority	Reservation Wide	DES, TERC/LEPC	Year 1 – 5	CSKT, Fed
	Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards	11.1.5 - Continue to enhance and improve back-up location for dispatch center.	Medium / 8 points High Priority	Reservation Wide	OEM, DES	Ongoing	CSKT, Fed, County
		11.1.6 - Continue to enhance and improve Reverse 911 capabilities through exercise and software development.	Medium / 8 points Medium Priority	Reservation Wide	E911, Sheriff	Ongoing	CSKT, Fed, County
	Objective 11.2 - Provide Public Education and Awareness on All Hazards	11.2.1 - Promote the need for emergency action plans for special needs populations.	Medium / 8 points Medium Priority	Reservation Wide	TERC/LEPC, CSKT Public Health Dept.	Ongoing	CSKT, Fed
		11.2.2 - Encourage preparation of Family Emergency Plans.	High / 10 points High Priority	Reservation Wide	TERC/LEPC, CSKT Public Health Dept., RFDs, DES	Ongoing	CSKT, Fed
		11.2.3 - Promote disaster-related educational programs through the school system.	Medium / 9 points Medium Priority	Reservation Wide	TERC/LEPC	Ongoing	CSKT, Fed

TABLE 5.4-1 CSKTMITIGATION STRATEGY							
Goal	**Objective**	**Project**	**Ranking / Score County Priority**	**Jurisdictions**	**Responsible Agency / Department**	**Schedule**	**Potential Funding Source**
Goal 11 - Reduce Impacts from All Hazards	Objective 11.3 - Implement Actions to Prevent Impacts from All Hazards	11.3.1 - Continue to work with cell phone companies to get better cell coverage	Medium / 8 points Medium Priority	Reservation Wide	DES	Ongoing	CSKT, State, Fed

Notes: DES = CSKT Disaster and Emergency Services; FEMA = Federal Emergence Management Agency; GIS = Geographic Information Systems; LEPC = Local Emergency Planning Committee; MDT = Montana Department of Transportation; NWS = National Weather Service; RFDs = Rural Fire Departments; TERC = Tribal Emergency Response Commission; Tribe = Confederated Salish & Kootenai Tribes.

6.0 CAPABILITY ASSESSMENT

CSKT has limited resources to implement mitigation strategies. Other than Planning Grant to update the PDM Plan, there has been limited change to these resources since the 2005 CSKT PDM Plan. CSKT DES is responsible for organizing mitigation projects and delegating responsibilities to the appropriate CSKT department including: Safety of Dams and Roads, Forestry, Lands, NRD, IT and GIS, Division of Fire, Cultural Committee, Tribal Prevention and Housing. These departments have the responsibility to work with relevant agencies and governments to provide overview of past, current and ongoing pre- and post-disaster mitigation planning projects including capital improvement programs, wildfire mitigation programs, stormwater management programs and agency compliance projects. The goals and objectives used to mitigate natural and technological hazards builds on the Tribes existing capabilities.

6.1 CSKT DEPARTMENT OF EMERGENCY SERVICES

The CSKT DES plans, organizes and manages the Reservation emergency preparedness program; evaluates, improves and promotes comprehensive disaster planning efforts; participates in multi-jurisdiction, multi-discipline work groups and task forces; and promotes interagency coordination. These efforts are designed to enhance the capacity of the local government to plan for, respond to and mitigate the consequences of threats and disasters using an all-hazard framework.

The CSKT DES includes one full time staff person whose salary is funded by the Tribe.

6.2 CSKT FUELS REDUCTION COORDINATOR

The mission of the CSKT Fuels Reduction Coordinator is to protect lives, property and the environment through hazard analysis and implementing mitigation projects to reduce identified risks. The position works with the CSKT DES, however direction and guidance is also provided by the CSKT DNR. Duties Include:

- Program manager of the Tribe's Hazardous Fuels Reduction program.
- Public information and education related to wildfire risk management.
- Prepares grant applications and administers projects conducted under awarded grants.
- Manages planning activities in accordance with the Community Wildfire Protection Plan.
- Provides professional forestry advice to the Fuels Reduction Advisory Committee.
- Works with the CSKT in other wildfire-related matters.

6.3 TERC/LEPC

Emergency services providers on the reservation participate in a Local Emergency Planning Committee (LEPC) that is co-chaired by the DES Director. This group is combined with a group representing the Flathead Reservation that has similar responsibilities: the Tribal Emergency Response Commission (TERC). The mission of the TERC/LEPC is to provide resources and guidance to the community through education, coordination and assistance in haz-mat planning and to assure public health and safety. They do not function in actual emergency situations, but attempt to identify and catalogue potential hazards, identify available resources and mitigate hazards when feasible. The TERC/LEPC consists of representatives from businesses, local government, emergency responders and citizen groups. The group meets on a monthly basis.

6.4 LAKE COUNTY FIRE ASSOCIATION

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

6.5 Lake County Office of Emergency Management (OEM)

The Lake County OEM is staffed with a single fulltime director who is able to coordinate and draw the resources from across Lake County assets. DES and OEM work closely as hazards that face one organization most likely face the other.

6.6 FUNDING OPPORTUNITIES

CSKT has no current FEMA grants or programs. Although a number of the mitigation projects listed in *Section 5.1* may not be eligible for Tribal-specific FEMA funding, CSKT may secure alternate funding sources to implement these projects in the future including federal and state grant programs, and funds made available through other sources. Alternate funding sources may include the following:

U.S. Department of Housing and Urban Development, Community Development Block Grants (CDBG). The CDBG program is a flexible program that provides communities with resources to address a wide range of unique community development needs. CDBG money can be used to match FEMA grant money. More Information:
http://www.hud.gov/offices/cpd/communitydevelopment/programs/

U.S. Bureau of Land Management, Rural Fire Assistance Program. BLM provides funds to rural fire departments for wildfire fighting; also provides wildland fire equipment, training and/or prevention materials. More Information:
http://199.134.225.50/nwcc/t2_wa4/pdf/RuralAssistance.pdf

U.S. Department of Homeland Security. Enhances the ability of states, local and tribal jurisdictions, and other regional authorities in the preparation, prevention, and response to terrorist attacks and other disasters, by distributing grant funds. Localities can use grants for planning, equipment, training and exercise needs. These grants include, but are not limited to areas of Critical Infrastructure Protection Equipment and Training for First Responders, and Homeland Security Grants. More information: http://www.dhs.gov/dhspublic/

FEMA, Hazard Mitigation Grant Program (HMGP). The HMGP provides grants to States, Native American Tribes, local governments, and private non-profit organizations to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.
More information: http://www.fema.gov/government/grant/hmgp/

FEMA, Pre-Disaster Mitigation Competitive (PDMC) Grant Program. The PDM program provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDMC grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds.
More information: http://www.fema.gov/government/grant/pdm/index.shtm

National Fire Plan, State Fire Assistance Hazard Mitigation Program. These special state Fire Assistance funds are targeted at hazardous fuel treatments in the wildland-urban interface. Recipients include state forestry organization, local fire services, county emergency planning committees and private landowners. More information:
http://www.fs.fed.us/r1-r4/spf/coopfire_assistance.html

Fire Management Assistance Program is authorized under Section 420 of the Stafford Act. It allows for the mitigation, management, and control of fires burning on publicly or privately owned forest or grasslands that threaten destruction that would constitute a major disaster.
More information: http://www.fema.gov/government/grant/fmagp/index.shtm

U.S. Department of Agriculture, Community Facilities Loans and Grants. Provides grants (and loans) to cities, counties, states and other public entities to improve community facilities for essential services to rural residents. Projects can include fire and rescue services; funds have been provided to purchase fire-fighting equipment for rural areas. No match is required.
More information: http://www.rurdev.usda.gov/HCF_CF.html; or local Rural Development office.

General Services Administration, Sale of Federal Surplus Personal Property. This program sells property no longer needed by the federal government. The program provides individuals, businesses and organizations the opportunity to enter competitive bids for purchase of a wide variety of personal property and equipment. Normally, there are no restrictions on the property purchased. More information: http://www.govsales.gov/html/index.htm

FEMA, Readiness, Response and Recovery Directorate, Fire Management Assistance Grant Program. Program provides grants to states, tribal governments and local governments for the mitigation, management and control of any fire burning on publicly (non-federal) or privately owned forest or grassland that threatens such destruction as would constitute a major disaster. The grants are made in the form of cost sharing with the federal share being 75 percent of total eligible costs. Grant approvals are made within 1 to 72 hours from time of request.
More information: http://www.fema.gov/government/grant/fmagp/index.shtm

Hazardous Materials Emergency Preparedness Grants. Grant funds will be passed through to local emergency management offices and HazMat teams having functional and active LEPC groups. More information: http://www.phmsa.dot.gov/hazmat/grants

Renewable Resource Grant Program. Administered by the Montana Department of Natural Resources and Conservation, the Resource Grant and Loan Program provides both grant and loan funding for public facility and other renewable resource projects. Projects that conserve, manage, develop or protect Montana's renewable resources are eligible for funding. Numerous public facility projects including drinking water, wastewater and solid waste development and improvement projects have received funding through this program. Other renewable resource projects that have been funded include irrigation rehabilitation, dam repair, soil and water conservation and forest enhancement.
More information: http://dnrc.mt.gov/cardd/ResDevBureau/renewable_grant_program.asp

Bureau of Indian Affairs (BIA). The BIA provides services directly or through contracts, grants or compacts to federally recognized Tribes. The BIA offers an extensive scope of programs that covers the entire range of Federal, State and local government services. Programs administered through the BIA include social services, natural resources management on trust lands, economic development programs, law enforcement and detention services, administration of tribal courts, implementation of land and water claim settlements, housing improvement, disaster relief, replacement and repair of schools, repair and maintenance of roads and bridges and the repair of structural deficiencies on high hazard dams. Through BIA programs, Tribes improve their tribal government infrastructure, community infrastructure, education, job training and employment opportunities along with other components of long term sustainable development that work to improve the quality of life for their members. More information: http://www.bia.gov/

7.0 PLAN MAINTENANCE PROCEDURES

The plan maintenance section of this document details the formal process that will ensure that the CSKT PDM Plan remains an active and relevant document. The maintenance process includes a schedule for monitoring and evaluating the plan and producing a plan revision every five years. The plan can be revised more frequently than five years if the conditions under which it was developed change significantly (e.g. a major disaster occurs and projects are accomplished and/or new projects need to be identified or funding availability changes). The Indian Tribal government will continue to comply with all applicable Federal statutes and regulations during the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c), and will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes as required in 44 CFR 13.11(d). This section also describes how the Tribe will monitor the progress of mitigation activities and be incorporated into existing planning mechanisms. The final section describes how CSKT will integrate public participation throughout the plan maintenance process.

7.1 MONITORING, EVALUATING AND UPDATING THE PLAN

7.1.1 2005 PDM Plan

The 2005 PDM Plan was neither monitored nor evaluated since it was developed and adopted. Mitigation projects were completed during this period (as discussed in Section 7.2.1, below); however, the plan was not discussed for relevance since its inception. CSKT submitted a planning grant to State DES and FEMA in 2016 to update their PDM Plan and this funding was approved.

7.1.2 2016 PDM Plan

According to monitoring procedure outlined in the 2005 plan, the plan should be updated every 5 years. Since this was not done the 2016 plan will implement an annual review process in an effort to better monitor and maintain mitigation projects. The PDM Plan should be reviewed annually at meetings of the TERC/LEPC. These reviews may be more or less frequent, as deemed necessary by the CSKT DES Director, but there will be a minimum of one review per year. The review should determine whether a plan update is needed prior to the required five-year update. The plan review should consider any new hazards and vulnerabilities as well as document completed mitigation projects, identify new mitigation projects and evaluate mitigation priorities.

The CSKT DES Director will be responsible for ensuring the PDM Plan review is on the agenda at the TERC/LEPC meetings so that applicability of the plan can be evaluated. The DES Director should prepare a status report summarizing the outcome of the plan review and the minutes should be made available to interested stakeholders and kept in a permanent file designated for the next (2021) PDM Plan update.

Three years after adoption of the plan, the CSKT DES Director may apply for a planning grant through

FEMA to start the updating of the PDM Plan. Upon receipt of funding, CSKT may solicit bids in accordance with applicable contracting procedures and hire a contractor to assist with the project. The proposed schedule for completion of the plan update is one year from award of a contract, to coincide with the five-year adoption date of the original PDM Plan.

The CSKT DES Director will be responsible for the plan update. Before the end of the five-year period, the updated plan will be submitted to FEMA for approval. When concurrence is received that the updated plan complies with FEMA requirements**,** it will be submitted to the Tribal Council for adoption. The DES Director will send an e-mail to individuals and organizations on the stakeholder list to inform them that the updated plan is available on the Tribe's website.

7.2 MONITORING PROGRESS OF MITIGATION ACTIVITIES

7.2.1 2005 PDM Plan

Since development of the 2005 PDM Plan, six mitigation projects have been completed with others identified as on-going or in-progress as outlined in **Appendix D**.

7.2.2 2016 PDM Plan

The process for monitoring and evaluating mitigation projects will be the responsibility of the TERC/LEPC. This group is comprised of dedicated individuals from Tribal, count and city departments, emergency response entities, local businesses and non-profit organizations to engage in all aspects of emergency management. This group has accepted the responsibility for implementing mitigation projects on behalf of the Tribe and annual meetings will provide a venue for reporting and accountability. Minutes should be prepared from these meeting and should be distributed to interested stakeholders as well as kept in a permanent file for the next PDM Plan update (2021). Agencies and organizations "assigned" responsibility for various aspects of the mitigation strategy will have the opportunity to coordinate with other team members on challenges, success and opportunities.

CSKT DES Director will be in charge of assigning responsibilities and monies to the appropriate department. Each department will be responsible for monitoring and maintaining mitigation projects, including updating the DES Director about project status and achievements for future updates to the PDM plan. Generally, HMGP and PDMC projects will be monitored by the DES Director and any National Fire Plan projects or Community Assessment Agreements will be monitored by the U.S. Forest Service and/or DNRC. Each organization will track projects through a central database and issue quarterly reports to federal agencies.

7.3 IMPLEMENTATION THROUGH EXISTING PROGRAMS

CSKT will have the opportunity to implement hazard mitigation projects through existing programs and procedures through plan revisions or amendments. The PDM Plan will be incorporated into the plans, regulations and ordinances as they are updated in the future or when new plans are developed. **Table 7.3-1** presents a summary of existing plans and ordinances and how integration of mitigation projects will occur.

TABLE 7.3-1 IMPLEMENTATION OF MITIGATION INTO EXISTING PLANS AND CODES		
Type	**Name**	**Integration Technique**
Plans		
Emergency Operations	CSKT Emergency Operations Plan	Integrated by reference in PDM Plan.
	Emergency Action Plan, Black Lake Dam	Dam safety projects addressed in EAPs. Integration through reference in PDM Plan.
	Emergency Action Plan, Jocko Dam	
	Emergency Action Plan, Sėliš Ksanka Qlispė Dam	
	Emergency Action Plan, Kicking Horse Dam	
	Emergency Action Plan, Lower Crow Dam	
	Emergency Action Plan, McDonald Dam	
	Emergency Action Plan, Mission Dam	
	Emergency Action Plan, Ninepipe Dam	

TABLE 7.3-1 IMPLEMENTATION OF MITIGATION INTO EXISTING PLANS AND CODES		
Type	**Name**	**Integration Technique**
Plans		
Emergency Operations	Emergency Action Plan, Pablo Dam	Dam safety projects addressed in EAPs. Integration through reference in PDM Plan.
	Emergency Action Plan, Tabor Dam	
	Emergency Action Plan, Upper Dry Fork Dam (Sanders County)	
	Emergency Action Plan, Lower Dry Fork Dam (Sanders County)	
	Emergency Action Plan, Hungry Horse Dam (Flathead County)	
Growth Policies, Lake County	Growth Policy, 2003	Integration may occur when these plans are revised.
	City of Polson Growth Policy, 2006	
	City of Ronan Growth Policy, 2008	
	St. Ignatius Growth Policy, 2001	
Wildfire Mitigation	CSKT DNR wildfire policy	Integration will occur when revised. Wildfire mitigation projects from PDM will be incorporated into mitigation strategy.
Codes, Regulations & Ordinances (Lake County)		
Zoning	City of Polson Zoning Ordinance	Integration will occur through revision. Hazard areas identified in PDM will be considered when these regulations are revised.
	City of Ronan Zoning Ordinance	
	St. Ignatius Zoning Ordinance	
Development	City of Polson Development Code	
Building	State of Montana Building Codes	
Subdivisions	CSKT Subdivision Regulations	
	City of Polson Subdivision Regulations	
	City of Ronan Subdivision Regulations	
Floodplain	Floodplain Regulations	
Lakeshore	Lakeshore Protection Regulations	

Lake County, the Cities of Polson and Ronan, and the Town of St. Ignatius all use a Growth Policy to guide development. Typically, a Growth Policy will address hazards; specifically, that life and property be protected from natural disasters and man-caused hazards. Mitigation goals in the PDM Plan will be recommended for incorporation into future revisions of these growth policies to ensure that high- hazard areas are being considered for low risk uses.

To ensure that the requirements of the PDM Plan are incorporated into other planning mechanisms and remain an on-going concern for CSKT, various staff will be included to have a mitigation component. Participation in this group will provide an awareness of new and on-going mitigation initiatives for the purpose that they be integrated into plans, codes and regulations during revision. The CSKT GIS Manager will include responsibilities for management and update of the spatial data compiled for the hazard analysis including coordinates of critical facilities and digital floodplain, inundation and wildfire layers so this data can be integrated into other planning efforts. The job description of the DES Director will include responsibilities for implementing outreach activities for risk reduction on the reservation, coordinating with the Tribal Council to secure funding for mitigation projects, ensure mitigation projects are implemented, and updating the PDM Plan. The DES Director will also be responsible for maintaining a permanent master file for the PDM planning

process, which will include damage figures from hazard events, records of mitigation projects and notes/minutes from relevant meetings.

Meetings of the Tribal Council Districts will provide an opportunity for the DES Director to report back on the progress made on the integration of mitigation planning elements into CSKT planning documents and procedures.

7.4 CONTINUED PUBLIC INVOLVEMENT

CSKT is dedicated to involving the public directly in review and updates of the PDM Plan. The public will have many opportunities to provide feedback about the plan. Hard copies of the plan will be kept at appropriate CSKT offices. An electronic copy of the plan will be available on the CSKT website. The existence and location of plan hard copies will be publicized on the CSKT website. *Section 2.0* includes the address and the phone number of the DES Director who will be responsible for keeping track of public comments on the plan.

The public will be invited to meetings of the TERC/LEPC when the PDM Plan is discussed. The meetings will provide the public a forum for which they can express concerns, opinions or ideas about the plan. The DES Director will be responsible for using county resources to publicize the public meetings and maintain public involvement through the newspapers, radio and Internet.

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APPENDIX A RESOLUTIONS ADOPTING PLAN

CSKT Pre-Disaster Mitigation Plan

CSKT Hazard Mitigation Plan 2017

Appendix B

Meeting Notes

PlanningTeam & Stakeholders

CSKT Hazard Mitigation Plan

PLANNING TEAM

Type	First Name	Last Name	Affiliation
Member	Dale	Nelson	CSKT
Member	Jim	Durgalo	CSKT
Member	Steve	Stanley	Lake County
Member	Martha	Smith	State of Montana
Member	Mike	Durgalo	CSKT
Member	Bill	Naegeli	Sanders County

CSKT PDM STAKEHOLDERS			
Type	First Name	Last Name	Affiliation
Tribal Council	Various	Various	CSKT
County Government	Steve	Stanley	Lake County
Non-Profit	John	Paraguay	Red Cross
Tribal Department	Tom	McDonald	CSKT NRD
Tribal Department	Jim	Durgalo	CSKT Forestry
Tribal Department	Mike	Durgalo	CSKT Environmental Management
State Government	Martha	Smith	State of Montana
City Government	City of	Polson	Community
City Government	City of	Ronan	Community
City Government	City of	St. Ignatius	Community
City Government	City of	Arlee	Community
Council District	Community of	Arlee	CSKT
Council District	Community of	Mission	CSKT
Council District	Community of	Ronan	CSKT
Council District	Community of	Pablo	CSKT
Council District	Community of	Polson	CSKT
Council District	Community of	Elmo	CSKT
Council District	Community of	Hot Springs	CSKT
Utility	Ralph	Goode	Mission Valley Power
Utility	Brian	Lipscomb	SKQ Dam
County Government	Bill	Naegeli	Sanders County
Consortium	TERK	LEPC	Resource Consortium

Meeting Notices

Meeting Sign-In Sheets

DATE: 12/17/15 **LOCATION: Arlee District Meeting**

CSKT Pre-Disaster Mitigation Plan Presentation

Name: (Please Print) Organization:	Affiliation or Title: Federally Salaried? (Yes or No)	Miles Traveled Round Trip to Attend Meeting	E-mail Address: Phone No.
Kristin Nelson	Circle One: Yes (No)	7	native34234@gmail.com 887-2202
Greg DuMontier	Tribal Member Circle One: Yes (No)	24	gdumontier@cc-use.com
Myrna DuMontier	Circle One: Yes No	24	genewene@gmail.
Kevin Thomas	Circle One: Yes No	6	K+ranch1670@gmail
Jim Steele	Circle One: Yes (No)	6	jsteele4066@gmail.com
Drew Hendrickson	Circle One: Yes (No)	6	drewandleta@blackfoot.net
Denise Fyant	Circle One: Yes (No)	8	726-3599
Shelly Fyant	Circle One: Yes (No)	6	shelly.fyant@cskt.org
VERNON FISHER	Circle One: Yes (No)	8	rez-cop@YAHOO.COM
Jody Steele	GAP Security Manager Circle One: Yes (No)	7	~~jody.steele@~~ jsteele@CSKTgaming.com
Chet Schlieker	Arlee Fire Dept Circle One: Yes (No)	6	406-210-4142

Meeting Start Time: 6:00 PM

Meeting End Time: 7:00PM

DATE: 4-2-15 LOCATION: CSKT - climate change

Pre-Disaster Mitigation Plan Update Local Match Contribution

Name: (Please Print) Organization:	Affiliation or Title: Federally Salaried? (Yes or No)	Miles Traveled Round Trip to Attend Meeting	E-mail Address: Phone No.
Janet Camel CSKT Econ. Dev't.	Circle One: Yes (No)	16	janetc@cskt.org 675-2700 x1256
Kari Smith CSKT Wildlife	Circle One: Yes (No)	5mi	kari.smith@cskt.org 883-2888 x7217
Melly Rewling CLLC / Roundtable	Circle One: Yes (No)	500	Melly@ Lakelandscapes.org
SAM WILLIAMS CLLC/Roundtable	Circle One: Yes (No)	500	Sw@lakelandscapes.org.
Mike Durglo CSKT NRD	Circle One: ~~Yes~~ No	—	mikedd@cskt.org
TABITHA GRAVES USGS	Research Ecologist Circle One: (Yes) No	120	tgraves@usgs.gov
Rojan Matt CSKT Forestry	Circle One: Yes (No)	30	rojannm@cskt.org
Tom McDonald CSKT NRD	Circle One: Yes (No)	—	tommc cskt.org
	Circle One: Yes No		
	Circle One: Yes No		
	Circle One: Yes No		

Meeting Start Time: 0900

Meeting End Time:

DATE: 9/9/2015 **LOCATION: Elmo Mt. Kootenai Culture Committee Meeting**

CSKT Pre-Disaster Mitigation Plan Presentation

Name: (Please Print) Organization:	Affiliation or Title: Federally Salaried? (Yes or No)	Miles Traveled Round Trip to Attend Meeting	E-mail Address: Phone No.
MARGARET ELLIOTT	Circle One: Yes (No)		
Lydia Hewankorn			
Helen Charlo	Circle One: Yes (No)		
[illegible]			
Diane Michel	Circle One: Yes (No)		
August Lefthand			
Jonnie V Carlson	Circle One: Yes No		
Cathy Hamel	Circle One: Yes (No)		
Len Twoteeth	Circle One: Yes No		Leonard.Twoteeth@cskt.org
Sue Antiste	Tribal Council Circle One: Yes (No)		
Tom Antiste	Circle One: Yes (No)		
Gina BigBeaver	Kootenai Culture Circle One: Yes No		ginab@cskt.org
Chris Tenas	Kootenai Culture Circle One: Yes No		
Lawrence Kenmille	Circle One: Yes (No)		LawrenceK@cskt.org

Meeting Start Time:
10:00AM

Meeting End Time:
12:00 PM

DATE: 11/13/15 **LOCATION: Hot Springs District Meeting**
CSKT Pre-Disaster Mitigation Plan Presentation

Name: (Please Print) Organization:	Affiliation or Title: Federally Salaried? (Yes or No)	Miles Traveled Round Trip to Attend Meeting	E-mail Address: Phone No.
Troy DE Rock / Dan Halvorson	Circle One: Yes No	|	NTKIMMYSUE@hotmail.com
MAGGIE GOODE	Circle One: (Yes) No	40	mcdgoode@yahoo.com
Carolyn Woods	Circle One: Yes (No)		donwoods3@hotmail.com
Gloria Howlett Rick	Circle One: Yes (No)		
James Halverson	Circle One: Yes (No)	8	— 741-2842 3725
Deb Berg	Circle One: Yes (No)	Ø	
Thelma Niemeyer	Circle One: Yes (No)		741-3322
Jordan Thompson	Circle One: Yes (No)		jordan.thompson@cskt.org
Darrell Whitworth	Circle One: Yes (No)	28	
Anita Dupuis	Circle One: Yes (No)	10	AnitaDupuisRobertson@gmail.com
TRoy Felsman	Circle One: Yes (No)	80	troyfelsman@gmail.com

Meeting Start Time:
12:00 PM

Meeting End Time:
1:00 PM

DATE: 11/30/15 **LOCATION: Polson District Meeting at KwaTaqNuk**
CSKT Pre-Disaster Mitigation Plan Presentation

Name: (Please Print) Organization:	Affiliation or Title: Federally Salaried? (Yes or No)	Miles Traveled Round Trip to Attend Meeting	E-mail Address: Phone No.
Kristin M. Nelson	Circle One: Yes (No)	24	native34234@gmail.com 406-887-2202
JANET CAMEL	Circle One: Yes (No)	43	janetc@cskt.org 406-675-2700 x1256
MAGGIE GOODE	Circle One: Yes (No)	70	mcdgoode@yahoo 980-2772
Brad Pluff	Circle One: Yes (No)	0	Brad.Pluff@CSKT.ORG 675-2700 X 1115
Tami Hamel	CSKT Circle One: Yes (No)	0	jamih@cskt.org (406) 675-2700
Madia Pepion	Circle One: Yes (No)	12	Budszpe@yahoo.com 871-2749
Alvin McCrea	Circle One: Yes (No)	2	alvinmccrea@yahoo.com 883-4575
Troy Felsman	Circle One: Yes (No)	90	troyfelsman2@gmail.com 360-0436
Glenda Hunter	Circle One: Yes (No)	0	glenaa.hunter@csktheallth.org
Debbie Anderson	Circle One: Yes (No)	0	danderson@cskt.health.org
	Circle One: Yes No		

Meeting Start Time:
6:00 PM

Meeting End Time:
7:00PM

3/20/16

DATE: ~~10/13/2015~~

Roman/Pablo District Meeting

LOCATION: ~~CSKT Council Chambers~~

CSKT Pre-Disaster Mitigation Plan Presentation

Name: (Please Print) Organization:	Affiliation or Title: Federally Salaried? (Yes or No)	Miles Traveled Round Trip to Attend Meeting	E-mail Address: Phone No.
Charmel Gillin Energy Keepers Inc	Circle One: Yes (No)		
BUD Gillin member	Circle One: Yes (No)		
Carole Lankford	Circle One: Yes (No)	12	Carolel@cskt.org
CSKT Council Marie Conner	Circle One: Yes (No)	1	Ronan
Dennis Clairmont	Circle One: Yes (No)		
DARRELL W. KEHOE	Circle One: Yes (No)	1	214-1544
NAOMI ROBINSON	Circle One: Yes (No)	1	naomi.robinson@cskt.org
Division of Fire SS&KT Jim Clairmont	Circle One: Yes (No)	2	jimc@cskt.org
	Circle One: Yes No		
	Circle One: Yes No		
	Circle One: Yes No		

Meeting Start Time:
9:00AM

Meeting End Time:
10:00 AM

DATE: 11/4/15 **LOCATION: St. Ignatius, Longhouse-Salish Culture Committee**
CSKT Pre-Disaster Mitigation Plan Presentation

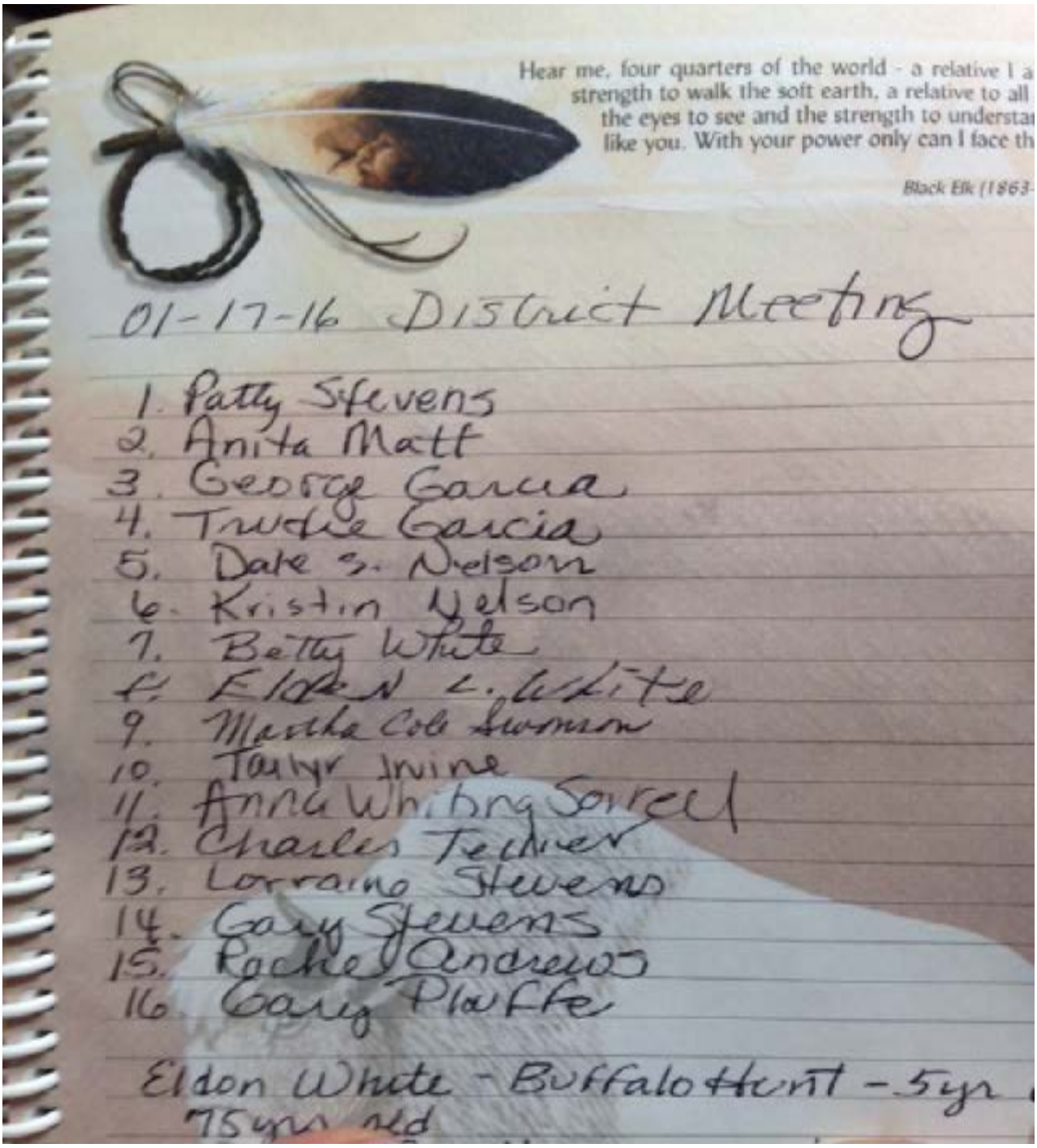
Name: (Please Print) Organization:	Affiliation or Title: Federally Salaried? (Yes or No)	Miles Traveled Round Trip to Attend Meeting	E-mail Address: Phone No.
Stephen Small Salmon Patrick A. Pierre	Circle One: Yes No		
Mark Pickett Louis Adams	Circle One: Yes No		
~~Tony Incashola~~ Tony Incashola	Circle One: Yes No		
Shirley A. Trahan	Circle One: Yes No		
Felicite McDonald	Circle One: Yes No		
Clara M. Trachs	Circle One: Yes No		
Hank Baylor	Circle One: Yes No		
Mary Linsebigler	Circle One: Yes No		
Sophie Haynes Elmer Holmes	Circle One: Yes No		
Kaiser Dick Toni Holmes	Circle One: Yes No		
Brita Mott Mali Mott	Circle One: Yes No		

Meeting Start Time:
2:00 PM

Meeting End Time:
3:00 PM

01/17/1026 LOCATION: St. Ignatius District Meeting

CSKT Pre-Disaster Mitigation Plan Presentation



Meeting Notes & Presentations

Arlee District Meeting
12/17/15

The meeting was started with a prayer and District representative Shelly Fyant introduced Dale Nelson and Greg Gould. Numerous representatives from the local community were in attendance. After an explanation of the plan, the goals and objectives were given, the attendees were then asked to describe the impacts they have seen over the last few years as it pertains to emergencies and challenges throughout the Reservation.

The group indicated that the change in climate has really affected all aspects of the Reservation; some animals are more aggressive and are causing more problems; some animals, like porcupines, seem to be gone completely when they used to be very plentiful. The habitat for all wild and domestic animals has changed for the worse. There are a lot more insects and different kinds of bugs now.

Vegetation on the Reservation has really felt the impact, the cedars are dying by the creeks, and there are much shorter berry seasons. The people depend on the berries to feed them through the Winter months. The fir trees have half the needles they used to have and the fruit trees are producing a lot less than before. The droughts have affected the old growth trees.

It seems that the temperatures are warmer now, and the wind blows more and harder. There are more Winter winds too.

The community members have noticed a HUGE increase in crime due to the drug problem on the Reservation. The social fabric of the families is crumbling. There are more active shooters everywhere and we are not prepared for that. We need to have overlapping jurisdictions and a unified command center.

Because of all the people around, the trains going across the Reservation are larger and carry more hazards. There are 100+ cars on the trains and they have a hard time navigating the curves and rivers. The egress road between Arlee and Ravalli has problems, but no one is fixing them.

Climate Change and Mitigation Workshop
04/02/15

The CSKT climate change oversight committee (CCOC) is an interdepartmental, interagency committee that is overseeing and managing all climate change research, advocacy and planning on the Reservation. The committee is comprised of CSKT departments, key county and state and federal partners as well as non-profits and universities.

The mitigation planning effort is being performed concurrently and in conjunction with the climate change committee work.

The workshop was a two day event bringing together all the key players in the multi-year research and planning efforts. The first day was focused on integrating the mitigation planning efforts and the climate change efforts. The 8 hour workshop on day one included the following topics and discussions:

- Traditional Ecological Knowledge regarding climate impacts
- Scientific data and current research on impacts of vegetation and animals
- Reports from key players on concurrent local activities regarding hazard mitigation
- Feedback and input on primary hazards and mitigation strategies

The input from the workshop has been integrated into the mitigation plan itself to align the CSKT mitigation efforts.

Elmo District Meeting
09/09/15

Daniel Stiffarm gave the prayer and District Representative Leonard TwoTeeth introduced Dale Nelson and Greg Gould.

Community members are very concerned for Chief Cliff, it is cultural and religious site for numerous tribes and people. The people that bought the property adjacent to the cliff are dynamiting the rock quarry under the cliff. The Tribe has been fighting it but nothing has been done.

There are different fish in the lake, too many lake trout and no salmon left. The bears are hibernating less and coming down to the houses more. There aren't as many deer to see anymore and hunting takes more time.

Drugs are a big problem for all ages, even some elders are hooked on drugs. You can't find decent housing because of it. Elmo doesn't have law enforcement and it takes a long time for anyone to respond if you do call.

Hot Springs District Meeting
11/13/15

The meeting was opened with a prayer and District Representative Leonard Grey introduced Dale Nelson and Greg Gould.

The gathered group initially addressed the problem of drugs on the Reservation. They are everywhere and lead to crime that is out of control. The meth problem is effecting housing everywhere. S&K housing is finally testing for drugs in the home sites.

The climate has changed. The huckleberry and bitterroot crops are lower every year and have been for the last 30 years. Husks are thinner on corn and other vegetables. There is less snowfall which means we can't tell coyote stories and the younger generation is losing its way. We tell coyote stories in November and there hasn't been any snow in November for years. The bathhouse water is different too. People used to come from all over the world to soak in the springs, but not now. That has affected the local community and people can't support themselves anymore. The river at Perma was 85 degrees last Summer, no one has ever seen it that warm before. The rivers are also much lower than they have ever been.

The change in the water is affecting the fish and the animals. There are fish where they never were before and then places where they were abundant and now there is nothing. The number of animals to harvest is down too, they have less food and too many people trying to live in the wilderness area.

The demand from the Canadians is affecting our water supply, because they are taking more water to mine it is changing our rivers. The dam is taking more water to produce more electricity for places away from the Reservation.

Polson District Meeting
11/30/15

Vernon Finley introduced Dale Nelson and Greg Gould.

Community members discussed the climate change and how it has impacted the Reservation. Winters have less snow but wind storms that are more frequent and more severe. Temperatures are hotter and summers are longer. It gets into the 80's in June now. During the Winter there is less ice on the water—Flathead used to freeze all the way out to the Narrows. A lot more swimmers itch in the lake now. Temperatures fluctuate more now.

The animals are having a hard time, the grasshoppers are worse and are eating all the vegetation, and there are more and more insects like wasps and ear wigs. We used to be able to hunt elk right down at the base of the mountains, now we have to go way up into the mountains to find them. The lake trout have taken over, there are no more salmon. No more salmon runs up in Glacier like there used to be. The bears can't find food so they get in trouble more, there are more human problems with them.

We can't find huckleberries or bitterroot where we used to anymore. There are more noxious weeds because we don't let the fires burn and take care of them.

Ronan District Meeting
03/20/16

Carole Lankford and Dennis Clairmont introduced Dale Nelson and Greg Gould.

Drugs are the biggest problem on the Reservation. We have to do something to stop them or we won't exist anymore. Crime has gotten so bad that it affects every family. The Tribe can't deal with it all and no one seems to be helping the young kids to not get messed up in it. We need some type of rehab program as well as stronger laws.

The climate has changed too, it's warmer earlier in the year, the snow pack is not what it used to be and we hardly ever get snow that sticks here in the valley. No snow means less water and more drought. Farmers and ranchers are using more and more water and it affects the lakes and the rivers. The huckleberry crops are getting lower and lower, almost can't find them now. Our elders rely on huckleberries and bitterroot to perform cultural ceremonies. Our culture is changing like the climate.

The bears are dwindling, you used to be able to see them all over the mountains, now you only see them when they are dead and have had problems with humans. There are a lot of deer down in the fields but not many in the mountains.

Salish Cultural Committee Meeting
11/01/15

Tony Incashola introduced Dale Nelson and Greg Gould

The Cultural Committee is very concerned about the loss of the Salish culture and how that affects the entire Reservation. Forest fires threaten sacred sites all over the wilderness area as well as near the towns. These sacred sites go back to before the whites came. Drugs have caused problems all over the Reservation, not just meth but alcohol as well. Law enforcement does not seem to be able to do anything about it. Our people just keep getting put in prison and it doesn't change anything. They rob their family and strangers to pawn things to be able to buy the drugs.

The weather is different now. We used to have a lot of snow, 6 feet was normal, now there is nothing. You go up into the wilderness and lakes that were always full now are dry. The salmon don't spawn like the used to, in fact they aren't in any of the rivers anymore. The bull trout are starting to come back but it will take generations for that.

They re-introduced wolves, but there have always been wolves here. We used to hear them up in the mountains all the time. The bears are more aggressive now, they would sit side by side with us and eat huckleberries, but now there are so few huckleberries that we all fight for them. The bitterroot tastes different, it is not as good as when we were young. The Creator told us we had to watch over the animals and now we are destroying them.

St. Ignatius and Dixon Districts Meeting
02/17/16

The meeting began with a prayer and then Patty Steven and Anita Matt introduced Dale Nelson and Rachel Andrews-Gould.

Community members noted that there are not as many thunderstorms anymore, they used to be frequent and often sparked forest fires. There are more forest fires now than before. The fires endanger our sacred sites. We used to let them burn as was the old way to replenish things, but now they put them out as soon as they start. There are more mudslides because of the drought. There is not as much grazing area for cattle as there used to be because of all the environmentalists trying to save everything. Insect patterns have changes and there are less bees, but more wasps. The huckleberry harvest is down every year, soon there won't be any left. It's hard for the bears, they come out of hibernation earlier because there is no snow. The bitterroot harvest is diminishing and that affects everyone.

Drugs are the biggest problem for the Reservation. It affects whole families and most people need home security because of the crime. Most everyone knows someone on drugs and it is horrible what people do when they are under the influence. More vandalism and theft. It cost the Tribe $55,000 to clean 1 meth house. SKHA can't get the houses re-rented because there are no inspectors to say the place is clean so they sit vacant and get vandalized. The Tribe does not have enough law enforcement and neither do the towns. Dixon doesn't have anything and Mission only has 1 person.

APPENDIX C RISK ASSESSMENT DOCUMENTATION

CSKT Pre-Disaster Mitigation Plan

Calculated Priority Ranking Index Summary

CSKT Pre-Disaster Mitigation Plan

CSKT Pre-Disaster Mitigation Plan

Calculated Priority Ranking Index

	Probability				Severity/Magnitude				Warning Time				Duration				
Hazard	**Unlikely**	**Possible**	**Likely**	**Highly Likely**	**Negligible**	**Limited**	**Critical**	**Catastrophic**	**< 6 hours**	**<12 hours**	**<24 hours**	**> 24 hours**	**< 6 hours**	**< 24 hours**	**< 1week**	**> 1week**	**CPRI Score**
NATURAL																	
Wildfires				x			x		x							x	3.7
Severe Summer Weather			x			x				x				x			2.6
Severe Winter Weather			x			x				x					x		2.7
Flooding		x			x							x				x	1.75
Drought	x					x						x				x	1.6
Landslide			x			x			x							x	2.95
Volcanic Ash	x						x			x						x	2.2
Earthquake			x		x				x				x				2.35
HUMAN CAUSED																	
Structure Fire			x			x			x					x			2.75
Hazardous Materials Incidents		x				x			x					x			2.3
Communicable Disease - Public Health		x				x			x							x	2.5
Communicable Disease - Livestock/AQ	x					x						x				x	1.6
Dam Failure	x						x		x							x	2.35
Highway Accident				x		x			x					x			3.2
Terrorism/Violence	x				x				x						x		1.65
Aircraft Accident	x					x			x				x				1.75
Railroad Accident	x						x		x							x	2.35

Critical Facilities

CSKT Pre-Disaster Mitigation Plan

CSKT Pre-Disaster Mitigation Plan - Critical Facilities							
#	Critical Infrastructure	Address	Town	Jurisdiction	Latitude	Longitude	Replacement Value
1	Arlee School	123 Fyant St.	Arlee	County	47.165616	-114.083534	$0
2	Arlee Fire Hall	200 Culloyah	Arlee	County	47.162627	-114.084647	$0
3	Arlee Tribal Health	11Bitterroot Jim	Arlee	County	47.167581	-114.089163	$5,217,074
4	Arlee Senior Center	106 Wessinger	Arlee	County	47.161751	-114.086398	$361,717
5	Arlee Fire Department		Arlee	County	47.159597	-114.081001	$0
6	Sig Arm Fire Department		Big Arm	County	47.797697	-114.295121	$0
7	Charla School	404-1st Ave. W	Charla	County	47.440101	-114.174413	$0
8	Charla Fire Department	39249 Dellwo Rd.	Charla	County	47.429927	-114.174994	$0
9	Charla Sewage Lagoons		Charlo	County	47.431043	-114.175764	$0
10	Dayton School	S06 B Street	Dayton	County	47.865683	-114.279773	$0
11	Kootenai Culture Bui ding	77406 Hwy93	Elmo	County	47.830664	-114.352271	$2,136,392
12	Tribal Complex Building(New)	21 Complex Rd.	Pablo	County	47.595921	-114.114321	$9,274,791
13	Tribal Complex Building (Old)	21 Complex Rd.	Pablo	County	47.595766	-114.115712	$7,303,900
14	Salish Kootenai College	52000 Hwy 93	Pablo	County	47.596812	-114.107108	$32,700,008

15	Two Eagle River School	52096 Hwy93	Pablo	County	47.600289	-114.111725	$9,592,557
16	Pablo Elementary School	608 4th Ave. E.	Pablo	County	47.601619	-114.117031	$3,513,985
17	Pablo Division of Fire / Search and Rescue		Pablo	County	47.601902	-114.119595	$182,200
18	CSKT Courthouse	106-4th Ave. E.	Polson	Polson	47.691833	-114.161106	$18,340,913
19	Polson City Hall/Fire Hall/Police Dept	106-lst St. E.	Polson	Polson	47.695191	-114.162218	$1,825,976
20	Cherry Valley School	107-Sth Ave. W.	Polson	Polson	47.687818	-114.165747	$72,900
21	Linderman School	312-4th Ave. E.	Polson	Polson	47.692006	-114.158202	$6,540,411
22	Polson Middle School	1602-2nd St. W	Polson	Polson	47.680081	-114.168511	$16,880,132
23	Polson High School	1712-2nd St. W.	Polson	Polson	47.678666	-114.168232	$24,440,954
24	Valley View School	7000 Valley View Rd.	Polson	County	47.631415	-114.284548	$452,146
25	Tribal Natural Resources	301 Main Street	Polson	Polson	47.693201	-114.162938	$3,246,171
26	St. Joseph Medical Center	6-13th Ave. E.	Polson	Polson	47.683269	-114.161468	$5,088,051
27	Polson Airport		Polson	Polson	47.693735	-114.183833	$644,241
28	Polson Fire Department / OEM / Sheriff		Polson	Polson	47.696241	-114.178357	$391,539

29	Polson Wastewater Treatment		Polson	Polson	47.687077	-114.178165	$0
30	CSKT Health Department		Polson	Polson	47.687955	-114.163697	$0
31	Montecahto RFD	6100 East Shore RT	Polson	County	47.725931	-114.037944	$0
32	Rollins Volunteer Fire Department	56 Big Lodge RD	Rollins	County	47.903233	-114.219061	$0
33	Ronan Tribal Health	26 Round Butte Rd.	**Ronan**	Ronan	47.530104	-114.098327	$506,404
34	Tribal Forestry	104 Main SE	Ronan	Ronan	47.529016	-114.095513	$11,956,662
35	St. Luke Hospital	107-6th Ave. SW	Ronan	Ronan	47.528647	-114.106796	$37,099,191
36	Ronan High School	103-3rd Ave. NW	Ronan	Ronan	47.530328	-114.100894	$5,257,651
37	Ronan Middle School	220 Round Butte Rd.	Ronan	Ronan	47.532055	-114.104446	$2,195,801
38	Glacier View Christian School	118 Mud Creek Lane	Ronan	County	47.570326	-114.120433	$0
39	Ronan Fire Hall	210Adams SW	Ronan	Ronan	47.528032	-114.100768	$104,075
40	Ronan Police Dept	206 Adams St SW	Ronan	Ronan	47.528028	-114.100759	$152,250
41	Safety of Dams	711-3rd Ave. NW	Ronan	Ronan	47.536359	-114.101845	$417,360
42	Ronan Airport		Ronan	County	47.567595	-114.105229	$0
43	Pine Haven Christian High School	P0940	St Ignatius	St Ignatius	47.313354	-114.096492	$0
44	St. Ignatius City Hall	12-lst Ave.	St. Ignatius	St. Ignatius	47.318158	-114.094546	$285,332
45	St. Ignatius Fire Hall	8- st Ave.	St. Ignatius	St. Ignatius	47.318346	-114.095369	$655,033

46	St Ignatius Police Dept	308 Crystal St	St Ignatius	St Ignatius	47.319591	-114.094681	$0
47	St. Ignatius Tribal Health	880 Mission Drive	St. Ignatius	St. Ignatius	47.316647	-114.104431	$7,790,830
48	Salish Culture Building	88 Blind Barnaby	St. Ignatius	St. Ignatius	47.313273	-114.103567	$1,402,813
49	St. Ignatius High School	4th & Blaine Rd.	St. Ignatius	St. Ignatius	47.318861	-114.091228	$0
50	St. Ignatius Airport		St. Ignatius	County	47.326357	-114.084045	$75,402
51	St. Ignatius Sewage Lagoons		St. Ignatius	County	47.317427	-114.110697	$0
52	Kicking Horse Job Corp.		Ronan	County	47.477081	-114.057749	$0
53	Proctor Fire Hall / Shop	444S8 Brubakerlane	Proctor	County	47.890686	-114.298728	$15,000
54	Swan Lake VFD	40942 Swan Hwy	Swan Lake	County	47.930754	-113.846561	$243,360
55	Salmon Prairie School	744 Salmon Prairie Road	Swan Lake	County	47.630818	-113.785325	$0
56	DNRC Polson Office	410 1st St East	Polson	Polson	47.691732	-114.162146	$0
57	County Road Shop		Charla	County	47.43883	-114.172786	$53,611
58	Elmo Fire Station		Elmo	County	47.830657	-114.350961	$0
59	Elmo Substation		Elmo	County	47.833521	-114.353884	$0
60	Big Arm Water System		Big Arm	County	47.797178	-114.292105	$0
61	Polson Road Shop / Pump House	54827 Hwy 93	Pablo	County	47.635944	-114.112695	$618,647

62	Ronan Municipal Garage	1010 Main St. SW	Ronan	Ronan	47.528967	-114.112876	$314,136
63	Ronan Municipal Offices	207 Main St.	Ronan	Ronan	47.528497	-114.101056	$407,650
64	Water Treatment Plant	Michel Road	Ronan	County	47.537177	-114.038806	$310,225
65	City Park Well		Ronan	Ronan	47.524641	-114.101747	$67,514
66	Wastewater Lagoons		Ronan	County	47.520556	-114.114975	$129,476
67	Lift Station #1		Ronan	Ronan	47.530039	-114.108000	$80,000
68	Lift Station #2		Ronan	Ronan	47.528441	-114.107985	$80,000
69	Lift Station #3		Ronan	Ronan	47.530039	-114.102197	$80,000
70	Lift Station #4		Ronan	Ronan	47.522677	-114.103904	$250,000
71	Lift Station #5		Ronan	County	47.510437	-114.082109	$10,000
72	Water Tower		Ronan	County	47.533602	-114.057531	$648,750
73	Tribal Health	s 4th Ave. East	Polson	Polson	47.692563	-114.161137	$0
74	CSKT Community Center	3ra Ave NW	Ronan	Ronan	47.532747	-114.102003	$0

CSKT BRIDGE INVENTORY									
MAP ID #	**BRIDGE_NO**	**FEAT_CROSS**	**LENGTH**	**WIDTH**	**CLEARANCE**	**CAPACITY**	**UNIQUEID**	**COUNTY**	**COST**
1	S00354006+06001	IRRIGATION CANAL	22	6	100	57,981	305401000.BRG.4371	Lake	**$86,560**
2	M24100000+00101	MISSION CREEK 052	10	7	100	45,856	305401000.BRG.2903	Lake	**$40,232**
3	L24303005+06001	POST CREEK 042	10	6	100	49,383	305401000.BRG.1714	Lake	**$39,360**
4	P00005018+09461	JOCKO RIVER	32	9	100	71,429	305401000.BRG.3155	Lake	**$126,800**
5	P00005040+09851	NINE PIPE RESERVOIR	24	9	100	53,792	305401000.BRG.3157	Lake	**$94,400**
6	POOOOSOS7+00641	PABLO FEEDER CANAL	25	24	100	71,429	305401000.BRG.3158	Lake	**$99,972**
7	P00005082+03541	DAYTON CREEK	22	12	100	71,429	305401000.BRG.3160	Lake	**$86,560**
8	P00006115+08931	JOCKO RIVER, MRL	150	12	100	87,964	305401000.BRG.3183	Lake	**$752,100**
10	S00212005+00991	MISSION CREEK	23	9	100	53,792	305401000.BRG.4071	Lake	**$92,656**
11	L24366000+06001	JOCKO RIVER 057	14	7	100	71,429	305401000.BRG.1731	Lake	**$54,880**
12	L24368000+02001	MISSION CREEK 047	12	6	100	47,399	305401000.BRG .1732	Lake	**$46,680**
13	L24380000+01001	JOCKO RIVER 054	24	5	100	71,429	305401000.BRG.1734	Lake	**$97,536**
14	L24380002+00001	VALLEY CREEK 055	160	6	100	51,147	305401000.BRG.1735	Lake	**$1,000,000**
15	L24393000+06001	SO MISSION RES INLET 051	10	6	100	37,699	305401000.BRG.1737	Lake	**$41,000**
16	L24397000+04001	JOCKO RIVER 056	28	5	3	20,944	305401000.BRG.1738	Lake	**$110,944**
17	L24418000+07001	CROW CREEK 071	16	6	100	11,023	305401000.BRG.l740	Lake	**$64,600**
18	L24612002+07001	PABLO FEEDER CANAL 001	10	6	100	57,981	305401000.BRG.1743	Lake	**$40,240**
19	L24617004+00001	PABLO FEEDER CANAL 004	9	6	100	51,808	305401000.BRG .1744	Lake	**$36,576**
20	L24359003+08001	PABLO FEEDER CANAL 045	9	6	100	48,060	305401000.BRG.l729	Lake	**$36,680**
21	L24025001+01001	PABLO 3A CANAL 035	12	6	100	36,817	305401000.BRG.1698	Lake	**$49,984**
22	L24029001+08001	PABLO 31A CANAL 036	14	6	100	23,810	305401000.BRG.1699	Lake	**$55,200**
23	L24030002+02001	PABLO CANAL 031	16	6	100	50,926	305401000.BRG.1701	Lake	**$62,800**
24	L24064000+08001	PABLO 3A CANAL 037	9	6	100	50,044	305401000.BRG.1702	Lake	**$36,576**
25	L24065002+02001	PABLO 3A CANAL 038	9	6	100	39,903	305401000.BRG.1704	Lake	**$37,800**
26	L24086000+02001	UTILE BITIERROOT RV 064	7	5	100	21,826	305401000.BRG.1705	Lake	**$29,260**

27	L24127000+03001	PABLO FEEDER CANAL 086	10	5	100	53,792	305401000.BRG.1707	Lake	**$38,800**
28	L24132000+09001	UTILE BITIERROOT RV 062	12	6	100	23,810	305401000.BRG.l708	Lake	**$46,328**
29	L24302008+05001	MISSION CREEK 044	9	0	100	71,429	305401000.BRG. 710	Lake	**$36,576**
30	L24302010+00001	MISSION RES INLET 043	9	5	100	45,856	305401000.BRG.1711	Lake	**$37,000**
31	L24303005+03001	SO KICKING HORSE RES 041	10	6	100	27,998	305401000.BRG.1713	Lake	**$40,400**
32	L24455000+01001	POST CREEK 074	9	6	100	31,967	305401000.BRG.1741	Lake	**$37,400**
33	L24727000+05001	PABLO FEEDER CANAL 007	14	7	100	71,429	305401000.BRG. 753	Lake	**$54,864**
34	L24623002+03001	PABLO FEEDER CANAL 008	12	6	100	39,242	305401000.BRG.1746	Lake	**$49,200**
35	L24624000+07001	PABLO FEEDER CANAL 025	9	7	100	43,872	305401000.BRG.1747	Lake	**$35,600**
36	L24630000+06001	SWAN RIVER 102	86	5	3	25,794	305401000.BRG.1749	Lake	**$343,812**
37	L24667000+01001	PABLO FEEDER CANAL 072	12	6	100	57,981	305401000.BRG. 750	Lake	**$49,984**
38	L24701000+09001	SWAN RIVER 091	47	7	100	71,429	305401000.BRG.1752	Lake	**$189,600**
39	L24742002+08501	DAYTON CREEK	20	7	100	51,808	305401000.BRG.1755	Lake	**$78,028**
40	L24352000+02001	PABLO A CANAL 034	14	6	100	20,282	305401000.BRG.1722	Lake	**$56,120**
41	L24352001+01001	POST CREEK 078	7	6	100	23,810	305401000.BRG.1723	Lake	**$29,260**
42	L24356000+06001	POST CREEK 080	11	6	100	26,676	305401000.BRG.1725	Lake	**$44,800**
43	L24357001+09001	SO KICKING HORSE RES 010	7	0	100	71,429	305401000.BRG.1726	Lake	**$26,840**
44	L24358003+02001	PABLO FEEDER CANAL 046	8	6	100	50,485	305401000.BRG.l728	Lake	**$33,800**
45	P00083058+06641	GOAT CREEK	18	9	100	53,792	305401000.BRG.3993	Lake	**$70,712**
46	P00083070+06501	BOND CREEK	6	8	100	71,870	305401000.BRG.3995	Lake	**$25,600**
47	P00083070+09001	NORTH FK BOND CREEK	6	12	100	71,870	305401000.BRG.3996	Lake	**$25,600**
48	L24308002+03001	PABLO FEEDER CANAL 022	14	6	100	23,810	305401000.BRG .1716	Lake	**$55,400**
49	L24309001+08001	NORTH CROW CREEK 002	10	7	100	45,856	305401000.BRG.1717	Lake	**$38,200**
50	L24339003+07001	JOCKO RIVER 012	18	7	100	35,935	305401000.BRG.1719	Lake	**$70,800**
51	L24339005+07001	JOCKO RIVER 013	24	7	100	53,572	305401000.BRG.1720	Lake	**$95,920**
52	P00083071+07001	HALL CREEK	6	12	100	71,870	305401000.BRG .3998	Lake	**$25,600**
53	P00083077+02001	SIX MILE CREEK	6	8	100	71,870	305401000.BRG.3999	Lake	**$25,600**

54	P00005037+07681	POST CREEK	16	9	100	49,824	305401000.BRG.3156	Lake	**$63,396**
55	P00005061+01811	FLATHEAD RIVER	468	9	100	71,870	305401000.BRG.3159	Lake	**$3,277,204**
56	L24065000+05001	PABLO 3A CANAL 039	12	6	100	24,912	305401000.BRG.1703	Lake	**$47,000**
57	L24124005+05001	PABLO A CANAL 083	12	5	100	39,903	305401000.BRG.l706	Lake	**$47,548**
58	L24301010+07001	CROW CREEK 066	12	7	100	49,824	305401000.BRG.l709	Lake	**$47,548**
59	L24303001+07001	NO KICKING HORSE RES 009	6	0	100	71,429	305401000.BRG. 712	Lake	**$25,600**
60	L24308001+olOOl	NORTH CROW CREEK 021	9	6	100	39,903	305401000.BRG. 715	Lake	**$35,360**
61	L24339000+06001	JOCKO RIVER 011	13	7	100	71,429	305401000.BRG. 718	Lake	**$53,644**
62	L24340005+00001	POST CREEK 053	19	6	100	34,833	305401000.BRG. 721	Lake	**$74,368**

Dam Failure Risk Assessment Documentation

CSKT Pre-Disaster Mitigation Plan

CSKT RISK ASSESSMENT SUMMARY - DAM FAILURE														
Census Designation	**Area Sq. Mi.**	**Dam Area Sq. Mi,**	**% Dam Inundation**	**Dam Area Acres**	**# of Residential Buildings at Risk**	**Residential Building Exposures**	**# of Commercial Buildings at Risk**	**Commercial Building Exposures**	**# of Critical Facilities at Risk**	**Critical Facilities Exposures**	**# Bridges at Risk**	**Bridge Exposure Risk**	**At Risk Population Total**	**At Risk Persons Under 18**
CENSUS Incorporated Towns														
Polson city	4.17	0.3	7%	190	139	$27,392,343	74	$31,785,452	0	$0	1	$3,277,204	543	71
Ronan city	1.19	0	0%	0	0	$0	0	$0	0	$0	0	$0	0	0
St. Ignatius city	0.56	0.1	18%	67	35	$4,577,891	11	$480,338	0	$0	1	$40,232	149	43
COUNTY	1,646	186		118,836	2,832	$603,058,548	574	$58,782,990	7	$29,867,535	29	$3,131,634	7,422	1,847
CENSUS Designated Places														
Arlee CDP	6.46	0.9	14%	579	18	$4,086,587	4	$394,668	0	$0	1	$126,800	203	64
Bear Dance CDP	2.77	0.21	8%	131	102	$43,146,186	8	$881,450	0	$0	0	$0	102	17
Big Arm CDP	5.41	0.08	1%	54	64	$10,332,194	22	$2,999,894	0	$0	0	$0	49	5
Charla CDP	2	0.78	39%	496	103	$8,638,650	23	$816,760	1	$0	0	$0	280	75
Dayton CDP	0.55	0.27	49%	175	128	$16,904,379	151	$29,745,843	1	$0	1	$78,028	83	11
Elmo CDP	0.31	0.17	55%	109	42	$6,632,461	35	$646,874	0	$0	0	$0	138	34
Finley Point CDP	4.27	0.59	14%	377	711	$193,168,628	67	$995,192	0	$0	0	$0	346	SO
Jette CDP	0.62	0.06	10%	38	55	$9,150,542	6	$166,620	0	$0	0	$0	79	7
Sèliš Ksanka	1.02	0.15	15%	94	13	$4,369,129	2	$61,891	0	$0	0	$0	48	12
Kicking Horse CDP	3.55	0.41	12%	260	0	$0	0	$0	0	$0	0	$0	6	1
Kings Point CDP	1.35	0.25	19%	157	187	$38,764,343	13	$29,672	0	$0	0	$0	110	17
Lindisfarne CDP	2.62	0.24	9%	152	235	$48,498,948	20	$478,624	0	$0	0	$0	196	30
Pablo CDP	4.84	1.55	32%	994	283	$24,177,458	106	$9,681,452	5	$29,867,535	0	$0	2,071	683
Ravalli CDP	2.64	0.25	9%	160	12	$1,137,479	0	$0	0	$0	0	$0	14	0
Rocky Point CDP	0.61	0.05	8%	32	38	$9,702,350	4	$29,064	0	$0	0	$0	88	17
Turtle Lake CDP	0.66	0.02	3%	12	0	$0	0	$0	0	$0	0	$0	60	12

CSKT CRITICAL FACILITES – DAM INUNDATION

Name	Address	Town	Jurisdiction	LAT	LONG	Replacement Value
Two Eagle River School	52096 Hwy 93	Pablo	County	47.600289	-114.111725	$9,592,557
Tribal Complex Building (New)	21 Complex Rd.	Pablo	County	47.595921	-114.114321	$9,274,798
Tribal Complex Building (Old)	21 Complex Rd.	Pablo	County	47.595766	-114.115712	$7,303,903
Pablo Elementary School	608-4th Ave. E.	Pablo	County	47.601619	-114.117031	$3,513,989
Pablo Division of Fire / Search and Rescue		Pablo	County	47.601902	-114.119595	$182,288
Charlo School	404-lst Ave. W	Charlo	County	47.440101	-114.174413	
Dayton School	506 B St	Dayton	County	47.865683	-114.280000	

Earthquake Risk Assessment Documentation

CSKT Pre-Disaster Mitigation Plan

CSKT RISK ASSESSMENT SUMMARY - EARTHQUAKE HAZARD (40-50 PERCENT G)														
Census Designation	**Area Sq. Mi.**	**Earthquake Hazard Area Sq. Mi.**	**% Hazard**	**Hazard Area Acres**	**# of Residential Buildings at Risk**	**Residential Buildings Exposures**	**# of Commercial Buildings at Risk**	**Commercial Building Exposures**	**# Critical Facilities at Risk**	**Critical Facilities Exposure Risks**	**#Bridges at Risk**	**Bridge Exposure Risks**	**At Risk Population Total**	**# At Risk Persons Under 18**
CENSUS Incorporated Towns														
Polson city	4.17	3.82	91.61%	2,442	2,002	$262,630,066	640	S186,321,779	14	S79,827,069	1	S3,277,204	4,471	1,084
Ronan city	1.19	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
St. Ignatius city	0.56	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
COUNTY	1,646	231		147,984	3,215	$623,671,365	470	$40,303,575	9	$63,186,190	15	$725,944	8,346	2,083
CENSUS Designated Places														
Arlee CDP	6.46	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Bear Dance CDP	2.77	2.74	98.92%	1,752	244	$66,399,442	25	$1,948,114	0	$0	0	$0	275	54
Big Arm CDP	5.41	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Charlo CDP	2	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Dayton CDP	0.55	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Elmo CDP	0.31	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Finley Point CDP	4.27	4.27	100.00 %	2,734	568	Sl39,101,581	71	S2,204,591	0	$0	0	$0	480	76
Jette CDP	0.62	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Sḷéliš Ksanka Qlispé CDP	1.02	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Kicking Horse CDP	3.55	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Kings Point CDP	1.35	1.35	100.00 %	866	311	S55,981,199	19	$109,662	0	$0	0	$0	151	24
Lindisfame CDP	2.62	0.62	23.66%	396	156	$32,886,119	23	$548,197	0	so	0	$0	100	19
Pablo CDP	4.84	4.83	99.79%	3,093	388	$37,391,847	120	$10,588,590	6	$62,567,543	0	$0	2,254	744
Ravalli CDP	2.64	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Turtle Lake CDP	0.66	0.66	100.00 %	422	6	$746,239	0	$0	0	$0	0	$0	209	88

CSKT CRITICAL FACILITIES - EARTHQUAKE HAZARD (40-50 PERCENT G)						
Name	**Address**	**Town**	**Jurisdiction**	**LAT**	**LONG**	**Replacement Value**
Salish Kootenai College	52000 Hwy 93	Pablo	County	47.596812	-114.107108	$32,700,008
Polson High School	1712-2nd St. W.	Polson	Polson	47.678666	-114.168232	$24,440,954
CSKT Courthouse	106-4th Ave. E.	Polson	Polson	47.691833	-114.161106	$18,340,913
Polson Middle School	1602-2nd St. W	Polson	Polson	47.680081	-114.168511	$16,880,132
Two Eagle River School	52096 Hwy 93	Pablo	County	47.600289	-114.111725	$9,592,557
Tribal Complex Building (New)	21 Complex Rd.	Pablo	County	47.595921	-114.114321	$9,274,798
St. Joseph Medical Center	6-13th Ave. E.	Polson	Polson	47.683269	-114.161468	$8,088,058
Tribal Complex Building (Old)	21 Complex Rd.	Pablo	County	47.595766	-114.115712	$7,303,903
Linderman School	312-4th Ave. E.	Polson	Polson	47.692006	-114.158202	$6,540,418
Pablo Elementary School	608-4th Ave. E.	Pablo	County	47.601619	-114.117031	$3,513,989
Tribal Natural Resources	301 Main Street	Polson	Polson	47.693201	-114.162938	$3,246,179
Polson City Hall/Fire Hall/Police Dept	106- st St. E.	Polson	Polson	47.695191	-114.162218	$1,825,976
Polson Road Shop / Pump House	54827 Hwy 93	Pablo	County	47.635944	-114.112695	$618,647
Polson Fire Department / OEM / Sheriff		Polson	Polson	47.696241	-114.178357	$391,539
Pablo Division of Fire / Search and Rescue		Pablo	County	47.601902	-114.119595	$182,288
Cherry Valley School	107-8th Ave. W.	Polson	Polson	47.687818	-114.165747	$72,900
Ronan Airport		Ronan	County	47.567595	-114.105229	$0
Montecahto RFD	6100 East Shore RT	Polson	County	47.725931	-114.037944	$0
CSKT Health Department		Polson	Polson	47.687955	-114.163697	$0
DNRC Polson Office	410 1st St East	Polson	Polson	47.691732	-114.162146	$0
Tribal Health	5 4th Ave. East	Polson	Polson	47.692563	-114.161137	$0
Polson Hill Communication Site #1		Polson	Polson	47.678004	-114.14247	$0
Polson Hill Communication Site #2		Polson	Polson	47.674774	-114.148993	$0

Flood Risk Assessment Documentation

CSKT Pre-Disaster Mitigation Plan

CSKT Pre-Disaster Mitigation Plan - Flood																				
Census Designation	Frequency	Magnitude	Area Sq. Mi.	Flood Area Sq. Mi.	% Flood	Flood Area Acres	# Residential Buildings at Risk	Residential Building Exposure $	Annual Loss to Residential Building Stock	# of Commercial Buildings at Risk	Commercial Building Exposure $	Annual Loss to Commercial Building	# Critical Facilities at Risk	Critical Facilities Exposure $	Annual Loss to Critical Facilities	# Bridge at Risk	Bridge Exposure Risk $	Annual Loss to Bridges $	At Risk Population Total	At Risk Persons Under 18
CENSUS Incorporated Towns																				
Polson city	0.21	0.0040%	4.17	0.02	0%	11	49	$10,314,441	$87	11	$1,322,741	$11	0	$0	$0	1	$3,277,204	$28	337	33
Ronan city	0.21	0.0040%	1.19	0.02	2%	11	7	$615,416	$5	16	$14,259,884	$120	0	$0	$0	0	$0	$0	94	36
St. Ignatius city	0.21	0.0040%	0.56	0.03	5%	19	41	$4,604,999	$39	7	$181,280	$2	0	$0	$0	1	$40,232	$0	251	71
COUNTY	0.21	0.0040%	1646	173		111,033	2,389	$608,995,285	$5,122	287	$24,472,893	$206	0	$0	$0	26	$3,799,076	$32	7659	1800
CENSUS Designated Places																				
Arlee CDP	0.21	0.0040%	6.46	0.28	4%	181	24	$2,327,944	$20	5	$438,868	$4	0	$0	$0	1	$126,800	$1	261	68
Bear Dance CDP	0.21	0.0040%	2.77	0.03	1%	17	83	$30,114,942	$253	6	$855,087	$7	0	$0	$0	0	$0	$0	102	17
Big Arm CDP	0.21	0.0040%	5.41	0.02	0%	12	14	$2,623,311	$22	6	$194,951	$2	0	$0	$0	0	$0	$0	76	12
Charlo CDP	0.21	0.0040%	2	0.05	3%	30	8	$1,121,491	$9	0	$0	$0	0	$0	$0	0	$0	$0	118	33
Dayton CDP	0.21	0.0040%	0.55	0.03	4%	13	20	$2,243,866	$19	8	$1,170,056	$10	0	$0	$0	1	$78,028	$1	32	0

Elmo CDP	0.21	0.0040%	0.31	0	0%	1	11	$2,016,475	$18	11	$93,200	$1	0	$0	$0	0	$0	$0	68	16
Finley Point CDP	0.21	0.0040%	4.27	0.16	4%	102	582	$125,650,735	$1,057	57	$595,542	$5	0	$0	$0	0	$0	$0	245	27
Jette CDP	0.21	0.0040%	0.62	0	0%	3	11	$1,380,312	$12	2	$70,671	$1	0	$0	$0	0	$0	$0	56	5
Sẹ̀lis Kṣanka Qlispẹ̀ CDP	0.21	0.0040%	1.02	0.08	8%	50	5	$1,656,606	$14	2	$61,891	$1	0	$0	$0	0	$0	$0	41	11
Kicking Horse CDP	0.21	0.0040%	3.55	0.07	2%	43	2	$152,593	$1	1	$553	$0	0	$0	$0	0	$0	$0	71	26
Kings Point CDP	0.21	0.0040%	1.35	0.08	6%	48	106	$21,712,875	$183	7	$25,149	$0	0	$0	$0	0	$0	$0	110	17
Lindisfarne CDP	0.21	0.0040%	2.62	0.1	4%	62	129	$23,987,580	$202	7	$227,603	$2	0	$0	$0	0	$0	$0	141	20
Pablo CDP	0.21	0.0040%	4.84	0.04	1%	23	11	$1,310,237	$11	1	$6,391	$0	0	$0	$0	0	$0	$0	597	189
Ravalli CDP	0.21	0.0040%	2.64	0.14	5%	87	7	$725,543	$6	0	$0	$0	0	$0	$0	0	$0	$0	14	0
Rocky Point CDP	0.21	0.0040%	0.61	0	0%	2	14	$3,394,002	$29	2	$27,433	$0	0	$0	$0	0	$0	$0	44	8
Turtle Lake CDP	0.21	0.0040%	0.66	0.00	0%	0	0	$0	$0	0	$0	$0	0	$0	$0	0	$0	$0	0	0

Hazardous Material Incident Risk Assessment Documentation

CSKT Pre-Disaster Mitigation Plan

CSKT RISK ASSESSMENT SUMMARY - HAZMAT														
Census Designation	**Area Sq. Mi.**	**Hazmat Area Sq. Mi.**	**% Hazmat**	**Hazmat Acres**	**# of Residential Buildings at Risk**	**Residential Building Exposures**	**# of Commercial Building at Risk**	**Commercial Building Exposures**	**# Critical Facilities at Risk**	**Critical Facilities Exposures**	**# of Bridges at Risk**	**Bridge Exposure Risks**	**At Risk Population Total**	**At Risk Persons Under 18**
CENSUS Incorporated Towns														
Polson city	4.17	2.02	48%	1,293	890	$90,923,471	517	$149,850,759	11	$31,062,173	1	$3,277,204	2,721	611
Ronan city	1.19	1.02	86%	652	683	$50,690,419	420	$110,298,707	12	$57,042,214	0	$0	1,617	432
St. Ignatius city	0.56	0.16	29%	100	122	$11,038,483	34	$4,050,397	0	$0	0	$0	315	76
COUNTY	1,648	118		81,543	5,619	$852,497,082	1,767	$349,089,825	55	$163,347,028	31	$3,551,072	17,342	4,371
CENSUS Designated Places														
Arlee CDP	6.46	2.44	38%	1,564	119	$11,301,631	62	$9,727,230	5	$5,578,791	2	$240,184	588	169
Bear Dance CDP	2.77	2.2	79%	1,405	235	$64,855,885	21	$1,863,070	0	$0	0	$0	275	54
Bio Arm CDP	5.41	1.57	29%	1,005	122	$21,426,322	40	$4,615,489	2	$0	0	$0	175	39
Charlo CDP	2	0.95	48%	608	168	$13,566,621	53	$3,485,537	4	$53,611	0	$0	377	105
Dayton CDP	0.55	0.46	84%	295	66	$9,690,596	125	$29,244,973	1	$0	0	$0	65	7
Elmo CDP	0.31	0.31	100%	200	43	$6,886,918	35	$646,874	1	$0	0	$0	180	44
Finley Point CDP	4.27	0.65	15%	418	142	$37,854,239	17	$758,545	0	$0	0	$0	224	35
Jette CDP	0.62	0.28	45%	180	49	$7,428,780	2	$155,470	0	$0	0	$0	165	27
Sḷiš Ksanka Qlispé CDP	1.02	0.42	41%	267	77	$14,904,728	2	$22,277	0	$0	1	$44,400	241	67
Kicking Horse CDP	3.55	0.25	7%	161	0	$0	0	$0	0	$0	0	$0	6	1
Lindisfarne CDP	2.62	0.5	19%	318	116	$21,804,345	13	$490,667	0	$0	0	$0	146	31
Pablo CDP	4.84	1.18	24%	757	180	$16,863,540	53	$6,437,841	5	$29,867,535	0	$0	1,484	510
Ravalli CDP	2.64	1.19	45%	761	52	$4,172,219	25	$1,303,480	0	$0	0	$0	76	12
Rocky Point CDP	0.61	0.01	2%	4	0	$0	0	$0	0	$0	0	$0	0	0
Turtle Lake CDP	0.66	0	0%	0	0	$0	0	$0	0	$0	0	*$0*	0	0

CSKT PRE-DISASTER MITIGATION PLAN - CRITICAL FACILITIES - HAZMAT						
Name	**Address**	**Town**	**Jurisdiction**	**LAT**	**LONG**	**Replacement Value**
St. Luke Hospital	107-6th Ave. SW	Ronan	Ronan	47.528647	-114.106796	$37,099,191
CSKT Courthouse	106 4th Ave. E.	Polson	Polson	47.691833	-114.161106	$18,340,913
Tribal Forestry	104 Main SE	Ronan	Ronan	47.529016	-114.095513	$11,956,663
Two Eagle River School	52096 Hwy 93	Pablo	County	47.600289	-114.111725	$9,592,557
Tribal Complex Building (New)	21 Complex Rd.	Pablo	County	47.595921	-114.114321	$9,274,798
St. Ignatius Tribal Health	880 Mission Drive	St. Ignatius	St. Ignatius	47.316647	-114.104431	$7,790,830
Tribal Complex Bui ding (Old)	21 Complex Rd.	Pablo	County	47.595766	-114.115712	$7,303,903
Linderman School	312-4th Ave. E.	Polson	Polson	47.692006	-114.158202	$6,540,418
Ronan High School	103-3rd Ave. NW	Ronan	Ronan	47.530328	-114.100894	$5,257,651
Arlee Tribal Health	11Bitterroot Jim	Arlee	County	47.167581	-114.089163	$5,217,074
Pablo Elementary School	608-4th Ave. E.	Pablo	County	47.601619	-114.117031	$3,513,989
Tribal Natural Resources	301 Main Street	Polson	Polson	47.693201	-114.162938	$3,246,179
Ronan Middle School	220 Round Butte Rd.	Ronan	Ronan	47.532055	-114.104446	$2,195,808
Kootenai Culture Building	77406 Hwy 93	Elmo	County	47.830664	-114.352271	$2,136,392
Polson City Hall/Fire Hall/Police Dept	106-1st St. E.	Polson	Polson	47.695191	-114.162218	$1,825,976
Ronan Fire Hall	210 Adams SW	Ronan	Ronan	47.528032	-114.100768	$1,040,755
Polson Airport		Polson	Polson	47.693735	-114.183833	$644,248
Polson Road Shop/ Pump House	54827 Hwy 93	Pablo	County	47.635944	-114.112695	$618,647
Ronan Tribal Health	26 Round Butte Rd.	Ronan	Ronan	47.530104	-114.098327	$506,404
Valley View School	7000 Valley View Rd	Polson	County	47.631415	-114.284548	$452,146
Safety of Dams	711-3rd Ave. NW	Ronan	Ronan	47.536359	-114.101845	$417,366
Ronan Municipal Offices	207 Main St.	Ronan	Ronan	47.528497	-114.101056	$407,650
Polson Fire Department / OEM / Sheriff		Polson	Polson	47.696241	-114.178357	$391,539
Arlee Senior Center	106 Wessinger	Arlee	County	47.161751	-114.086398	$361,717
Ronan Municipal Garage	1010 Main St. SW	Ronan	Ronan	47.528967	-114.112876	$314,136
Swan Lake VFD	40942 Swan Hwy	Swan Lake	County	47.930754	-113.846561	$243,360
Ronan Police Dept	206 Adams St SW	Ronan	Ronan	47.528028	-114.100759	$152,250

Lift Station #2		Ronan	Ronan	47.528441	-114.107985	$80,000
Lift Station #1		Ronan	Ronan	47.530039	-114.108	$80,000
Lift Station #3		Ronan	Ronan	47.530039	-114.102197	$80,000
St. Ignatius Airport		St. Ignatius	County	47.326357	-114.084045	$75,402
Cherry Valley School	107-8th Ave. W.	Polson	Polson	47.687818	-114.165747	$72,900
City Park Well		Ronan	Ronan	47.524641	-114.101747	$67,514
County Road Shop		Char lo	County	47.43883	-114.172786	$53,611
Proctor Fire Hall/ Shop	44458 Brubaker lam	Proctor	County	47.890686	-114.298728	$15,000
Arlee Fire Department		Arlee	County	47.159597	-114.081001	$0
Arlee Fire Hall	200 Culloyah	Arlee	County	47.162627	-114.084647	$0
Arlee School	123 Fyant St.	Arlee	County	47.165616	•114.083534	$0
St. Ignatius Sewage Lagoons		St. Ignatius	County	47.317427	-114.110697	$0
Charlo Fire Department	39249 Dellwo Rd.	Charlo	County	47.429927	-114.174994	$0
Charlo Sewage Lagoons		Charlo	County	47.431043	-114.175764	$0
Charlo School	404-1st Ave. W	Charlo	County	47.440101	-114.174413	$0
CSKT Community Center	3rd Ave NW	Ronan	Ronan	47.532747	-114.102003	$0
Polson Wastewater Treatment		Polson	Polson	47.687077	-114.178165	$0
CSKT Health Department		Polson	Polson	47.687955	•114.163697	$0
DNRC Polson Office	410 1st St East	Polson	Polson	47.691732	-114.162146	$0
Tribal Health	5 4th Ave. East	Polson	Polson	47.692563	-114.161137	$0
Montecahto RFD	6100 East Shore RT	Polson	County	47.725931	-114.037944	$0
Big Arm Water System		Big Arm	County	47.797178	-114.292105	$0
Big Arm Fire Department		Big Arm	County	47.797697	-114.295121	$0
Elmo Fire Station		Elmo	County	47.830657	•114.350961	$0
Elmo Substation		Elmo	County	47.833521	•114.353884	$0
Dayton School	506 B Street	Dayton	County	47.865683	-114.279773	$0

Landslide Risk Assessment Documentation

CSKT Pre-Disaster Mitigation Plan

CSKT Pre-Disaster Mitigation Plan - Landslide Hazard														
Census Designation	**Area Sq. Mi.**	**Landslide Hazard Area Sq. Mi.**	**% Hazard**	**Hazard Area Acres**	**# Residential Buildings at Risk**	**Residential Building Exposures**	**Commercial Buildings at Risk**	**Commercial Building Exposures**	**Critical Facilities at Risk**	**Critical Facilities Exposure Risks**	**# of Bridges at Risk**	**# Bridge Exposure Risks**	**At Risk Population Total**	**At Risk Persons Under 18**
CENSUS Incorporated Towns														
Polson city	4.17	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Ronan city	1.19	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
St. Ignatius city	0.56	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
COUNTY	1,646	79	0	50,840	384	$65,526,956	71	$10,389,748	1	$0	0	$0	2,266	448
CENSUS Designated Places														
Arlee CDP	6.46	0	0.00%	1.03	0	$0	0	$0	0	$0	0	$0	3	0
Bear Dance CDP	2.77	0.19	6.86%	122.66	101	$15,193,820	12	$976,860	0	$0	0	$0	263	54
Big Arm CDP	5.41	0.01	0.18%	8.21	0	$0	0	$0	0	$0	0	$0	4	0
Char1o CDP	2	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Dayton CDP	0.55	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Elmo CDP	0.31	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Finley Point CDP	4.27	0.03	0.70%	22.22	14	$2,334,412	5	$654,291	0	$0	0	$0	67	14
Jette CDP	0.62	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Sẹ̀liš Ksanka Qlispé CDP	1.02	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Kicking Horse CDP	3.55	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Kings Point CDP	1.35	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Lindisfame CDP	2.62	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Pablo CDP	4.84	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Ravalli CDP	2.64	0.04	1.52%	27.46	3	$206,106	0	$0	0	$0	0	$0	61	12
Rocky Point CDP	0.61	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0
Turtle Lake CDP	0.66	0	0.00%	0	0	$0	0	$0	0	$0	0	$0	0	0

CSKT Pre Disaster Mitigation Plan - Critical Facilities - Landslide Hazard					
Name	Address	Jurisdiction	LAT	LONG	Replacement Value
Montecahto RFD	16100 East Shore RT	County	47.7259311	-114.0379441	$0

Severe Summer Weather Risk Assessment Documentation

CSKT Pre-Disaster Mitigation Plan

CSKT Pre-Disaster Mitigation Plan - Severe Summer Weather																	
Census Designation	**Frequency**	**Magnitude**	**Area Sq. Mi.**	**# Residential Buildings at Risk**	**Residential Building Exposure**	**Annualized Loss for Building Stock**	**# of Commercial Buildings at Risk**	**Commercial Building Exposure**	**Annualized Loss for Commercial Building**	**# of Critical Facilities Exposure**	**Critical Facilities Exposure**	**Annualized Loss for Critical Facilities**	**# of Bridge Exposure**	**Bridge Exposure**	**Annualized Loss for Bridges**	**Total Population Exposure**	**Total Persons Under 11**
CENSUS Incorporated Towns																	
Polson city	0.65	0.0034"	4.17	2,014	$264,253,693	$5,871	641	$186,643 179	$4,147	14	$80,471,317	$1,788	1	$3,277,204	$73	4,488	1,085
Ronan city	0.65	0.0034"	1.19	869	$68,159.45	$1,514	428	$111,261,580	$2,472	16	$59,905,388	$1,331	0	$0	$0	**1,871**	518
St. Ignatius city	0.65	0.0034"	0.56	323	$28,062,140	$623	98	$11,480,359	$255	7	$1,115,758	$225	1	$40,232	$1	842	254
COUNTY	0.65	0.0034"	1,646	10,026	$1.900,032,008	$42 215	1,713	$152,796,089	$3,395	37	$72,839,343	$1,618	88	$8,437,082	$187	21,545	5,424
CENSUS Designated Places																	
Arlee CDP	0.65	0.0034"	6.46	152	I,525,979	$345	65	$9,731,532	$675	1	$0	$0	1	$78,028	$2	84	11
Bear Dance CDP	0.65	0.0034"	2.77	244	$66,199,442	$1,'75	25	$1,948,114	$14	2	$2,136,392	$47	0	$0	$0	180	44
Big Arm CDP	0.65	0.0034"	5.41	126	$22,369,725	$497	43	$4,629,812	$60	0	$0	$0	0	$0	$0	480	76
Charlo CDP	0.65	0.0034"	2	178	$15,102,794	$116	53	$10 395,523	$675	4	$53,611	$1	0	$0	$0	379	43
Dayton CDP	0.65	0.0034"	0.55	137	$17,905,114	$398	156	$30,395,523	$6	0	$0	$0	1	$44,400	$I	251	68
Elmo CDP	0.65	0.0034"	0.31	43	$6,886,9 18	$153	35	$646,874	$37	1	$0	$0	1	$26,840	$1	286	71
Finley Point CDP	0.65	0.0034"	4.27	909	$231,936,697	$5,153	104	$2,679,845	$2	0	$0	$0	0	$0	$0	151	24
Jette CDP	0.65	0.0034"	0.62	125	$20,690,942	$460	10	$647,663	$32	0	$0	$0	0	$0	$0	65	5
Sėliš Ksanka Qlispė CDP	0.65	0.0034"	1.02	111	$24.590,490	$546	7	$290,136	$26	0	$0	$0	0	$0	$0	284	56
Kicking Horse CDP	0.65	0.0034"	3.55	15	$2.046,669	$45	8	$1,680,673	$235	6	$62,567,543	$1,390	0	$0	$0	2,254	744
Kings Point CDP	0.65	0.0034"	1.35	311	$55,981,199	$1,244	19	$I09,662	$29	0	$0	$0	0	$0	$0	76	12
Lindisfarne CDP	0.65	0.0034"	2.62	443	$77,983,856	$1,733	54	$1 148,242	$39	I	$0	$0	0	$0	$0	209	38
Pablo CDP	0.65	0.00%	4.84	388	$37,391,847	$831	120	$10,588,590	$22	I	$243.36	$5	4	$I02,400	$2	113	15
Ravalli CDP	0.65	0.0034"	2.64	52	$4,172,219	$93	25	$1,303,480	$0	0	$0	$0	0	$0	$0	209	88
Rocky Point CDP	0.65	0.0034"	0.61	64	$14.014.588	$311	8	$349,802	$212	0	$0	$0	1	$34.40	$1	661	128
Turtle Lake CDP	0.65	0.0034"	0.66	6	$746,219	$17	0	$0	$1.93	20	$33,836,171	$752	23	$6,607,214	$147	9,610	1,879

Severe Winter Weather Risk Assessment Documentation

CSKT Pre-Disaster Mitigation Plan

CSKT Pre-Disaster Mitigation Plan - Severe Winter Weather																	
Census Designation	Frequency	Magnitude	Area Sq. Mi.	# Residential Buildings at Risk	Residential Building Exposure	Annualized Loss for Building Stock	# of Commercial Buildings at Risk	Commercial Building Exposure	Annualized Loss for Commercial Building	# of Critical Facilities Exposure	Critical Facilities Exposure	Annualized Loss for Critical Facilities	# of Bridge Exposure	Bridge Exposure	Annualized Loss for Bridges	Total Population Exposure	Total Persons Under 11
CENSUS Incorporated Towns																	
Polson city	1.04	0.0004"	4.17	2,014	$264,253,693	51,099	641	$186,643,179	$776	14	$80.471,317	$335	1	$3,277,204	$14	4,488	1,085
Ronan city	1.04	0.0004"	1.19	869	$68.159.449	$284	428	$111,261,523	$463	16	$59,905,388	$249	0	$0	$0	1,871	518
St. Ignatius city	1.04	0.0004"	56	323	$28.062.140	$117	98	$11,480,359	$48	7	$10,134,008	$42	1	$40.23	$0	842	254
COUNTY	1.04	0.0004"	1,646	10,026	$1,900,032,008	$7.91	1,713	$152,796.09	$636	37	$72.839,343	$303	88	$8.437.082	$35	21.545	5,424
CENSUS Designated Places																	
Arlee CDP	1.04	0.0004"	6.46	152	$15,525,979	$65	65	$9,733,532	$40	5	$1.115,758	$5	2	$240,184	$1	636	187
Bear Dance CDP	1.04	0.0004"	2.77	244	$66.399,442	$276	25	$1,948,114	$5	0	$0	$0	0	$0	$0	275	54
Big Arm CDP	1.04	0.0004"	5.41	126	$22,369,725	$93	43	$4,629,812	$19	2	$0	$0	0	$0	$0	177	39
Charlo CDP	1.04	0.0004"	2	178	$15,102,794	$63	53	$30,395.52	$126	4	$53,611	$0	0	$0	$0	379	105
Dayton CDP	1.04	0.0004"	0.55	137	$17,905,114	$74	156	$30,395,523	$126	1	$0	$0	1	$78,028	$0	84	11
Elmo CDP	1.04	0.0004"	0.31	43	$6.886.918	$29	35	$646,874	$3	2	$1.136,392	$9	0	$0	$0	180	44
Finley Point CDP	1.04	0.0004"	4.27	909	$231,936,697	$965	104	$2,679.85	SU	0	$0	$0	0	$0	$0	480	76
Jette CDP	1.04	0.0004"	0.62	125	$20,690,942	$86	10	$647,663	$3	0	$0	$0	0	$0	$0	253	43
Sélíš Ksanka Qlispé CDP	1.04	0.0004"	1.02	113	$24.590,490	$102	7	$290,336	$1	0	$0	$0	1	$44,400	$0	251	68
Kicking Horse CDP	1.04	0.0004"	3.55	15	$2.046,669	$9	8	$1.680,673	$7	1	$0	$0	1	$26,840	$0	286	71
Kings Point CDP	1.04	0.0004"	1.35	311	$55.981.199	$233	19	$109,662	$0	0	$0	$0	0	$0	$0	151	24
Lindisfarne CDP	1.04	0.0004"	2.62	443	$77,983,856	$324	54	$1,148,242	$5	0	$0	$0	0	$0	$0	284	56
Pablo CDP	1.04	0.0004"	4.84	388	$37.391.847	$156	120	$10,588,590	$44	6	$62,567,543	$260	0	$0	$0	2,254	744
Ravalli CDP	1.04	0.0004"	2.64	52	$4,172,219	$17	25	$1.303,480	$5	0	$0	$0	0	$0	$0	76	12
Rocky Point CDP	1.04	0.0004"	0.61	64	$14,014,588	$58	8	$349,802	$1	0	$0	$0	0	$0	$0	97	19
Turtle Lake CDP	1.04	0.0004"	0.66	6	$746,239	$3	0	$0	$0	0	$0	$0	0	$0	$0	209	88

Structure Fire Risk Assessment Documentation

CSKT Pre-Disaster Mitigation Plan

CSKT Pre-Disaster Mitigation Plan - Structure Fire																	
Census Designation	Frequency	Magnitude	Area Sq. Mi.	# Residential Buildings at Risk	Residential Building Exposure	Annualized Loss for Building Stock	# of Commercial Buildings at Risk	Commercial Building Exposure	Annualized Loss for Commercial Building	# of Critical Facilities Exposure	Critical Facilities Exposure	Annualized Loss for Critical Facilities	# of Bridge Exposure	Bridge Exposure	Annualized Loss for Bridges	Total Population Exposure	Total Persons Under 11
CENSUS Incorporated Towns																	
Polson city	34.09	0.00%	4.17	2.014	$264,253,693	$48,912	641	$186,643,179	$34,547	14	$80,471,317	$14,895	1	$3,277,204	$607	4,488	1,085
Ronan city	34.09	0.00%	1.19	869	$68,159,449	$12,616	428	$111,261.52	$20,594	16	$59,905,388	$11,088	0	$0	$0	1,871	518
St. Ignatius city	34.09	0.00%	0.56	323	$28,062,140	$5,194	98	$11,480,359	$2,125	7	$10,134,008	$1,876	1	540,232	$7	842	254
COUNTY	34.09	0.00%	1,646	10.026	$1,900,032,008	$351,686	1,713	$152.796,089	$28,282	37	$72,839,343	$13,482	88	$8,437,082	$1,562	21,545	5,424
CENSUS Designated Places																	
Arlee CDP	34.09	0.00%	6.46	152	1,525,979	$2,874	65	$9,733,532	$1,802	5	$1,115,758	$207	2	$240,184	544	636	187
Bear Dance CDP	34.09	0.00%	2.77	244	$66,399,442	$12,290	25	$1,948,114	$361	0	$0	$0	0	$0	$0	275	54
Big Arm CDP	34.09	0.00%	5.41	126	$22,369,725	$4.14	43	$4,629,812	$857	2	$0	$0	0	$0	$0	177	39
Charlo CDP	34.09	0.00%	2	178	1,102,794	$2,795	53	$30,395,523	$5.63	4	$53,611	$1O	0	$0	$0	379	105
Dayton CDP	34.09	0.00%	0.55	137	$17,905,114	$3,314	156	$30,395,523	$5,626	1	$0	$0	1	$78,028	$14	84	11
Elmo CDP	34.09	0.00%	0.31	43	$6.886,918	$1.28	35	$646,874	$120	2	$2,136,392	$395	0	$0	$0	180	44
Finley Point CDP	34.09	0.00%	4.27	580	$142,198,213	$26,320	73	$2,207,267	5409	0	$0	$0	0	$0	$0	480	76
Jette CDP	34.09	0.00%	0.62	125	$20,690,942	$3,830	10	$647,663	$120	0	$0	$0	0	$0	$0	253	43
Sélis Ksanka Qlispé CDP	34.09	0.00%	1.02	113	$24,590,490	54,552	7	$290,336	$54	0	$0	$0	1	544.4	$8	251	68
Kicking Horse CDP	34.09	0.00%	3.55	15	$2,046,669	$379	8	$1,680,673	$311	1	$0	$0	1	$26,840	$5	286	71
Kings Point CDP	34.09	0.00%	1.35	311	$55,981,199	$10,362	19	$109,662	$20	0	$0	$0	0	$0	$0	151	24
Lindisfarne CDP	34.09	0.00%	2.62	443	$77,983,856	$14,434	54	$1,148,242	$213	0	$0	$0	0	$0	$0	284	56
Pablo CDP	34.09	0.00%	4.84	388	$37,391,847	$6,921	120	$10,588,590	$1,960	6	$62,567,543	$11,581	0	$0	$0	2,254	744
Ravalli CDP	34.09	0.00%	2.64	52	54,172,219	$772	25	$1,303,480	$241	0	$0	$0	0	$0	$0	76	12
Rocky Point CDP	34.09	0.00%	0.61	64	$14,014,588	$2.$94	8	$349,802	$65	0	$0	$0	0	$0	$0	97	19
Turtle Lake CDP	34.09	0.00%	0.66	6	$746,239	$138	0	$0	$0	0	$0	$0	0	$0	$0	209	88

Wildfire Risk Assessment Documentation

CSKT Pre-Disaster Mitigation Plan

CSKT Pre-Disaster Mitigation Plan - Wildfire																			
Census Designation	Frequency	Magnitude	Area Sq. Mi.	WUI Area Sq. Mi.	% WUI	WUI Area Acres	# Residential Buildings at Risk	Residential Building Exposure $	Annual Loss to Residential Building Stock	# of Commercial Buildings at Risk	Commercial Building Exposure $	Annual Loss to Commercial Building	# Critical Facilities at Risk	Critical Facilities Exposure $	Annual Loss to Critical Facilities	# Bridge at Risk	Bridge Exposure Risk $	Annual Loss to Bridges $	At Risk Population Total	At Risk Persons Under 18
CENSUS Incorporated Towns																				
Polson city	0.3	0.0150%	4.17	0.00	0%	0	0	$0	$0	0	$0	$0	$0	$0	$0	0	$0	0	0	0
Ronan city	0.3	0.0150%	1.19	0.01	1%	5	7	$989,415	$44	0	$0	$0	$0	$0	$0	0	$0	0	27	12
St. Ignatius city	0.3	0.0150%	0.56	0.00	0%	0	0	$0	$0	0	$0	$0	$0	$0	$0	0	$0	0	0	0
COUNTY	0.3	0.0150%	1646	334.16		213,864	6,265	$1,239,691,127	$55,614	927	$71,969,078	$3,229	$21	$69,358,669	$3,112	35	$3,787,396	170	14024	3507
CENSUS Designated Places																				
Arlee CDP	0.3	0.0150%	6.46	6.41	99%	4,105	151	$15,385,873	$690	65	$9,733,532	$437	5	$5,578,791	$250	2	$240,184	$11	636	187
Bear Dance CDP	0.3	0.0150%	2.77	2.77	100%	1,774	244	$66,399,442	$2,979	25	$1,948,114	$87	0	$0	$0	0	$0	$0	275	54
Big Arm CDP	0.3	0.0150%	5.41	5.41	100%	3,464	126	$22,369,725	$1,004	43	$4,629,812	$208	2	$0	$0	0	$0	$0	177	39
Charlo CDP	0.3	0.0150%	2	0	0%	0	0	$0	$0	0	$0	$0	0	$0	$0	0	$0	$0	0	0
Dayton CDP	0.3	0.0150%	0.55	0	0%	0	0	$0	$0	0	$0	$0	0	$0	$0	0	$0	$0	0	0
Elmo CDP	0.3	0.0150%	0.31	0.01	3%	7	0	$0	$0	0	$0	$0	0	$0	$0	0	$0	$0	68	16

Finley Point CDP	0.3	0.0150%	4.27	4.27	100%	2,734	909	$231,936,697	$10,405	104	$2,679,845	$120	0	$0	$0	0	$0	$0	480	76
Jette CDP	0.3	0.0150%	0.62	0	0%	0	0	$0	$0	0	$0	$0	0	$0	$0	0	$0	$0	0	0
Sẻlis Ksanka Q̓lispẻ CDP	0.3	0.0150%	1.02	0	0%	0	0	$0	$0	0	$0	$0	0	$0	$0	0	$0	$0	0	0
Kicking Horse CDP	0.3	0.0150%	3.55	1.25	35%	799	15	$2,046,669	$92	3	$23,780	$1	1	$0	$0	1	$26,840	$1	286	71
Kings Point CDP	0.3	0.0150%	1.35	1.06	79%	681	276	$48,709,003	$2,185	15	$105,948	$5	0	$0	$0	0	$0	$0	136	24
Lindisfarne CDP	0.3	0.0150%	2.62	2.62	100%	1,679	443	$77,983,856	$3,489	54	$1,148,242	$52	0	$0	$0	0	$0	$0	284	56
Pablo CDP	0.3	0.0150%	4.84	3.68	76%	2,358	340	$32,898,978	$1,476	101	$9,782,087	$439	6	$62,567,543	$2,807	0	$0	$0	2074	695
Ravalli CDP	0.3	0.0150%	2.64	2.01	76%	1,283	52	$4,172,219	$187	25	$1,303,480	$58	0	$0	$0	0	$0	$0	76	12
Rocky Point CDP	0.3	0.0150%	0.61	0	0%	0	0	$0	$0	0	$0	$0	0	$0	$0	0	$0	$0	0	0
Turtle Lake CDP	0.3	0.0150%	0.66	0.59	89%	376	6	$746,239	$33	0	$0	$0	0	$0	$0	0	$0	$0	209	88

CSKT Pre-Disaster Mitigation Plan - Wildfire Risk						
Name	**Address**	**Town**	**Jurisdiction**	**LAT**	**LONG**	**Replacement Value**
Salish Kootenai College	52000 Hwy 93	Pablo	County	47.596812	-114.107108	$32,700,008
Two Eagle River School	52096 Hwy 93	Pablo	County	47.600289	-114.111725	$9,592,557
Tribal Complex Building (New)	21 Complex Rd.	Pablo	County	47.595921	-114.114321	$9,274,798
Tribal Complex Building (Old)	21 Complex Rd.	Pablo	County	47.595766	-114.115712	$7,303,903
Arlee Tribal Health	11Bitterroot Jim	Arlee	County	47.167581	-114.089163	$5,217,074
Pablo Elementary School	608-4th Ave. E.	Pablo	County	47.601619	-114.117031	$3,513,989
Water Tower		Ronan	County	47.533602	-114.057531	$648,750
Arlee Senior Center	106 Wessinger	Arlee	County	47.161751	-114.086398	$361,717
Water Treatment Plant	Michel Road	Ronan	County	47.537177	-114.038806	$310,225

Swan Lake VFD	40942 Swan Hwy	Swan Lake	County	47.930754	-113.846561	$243,360
Pablo Division of Fire / Search and Rescue		Pablo	County	47.601902	-114.119595	$182,288
Lift Station #5		Kicking Horse	County	47.510437	-114.082109	$10,000
Arlee Fire Department		Arlee	County	47. 159597	-114.081001	$0
Arlee Fire Hall	200 Culloyah	Arlee	County	47.162627	-114.084647	$0
Arlee School	123 Fyant St.	Arlee	County	47.165616	-114.083534	$0
Kicking Horse Job Corp.		Ronan	County	47.477081	-114.057749	$0
Salmon Prairie School	744 Salmon Prairie Roa1	Swan Lake	County	47.630818	-113.785325	$0
Montecahto RFD	6100 East Shore RT	Polson	County	47.725931	-114.037944	$0
Big Arm Water System		Big Arm	County	47.797178	-114.292105	$0
Big Arm Fire Department		Big Arm	County	47.797697	-114.295121	$0
Rollins Volunteer Fire Department	56 Big Lodge RD	Rollins	County	47.903233	-114.219061	0

APPENDIX D

MITIGATION DOCUMENTATION

CSKT Pre-Disaster Mitigation Plan

Example Mitigation Strategies

CSKT Pre-Disaster Mitigation Plan

ALL HAZARD - EXAMPLE MITIGATION PROJECTS		
	Prevention	
1		Obtain Reverse 911 for the Reservation
2		Work with National Weather Service to get a radio signals where needed
3		Provide NOAA weather radios to all schools and critical facilities
4		Look for corporate sponsorships to provide NOAA weather radios to the public
5		Continue to work with cell phone companies to get a tower in towns, as needed
	Emergency Services	
6		Continue to enhance and improve back-up location for dispatch center
7		Ensure continuity of operations by providing operable generator in 9-1-1 center
8		Recruit and train emergency response personnel
9		Develop templates for messaging system that could be used for transmission on radio stations (road reports, weather forecasts and conditions, emergency conditions and events, and public services).
10		Obtain a self-start generator for FM radio antennas.
11		Obtain self-start generators for schools/shelters.
12		Obtain additional repeaters for Reservation.
13		Develop local hazard communication plan that establishes protocol for providing information to residents
14		Enhance GIS data to better to assist with mitigation.
		Continue to enhance and improve Reverse 911 capabilities through exercise and software development.
	Public Information	
15		Encourage public to volunteer during disasters.
16		Promote disaster-related educational programs through the school system.
17		Provide awareness on developing a family disaster plan and disaster supply kit.

COMMUNICABLE DISEASE - EXAMPLE MITIGATION PROJECTS		
	Prevention	
	Property Protection	
	Structural Projects	
	Emergency Services	
1		Expand capacity of facilities to handle an outbreak.
	Public Information	
2		Provide public awareness on communicable disease prevention.

DROUGHT - EXAMPLE MITIGATION PROJECTS		
	Prevention	
	Property Protection	
	Structural Projects	
	Emergency Services	
	Public Information	
1		Support drought programs implemented through the Conservation District, FSA ,and MSU extension
2		Develop funds and public impetus to improve XXX water intake system.

EARTHQUAKE - EXAMPLE MITIGATION PROJECTS		
	Prevention	
1		Develop planning and zoning guidelines to keep critical facilities away from fault line
2		Develop planning/zoning ordinances and building codes for areas below steep slopes and soils subject to liquefaction
3		Adopt building codes to prohibit loose masonry, overhangs
	Property Protection	
4		Retrofit structures; add braces, remove overhangs, provide flexible utility connections and tie down
5		Structurally retrofit unreinforced masonry buildings
6		Structurally retrofit roofs during re-roofing
7		Replace brittle equipment in electrical substations
8		Using shatter-proofing techniques strengthen windows in schools and critical facilities
9		Encourage non-structural projects in schools and critical facilities
10		Encourage schools and critical facilities to identify the need for structural retrofits
11		Encourage homeowners to perform structural and non-structural retrofits on their homes.
	Structural Projects	
12		Stabilize slopes
13		Analyze/strengthen water towers
14		Retrofit bridges, overpasses, and other critical transportation links
15		Provide shut-off valves in distribution lines for water and gas service
16		Add seismic connections such as bolting
17		Add shear walls in buildings
18		Brace equipment that could block building exits or kill or injure people
19		Brace parapet walls on buildings; brace or demolish outdoor shelters that pose collapse hazards
20		Brace equipment (such as mechanical equipment, generators) whose failure may disrupt the operation of a critical facility such as a hospital.
21		Brace equipment (such as sprinkler piping) whose failure could lead to increase building damages
22		Pursue structural and non-structural mitigation projects for schools, public, essential service (target hazard) facilities.
	Emergency Services	
23		Prepare earthquake response plans to account for secondary problems; fires and hazardous materials spills
24		Provide emergency back-up power to critical facilities; emergency generators, secondary feeds
25		Harden critical wireless emergency communication systems
	Public Information	
26		Provide technical assistance on retrofitting and non-structural mitigation
27		Conduct educational earthquake awareness and preparedness in schools and for the general public

LANDSLIDE - EXAMPLE MITIGATION PROJECTS	
	Property Protection
1	Conduct study of landslide-prone areas
2	Implement preservation/stabilization measures of slide-prone areas

DAM FAILURE - EXAMPLE MITIGATION PROJECTS		
	Prevention	
1		Develop planning and zoning guidelines for open space preservation within the flood zone
2		Consider using dam inundation as criteria for future subdivision review and require disclosure by developers to prospective buyers.
3		Conduct dam safety inspections
4		Drain reservoir when conditions appear unsafe
5		Maintain Emergency Action Plans of high hazard dams and work with owners to keeps plans current.
6		Implement zoning below and around dams.
	Property Protection	
	Structural Projects	
7		Install movement sensors on faces of dams to detect pending failure.
8		Construct dam improvements, spillway enlargements
9		Remove unsafe dams
10		Reconstruct rip rap on earthen dams
	Emergency Services	
11		Develop evacuation plans,including means of transporting people and evacuation routes.
12		Promote installation of early warning systems on high hazard dams to interface with dispatch.
		Coordinate with dam owners to exercise EAPs with responders.
	Public Information	
13		Conduct public outreach / education with residents living in inundation areas.
14		Promote the benefit of residents downstream from high hazard dams having NOAA weather radios.

FLOODING - EXAMPLE MITIGATION PROJECTS		
	Prevention	
1		Create planning and zoning guidelines for development within the floodplain
2		Create planning and zoning guidelines to preserve open space within the flood plain
3		Create floodplain ordinances
4		Develop storm water management guidelines
5		Continue to update floodplain mapping (DFIRMS).
6		Complete elevation survey of structures in floodplain
7		Update flood regulations when DFIRMs are adopted to protect future development
8		Consider a new zoning ordinance that stipulates new homes built in the 500-year floodplain are not allowed to have basements
9		Implement a policy for residential and non-residential approach permits which includes installation standards and enforcement
	Property Protection	
10		Construct barriers and wet or dry flood proofing
11		Create structural openings in foundation walls allowing flood waters in and out, thus avoiding collapse
12		Protect sewers from backing up by:
12a		Installing backflow valves or plugs in drains and toilets to prevent floodwaters from entering home
12b		Purchasing and installing sump pumps with back-up power
13		Obtain river gauges where needed.
14		Remove woody vegetation from the edge of the levee and dikes
15		Remove debris from floodways
16		Relocate, elevate and/or flood proof structures which have been repeatedly flooded
17		Complete an engineering study of what needs to be done to mitigate flooding in flood-prone area
18		Install security fencing and signage on levees and dikes
19		Consider forming a flood control district to address concerns with the dikes/levees.
20		Perform maintenance on drainage systems
21		Identify and secure use of emergency retention ponds
22		Relocate furnaces, hot water heaters, and electrical panels from flood-prone areas
	Natural Resource Protection	
23		Protect wetlands
24		Work with partner agencies to identify erosion and sediment control issues.
25		Employ best management practices
	Structural Projects	
26		Diversions
27		Levees/flood walls/dikes
28		Repair impaired bridges
29		Replace culverts with bridges to mitigate impacts of runoff
30		Reduce flooding by installing drainage ditches
31		Continue to resize and upgrade culverts in various locations throughout the reservation.

FLOODING - EXAMPLE MITIGATION PROJECTS		
32		Identify locations throughout the reservation where culverts are needed
33		Install/redesign storm drainage system
34		Dredge rivers/creeks to increase carrying capacity.
	Emergency Services	
35		Develop flood warning system
36		Continue to work with landowners, ranchers, and response agencies on flood response activities
37		Protect critical facilities
	Public Information	
38		Provide flood map information
39		Provide for real estate disclosure
40		Continue to educate homeowners on the advantages of purchasing flood insurance through the National Flood Insurance Program through availability of information.
41		Work towards achieving a lower rating through the National Flood Insurance Program Community Rating System.
42		Participate in the National Weather Service's Flood Awareness Week
43		Provide awareness training to repetitive loss property owners (and others) on mitigation programs to relocate, elevate, and flood proof structures in the floodplain
44		Provide awareness training in agricultural areas that livestock grazing in floodplains should include a high spot where animals can evacuate to.
45		Educate reservation residents on what must be done to manage storm water in the community.
		Promote participation in National Flood Awareness week

HAZARDOUS MATERIAL INCIDENTS - EXAMPLE MITIGATION PROJECTS		
	Prevention	
1		Increase security at bulk storage facilities
2		Implement Meth Watch Program in communities
3		Pursue zoning regulations to ensure that perimeter security is provided at bulk chemical and petroleum facilities
4		Explore the possibility of a Polson Bypass for truck traffic carrying hazardous material loads and/or a signed hazardous material route to avoid population center.
	Property Protection	
	Emergency Services	
5		Encourage local emergency responders have adequate training to respond to hazardous material events consistent with local capabilities
6		Continue providing awareness training to emergency responders.
7		Develop evacuation procedures for homes near transportation networks that commonly carry hazardous materials and near storage facilities and pipelines the house hazardous materials
8		Develop alternative routes when major arteries are compromised
9		Pursue funding for supplies and equipment trailer
10		Obtain decontamination trailers that can be placed around reservation.
11		Update resource list of emergency response supplies/vendors.
12		Obtain regional containment equipment trailers and supplies to strategically position for response in the reservation.
13		Explore creating a safe haven for haz-mat bads that may be in trouble.
	Public Information	
14		Provide public education on methamphetamine labs and how to identify signs of labs and the dangers of labs
15		Increase public awareness of common hazardous materials either stored, or used or transported through the area.
16		Educate teachers and school staff in schools near hazardous materials facilities and transportation routes in how to limit exposure to hazardous materials to students during an incident.
17		Evaluate opportunities to inform private property owners who live along state high ways on hazardous-material traffic.

RAILROAD ACCIDENTS - EXAMPLE MITIGATION PROJECTS	
	Emergency Services
1	Examine unprotected railroad crossings and recommend if gates/signage are needed.

SEVERE SUMMER WEATHER - EXAMPLE MITIGATION PROJECTS

	Prevention	
1		Encourage development and enforcement of wind resistant buildings and construction codes
2		Evaluate current building codes for efficiency in protecting structures from wind damage
	Property Protection	
1		Support/encourage electrical utilities to use underground construction methods where possible to reduce power outages from windstorms
2		Create partnerships with utility companies and negotiate for shorter span distances between power poles to better withstand snow loads and severe storms.
3		Negotiate with utility companies for replacement of weak or rotten power poles.
4		Develop strategies for managing overhead utility lines
5		Provide guy wires on power poles subject to failure
6		Protect traffic lights from high winds
7		Analyze communication lines on power poles; if they cause unacceptable loads, remove when possible
8		Install shutters on windows and doors or otherwise protect building openings from wind damage
9		Ensure that roof-mounted equipment is securely mounted
10		Develop and implement programs to keep trees from threatening lives,property, and public infrastructure during windstorm event!
lOa		Develop partnerships between utility providers and county & local agencies to identify potentially hazardous trees
Ob		Continue to encourage landowners to thin trees to reduce wind damages
lOc		Make sure right-of-way around power lines is free of trees or limbs that may cause damage
Od		Develop strategies for clearing roads of fallen trees, and clearing debris from public and private propert)
11		Install 3-milwindow film on windows of existing and future schools and critical facilities to prevent shattering.
12		Promote the use of hurricane clips for buildings vulnerable to high winds
	Structural	
13		Structurally analyze all buildings or rooms identified as shelters and strengthen these as necessal')
	Emergency Services	
14		Provide emergency back-up power to critical facilities; emergency generators, secondary feeds, portable generators with standard camlock connections
	Public Information	
15		Distribute educational materials to organizations and county residents regarding preparedness for no power situation!
16		Promote the National Weather Service's Severe Weather Awareness Week.
17		Continue participation in National Weather Service Storm Ready Community Program
18		Promote National Weather Service's severe weather spotter training program
19		Provide awareness training on securing loose objects and pruning back large trees that could break during wind events and cause property damage.
20		Provide outreach on the risks of lightning and other severe summer weather hazards

SEVERE WINTER WEATHER - EXAMPLE MITIGATION PROJECTS

	Prevention	
1		Implement a building code that requires roofs to be designed to withstand appropriate snow load.
2		Explore implementing a building code that would require stronger building construction to withstand severe winds
	Property Protection	
3		Perform engineering study of public buildings and shelters to determine which may need retrofits to withstand snow loads.
4		Install air flow spoilers on powerlines in areas vulnerable to heavy snow loads.
5		Work with power companies to identify powerlines which should be buried to mitigate interruption of service.
	Structural	
6		Perform retrofits on public buildings and shelters that could become compromised by snow loads.
	Emergency Services	
7		Develop coordinated management strategies for de-icing roads, plowing snow, clearing roads of fallen trees, and clearing debris from public and private property
8		Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms
9		Partner with responsible agencies and organizations to design and implement programs that reduce risk to life, property, and utility systems
10		Develop partnerships between utility providers and reservation and local public works agencies to document known hazard areas
11		Develop a resource list of people who shovel snow from roofs.
12		Continue to aggressively address rural locations within the reservation so people's residences can be found for rescue purposes.
13		Obtain generators for emergency shelters.
14		Identify or update list of emergency shelters in each community.
15		Obtain generators for schools to maintain power supply during winter.
16		Coordinate with appropriate organizations to evaluate the need for more weather stations and/or weather instrumentation
17		Enhance weather monitoring to attain earlier severe winter storm warnings through collaboration with NWS.
18		Consider enhanced snow removal services to support public safety and infrastructure protection
	Public Information	
19		Distribute educational materials to residents regarding evacuation routes during road closures
20		Increase public awareness of severe winter storm mitigation activities
21		Prepare a guide book for special needs populations on winter weather survival
22		Provide training or video on how to measure snow moisture to determine when shoveling of roofs is necessary.

SEVERE WINTER WEATHER - EXAMPLE MITIGATION PROJECTS		
23		Continue to distribute educational material on how to prepare for winter.
24		Perform public outreach/education of location of emergency shelters.
25		Conduct public outreach campaign where special needs residents would provide information on where they live and what they need. Explore software program to allow reservation to develop and maintain database with this information.
26		Promote the National Weather Service's Winter Weather Awareness Week
27		Educate the public on techniques to construct homes that will better withstand severe winds

STRUCTURE FIRE - EXAMPLE MITIGATION PROJECTS

	Prevention	
	Property Protection	
1		Encourage fire sprinkler systems in residential and older commercial buildings.
2		Provide adequate water supply to create water sources for fighting fires in new housing developments.
3		Increase availability of water resources for structure fire suppression by creating reliable water supplies in rural areas
	Emergency Services	
4		Encourage volunteer fire departments to recruit and train volunteers
5		Update equipment needed for suppressing structure fire
	Public Information	
6		Promote public education on the benefit of smoke detectors
7		Support volunteer fire department fire prevention activities
8		Support the education program in school on topics supplied by International Fire Council.
9		Support a community education program on structure fire prevention.
10		Promote the need for emergency action plans for special needs populations.
11		Encourage preparation of Family Emergency Plans.
12		Promote sprinkler system installation in commercial structures

WILDFIRE - EXAMPLE MITIGATION PROJECTS

	Prevention	
1		Create zoning districts to reflect fire risk zones
2		Develop planning and zoning guidelines to restrict development to areas near fire protection and water source
3		Require new subdivisions to space buildings, provide fire breaks, on-site water storage wide roads, multiple access, require defensible space and inspection of new development in the WUI
4		Adopt building code standards for roof materials, spark arresters
5		Review subdivision regulation to reexamine water supply requirements.
6		Review implementation process for rural impact fees for fire protection in the WUI.
7		Encourage Planning Board to adopt subdivision regulations that require creation of survivable space, ingress/egress roads and adequate water supply for fire fighting and limit construction on steep slopes for all new developments.
8		Consider strategies for reservation regulations (subdivision and others) that would require maintenance of fuel reduction projects in the WUI Land enforcement.
9		Consider implementing zoning on the reservation for requiring fuel reduction in the WUI.
10		Consider implementing zoning on the reservation requiring fire-resistant building materials in the WUI
	Property Protection	
11		Retrofit roofs with fire-resistant materials and add spark arrestors
12		Remove vegetation and combustible materials around structures
13		Perform fuel treatments along evacuation routes and initial attack roads in the WUI
14		Continue grants programs for landowners to create defensible space.
15		Study creation of fire breaks in appropriate locations in Conservation Reserve Program lands and areas of future development.
16		Perform fuel mitigation around historic sites
17		Upgrade the water supply in communities as needed to more effectively assist with wildfire suppression
18		Encourage BLM and USFS to perform fuel mitigation on federal lands adjacent to the WUI
19		Encourage utility companies to perform fuel reduction along utility corridors
20		Encourage contiguity in fuel management projects so there will be no gaps in treatment.
21		Support interagency collaboration on fuel management projects.
	Natural Resource Protection	
22		Prohibit development in sensitive areas
23		Employ mechanical thinning and prescribed burning to abate the risk of catastrophic fire
24		Protect watersheds from erosion, prevent water pollution to the public water supply from wildfires
25		Clear trimmings, trees, brush, and other debris completely from sites to reduce fire risk.
	Structural Projects	
26		Create fire breaks to prevent the spread of fire
27		Provide more than one means of access into and out of a community
28		Equip water storage facilities with fire-resistant electrical pump when not connected to a community water system
29		Develop alternative firefighting water sources
30		Widen initial attack roads and install culverts where needed.

WILDFIRE - EXAMPLE MITIGATION PROJECTS

	Emergency Services	
31		Recruit and train volunteer fire fighters
32		Enhance emergency services to increase the efficiency of wildfire response and recovery activities
33		Install more fire reporting stations for better access and coverage
34		Coordinate fire departments and other emergency services in prevention and response activities
35		Obtain more 4-WD tenders
36		Install booster antennas to enhance cell service in fire districts where it would be beneficial.
37		Improve training and qualifications of personnel to more effectively interface with incoming Incident Management Teams deployed in the reservation.
38		Obtain additional repeaters or relocate existing repeaters to enhance radio communications.
39		Increase availability of water resources for wildland firefighting by strategic placement of water tanks and ponds.
40		Create a database of water sources for firefighting and make database available to rural fire districts.
41		Consider increasing air support for wildfire suppression
	Public Information	
42		Develop fuels mapping for public and private lands
43		Continue to update and maintain fire hazard mapping project
44		Develop and disseminate updated maps relating to fire hazard to assist builders and homeowners in wildfire mitigation and guide emergency services during response.
45		Publicize fire season
46		Develop partnerships to provide for fire mitigation activities and suppression preparedness
47		Promote FIREWISE Programs
48		Conduct community-based demonstration projects of fire prevention and mitigation in the urban interface
49		Establish neighborhood "drive-through" activities that pinpoint site-specific mitigation activities.
50		Support volunteer fire department fire prevention activities
51		Provide outreach to citizens on wildfire mitigation techniques.
52		Promote evacuation planning for landowners.
53		Provide education to landowners on fuel mitigation along evacuation routes.

Mitigation Strategy Action Plans

CSKT Pre-Disaster Mitigation Plan

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 1- Reduce Impacts from Wildfire		
Objective	*Objective 1.1 - Enhance Emergency Services to Mitigate Impacts from Wildfire*		
Project	**Project 1.1.1- identify and facilitate additional training for firefighters.**		
Category	Emergency Services		
Hazard(s) Addressed	Wildfire		
Jurisdiction(s)	Flathead Reservation		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 Points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% Reservation residents (1point)		
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1Point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	individual Fire Chiefs		
Potential Funding Source(s)	Grants, Fire Service Training School		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 1- Reduce Impacts from Wildfire		
Objective	*Objective 1.2 - Protect Property from Wildfire*		
Project	Project 12.1- Continue to be proactive in fuel management reservation		
Category	Property Protection		
Hazard(s) Addressed	Wildfire		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100,000 to $500,000 (2 points)		
	Low = < $100 000 *(3* Points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 *(2* points)		
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	CSKT Tribal Fire		
Potential Funding Source(s)	CSKT Fuel Reduction Program		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 1- Reduce Impacts from Wildfire		
Objective	*Objective 1.2 - Protect Property from Wildfire*		
Project	**Project 1.2.2 - Support interagency collaboration on fuel management projects.**		
Category	Property Protection		
Hazard(s) Addressed	Wildfire		
Jurisdictions	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500,000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 points)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES, Fuel Reduction Office,		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	*Objective 1.2 - Protect Property from Wildfire*		
Project	**Project 1.2.3 - Continue to support and enhance Reservation fuel reduction program.**		
Category	Property Protection		
Hazard(s) Addressed	Wildfire		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 Points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500 000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation Unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	Fuel Reduction Office, CSKT		
Potential Funding Source(s)	CSKT Fuel Reduction Program		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	*Objective 1.3 - Provide Public Education and Awareness on Wildfire*		
Project	**Project 1.3.1 - Provide wildfire mitigation information to urban interface landowners.**		
Category	Public Education and Awareness		
Hazard(s) Addressed	Wildfire		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500,000 (1 point)		
	Medium = $100,000 to $500,000 (2 points)		
	Low = < $100,000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100,000 to $500,000 (2 points)		
	Low = < $100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	High	
Responsible Agency	CSKT, Fire Chiefs		
Potential Funding Source(s)	CSKT		
Jurisdiction Participation	CSKT district meetings. Information on creating defensible space, available from Fire Safe Montana, will be distributed at these meetings.		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	*Objective 2.1- Enhance Emergency Services to Mitigate Impacts from Transportation Accidents*		
Project	**Project 2.1.1- Coordinate emergency response activities between railroad, Tribes counties and municipalities.**		
Category	Emergency Services		
Hazard(s) Addressed	Transportation Accidents		
Jurisdiction(s)	C S K T		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500,000 (1point)		
	Medium = $100 000 to $500 000 (2 Points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1point)		
Property Benefit	High = > $500,000 {3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 Point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	LEPC/TERC, Fire Chiefs		
Potential Funding Source(s)	CSKT (including RFD budgets)		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	*Objective 2.1 - Enhance Emergency Services to Mitigate Impacts from Transportation Accidents*		
Project	**Project 2.1.2 - Encourage local emergency responders to have adequate training to respond to hazardous material incidents consistent with local utilities**		
Category	Emergency Services		
Hazard(s) Addressed	Transportation Accidents		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100,000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 Point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500,000 (2 points)		
	Low = < $100 000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	High	
Responsible Agency	LEPC/TERC, DES		
Potential Funding Source(s)	CSKT, MDT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	*Objective 2.1 - Enhance Emergency Services to Mitigate Impacts from Transportation Accidents*		
Project	Project 2.13 - Work with MDT to enhance chain-up areas along U.S. Highway 93.		
Category	Emergency Services		
Hazard(s) Addressed	Transportation Accidents		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	LEPC/TERC		
Potential Funding Source's	CSKT, State		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	*Objective 2.1 - Enhance Emergency Services to Mitigate Impacts from Transportation Accidents*		
Project	**Project 2.1.4 - Continue to work with MRL and encourage ongoing training with local responders.**		
Category	Emergency Services		
Hazard(s) Addressed	Transportation Accidents		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents {3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)	x	1
Property Benefit	High = > $500 000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	7
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	CSKT, MRL		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	*Objective 2.2 - Implement Actions to Prevent Impacts from Transportation Accidents*		
Project	**2.2.2 - Encourage truck traffic to use Highway 93 instead of Highway 35 around Flathead Lake.**		
Category	Prevention		
Hazard(s) Addressed	Transportation Accidents		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% Reservation residents (1 Point)		
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 ODO (1 point)		
Feasibility	High = Technology available/implementation likely (3 Points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES,LEPC/TERC,RFD		
Potential Funding Source(s)	CSKT, MDT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	*Objective 2.3 - Provide Public Education and Awareness on Transportation Accidents*		
Project	**Project 2.3.1 - Increase public awareness of common hazardous materials either stored, used or transported through the area.**		
Category	Provide Public Education and Awareness		
Hazards Addressed	Transportation Accidents		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 **(1 point)**	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	LEPC/TERC		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 3 - Reduce Impacts from Landslides		
Objective	*Objective 3.1 - Protect Property from Landslides*		
Project	**Project 3.11 - Encourage MDT to work with the Reservation to identify landslide**		
Category	Property Protection		
Hazard(s) Addressed	Landslides		
Jurisdiction(s)			
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 Point)	x	1
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500,000 (2 points)		
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 Points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES, Planning		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 3 - Reduce Impacts from Landslides		
Objective	*Objective 3.1 - Protect Property from Landslides*		
Project	**Project 3.1.2 - Encourage MDT to implement preservation/stabilization measures of slide-prone areas.**		
Category	Property Protection		
Hazard(s) Addressed	Landslides		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)	x	1
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 Points)		
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 Point)	x	1
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 Point)		
Feasibility	High = Technology available/implementation likely (3 'Points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	7
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES, Planning		
Potential Funding Source's	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 4 - Reduce Impacts from Structure Fire		
Objective	*Objective 4.1 - Protect Property from Structure Fire*		
Project	**Project 4.11 - Encourage fire sprinkler systems in residential and older commercial buildings.**		
Category	Property Protection		
Hazard(s) Addressed	Structure Fire		
Jurisdictions	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	12
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Low	
Responsible Agency	RFDs, City Fire Depts.		
Potential Funding Source's	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 4 - Reduce Impacts from Structure Fire		
Objective	*Objective 4.1 - Protect Property from Structure Fire*		
Project	**Project 4.1.2- Continue to consult with Fire Chiefs regarding whether new water supplies are needed to maintain fire flows in new housing developments.**		
Category	Property Protection		
Hazard(s) Addressed	Structure Fire		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)	x	2
	Low = < $100 000 (3 points)		
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1point)	x	1
Property Benefit	High = > $500000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1ooint)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation Unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	Planning, CSKT		
Potential Funding Source(s)	CSKT		
implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 4 - Reduce Impacts from Structure Fire		
Objective	*Objective 4.2 - Enhance Emergency Services to Mitigate Impacts from Structure Fire*		
Project	**Project 4.2.1- Encourage volunteer fire departments to recruit and train volunteers.**		
Category	Emergency Services		
Hazard(s) Addressed	Structure Fire		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500 000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 Points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	RFDs		
Potential Funding Source's	CSKT		
implementation Schedule	Ongoing		

CSKT PDM PLAN Mitigation Action Plan			
Goal	Goal 4 - Reduce Impacts from Structure Fire		
Objective	*Objective 4.3 - Provide Public Education and Awareness on Structure Fire*		
Project	**Project 4.3.1- Support volunteer fire department fire prevention activities.**		
Category	Public Education and Awareness		
Hazards Addressed	Structure Fire		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 *(3 points)*	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	12
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Low	
Responsible Agency	RFDs		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	*Objective 5.1 - Enhance Emergency Services to Mitigate Impacts from Severe Winter Weather*		
Project	**Project 5.11- Develop coordinated management strategies for de-icing roads, plowing snow, clearing roads of fallen trees, and clearing debris from public and private property.**		
Category	Emergency Services		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100,000 to $500 000 (2 points)		
	Low = < $100 000 (1point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	Reservation Road Dept, ,Tribal Housing		
Potential Funding Source(s)	Cointy, CSKT, State		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	*Objective 5.1 - Enhance Emergency Services to Mitigate Impacts from Severe Winter Weather*		
Project	**Project 5.1.2 - Partner with responsible agencies and organizations to design and implement programs that reduce risk to life, property, and utility systems.**		
Category	Emergency Services		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdictions	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100,000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Priority	High, Medium, Low	High	
Responsible Agency	DES, CSKT, MDT		
Potential Funding Source(s)	County, Cities, CSKT, State		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	*Objective 5.1 - Enhance Emergency Services to Mitigate Impacts from Severe Winter Weather*		
Project	**Project 5.13 - Continue to aggressively address rural locations within the reservation so people's residences can be found for rescue purposes.**		
Category	Emergency Services		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100,000 to $500 000 (2 points)	x	2
	Low = < $100 000 (3 points)		
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% County residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)	x	1
Feasibility	High = Technology available/implementation likely (3 Points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	High	
Responsible Agency	DES		
Potential Funding Source(s)	CSKT		
implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	*Objective 5.1- Enhance Emergency Services to Mitigate Impacts from Severe Winter Weather*		
Project	**Project 5.1.4 - Enhance weather monitoring to attain earlier severe winter storm warnings through collaboration with NWS.**		
Category	Emergency Services		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $5OO 000 (2 points)		
	Low =< $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 **(1**point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation Unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	*Objective 5.2 - Provide Public Education and Awareness on Severe Winter Weather*		
Project	**Project 5.2.1- Continue to distribute educational material on how to prepare for winter.**		
Category	Public Education and Awareness		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	CSKT, State		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	*Objective 5.2 - Provide Public Education and Awareness on Severe Winter Weather*		
Project	**Project 5.2.2 - Conduct public outreach campaign where special needs residents would provide information on where they live and what they need. Explore software program to allow Reservation to develop and maintain database**		
Category	Public Education and Awareness		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdictions	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1point)	x	1
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)	x	1
Feasibility	High = Technology available/implementation likely (3 Points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	IHS/DES, Tribe		
Potential Funding Source(s)	Grants		
Implementation Schedule	Long-term		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	*Objective 5.2 - Provide Public Education and Awareness on Severe Winter Weather*		
Project	**Project 5.2.3 - Promote the National Weather Service's Winter Weather Awareness Week (third full week in October).**		
Category	Public Education and Awareness		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 Point)	x	1
Feasibility	High = Technology available/implementation likely (3 Points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	LEPC/TERC		
Potential Funding Source(s)	CSKT, NWS		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	*Objective 6.1 - Implement Actions to Prevent Impacts from Flooding*		
Project	**Project 6.1.1- Support FEMA's Map Modernization Program which will provide CSKT with updated floodplain mapping (DFIRMS).**		
Category	Prevention		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)	x	2
	Low = < $100 000 *(3 points)*		
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)	x	1
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation Unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	High	
Responsible Agency	Planning		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	*Objective 6.1- Implement Actions to Prevent Impacts from Flooding*		
Project	**Project 6.1.2 - Update flood regulations when DFIRMs are adopted to protect future development.**		
Category	Prevention		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% County residents (1 Point)	x	1
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100,000 to $500 000 (2 points)		
	Low = < $100 000 (1 Point}		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	High	
Responsible Agency	Planning		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Short-term		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	*Objective 6.2 - Implement Actions to Protect Natural Resources from Flooding*		
Project	**Project 6.2.1- Work with partner agencies to identify erosion and sediment control issues.**		
Category	Natural Resource Protection		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)	x	1
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	6
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	High	
Responsible Agency	Planning, Road Dept.		
Potential Funding Source(s)	CSKT		
implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	*Objective 6.3 - Implement Structural Projects to Reduce Impacts from Flooding*		
Project	Project 6.3.1- Continue to resize and upgrade culverts in various locations throughout the reservation.		
Category	Structural		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)	x	2
	Low = < $100 000 (3 points)		
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)	x	2
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation on unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	MDT, CSKT		
Potential Funding Source(s)	CSKT, FEMA, State		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	*Objective 6.3 - Implement Structural Projects to Reduce Impacts from Flooding*		
Project	**Project 6.3.2 - Identify locations throughout the reservation where culverts are needed.**		
Category	Structural		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points}	x	2
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES, MDT		
Potential Funding Source(s)	CSKT, FEMA, State		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	*Objective 6.4 - Enhance Emergency Services to Mitigate Impacts from Flooding*		
Project	**Project 6.4.1- Continue to work with landowners, ranchers, and response agencies on flood response activities.**		
Category	Emergency Services		
Hazard(s) Addressed	Flooding		
Jurisdictions	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% Reservation residents (1point)		
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 Points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES, Planning		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	*Objective 6.4 - Enhance Emergency Services to Mitigate Impacts from Flooding*		
Project	**Project 6.4.2 - GPS all homes alon2 waterways.**		
Category	Emergency Services		
Hazard(s) Addressed	Flooding		
Jurisdiction	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% County residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total5core	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Low	
Responsible Agency	GIS, Planning		
Potential Funding Source	CSKT, Grants		
implementation Schedule	Long-term		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	*Objective 6.5 - Provide Public Education and Awareness on Flooding*		
Project	**Project 6.5.1 - Continue to educate homeowners on purchasing flood insurance through the National Flood Insurance Program through availability of information.**		
Category	Public Education and Awareness		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500,000 (1 point)		
	Medium = $100,000 to $500,000 (2 points)		
	Low = < $100,000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)	x	1
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100,000 to $500,000 (2 points)		
	Low = < $100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Low	
Responsible Agency	Planning		
Potential Funding Source(s)	CSKT, FEMA		
Jurisdiction Participation	Jurisdictions will participate according to their capabilities. At a minimum, information on the NFIP, available from FEMA, will be distributed at meetings of the Tribal Districts.		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	*Objective 6.5 - Provide Public Education and Awareness on Flooding*		
Project	**Project 6.5.2 - Educate homeowners on flood concerns.**		
Category	Public Education and Awareness		
Hazards Addressed	Flooding		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	High	
Responsible Agency	DES		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	*Objective 6.5 - Provide Public Education and Awareness on Flooding*		
Project	**Project 6.5.3 - Make floodplain maps available on the CSKT website.**		
Category	Public Education and Awareness		
Hazards Addressed	Flooding		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 Point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 Points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	GIS, Planning		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Short-term		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 7 - Reduce Impacts from Communicable Disease		
Objective	*Objective 7.1- Provide Public Education and Awareness on Communicable*		
Project	**Project 7.1.1- Encourage and support local public health in preparing plans for biological hazards.**		
Category	Public Education and Awareness		
Hazard(s) Addressed	Communicable Disease		
Jurisdiction	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $5OO 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 {1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium =Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	IHS		
Potential Funding Source{s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 7 - Reduce Impacts from Communicable Disease		
Objective	*Objective 7.1- Provide Public Education and Awareness on Communicable*		
Project	**Project 7.1.2- Provide public awareness on communicable disease prevention.**		
Category	Public Education and Awareness		
Hazard(s) Addressed	Communicable Disease		
Jurisdiction(s)	CSKT, IHS		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% County residents **(1** point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100,000 to $500 000 (2 points)		
	Low = < $100 000 (1point)	x	1
Feasibility	High = Technology available/implementation likely (3 Points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	IHS		
Potential Funding Source(s)	CSKT, IHS		
implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 8 - Reduce Impacts from Severe Summer Weather		
Objective	*Objective 8.1 - Protect Property from Severe Summer Weather*		
Project	**Project 8.1.1- Support/encourage electrical utilities to use underground construction methods where possible to reduce power outages**		
Category	Property Protection		
Hazard(s) Addressed	Severe Summer Weather		
Jurisdictions	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100,000 to $5OO,OOO (2 points)		
	Low = < $100 000 (3 Points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% Reservation residents (1Point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)	x	**1**
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	Planning		
Potential Funding Source	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 8 - Reduce Impacts from Severe Summer Weather		
Objective	*Objective 8.1- Protect Property from Severe Summer Weather*		
Project	**Project 8.1.2 - Develop strategies for clearing roads of fallen trees, and clearing debris from public and private property.**		
Category	Property Protection		
Hazard(s) Addressed	Severe Summer Weather		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $5OO 000 (1point)		
	Medium = $100 000 to $500000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)	x	**1**
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Low	
Responsible Agency	Road Dept., MDT, CSKT, Power Companies		
Potential Funding Source(s)	CSKT, State, Power Company		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 8 - Reduce Impacts from Severe Summer Weather		
Objective	*Objective 8.2 - Provide Public Education and Awareness on Severe Summer Weather*		
Project	**Project 8.2.1- Continue participation in National Weather Service Storm Ready Community Program.**		
Category	Public Education and Awareness		
Hazard(s) Addressed	Severe Summer Weather		
Jurisdiction(s)	Lake Reservation, Polson Ronan St. Ignatius		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500,000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% County residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	CSKT, NWS		
implementation Schedule	Ongoing		

CSKTMONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 8 - Reduce Impacts from Severe Summer Weather		
Objective	*Objective 8.2 - Provide Public Education and Awareness on Severe Summer Weather*		
Project	Project 8.2.2 - Promote National Weather Service's severe weather spotter training program.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Severe Summer Weather		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES,LEPC/TERC		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PCM PLAN			
Mitigation Action Plan			
Goal	Goal 9 - Reduce Impacts from Earthquakes		
Objective	*Objective 9.1- Protect Property from Earthquakes*		
Project	**Project 9.1.1- Encourage non-structural projects in schools and critical facilities.**		
Category	Property Protection		
Hazard(s) Addressed	Earthquakes		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)	x	2
	Low = < $100 000 *(3* Points)		
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES, LEPC/TERC, Schools		
Potential Funding Source(s)	CSKT, State		
Implementation Schedule	Year 1-5		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 9 - Reduce Impacts from Earthquakes		
Objective	*Objective 9.1 - Protect Property from Earthquakes*		
Project	**Project 9.1.2 - Encourage schools and critical facilities to identify the need for structural retrofits**		
Category	Property Protection		
Hazard(s) Addressed	Earthquakes		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 **(1** point)		
	Medium = $100,000 to $500 000 (2 points)		
	Low = < $100 000 *{3* Points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 {1 point)		
Feasibility	High = Technology available/implementation likely (3 Points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES, LEPC/TERC, Schools		
Potential Funding Source	CSKT, State		
Implementation Schedule	Year 1-5		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 9 - Reduce Impacts from Earthquakes		
Objective	*Objective 9.1 - Protect Property from Earthquakes*		
Project	**Project 9.1.3 - Encourage homeowners to perform structural and non-structural retrofits on their homes.**		
Category	Property Protection		
Hazard(s) Addressed	Earthquakes		
Jurisdictio	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1point)	x	1
Property Benefit	High = > $500,000 (3 points)	x	3
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	CSKT, FEMA		
Implementation Schedule	Year 1- 5		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 9 - Reduce Impacts from Earthquakes		
Objective	*Objective 9.2 - Provide Public Education and Awareness on Earthquakes*		
Project	**Project 9.2.1 - Promote and support educational earthquake awareness and preparedness in schools and for the general public.**		
Category	Public Education and Awareness		
Hazard(s) Addressed	Earthquakes		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES, LEPC/TERC		
Potential Funding Source(s)	CSKT, FEMA		
implementation Schedule	Year 1-5		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 10 - Reduce Impacts from Dam Failure		
Objective	*Objective 10.1 - Implement Actions to Prevent Impacts from Dam Failure*		
Project	**Project 10.1.1 - Consider using dam inundation as criteria for future subdivision review and require disclosure by developers to prospective buyers.**		
Category	Prevention		
Hazard(s) Addressed	Dam Failure		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100,000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)	x	2
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium-High	
Responsible Agency	Planning, Energy Keepers		
Potential Funding Source(s)	CSKT, Energy Keepeers		
Implementation Schedule	Year 1-5		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 10 - Reduce Impacts from Dam Failure		
Objective	*Objective 10.2 - Enhance Emergency Services to Mitigate Impacts from Dam Failure*		
Project	**Project 10.2.1 - Coordinate with dam owners to exercise EAPs with responders.**		
Category	Emergency Services		
Hazard(s) Addressed	Dam Failure		
Jurisdictions	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1point)	x	1
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500,000 (2 points)	x	2
	Low = < $100 000 (1point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES, LEPC/TERC, Energy Keepers		
Potential Funding Source(s)	CSKT, Energy Keepers		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 10 - Reduce Impacts from Dam Failure		
Objective	*Objective 10.2 - Enhance Emergency Services to Mitigate Impacts from Dam*		
Project	**Project 10.2.2 - Maintain EAPs of high hazard dams and work with owners to keep plans current.**		
Category	Emergency Services		
Hazard(s) Addressed	Dam Failure		
Jurisdiction{s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points}		
	Medium = 20 to 50% of Reservation residents (2 points}		
	Low = < 20% Reservation residents (1 point)	x	1
Property Benefit	High = > $500,000 (3 points}		
	Medium = $100 000 to $500 000 (2 points)	x	2
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points}		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	Energy Keepers, DES		
Potential Funding Source{s)	CSKT		
implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11- Reduce Impacts from All Hazards		
Objective	*Objective 11.1- Enhance Emergency Services to Mitigate Impacts from All Hazards*		
Project	**Project 11.1.1- Buy weather radios for various critical facilities.**		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	3
	Low = < 20% Reservation residents (1Point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500,000 (2 points)		
	Low = < $100 000 (1Point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation Unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	CSKT, Grants		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11- Reduce Impacts from All Hazards		
Objective	*Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards*		
Project	**Project 11.1.2 - Continue coordinating with public broadcasting stations with information for Early Alert System.**		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 *to* $500 000 (2 points)		
	Low = < $100 000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 l Points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	High	
Responsible Agency	DES, Chief Elected Officials		
Potential Funding Source(s)	CSKT, Cities		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11- Reduce Impacts from All Hazards		
Objective	*Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards*		
Project	**Project 1113 - Continue to encourage that public facilities and schools obtain generators for backup power.**		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	Lake Reservation, Polson Ronan St. Ignatius		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)	x	2
	Low = < $100 000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 Points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	High	
Responsible Agency	DES, LEPC/TERC		
Potential Funding Source(s)	CSKT, School		
implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11- Reduce Impacts from All Hazards		
Objective	*Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards*		
Project	**Project 11.1.4 - Identify emergency shelters and encourage them to obtain generators**		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
Jurisdiction	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)	x	2
	Low = < $100 000 *(3 points)*		
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)	x	1
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 Points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	6	x
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES, LEPC/TERC		
Potential Funding Source	CSKT		
Implementation Schedule	Year 1-5		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11- Reduce Impacts from All Hazards		
Objective	*Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards*		
Project	**Project 111S - Continue to enhance and improve back-up location for dispatch center.**		
Category	Emergency Services		
Hazard(s) addressed	All Hazards		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)	x	2
	Low = < $100 000 (3 points)		
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	High	
Responsible Agency	DES		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11- Reduce Impacts from All Hazards		
Objective	*Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards*		
Project	**Project 11.16 - Continue to enhance and improve Reverse 911 capabilities through exercise and software development.**		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
Jurisdiction	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500,000 (1point)		
	Medium = $100 000 to $500 000 (2 points)	x	2
	Low = < $100 000 *(3* points)		
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	911, Tribal Police		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 1.1- Reduce Impacts from All Hazards		
Objective	*Objective 1.1.2 - Provide Public Education and Awareness on All Hazards*		
Project	**Project 1.1.2.1- Promote the need for emergency action plans for special needs populations.**		
Category	Public Education and Awareness		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500,000 (1 point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% Reservation residents (1 point)	x	1
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	LEPC/TERC, IHS		
Potential Funding Source(s)	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11- Reduce Impacts from All Hazards		
Objective	*Objective 11.2 - Provide Public Education and Awareness on All Hazards*		
Project	**Project 11.22- Encourage preparation of Family Emergency Plans.**		
Category	Public Education and Awareness		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)	x	3
	Medium = 20 to 50% of Reservation residents (2 points)		
	Low = < 20% County residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)	x	1
Feasibility	High = Technology available/implementation likely (3 Points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	High	
Responsible Agency	LEPC/TERC, IHS, DES, RFDs		
Potential Funding Source(s)	CSKT		
implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11- Reduce Impacts from All Hazards		
Objective	*Objective 11.2- Provide Public Education and Awareness on All Hazards*		
Project	**Project 11.2.3 - Promote disaster-related educational programs through the school system.**		
Category	Public Education and Awareness		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% Reservation residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 points)		
	Low = < $100 000 (1point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	LEPC/TERC		
Potential Funding Source	CSKT		
Implementation Schedule	Ongoing		

CSKT PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11- Reduce Impacts from All Hazards		
Objective	*Objective 11.3 - Implement Actions to Prevent Impacts from All Hazards*		
Project	**Project 113.1- Continue to work with cell phone companies to get a tower in towns as needed.**		
Category	Prevention		
Hazard(s) Addressed	All Hazards		
Jurisdiction	CSKT		
Benefit-Cost Ranking	**Options**	**Selection**	**Score**
Estimated Cost	High = > $500 000 (1point)		
	Medium = $100,000 to $500,000 (2 points)		
	Low = < $100 000 (3 points)	x	3
Population Benefit	High = > 50% of Reservation residents (3 points)		
	Medium = 20 to 50% of Reservation residents (2 points)	x	2
	Low = < 20% Reservation residents (1point)		
Property Benefit	High = > $500,000 (3 points)		
	Medium = $100 000 to $500 000 (2 Points)		
	Low = < $100 000 (1point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
Reservation Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source	CSKT		
Implementation Schedule	Ongoing		

2005 Mitigation Project Summary & Status

CSKT Pre-Disaster Mitigation Plan

STATUS OF PROJECTS OUTLINED IN 2005 CSKT MITIGATION PLAN

PROJECT	TRIBAL PRIORITY RANKING	STATUS	MONITORING/COUNTY PARTNER	FUNDING SOURCE
Provide weather radios for various critical facilities	High	Completed	Montana DES	State/Various
Enhance NOAA broadcasts to include Reservation boundary	High	In-progress	CSKT DES	CSKT
Formulate community awareness projects that instill Firewise practices; participate with fire management program in the understory reduction efforts	High	On-going; Homes in WUI and buffer zone surveyed and mapped; set up website for local fire chiefs to access relevant information about individual homes in the event of structure or wildfire	CSKT DES/CSKT Tribal Prevention	CSKT Tribal Prevention
Provide additional training to fire fighters		On-going	CSKT Forestry	CSKT
Recruit EMT volunteers through public outreach		On-going; programs started at Salish Kootenai College to recruit and train EMT volunteers	CSKT and SKC	CSKT and SKC
Secure bulk petroleum and propane tanks with fencing		On-going; working with private enterprise to ensure that bulk storage is secured	CSKT	
Investigate mitigation options for West Nile Virus		Completed	CSKT Public Health/IHS	CSKT and IHS
Install fencing and alarm system at water treatment plant and water supply wells	High	Completed	CSKT Housing	
Provide HAZMAT training and software to emergency managers		In-Progress	CSKT DES	CSKT; local RFDs
Install/Construct EOC	High	On-going; space is designated and EOC type has been designated; need laptops and command center technology	CSKT DES	CSKT
Re-countour Skyline Drive and provide new guard rail		Completed	Federal Dept of Transportation	Various

Provide emergency generators to hospitals, EOC, jail, rest homes, Tribal Health		In-progress; 2 generators at DES and Tribal law and order; currently working with other critical facilities to facilitate individual grants to purchase additional generators	CSKT DES	Completed Homeland Security Grant; need additional funding to finish project.
Move antennaes, towers, and repeaters from Oliver Point to Jette Hill for year-round accessibility		Completed; Jette Hill is active and Oliver Point was left equipped for stand-by emergency	Various Tribal and County Offices	Various
Under-story reduction and road building to provide egress/ingress to roads land-locked in the event of wildfire or flooding	High	In-Progress	CSKT Safety of Dams and Roads	CSKT
Replace deteriorated bridges on Little Bitterroot, Jocko, Flathead River and Boulder Creek to withstand heavy rain and melting snow		On-going	CSKT Safety of Dams and Roads	CSKT
Work with federal, state, and NGO groups studying effects on wildfire at urban interface		On-going	CSKT Forestry	CSKT
Institute communications system with local radio stations informing land owners of seasonal floods		Completed; Public radio, RAVE systems	CSKT IT	CSKT
GPS homes along Flathead and Little Bitterroot River		Not Completed	CSKT NRD/GIS	CSKT
Protect culturally significant resources within forested areas, pictographs, and grave sites from wildfires or vandalism	High	In-progress; locations mapped by culture committee	CSKT Culture Committee/DES/EHP	CSKT and EHP
Work with neighboring counties to discontinue dumping tires on Tribal land		On-going; Tire disposal stations at Hot Springs and Pablo	CSKT	Private Enterprise
Obtain 26’-30’ all-hazard boat w/firefighting unit capable of rescue evacuation for Flathead Lake/island residents	High	Not completed	CSKT Division of Fire	None

Replace 1939 Vintage pumping plant on Flathead River	High	Unknown	CSKT Safety of Dams and Roads	Unknown

APPENDIX E RELEVANT PLANS

CSKT Pre-Disaster Mitigation Plan

FEBRUARY - 2010
CONFEDERATED SALISH, PEND d'OREILLE and KOOTENAI TRIBES of the FLATHEAD NATION

CSKT - AQUATIC INASIVE SPECIES (AIS) STRATEGIC PREVENTION MANAGEMENT PLAN

DRAFT

Produced by:
Clint Folden, Wetlands Conservation Program,
CSKT Division of Environmental Protection,
February 24, 2010

Produced by:
Clint Folden, Wetlands Conservation Program,
CSKT Division of Environmental Protection,

February 24, 2011

ACKNOWLEDGEMENTS

This plan was prepared with support from Montana State Government Agencies and Universities, Federal land management agencies and the Flathead Basin AIS Work Group.

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Executive Summary

Introductions of Aquatic Invasive Species (AIS) have caused the decline and extinction of many plant and animal species, and are cited as a cause of endangerment for 48% of the species listed under the Endangered Species Act (ESA). In 2005, aquatic invasive species cost the U.S. economy over $120 billion. Their occurrence and distribution are increasing rapidly, and adverse impacts associated with AIS continue to rise. There are currently over 70 nonindigenous aquatic species reported in the state and more are expected to arrive. Current state activities and authorities address some AIS issues, their prevention, and control. However, these activities are not coordinated nor comprehensively managing the impacts of AIS. The importance of the Flathead Indian Reservations aquatic resources requires a coherent response to the threat posed by AIS. For all of these reasons, the development of a Tribal strategy for the prevention and management of AIS species is critically needed.

AIS can be: plants (such as flowering rush), animals (such as zebra mussels), and other microorganisms (such as the parasite that causes whirling disease). Once introduced into new habitats, these organisms disturb native species through competition, predation, displacement, hybridization, spread of disease and parasites, and can ultimately cause extinction of many valued organisms. AIS can also affect humans by causing adverse impacts to commercial, agricultural, aquacultural, and recreational activities that depend on water resources. Even today, on the Flathead Indian Reservation, Aquatic Invasive Species are a serious problem. Current state activities and statutes address AIS prevention and control, however, there is a need to combat AIS at the local watershed level to assist with these efforts as well as minimize the harmful economic, ecological and social impacts of AIS.

This strategic plan is tied both to the federally approved State Aquatic Nuisance Species Management Plan, and the Flathead Basin Aquatic Invasive Species Strategic Prevention Plan. Additionally, it is the initial step in establishing a program on the Flathead Indian Reservation to prevent, control or eliminate AIS within the watershed. This AIS plan is dependent upon a coordinated, grass-roots effort designed to prevent the dispersal of AIS into, within, and out of Flathead Lake and the Lower Flathead River Watershed through early detection and assessment of newly established invaders. Monitoring of invading populations, implementing public outreach and education programs, improving the understanding of the ecology of invaders and factors in the resistance of habitats to invasion, and supporting the development, testing and implementation of prevention, management, and control methods will prepare Natural Resource Employees in the defense of the aquatic resources of the Flathead Indian Reservation and beyond. The Confederated Salish and Kootenai Tribes Plan outlines strategies and supporting tasks that can be used to prevent the spread of AIS, along with the support and partnership of the State of Montana and the Flathead Basin Commission.

This Plan also contains a 2017 work plan outlining the programmatic and funding priorities for year 1. It is anticipated that the work plan will be updated annually, and will be revised as we learn more about the ecology of invasive species, and the efficacy of prevention and control strategies.

Background - Aquatic Invasive Species

AIS are introduced to new habitats through both natural and human-caused mechanisms. In many waters, fisheries management programs have intentionally transplanted nonnative sport fish to provide recreational opportunities. Other aquatic organisms have been transported via ballast water in ships, aquarium releases, and illegal translocations. Regardless of the cause of species introductions, the establishment and proliferation of AIS often results in the decline of native organisms and the modification of aquatic communities. Over the past 50 years the rate of AIS introduction has dramatically increased. Once introduced, populations often grow quickly and spread rapidly due to lack of natural controls. Once established, AIS can

displace native species, clog waterways, impact municipal and industrial irrigation and power systems, degrade ecosystems, reduce or threaten recreational and commercial fishing opportunities, and can cause wildlife and public health problems.

Aquatic Invasive Species are a serious problem in Montana. There are currently over 70 nonindigenous aquatic species reported in Montana and many more could be accidentally introduced. Current state activities and mandates have addressed AIS, their prevention, and control. However, there is a need to combat AIS at the local watershed levels to assist with these efforts.

In 2016, the State positively identified invasive mussels in both Canyon Ferry and Tiber Reservoirs. The Governor created an Incident Command Team to address the presence of the mussels and to refine the State's AIS plan to contain the mussels and prevent their spread to other portions of the State.

Our plan will support the State's efforts, coordinate with the efforts of the Flathead Basin Commission, and specifically address the CSKT's mission to protect Reservation resources from introduced species and their associated impacts. Ultimately, the goal of this plan is to prevent introduction of invasive species to the Reservation and identify step-by-step procedures to contain and control any species if introductions occur despite our management efforts.

AIS Defined:

AIS are pathogens, plant or animal species which are nonindigenous to the Flathead Indian Reservation or Flathead Basin that threaten the diversity or abundance of native species, the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters.

Goal of the Plan:

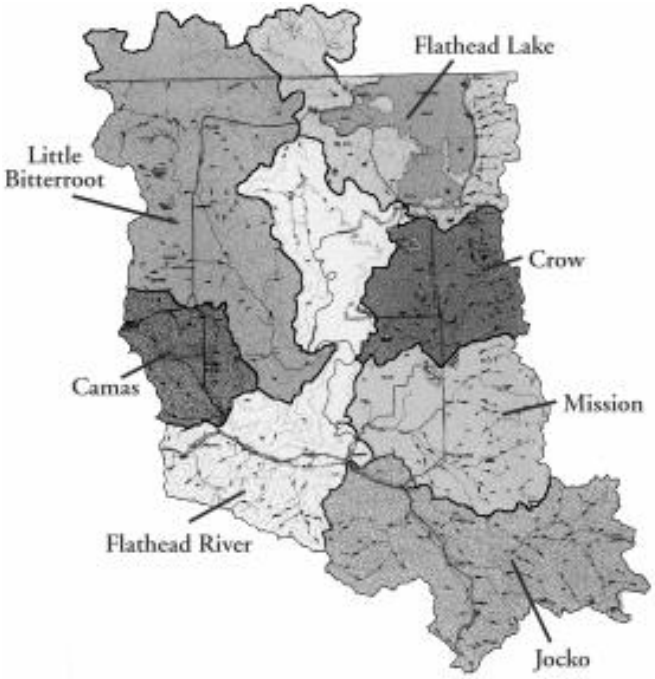
The goal of the CSKT - AQUATIC INASIVE SPECIES (AIS) STRATEGIC PREVENTION MANAGEMENT PLAN is to help initiate and sustain local efforts as appropriate to prevent, control and/or eliminate AIS within the Flathead Indian Reservation and beyond. Essentially, its purpose is to minimize the harmful ecological, economic, and social impact of AIS through education, prevention and management of introduction, population growth, and dispersal of AIS into, within, and out of the Flathead Indian Reservation.

Area of Concern:

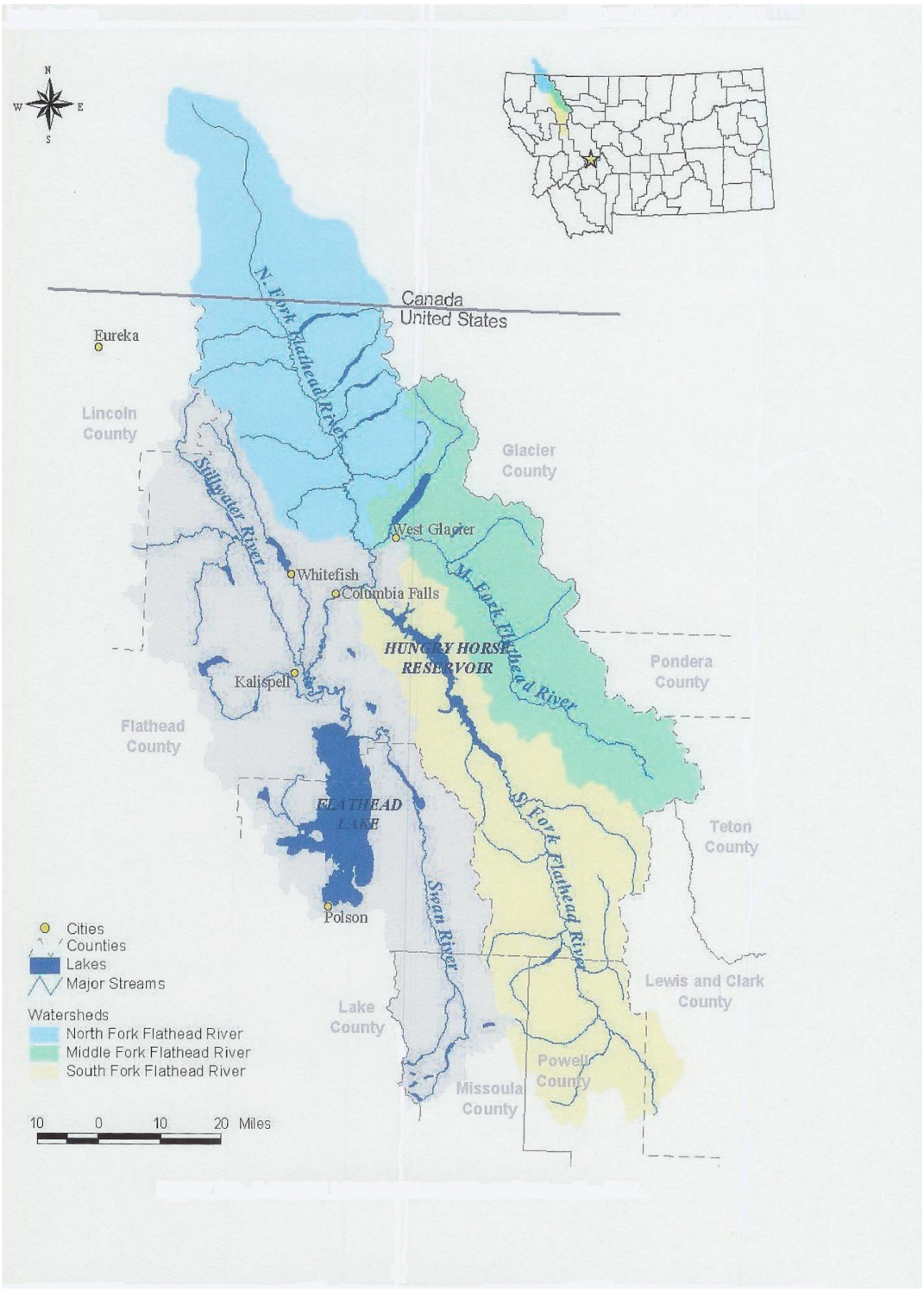
The area of concern includes all aquatic and riparian environments specifically within the exterior boundaries of the Flathead Indian Reservation (FIR). However, on a much broader scale we must also include the entire Flathead Basin and below. The Flathead Basin encompasses 8,587 square miles (approximately six million acres) in Northwest Montana and Southeast British Columbia, including Flathead Lake, rivers, tributaries, lakes, ponds and wetlands. The basin drains the western and southern slopes of Glacier National Park, Mission Mountain Wilderness, as well as portions of the Bob Marshall Wilderness Complex. The Flathead River is the largest tributary to the Clark Fork River, which flows into Lake Pend Oreille, Idaho, the Flathead Basin serves as the headwaters for the Columbia River system.

The Flathead Basin is arguably the most intact native aquatic ecosystem in the United States (outside of Alaska). For example, this Basin supports some of the last best habitat for native cold-water aquatic species in Montana, including bull and westslope cutthroat trout. Within the FIR and Flathead Basin, AIS have the potential to significantly impact the fragile ecological balance between physical habitat and the native plants and animals that depend on it (see Appendices C & D for a summary of AIS species currently posing the greatest threats to the Flathead Basin). Impacts from AIS species already threaten critical parts of this ecosystem. For example, the expansion of lake trout within the Basin is negatively affecting bull trout. The impacts of nonnative

fish occurrences may vary throughout the state depending on the specific watershed and its current fish populations. Since the Flathead Basin is located in the headwaters of the Columbia River Basin and sustains numerous native fish populations, any infestation of AIS here could result in serious adverse impacts to native fish and aquatic health within the Basin as well as downstream.



Primary Area of Concern: Watersheds of the Flathead Indian Reservation.



Expanded Area of Concern: Flathead River Basin in northwestern Montana and southeastern British Columbia (Canada), with the addition, Lower Flathead River and Camas Watersheds (not pictured).

Organization of the CSKT AIS Plan

The CSKT AIS Plan will be divided into these primary sections:

I. Response
II. Control
III. Education and Outreach.

We recognize that the ultimate goal of this plan is to **prevent** the invasion and establishment of any invasive species. However, we will address response and control measures first so as to provide staff with a step-by-step set of guidelines to follow in the event of AIS being detected within the exterior boundaries of the Reservation. This portion of the plan does NOT detail what the CSKT response is if invasive mussels are detected in the Flathead Basin but not within the boundaries of the Reservation. The CSKT will coordinate with the Flathead Basin Commission to implement response/control/prevention measures if mussels are detected upstream of our Reservation boundary.

I. Response

A. Confirmation
If AIS are positively identified within Reservation waters, the following actions will be initiated by the NRD Department Head:

1. The Department Head will coordinate with Program Staff to perform confirmation sampling to verify the presence of AIS. The nature of the AIS will determine which Program is notified first. A brief (but not comprehensive) set of examples is listed below.

    a. Invasive mussels – contact Water Quality
    b. Non-native fish – contact Fisheries
    c. Non-native plants – contact Pesticides

2. Since both the Fisheries and the Pesticides programs have well-established procedures to deal with introduced fish and plant species- the rest of this section will deal specifically with procedures designed to address the presence of invasive mussels (*Dreissenia spp*. Zebra and Quagga).

3. Perform Confirmation Sampling
    - The NRD Department Head will request the Water Quality Program Manager to collect and analyze water samples to confirm the presence of invasive mussels.

    - Water samples will be sent to Flathead Lake Biological Station and analyzed using eDNA analysis (October – May) and both eDNA and microscopy analysis if confirmation is needed in warmer weather months (June-September).

    - Flathead Lake Biological Station will be asked to submit a split sample to _____ Laboratory in Wisconsin to confirm their results.

Should this be "While waiting for confirmation the NRD Department Head will…." Also, I need cell phone numbers for each of these contacts

B. Communication

4. If Confirmation sampling reveals that AIS are present, the NRD Department Head will initiate the following actions:

    a. Contact the Tribal Council and notify them that mussels have been detected in Reservation waters.

b. Contact the State Incident Command Team and notify them that mussels have been detected in Reservation waters. Request that State monies be released to help address control and containment of mussels in Reservation waters.

c. Contact Dale Larson – CSKT Emergency Manager (406) 690-2880
The Emergency Manager will notify DES personnel in Lake County as well as DES officials in Kalispell/Bigfork/Whitefish and communities north of the Reservation boundary that non-native mussels have been detected in confirmation samples. His office can also request release of any emergency funds from the County and State that may be needed to purchase products to control or eradicate mussels.

d. Contact Tom McDonald – NRD Division Manager of FWRC (406) 883-2888. Tom McDonald will mobilize his staff to close (gate or block) lake and reservoir access points as deemed legal and appropriate by his office.

e. Contact Les Evarts and/or Barry Hansen with Tribal Fisheries and notify them that mussels have been detected.

f. Contact Tribal Fish and Game Wardens and notify them that mussels have been detected. Fish and Game wardens will be asked to coordinate with Lake County game wardens if the season and jurisdictional authority of the impacted waterbody(is) require coordination with county officials.

g. Contact Safety of Dams and Brian Lipscomb at Energy Keepers and notify them that mussels have been detected. Request that safety measures to prevent spill waters from entering any downstream waterbodies be employed.

h. Contact the Flathead Irrigation Project and notify them that mussels have been detected. Request that irrigation lines be shut down (if the season warrants such action) to prevent the dispersal of invasive mussels to downstream waters.

i. Contact Tribal Law Enforcement and notify them that mussels have been detected. Tribal law enforcement officials will be asked to coordinate with Lake County law enforcement if the season and jurisdictional authority of the waterbody(is) require coordination with Lake County personnel to close/gate/obstruct a lake access point.

j. Contact Rob McDonald – CSKT Communications Director and notify him that mussels have been detected. His office will then be tasked with crafting a press release to inform the public of the results of the confirmation sampling and the response effort.

k. Contact Virgil Dupuis (406) 261-8675 - SKC/MSU Extension Agent and notify him that mussels have been detected. His office can provide an Environmental Assessment that addresses the application of control products that can kill *Dreissenia spp*. in nearshore environments. If Zequanox or other supplies are needed to respond to the presence of invasive mussels, the Extension Agent can both order and apply the product.

l. Contact Willie Keenan or Jasmine Brown – NRD Pesticide Program (675-2700 ext. 7208) (264-4617 (cell)) and notify the office that mussels have been

detected. The Pesticide Program will need to provide regulatory oversight in the event that any contractor and/or Tribal Program applies pesticides for AIS control.

m. Contact Clint Folden – NPDES Program and notify his office that mussels have been detected. The NPDES Program will need to supply a one page permit to the EPA in the event that the Tribes have to apply a control product like a pesticide into shallow or nearshore waters.

n. Contact Dan Lipscomb - Shoreline Protection Program and notify his office that mussels have been detected. His office can coordinate with property owners (if appropriate) in the event that Zequanox has to be applied to any near shore environments.

5. Subsequent response measures will be affected by the seasonality of the detection and the waterbody that is impacted. For instance:

C. Restriction/Closure

If a positive and confirmed detection of invasive mussels occurs within Flathead Lake:

Winter (December-Feb) – If boats are not entering or leaving Reservation waters, signage should be posted at all launch sites and boat ramps indicating that mussels have been detected. The Tribes will close (gate or obstruct) all Tribally owned access points.

Spring (March-May) – If boats are entering or leaving Reservation waters, signage will be posted at all launch sites and boat ramps indicating that mussels have been detected. The Tribes will close (gate or obstruct) all Tribally owned access points.

Summer (June-August) If boats are entering or leaving Reservation waters, signage will be posted at all launch sites and boat ramps indicating that mussels have been detected. The Tribes will close (gate or obstruct) all Tribally owned access points.

Fall (September – November) If boats are entering or leaving Reservation waters, will be posted at all launch sites and boat ramps indicating that mussels have been detected. The Tribes will close (gate or obstruct) all Tribally owned access points.

If a positive and confirmed detection of invasive mussels occurs within reservoirs or lakes that fall completely within the ownership and jurisdiction of the Tribes- those lakes and reservoirs will be completely closed to watercraft in order to prevent the spread of invasive mussels.

D. Removal/Eradication

Control measures for killing Quagga and Zebra mussels are limited to physical removal

of the animals once they become attached to a substrate and the use of biocides like Zequanox (or other products) to attached populations. Typically, more than one application of a biocide is necessary to completely eradicate an established population. The effects of treatment are visible within one day. Visual observation of the treated area will determine the extent and schedule of follow-up applications of a biocide.

If established populations are observed, the Tribes will need to:

1. Contact the SKC Extension Agent who can both order and apply the product. The SKC Extension Agent can also provide an Environmental Assessment to cover the application of biocides or pesticides.
2. Contact the Shoreline Protection Program and notify them where/when the product will be applied. Shoreline residents will need to be notified and asked to stay out of the treatment area during the application period (typically 1-3 days for biocides depending upon the product).
3. Contact the Pesticide Program and ask them to provide regulatory oversight of the Pesticide application.
4. Contact the NPDES Program and ask for an NPDES permit to be issued for the application.

II. Control Measures

Control Measures for invasive mussels include but are not limited to the development of a routine monitoring program, creation of inspection and decontamination stations and deployment of K-9 teams to work at inspection stations. Each of these measures will be described in the following section and approximate costs for each measure will be detailed in the budget section of this plan.

A. Monitoring Program
   1. The CSKT Water Quality Program will initiate shallow and deep water monitoring in Flathead Lake in March 2017.
   2. Sampling will occur once per month at 20 sites (see map)
   3. Plankton tows (see methodology developed by Flathead Lake Biological Station – attached) will be performed at surface and at depth at nearshore, shallow, and open water locations on the South half of Flathead Lake.
   4. Preserved samples will be submitted to Flathead Lake Biological Station and analyzed using environmental DNA analysis for samples collected September – June. Microscopy analysis will also be performed on samples collected in July-August since these are the only months when veligers are large enough to be observed using microscopy techniques.
   5. Analysis results (even negative results) will be summarized in a monthly report and given to the NRD Department Head and the FBC.
   6. The CSKT Water Quality Program will coordinate with the FBC and the State in order to communicate the results of ALL samples collected in the Basin.
   7. The CSKT Water Quality Program will request a modification to its Quality Assurance Action Plan to include monitoring of Flathead Lake samples for invasive mussels. A detailed budget for this effort will be outlined in the budget section of this plan.

This portion of the plan needs legal comment and staff input

B. Inspection and Decontamination

1. The CSKT will coordinate with the State of Montana to operate two inspection stations. One will be located at Ravalli and the other at Pablo. Each inspection station will be staffed by two crews of two people (at a minimum) that will be charged with performing visual inspections of watercraft to make sure that all watercraft have been cleaned, drained, and dried prior to entering Reservation waters.

2. A decontamination unit will also be used at each inspection station to thoroughly clean and disinfect watercraft.

3. The inspection stations will be operated from March 1- September 30 every year. Staff working at the inspection stations will coordinate with Tribal Police, Game Wardens, and local law enforcement. If a boater does not stop for inspection, they can be detained and ticketed.

4. If a watercraft fails inspection, staff at the stations have the authority to require decontamination or even impoundment of the boat for 20 days to ensure that the boat poses no AIS threat.

5. The CSKT will implement a "sticker and band" initiative that will require boaters to have their boats inspected and the band cut by certified staff prior to launch. The cost for the "sticker and band" program will be $20 per boat per season for in-state boaters and $35 for out-of-state boaters. Revenue generated by the sticker and band initiative will be used by CSKT to fund its inspection and decontamination stations.

6. Costs associated with running an inspection station as well as expected revenue from implementing a "sticker and band" initiative are outlined in the budget section of this plan.

7. The CSKT will coordinate with the FBC and Western Dogs for Conservation to train two local teams of dog handlers and dogs to perform canine inspections of watercraft. The dog teams will be utilized from March 1- September 30 each year. The costs associated with initial training and subsequent re-certification of teams is outlined in the budget section of this plan.

III. Education and Public Outreach

The success of this AIS Plan depends upon public and local business support. There is a need to foster understanding of the AIS threat and provide direction and information about ways to prevent or control local infestations. There is a need to encourage people to inspect, clean, drain and dry boats, trailers, waders, and any other

gear used in more than one water body. There is a need to develop and implement consistent education and outreach plans addressing AIS throughout the FIR, and to develop an AIS-free certification program.

It is far less costly to prevent introduction of AIS than to pay for control or eradication once an unwanted species becomes established (if control or eradication are even possible). If prevention is unsuccessful and invasion occurs, managers must immediately detect, contain or eradicate the species, or face expensive, long-term efforts to manage a species that has become well established and threatens to spread. In most instances, a quick and powerful response is needed if there is to be any hope of eradication, containment, or cost control. Responding to an invasion becomes less feasible as the organism becomes more widespread, because the size and cost of the treatment increase, and the chance for successful control diminishes.

Focusing efforts on education, introduction pathways, integrated management, and overall criteria and procedures will be critical to prevent additional AIS from invading the Flathead Basin. Given that humans are a primary vector for transporting AIS, the success of our strategic plan rests on our public outreach efforts to inform the public of AIS threats and encourage active participation in prevention efforts. Some AIS species are already established and spreading in the Flathead system, including whirling disease, flowering rush, several fish species, and possibly Eurasian watermilfoil. To achieve participation, we must engage organizations and agencies in collaborative planning and action. We must also understand the pathways of introduction so that we may better direct our prevention efforts. Ultimately, we need to have sufficient resources, criteria, and procedures in place to implement each of the components of this plan. This portion of the implementation plan defines how we will increase awareness and participation in prevention efforts; integrate ongoing management and conservation work; interrupt introduction pathways; and integrate AIS prevention into effective laws, policies, and criteria to effectively combat AIS.

Strategy 1: Inform the public, policy makers, natural resource workers, private industry, and other stakeholders about the risks and impacts of AIS in order to develop a community that understands their role in AIS prevention.

The primary strategy is to create public awareness about AIS, how their actions can prevent the spread and introduction of AIS and how they can help reduce the impacts of existing AIS (i.e., teach people to inspect, clean, drain and dry). The following tasks will help us attain that goal:

Task 1 – Hire/Contract an AIS Coordinator

Due to the scope AIS prevention efforts and the amount of time it will take to effectively execute the AIS plan, the Tribes should hire a Coordinator to oversee each of the identified elements of this plan. Costs associated with creation of this position are outlined in the budget section of this plan.

Strategy 1: Host Facilitated Public Meetings in Local Communities

Tasks

Perform a facilitated meeting where the public is invited to review the problems caused by AIS, brainstorm local solutions, and invite community residents, businesses, schools, etc. to become "partners" in AIS prevention.

AIS meetings could be scheduled for January-March of 2017 and held in:
Arlee, St. Ignatius, Charlo, Ronan, Pablo, Elmo, Dayton, and Polson and/or other communities identified by the Command Team

Strategy 2: Compile the Summary Notes for Each Public Meeting for Public Review

The identified problems and solutions recognized in each community will be summarized and published in the following ways:

- Local newspapers
- AIS Prevention website (this will need to be developed as a separate page on the CSKT website)

The website can also be utilized as a tool to post elements of the AIS plan when it is finalized, inspection stations, and press releases relevant to AIS control measures and activities.

Strategy 3: Host A Public Celebration Meeting in May 2017

Following the community meetings, a larger scale community forum should be hosted and include tools that would encourage public participation (food, beverages, door prizes etc.).

At this meeting, the AIS Coordinator would present information learned from communities on the Reservation, review the problems of AIS, and invite the public to come up with a final set of solutions that could be agreed upon by the community. This would be a facilitated discussion.

The event would conclude with a final Partnership Invitation. Area businesses, churches, schools, service organizations, and private citizens would be invited to become Partners in AIS prevention and to provide actions for their Partnership.

For instance, libraries could partner with us to distribute brochures on AIS prevention. Local schools could offer to distribute information or invite staff biologists to present in classrooms. Service organizations like Kiwanis, Rotary, and the Elks could also partner to help raise awareness of AIS issues.

Partnership development is key to the long-term success and sustainability of a Tribal AIS prevention program. Partnership results in a community based effort to prevent invasive species rather than an agency based initiative which will always be limited by funding and staff.

Partners and partner "actions" can be published on the AIS website as a tool to recognize the volunteer efforts and contributions of the community.

Task 2: Develop and support educational workshops.

Once the initial stakeholder partnerships have been developed, these tasks would be performed on an on-going basis by the AIS Coordinator.

Tasks

- **Contact local community partners and start to set up an annual calendar of education and outreach workshops and events.**
- **Create a database of known partners to assist with this effort.**
- **Brainstorm ideas for future events.**
- **Search for funding sources, both local and abroad for a variety of education and outreach.**
- **Integrate AIS education into existing community programs and schools (ex: Wildlife Art Museum series, local library events).**

- **Investigate setting up an annual community based AIS event on the FIR.**
- **Hold Reservation wide workshops – utilize scenic float tools to educate the public.**
- **Adjust focus of workshops as the public (residents and tourists) becomes better educated.**

Task 3: Promote one-on-one contact with water users.

Tasks

- **Set up a coordinated effort between partners to provide sufficient seasonal staffing throughout the FIR for check/wash stations.**
- **Consider and prioritize other organizations and businesses to partner with for sufficient on the ground education.**
- **Organize and coordinate seasonal AIS training.**
- **Employ individual to review existing outreach resources and to develop new public contact materials as needed.**
- **Search for grant opportunities and sources of long term funding for seasonal staff.**
- **Set up partnership agreements with participating groups.**
- **Interview/survey visitors to evaluate effectiveness of prevention program and adjust efforts to address responses to questionnaires/surveys.**

Task 4: Implement school outreach programs.

Tasks

- **Set up a partnership with local schools and educational groups (TU, Flathead Lakers, etc.) to establish outreach in schools.**
- **Find or develop lesson plans/school education programs for teaching about AIS.**
- **Set up workshop with FIR teachers to ensure success.**
- **Integrate into Reservation wide education system.**

Task 5: Integrate AIS outreach into the plans and actions of partners and other relevant agencies and organizations.

Tasks

- **Meet with public information personnel to determine routes for outreach.**
- **Create tools for outreach to co-workers and members (e.g. PowerPoint presentations, electronic information documents).**
- **Stock offices and front desk areas of all FIR AIS Plan partners, organizations, agencies and others with basic informational materials on AIS.**
- **Hold brown-bag lunches on AIS and take co-workers and other interested parties on float trips to explain AIS issues.**

Provide power washers and/or other associated cleaning tools (brushes, scrapers) to be used by employees. (especially during public events, ex. Mack Days and other water related events).

Task 6: Coordinate seasonal staffing to maximize the degree of plan implementation with available resources.

Tasks

- **Set up a communication pathway to keep all partners informed and avoid duplication. Partners meet as needed to plan and coordinate for summer season.**
- **Develop and implement a plan to help meet staffing requirements (Youth Groups, YCC, Montana Conservation Corps, SKC, etc.).**

Task 7: Develop effective education and outreach plans and campaigns.

Tasks

- **Develop product marketing plan. Analyze what has worked and failed in other jurisdictions. Consider market research to refine messaging over time. Coordinate with the Tribal Information Officer to create a "brand" for Tribal Messaging that will be used in all signage, print media, and televised outreach efforts.**

- **Use contact survey, develop plan to help maximize effectiveness of education efforts in reaching target audiences.**
- **Establish relationships with visitor centers, chambers of commerce and other "marketing focal points," such as websites.**
- **Use the State AIS reporting system.**

Task 8: Encourage the development of AIS-free certification programs to help the public understand their role.

Tasks

- **Search and evaluate ongoing certification programs and consider using the existing MT AIS program or develop a FIR program.**
- **Incorporate education and self-certification program with boat inspections and wash stations to facilitate interstate boat travel.**
- **Utilize police/highway patrol, SKC students, local high school students, MFW&P personnel, etc. to assist with boat inspections.**

Task 9: Develop understanding of and support for AIS prevention within agencies and organizations.

There is also a need for understanding and support within agencies and organizations. This can be done by institutionalizing behaviors and procedures that reduce the potential for AIS spread, regardless of survey knowledge, defining and incorporating Best Management Practices into management actions, and identifying opportunities to incorporate AIS management into agency/organization decision-making and plans.

Task 10: Institutionalize behaviors and procedures that reduce potential for the spread, even among uninformed public.

Tasks

- **Representatives of each partner organization and agency within the FIR should begin talking to their coworkers, supervisors, etc., emphasizing the importance of AIS prevention, and providing information species identification.**
- **Compile research about the impacts of AIS on social, economic, and ecological systems. Use this information to develop a comprehensive report that can be distributed to natural resource program administrators. This information will be used to more comprehensively inform policy and program decisions that potentially influence how AIS prevention, containment, and eradication will occur on the FIR.**

- **Plan and conduct a Spring workshop on understanding AIS prevention and identification. Encourage the participation of field biologists, hatchery personnel, fishing guides, wildlife and fisheries managers and researchers, wardens, fire crews, contractors, etc. Even consider including elected officials and other agency staff (planning and health departments) in specific outreach efforts.**

Task 11: Define and incorporate Best Management Practices (BMP's) into management actions.

Tasks

- **Create suggested protocols for agencies/organizations to adopt (Inspect, Clean, Drain and Dry).**
- **Search literature to determine what management practices have been effective in other areas.**
- **Create plans that each agency/organization can incorporate into their work plans.**

Task 12: Identify opportunities to incorporate AIS management into agency/organization/government decision-making plans.

Tasks

- **Emphasize the importance of AIS to upper management and encourage all employees to stress the importance of AIS prevention.**
- **Meet with other water users, discuss the importance of AIS prevention, and invite them to AIS workshops.**

Research and address pathways of introduction.

Strategic planning is the key in identifying and interrupting the pathways of introduction and protects the FIR from AIS. Piecemeal attempts to protecting individual waters scattered throughout the FIR will not likely succeed in protecting the entire Reservation and may even fail to protect those selected waters. Prevention can be accomplished by identifying and managing key AIS vector routes, encouraging the development of an AIS-free certification program (possible funding source as well), developing a strategic network of cleaning/treatment infrastructure, developing standard cleaning protocols and a network of AIS experts, and by defining inspection protocols.

There are four primary vectors of spread: local water body users, outside visitors, resource management actions, and water delivery systems. **There are also two main concerns: expansion of AIS already present within the FIR and import of new AIS from outside the Reservation (most probable).**

Local users are residents from within the FIR who use local resources. Our primary focus with local users would be to control expansion of already existing AIS populations, and ensure that local users traveling outside of the Reservation with their boats do not introduce unwanted "hitchhikers" when they return to the Reservation. Outside visitors are the most likely source of introduction of new AIS species to the FIR. Outside visitors include the thousands of summer home residents in our area and other vacationers.

Six major access roadways (including Jocko Road from Seeley Lake) provide focal points for intercepting threats and educating the public. A logical way to intercept trailered boats would be to use the existing infrastructure along the Montana-Idaho border and the U.S.-Canadian border. Idaho is currently inspecting boats entering the State of Idaho, and U.S. Border Patrol already inspects livestock haulers entering Montana. Utilizing the Border Patrol and working with our counterparts in Idaho we can develop AIS inspections for boats being transported into the Country as well as within and between states. Montana Fish Wildlife and Parks, set up similar inspection stations

in the Plains, MT area beginning this spring (2010).

Similarly, one inspection station would be needed in the Arlee area to inspect boats coming from Hwy 93 south and Jocko Road out of the east. Regardless of the location, boat inspection stations would need a coordinated signage, marketing and education program along the major highway corridors designed to target local users and outside visitors.

In addition, all anglers are required to purchase fishing licenses, and license dealers can provide a focal point to increase awareness and distribute AIS educational materials. For example, fishing licenses could include an educational message such as – **"Aquatic Invaders: STOP the Spread – Inspect, Clean, Drain and Dry."** Visiting anglers often contact guides, marinas, and fishing shops and such businesses can also be helpful in disseminating a unified AIS message.

Lastly, resource management activities have inadvertently spread AIS. For example, hatcheries were the primary vector for the spread of whirling disease and are associated with many nonnative fish introductions (Lower Crow Reservoir-Small Mouth Bass). Field personnel commonly work in multiple watersheds within a week's time, without opportunities to completely dry gear before entering adjacent waters. Felt soled waders in particular have the potential to spread AIS, and should be replaced* with rubber soled and/or cleated boots. Many companies supply felt soles are in the process of eliminating them from their stock, and replacing them with advanced rubber or cleated soles. Similarly, equipment such as heavy machinery or firefighting apparatus may be deployed in multiple watersheds without proper cleaning. Institutionalized protocols to prevent AIS spread are critical for hatchery and resource personnel and their equipment. Water delivery systems, especially "trans-basin diversions" that transfer water between watersheds, also have the potential for cascading environmental impacts, if infested.

**** Given the time and effort needed to properly decontaminate felt soled waders, proper decontamination is rarely accomplished. Therefore, the State of Alaska Board of Fisheries recently agreed to ban felt soled waders and boots in southeast Alaska's freshwater streams as of January 1, 2011.***

Identify and manage key AIS vector routes

Tasks

- **Encourage outfitters, guides, marina operators and angler shops to present a unified message.**
- **Identify all possible AIS signing locations on the FIR and post warning signs, this would include private locations where allowed.**
- **Partner with local service dog training groups to develop a mussel sniffing dog training program for local residents. Invite private individuals and service dog trainers to use their dogs to sniff beaches, docks, and watercraft as a means of "early detection".**
- **Develop a highway AIS information campaign using billboards, Traveler Information Systems or other technology to target local users and outside visitors.**
- **Establish boat inspections at Reservation entrances and work with State, and Regional offices to develop joint stations along other indirect highway routes that could lead to the Reservation.**
- **Develop a consistent approach to angler and boater education at point of license and boat sales.**
- **Identify drainage interconnections created by existing water delivery systems (municipal, agricultural, etc.). These interconnections can potentially speed the spread and increase the risk of AIS introductions.**
- **Encourage all states, tribes, national parks, national forests, provinces, etc. to adopt the message: Aquatic Invaders: *Stop the Spread* –**

Inspect, Clean, Drain and Dry **on recreation permits and fishing licenses. Partner with MDOT and utilize the mobile "Variable Message Alert" tool or purchase such tools for critical locations within the Reservation Boundaries.**

- **Incorporate education and self-certification program with boat inspections and wash stations to facilitate interstate boat travel, seek mandatory stop authorization if necessary.**

Encouraging the development of AIS-free certification programs:

One method of better assuring voluntary compliance is through development of an AIS certification process whereby a boat owner or other users would receive a benefit as a result of their certification. This benefit may be the ability to pass quickly through boat inspection stations. Current options available online include the clean angling pledge and 100th Meridian clean boating certificate.

A certification process could be instituted in conjunction with boat inspection stations to educate boaters on how to perform their own inspections and to take special precautions when boating in infested waters. Two videos that may be used include "*Don't Move a Mussel Parts I and II.*" Part I deals with the ecology and effects of zebra and quagga mussels, whereas Part II educates boaters on how to inspect a boat.

Encourage the development of AIS-free certification programs.

Tasks

- **Research and evaluate ongoing certification programs and select the program most appropriate for the FIR.**
- **Incorporate education and self-certification program with boat inspections and wash stations to facilitate interstate boat travel.**

Developing a strategic network of cleaning/treatment infrastructure and adopt standard cleaning protocols:

AIS and natural ecosystems have no exact boundaries. Likewise, successful suppression or prevention necessitates an effort that overcomes boundary limitations. Part of education and prevention is instilling a new ethic or behavior to reduce the threat of spread. This new behavior entails the decontamination or cleaning of equipment that has been in contact with water and organisms that may be spread to another area. Boater surveys and recent infestations demonstrate how AIS can rapidly cross major watersheds and spread. To be effective, we must successfully intercept and stop these new threats.

Efforts that solely rely on infrastructure for cleaning and treatment are potentially less effective and ignore the need for individual responsibility for inspecting, cleaning, draining and drying gear before entering new waters. Educating users regarding their personal responsibilities to prevent the spread of AIS should be incorporated in any cleaning infrastructure. Education and inspections need to be integrated with cleaning infrastructure to target likely carriers that need a more rigorous decontamination and quarantine.

There are environmental and human health issues associated with decontaminative chemicals, but certain user groups may benefit from information on how to use them safely and effectively. Properly run wader decontaminating stations require daily attention and onsite supervision. In contrast, poorly run and placed sites could become an additional threat. Most agencies, currently, do not have the work force or specific direction to maintain cleaning sites through time, unless funds are diverted from other programs. The long-term goal, however, is to maintain functional and integrated check systems throughout the FIR. Commercial car washes and similar facilities might help augment this effort, provided they are first determined to be properly equipped with appropriate waste containment systems. As stated in "***Aquatic Nuisance Species, A handbook for education efforts"***, DNR Publication WT-825

2005, **"The key message that should be shared with all groups that may be interested in installing a boat wash facility is as follows: wash stations are a poor substitute for an effective education and watercraft inspection program that emphasizes the basic 'inspection and removal' message, BUT washing stations can be one component of an overall prevention and control strategy."**

Considering costs and the challenge of staffing many facilities, it may make more sense to have a few well-staffed, strategically placed watercraft inspection and wash stations than many local wash stations at individual lakes that are staffed periodically with fluctuating funding and initiative.

As part of all public education the message of inspect, clean, drain and dry should be promoted for all aspects of AIS prevention. The message must be clear and concise with no confusion or conflict – confusion leads to inaction.

Establish a strategic network of cleaning/treatment infrastructure and adopt a standard cleaning protocol.

Tasks

- **Determine effective approach to AIS prevention for boats (detailed inspections vs. cursory washings).**
- **Develop boat inspections and wash stations at positions, stations with an education and self-certification process.**
- **Educate public about proper washing at check stations, boat ramps, marinas, Reservation entry points, etc.**
- **Contact other AIS managers and learn from their experiences and implement effective protocols.**
- **Promote the universal message "Aquatic Invaders: Stop the Spread - Inspect, Clean, Drain and Dry!"**
- **Encourage agencies and organizations to adopt cleaning protocols.**
- **Contact Boat Inspection Regional Protocols Committee to obtain their protocols and share information.**
- **Encourage other counties, in the surrounding area to develop boat inspections and wash stations with education and certification processes.**
- **Develop or adopt a questionnaire to help identify high risk boats and ensure that they undergo detailed inspection and decontamination.**
- **Identify and encourage the use of safe carwashes throughout the Flathead Indian Reservation to treat contaminated boats.**

Developing a network of AIS experts, train resource professionals to identify AIS, and identify and/or develop consistent inspection protocols: There is a need to have annual training for permanent and seasonal employees especially those dealing with education and inspections. The purpose of this training would be to train people to **(1)** identify AIS; **(2)** educate the public about AIS; and **(3)** conduct boat inspections and be able to assist the public in learning how to inspect their own equipment. Yearly trainings can be in a central location or routed around Western Montana

Develop a network of AIS experts, train resource professionals in AIS identification, and identify/or develop consistent inspection protocols

Tasks

- **Train field staff in AIS identification.**
- **Coordinate annual AIS training.**
- **Compile a list of qualified experts and create a point of contact for agencies and organizations.**

- **Create a reporting system within the Flathead Indian Reservation so that all members are aware of new occurrences of AIS.**

Promote legislation and regulations that support AIS prevention.
There is a need to evaluate criteria and procedures to identify opportunities to improve AIS management within the FIR. This would include surveying and documenting existing laws, regulations, and policies; identifying weaknesses, inconsistencies, or absences in authorities and procedures; and supporting/implementing solutions that address the needs identified.

Survey and document existing laws, regulations, and policies.

Tasks

- **Assemble all Federal, Tribal and State laws relevant to water quality, AIS, and the interstate movements of species. Review relevant laws from adjacent States and Provinces.**
- **Review and assemble all Flathead Indian Reservation associated agency regulations pertinent to AIS control and protection of its jurisdictional waters.**
- **Inventory all legal authorities and procedures for Flathead Indian Reservation agencies interdicting AIS.**
- **Identify and address multi-jurisdictional gaps in authority.**

Identify weaknesses, inconsistencies, or absences in authorities and procedure.

Tasks

- **By agency, list and map extent of legal authorities to prevent AIS through inspection and decontamination.**
- **Compare legal authorities in AIS enforcement for overlapping jurisdictions and establish a lead agency.**
- **Identify current Flathead Indian Reservation enforcement procedures, and promote consistency.**

Support and/or implement solutions that address the needs identified in this plan

Tasks

- **As allowed, promulgate local restrictions, regulations, and containment measures for AIS contaminated waters and non-contaminated waters to ensure they are not contaminated in the future, and promote strengthening of laws and regulations where weaknesses exist.**
- **Where needed, and where existing laws allow, petition State, Federal, Tribal, and Provincial agency heads to strengthen rules and regulations to prevent AIS.**
- **Where needed and permissible, delegate deputy authority for local AIS enforcement to secondary agencies.**
- **Through private partners, government agencies, and non-government organizations, share information with elected officials to facilitate the passage of robust State and Federal laws that discourage the movement of AIS.**
- **Identify interested groups that will independently make recommendations to elected officials for laws that protect uncontaminated waters from AIS.**

- **Identify groups, individuals, or business ventures that advance the interstate movement of AIS for economic gains or shortsighted recreational motives in the Flathead Indian Reservation.**
- **Promote public knowledge of laws and regulations to increase awareness and prevention of AIS through voluntary compliance.**

Objective 2: Detect, monitor, and respond to pioneering AIS in Flathead Reservation waters.

Without clear knowledge of the location of existing populations of AIS within the Flathead Basin, our fight against AIS is like boxing in the dark, and without a rapid response plan, we do not have timely knowledge of how to combat our opponent. This portion of the implementation plan addresses the need for protocols for Reservation-wide AIS surveys, reporting, and a rapid response plan to effectively address newly discovered populations.

This section also defines the survey of existing conditions on the FIR, an approach to sharing the reports, and a rapid response protocol. Associated benefits from this section include clear knowledge of existing conditions to facilitate effective monitoring, a cooperative database for information sharing and communication, and an increased potential for timely response to newly discovered AIS infestations.

The following tasks will be pursued:

o Prioritize specific bodies of water for surveying
o Identify existing survey methodologies
o Adopt and/or develop universal/consistent survey methodologies
o Use existing databases as templates to incorporate new survey data
o Continue support for the Whitefish to Eureka Volunteer Lake Monitoring Program and the Flathead Basin Commission Volunteer Water Quality Monitoring Program for early AIS detection
o Develop other water quality monitoring and AIS volunteer monitoring programs throughout the Flathead Basin
o Include existing monitoring efforts currently being undertaken (see FBC surface water quality monitoring plan) in the AIS monitoring component

Strategy 1: Inventory and monitor priority waters of the Flathead Basin for AIS. Facilitate the collection and dispersal of information, research and data on AIS in the Flathead Basin.

There is a need to adopt or develop a universal AIS inventory protocol and implement it throughout the Flathead Basin. Prior to surveying, existing survey data will be gathered and compiled into an interactive GIS format. Using a GIS personal geo-database format, spatial data and its attributes can easily be displayed, cataloged, distributed, and analyzed by multiple users. Spatial analysis of the data will be invaluable in prioritization of new survey sites, quantifying areas of AIS risk, determining vectors of spread, estimating AIS habitat suitability, and estimating return survey intervals of existing survey sites.

Strategy 1A: Survey Flathead Basin waters for AIS.

Tasks

- **Develop Flathead Basin survey methodology and standards.**
- **Fund new watershed/lake water quality /AIS volunteer monitoring programs or expand existing programs.**
- **Fund ongoing AIS monitoring program.**
- **Quality/AIS Program Flathead Indian Reservation Volunteer Flathead Lake Monitoring Program w/AIS component.**
- **Produce Flathead Indian Reservation AIS Distribution Data Summary (areas surveyed and known infestations).**

- **Develop Flathead Indian Reservation-wide AIS Distribution Map.**
- **Prioritize List of Waters to survey.**
- **All high priority Flathead Basin waters surveyed.**

Report and coordinate AIS information: There is the need to develop a protocol for AIS related reporting, coordinating, and updating of a selected database. At the same time, there is no need to duplicate existing efforts. The FIR AIS group should review current AIS databases to determine if there can be integration into existing projects. We should facilitate the development of AIS distribution databases within the FIR that currently do not have them, and help facilitate universalizing the databases so data can be easily shared within the Tribe. If current databases are found to be insufficient and the ability or willingness to improve them is lacking, then there will be consideration of creating a database.

Strategy 1B: Report and Coordinate AIS

Tasks

- **Review Flathead Basin AIS databases and determine the need for a universal database.**
- **Make existing databases universal or identify single database to populate.**
- **Develop protocol for reporting, coordinating and sharing data within Flathead Indian Reservation and State.**

Strategy 2: Implement an early detection and rapid response system to deal with detected and potential AIS. Specifically,

- o Develop a communication structure within the Flathead Indian Reservation
- o Define authorities and responsibilities in a rapid response scenario
- o Define response protocol
- o Utilize current models of collaboration in a rapid response scenario

Rapid Response Plan: The Flathead Basin features many interstate rivers, lakes, and reservoirs. There is a need to develop a Flathead Basin rapid response plan to react to newly discovered AIS populations. If each State, Tribe, County, Province, and state and federal agencies have an AIS rapid response plan, it is a simple matter to ensure coordination between the different jurisdictions. If there are needs for rapid response plans, we will facilitate their creation, using the Western Regional Panel Rapid Response Model as a standard for the development of rapid response plans within the Flathead Basin.

Strategy 2A: Develop and implement a rapid-response plan.

Tasks

- **Convene Tribes, State, Counties, and state and federal land management agencies to compare rapid response plans and identify needs. Ensure plans address interstate and trans-boundary situations.**
- **Ensure all Tribal, County, State and Federal land management agencies have rapid response plans in place by developing a Flathead Indian Reservation-wide plan.**

Objective 3: Abate ecological, socioeconomic, and public health and safety impacts resulting from infestations of AIS within the Flathead Indian Reservation.

Strategy 1: Where feasible, support and implement active control and

eradication for established AIS.

It is obviously best to prevent the introduction of AIS onto the FIR. However, thought should be given upfront to the containment of AIS if they are introduced or already established. To ensure that we are equipped with the tools and methods to abate ecologic, socioeconomic, and public health and safety impacts from AIS introductions, we need to identify research and technological needs within the FIR and to encourage additional research. In addition, we need to identify and publicize potential threats and communicate this information to potentially impacted industries.

Abating the impacts of AIS is time consuming, costly, and often ineffective. However, not attempting any control of AIS is inviting further spread within the FIR waters and contamination to other outside areas. Removing or even lessening a well-established AIS problem within a waterway is at times unrealistic. However, in many such situations much can be done to contain the problem and prevent further spread to unaffected waters. Such measures may involve mandatory inspections and cleaning, or even local seasonal closures or quarantines.

Containment of established populations is the next step after early detection and rapid response. Containment plans may be unique for a given area within FIR. Control strategies include physical, chemical and biological mechanisms to eradicate or reduce AIS populations. Selection of a control strategy can be influenced by agency policies and mandates, so that different controls may be employed for the same AIS depending on what jurisdiction it may fall in. If each state and federal land management agency on the FIR had an AIS containment program in place, they should coordinate their efforts with the other affected agencies during implementation. Containment methods and protocols vary depending on the AIS to be contained. For that reason, guidelines for containment are general.

Some considerations while developing containment plans within the Flathead Indian Reservation should include:

- A control strategy should not create problems greater than those of the aquatic nuisance species itself.
- A control strategy should not cause significant impacts to the environment or non-target organisms; nor have any negative consequence to human health or safety.
- There should be a need to control the aquatic invasive species due to it causing, or the potential for it causing, a significant adverse impact.
- A control strategy should seek to not reduce the human utilization of the water body, unless it is determined that a reduction in certain utilizations would be an effective/appropriate method of control.
- A control strategy should be specific to the Flathead Indian Reservation and adaptable locally.
- A control strategy should have a reasonable likelihood of succeeding and be cost effective.

Timing for the containment of AIS should coincide with the rapid response system and a smooth transition from an immediate response to a long-term containment effort is essential.

In order to minimize AIS problems, it is important to first fully assess the extent of the contamination. Is this a long-standing AIS issue or is it newly introduced? If it is a known AIS, has it spread appreciably? Are there new factors (i.e. increased recreational activity) that may currently increase the risk of spread? If new AIS are found, can actions be taken now to contain or even eradicate the problem?

In attempting control of AIS, assessment should lead to a prioritization of where to invest time and effort. Since multiple variables can determine priorities in controlling AIS, using a matrix approach (see next page) can help describe the problem through relative comparison.

The following table is an example matrix that can be used in determining which AIS areas should have priority:

Example Matrix Point Assessment Tool. Unknowns are allocated the full point value. In this example, AIS site D would be the highest priority.

AIS Affected Area	Est. Prob.	Newly introduced AIS (50)	Threat to public health and safety (50)	Significant resources at risk? (50)	Approx. area size involved (100)	Feasible control method available (50)	Control success highly likely (100)	**Priority** _____ Total Score
A		Yes _____ 25		No	Yes (cutthroat trout) 50	300ac. _____ 30	Yes _____ 50	No	**3** _____ 155
B			? _____ 50	Yes _____ 50	? _____ 50	2ac. _____ 100	No	? _____ 100	**2** _____ 350
C		Yes _____ 25		No	No	1000ac. _____ 10	Yes _____ 50	No	**4** _____ 75
D			Yes _____ 50	? _____ 50	Yes (cutthroat trout) 50	? _____ 100	Yes _____ 50	Yes _____ 100	**1** _____ 400

Monitoring is necessary to evaluate the effectiveness of abatement efforts. Monitoring should be done as soon as possible so that adjustments to control work can be timely.

Strategy 1A: Monitor effectiveness of abatement techniques.

Tasks

- **Ensure Tribes, State and Federal agencies, and Counties have general containment plans that are applicable to typical AIS scenarios throughout the Flathead Indian Reservation.**
- **Facilitate in the development of containment plans in high priority areas where they do not exist.**

Strategy 2: Research AIS for impacts to native biota and develop strategies to control and eradicate AIS populations.

The science of how to effectively contain, control, and eradicate AIS populations continues to develop. It is important to stay current with the latest methods and techniques and to encourage the development of new methods when necessary. The Flathead Indian Reservation AIS working group supports collaborative scientific research among, Tribal, Federal and State agencies and academic institutions that investigate potential control strategies and associated environmental impacts. Identification of the AIS research needs within the FIR will be an ongoing process as infestations occur and new threats are detected. Possible topics for current research needs include inventories, vectors, high priority waters, high probability waters, most probable invaders, rates of spread, effectiveness of existing prevention, control and abatement techniques and ecological impacts. Participate in a technology transfer program to be used in distributing research findings.

Strategy 2A: Contain, control, and eradicate AIS populations through research.

Tasks

- **Remain current with latest applicable abatement research and techniques.**
- **Facilitate the development of applicable abatement techniques when necessary through contributing funding, personnel, and study sites when possible.**

Strategy 3: Identify and publicize potential and existing threats.

The ability to identify and publicize potential and existing threats is important to the effective abatement of AIS invasions. While baseline and monitoring are discussed in Objective 2, we can also engage the public in reporting AIS they encounter in the Flathead Watershed (Objective 1). Important factors to consider in the assessment of the risk of an identified AIS invasion include:

- Identify geographical extent of AIS contamination, what species are present, and whether the AIS are established or incipient.
- Determine what resources are at risk, what socio-economic values are impacted, and if there is a threat to public health and safety.
- Assemble existing applicable research and other information for the involved AIS, and develop a species-specific control strategy.
- Prioritize which AIS waters to control based on threat level and probability of success.

Strategy 3A: Develop a list of experts to quickly voucher AIS species if they are sampled on the Flathead Indian Reservation. In addition, publicize new AIS invasions on the Reservation to protect against their further spread and inform the public.

Tasks

- **Develop a contact list composed of AIS identification experts who can quickly assist in the identification and confirmation of AIS if they are discovered in the Flathead Basin.**
- **Ensure States, Tribes, Provinces, counties, and federal and state agencies have developed protocols and media contacts to publicize new AIS invasions as they are documented. Assist if needed.**
- **Develop sign to post near infected waters instructing water users of danger of spreading AIS.**

Objective 4: Provide a cooperative environment that encourages coordinated action by all interested stakeholders on the Flathead Indian Reservation and beyond.

The intended outcome of this component of the implementation plan is a cooperative environment that encourages coordinated activities among all interested parties throughout the Flathead Basin. The key to this outcome is the creation of a series of linked, relational databases along with the development of an on-line forum with which to share information and make it possible to easily access the Flathead Indian Reservation, Federal, State and Local AIS working group's wealth of collaborative resources. Ideally, we would develop a system that can accommodate both the general public and internal communication needs (two levels of access to the information). The databases would include a funding database, a contact and partner database, and a calendar database.

Strategy 1: Cooperate to plan, implement, and evaluate projects where appropriate to achieve goals and eliminate duplication or competition, thereby increasing efficiency.
Specifically,

- Convene regular meetings to share information.
- Review annual Flathead Basin project proposals for prioritization.
- Encourage projects that benefit the entirety of the Flathead Basin and reduce competition that decreases efficiency and effectiveness.

To maximize the effectiveness and efficiency of prevention and management of AIS within the FIR, it is necessary to establish cooperation and collaboration among Tribal, Federal, State, County and even Provincial agencies, and non-government organizations. Communication must occur frequently to coordinate funding proposals and encourage partnerships.

Strategy 1A: Convene regular meetings of the Flathead Tribal working group and other AIS partners throughout the Basin to share information

Tasks

- **Elect a secretary responsible for sending out Flathead Basin work group meeting notices, meeting logistics, note-taking, and posting of notes according to adopted practices and procedures.**
- **Obtain concurrence from work group to suggested meeting schedule of 2 times per year (1st week in April and 1st week in November).**
- **Implement and clearly communicate procedures (for posting new information) among group members.**

- **Create calendar to inform group about other relevant AIS meetings around the country.**

Strategy 1B: Solicit and review annual Tribal and Basin project proposals for prioritization.

Tasks

- **Develop measurable outcomes and outputs to use in evaluating project proposals submitted for funding.**
- **Review and revise point system for rating Flathead Indian Reservation and Basin projects.**
- **Educate work group members about how to post documents on-line.**
- **Formalize the process via a written document (SOP) to be incorporated into the implementation plan.**
- **Review and revise SOP annually.**
- **Post documents as needed.**
- **Maintain and implement schedule.**

Strategy 1C: Encourage projects that benefit the entire Reservation and the Flathead Basin.

Tasks

- **Create an excel spreadsheet to use as a foundation for a future funding database. Spreadsheet would include: target area (education, marketing, etc.); fund source; who can apply; due dates; links to URLs; etc.**
- **Incorporate this spreadsheet into funding database (see Objective #2).**
- **In interim, post spreadsheet on-line.**
- **Develop list of prioritized needs to guide organizations and agencies seeking to create partnership efforts.**
- **Update and maintain database on website.**
- **Insure that spreadsheet links to other databases.**

Strategy 2: Encourage Flathead Indian Reservation organizations, businesses, and individuals to participate in, support and fund this AIS effort.

Although some elements in this implementation plan can be conducted with in-kind labor contributed by various groups and agencies, AIS group member or members, other elements will require financial support. Therefore, potential external and internal funding sources for AIS management within the Flathead Indian Reservation must be identified.

Strategy 2A: Develop a list of potential external funding sources for cooperative proposals.

Tasks

- **Identify a funding source to support a "grants specialist" – a paid employee to update and maintain funding information; assist in grant applications; facilitate communication (i.e. sending out e-mails regarding critical dates); and post on-line information.**
- **Develop an excel spreadsheet to list grant and other funding opportunities including deadlines, eligibility, amounts and examples of successful proposals. Incorporate spreadsheet into relational database.**
- **Each agency should identify partners able and willing to establish appropriate funding mechanisms by which various projects can be properly administered.**

- **Assess the need for the creation of an over-arching funding management group (i.e. new non-profit).**
- **Each agency should develop a procedure for working with selected partners or newly created funding management groups.**
- **Establish procedures to properly handle funds.**
- **Maintain database.**
- **Complete agency specific Standard Operating Procedures to incorporate into the implementation plan.**
- **Implement established procedures if needed.**

Strategy 2B: Identify internal funding sources for AIS management.

Tasks

- **Fund a Flathead Indian Reservation AIS Coordinator**
- **Identify individuals to contact in each agency or other appropriate organizations (Federal, Tribal, Regional, and Local) to request AIS contributions.**
- **Request that agency or other appropriate contact person provide a list of internal funding that has been used in the past and/or could be approached in the future.**
- **Incorporate agency and similar organization information into a funding database.**
- **Update that database as needed.**

Strategy 2C: Facilitate local cooperative partnerships within the Flathead Indian Reservation.

Tasks

- **Prepare an excel spreadsheet as a foundation for a partners/contact database.**
- **Propose participation levels defined below to FIR AIS partners.**
- **Distribute spreadsheet (above) to partners to supply known contact information.**
- **Assign responsibility to maintain/update contact/partner lists.**
- **Identify potential (future) partners and add to spreadsheet.**
- **Develop a formal 'recognition' process for donors and volunteers (e.g., annual thank you letter and/or window sticker for participants/sponsors). Consider formal sponsorship program (i.e., corporations or governments may wish to sponsor a wash station) and/or good stewardship award(s).**
- **Incorporate spreadsheet into on-line database forum.**
- **Maintain/update the partners and potential partners' database, including contact information, documentation of when contacted, by whom, and results of contact.**
- **Create/update/maintain links to partner URL.**
- **Develop a narrated "community outreach" program which any partner can present to peers or other audiences. The program should include a check-list of Best Management Practices.**

***Proposed definitions:**

Partner – actively involved in Flathead Basin AIS prevention, control and/or eradication efforts; would include all agencies, governments and NGOs working on AIS in our area.

Sponsor – group or individual that contributes actual dollars to the effort.

Participant – groups, businesses or individuals that assist in selected AIS

efforts (i.e. a business that posts/distributes AIS information or an AIS monitoring volunteer.
Other – groups or individuals that want only to be included on our mailing lists.

Strategy 3: Coordinate with national, regional, state and local AIS efforts.
The purpose of the Flathead Indian Reservation AIS work group is to facilitate a coordinated effort in the prevention and management of AIS on the Flathead Indian Reservation, as well as the Flathead Basin because each of the partners recognizes they cannot accomplish these tasks as effectively alone. In addition, coordinating with national AIS efforts prevents duplication of efforts, keeps the Flathead Indian Reservation AIS work group members current with similar AIS issues occurring outside the Flathead Basin, and informs the group of nationally based AIS prevention opportunities.

Strategy 3A: Develop an overarching communication forum for the Flathead Indian Reservation AIS partnership.

Tasks

- **Investigate possible venues (Google Groups, SharePoint, and Websites).**
- **Fund technical position to assist FIR. Assist with existing volunteer monitoring programs; implement new volunteer programs as needed, assist with education/outreach efforts, etc.**
- **Maintain/update communication forum.**
- **Link all sub-committee databases using various fields such as 'focus' (e.g. education, marketing, non-native fish introductions, dydimo, New Zealand mudsnails, Eurasian watermilfoil, etc.).**

Strategy 3B: Formally connect with National, Regional, Tribal, State and/or local efforts.

Tasks

- **Identify federal, state, tribal, regional and local efforts and groups.**
- **Classify above agencies/governments/groups as partners where applicable and add to contact database.**
- **Identify existing AIS related databases/maps.**
- **Determine whether volunteers should be solicited from the Flathead Basin AIS partnership to serve as official representatives on these groups.**
- **Determine which AIS databases/maps are appropriate to use and develop SOP for use.**
- **Attend national/tribal/regional/local meetings as appropriate.**
- **Implement database SOPs as needed.**

Strategy 3C: Identify opportunities to work together.

Task

- **Produce annual "planned activities" report that outlines projects that all partners are planning or considering.**

Conclusion

The costs associated with the prevention of Aquatic Invasive Species (AIS) pale in comparison to the costs of AIS remediation. The State of Idaho recently completed a socio-economic study which showed that dealing with the introduction of invasive mussels would cost $100 million annually. For those States already struggling with AIS remediation, millions are spent annually to keep dams and water delivery systems

functioning.

The argument that AIS will arrive in the Flathead regardless of the management actions taken, misses the point. For every year that we delay their arrival, millions of dollars will be saved annually. Moreover, for those locales that take the threat of AIS seriously, prevention efforts have been successful. Lake Tahoe, though surrounded by areas with mussel infestations, still remains mussel free due to their pro-active approach to AIS prevention.

The economic and ecological viability of the Flathead region will be seriously compromised if new AIS are introduced and existing AIS continue to spread. Therefore, preventive management actions must be taken now to prevent the introduction of zebra and quagga mussels; and remediation efforts must commence to confine the spread of other AIS within or adjacent to the Flathead Basin, such as flowering rush, whirling disease and Eurasian watermilfoil.

Agencies managing waters within the Flathead Basin are facing a significant challenge in dealing with new AIS species given the shortage of personnel and funding for capital costs. However, even if adequate AIS prevention and remediation funds are made available, an AIS prevention program will only be successful with the cooperation and support of those living in the Flathead and those visiting our beautiful waters. We urge you to Inspect, Clean, Drain and Dry each time you enter/leave any new water body, and urge you to become more familiar with the identification of AIS species.

CSKT AIS PROGRAM BUDGET 2017

Personnel

AIS COORDINATOR…… $ 35,000

Monitoring
AIS MONITORING
(60 SAMPLES PER MONTH (3 PER SITE AT 20 SITES) X 7 MONTHS)
$100 per sample for e DNA (60 samples x 5 months) ……. $30,000
$ 20 per sample for microscopy (60 samples x 2 months) ……. $12,000

Total Monitoring……$ 42,000

Inspection Stations
4 people per station x 10 hours/day x $16 per hour…… $134,000

Two Stations…… $268,000

Decontamination Units
$12,000 per unit x 2 units……$ 24,000

K-9 Team
Training of two teams and one dog…… $47,435
Recertification cost (per annum maintenance cost) ……. $ 8,000
Salary for 4 dog handlers (7 days a week for 210 days) @ $15 per hour……$126,000
($31k per handler for 210 days of work)

Total for K-9 Teams (First year)
…… $181,435

Education/Outreach/Marketing
Video and PSA development…… $ 20,000
Website development…… $ 1,500
Signage…… $ 1,500
Public Meetings (Venue rental, food, beverages) ……$ 1,700
Travel and Training……$ 2,000
Total Education and Outreach…… $26,700

Total AIS Budget…… $577,135

Potential and Identified Income Streams:

Tribal Council……$

Energy Keepers……$

State AIS Grant……$

BIA Grant……$

Sticker and Band Initiative…… $

$20 per boat for in-state boaters (onetime fee)

$35 per boat for out-of-state boaters (repeat fee)

APPENDIX C: AIS threats to the Flathead Indian Reservation

Species	**ANS Priority Class**2	**Legal status**3
Fish		
Asian carp species (bighead, grass, silver, and black)		Prohibited
Black bullhead	4	Unclassified
Eurasian ruffe	1	Prohibited
Lake trout	4	Unclassified
Northern snakehead	1	Prohibited
Brook trout	4	Unclassified
Rainbow trout4	4	Unclassified
Brown trout	4	Unclassified
Largemouth Bass	4	Unclassified
Walleye	4	Unclassified
Northern pike	4	Unclassified
Pumpkinseed	4	Unclassified
Lake Whitefish	4	Unclassified
Round goby	1	Prohibited
Tench	1	Unclassified
Walking catfish	1	Prohibited
Yellow perch	4	Unclassified
White perch	1	Prohibited
Zander	1	Prohibited
Amphibians		
African clawed frogs		Prohibited
North American bullfrog		Prohibited
Mollusks		
New Zealand mud snail	1	Prohibited

Quagga mussel	1	Prohibited
Zebra mussel	1	Prohibited
Crustaceans		
Rusty crayfish	1	Prohibited
Plants		
Eurasian watermilfoil	3	
Curley leaf pondweed	4	
Flowering rush	4	
Yellow flag iris	4	
Parasites and Pathogens		
VHS virus	1	
Whirling disease	2	
Mammals		
Nutria	1	Prohibited

2 Priority classes were adapted from the Statewide ANS Management Plan.
3 Classification in Exotic Wildlife Administrative Rules ARM 12.6.2220.
4 Lake trout and rainbow trout do pose significant impacts to native fish within the Flathead River Basin. Management strategies are utilized in some locations to control their populations. Continued management is encouraged and prevention of spread to new areas is essential to limit further impacts to native species.

Priority Class 1

These species are not known to be present within the Flathead Basin, but have a high potential to invade. Limited or no known management strategies for these species exist. Appropriate action for this class includes prevention of introductions and eradication of pioneering populations.

Priority Class 2

These species are present and established within the Flathead Basin and have the potential to spread further. Limited or no known management strategies for these species exist. These species can be managed through actions that involve mitigation of impact, control of population size, and prevention of dispersal to other waterbodies.

Priority Class 3

These species are not known to be established in the Flathead Basin and have a high potential for invasion. Appropriate management techniques are available and include prevention of introductions and eradication of pioneering populations.

Priority Class 4

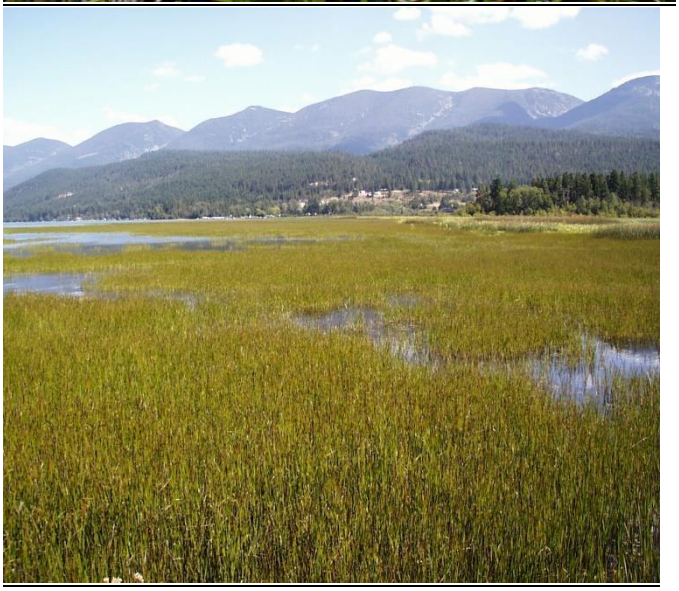
These species are present and have the potential to spread within the Basin, but management strategies exist for these species and include mitigation of impact, control of population size, and prevention of dispersal to other waterbodies.

Partial Photo List of AIS Species within the FIR

Lake Trout

Rainbow Trout, Underwater Fish photos.com

Curly-leaf pondweed: Photo Leslie Mehrhoff, University of Connecticut



Flowering Rush, Flathead Lake: Photo Courtesy Peter Rice, University of Montana

Partial Photo List of Potential Threats to the FIR

Zebra Mussel: Photo Courtesy of USGS

Quagga Mussel: Photo Courtesy of USGS

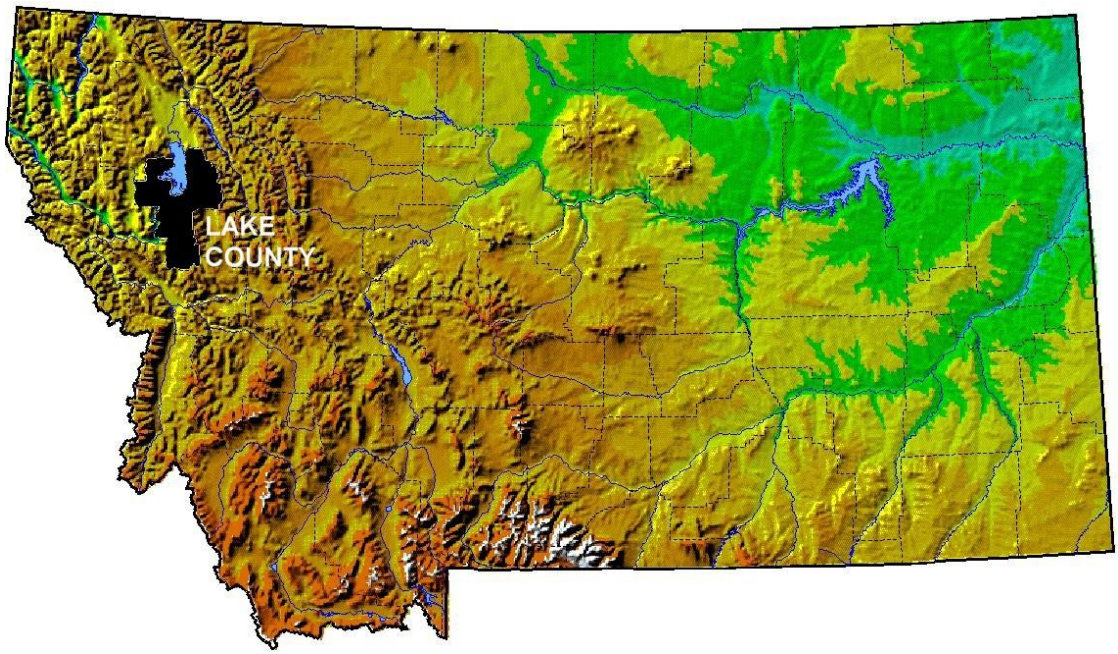
New Zealand Mudsnail: www.esg.umt.edu

Community Wildfire Protection Plan

For

Lake County

January, 2005



Prepared For:

Lake County, Montana

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

Prepared By:

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LAKE COUNTY
COMMUNITY WILDFIRE PROTECTION PLAN

TABLE OF CONTENTS

APPROVALS

This **Lake County Wildland Fire Protection Plan** has been developed in cooperation and collaboration with the representatives of the following organizations, agencies, and individuals.

_____ _____

By: Mike Hutching, Chairman Date
Lake County Board of Commissioners

_____ _____

By: Stephen Stanley, Coordinator Date:
Lake County Office of Emergency Management

_____ _____

By: Tony Harwood, Manager - Division of Fire Date
Confederated Salish and Kootenai Tribes

_____ _____

By: Dan Cassidy, Fire & Service Forestry Manager Date:
Montana DNRC, Northwestern Field Office

_____ _____

By: Steve Brady, District Ranger Date:
USFS Flathead NF, Swan Lake Ranger District

_____ _____

By: Chris Adler, President Date:
LAKE COUNTY Association of Firefighters

_____ _____

By: John Konzen, Chairman Date:
Northwest Regional Resource Conservation & Development

CHAPTER 1: INTRODUCTION

1.1**PURPOSE**

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

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

This Plan has been prepared in compliance with:

- The National Fire Plan; A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan– May 2002.

- The Federal Emergency Management Agency's Region 10 guidelines for a Local Hazard Mitigation Plan as defined in 44 CFR parts 201 and 206, and as related to a fire mitigation plan chapter of a Natural Hazards Mitigation Plan. This plan will be attached as an annex to the LAKE COUNTY Pre-Disaster Mitigation Plan.

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

Among the primary guiding principles in preparing this plan are:

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

NATIONAL FIRE PLAN

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

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

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

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

FEDERAL EMERGENCY MANAGEMENT AGENCY

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

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

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

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

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

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

1.2**GOALS**

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

1.3 PLAN STRUCTURE

The CSKTCommunity Fire Protection Plan is comprised of two parts:

1.) The main Plan (this document) is intended to provide background information on the CSKTwildfire situation, identify overall goals and objectives, and to establish general operating guidelines for a continuing planning process. This plan does not include recommendations for specific risk reduction projects; it does, however, provide guidance for the conduct of an on-going, collaborative hazard mitigation program throughout the County. Given the general nature of this document, it is intended to be valid for a period of at least five years. The Plan may be amended if needed, as part of the annual planning process, which will be described in later chapters.

2.) An operating plan will be prepared annually, based on guidance and direction provided in the main plan. The annual update will be used as a means for documenting plan activities, identification of emerging issues, evaluation of past work projects, and to establish an annual risk-mitigation work plan based on priorities set by involved stakeholders.

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

1.4 PLANNING PROCESS

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

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

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

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

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

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

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

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

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

EXISTING EFFORTS, STUDIES AND PLANNING DOCUMENTS

LAKE COUNTY Cooperative Fire Management Plan (DNRC)

LAKE COUNTY Annual Action Plan (DNRC)

Seeley-Swan Fire Plan

LAKE COUNTY Emergency Operations Plan

LAKE COUNTY Pre-Disaster Mitigation Plan (in progress)

Wildland Fire Annual Operating Plan (Flathead Agency, BIA)

LAKE COUNTY Growth Policy

LAKE COUNTY Emergency Services Master Mutual Aid Agreement

LAKE COUNTY Growth Density Plan (Draft)

RECORD OF PLANNING MEETINGS HELD

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

PUBLIC INVOLVEMENT

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

News Releases

A news release was provided to the LAKE COUNTY Leader newspaper at the beginning of the planning effort. The following news release was published in the September 9^{the} issue of the paper, accompanied by a wildfire-related photograph.

PRESS RELEASE

DATE: September 3, 2004

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

Phone : (406) 826-5171
FAX : (406) 826-5172
E-mail : arctos@blackfoot.net

PLANNING EFFORT UNDERWAY FOR WILDFIRE SAFETY

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

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

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

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

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

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

PRESS RELEASE

DATE: November 22, 2004

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

Phone : (406) 826-5171
FAX : (406) 826-5172
E-mail : arctos@blackfoot.net

DRAFT COUNTY WILDFIRE PLAN TO BE PRESENTED

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

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

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

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

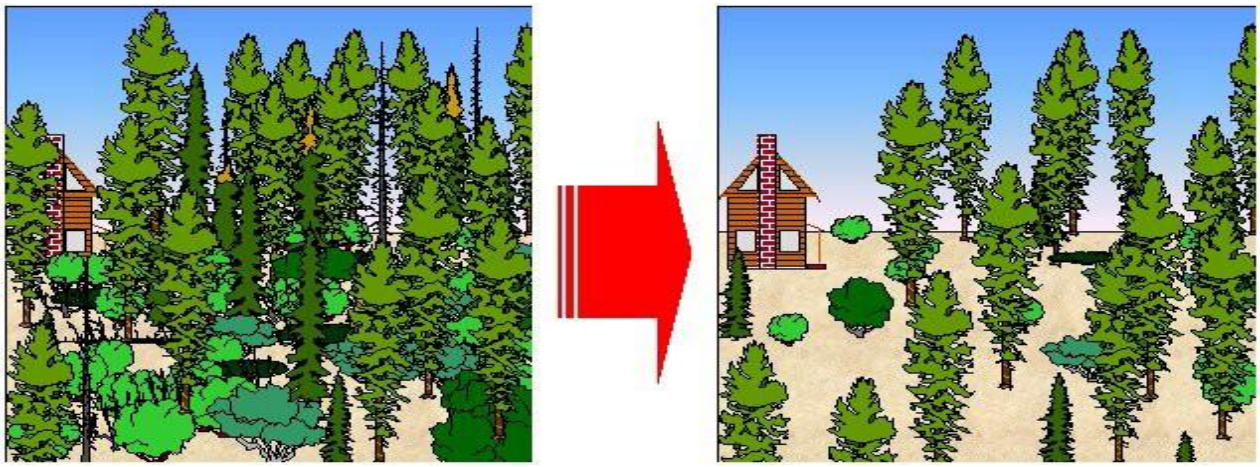
A draft version of the Plan will be presented to the public at two upcoming open-house meetings: December 8^{the} at the Swan Lake Community Center and December 9^{the} at the Tribal Division of Fire Management conference room. Both meetings will begin at 7:00 p.m. The public is invited to attend, and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

PUBLIC MEETINGS HELD

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

PROTECTING HOMES FROM WILDFIRE

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



LAKE COUNTY residents and landowners interested in the County's

HAZARDOUS FUELS REDUCTION PROGRAM

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

WEDNESDAY, DECEMBER 8th
7:00 P.M.
SWAN LAKE COMMUNITY CENTER
HIGHWAY 83
SWAN LAKE

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

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

CHAPTER 2: CSKTCHARACTERISTICS

2.1 POPULATION

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

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

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

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

2.2 LAKE COUNTY COMMUNITIES

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

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

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

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

2.3**LAND COVER**

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

2.4 **LAND OWNERSHIP**

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

See Map #2, “Land Ownership”.

2.5 **WATER RESOURCES**

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

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

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

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

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

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

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

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

2.6 **ECONOMY**

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

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

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

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

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

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

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

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

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

2.7 CULTURAL RESOURCES

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

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

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

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

CHAPTER 3: WILDLAND FIRE MANAGEMENT ORGANIZATION

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

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

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

3.1 WILDLAND FIRE AGENCIES

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

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

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

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

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

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

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

CONFEDERATED SALISH AND KOOTENAI TRIBE (CS&KT)

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

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

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

DEPARTMENT OF NATURAL RESOURCES & CONSERVATION (DNRC)

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

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

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

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

U.S. FOREST SERVICE, FLATHEAD NATIONAL FOREST

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

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

3.2**LAKE COUNTY ORGANIZATIONS**

RURAL FIRE DISTRICTS

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

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

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

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

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

FIRE SERVICE AREAS

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

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

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

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

COUNTY OEM COORDINATOR

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

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

LAKE COUNTY FIRE ASSOCIATION

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

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

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

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

FUELS REDUCTION ADVISORY COMMITTEE

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

FUELS REDUCTION COORDINATOR

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

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

CHAPTER 4: FOREST CONDITIONS AND FIRE ENVIRONMENT

4.1 HISTORICAL FIRE REGIMES

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

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

Short-interval Fire Regime

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

Long-interval Fire Regime

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

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

Mixed Severity Fire Regime

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

4.2 FOREST TYPES IN LAKE COUNTY

Warm, Dry Ponderosa Pine, Xeric Douglas-fir

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

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

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

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

Warm, Dry Douglas-fir

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

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

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

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

Cool, Moist and Cool, Dry Douglas-fir

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

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

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

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

Warm, MoistDouglas-fir

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

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

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

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

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

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

Warm, Moist Subalpine Fir

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

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

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

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

Warm, Dry Subalpine Fir

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

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

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

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

Cool, Dry Subalpine Fir

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

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

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

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

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

4.3**FIRE HISTORY**

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

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

CHAPTER 5: WILDFIRE RISK ASSESSMENT

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

The objectives of the Risk Assessment process are to:

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

5.1 IDENTIFYING THE WILDFIRE PROBLEM IN LAKE COUNTY

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

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

Category 1. Interface Community:

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

Category 2. Intermix Community:

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

Category 3. Occluded Community:

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

As listed in the Federal Register, LAKE COUNTY Communities classified as "At Risk from Wildfire" include:

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

5.2**RISK ASSESSMENT PROCESS**

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

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

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

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

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

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

IDENTIFICATION OF WILDLAND/URBAN INTERFACE AREAS

The planning process in LAKE COUNTY will involve two levels of risk assessment:

1. This Community Fire Protection Plan will identify major areas of the County that are particularly at risk from wildfire. These blocks are identified as "Planning Areas", and will be comparatively evaluated for their level of risk in relation to each other. Examples of these areas include Lake Mary Ronan, Salmon Prairie, Big Arm, Ferndale, Swan Lake, etc. The Planning areas are evaluated in this Community Fire Protection plan for the first four of the rating factors above (all except for "Structural Vulnerability").

2. The Annual Operating Plan will establish work priorities within the major Planning Areas, focusing on manageable work units (i.e.: subdivision or cluster level). The Annual Operating Plan may target certain areas for more intensive, site-specific risk rating, to prioritize fuels reduction work as well as other prevention measures such as door-to-door or neighborhood outreach efforts. The "Structural Vulnerability" rating factor will be assessed at the time of the site-specific risk rating effort. Work unit size should be based on criteria such as the number of concurrently open fuels treatment contracts, neighborhood identity, and resource allocation efficiency.

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

5.3**IDENTIFYING PLANNING AREAS**

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

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

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

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

LAKE COUNTY WILDLAND-URBAN INTERFACE PLANNING AREAS

NAME	AREA (ACRES)	NUMBER OF RESIDENCES*	ASSESSED VALUATION**
Arlee	18,560	579	$29,498,449
Big Arm / Rocky Point	26,880	1,118	$172,148,893
East Shore – North	12,800	805	$120,602,060
East Shore – South	23,680	766	$127,435,026
Ferndale / Swan Lake	31,360	850	$151,629,117
Lake Mary Ronan	8,960	83	$12,165,187
Mission Front – North	32,000	1,121	$71,490,604
Mission Front – South	23,680	202	$16,519,798
Rollins	9,600	348	$72,346,307
Salmon Prairie	17,920	132	$14,373,401
Turtle Lake	7,680	283	$13,408,363

Notes:
* Number of assigned addresses within Planning Area boundary. From LAKE COUNTY Planning Dept. GIS Database
** Assessed Property Valuation within Planning Area Boundary, and includes timber and commercial values. From LAKE COUNTY Assessor’s Office.

5.4 IDENTIFYING WORK UNITS

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

5.5**RISK RATING METHODOLOGY**

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

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

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

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

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

HAZARD COMPONENT

Fuel Type

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

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

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

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

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

VALUES AT RISK COMPONENT

$ Valuation

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

Density

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

Other Values

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

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

PROTECTION CAPABILITY COMPONENT

Response

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

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

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

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

IGNITION RISK

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

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

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

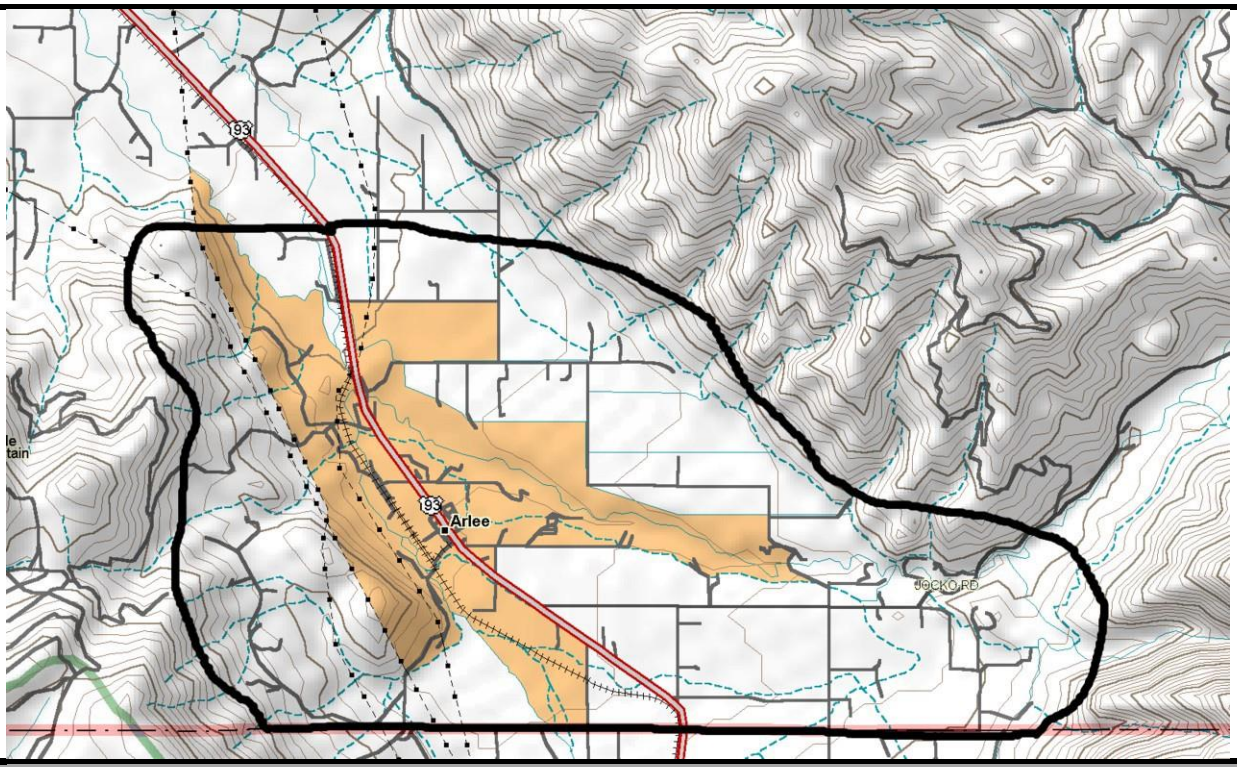
IGNITION RISK COMPONENT		
Factor	Level	Rating Criteria
Person-Caused Fires	1	Less than 0.05 fires per square mile per year
	2	Between 0.05 and 0.075 fires per square mile per year
	3	More than 0.075 fires per square mile per year
Lightning Fires	1	Less than 0.029 fires per square mile per year
	2	Between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

5.6 PLANNING AREA RISK ASSESSMENTS

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

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Arlee



GEOGRAPHICAL DESCRIPTION:

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

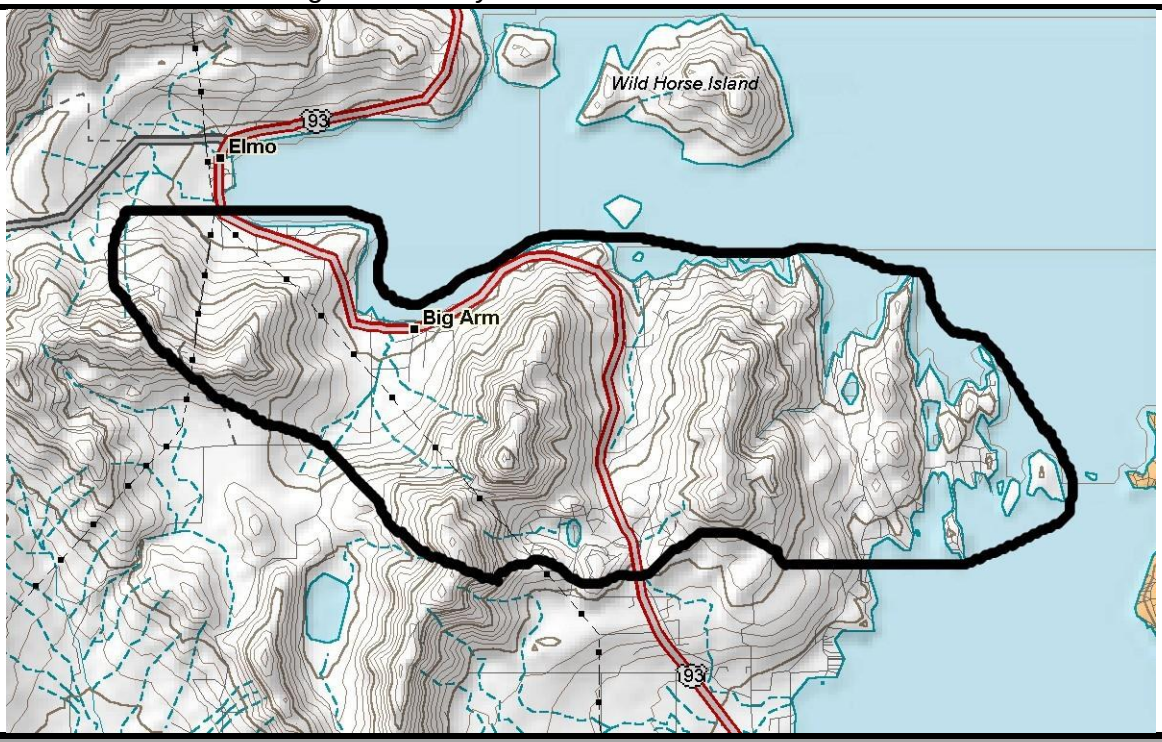
LOCAL FIRE DEPARTMENT	WILDLAND FIRE PROTECTION AGENCY
Arlee Rural Fire District	CS&KT Fire Management / BIA

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 2 & 9	2		(40%)
	Topography	Flat to Gentle slope	1		
	Weather	Average Moisture	2		
	Cond. Class	Class 1; Logged / thinned	1		
		Total:	6	50	20
Values at Risk	$ Valuation	$1.03 mm / Sq. mile	1		(20%)
	Density	20.2 Residences / sq. mile	2		
	Other Values	Powerlines	1		
		Total:	4	44	8.8
Protection Capability	Response	RFD close; BIA far	2		(30%)
	Access	Good	1		
	Water Sup.	Poor	3		
		Total:	6	67	20.1
Ignition Risk	Man-caused	.063 fires / sq. mile / year	2		(10%)
	Lightning	.051 fires / sq. mile / year	3		
		Total:	5	83	8.3
				COMPOSITE SCORE:	57.2

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Big Arm / Rocky Point



GEOGRAPHICAL DESCRIPTION:

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

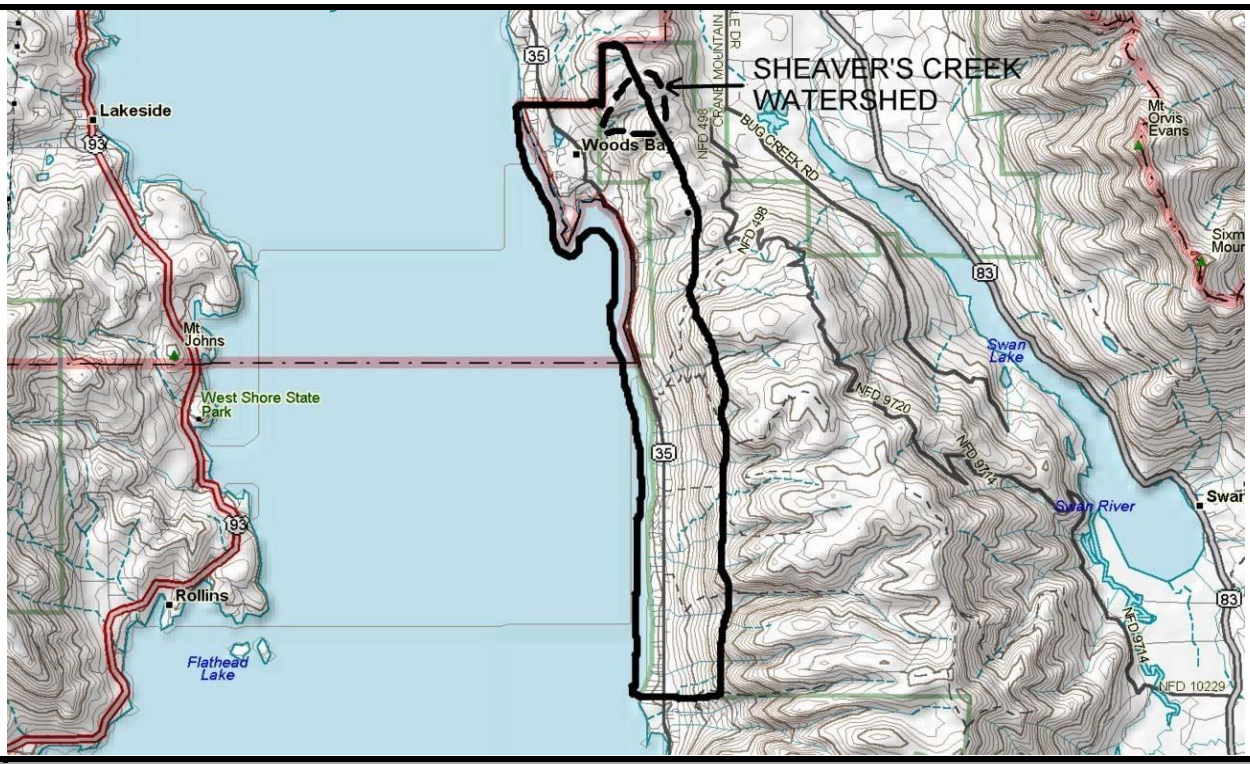
LOCAL FIRE DEPARTMENT	WILDLAND FIRE PROTECTION AGENCY
Polson Rural Fire District	CS&KT Fire Management / BIA

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 10	3		(40%)
	Topography	Hilly terrain	3		
	Weather	Dry	2		
	Cond. Class	Class III; overcrowded w/ brush	3		
		Total:	11	92	37
Values at Risk	$ Valuation	$4.12 mm / sq. mile	2		(20%)
	Density	26.7 Residences / sq. mile	2		
	Other Values	Recreation / Power Lines	2		
		Total:	6	67	13.4
Protection Capability	Response	Average	2		(30%)
	Access	Poor; narrow, single-access roads	3		
	Water Sup.	Poor	3		
		Total:	8	89	27
Ignition Risk	Man-caused	.087 fires / sq. mile / year	3		(10%)
	Lightning	.031 fires / sq. mile / year	2		
		Total:	5	83	8.3
				COMPOSITE SCORE:	85.7

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: East Shore - North



GEOGRAPHICAL DESCRIPTION:

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

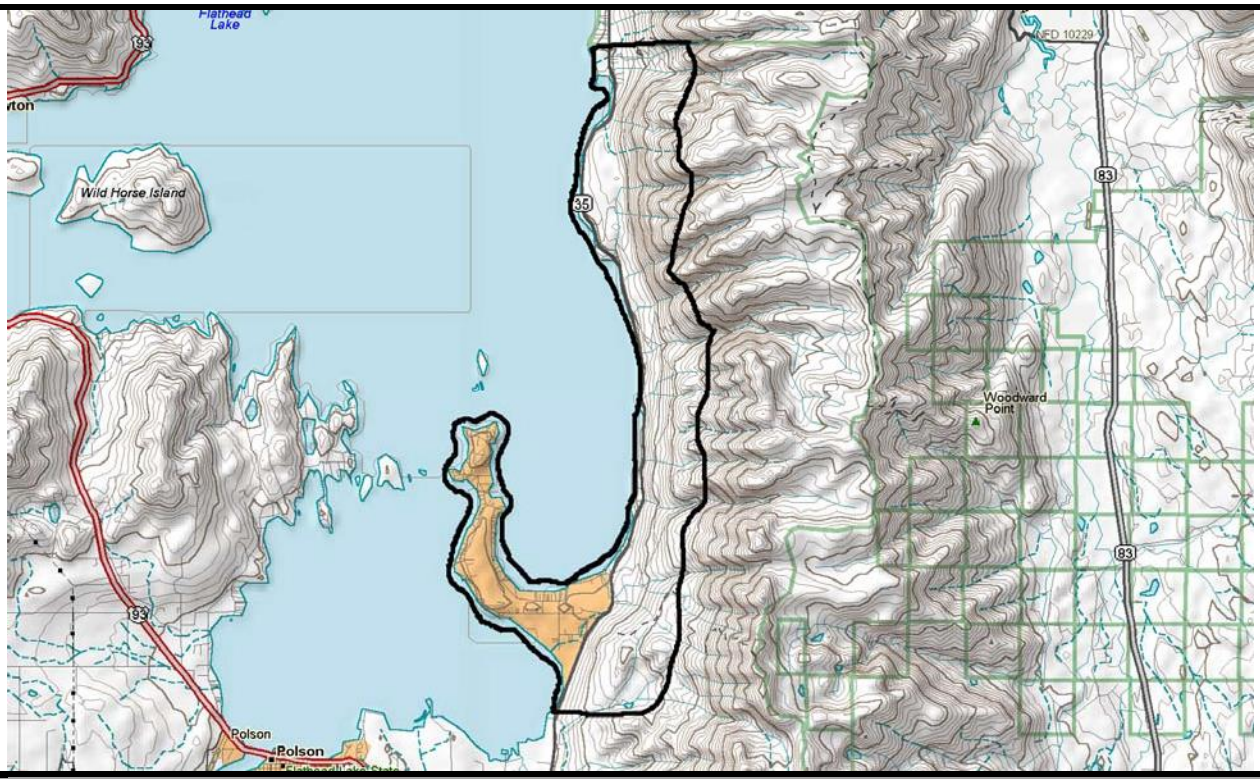
LOCAL FIRE DEPARTMENT	WILDLAND FIRE PROTECTION AGENCY
Bigfork Rural Fire District	DNRC Kalispell Unit and USFS Flathead NF

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 8	1		(40%)
	Topography	Steep slopes, west aspect	3		
	Weather	Average Moisture	2		
	Cond. Class	Class II; Some Regen. & ladder	2		
		Total:	8	67	26.8
Values at Risk	$ Valuation	$6.0 mm / sq. mile	3		(20%)
	Density	40 Residences / sq. mile	3		
	Other Values	Commercial & recreation; watershed	3		
		Total:	9	100	20
Protection Capability	Response	Good	1		(30%)
	Access	Average	2		
	Water Sup.	Good	1		
		Total:	4	44	13.2
Ignition Risk	Man-caused	.025 fires / sq. mile / year	1		(10%)
	Lightning	.012 fires / sq. mile / year	1		
		Total:	2	33	3.3
				COMPOSITE SCORE:	63.3

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: East Shore - South



GEOGRAPHICAL DESCRIPTION:

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

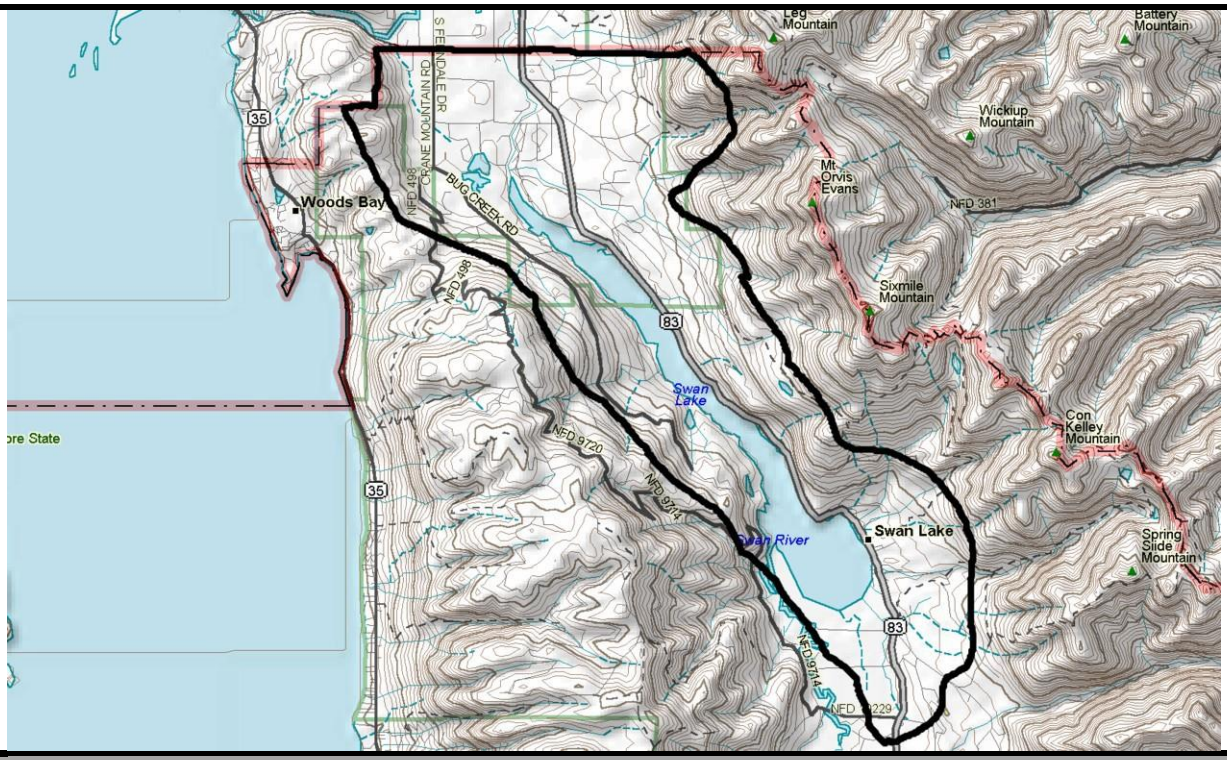
LOCAL FIRE DEPARTMENT	WILDLAND FIRE PROTECTION AGENCY
Finley Point / Yellow Bay Rural Fire District	CS&KT Fire Management / BIA

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 9	2		(40%)
	Topography	Flat to Steep, west aspect	2		
	Weather	Average Moisture	2		
	Cond. Class	Class II; some regen. & Ladder	2		
		Total:	8	67	26.8
Values at Risk	$ Valuation	$3.42 mm/ sq. mile	2		(20%)
	Density	20.6 Residences / sq. mile	2		
	Other Values	Commercial & recreation	3		
		Total:	7	78	15.6
Protection Capability	Response	Average	2		(30%)
	Access	Average	2		
	Water Sup.	Good	1		
		Total:	5	56	16.8
Ignition Risk	Man-caused	.027 fires / sq. mile / year	1		(10%)
	Lightning	.016 fires / sq. mile / year	1		
		Total:	2	33	3.3
				COMPOSITE SCORE:	62.5

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Ferndale / Swan Lake



GEOGRAPHICAL DESCRIPTION:

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

LOCAL FIRE DEPARTMENT	WILDLAND FIRE PROTECTION AGENCY
Ferndale and Swan Lake Rural Fire Districts	DNRC Kalispell Unit and USFS Flathead NF

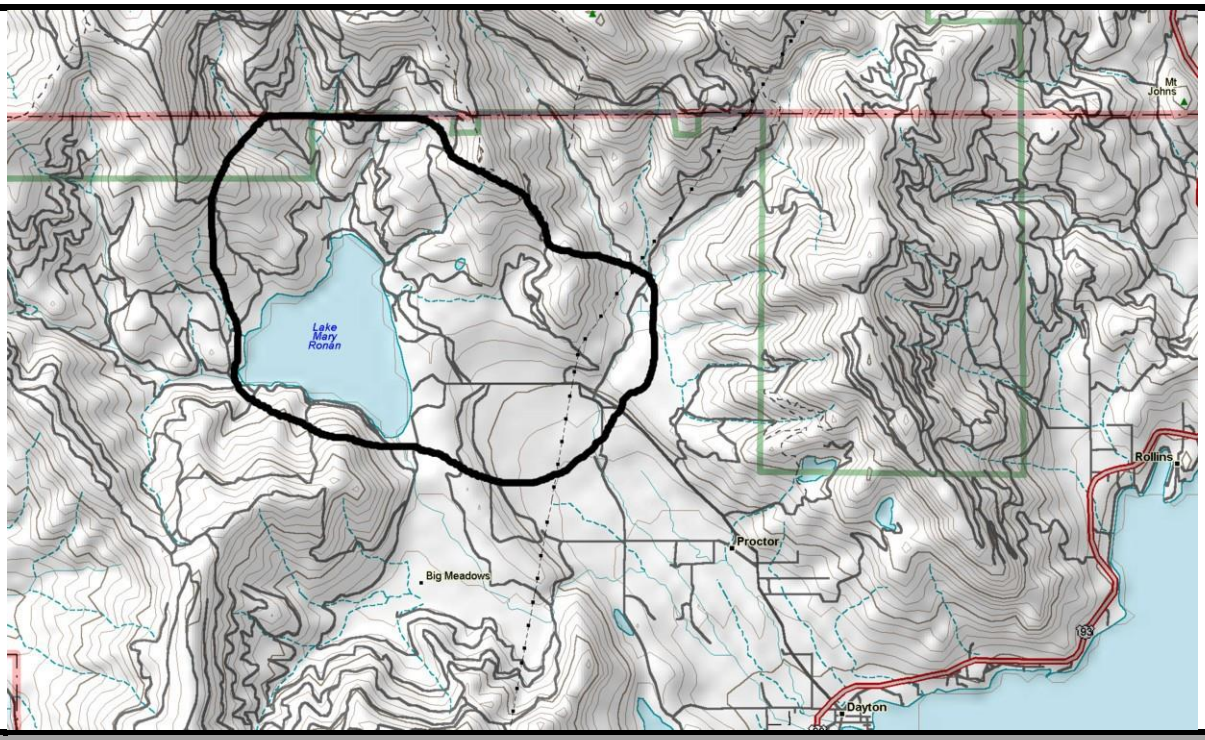
RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 8	1		(40%)
	Topography	Residences at Valley bottom	1		
	Weather	Moist	1		
	Cond. Class	Class III; ladder fuels & brush	3		
		Total:	6	50	20
Values at Risk	$ Valuation	$3.12 mm / sq. mile	2		(20%)
	Density	17.5 Residences / sq. mile	2		
	Other Values	Recreation / Fishery	2		
		Total:	6	67	13.4
Protection Capability	Response	Good	1		(30%)
	Access	Good	1		
	Water Sup.	Average	2		
		Total:	4	44	13.2
Ignition Risk	Man-caused	.032 Fires / sq. mile / year	1		(10%)
	Lightning	.019 fires / sq. mile / year	1		
		Total:	2	33	3.3

COMPOSITE SCORE: 49.9

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Lake Mary Ronan



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

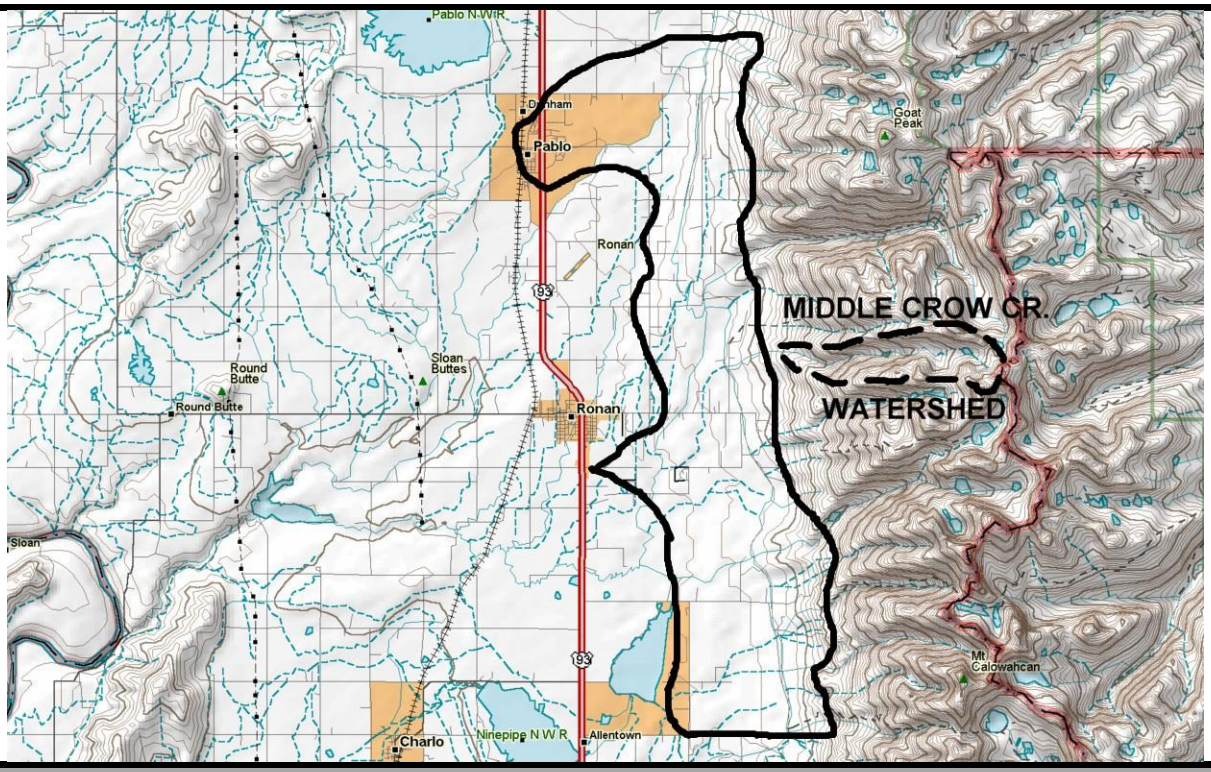
LOCAL FIRE DEPARTMENT	WILDLAND FIRE PROTECTION AGENCY
Chief Cliff Volunteer Fire Company	DNRC Kalispell Unit

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 6	3		(40%)
	Topography	Some slopes; SW Aspect	2		
	Weather	Dry	3		
	Cond. Class	Class 3; Doug. Fir encroachment	3		
		Total:	11	92	37
Values at Risk	$ Valuation	$0.90 mm / sq. mile	1		(20%)
	Density	6.1 residences / sq. mile	1		
	Other Values	Recreation, Power Lines	2		
		Total:	4	44	8.8
Protection Capability	Response	RFD Close; DNRC far	3		(30%)
	Access	Average	2		
	Water Sup.	Average	2		
		Total:	7	78	23.4
Ignition Risk	Man-caused	.044 fires / sq. mile / year	1		(10%)
	Lightning	.037 fires / sq. mile / year	2		
		Total:	3	50	5
				COMPOSITE SCORE:	74.2

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Mission Front - North



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

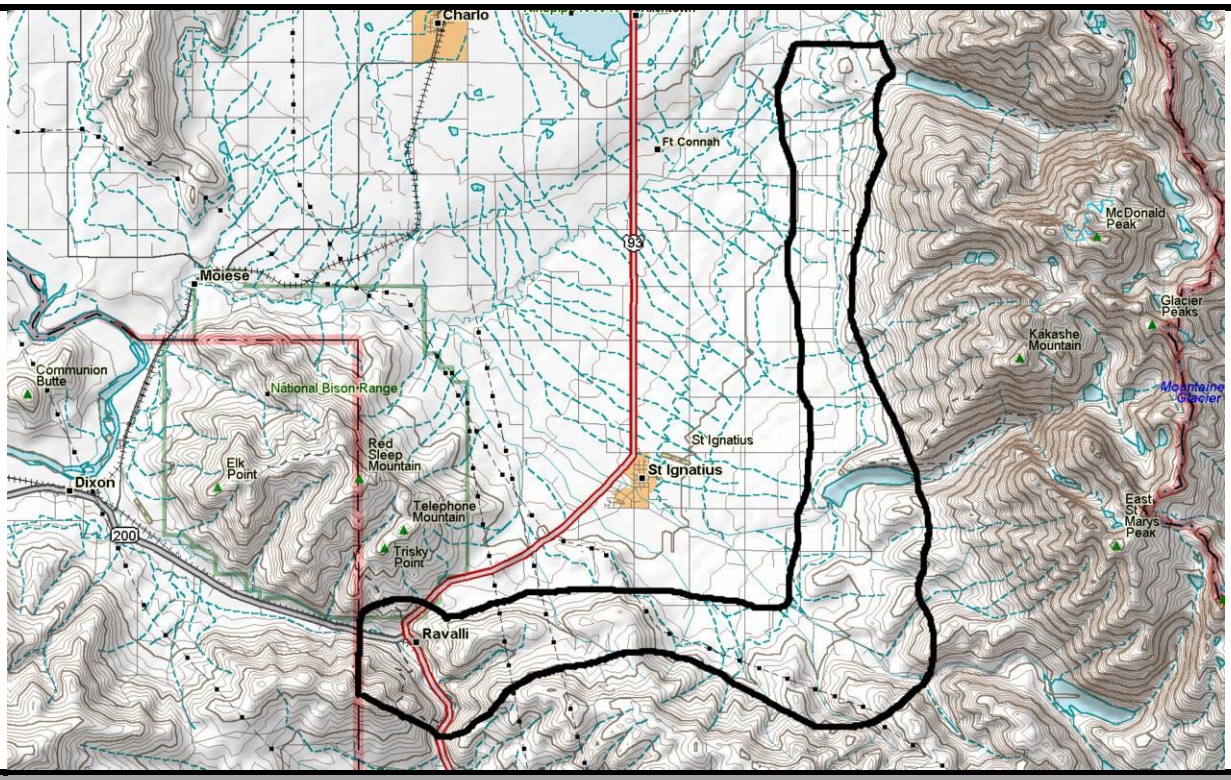
LOCAL FIRE DEPARTMENT	WILDLAND FIRE PROTECTION AGENCY
Ronan Rural Fire District	CS&KT Fire Management / BIA

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 2 & 9	2		(40%)
	Topography	Mostly Flat	1		
	Weather	Average Moisture	2		
	Cond. Class	Class I; Mature, even-aged	1		
		Total:	6	50	20
Values at Risk	$ Valuation	$1.42 mm / sq. mile	1		(20%)
	Density	22. 2 Residences / sq. mile	2		
	Other Values	Commercial; Crow Cr. Watershed	3		
		Total:	6	67	13.4
Protection Capability	Response	Good	1		(30%)
	Access	Good	1		
	Water Sup.	Poor	3		
		Total:	5	56	16.8
Ignition Risk	Man-caused	.077 fires / sq. mile / year	3		(10%)
	Lightning	.031 fires / sq. mile / year	2		
		Total:	5	83	8.3
				COMPOSITE SCORE:	58.5

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Mission Front - South



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

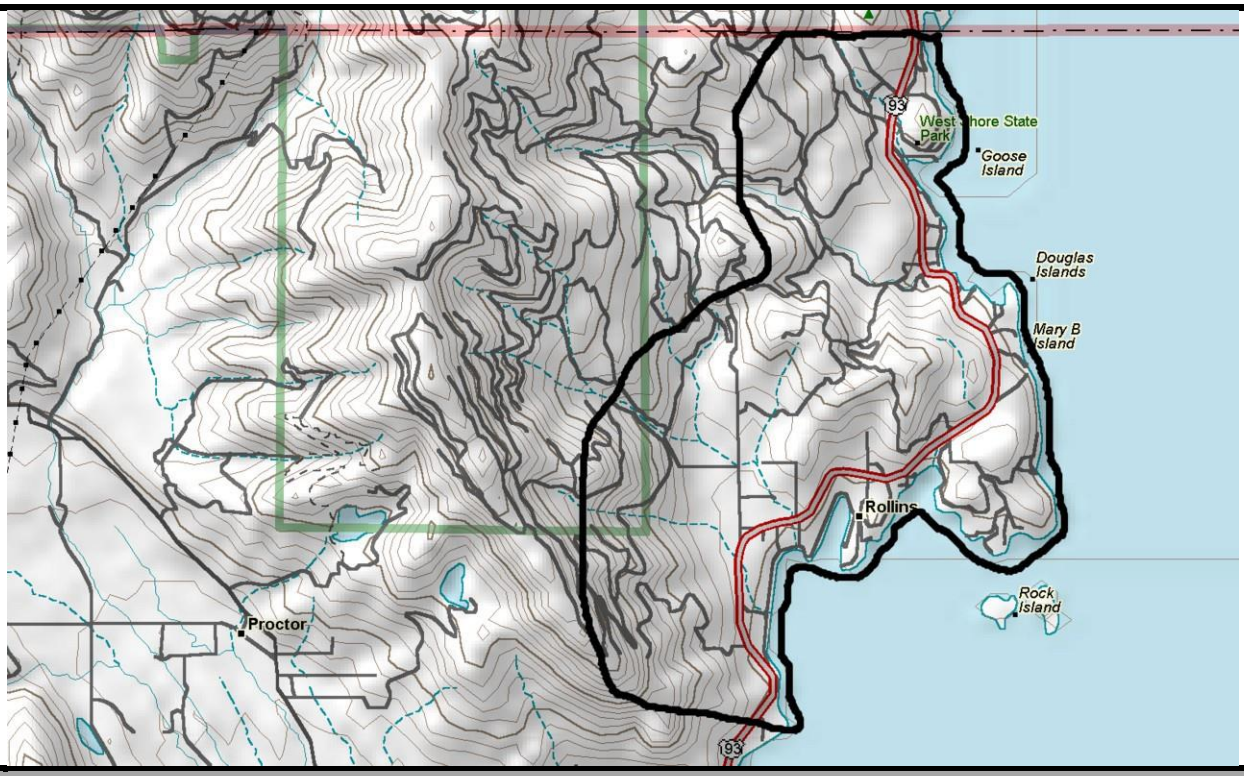
LOCAL FIRE DEPARTMENT	WILDLAND FIRE PROTECTION AGENCY
St. Ignatius Rural Fire District	CS&KT Fire Management / BIA

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 2 & 9	2		(40%)
	Topography	Development mostly on flats	1		
	Weather	Average Moisture	2		
	Cond. Class	Class I; Managed Forest	1		
		Total:	6	50	20
Values at Risk	$ Valuation	$0.44 mm / sq. mile	1		(20%)
	Density	5.4 Residences / sq. mile	1		
	Other Values	None	1		
		Total:	3	33	6.6
Protection Capability	Response	Average	2		(30%)
	Access	Good	1		
	Water Sup.	Poor	3		
		Total:	6	67	20.1
Ignition Risk	Man-caused	.099 fires / sq. mile / year	3		(10%)
	Lightning	.046 fires / sq. mile / year	2		
		Total:	5	83	8.3
				COMPOSITE SCORE:	55

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Rollins



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

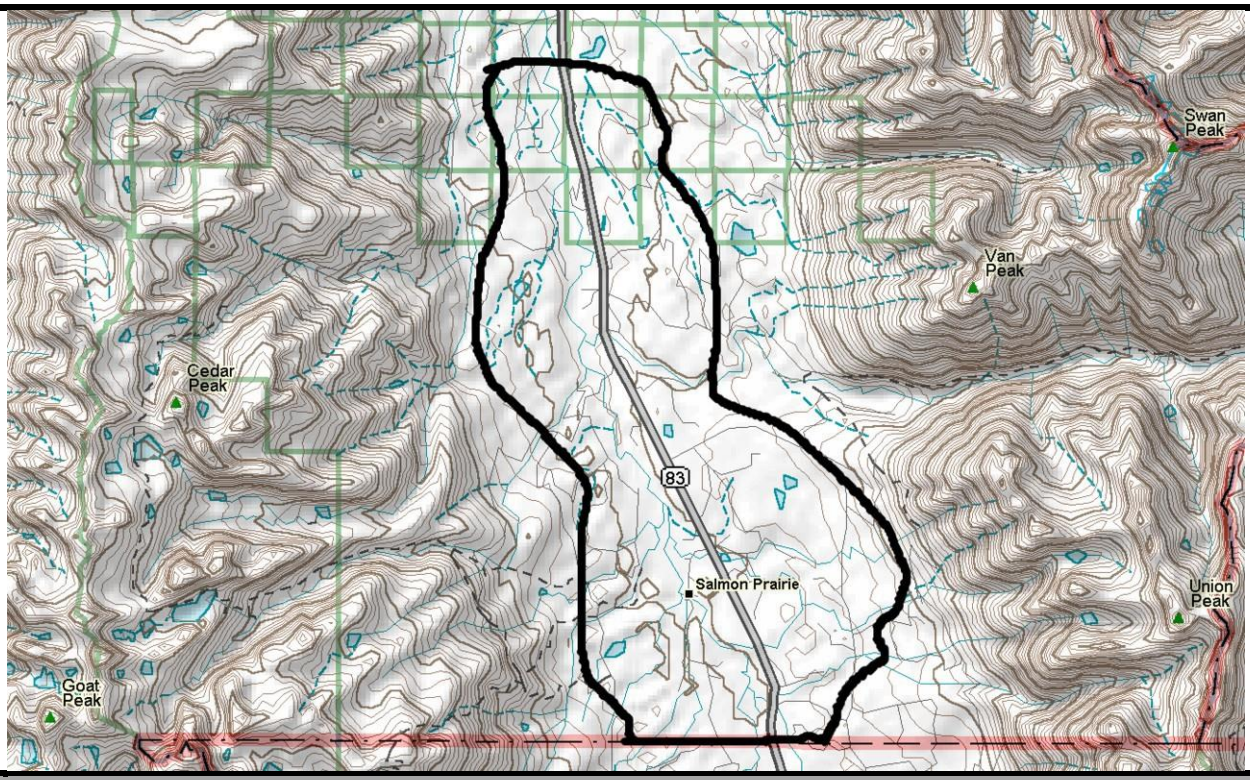
LOCAL FIRE DEPARTMENT	WILDLAND FIRE PROTECTION AGENCY
Rollins Rural Fire District	DNRC Kalispell Unit

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 9	2		(40%)
	Topography	Some slopes; east aspect	2		
	Weather	Average Moisture	2		
	Cond. Class	Class 1; Managed Stands	1		
		Total:	7	58	23.2
Values at Risk	$ Valuation	$4.88 mm / sq. mile	3		(20%)
	Density	23.5 residences / sq. mile	2		
	Other Values	None	1		
		Total:	6	67	13.4
Protection Capability	Response	RFD close; DNRC far	2		(30%)
	Access	Good	1		
	Water Sup.	Poor on hillsides	2		
		Total:	5	55	16.5
Ignition Risk	Man-caused	.047 fires / sq. mile / year	1		(10%)
	Lightning	.054 fires / sq. mile / year	3		
		Total:	4	67	6.7
				COMPOSITE SCORE:	59.8

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Salmon Prairie



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

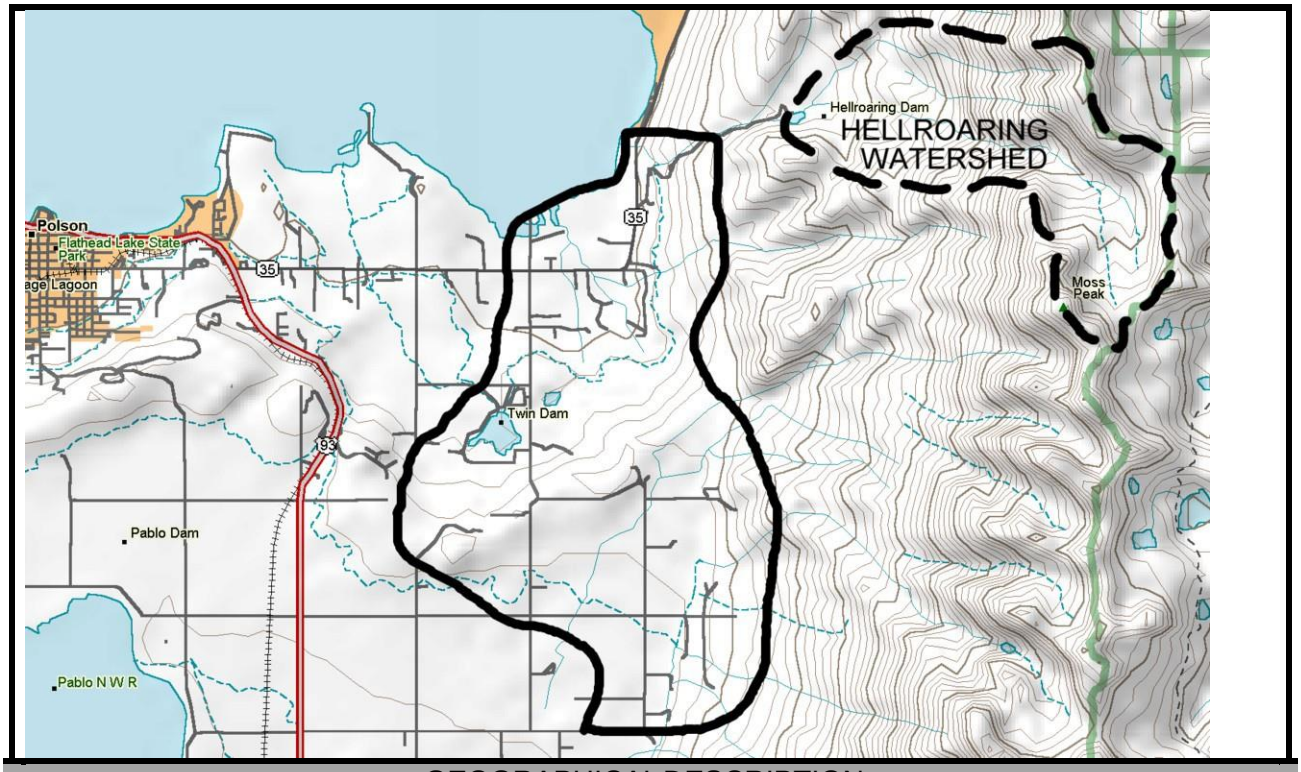
LOCAL FIRE DEPARTMENT	WILDLAND FIRE PROTECTION AGENCY
Swan Fire Service Area	DNRC Swan Unit

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 2 & 9	2		(40%)
	Topography	Flat	1		
	Weather	Dry	3		
	Cond. Class	Class 1; Managed stands	1		
		Total:	7	58	23.2
Values at Risk	$ Valuation	$0.52 mm / sq. mile	1		(20%)
	Density	4.7 Residences / sq. mile	1		
	Other Values	Grizzly Bear Habitat, Bull Trout	2		
		Total:	4	44	8.8
Protection Capability	Response	Good	1		(30%)
	Access	Good	1		
	Water Sup.	Poor	3		
		Total:	5	55	16.5
Ignition Risk	Man-caused	.041 fires / sq. mile / year	1		(10%)
	Lightning	.061 fires / sq. mile / year	3		
		Total:	4	67	6.7
			COMPOSITE SCORE:		55.2

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Turtle Lake



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

LOCAL FIRE DEPARTMENT	WILDLAND FIRE PROTECTION AGENCY
Polson Rural Fire District	CS&KT Fire Management / BIA

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 8 & 2	1		(40%)
	Topography	Some slopes; west & south aspect	2		
	Weather	Average Moisture	2		
	Cond. Class	Class I; Mature, even-aged stands	1		
		Total:	6	50	20
Values at Risk	$ Valuation	$1.12 mm / sq. mile	1		(20%)
	Density	23.7 Residences / sq. mile	2		
	Other Values	Municipal Watershed	2		
		Total:	5	55	11
Protection Capability	Response	Good	1		(30%)
	Access	Good	1		
	Water Sup.	Average	2		
		Total:	4	44	13.2
Ignition Risk	Man-caused	.084 fires / sq. mile / year	3		(10%)
	Lightning	.050 fires / sq. mile / year	3		
		Total:	6	100	10
				COMPOSITE SCORE:	54.2

CHAPTER 6: MITIGATION

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

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

The objectives of this Mitigation Plan are:

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

6.1 MITIGATION PLANNING PROCESS

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

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

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

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

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

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

PRIORITIZING MITIGATION WORK

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

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

PLANNING AREA
RISK ASSESSMENT SUMMARY

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

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

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

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

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

ESTABLISHING WORK UNITS

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

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

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

IDENTIFYING SPECIFIC MITIGATION ACTIVITIES

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

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

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

ANNUAL PLANNING SCHEDULE

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

6.2**MITIGATION STRATEGIES**

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

Hazardous fuel reduction

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

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

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

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

Treatment strategies can occur at multiple scales.

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

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

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

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

Strategies to reduce structural ignitability

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

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

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

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

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

Regulatory Issues

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

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

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

Fire Prevention activities

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

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

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

Fire response / emergency preparedness

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

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

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

Biomass / small diameter wood utilization

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

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

6.3**FUNDING**

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

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

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

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

CHAPTER 7: MONITORING AND EVALUATION

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

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

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

7.1 ANNUAL OPERATING PLAN OUTLINE

1. TITLE

2. DATE OF COMPLETION

3. REVIEW OF THE PAST YEAR'S ACTIVITIES
   - WILDFIRE LOSS MITIGATION PROJECTS
   - OTHER ACCOMPLISHMENTS
   - WILDFIRE OCCURRENCES EFFECTIVENESS
   - OF PAST MITIGATION EFFORTS

4. DISCUSSION OF EMERGING ISSUES / CHANGING CONDITIONS

5. MITIGATION OBJECTIVES

6. IDENTIFY PRIORITIES FOR MITIGATION WORK

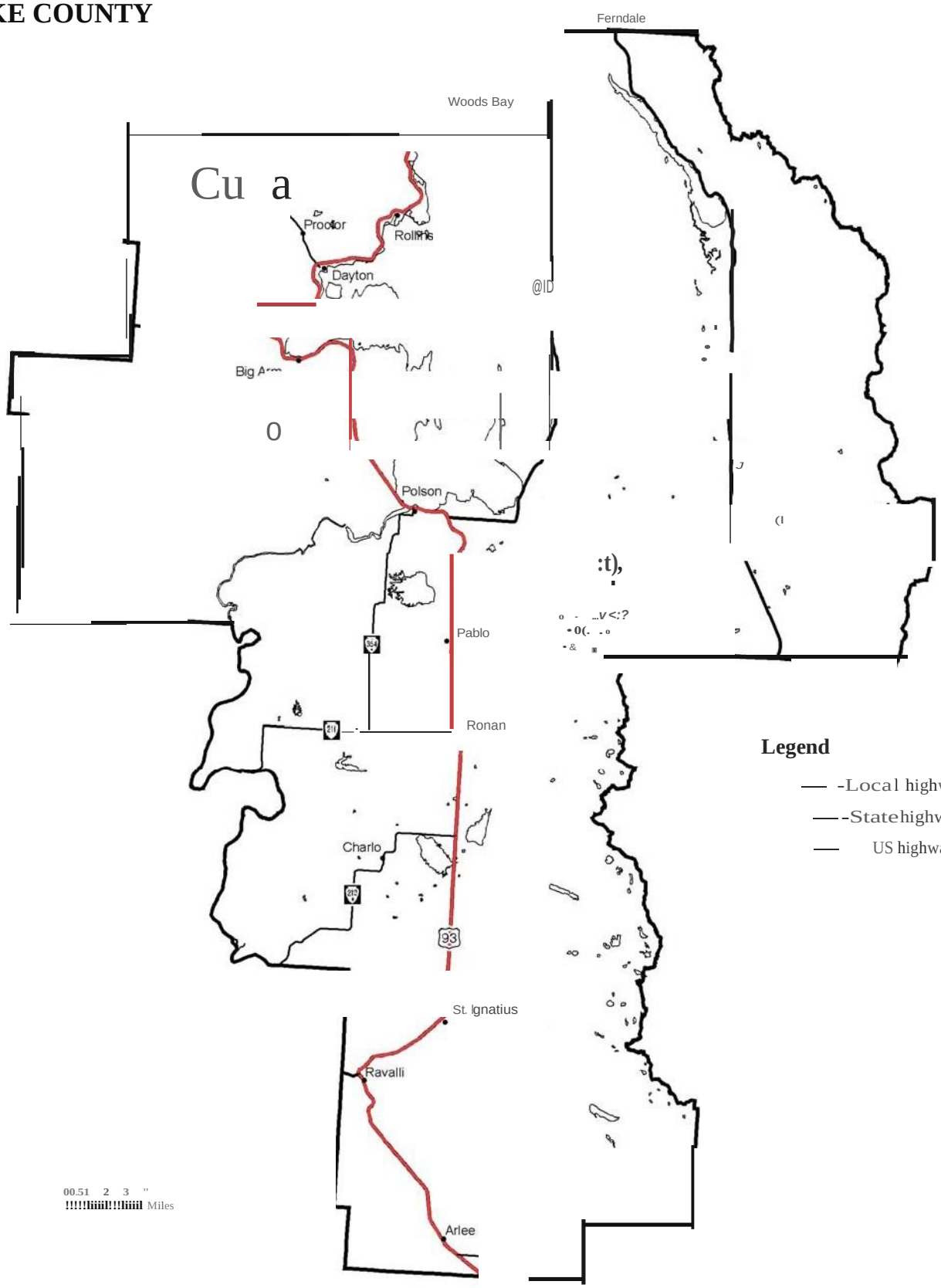
7. WORK PLAN
   - HAZARDOUS FUELS TREATMENTS
   - REDUCING STRUCTURAL IGNITABILITY
   - FIRE PREVENTION
   - FIRE RESPONSE / EMERGENCY PREPAREDNESS
   - BIOMASS / SMALL DIAMETER WOOD UTILIZATION
   - COMMUNITY AWARENESS

8. DOCUMENTATION OF PLANNING ACTIVITIES
   - FIRE PLAN STEERING COMMITEE
   - PUBLIC MEETINGS

9. APPROVALS

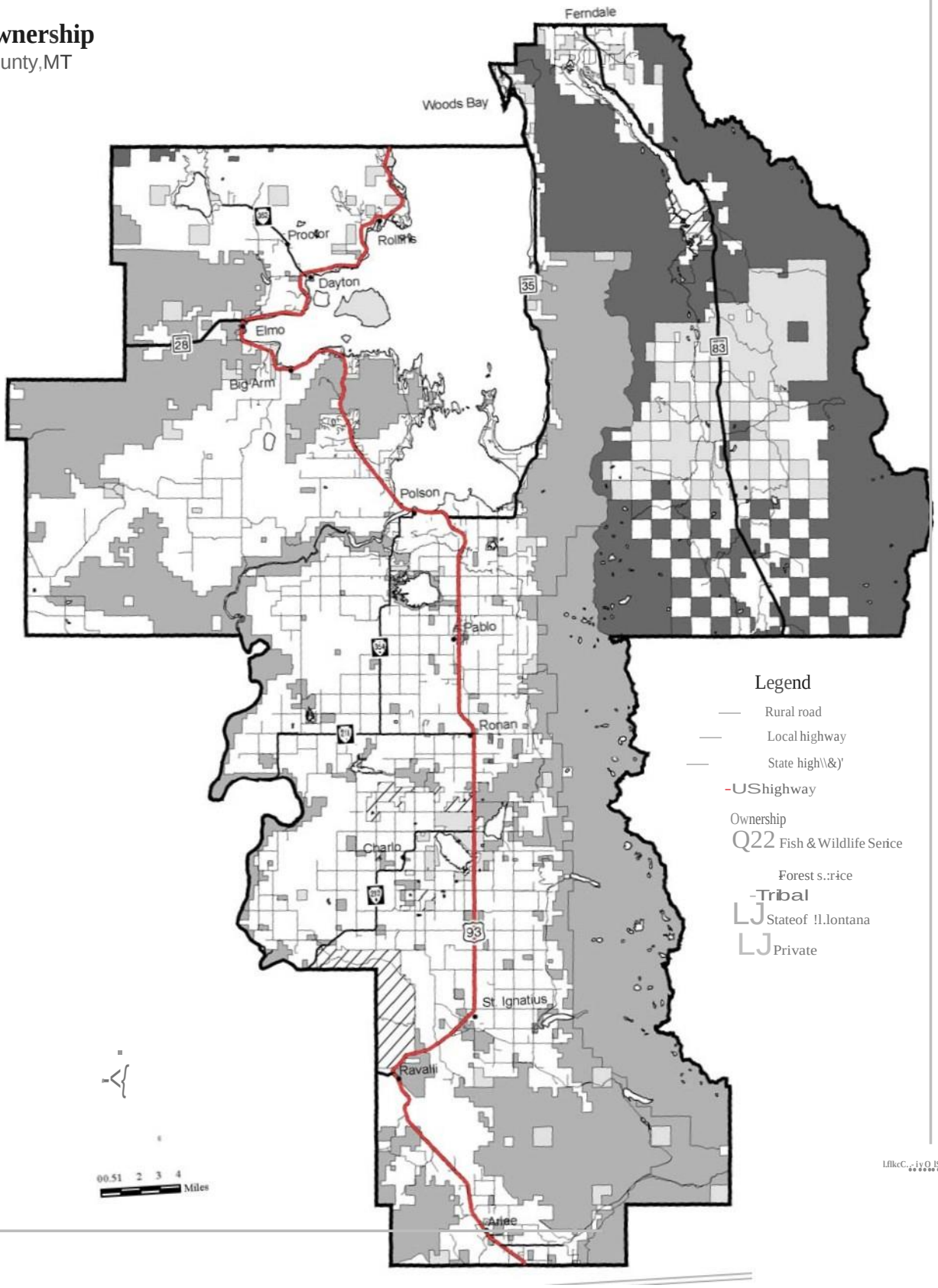
APPENDIX A - MAPS

LAKE COUNTY

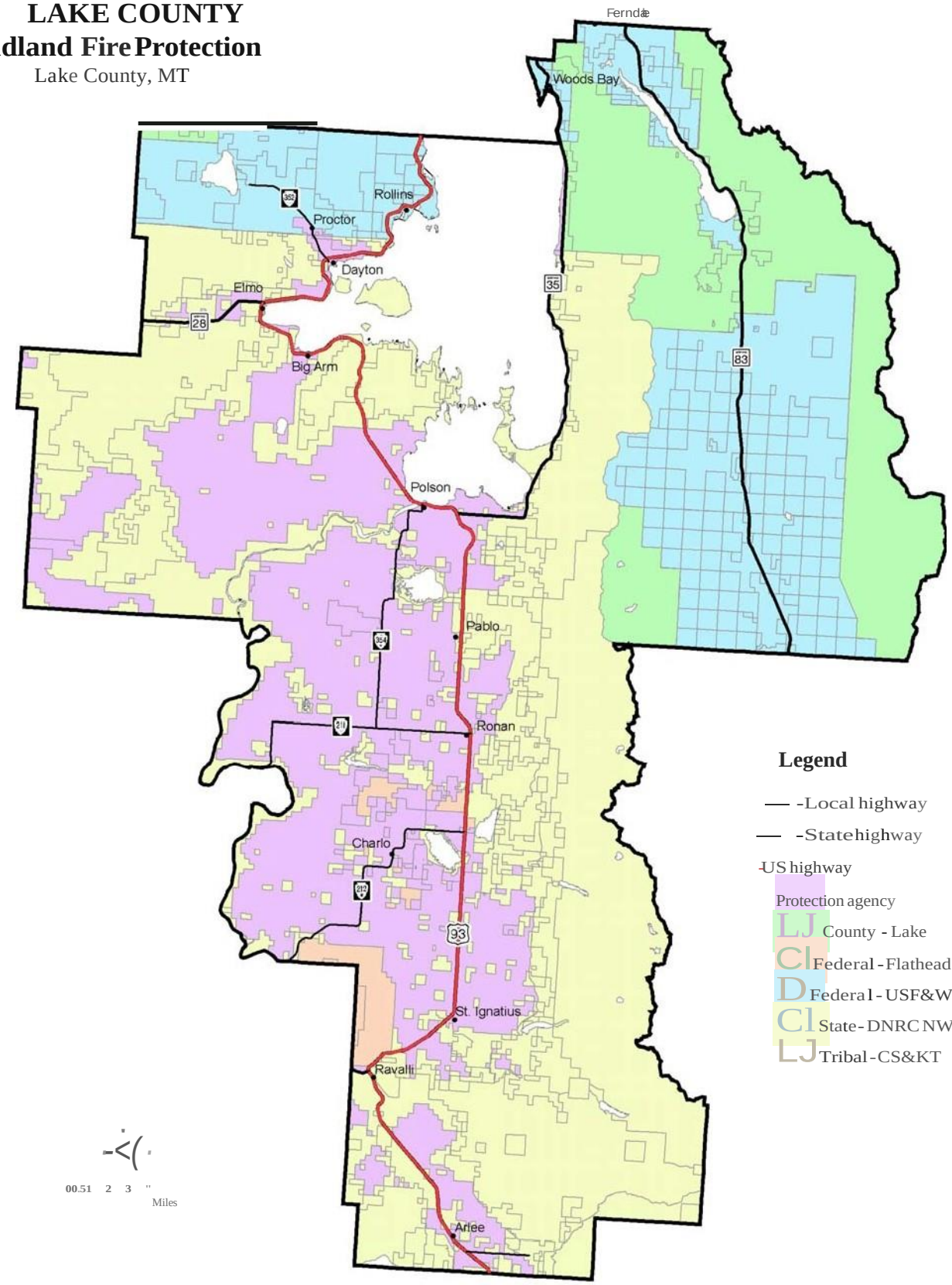

Ferndale
Woods Bay
Proctor
Rollins
Dayton
@ID
Big A
Polson
Pablo
Ronan
Charlo
St. Ignatius
Ravalli
Arlee
Legend
-Local highway
-Statehighway
US highway
Miles

Land Ownership

Lake County, MT

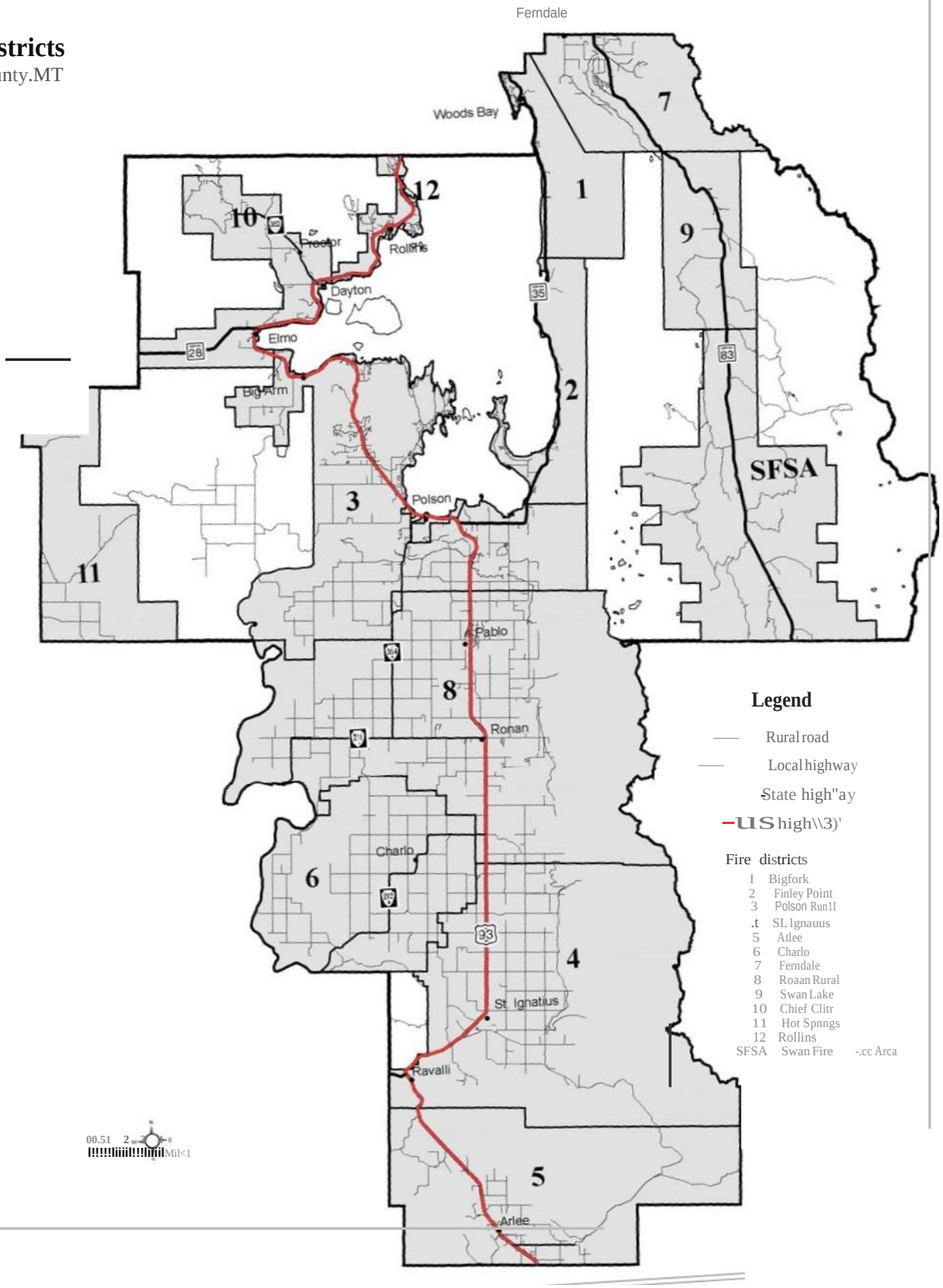


LAKE COUNTY
Wildland Fire Protection
Lake County, MT



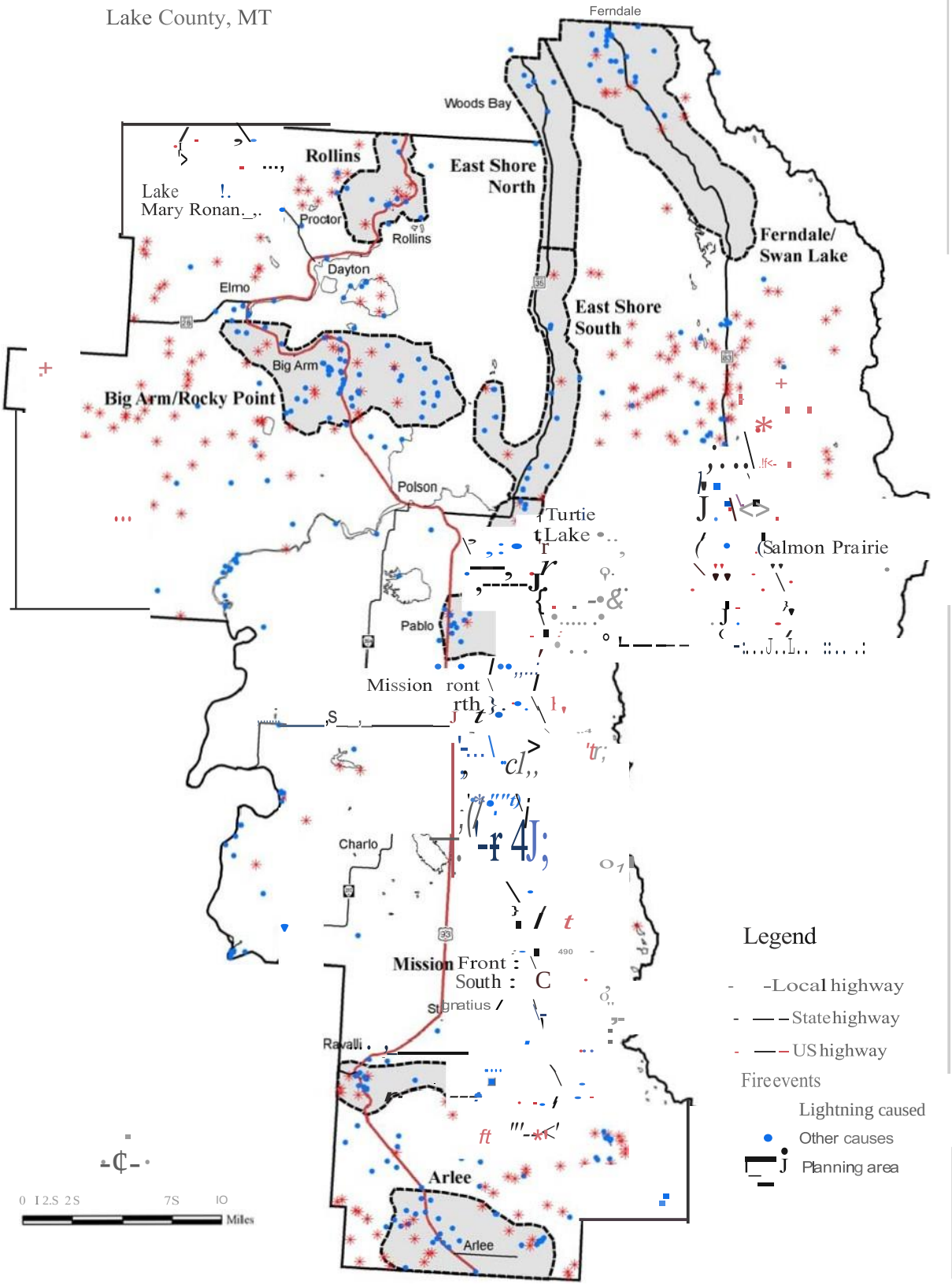
Fire Districts

Lake County.MT



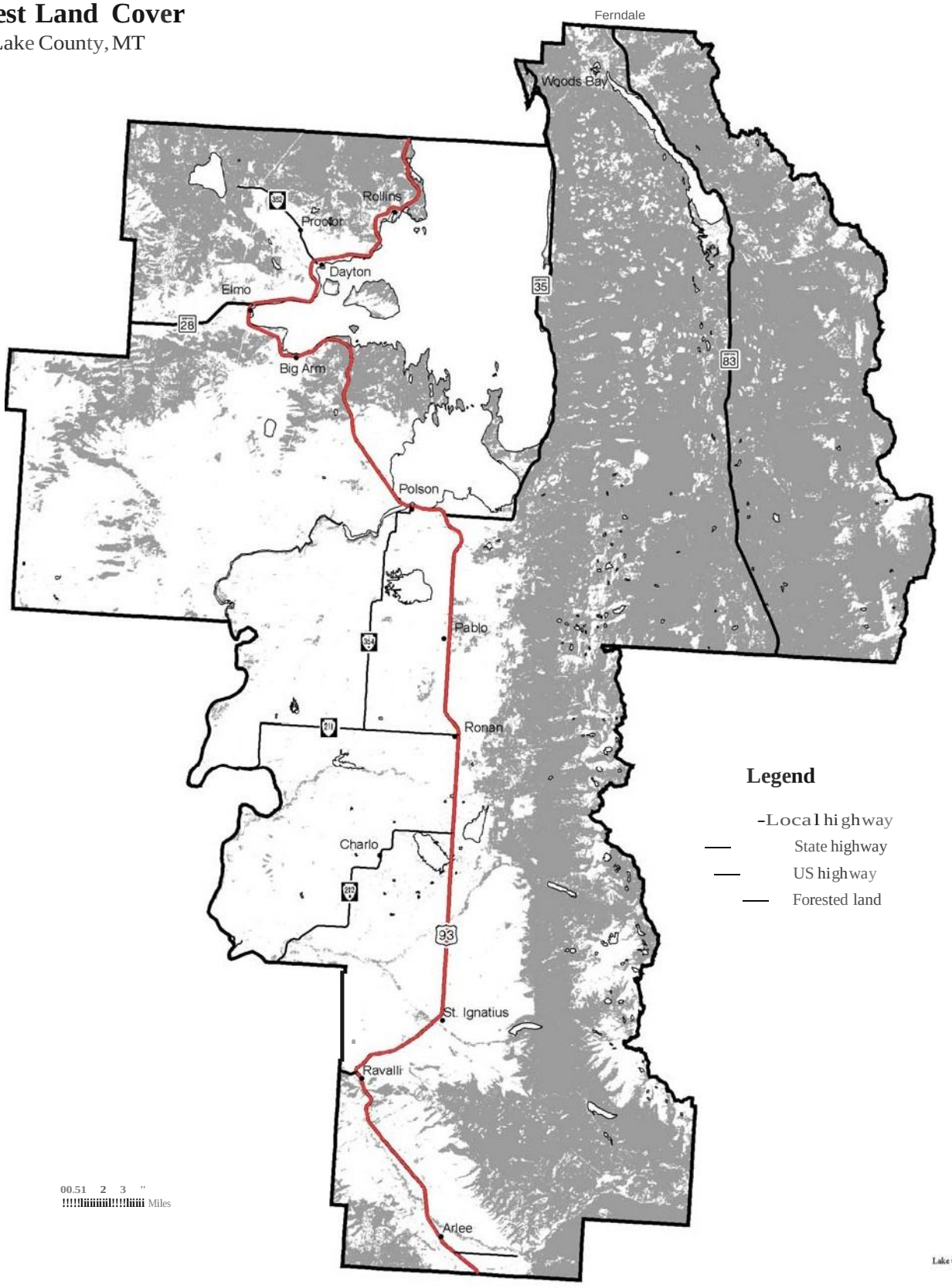
1983 - 2003

Lake County, MT



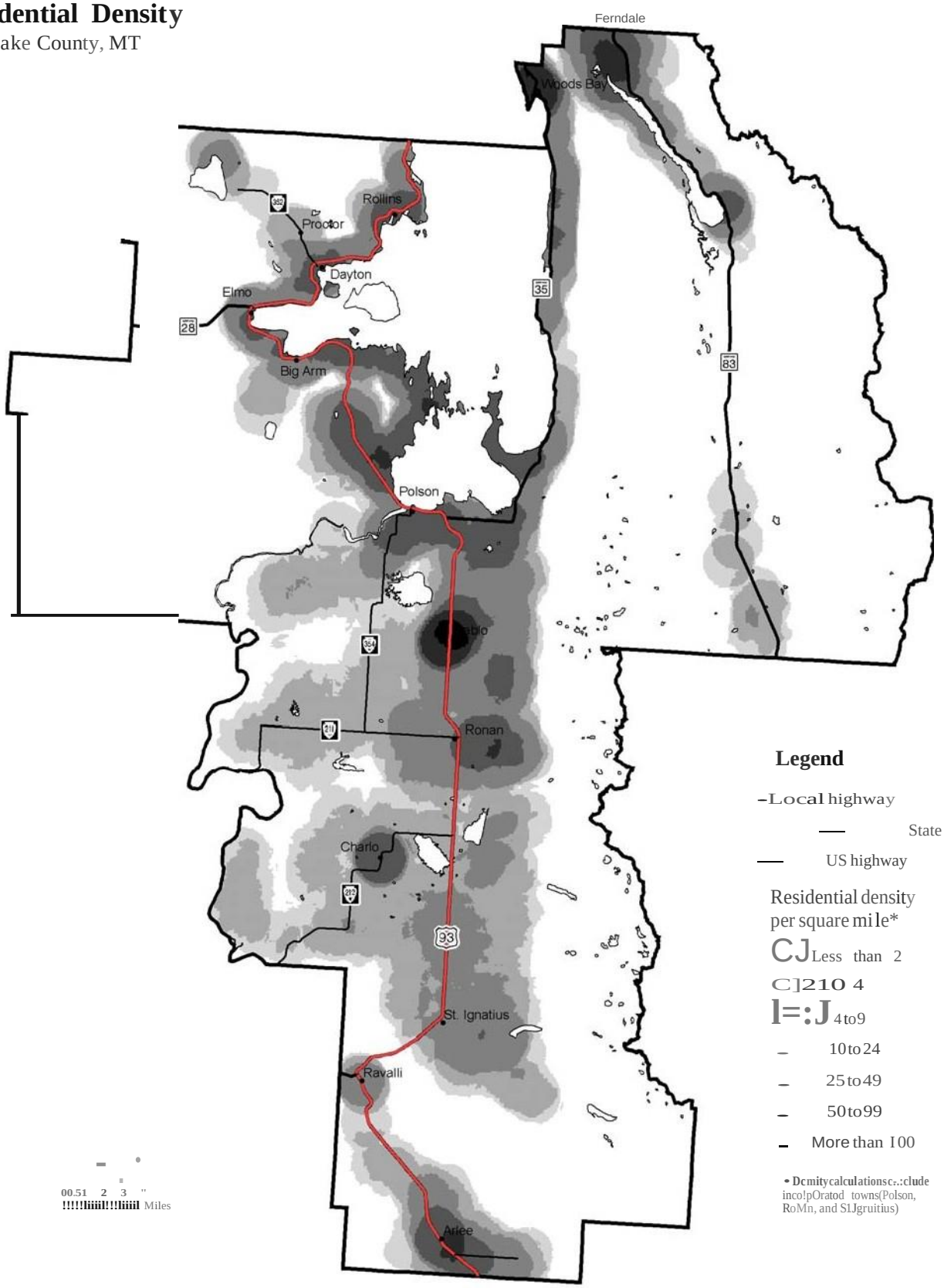
Forest Land Cover

Lake County, MT



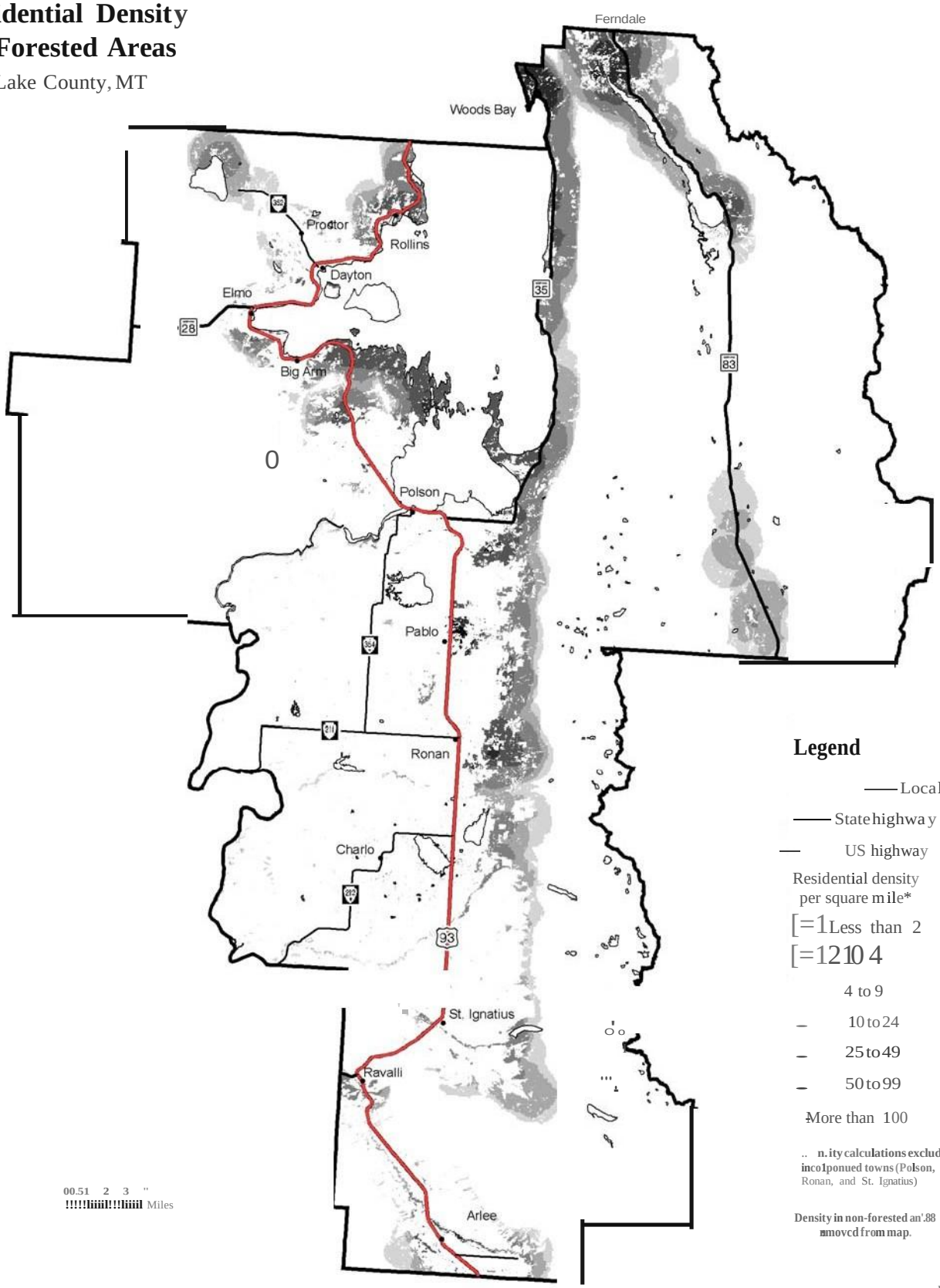
Residential Density

Lake County, MT



Residential Density in Forested Areas

Lake County, MT



Legend

- Local highway
- State highway
- US highway

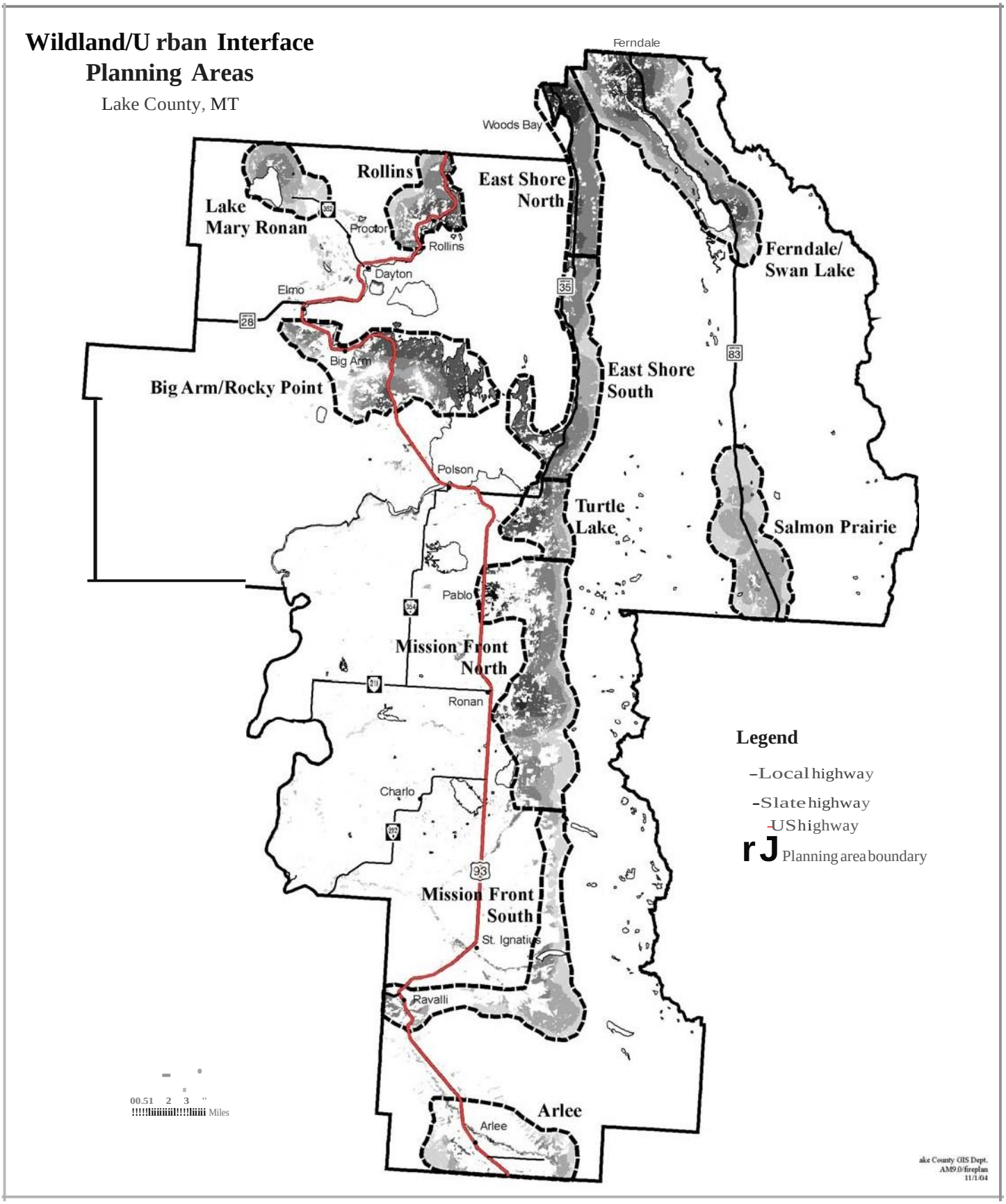
Residential density per square mile*

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

.. n. ity calculations exclude incorporated towns (Polson, Ronan, and St. Ignatius)

Density in non-forested an'.88 removed from map.

Lake County OIS1)(p.


Wildland/U rban Interface
Planning Areas
Lake County, MT
Ferndale
Woods Bay
Rollins
East Shore
North
Lake
Mary Ronan
Proctor
Rollins
Dayton
Elmo
Ferndale/
Swan Lake
Big Arm
Big Arm/Rocky Point
East Shore
South
Polson
Turtle
Lake
Salmon Prairie
Pablo
Mission Front
North
Ronan
Charlo
Mission Front
South
St. Ignatius
Ravalli
Arlee
Arlee
Legend
-Local highway
-Slate highway
-US highway
Planning area boundary
00.51 2 3
Miles
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AM9.0/fireplan
11/1/04

APPENDIX B: SAMPLE HOMEOWNER MATERIALS

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

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

N M#'ul..i

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

Keep Montana Green

OCIATIO

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

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

5,000 copies of this public document were published at an est1mateJ cost of $0.21 per copy, for a total cost of $l,050.00, which includes $1,050.00 for printing and $.00 for distribution.

FIREWISE

Landscaping For Woodland Homes

You Need Defensible Space!

Become involved in fire safety in your community.

LARGE OR SMALL HARDWOOD TREE

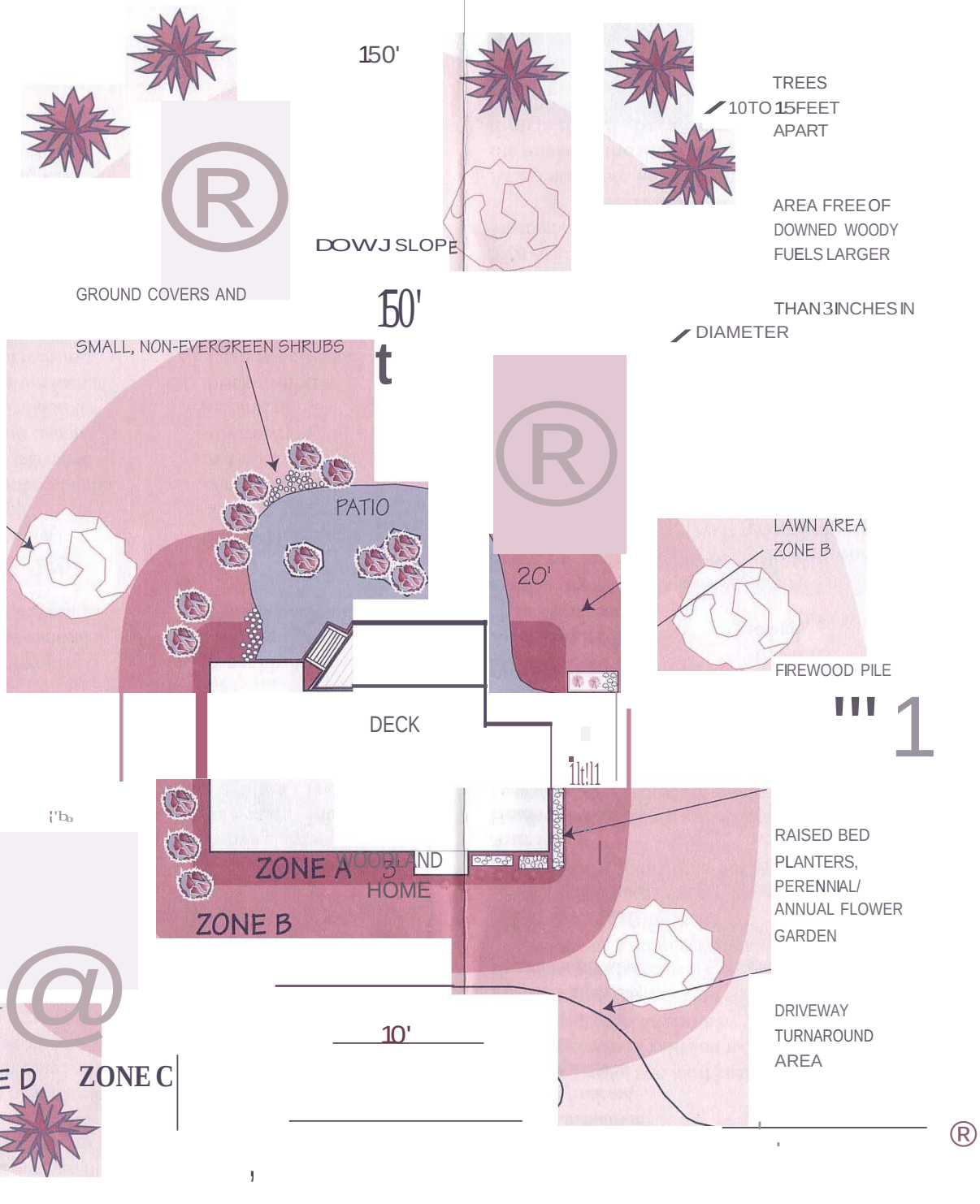
EVERGREEN TREE

NON-EVERGREEN SHRUB

HERBS, VEGETABLES, GROUND COVERS, ANNUAL OR PERENNIAL FLOWERS

RAISED BEDS

HARDWOOr TREE



EXPLANATION

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

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

100'

-WOODLAND HOH£ 20NES

20NE A

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

20NE g

Maintain a well-kept lawn, and avoid evergreens that catch fire easily and burn quickly. Occasional trees and shrubs should be at least 10 feet from the house and up to 20 feet away 011 the downhill side. Remove all downed woody fuel, such as logs or branches, and avoid u ing railroad ties or other flammable material in your landscaping. Freshly tended flowh beds, herb or vegetable gardens, rock gardens, stone walls, and driveways can alsb act as fire breaks.

20NE C

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

20NE D

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

CUHATE

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

TOPOGRAPH Y

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

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

VEGETATfON

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

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

THE FfRE5GAPE

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

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

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

WHAT ARE WE GOfNG TO DO WfTH THf5 PfECE OF LAND!

You can landscape for fire protection while maintaining a natural look to your surroundings. Work with the plants native to the site, using the patterns found in nature. Also, consider hardiness zones and planting sites when choosing new plants. Where plants and trees are placed in your yard is just as important as the species when planning fire safety.

ALL PLANTS EIIRN!

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

Choose plants and trees with:

- A high moisture content in the leaves (leaves stay moist)
- A low oil or resin content (avoid pines)
- Minimal litter and accumulating debris

- Limited foliage, and few dead branches
- A lower overall height
- An open, loose branching habit
- Easy maintenance and pruning
- Drought resistance

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

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

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

TREES

Betula papyrifera	paper birch
Populus tremuloides	quaking aspen
Populus trichocarpa	black cottonwood

SHRL/gs *(TdL)*

Acer glabrum	Rocky Mountain maple
Alnus spp.	alder
Amelanchier alnifolia	serviceberry
Camus stolonifera	red-osier dogwood
Elaeagnus commutata	silverberry
Holodiscus discolor	oceanspray
Lonicera involucrata	black twinberry
Lonicera utahensis	Utah honeysuckle
Philadelphus lewisii	mock orange
Prunus virginiana	chokecherry
Rosa woodsii	Wood's rose
Salix spp.	willow
Shepherdia canadensis	buffalo berry
Sorbus scopulina	mountain ash
Taxus brevifolia	Pacific yew

SHRL/gs ()

Arctostaphylos uva-ursi	kinnikinnik
Berberis repens	Oregon grape
Ledum glandulosum	Laborador tea
Potentilla fruticosa	shrubby cinquefoil
Rhamnus alnifolia	buckthom
Ribes spp.	gooseberry
Spiraea betulifolia	birch-leaved spiraea
Symphoricarpos albus	common snowberry
Vaccinium globulare	globe huckleberry

FORgS)

Achillea millefolium	yarrow
Amica spp.	amica
Aster spp.	aster
Heuchera cylindrica	alumroot
Lupinus spp.	lupine
Penstemon spp.	penstemon
Senecio spp.	groundsel
Smilacina racemosa	false Solomon's seal

GROLIND COVERS

Antennaria spp.	pussy-toes
Dryas drummondii	yellow dryad
Fragaria virginiana	strawberry
Sedum spp.	sedum

GRASSES

Agropyron caninum	pubescent wheatgrass
Agropyron cristatum	crested wheatgrass
Bromus vulgaris	brome grass
Carex spp.	sedge
Cinna latifolia	drooping woodreed
Elymus glaucus	blue wildrye
Festuca ovina	sheep fescue
Festuca subulata	bearded fescue
Stipa occidentalis	western needlegrass
Trisetum cemum	trisetum

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

PROTECT YOUR HOME AND FAMILY FROM WILDFIRES

People living on forested homesites should be prepared for wildfires.

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

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

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

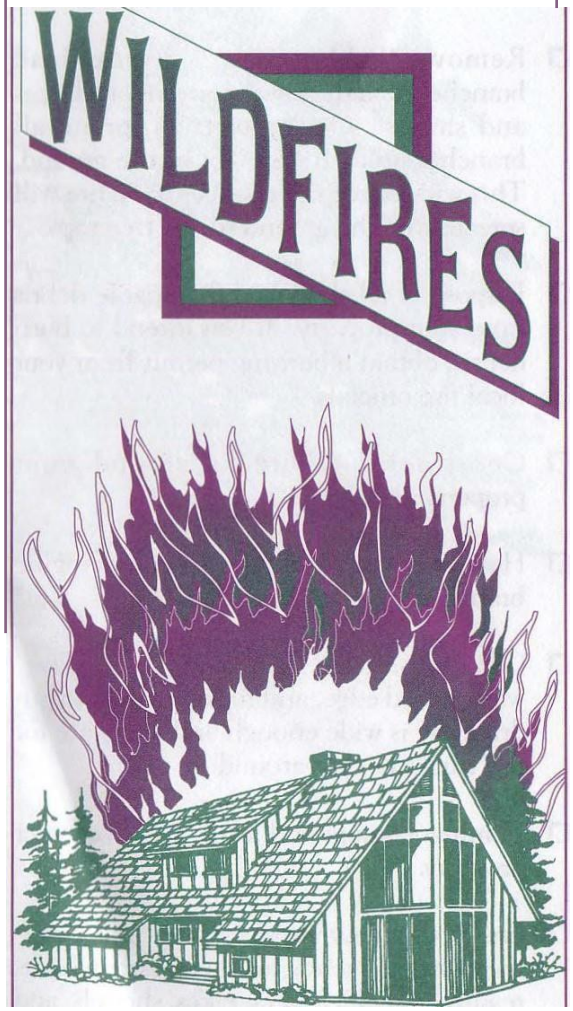
LEARN TO LIVE SAFELY WITH THE THREAT OF WILDLAND FIRES!

FOR HELP OR INFORMATION, CALL THE

Montana Department of Natural Resources and Conservation

MONTANA DNRC

PROTECT YOUR HOME AND FAMILY FROM



FORESTED HOMESITE

FIRE PREVENTION CHECKLIST

D Reduce the forest density around your home by thinning, or by harvesting posts, poles, and firewood. Space your trees so that there is 15 feet between the crowns. This spacing will reduce the chance that a fire will spread from tree to tree.

D Remove "ladder fuels." Prune dead branches from the lower portions of all trees and shrubs. On larger trees, prune all branches up to 10 feet above the ground. This will reduce the chance that a fire will spread from the ground to the tree tops.

D Dispose of all slash and flammable debris from your property. If you intend to burn debris, obtain a burning permit from your local fire officials.

D Construct fuel breaks around your property's boundaries.

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

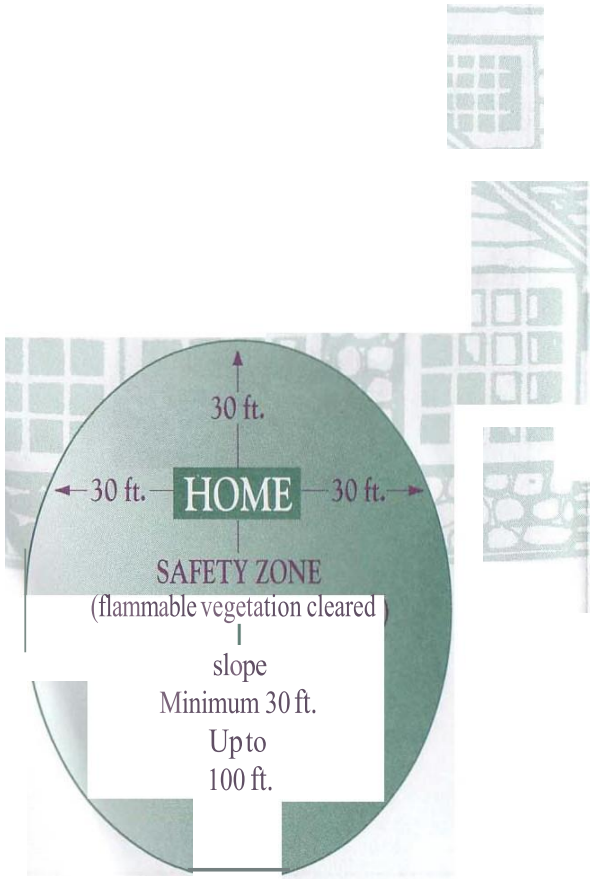
D Clear brush back 10 feet from your driveway or road edge, and make sure that your driveway is wide enough and adequate for fire trucks to turn around.

D Eliminate dumps and trash piles from your property.

D Ensure that your water supply is usable during a fire emergency, and keep garden hoses readily available. Keep rakes, shovels, and buckets in a handy location.

D Stack your firewood at least 100 feet away from the house, and not on the downhill side.

D Provide a 30-foot "safety zone" around your home by landscaping with fire-resistant plants and planting a lawn. If you live on a slope, the safety zone should be larger. Keep lawns watered and mowed, and remove the clippings. These measures will prevent fire from reaching your house.



D Clean needles, leaves, branches, and other flammable debris from the roof and gutters.

D The roof should be made of fire-resistant material. If you have a wood shake roof, install a sprinkler system on the roof.

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

D Make sure your chimney extends 3 feet above your roof, and cover it with a mesh screen or spark arrestor.

D Locate the propane tank at least 10 feet away from the house, so that the tank can be shut down in case of fire.

D Keep storage areas clean, and do not allow oily rags, flammable materials, or newspapers to accumulate.

D Wet down fireplace or stove ashes, and dispose of them in a metal can.

D Display your name and house number in front of your property to assist firefighters in locating your home.

D To keep out hot embers, enclose open spaces beneath features such as decks, balconies, and stilts. Screening is sufficient.

Date of the last fire prevention check |

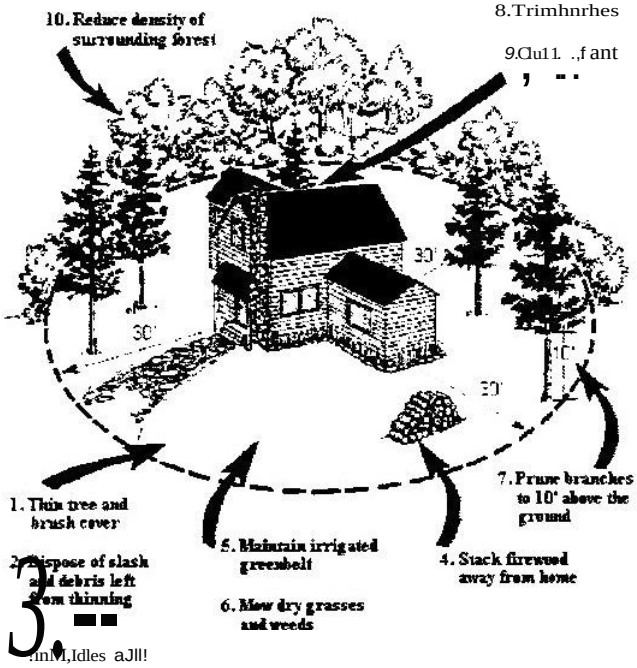
Home Fire Safety News

Wildland Fire Prevention

July 2000

Could your home survive a wildfire?

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



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Firewise Landscaping

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

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

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

Be sure to visit the Firewise website at www.firewise.org

Firewise Checklist

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

Within three feet of structures:

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

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

D Maintain surface vegetation at 3" or less in height.

D Remove all downed trees, brush, limbs, etc.

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

D Thin trees to 10 feet between crowns.

D Prune limbs of remaining trees to 15 feet in height or one-third of total live crown, whichever is less.

D Maintain surface vegetation at 3 inches in height or less.

D Remove all downed trees, brush, limbs, etc.

Thirty feet from structures and beyond:

D Thin trees to 10 to 15 feet between crowns.

D Prune limbs on remaining trees to 15 feet above the ground

Other Practices:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

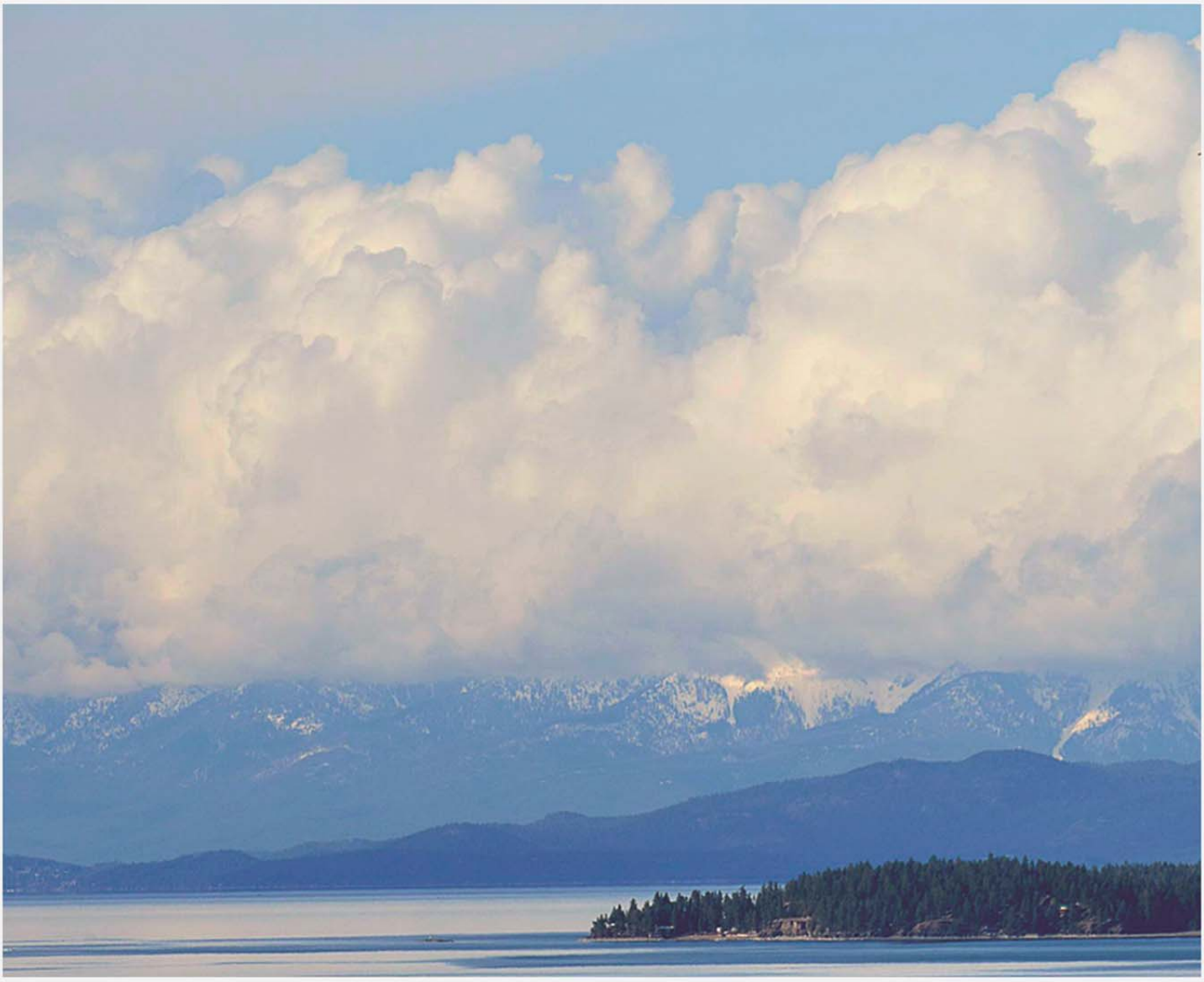
If you would like additional information, or if you have further questions, please contact your local USDA Forest Service, Montana DNRC, or Fire Department Office.

APPENDIX C – ANNUAL OPERATING PLANS

Climate Change Strategic Plan

September 2013

Confederated Salish and Kootenai Tribes of the Flathead Reservation



Tribal Resolution

Resolution No. 13-52

RESOLUTION
OF THE TRIBAL COUNCIL OF
THE CONFEDERATED SALISH AND KOOTENAI TRIBES
OF THE FLATHEAD INDIAN RESERVATION, MONTANA

RESOLUTION TO DEVELOP A CONFEDERATED SALISH & KOOTENAI TRIBES CLIMATE CHANGE STRATEGIC PLAN

BE IT RESOLVED BY THE COUNCIL OF THE CONFEDERATED SALISH AND KOOTENAI TRIBES THAT:

WHEREAS, The Confederated Salish and Kootenai Tribes are a federally recognized tribe, recognized by the United States Government and all of its Governing bodies and agencies; and

WHEREAS, there is overwhelming scientific evidence of climate change driven in part by the release of greenhouse gases into the atmosphere, the effects of which may significantly affect environment, natural resources, and infrastructure on which the Tribes have traditionally relied on; and

WHEREAS, the Natural Resources Department has received funding from the Roundtable on the Crown of the Continent and the Great Northern Landscape Conservation Cooperative to support the efforts to develop this Climate Change Strategic Plan and will oversee and coordinate the CSKT Climate Change Strategic Planning Initiative; and

WHEREAS, the potential impacts of climate change may include loss of habitat, reduced viability of fish and wildlife species, damage to forest resources, reduced air and water quality and quantity, damage to infrastructure and facilities, and associated risks to human health and welfare, and

WHEREAS, inaction in the present may yield negative social, environmental, cultural, and economic consequences in the future; and

NOW, THEREFORE, BE IT RESOLVED that the Confederated Salish and Kootenai Tribal Council recognizes and acknowledges the potential impacts of climate change and declares the intent and commitment of the Tribes to address effects of climate change, and also hereby declares and directs the following actions to be taken under this initiative:

To undertake efforts to determine the potential effects of climate change on or to the Confederated Salish and Kootenai Tribal community and the Flathead Reservation, including effects and projected impacts on the local environment, forestry, agriculture,

fish and wildlife, water and air quality, as well as critical infrastructure and public health;

To develop appropriate policies and strategies for addressing effects and projected impacts of climate change on the Tribe and the Reservation and for contributing to reduction of climate change;

To develop potential programmatic and/or regulatory actions and changes consistent with said policies, strategies, and goals as appropriate to addressing the effects of climate change and contributing to reduction of the causes;

To communicate and coordinate with local, state, regional, and national entities and jurisdictions on addressing projected impacts of climate change, including government-to-government cooperation and identification of funding sources and opportunities as possible and available; and

BE IT FURTHER RESOLVED that the Natural Resources Department along with all other departments within the Tribal government shall assess how best to implement the actions under this initiative and how best to incorporate such actions into programs and activities; and

BE IT FURTHER RESOLVED that Traditional Ecological Knowledge shall be integrated into the CSKT Climate Change Strategic Plan; and

BE IT FURTHER RESOLVED that the CSKT Climate Change Strategic plan shall remain in effect indefinitely and shall be re-evaluated on an annual basis.

CERTIFICATION

The foregoing resolution is duly adopted by the Tribal Council of the Confederated Salish and Kootenai Tribes of the Flathead Indian Reservation on November 29, 2012, with a vote of 9 for, 0 opposed, and 0 not voting, pursuant to the authority vested in it by Article VI, Sections A, C, D, and, U of the Tribes' Constitution and Bylaws; said Constitution adopted and approved under Section 16 of the Act of June 18, 1934 (48 Stat. 984), as amended.

Chairman, Tribal Council

ATTEST:

Secretary, Tribal Council

Tribal Chairman's Proclamation

THE CONFEDERATED SALISH AND KOOTENAI TRIBES
OF THE FLATHEAD NATION
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A People of Vision

A Confederation of the Salish,
Pend d' Oreilles
and Kootenai Tribes

Forward

By
Joe Durglo
Chairman, Council Confederated Salish and Kootenai Tribes

Our people have long lived by an idea that we know best how to govern ourselves. We pursue every opportunity to take back control of our lands, our government, and our resources. This report is another example of our pursuit for a better homeland for future generations.

Our lands and resources are the basis of our spiritual life. That's been our way since time began. By preparing for further environmental changes, we can mitigate threats to our way of life. Our traditions rely on abundant populations of native fish and wildlife, healthy plant communities, clear air, water, undisturbed spiritual sites, prehistoric and historic campsites, dwellings, burial grounds, and other cultural sites because these areas reaffirm the presence of our ancestors. These resources also provide our future leaders with a connection to their ancestors and native traditions.

Our culture committees remind us that many of these foods, medicinal and cultural resources are non-renewable. Our survival is woven together with the land. This plan is the foundation that will support new strategic efforts to preserve and protect the local environment. These recent efforts are a continuation of the work our elders have done for years in observing and considering climate changes on our lands. As is our practice, we look ahead to prepare for coming challenges and apply the values taught by our ancestors. This is how we've always survived, and how we will continue to thrive as a people.

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Acknowledgments

This project received financial support from The Roundtable of the Crown of the Continent Adaptive management initiative through the Kresge foundation and the Great Northern Landscape Conservation Cooperative.

Many people participated in the development and preparation of this plan. The Confederated Salish, Pend d' Oreille and Kootenai Tribes would like to acknowledge contributions of the following individuals:

Project Team

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Rich Janssen, Department Head	Natural Resources Department
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Clayton Matt, Director	Tribal Services
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Planning Committee

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Dale Becker, Tribal Wildlife Program Manager	Natural Resources Department
Craige Couture, Chief of Police	Tribal Law & Order
Mike Durglo Sr., Co-Director (St. Ignatius)	Historic Preservation/Cultural Preservation
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Sadie Saloway (Elmo)	Tribal Elder
Stephen SmallSalmon (Post Creek)	Tribal Elder
Thompson Smith	Salish-Pend d'Oreille Culture Committee
Sarah Velk, Intern	University of Montana
Martin Zobel, Cartographer/Digitizer	Natural Resources Department

The Climate Change Planning Committee would like to give special thanks to the Tribal Elders for contributing their wisdom and guidance and to the Tribal Council for their leadership and for making this Climate Change Strategic Plan a priority.

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Key Terms

Adaptation (climate change): actions in response to actual or expected climate change and its effects, that lessen harm or exploit beneficial opportunities. It includes reducing the vulnerability of people, places, and ecosystems to the impacts of climate change.

Adaptive Capacity: the ability of a system to accommodate or respond to the changes in climate with minimum disruption or cost. Generally, systems that have high adaptive capacities are better able to deal with climate change.

Climate: the "average weather" generally over a period of three decades. Measures of climate include temperature, precipitation, and wind.

Climate Change: any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period of time (decades or longer). Climate change may result from natural factors and processes and from human activities that change the atmosphere's composition and land surface.

Global Warming: average increase in the temperature of the atmosphere, which can contribute to changes in global climate patterns. Global warming can occur from a variety of causes, both natural and human induced.

Greenhouse Gas (GHG): any gas that absorbs infrared radiation in the atmosphere; examples include carbon dioxide, methane, nitrous oxide, ozone, and water vapor.

Mitigation (climate change): actions that reduce the levels of greenhouse gases in the atmosphere; includes reducing emissions of greenhouse gases and enhancing sinks (things that absorb more greenhouse gases than they emit). Examples include switching to renewable energy sources and implementing energy efficiency measures.

Planning Area: this is an area in which the tribal government manages, plans, or makes policy affecting the services and activities associated with built, human, and natural systems. For example, within the sector Utilities, you might have planning areas of Water and Electricity.

Preparedness Actions: actions or activities that the tribe could take to achieve its climate change preparedness goals.

Preparedness Goals: what the tribe wants to accomplish in the priority planning areas through preparedness actions.

Priority planning areas: planning areas of particular importance to the tribal government or community which are vulnerable to climate change impacts.

Resilience: ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to absorb stress and change.

Risk: Risk is the consequence of an impact times the probability or likelihood that the impact will happen.

Sector: general grouping used to describe any resource, ecological system, species, management area, etc. that may be affected by climate change. For example, Transportation, Utilities, Water Resources, Forest Resources, Human Health, or Cultural Resources and Traditions.

Sensitivity: how much a system is directly or indirectly affected by changes in climate conditions (e.g., temperature and precipitation) or specific climate change impacts (e.g., sea level rise, increased water temperature). If a system is likely to be affected as a result of projected climate change, it should be considered sensitive to climate change.

Traditional Ecological Knowledge (TEK): considerations related to your planning areas (Forestry, Water, Air, etc.) concerning climate change. TEK refers to the evolving knowledge acquired by indigenous and local peoples over hundreds or thousands of years through direct contact with the environment. This knowledge is specific to a location and includes the relationships between plants, animals, natural phenomena, landscapes and timing of events that are used for lifeway's, including but not limited to hunting, fishing, trapping, agriculture, and forestry.

Vulnerability: the susceptibility of a system to harm from climate change impacts. It's a function of how sensitive the system is to climate and the adaptive capacity of the system to respond to such changes. Generally, systems that are sensitive to climate and less able to adapt to changes are considered to be vulnerable to climate change impacts.[i]

Executive Summary

This Confederated Salish & Kootenai Tribes (CSKT) Climate Change Strategic Plan represents an early step towards addressing the impacts of climate change on the Flathead Reservation in Montana. This initiative's purpose is to improve the Tribal community and Natural Resources resiliency by effectively informing climate change impact planning decisions made by the Tribes. It is designed to initiate collectively beneficial climate change impact mitigation and adaptation solutions.

This process was led by the CSKT Office of Environmental Protection and was assisted by Next Seven Group, LLC. It was completed in collaboration with the Tribes' administration, elders, scientific leaders, and other stakeholders and experts. Historical information was adapted from the Flathead Reservation Comprehensive Resource Plan and local climate change scenarios were adapted from the Missoula County Climate Action: Creating a Resilient and Sustainable Community report. Traditional Ecological Knowledge was provided by the Salish-Pend d'Oreille Culture Committee, Kootenai Culture Committee, and Historic Preservation/ Cultural Preservation Department. Local impact assessments on forestry, land, fish, wildlife, water, air, infrastructure, people, and culture were developed by CSKT Tribal Departments and local organizations.

The Climate Change Strategic Planning Committee included a representative group of administration and staff from various Tribal departments and local organizations. The level of involvement of each contributing committee member was on a compulsory and/or voluntary basis. This planning resulted in the establishment of priorities and related preparedness goals and actions. The priority levels for forestry range from low to high, land are medium, fish and fish habitat are high, wildlife range from low to high, water are high, air are medium, infrastructure are low, people range from low to high, and culture are high. The goals and actions are diverse – addressing each sector's needs. Available Traditional Ecological Knowledge has been included.

This plan represents an early step in the Tribes' effort to mitigate the effects of climate change on the Flathead Reservation. It is designed to serve as the foundation for developing effective strategies to protect and preserve the local environment. Results from this planning should be incorporated into guiding documents, such as the Comprehensive Resource Management Plan and the Forestry Management Plan. This strategic plan should be regularly revisited and modified as priorities and needs of the Tribes change and new information regarding the climate science and impacts becomes available. As implementation plans are developed, effective monitoring and evaluation policies and procedures should be established. These measures should determine if the Tribes' actions are meeting the Tribes' preparedness goals.

1. Introduction

Overwhelming scientific evidence demonstrates that human inputs of greenhouse gases are almost certain to cause continued warming of the planet. (Environmental Protection Agency, 2013) The Northwest has already observed climate changes including an average increase in temperature of 1.5°F over the past century. (Karl, Melillo, & Peterson, 2009) Locally, all models predict warmer temperatures, lower snowpack, and more frequent and severe droughts and floods. (Marni E. Koopman, 2011) The Confederated Salish and Kootenai Tribes acknowledge these change and its potential impacts on the Flathead Reservation in Montana.

Historically, Tribal elders have recognized and prepared for climate change. Climate change planning has been occurring for centuries. As such, the Confederated Salish and Kootenai Tribes Climate Change Strategic Plan sets forth the foundation for developing effective, culturally-sensitive climate change adaption and mitigation strategies needed to ensure healthy social, environmental, and built environments on the Flathead Reservation. These efforts have been authorized through Tribal Resolution No. 13-52 and are in direct support of the Tribes' mission to provide sound environmental stewardship that preserves, perpetuates, protects and enhances natural resources and ecosystems.

> Indigenous people of the world have a special moral stature on this issue [of climate change] and may have a special role to play in coming together to advocate for action.
>
> - Salish-Pend d'Oreille Culture Committee

The Confederated Salish and Kootenai Tribes Climate Change Strategic Plan's mitigation and adaptation strategies are guided by local impact assessments. These assessments investigate the vulnerabilities and risks of the forestry, land, fish, wildlife, water, air, infrastructure, people, and culture sectors to the impacts of climate change. Vulnerability is the susceptibility of a system to harm from climate change impacts. Risk is the consequence of an impact times the probability or likelihood that the impact will happen. These assessments determine the urgency of each planning area, ranging from low to high priority. They guide the development of preparedness goals and actions. These goals and actions vary based on a variety of factors, such as the types and magnitudes of projected climate change impacts and the scale of the planning effort.

Overall, this plan represents an ongoing and evolving adaptive management process. Implementation planning which determines the tasks to be completed, resources needed, responsible parties, collaborations, and evaluation measures needed to fulfill the goals is the next step in improving the Tribal community and its lands resiliency to the impacts of climate change.

1.1 Characteristics and History of the Tribes

The Confederated Salish and Kootenai Tribes (CSKT) include the Salish, Kootenai, and Pend d'Oreilles Tribes. As the first to organize a tribal government under the Indian Reorganization Act of 1934, the Tribes are governed by a tribal council. The Tribal Council has ten members. The council elects from within a Chairman, Vice Chairman, Secretary and Treasurer. The Tribal Council represents the Arlee, Dixon, Elmo, Hot Springs, Pablo, Polson, Ronan, and St. Ignatius districts in Montana. The CSKT employs nearly 1,400 people. (Camel, 2012)

As of 2012, there were about 7,900 enrolled tribal members. (Camel, 2012) Approximately 5,300 tribal members live on the Flathead Reservation and 2,600 tribal members live off the Reservation. (Camel, 2012) The 2010 population of the Reservation was 28,324, an eight percent increase over the 2000 census, but non-Indians outnumbered Indians by two-to-one. (Bureau, 2010) (Independent Record, 2011)

The Tribes' mission is guided by traditional principles and values. As stated in the 2011 Confederated Salish & Kootenai Tribes Annual Report, "we adopt traditional principles and values into all facets of tribal operations and services; invest in our people in a manner that ensures our ability to become a completely self-sufficient society and economy; and strive to provide sound environmental stewardship that preserves, perpetuates, protects and enhances natural resources and ecosystems."

The Tribes' vision is to maintain traditional principles and values. "Traditional values that served our people in the past are embedded in the many ways we serve and invest in our people and communities, in the way we have regained and restored our homelands and natural resources, in the ways we have built a self-sufficient society and economy, in the ways we govern our Reservation and represent ourselves to the rest of the world and in the ways we continue to preserve our right to determine our own destiny." (Confederated Salish & Kootenai Tribes Annual Report, 2011) Today, the CSKT are recognized as a model of a self-sufficient sovereign nation of the United States. The Tribal government offers a number of services to tribal members and is the chief employer on the Reservation.

Location, definition of tribal lands

The Salish, Pend d'Oreille and Kootenai Tribes originally lived between the Cascade Mountains and Rocky Mountains. These aboriginal territories spanned over 20 million acres of what is now known as western Montana, northern Idaho, and parts of southern Canadian provinces. On July 16, 1855, the Tribes ceded most of this land, reserving about 1.3 million acres, through the Treaty of Hellgate. This formed the Flathead Reservation in Montana.

The Reservation is located in Northwest region of the United States, in western Montana on the Flathead River. It comprises the lower quarter of the Flathead River Basin, and encompasses the south half of Flathead Lake and the Lower Flathead River. It includes portions of Lake, Sanders, Missoula, and Flathead Counties. The largest community on the Reservation is the city of Polson, MT, which is also the county seat of Lake County.

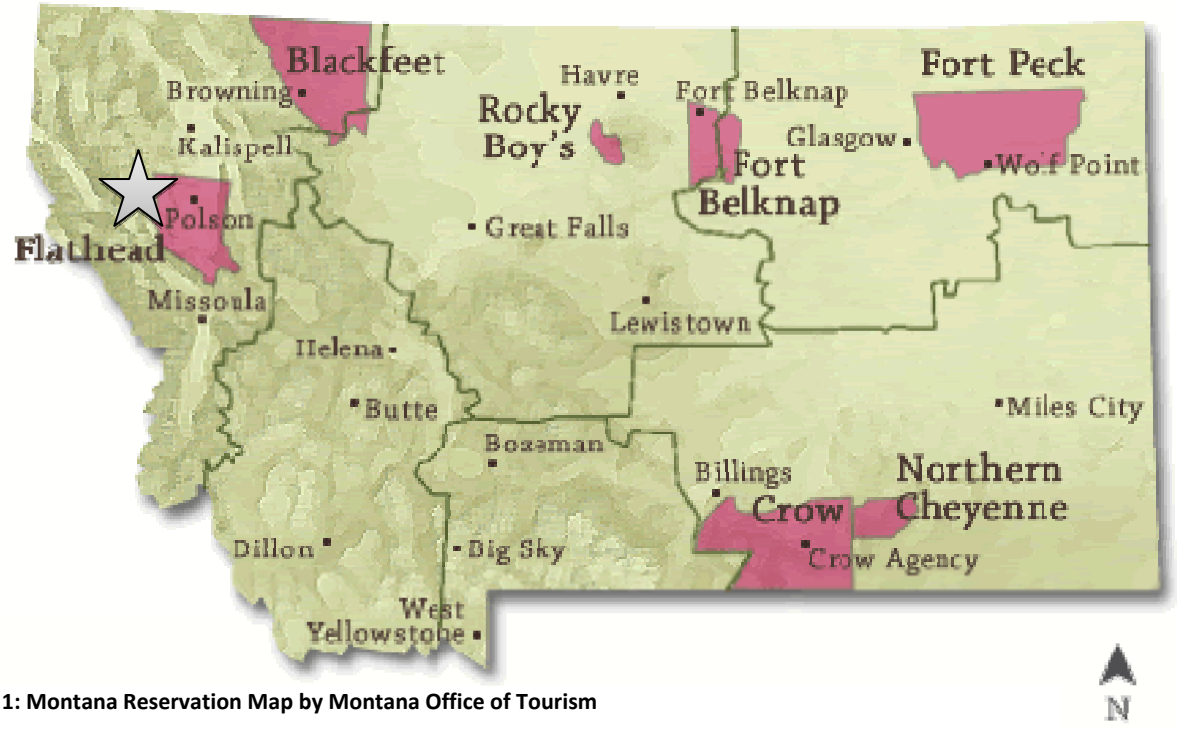

Figure 1: Montana Reservation Map by Montana Office of Tourism

Today, the Flathead Reservation is 1.317 million acres, of which just over 790,000 acres are owned and managed by the Tribes and its members. (About SKGS, 2013) However, Tribes' territory is fragmented due to the Flathead Allotment Act. This Act opened the Reservation to non-Tribal members in 1910. The Flathead Nation's land use is depicted in the 2013 Land Status map.

THE CONFEDERATED SALISH AND KOOTENAI TRIBES
OF THE
FLATHEAD NATION

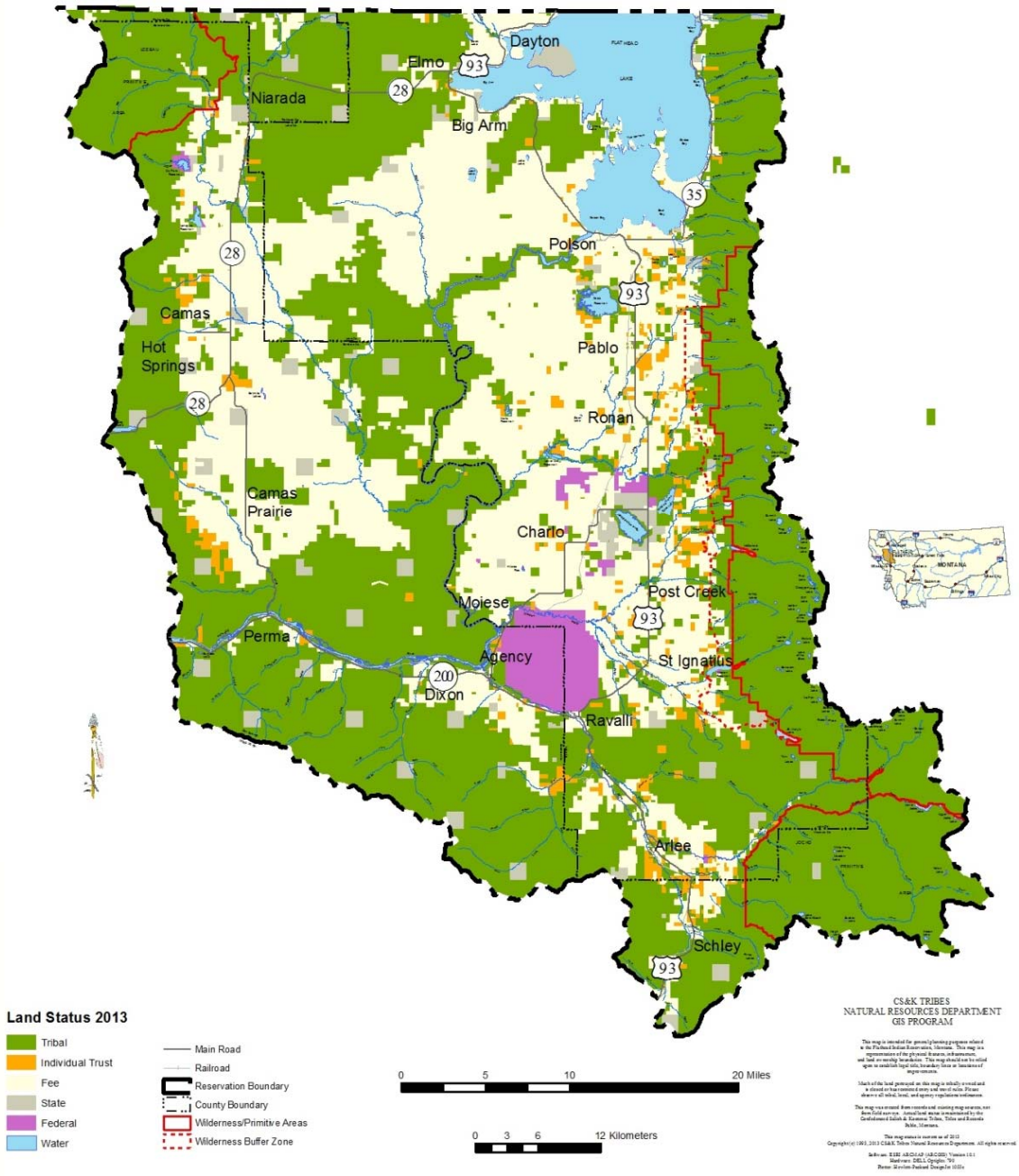

Figure 2: Land Status 2013 by CSKT

History of tribes, include traditional ways of life

Each of the Tribes on the Reservation is culturally unique and has its own belief system, yet all three are similar in at least two fundamental ways. The first is that each holds knowledge of the natural environment. The second is that each has a profound respect for all of creation. Both of these traits have enabled the Tribes to survive for thousands of years.[ii] The subsistence patterns of Tribal people developed over generations of observation, experimentation and spiritual interaction with the natural world. This has created a body of knowledge about the environment closely tied to seasons, locations, and biology. This way of life was suffused with rich oral history and a spiritual tradition in which people respected the animals, plants and other elements of the natural environment. (CSKT History & Culture, 2004) Through the teachings of elders, these tribal ways of life continue to this day.

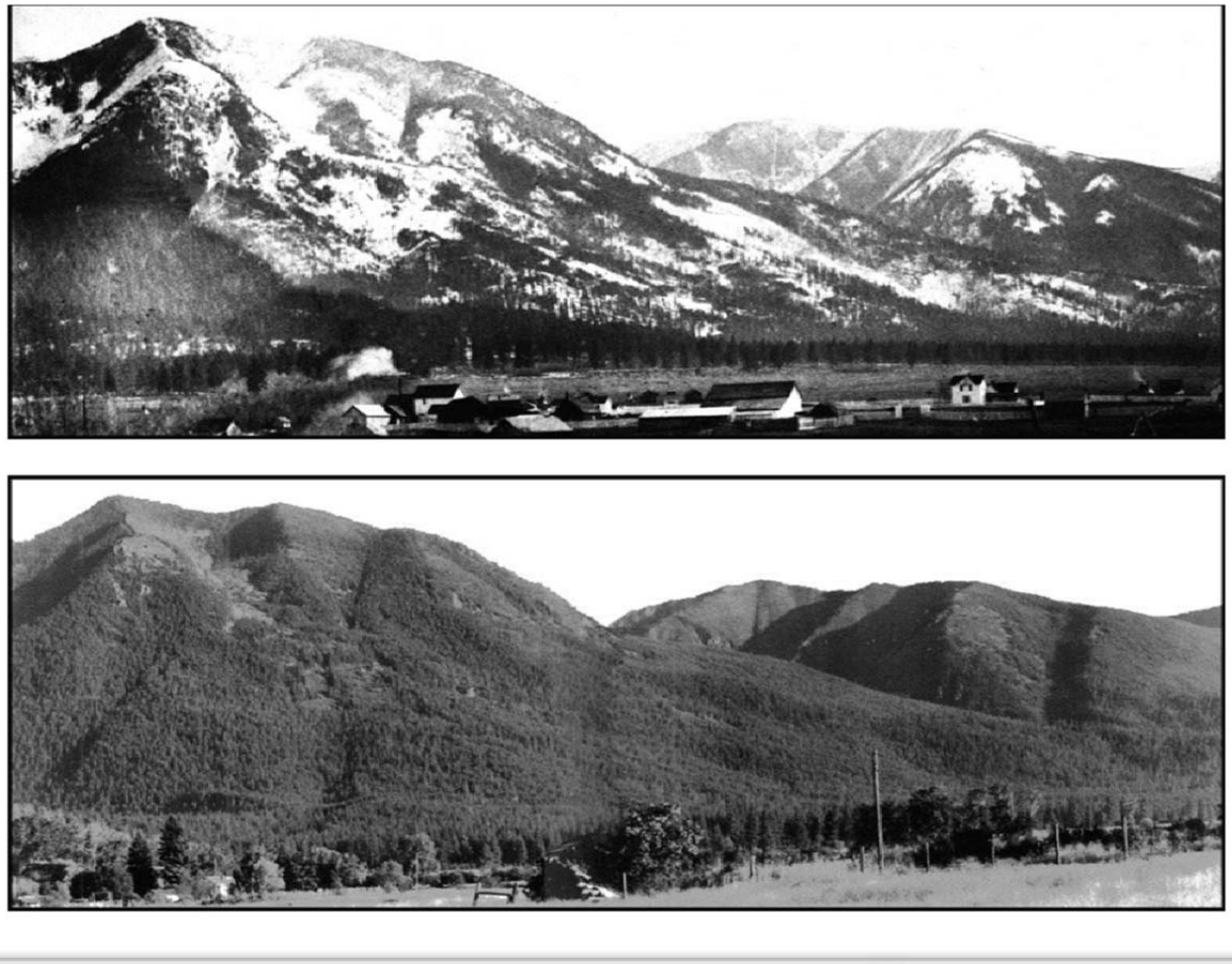

Figure 3: Historical photo of Dancing Boy near Arlee, MT by unknown photographer

1.1.1 Salish Culture

On the Flathead Reservation, the designation "Confederated Salish" encompasses not only the Salish and the Pend d'Oreilles, but also Kalispel and Spokane Indians who settled on the Reservation. Elders say that these and other Tribes were once one Salish speaking tribe. Thousands of years ago this ancestral tribal group divided into a number of different bands that later became Tribes and occupied much of the Northwest, from British Columbia to Montana and beyond. Some bands lived throughout Montana from the Bitterroot to the Yellowstone valleys. The Pend d'Oreilles eventually settled in the Flathead Valley and a band of Kalispel camped along the Flathead River near Perma, Camas Prairie, and Paradise.

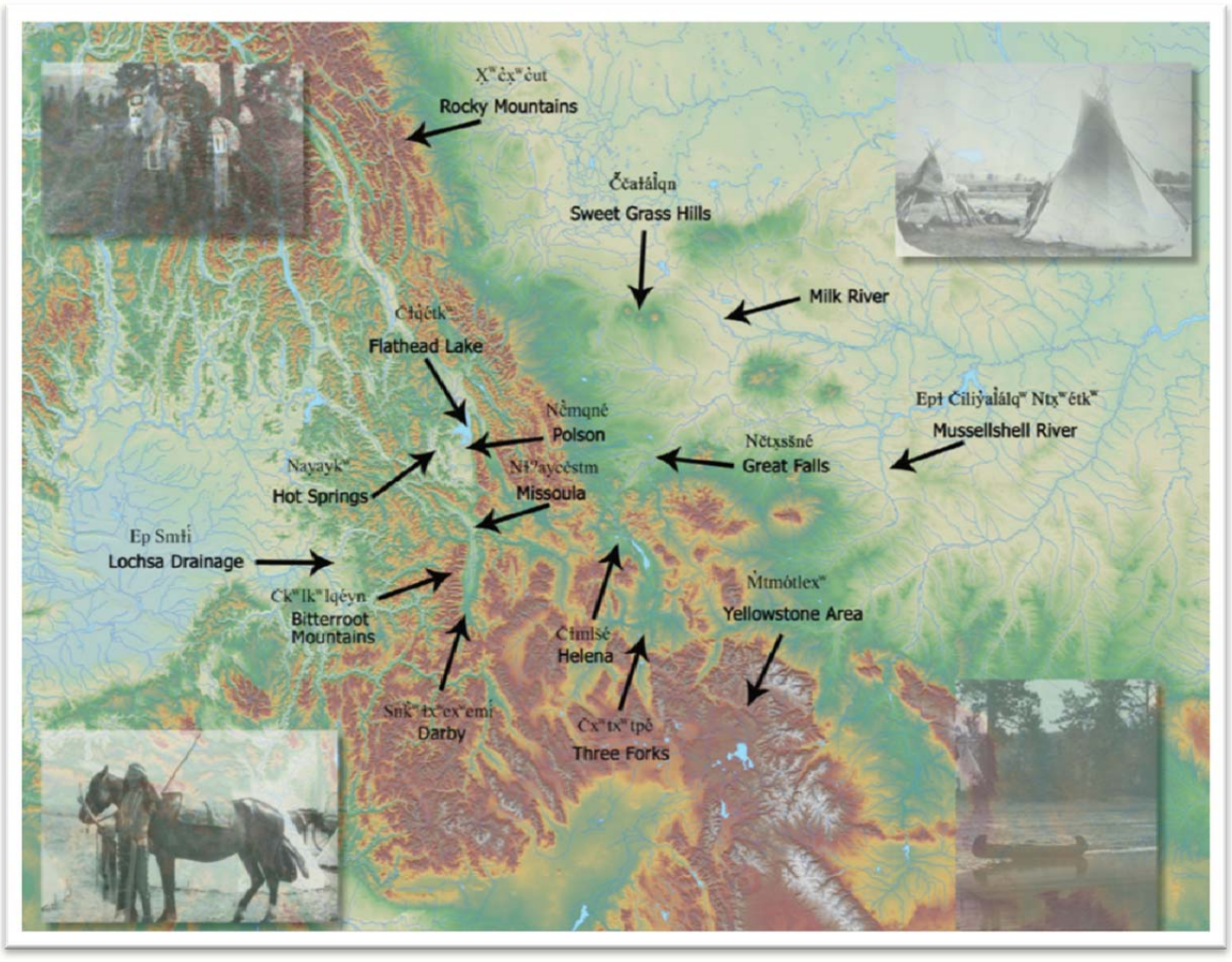

Figure 4: Aboriginal Territories of the Salish & Pend d'Oreille People courtesy of CSKT SPCC and Natural Resource's GIS Department

Economy and Government

Before the time of the Reservation, the Salish Tribes gained subsistence from a tribal system of hunting, fishing and harvesting. The quest for food began in the early spring with the bitterroot harvest. Tribal leaders appointed elders to watch for when the bitterroot was ready. When the time came, the leaders called the people together to dig enough roots for a feast to celebrate the year's first food and to pray that food would be plentiful.

Along with bitterroot, the people harvested other plants such as camas bulbs, tree moss, onions, Indian potatoes, Indian carrots, and medicinal plants. The people fished year-round. In summer and fall, the Salish hunted and picked berries, first strawberries and service berries, and later huckleberries, raspberries, chokecherries and hawthorn berries. All of these activities were communal. The people worked together and helped each other.

In the fall, the men concentrated on hunting while the women dried meat and prepared hides for robes and buckskins. The Salish hunted many different animals, but mainstays were deer and bison. Every year, the people traveled east of the mountains, where game animals were plentiful. After a group hunt, the hunters divided the meat among all the people in the camp. They piled cut meat in one place, and people from each lodge took what they needed. The successful hunters shared with those who were unsuccessful. The Tribe used everything and wasted nothing. The Salish spent the winter months trapping and fishing. Women repaired clothing and sewed new garments from deer and elk skins. They decorated their work with porcupine quills colored with natural dyes.

Each tribe had a leader or leaders chosen for their character. The leaders governed by consensus, under the guidance and advisement of respected elders. Different leaders had particular strengths or skills and their responsibilities reflected this. One chief might be in charge of the hunt. Another might lead various camp activities. A third would command war expeditions. Pete Beaverhead once said, "In most of the stories there are three big chiefs above all the rest of the people. They are all regarded with the same respect. None [is] higher than the other two. This is among the [Pend d'Oreilles] Indians. Then the smartest warriors are right behind them. There were always very many of these men."

Lodging, Transportation, Recreation, and Trade

The Salish made lodge coverings from elk and buffalo hides and fashioned tools such as needles, mauls and grinding stones from wood, bone and rock. The Salish travelled long distances to collect raw materials not available locally. The Salish had a strong trade relationship with the Nez Perce

and traded bitterroot and high quality buckskin for Nez Perce corn husk bags filled with camas. Before the introduction of the horse, the Salish used travois to haul possessions between camps. The people held celebrations after battles, successful hunts and other important events and interwove song and dance with daily activities.[iii]

1.1.2 Kootenai Culture

Before contact with non-Indians, the Kootenai Nation (also spelled Kootenay or Kutenai) numbered over ten thousand. Kootenai Indians inhabited what is now eastern British Columbia, the southern half of Alberta, northern Idaho, eastern Washington and Montana. The name comes from the Kootenai practice of setting traps in the creeks during the large fish runs.

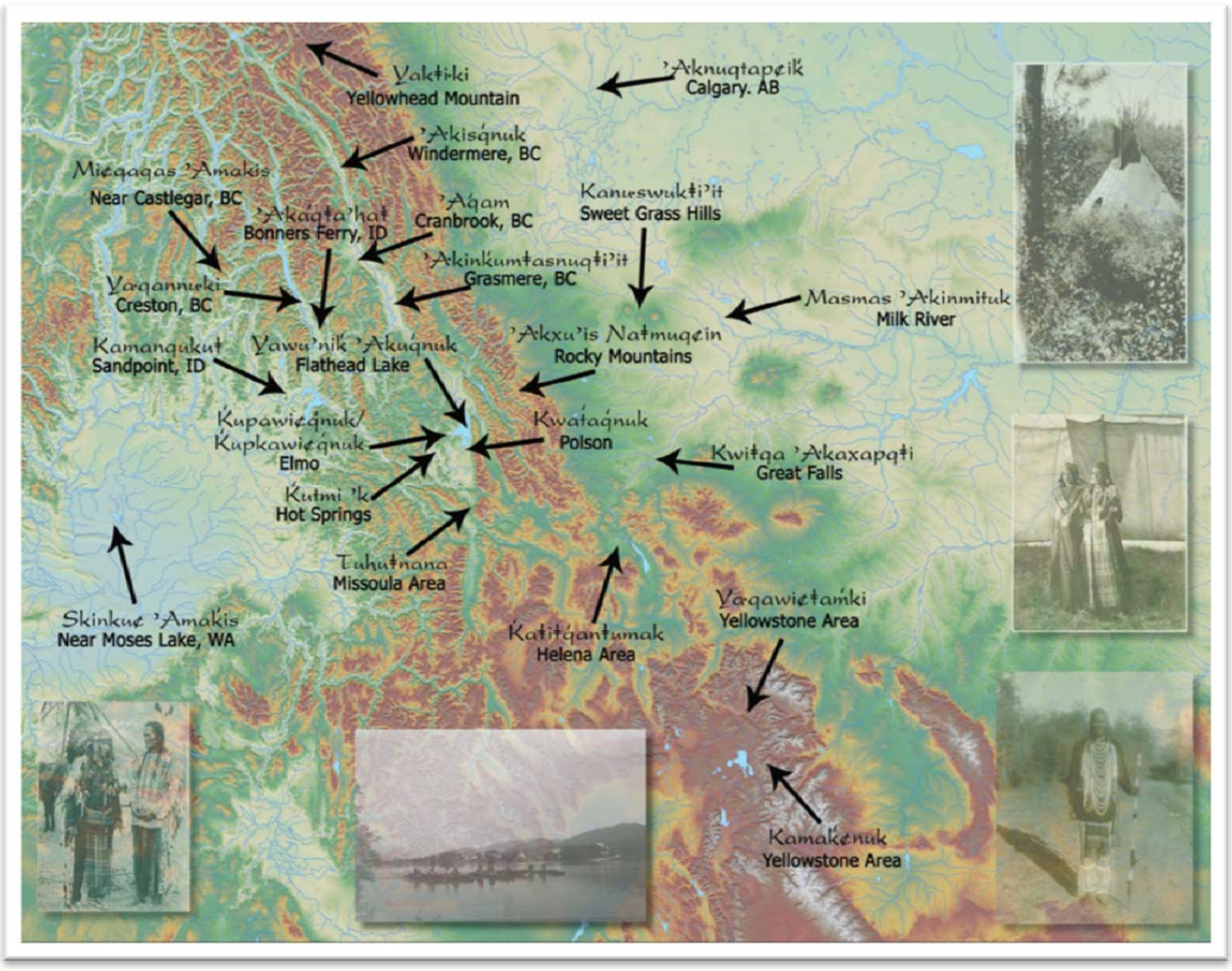

Figure 5: Aboriginal Territory of the Ksanka Band of Kootenai Indians map courtesy of NRD and Kootenai Culture Committee

Economy and Government

The Kootenai moved seasonally over a large territory. The seasonal round began in the early spring when the people travelled to fishing grounds. There the Kootenai caught bull and cutthroat trout, salmon, sturgeon, and whitefish using a simple bone device and line, or harpoons with a detachable barbless point. The people also set traps and weirs in streams.

In early May, as the fishing season came to a close, the root harvest began. The people dug bitterroot, camas and other roots. In mid-June the band traveled east of the divide to hunt buffalo. Weeks later the people returned with heavy loads of meat. From mid to late summer the Kootenai harvested service berries, chokecherries, huckleberries and other fruits. When fall approached, some of the Kootenai organized communal deer drives. Others returned to the Plains to hunt buffalo. The Tribe cached surplus food for winter.

Deer were the most accessible and abundant of the game animals. Deer meat was one of the most essential foods, but the Kootenai also hunted elk, moose, caribou, buffalo, mountain sheep and bear, and birds such as grouse, geese and ducks. H. H. Turney-High, an ethnographer, wrote that the Kootenai "considered their land a fortunate one wherein any industrious man could get plenty to eat for himself and [his] family."

Lodging, Transportation, Recreation, and Trade

The Kootenai lived in skin and mat-covered tepees (the latter woven from tulle and dogbane). The people used canoes to transport family and gear, and to fish for salmon. They manufactured a unique covered canoe with a long projection at both bow and stern. During times of peace the Kootenai traded with other Tribes, such as the Shoshone, Nez Perce, and Blackfeet. Other Tribes coveted the native tobacco cultivated by the Kootenai. The Kootenai traded it and famous tanned buckskin hides for stones used to make pipes, various tools and material goods.

The Kootenai always had time for story-telling and games. Girls played with dolls that, according to Helen Charlo, were "made mostly out of buckskin and deer hair." Paul Mathias said boys made bean shooters and sling shots for hunting rabbits and groundhogs. Mary Antiste has talked of how boys made bows and arrows. Others told of how children made tops by winding strings around oval rocks. By pulling the strings they could make the rocks spin. The adults played a game called shinny. In the evenings the people told stories.[iv]

1.1.3 Socioeconomic Profile

Today, the socioeconomic profiles of these Tribes have dramatically changed, as compared to their historical status. The Flathead Reservation is a rural area, bordered on the south by Montana's second largest urban trade center and on the north by one of Montana's fastest growing counties. It is largest reservation in Montana. It grew by eight percent to 28,359 people in 2010. But non-Native Americans on the Reservation outnumbered Indians by more than two-to-one. (Independent Record, 2011). Unlike many Indian Reservations, the Flathead Reservation is not isolated from the larger state and regional economies. Located in the center of western Montana's dynamic economy, the Reservation contributes to and is influenced by the region's development.

Today, socioeconomic challenges face tribal members. The poverty rate for American Indian families in Lake County (largest county on the Reservation) is 29.1 percent while the official unemployment rate for Lake County is 10.2 percent. CSKT's Department of Human Resource Development which manages 35 income/social service programs reports an unemployment rate of 36 percent among Tribal members in 2007. 60 percent of Tribal members residing on the Flathead Reservation received services from CSKT Workforce Investment Act, Child Care, and Temporary Assistance for Needy Families, or General Assistance as reported in 2008. Furthermore, CSKT reported the following employment data to the Bureau of Indian Affairs (BIA) for 2010:

Table 1: CSKT Employment Data		
Category	**No.**	**% of Enrolled Members**
Enrolled Tribal Members	7,773	100%
Able & Willing But Unable to Find Work	1,860	24%
Employed Part Time	2,072	27%
Employed Full Time in the Public/Tribal Sector	1,947	25%
Employed Full Time in the Private Sector	1,231	16%
Employed with Earnings Below Poverty	514	7%

Table 1: CSKT Employment Data, reported to BIA in 2010

According to this employment data, nearly one out of four tribal members is able and willing but unable to find work while only sixteen percent are employed full time in the private sector.

Tribal enterprises and organizations

The principle sources of income for the Tribes are derived from timber industry sales and revenues from the co-license for the Kerr Dam facility with Montana PPL. The Tribes also operate the following enterprises and organizations.

S&K Technologies, Inc. is a federally-chartered corporation headquartered in St. Ignatius, Montana. It has six subsidiary businesses including S&K Technologies, LLC, S&K Aerospace LLC, S&K Global Solutions LLC, S&K Environmental LLC, S&K Logistics Services LLC, and S&K Security Group LLC.

S&K Gaming, LLC, operates two properties—KwaTaqNuk Best Western Hotel and Casino in Polson, Montana, and Gray Wolf Peak Casino north of Evaro, Montana.

S&K Electronics (SKE) is a leading, high-tech manufacturing company in based in Pablo, Montana.

S&K Holding Company manages Boulder Hydro, a small-scale hydroelectric facility northeast of Polson, Montana, S&K Self-Storage in Pablo, Montana, and Sovereign Leasing and Financing in Ronan, Montana.

Energy Keepers is the Tribal Corporation that manages the Tribes energy resources. It intends to acquire and manage Kerr Dam in 2015.

Salish Kootenai Housing Authority operates as a separate Tribal entity that maintains approximately 500 low-rent properties, 30 ownership properties, 19 transitional living units for homeless families and individuals, 60 trailer park lots, and 50 rental assistance slots.

Tribal Credit was established in 1936 to help raise the social and economic status of Tribal members by providing loans for purchase of property and homes.

Eagle Bank is the newest bank to be chartered on the Flathead Reservation. This community bank is owned by the Confederated Salish and Kootenai Tribes on behalf the Tribal members.

Educational programs include Early Childhood Services (Early Head Start and Head Start), Salish language immersion elementary school, Two Eagle River middle and high schools, Kicking Horse Job Corps (a vocational training center), and Salish Kootenai College.[v]

Current land use, transportation

The Tribes participate in statewide transportation planning. Transportations projects are prioritized through cooperation and input from the Tribal Council and the Reservation Transportation Committee. US Highway 93 is the major transportation corridor through the Flathead Reservation. This is the principal north/south highway in Western Montana. Highway 28 connects the northern portion of the Reservation to the western half, Highway 200 runs east and west along the southern portion of the Reservation, and Highway 35 follows the eastern side of Flathead Lake in the northern portion of the Reservation. (CSKT, Flathead Reservation Transportation Plan, 2007-2017) This area also contains thousands of miles of roads.

Figure 7: Bus, photo by Corky Sias, DHRD Transportation Manager

Figure 6: Buses, photo by Corky Sias, DHRD Transportation Manager

There are six types of roads located on the Reservation. They include nearly 4,197 miles (6,757 km) of Tribal, BIA, and other Federal, state, city and county roads. There are 2,580 miles (4,154 km) of Tribal forest roads, 372.5 miles (600 km) on the Bureau of Indian Affairs Road System, 89 miles (143 km) of National Highway roads, 165 miles (270 km) of State roads, 70.5 miles (114 km) of city streets in Polson, Ronan, St. Ignatius, and Hot Springs, and approximately 920 miles (1,481 km) of county roads in Lake County, Sanders County, Flathead County, and Missoula County. (CSKT,

Flathead Reservation Transportation Improvement Program, 2009-2013) Land use planning by the Tribes includes cultural considerations for natural resources.

THE BIA ROAD SYSTEM

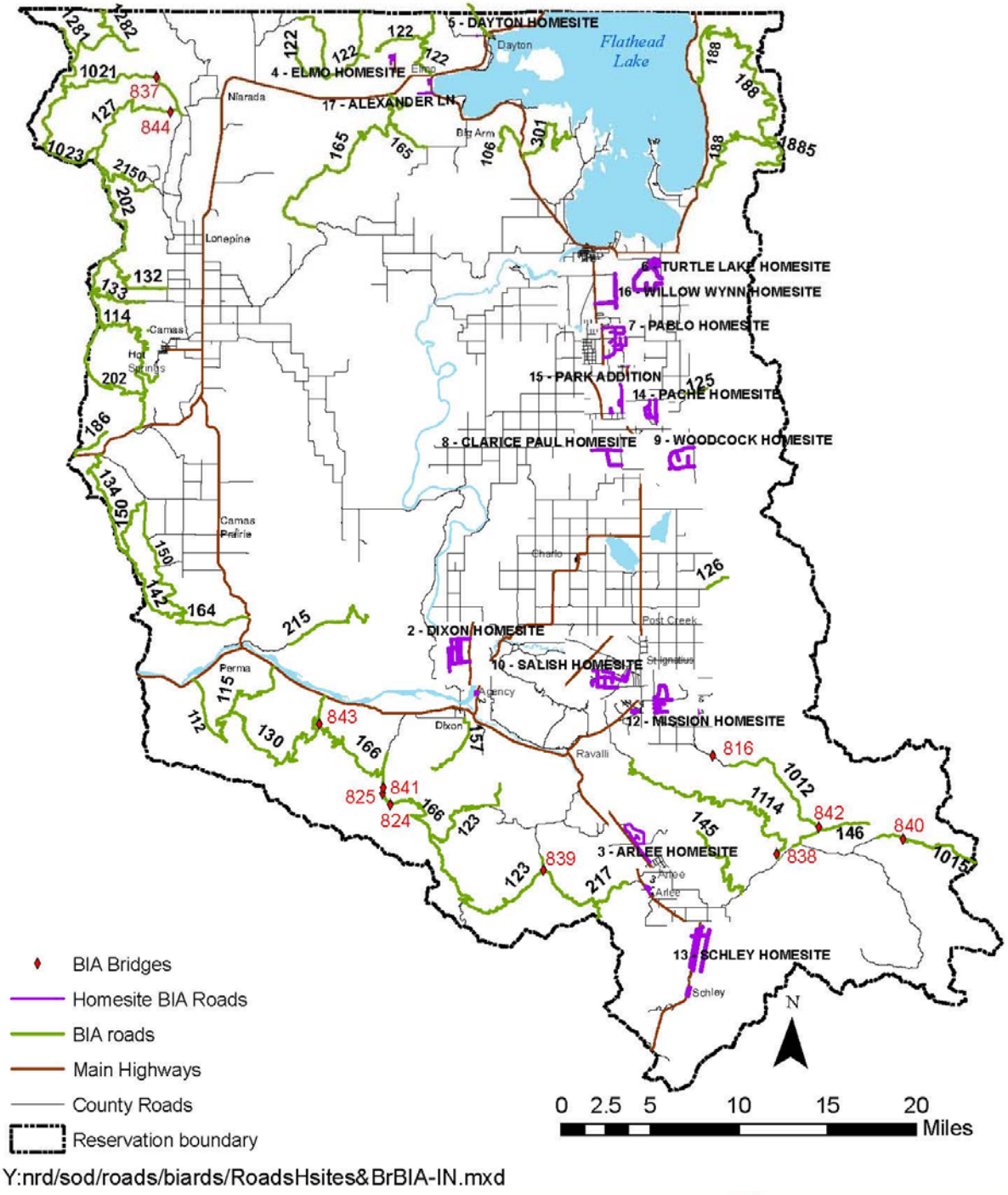

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Figure 8: BIA Road System from the Flathead Reservation Transportation Plan 2007-2017

1.1.4 Cultural Considerations Regarding Natural Resources

Cultural traditions rely on abundant populations of native fish and wildlife, healthy plant communities, clean air and water. Undisturbed spiritual sites, prehistoric and historical campsites, dwellings, burial grounds and other cultural sites are important, too, because they, in the words of the Flathead Culture Committee, "reaffirm the presence of our ancestors, how we are alive today only because of them. These places are part of the basis of our spiritual life." They provide young people with a connection to ancestors and native traditions.

Many food and medicinal plants grow on Reservation and aboriginal lands. Some grow in mountain areas, others along river and stream corridors, still others in arid places. Many have multiple uses. The Tribes have used most of them for thousands of years. Tribal elders report that some human activities, such as logging and grazing, have damaged some of the areas where these plants grow. Work is ongoing to protect these sites.

Figure 9: Chauncey Means at River Honoring, photo by Conrad Durglo

Figure 10: River Honoring, photo by Conrad Durglo

There are other cultural resources on the Reservation and aboriginal lands that must be protected. These include hunting and fishing grounds, spiritual sites, dancing grounds, trails, and occupational sites. Salish and Kootenai cultural resource specialists use the term "site" for areas of historical, cultural or spiritual importance. These areas sometimes, but not always contain artifacts. They may be the site of past or present-day Tribal activities.

> Many cultural resources are non-renewable resources. They can be one day or thousands of years old. Their destruction is a gross violation of everything we value.
>
> — Flathead Culture Committee

Tribal, federal, and state laws prohibit the destruction of land-based cultural resources. The cultural committees provide training to natural resource managers about the importance of cultural resources. To protect sites, the committees have developed cultural awareness programs for people interested in Tribal cultures and resources. They also work with federal, state, and local agencies, as well as Tribal departments for cultural resource protection.

Importance of traditional knowledge

Cultural resources are precious Tribal resources. They encompass the Tribes' elders, languages, cultural traditions, and cultural sites. They include the fish, wildlife and plants native to the region and land forms and landmarks. Tribal elders and the languages are perhaps the most vital of these resources because they teach and communicate the histories and traditional lifestyles of the Tribes. The traditions depend on land based cultural resources. These land-based resources include native fish and wildlife and their habitats, food and medicinal plants and the areas where they grow, prehistoric and historical use sites, and other land areas where Tribal members currently practice cultural traditions.

Figure 11: Clark's Nutcracker, photo by Eugene Beckes

> The Earth is our historian; it is made of our ancestors' bones. It provides us with nourishment, medicine and comfort. It is the source of our independence; it is our Mother. We do not dominate Her, but harmonize with Her.
>
> —Flathead Culture Committee

The Tribes believe everything in nature is embodied with a spirit. The spirits are woven tightly together to form a sacred whole (the Earth). Changes, even subtle changes that affect one part of this web affect other parts. Protecting land-based cultural resources is essential if the Tribes are to sustain Tribal cultures. This is one of the most important goals of Tribal natural resource management on the Reservation. It is also a goal that the Tribes have for Tribal aboriginal territories managed by other entities.[vi]

1.2 Why the Tribes are Planning for Climate Change

Climate change is expected to impact the Flathead Reservation. These impacts may substantially affect ways of life that have been at the core of Tribal culture for generations. As such, the significance of these impacts merits special focus, especially related to the connection between traditions and issues of community resilience and sovereignty.

Tribes' Commitment to Planning

The Confederated Salish and Kootenai Tribes recognizes and acknowledges the potential impacts of climate change and declare their commitment to addressing the effects of the climate change. This commitment includes determining the potential effects of climate change; developing appropriate strategies; establishing programmatic and regulatory actions to address these effects; and communicating relevant entities to coordinate efforts and identify funding sources. These efforts support the Tribes' mission to provide sound environmental stewardship that preserves, perpetuates, protects, and enhances natural resources and ecosystems.

Figure 12: Flathead Reservation, photo by Roian Matt

Reason for Planning

This planning effort is intended to improve the Tribal community and its lands' resiliency to climate change by effectively informing planning decisions made by the Tribes. Addressing these impacts is important to the long term health of the community. The impacts of climate change can directly and indirectly affect a broad range of resources. Taking practical steps now enables the Tribes' to reduce future risk and realize possible near term benefits.

1.3 Planning in a Regional Context

Climate change adaption planning has been recognized as a priority by other organizations and governments. The Western Climate Initiative is a collaboration launched in February 2007 between the Governors of several western states to meet regional challenges raised by climate change. This organization is identifying, evaluating and implementing collective and cooperative ways to reduce greenhouse gas emissions in the region. (Western Climate Change Initiative, 2013) Beyond this initiative, two regional plans have been developed in response to the impacts of climate change. They include the Montana Climate Change Action Plan and the Missoula County Climate Action: Creating a Resilient and Sustainable Community report.

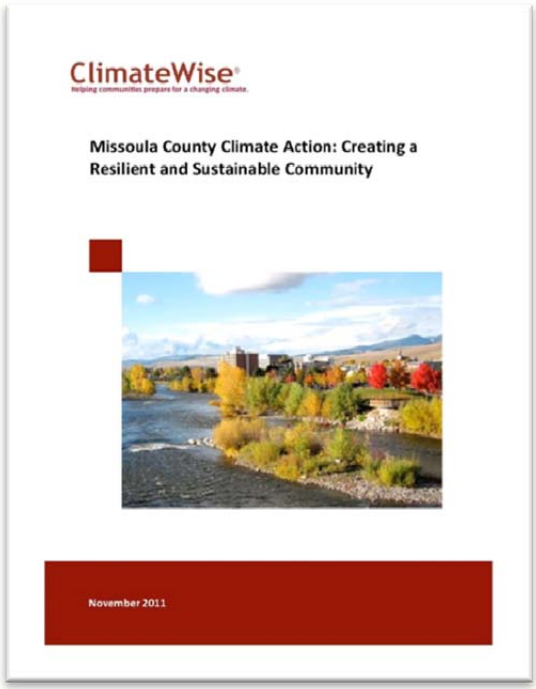

Figure 13: Missoula County Climate Actions: Creating Resilient and Sustainable Community report cover

The Montana Climate Change Action Plan, released November 2007, was developed based on the recognition of the profound consequences that global warming could have on the economy, environment, and quality of life in Montana. (Committee, 2009) The Missoula County Climate Action: Creating a Resilient and Sustainable Community, a report released November 2011, assesses how a changing climate might affect Missoula County, a neighboring city, using climate change modeling. This information was used to develop adaption strategies across different societal and environmental sectors to protect people and the natural resources. (Marni E. Koopman, 2011) These efforts align with the Tribes efforts to mitigate and adapt to the impacts of climate change.

2. Climate Impacts

Climate conditions vary naturally. However, overwhelming scientific evidence demonstrates that human inputs of greenhouse gases are almost certain to cause continued warming of the planet. In 2000, the U.S. Global Change Research Program released the first national assessment of climate change impacts on the United States. The report examined how 21st century climate may change in the U.S. and provided an initial assessment of major national and regional vulnerabilities to climate. (Center for Science in the Earth System, University of Washington, & King County, Washington, 2007)

The U.S. National Assessment found many common national concerns, including the following:

- average annual air temperature is projected to increase in all regions of the country, with the average national increase projected at the time of the assessment to be 5-9°F by the end of the 21st century;
- warmer temperatures, and in some regions lower snowpack, are expected to increase the risk of drought across the country;
- sea level rise and increased storm surges are expected to pose greater threats to coastal ecosystems and human communities;
- shifts in the types and distribution of forest species are likely;
- a near-term increase in forest growth is expected in most regions, because moderate increases in temperature and atmospheric concentrations of CO2 have a temporary "fertilizing effect" (a phenomenon referred to as the "CO2 fertilization effect"). On the other hand, overall forest growth could decrease over the long term, due to increased forest fires, insect outbreaks, and disease;
- natural ecosystems are particularly vulnerable to projected warming given that many natural ecosystems are not able to prepare for or adjust quickly to climate change impacts, and also given that non-native species may benefit from climate change more than native species;
- in all regions, the results of non-climate stresses (e.g., habitat fragmentation and patterns of human development) will be exacerbated by climate change impacts.[vii]

The U.S. National Assessment also found important differences in how climate change could affect different regions of the country. For example, decreases in snowpack will have greater impacts on water supplies in the western U.S. where snowmelt runoff is the primary source of water supply. Changes in agricultural production vary depending on the region and crop. Agriculture in northern regions (the Midwest, West, and Pacific Northwest) generally fared better under climate change scenarios than southern regions. (Center for Science in the Earth System, University of Washington, & King County, Washington, 2007) Human health impacts, changes in extreme events, and impacts on coastal ecosystems vary from region to region.

2.1 Climate Impacts Regionally

The northwestern region of the continental United States consists of the Pacific states of Washington and Oregon and also includes Idaho and a portion of Montana. This area is home to roughly 45 Native American Tribes (Bureau of Indian Affairs, January). This region of the country is an ecologically diverse area that contains ecosystems from old-growth rainforests in the Cascade mountain range to the arid shrub-steppe habitat of southern Idaho (U.S. Fish and Wildlife Service, January).Climate change caused from greenhouse gas emissions is having an impact on a global to local scale. The growing population of the Northwest is beginning to witness profound changes that are impacting forest, mountain, river and coastline environments and consequently all living organisms (Karl, Melillo, & Peterson, 2009).

Figure 14: Northwest Region Map

The Northwest has already observed climate-related changes including an average increase in temperature of 1.5°F over the past century (Karl, Melillo, & Peterson, 2009). However, some areas have witnessed as much as a 4°F temperature increase. Warmer temperatures experienced during

the winter months have been contributing to earlier snowmelt. In turn, this is affecting the region's water supply during the summer season. Earlier snowmelt has been impacting stream-flow, increasing runoff in the winter and early spring and decreasing it in the late spring, summer and fall. Over the past 50 years, runoff has begun to shift between one and two days earlier in some places to as much as 25 to 30 days earlier in other places.

Stream flow timing is extremely important for the already declining populations of salmon in the Northwest. Earlier runoff from a warming climate can contribute to the devastation of incubating eggs and the premature migration of young salmon to estuaries. Furthermore, warming water temperatures are known to stress salmon who favor colder temperatures while also creating a more hospitable habitat for disease and parasites. The warming temperatures are affecting not only water resources, but also northwestern forests, which are beginning to have an increased risk of wildfire (Karl, Melillo, & Peterson, 2009)

Continued future warming in this region is inevitable, even if all greenhouse gas emissions were halted today. According to the 2009 Global Climate Change Impacts in the United States report by Karl et al., temperatures are projected to increase anywhere between 3°F to 10°F during this century (depending on different emission scenarios). It is expected that snowpack in the Cascades might decline by as much as 40 percent by the 2040s, further impacting stream discharge that could potentially shift runoff between 20 and 40 days earlier by the end of this century. Water storage for the Columbia Basin is highly dependent on current winter snowpack in addition to stream flow. The decrease in snowpack would affect not only water available for human use, but also the region's hydropower operations.

Models suggest winter precipitation will increase and summer precipitation will decrease in the future. Heavier winter rainfall could increase the number of landslides in the Northwest and also cause more winter flooding. Furthermore, it is projected that the wildfire risk in this area will increase due to warmer temperatures that contribute to lower humidity levels as well as more favorable conditions for the mountain pine beetle and other insect infestations. Other climate change impacts on forests include the migration of species to new environments. It is speculated that this may ultimately cause a loss of biodiversity as a result of species extinction.

The changes that are already occurring in the Northwest, and that will continue to occur, have the potential to alter the region's water supply considerably and may have immeasurable implications not only for municipalities and industries, agricultural irrigation, hydropower production, navigation, and recreation, but also for many plants, animals and people in the Northwest (Karl, Melillo, & Peterson, 2009). Modeling has indicated that these regional changes are expected to have local impacts.[viii] [ix]

2.2 Climate Impacts Locally

All models predict warmer temperatures, lower snowpack, more frequent and severe droughts and floods. (Marni E. Koopman, 2011) Scientific climate change modeling, conducted by Geos Institute using *ClimateWise* concludes the expected climate trends.

Table 2: Expected Climate Trends	
Certainty	**Trends**
High	• Up to 5° F warmer by 2035-45 • Lower and extended low stream flow in late summer • Earlier and greater spring runoff • Shifts in species ranges for wildlife and plants • Greater likelihood of severe wildfire, especially during warm phase Pacific Decadal Oscillation (PDO) • Increased spread of invasive plants and animals
Medium	• Up to 10° F warmer by 2075-85 • Continued declines in snowpack at lower elevations • Declines in aquatic species such as bull trout and cutthroat trout • Declines in alpine and subalpine species, including subalpine fir, Engelmann spruce, big horn sheep, pika, and mountain goat • More pest and disease outbreaks such as mountain pine beetle
Low	• Decline in summer precipitation • Increase in winter precipitation • Greater precipitation change at higher elevations • High tree species turnover, but continued forest cover in many areas • Declines in Douglas fir and lodgepole pine • Potential increase in oaks or other broadleaf tree species

Table 2: Missoula County Climate Action: Creating a Resilient and Sustainable Community, Expected Climate Change Trends for Missoula County

The Flathead Reservation and Missoula County share geographic, topographic, and climatic characteristics. As such, climate change trends and scenarios have been adapted from the Missoula County Climate Action: Creating a Resilient and Sustainable Community report, Section I. Considerations for temperature and precipitation, storm events, snowpack, hydrology, forest and vegetation, wildfire, snow events, air quality, and fish and wildlife are provided.

Temperature and precipitation – Average temperature is projected to increase regardless of which model is used, with accelerated increase toward the end of the century. In contrast, model projections for precipitation in the area vary substantially. By mid-century average precipitation could decline by 29 percent or increase by 10 percent depending on which model is consulted. By late century (2075-85), all three models agree on slightly wetter conditions in winter. Higher temperatures leading to greater evaporation are likely to offset any positive change in precipitation.

Storm events - Climate change could increase the severity of individual storm events, even if average precipitation levels do not increase. As temperatures warm, more precipitation will fall as rain instead of snow, and more rain-on-snow events could occur. Heavy rainfall and rain-on-snow both increase the risk of flooding. Such storm events can be exacerbated by land use practices and infrastructure failures, making the impacts of flooding more severe. When rainfall occurs in a short period of time, most water runs off quickly without infiltrating soils or recharging groundwater aquifers.

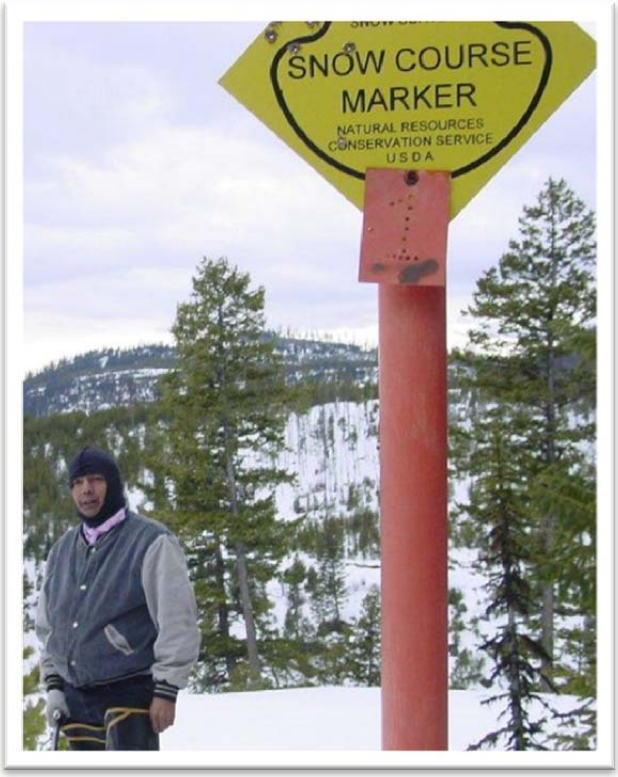

Figure 15: Martin Barnaby at Bassoo snow measurement site, photo by George McLeod

Snowpack – A recent study demonstrated synchronous declines in snowpack across the Rocky Mountains since the 1980s. Continued declines are expected as temperatures increase. Because many current water storage strategies rely heavily on snowpack, a substantial strain on supplies and infrastructure could result.

Hydrology – This area has already experienced many changes in hydrology patterns. The snow water equivalent (SWE) of winter snowpack has declined, stream flow has declined (especially late summer flow), and water temperatures have increased. The time of many events, such as average freeze and thaw dates, has also changed substantially over the last 50-100 years. Future expected trends include longer and lower summer stream flows, increasing flood risks and more precipitation falls as rain instead of snow, increasing summer stream temperatures, and declining groundwater recharge.

Forest and vegetation change – 76 percent of Missoula County is forested. Overall, U.S. forests have become more productive in the last 55 years, likely due to a longer growing season and higher CO_2 levels. As conditions become warmer and drier in the summer, many forests are expected to become less productive due to lower soil moisture during the growing season, temperature stress, insect and disease outbreaks, invasive species prevalence, and wildfire.

Two different vegetation models to assess future vegetation patterns in this local area were consulted. The function model (MC1) projected a steep contraction of subalpine vegetation at higher elevations, in the northeastern and southwestern portions of the area, but continued coniferous forest cover in most other areas. In contrast, the climate envelope model indicated a decline in favorable conditions for many of the county's common tree species, including Ponderosa pine, lodgepole pine, Douglas-fir, and subalpine fir. Deciduous trees, such as oaks, may find more favorable conditions.

Wildfire - Fire severity can be expected to increase given warmer and drier conditions. An assessment of climate change and forest fires over North America Projected 10-50 percent increases in seasonal severity rating (SSR) over most of the U.S., implying increases in area burned and fire severity. Similarly, a recent study predicts substantial increase in fire frequency in the Greater Yellowstone Ecoregion (GYE). The MC1 vegetation model that was consulted showed a 26-30 percent increase in wildfire in the area. Increases in wildfire are primarily expected in the higher elevations.

Figure 16: Chippy Creek fire, photo by Ron Swaney

Air quality - Climate and air quality are closely related. Conventional pollutants such as ozone and particle pollution affect public health and also exacerbate climate change. Higher temperatures can cause increased ozone formation, even without additional pollutants. Increased forest fires may also affect air quality.

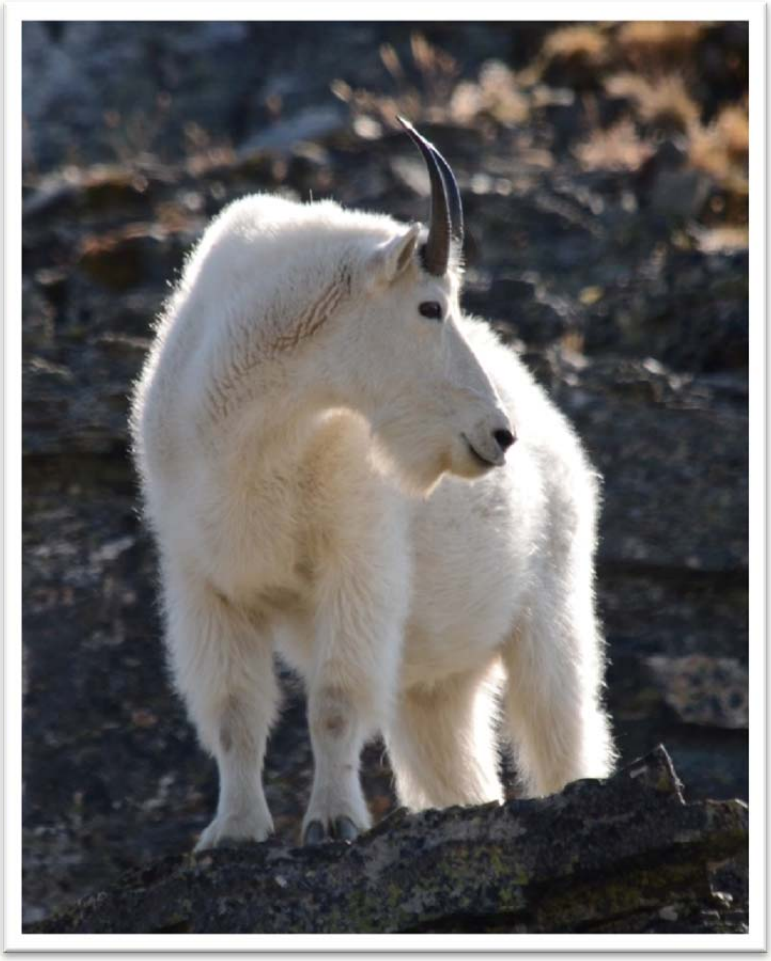

Figure 17: Mountain goat, photo by Eugene Beckes

Fish and wildlife changes - Wildlife will respond in many ways to a changing climate, including range shifts, changes in migration and breeding seasons, changes in population size, increases in disease, population declines, and extinction. As climate change accelerates, it is increasingly expected to outpace the ability of wildlife to respond and adapt. Approximately 30% of all species could be lost by 2100.

Wildlife in the area expected to be the most vulnerable to climate change includes species dependent on snow, such as wolverine, lynx, and snowshoe hare. Also vulnerable are high-elevation species such as big horn sheep, pika, mountain goat, and wolverine, as well as rosy finch and ptarmigan. Other species, such as elk, may respond favorably to warmer winter conditions and lower snowpack.

More frequent wildfires can remove the vegetation that stabilizes steep slopes, resulting in increased frequency and magnitude of landslides and debris flows, which can degrade fish habitat. Many aquatic species are especially sensitive due to their dependence on clear, cold water streams and their inability to move to new areas. These include bull trout and westslope cutthroat trout. In the Rocky Mountains, warming is projected to cause a loss of up to 42% of current trout habitat by the end of the century. Invasive species, including noxious weeds, pine and spruce beetles, and others, are expected to continue to spread, partly due to declining or weakened native species and warmer temperatures. Warmer waters are also expected to benefit invasive aquatic species and aquatic pathogens. [x]

2.3 Climate Impacts on the Tribes

The spirit and direction of the Salish, Pend d'Oreille and Kootenai people is founded upon and reflective in its cultural heritage. The cultural foundation of the Tribes is to be preserved as a living part of our community life and development in order to give a sense of orientation to the Salish, Pend d'Oreille and Kootenai people. However, cultural resources of the Tribes are being lost, substantially altered, or destroyed with increasing frequency in the face of ever increasing energy, economic, residential, highway, sanitation and public health developments. The present programs that work to preserve the Tribes cultural resources must be strengthened to ensure future generations a genuine opportunity to appreciate it and enjoy the rich heritage of the Tribes.

Figure 18: Flathead Lake, photo by David Nall

As such, measures are necessary to foster conditions under which modern society and the prehistoric, historic and cultural resources can exist in productive harmony to fulfill the social economic and other requirements of present and future generations. The Historic Preservation/Cultural Preservation Department recognizes that it is unknown if it is possible to reverse climate change, but that the Tribes need to protect cultural resources as much as possible while looking for solutions - that this work must be done now. [xi]

2.3.1 Traditional Ecological Knowledge

The Tribes aboriginal land is what has and continues to shape people. Western science has allowed societies to segregate the roles and different functions of each part of nature. Native people to this land understand that these functions cannot be separated from each other. They understand that there is a direct relationship among everything in the natural environment. As such, Traditional Ecological Knowledge is not only incorporating Tribal traditions and culture, but it is applying Salish, Pend d'Oreille, and Kootenai world views into decision-making.

Tribal people have a special relationship with the natural environment. They have used the plants for food and medicinal purposes, and to provide forage for grazing livestock, buffalo, and horses. They have used fire to help maintain the health and productivity of ecosystems. They have harvested traditional foods, such roses for the rose hips, in this area for generations.

Figure 19: Coyote, photo is public domain

When compared to traditional living over the last hundreds or thousands of years practices have significantly changed. Maintaining ceremonies, traditions, languages, and spiritual ways of life is a choice. Climate change is happening within our lifetime. The impacts from this change can be positive and negative for the Tribes.

Traditional Ecological Knowledge has been passed down from generation to generation through stories and life experiences. This was and is a way of life. It will continue for generations to come. – Kootenai Culture Committee

Although the Tribes are responsible for natural resource management to meet multiple objectives, including the lands health, structural and functional goals and to meet economic viability for the Tribes, they recognize the importance of cultural resources. They recognize Tribal people have been an active participant in shaping the landscape.

The Tribes understand that ancestors have a unique perspective in regards to a changing environment. Restoration of historic structures and functions of cultural-use plants, foods, habitat, and animals will remain a priority. Additionally, a continued understanding of cultural place names will continue to be significant. Therefore, the Tribes will have continued Tribal Elder involvement in resource planning, because the importance of oral histories that convey the voice of ancestors is valued.[xii]

2.3.2 Tribal Elder Observations

Climate change observations have been made by Tribal elders whose ages are between 70 – 80 or more years old. However, the knowledge they gained from parents, grandparents and great grandparents dates back some 150 to 250 years. As such, these Tribal elders have made important climate change observations. To gather this knowledge, the Climate Change Planning Coordinator collaborated with the Salish Pend d'Oreille Culture Committee, Kootenai Culture Committee, and Historic Preservation/Cultural Preservation Department to conduct elder interviews. Excerpts about personal experiences of climate change from interviews with Ignace Couture, Mike Durglo. Sr., Sadie Saloway, Stephen SmallSalmon, Patrick Pierre, and Louie Adams's are included in this section.[xiii]

Ignace "Ig" Couture (Elmo, MT)

Figure 20: Ignace Couture, photo by Frank Tyro

Weather changes are coming and it is going to get hotter. What do we do about it and how does this affect the animals, like the deer and elk that live around this area? I think the deer like it [the warmer weather] because they feed all year round now. Usually, there is a lot of snow so they have to eat the moss off the trees. They don't have to do that anymore. But then, the moss is probably going to be gone now too. You have got to do something.

Always the weather – everything has got to do with the weather. With the weather changes, there is not going to be that much water in the hills. The animals use that water year round. The springs are probably going to dry up.

When I was young, I went to grade school in the Elmo [Montana] here. In the winter we use to ice skate from November to at least February every year. [There was a] lot of ice out there. Now a-days you do not have it.

I do not know when the last time the lake completely froze. It has been awhile since it did that. I do not know if we will ever see that again.

In November, they would build fires along the lake to draw them [the fish] in. They'd catch them with a hook. In November, you'd see a couple of fires in the evening. Then you would know they were fishing for salmon. In Dayton Creek you use to be able to snag them [the salmon] out of there. Now, all of a sudden, they are gone.

I think the bitterroots are in trouble. They only pick them about one or two weeks out of the year. You lose one dry season and I do not know if you will have any up there.

Animals that live up there [in the mountains] will adapt - whatever we are going to have left. But, I always try to think of the future and how it is going to be because of the drastic changes. In the last 100 years, we have had the wagon buggy days of my mother and my dad to driving cars. Some of them have seen guys going to the moon. So, that is the drastic change.

Mike Durglo Sr. (St. Ignatius, MT)

Figure 21: Mike Durglo Sr, photo by Frank Tyro

At the time, you could tell it was winter because it was cold and the snow was deep. Sometimes, when you would go down the county road you only can see an inch of the fence post sticking out.

There was something wrong with it [our pine]. They were dying. But, I guess that was the pollution at that time. So, they [leadership] blamed it on the pollution. Which now I guess was global warming. Even today you can tell the difference. The seasons are not like they use to be. Even the birds started noticing that new kinds of different birds were coming into this area.

As an Indian people we get concerned especially for the higher elevation plants that we use for medicine - not only for medicine but some of the plants that we use for a mountain tea. Those look like those little huckleberries. I call them miniature huckleberries. We are concerned for those things. Not only the plants but for the animals.

Our [Historic Preservation/ Cultural Preservation] Department has the task for protecting our culture sites. The pine beetles started to infect brook pine or yellow pine. Some of the pine trees they are getting infected. Once they get infected [with pine beetles] they'll kill it.

But you still talk about it [the history]. You pass it on to the grand kids or to the young children that are there. You keep the history going. That is how we Indian people hand it down - through oral history. So that is what is going to happen with our plants today. Someday, we are going to talk about [the plants] that we do not see. They [the children] probably will not see it but they will remember. "Oh, so-and-so told me about it." Then they will pass it on to their children and grandchildren. It will not be there, but it will still be part of our history. That is how we kept [the history] going because we did not have books or anything to write it down.

They said towards the end that coyote was going to come back. I don't know what they mean by that. Today, when we tell coyote stories, we depend on the weather too. When it gets cold, snow up there on the mountains - that is when we start telling our coyote's creator story. But what is going to happen when we don't have that cold and snow up in the mountains. So, our story will be kind of confusing.

Sadie Saloway (Elmo, MT)

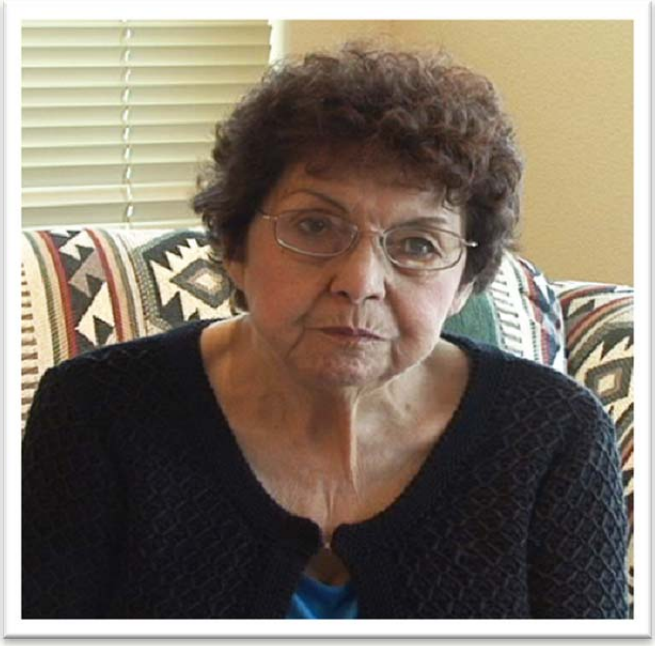

Figure 22: Sadie Saloway, photo by Frank Tyro

The huckleberries are just disappearing so fast. I have been away from there for 53 years, but the area's we use to go to, like Sand Creek (BC)., Jaffray (BC) area, and in Elko (BC) …were good places. They are all gone. I don't know if we need a good fire? I think that is part of it on the berries and the plants. I do not know why the climate changes. Probably contributes to the demise of a lot of the plants that we use to have.

Dad would mention the different things. One of the things he always did was we took a drink out of the creek we always put some back. So, you took a drink then you threw some [water] on the plants or somewhere.

Stephen SmallSalmon (Post Creek, MT)

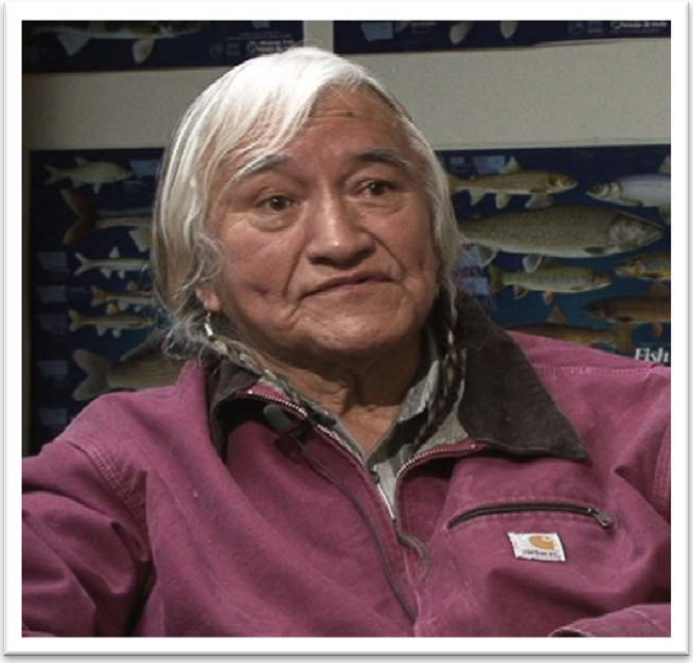

Figure 23: Stephen Smallsalmon, photo by Frank Tyro

I remember Uncle Pete Beaverhead and I used to hear him talking. They say it's going to be changing - just like our language, our life, the snow pack. It seemed like they knew. I don't know how they knew. I guess they were wise. Maybe, they learned it from their folks. Handed it down generation-to-generation, then to me. I started to realize it [the weather] is changing. The life is changing. The world is changing. Everything is changing.

Just like you are talking about fish and animals. I remember years ago, the snow was deep. It was cold.

That scary part is still not here, but it seems like we do not do [prepare] until it is here. Then we start getting all shook up.

My elders use to say "that's what we're supposed to do." Hand it down, hand it down, hand it down. We forget about those things. Hand it down - it's me, it's always me. I got to make the buck, you know, I have to pay my bills, I have to pay. And I watched that, you know.

Today we do not have more snow. Do you know why? Why is it? You know, how come we got so many fires? Is it too dry? What is it? There is not enough rain. Why is there bugs around, like those beetles? It's too dry. It's not cold enough to kill them all and there is that question.

When I was young… my dogs find quills. You do not see that anymore. You do not hear frogs. I remember hearing them in the nights. Just sit there and listen to the frog.

"How come that muskrat is way over there?" "Oh, it's going to be a cold winter you know." Or, "how come the squirrel or chipmunk is getting everything ready right away?" Oh, the old people use to say, "it's going to be cold." Yeah sure, enough it was. We went by that - you know.

There. (lighting sound) Things like that are scary. How could we prevent that? How could we clean up this world? How could we tell people?

We changed that….about the weather. You could tell by the choke cherries getting smaller and the huckleberries getting smaller. I saw that happen. Sometimes you could get in a really good batch. Why is that? Why- why- what- could we change. Now, it's getting mad. Somebody cutting choke cherries or taking the huckleberries…that is ours….even the stuff that we medicine ourselves in the mountains. We have got to protect ours. We have got to educate the people first. Say, let us take a bunch like Nkusum [students] to go out there. Some other people do go out there and study those medicine ways.

I believe in that myself. It is our medicines. I am talking about the ones in the mountains. I am talking about the ones that seem like the young people do not use. Like using stuff for your hair to make you hair grow. And things like that.

It's the rain - the rain. The weather pattern is different. I've noticed that. It could be snowing here [in Polson] and it will not be snowing up in Ronan.

Long time ago Indians, old Indian people like I say, went with the animals. …. The bears slept all winter. Today, they do not come out sometimes when it gets warm, because they have become mixed up too. You know, "oh, it's still winter time."

There are so many questions here about what is what. How could we prevent that? Do we do this or do we do that? So many questions out there we have to study. Last night, I went in a sweat and I prayed for the world. To me, I say it is the people, you know. It is the people, you know. We have got to do it. It is not you and you. It is I got - we have got to do it.

I always believe in the Creator. I pray. I go in a sweat. I pray a lot, when I got older. I have seen a lot of things in my times. A lot of things that my uncles, my grandfathers, they told me in those times. I saw that they always say I went down this trail. But young guys will come up and argue with you. They think they know you know.

The weather [may bring a] big change and then maybe the world will go back the other way. Can never tell you know. Like going up to the moon and stuff like that.

Patrick Pierre (Camas Prairie)

Figure 24: Patrick Pierre, photo by Frank Tyro

We are the original people here in this country.

The elders would sit down and they would tell stories, this was especially up in the Little Thompson during the hunting. They would have a big camp up there and all the people that gathered at our place, maybe six, seven families, everybody had wagons or buggies go up there and we would camp for a couple of weeks, hunt. They would tell stories around this big fire and I would always listen. They would talk about a certain thing that was coming and you will see it in your time.

I have seen a lot of these things that they talked about back then, and I witnessed it, and one of the things that I want to bring out today, is happening now, is one day this earth is going to become warm. They said the snow and ice is going to melt in the north and the oceans are going to fill up, islands are going to flood and the earth here is going to be warm, summer time will be extremely hot, winter time you aren't going to get cold weather, maybe short cold weather, but most of the time it will be warm, I am witnessing that today and I am glad I can talk about. I never believed it back in those days but I have actually seen the change.

The other thing they talked about was the face of this earth may burn up, but it's not going to destroy you, the timber will be gone, there will be no more timber but you're going to survive because you are who you are you are Indian you understand the earth, you're one with the earth, you understand that and you're going to survive and today I am witnessing forest fires burning thousands of acres right here on our Reservation. So these are the things that I have witnessed in my lifetime and those are very important for now. We can pass these things on to the next generation that they will listen and they will learn to observant all the time.

Louie Adams (Valley Creek)

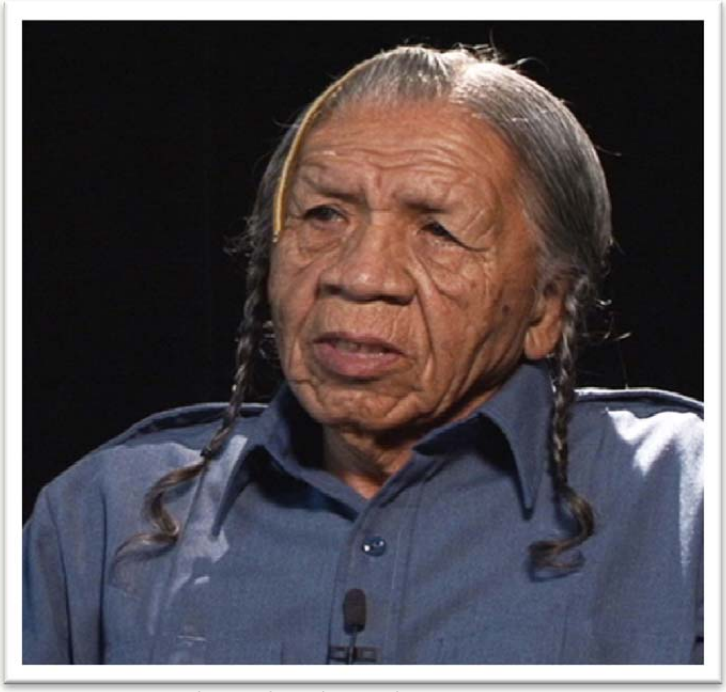

Figure 25: Louie Adams, photo by Frank Tyro

In the past I used to see the old people go away and any time they went away they took a ton of knowledge with them, our tradition and or ways with them. When I was growing up the people always said the four main things, the Bitterroot people, number one was of course Creator (kwlncutn) and number two was earth (stulixw). See our people didn't have mother earth and father sun and all that stuff as other tribes did, which was okay, it is for the Bitterroot Salish that I speak. Sweat (snlaqi) is number three and number four was lightning (suwecm), because they always said that when he (kwlncutn) cleans house he uses fire. That's been going on for thousands of years, since the earth was made. My grandmother used to say that sometimes when they stayed in the Bob Marshall it would be smoky all summer long from fires but still everything was still good, good fishing, good hunting.

When I was little it seemed like there was always a lot of snow in the winter time. But any more it's not like that. The old people used to say that in the winter when it got cold you could hear the trees pop, it sounded like a rifle shot, then the coyote stories could come out, then in the spring when you hear the first thunder then that when you put them away.

Up valley creek when I was young, we moved up there when I was 9 years old, when the spring would break and the snow start melting, valley creek would be just roaring, there would be brush going down the creek and stumps, now it's not like that, yah you get runoff and high water but nothing like I remember.

This is something that the old people used to say about cold weather, maybe they didn't know what germs were but they knew that we had to have some really cold weather during the winter in order to get rid of sickness (scaal).

That's what the old people said, if you see an eagle flying around, a hawk sitting on a tree or a meadowlark sitting on a post, rabbits coming around close to you or any of these little creatures that come fairly close, they are telling you in their own silent way "hey", we are still here, we were here when you got here and we will be here with you till the end and that's why you are supposed to take care of them and that's why they check on you once in a while, because they have no voice and that's what I have in my heart.

3. Planning Focus

Elder observations indicate that the climate has noticeably changed within their lifetime and as stated prior, the knowledge they gained from parents, grandparents, and great grandparents goes back at least three generations. These first-hand accounts of the impacts of climate change further demonstrate its effect on the Tribes. As such, it emphasizes the value and importance of this adaption and mitigation planning effort. It also establishes the need to engage regional, national, and global planning efforts to develop comprehensive strategies. As such, the Confederated Salish and Kootenai Tribes Climate Change Strategic Plan is dedicated to assessing the impacts of climate change on the Flathead Reservation. Considerations are provided for the built, natural, and social environments, with specific focusses on nine sectors, which include forestry, land, fish, wildlife, water, air, infrastructure, people, and culture.

Planning process, methodology

The climate change strategic planning process included a series of meetings, trainings, and collaborative planning sessions.[xiv] The planning committee was responsible for providing oversight and/or ongoing project collaboration, including direct communication between the Office of Environmental Protection and their respective entities. They were also responsible for assisting, where needed, in data collection and providing feedback on the plan's development.

Local impact assessments were completed by Tribal departments and local organizations using a survey based on the Adaptation Planning Spreadsheet and Matrix. Surveys were developed using Microsoft Word, SurveyMonkey, and Portable Document Format. They were administered online, via email, and in-person, upon request. Inter- and intra-departmental collaboration and consideration of Traditional Ecological Knowledge was highly encouraged during the research process. This information establishes the preliminary foundation of the plan – guiding the direction and scope of its mitigation and adaptation strategies.[xv]

3.1 Forestry Focus

The focus of the Forestry Sector is CSKT forestland timber, rangeland (fire), interior grass, shrub, and forb (phorb)[1] vegetation in four fire regimes types.[2] The sector includes the Non-Lethal, Mixed, Lethal, and Timberline Fire Regimes and associated wildland fire behavior. The Forestry Sector planning area is Tribal/Individual Trust and Tribal Fee forested lands within the exterior boundary of the Flathead Reservation.

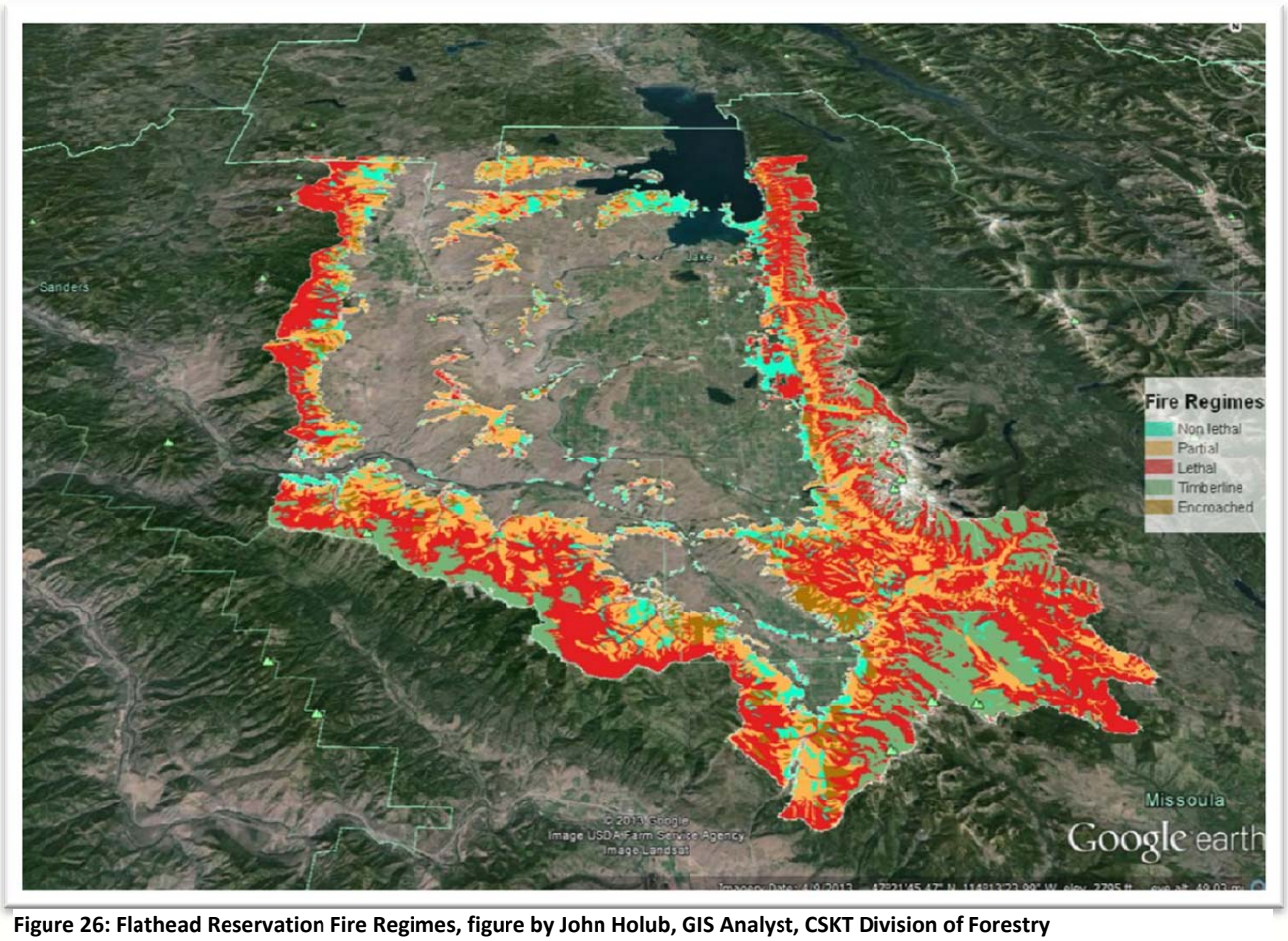

Figure 26: Flathead Reservation Fire Regimes, figure by John Holub, GIS Analyst, CSKT Division of Forestry

[1] A forb (sometimes spelled phorb) is a herbaceous flowering plant that is not a graminoid (grasses, sedges and rushes). The term is used in biology and in vegetation ecology, especially in relation to grasslands and understory.
[2] A fire regime refers to the general pattern in which fires naturally occur in a particular ecosystem over time.

Widespread changes in Fire Regime vegetation compositions, structures, functions, and area extent, with increased wildland fire behavior impacts define the geographical impact of climate change on the Forestry Sector. All four fire regimes will experience increased forest disturbance regimes timber mortality from insect infestations and drought, increased site occupation by invasive species, and decreased water holding capacities.

Non-Lethal Fire Regime areas will shift upslope in elevation and will increase in area to replace most of the Mixed Fire Regime and the lower elevation portion of the Lethal Fire Regime areas. The Mixed Fire Regime will lose productivity and forest fuel diversity. Seral[3] species will be the pre-dominate vegetation type, in both fire regimes with an overall decrease in Douglas-fir and Grand Fir timber and forbs. Grass and shrub rangeland will replace both fire regimes at lower elevations.

Lethal Fire Regime areas will greatly shrink in area and will occupy only the highest elevation areas on the landscape, mostly on north aspects and high mountain basins and plateaus. At lower elevations, Lethal Fire Regime riparian[4] areas will be replaced by the Non-Lethal Regime with a loss of spruce and cedar timber species and a decrease of wetland forbs. The Timberline Fire Regime will not change in area, but will experience a loss of timber composition, structure and associated functions.

Figure 27: Flathead Reservation, photo by Roian Matt

Fire Regime changes will be slow, and environmental impacts will be minor over the near- and intermediate-term periods. The greatest impacts will be experienced in the long-term time period with the earliest and most rapid changes and impacts to the Lethal and Timberline Fire Regimes followed over a longer future time period by the Mixed and Non-Lethal Fire Regimes. These estimated impact and change timeframes are based on the medium and high certainty climate model predictions associated with *Section 2.2 Climate Impacts Locally*.

[3] A seral community (or sere) is an intermediate stage found in ecological succession in an ecosystem. An example of seral communities in secondary succession is a recently logged coniferous forest.

[4] A riparian area refers to zones relating to, or situated on the banks of rivers; riverine.

3.2 Land Focus

The focus of the Land Sector is native plant community trends and ecological sites, including the monitoring and managing of noxious weeds. This sector considers the impacts of climate change to long-term changes in plant communities and cropping patterns. The Land Sector planning area is Tribal/Individual Trust and Tribal Fee lands within the exterior boundary of the Flathead Reservation. The geographical impact/extent covers one hundred thousand acres of intermountain grasslands throughout the foothill, riverine, and prairie areas that will be impacted. Twenty thousand acres of irrigated and dryland cropland throughout the valley areas will be impacted by reduced water supply and shifting to alternatives to crops. The timeframe for these expected changes are estimated to be in the near-term (0-10 years) to long-term (26+ years).

3.3 Fish Focus

The focus of the Fish Sector is fish and fish habitat with the intent to assess the benefits of healthy functioning fish habitat versus degraded habits in the context of climate change. This planning area includes bodies of water and substrate required for fish spawning, breeding, feeding, and growth which are located on and near the Flathead Reservation. The geographical impact is expected to be throughout Western Montana. The timeframe for these expected changes are estimated to be in the near-term (0-10 years).

3.4 Wildlife Focus

Figure 28: Trumpeter Swan, photo by David Nall

The focus of the Wildlife Sector is terrestrial wildlife species (birds, mammals, amphibians and reptiles) and their habitats. Warmer temperatures and changes to precipitation will alter native wildlife habitat. Desiccation (state of extreme dryness) of wetland habitats will increase, with generally negative impacts upon wildlife and wetland habitats. Grassland habitats become drier, also resulting in negative species impacts. Alpine habitats will likely become drier. The species of plants and wildlife in these locations will change.

The geographical impact to wildlife includes all Reservation habitat types, such as grasslands, agricultural lands, rangelands, wetland riparian areas, mountain forests, alpine habitats, and the other biotic features entailed in those habitats. It is expected that nearly all activities in those habitats may potentially affect wildlife and their habitats. The timeframe of these impacts range from near-term (0-10 years) through the long-term (26+ years). Initial adverse changes upon habitats are likely occurring now and will continue to increase overtime.

3.5 Water Focus

Figure 29: Flathead Lake, photo by David Nall

The focus of the water sector is the quality and quantity of groundwater and surface water. This planning area includes most of Western Montana west of the continental divide, north to the Flathead River headwater streams up into Canada, and west to the Columbia River Basin. The Clark Fork River drainage encompasses the area from Butte, Montana to the Idaho boundary.

Observations over the last 30 years indicate that the accumulation of snow pack now begins later in the fall and spring melt is trending to occur approximately two weeks earlier in the spring. [5] This is due to warmer temperatures and warmer Pacific influence rains. This trend points to less storage for irrigation in the fall, warmer and less water for fisheries, changes in ground water recharge, and changes in management for hydroelectric management.

The geographical impact/extent of water resources that relate to the Tribes lands reaches beyond the boundaries of the Flathead Reservation. It encompasses the entire Flathead River drainage located above and adjacent to the Reservation which is most of Western Montana. The timeframe of some of these impacts are near-term (0-10 years). There is potential for certain areas to start losing water temperatures desirable for the existence for some species and irrigation water supply will certainly be affected.

[5] This trend can be documented by NRCS SNOTEL information as well as USGS Stream Flow information that are related to the Reservation's watersheds.

3.6 Air Quality Focus

The focus of the air quality sector is impacts to health caused by increases in criteria pollutants[6] from climate change within the exterior boundaries of the Reservation in the two non-attainment areas and outside those areas in the prevention of significant deterioration Class I area.[7] The planning area is Polson Non-attainment Particulate Matter, Ronan Non-attainment Particulate Matter, and the Prevention of Significant Deterioration (PSD)[8] of criteria pollutants within the exterior boundaries of the Reservation. Attainment area is an area considered to contain air quality as good as or better than the National Ambient Air Quality standards as defined in the Clean Air Act (CAA). An area may be an attainment area for one pollutant and a nonattainment area for others.

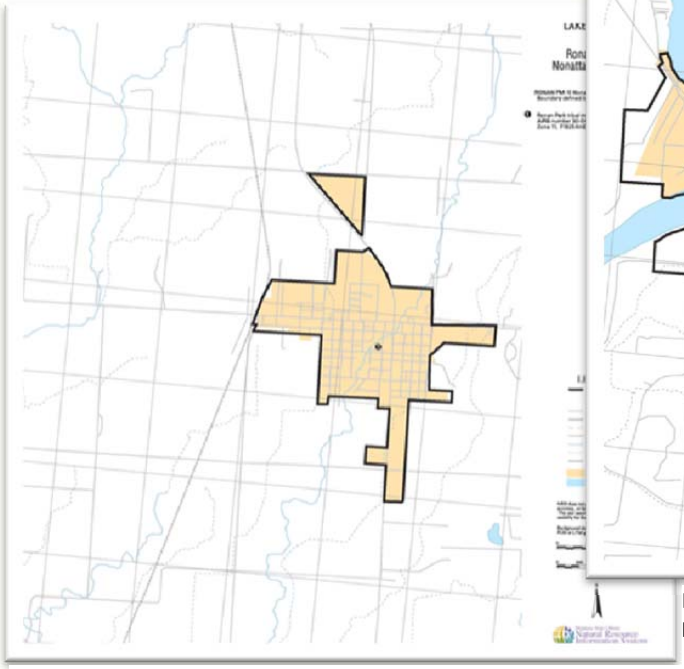

Figure 31: 1998 Ronan PM-10 Non-attainment Area, Montana State Library Natural Resource Information System

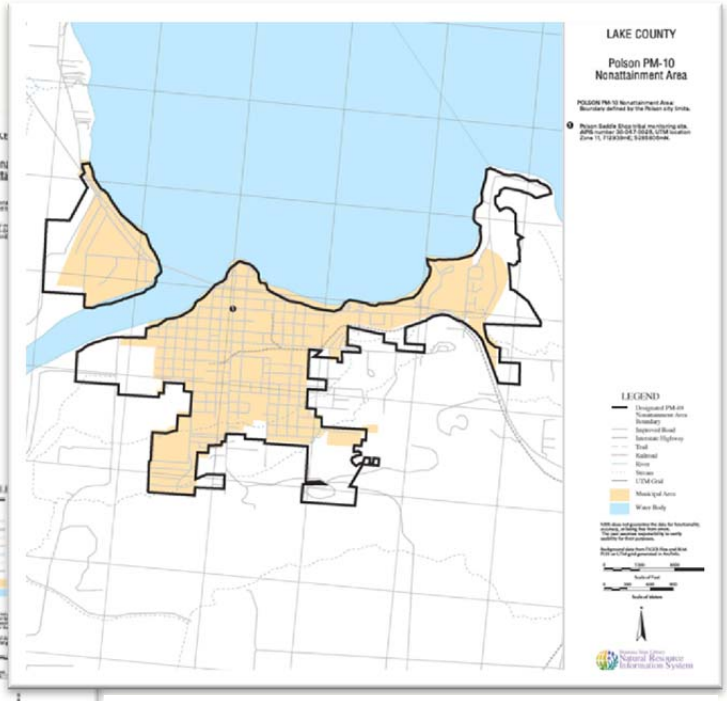

Figure 30: 1998 Polson PM-10 Non-attainment Area, Montana State Library Natural Resource Information System

[6] The six Environmental Protection Agency (EPA) criteria pollutants are Lead, Ozone, Nitrous Oxides, Sulfur Oxides, Carbon Monoxide and Particulate Matter (dust).

[7] Class I areas include national wilderness areas greater than 5,000 acres in size and national parks that are greater than 6,000 acres.

[8] Prevention of Significant Deterioration (PSD) is an Environment Protection Agency (EPA) program in which state and/or federal permits are required in order to restrict emissions from new or modified sources in places where air quality already meets or exceeds primary and secondary ambient air quality standard.

The geographical impacts are localized health impacts to the Non-Attainment areas and extend to widespread impacts to the PSD. The PM10 Non-Attainment areas of Ronan, MT and Polson, MT will experience increases in dust due to predicted drought conditions and finer particulates from smoke as increased wildfire activity occurs. Outside of the city limits of Ronan, MT and Polson, MT the extent of dust impacts will be lessened due to decreased anthropogenic[9] activity. The timeframe for increased smoke impacts is near term (0-10 years). A greater increase in smoke from wildfires and dust events caused by drought will occur in the intermediate term (11-25 years).

3.7 Infrastructure Focus

The focus of the infrastructure sector is housing and power. The housing planning area includes the 28 water and/or waste water systems and over 500 units of affordable housing that are owned by the Tribes and operated by the Salish Kootenai Housing Authority. Analysis of climate change impacts to housing is unavailable. The power planning area includes customers on and near the Reservation. Analysis of power indicates that there are no notable current and/or foreseen challenges to providing power. Energy efficiency incentives are currently considered effective in in energy conservation. The geographical impact of housing includes Evaro, MT to the south end of the Reservation. Then Dayton to the north end of the Reservation, with numerous systems in between. The geographical impact of power includes the Flathead Reservation to the north end by Niarada and Lake Mary Ronan. The estimated timeframe for impacts to the infrastructure are long-term (26+ years).

3.8 People Focus

The focus of the people sector is social services, safety, tribal health, and human resources. Services, safety, health, and resources are distinct, yet interrelated aspects of this sector. Combined, these categories provide a more complete analysis of the expected impacts of climate change upon people on the Reservation.

Social Services

The focus of the social services section is the emergency welfare services for Tribal people, as related to climate change. Tribal Social Services Department clients are some of the most

[9] Anthropogenic refers to environmental pollution and pollutants originating in human activity

vulnerable populations on the Flathead Reservation. They include parents, foster children, foster parents, guardians, children in our group home, general assistance clients, and trust Management clients. Many if not all of the Tribal Social Services Department clients are socially and economically fragile to any adversity in their daily lives. Due to this, measures must be taken to ensure there is a system in place to deliver services quickly and efficiently.

The geographical impact on people is Reservation wide. It is expected that the more isolated communities will be affected the most by climate change. Some of the impacts will include increased flooding that washes out roads and bridges. This will make service delivery and emergency response more difficult. The timeframe of these impacts is near-term (0-10 years).

Safety

The focus of the safety section is work environments, tribal facilities, tribal food services, and domestic animal control. Support provided by safety programs address suicides, drowning, motor vehicle accidents, child safety seat program, fire prevention, poisoning, and more. Extreme and unpredictable weather patterns create safety related issues.

The geographical impact is Reservation-wide. Climate change is expected to impact tribal facilities. This impact will result in the need for additional maintenance and improvements. Impacts are also expected to affect highway safety and fire prevention. The timeframe for these changes is estimated to be in the near-term (0-10 years) through the long-term (26+ years).

Health and Human Resources

The focus of the health and human resources section is community's healthcare and transportation. This analysis recognized that changing weather patterns caused by climate change could result in increased environmental health and emergency issues. These impacts may also create transportation barriers that may affect access to healthcare and other critical services and resources.

The geographical impact/extent includes the entire Reservation. The timeframe for these expected changes are estimated to be in the near-term (0-10 years) through the long-term (26+ years). In the intermediate term (11-25 years) air quality and transportation issues are anticipated. In the long-term, this will likely result in a rise in respiratory conditions and traffic congestion.

3.9 Cultural Focus

The focus of the cultural sector is on the Salish, Pend d'Oreille and Kootenai people. The intent of this analysis is to understand the full meaning of the expected impacts of climate change to the Tribes - including the Tribes cultural survival. It is also intended to understand the causes of climate change and potential solutions from a cultural perspective. The threat posed by climate change to the Tribes cannot be understood without also knowing the ways in which affected lands, waters, plants, and animals are not just environmental resources but also cultural and spiritual resources - without which our cultures and traditional ways cannot survive.

Figure 32: Flathead Reservation, photo by Roian Matt

Regarding cultural perspectives on the causes and potential solutions of climate change, the Tribes have an important role to play in educating people on how this problem is the result of the worldwide establishment of a way of life that is fundamentally at odds with the traditional ways of tribal people here. How those traditional ways, including respect for our entire environment and a sense of obligation to take care of it for future generations, continue to hold out hope that humanity has the capacity to re-learn how to live sustainably.

The geographical focus is the entire Reservation, as well as all aboriginal territories both east and west of the Continental Divide. This comprises lands and waters of cultural meaning and importance. All of these areas will be affected by climate change. The timeframe for these

expected changes are estimated to be in the near-term (0-10 years) through the long-term (26+ years), and well beyond for many generations to come.

4. Vulnerability and Risk

This section summarizes the vulnerabilities and risks of the forestry, land, fish, wildlife, water, air, infrastructure, people, and culture sectors to the impacts of climate change. This assessment was completed by Tribal departments and local organizations using the Vulnerability Matrix, Risk Matrix, and Identifying Priority Planning Areas tool.[xvi] Vulnerability is the susceptibility of a system to harm from climate change impacts. Generally, systems that are sensitive to climate and less able to adapt (low adaptive capacity) to changes are considered vulnerable to climate change impacts. Risks are the consequences of an impact times the probability or likelihood that the impact will occur.[xvii] This analysis is conducted to establish each planning areas priority.

VULNERABILITY MATRIX

SENSITIVITY	ADAPTIVE CAPACITY: HIGH	MEDIUM	LOW
HIGH	MEDIUM	MEDIUM-HIGH	HIGH
MEDIUM	MEDIUM-LOW	MEDIUM	MEDIUM-HIGH
LOW	LOW	MEDIUM-LOW	MEDIUM

RISK MATRIX

CONSEQUENCES (VULNERABILITY)	PROBABILITY: HIGH	MEDIUM	LOW
HIGH	HIGH	MEDIUM-HIGH	MEDIUM
MEDIUM	MEDIUM-HIGH	MEDIUM	MEDIUM-LOW
LOW	MEDIUM	MEDIUM-LOW	LOW

IDENTIFYING PRIORITY PLANNING AREAS

RISK	VULNERABILITY: HIGHER	LOWER
HIGHER RISK	HIGHER PRIORITY	MEDIUM PRIORITY
LOWER RISK	MEDIUM PRIORITY	LOWER PRIORITY

Figure 33: Adaption Planning Tool used by CSKT

4. 1 Forestry Assessment

The forestry sector's probability of the impacts from climate change is based on estimated changes to four fire regime types. The estimation that something will happen is rated medium for the Non-Lethal, Mixed, Lethal, and Timberline Fire Regimes based on present medium and high certainty climate predictions referenced listed in *Section 2.2 Climate Impacts Locally*.

The vulnerability of the planning area to climate change is rated high for the Lethal Fire Regime because of the predicted effects of change from moisture-drought stress and increased fire behavior. The Non-Lethal Fire Regime has a lower level of predicted vulnerability because of inherent tolerances to decreased moisture and increased fire disturbance regimes over the planning period.

Figure 34: Flathead Reservation, photo by Roian Matt

The sensitivity of the planning area to climate change varies. The Mixed, Lethal, and Timberline Fire Regimes are rated with medium sensitivity to climate change because of expected changes and impacts to regime species compositions, structures and functions as affected by decreased moisture, and increased fire behavior regimes. The Non-Lethal Fire Regime is rated as low sensitivity because of adaptive capabilities and tolerances to increased temperatures, decreased moisture, and increased fire behavior affects.

The adaptive capacity of the planning areas also varies. The Non-Lethal Fire Regime has a high adaptive capacity to the projected climate change and will have the ability to respond to changes in climate with minimal disruption. The Lethal and Timberline Fire Regimes have a low adaptive capacity for climate change because of increased stress on the regime vegetation compositions and structures as temperatures rise, with decreased moisture for plant growth and regeneration.

The risk to the systems in the planning area ranges from medium-low to medium/high. The Lethal Fire Regime is rated medium/high risk for the consequence of loss, or decline of this important forest habitat type because of the projected climate change and associated environmental impacts. The Non-Lethal Fire Regime is rated at medium/low risk because this regime is less sensitive and vulnerable to the projected climate change impacts, and has higher adaptive capacity to tolerate changes to plant composition and structure.

The priority of the planning area related to the risks for Non-Lethal Fire Regimes is low, Mix Fire Regimes is medium, Lethal Fire Regimes is high, and Timberline Fire Regimes is medium. The Lethal Fire Regime has a higher priority for action because of the highest risk and vulnerability to change from the projected climate change impacts to this vegetative type.

4. 2 Land Assessment

Figure 35: Flathead Reservation, photo by Roian Matt

The land sector's probability of and vulnerability to the impacts from climate change is medium/high for plants, noxious weeds, and agriculture. The sensitivity of plants to climate change is medium/high and the sensitivity of noxious weeds and agriculture is medium. The adaptive capacity, risk, and priority of the plants, noxious weeds, and agriculture are medium.

4. 3 Fish Assessment

The fish sector's probability of and vulnerability to impacts from climate change is high. The sensitivity of this planning area to climate change is high and the adaptive capacity is low. As such, the risk to the fish sector is high and the priority of this planning area is high.

4.4 Wildlife Assessment

The wildlife sector's probability of impacts from climate change is medium, with impact variations between different habitats. Some habitats will experience compounded/additive effects of climate change overtime. The vulnerability of wildlife and habitat resources to climate change is medium. Impacts are likely to be subtle initially, with increased impacts over time for affected species.

The sensitivity of the wetland wildlife to climate change is high due to lessened water quantity and quality. Species in other habitats will have a low level of sensitivity. The adaptive capacity of most wildlife is medium. However, some may have both high and low capacities for adaptation. Some shifts in areas of use and habitat types can be expected. The risk to the systems in forested habitat is medium, wetland habitat is high, grassland habitat is low, alpine habitat is medium, riparian habitat is low, and agricultural habitat is low. The priority of the systems in forested habitat is low, wetland habitat is high, grassland habitat is medium, alpine habitat is medium, riparian habitat is low, and agricultural habitat is medium.

4. 5 Water Assessment

Water quality and quantity have been assessed to determine each characteristic vulnerability and risk. These aspects have been researched independently. However, the inherent connection between water quality and quantity is recognized.

Water Quality

Water quality probability of impacts from climate change is high. Agricultural activity throughout the western United States threatens water quality. This threat will be magnified due to climate change in the form of an earlier runoff and more precipitation in the form of rain. More rain precipitation will mean more overland runoff producing sediment from erosion and delivering more pollutants to waterways. Droughts in the summers will decrease the availability of clean water.

The vulnerability of water quality to climate change is high because this planning area is under stress from multiple municipalities producing storm water runoff and wastewater treatment sites. Agricultural runoff that includes bacteria and erosion sources as well as the increase in temperature from irrigation return flow ditches also put enormous stress on the system. The sensitivity of water quality to climate change is high because of outside influences such as temperature, bacteria, sediment, and over use. Water is directly affected by climate change due to the direct increase or decrease of water coming into the system as well as in what form the water becomes available (rain versus snow) and when the water becomes available (winter versus spring/summer). Water loss can also be seen during drought conditions that would show up in the summers.

The adaptive capacity of water quality to climate change is low. With an increase in overland runoff during the spring season more pollutants will make it into the waterways than by normal slow snowmelt runoff. The water that will usually flush the contaminants downstream will dry up or will be lower than normal flow in the summers due to the increase in likelihood of a drought leaving the contaminants within the stream, lakes, wetlands, or sediments.

The risk to water quality is high. The waterways are home to many species of fish and other aquatic fauna. The water is also used by some municipalities for drinking purposes as well as agricultural and industrial uses. The increase in pollutants from more overland runoff due to more rain as well as drought in summers puts all these beneficial uses at risk. The priority of water quality is high. With less water during the summer season, the greater the need will become for all users; traditional (fish, plants, wildlife), agricultural, industrial, and municipalities.

Water Quantity

Figure 36: Stream Measurements at Post Creek, photo by W. Keenan

Water quantity probability of impacts from climate change is medium/low. This is due to a lower snow pack and only a change in the timing of run-off. Management of the watersheds systems will require adjustments. If spring or summer rains become more intense the impact may become higher. The vulnerability of water quantity to climate change is medium/high. These impacts may result in: native species with low adaptability to specific parameters, such as temperature, may cease to exist; limiting of irrigation in the late summer season; and wetland resources would cease to exist because of more arid summers.

Water quantity has a high sensitivity because of dependent resources (fisheries, wildlife, and plants) important to the Tribes. Increased water temperature would affect dependent species that are capable of living in the changed environment. Changes from flooding or drought would have to be addressed. During the longer drier summer current cropping may not be able to continue to be farmed. Spring floods, depending on their scale, could be controlled.

The adaptive capacity of water quantity is high. More limited water resources with a high demand may result in considerable cost increases to consumers. Much of the valley system has been converted from its natural channels into an irrigation system that delivers water to approximately 130,000 acres. Water ways have been cut off and cleared of vegetation. New storage may need to be developed for hydroelectric as well as irrigation. As this occurs, it will also put pressure on domestic water supply. The risk and priority to water quantity is high for domestic, municipal, and industrial users. Additional considerations about the impact of climate change on water quantity should be made by those managing the dependent resources.

4. 6 Air Quality Assessment

The air sector's probability of the impacts from climate change to Non-Attainment Polson, Non-Attainment Ronan, and Prevention of Significant Deterioration (PSD)[10] is medium. The estimations of medium impacts to all three sectors is based on observed increases in higher particulate data measurements in Ronan and Polson from Wildfire and documented regional haze analysis from the CSKT's existing Interagency Method of Protecting Visual Environments (IMPROVE) monitoring.

The vulnerability of air quality to climate change in Non-Attainment Polson and Non-Attainment Ronan is low. The vulnerability of PSD is medium. The communities of Ronan, MT and Polson, MT engage in mitigation efforts to reduce dust. One such activity is street sweepers that are employed at a minimum every Friday. Other predicted pollutant increases as a result of climate change are increases in Ozone.[11] However, the base emissions rate in these communities is well below the threshold levels set by the Environmental Protection Agency (EPA).

The sensitivity of Non-Attainment Polson, Non-Attainment Ronan, and PSD is medium. A water shortage due to drought could affect a community's ability for dust suppression. One of the tools used in the past to suppress dust was water. Recently Magnesium Chloride has taken on a larger role in this activity and it will continue to do so in the future. This will help make the air quality less sensitive to climate change.

The adaptive capacity of air quality in Non-Attainment Polson and Non-Attainment Ronan is high. The adaptive capacity of PSD is medium. The local communities of Polson, MT and Ronan, MT have a high adaptive capacity to projected climate changes. Efforts to mitigate impacts would be to limit outdoor activities during limited visibility days to prevent health effects to the elderly, people with respiratory illness and to small children and infants. The larger PSD area has no monitoring activity and therefore is less likely to be forewarned by ongoing events.

The risk to air quality in Non-Attainment Polson and Non –Attainment Ronan is medium. The risk to PSD is medium/low. The non-attainment areas are at medium probability of impacts but the risks remain at medium due in large part because most impacts will occur during the summer

[10] Prevention of Significant Deterioration is an Environment Protection Agency program in which state and/or federal permits are required in order to restrict emissions from new or modified sources in places where air quality already meets or exceeds primary and secondary ambient air quality standard.

[11] Ozone, or trioxygen, is a triatomic molecule, consisting of three oxygen atoms. It is often referred to as smog. Ozone is an oxidant that has applications related to oxidation. Concentrations of ozone above about 100 ppb can damage mucus and respiratory tissues in animals and tissues in plants, making it a respiratory hazard and pollutant near ground level.

months. Most sanding operations occur within city limits and along the major highways reducing risk for the greater PSD area. Other risks exist from the predicted higher temperatures and the ability of the population to cope with this type of stress. Another risk is the predicted higher temperature resulting in unknown disease infestations and pestilence. This includes considerations for how these could be spread by airborne pathogens and affects the populace. The priority of the Non-Attainment Polson, Non –Attainment Ronan, and PSD is medium. The priority remains medium as impacts to air are directly linked to human health.

4. 7 Infrastructure Assessment

The infrastructure sector includes specific considerations for housing and power. Housing's probability of and vulnerability to the impacts from climate change is low. The sensitivity of this planning area to climate change is low and the adaptive capacity is high. As such, the risk to the systems in this planning area is low. The priority of housing is low. Power's probability, vulnerability, and sensitivity of the impacts from climate change are low. The adaptive capacity is also low. The risk to this planning area is low. The priority of power is low.

4. 8 People Assessment

The people sector includes considerations for services, safety, health, and resources. These are distinct, yet interrelated aspects of this sector. Combined, they provide a more comprehensive assessment of the risk and priority of this planning area.

Social Services

The social service's population's probability of impacts from climate change ranges from medium to high. Families and foster families are considered to have a medium priority. Elderly indigent and children (group home, foster children) have a high probability of impact. The vulnerability of people to disease vectors is medium and to heat-related illnesses is medium/high. The vulnerability of people to decreased potable water is medium and to pollution related illnesses, mainly from increased fires, is medium/high. The sensitivity of people to disease vectors is low and to heat-related illnesses is medium. The sensitivity of people to decreased potable water is medium and to pollution related illnesses is medium. The adaptive capacity of people to disease vectors is medium and to heat-related illnesses is low. The adaptive capacity of people to decreased potable water is medium and to pollution related illnesses is medium.

The estimated risk of people to disease vectors is medium and to heat-related illnesses is higher risk. The estimated risk of people to decreased potable water is medium/low and to pollution related illnesses is high. The priority planning related to the risk of people to disease vectors is medium and to the risk of people to heat-related illness is high. The priority planning related to the risk of people to decreased potable water is low and to pollution related illnesses is high.

Safety

The safety services' area's probability of impacts from climate change is medium. The vulnerability of new facilities to climate change is medium because improved building and safety products withstand extreme weather conditions. However, aging tribal infrastructure's vulnerability is high. The sensitivity, risk, and priority of this planning area to climate change impact are medium.

Health and Human Resources

The tribal health's populations' probability of impacts from climate change related health issues is low. However, their vulnerability to respiratory health issues is high. The sensitivity of elderly, youth, and those with existing chronic health conditions is high. The adaptive capacity of this population is undetermined. The risk to the healthcare system is low and the priority is medium. The human resources probability of and vulnerability to the impacts from climate change is medium. The sensitivity of this planning area to climate change is low and the adaptive capacity is medium. The risk to the human resources system is low and the priority is low.

4.9 Cultural Assessment

Figure 37: Flathead Reservation, photo by Roian Matt

The cultural sector's probability of impacts from climate change is high. The vulnerability and sensitivity of this planning area to climate change is high. The adaptive capacity is uncertain. For example, how can the bitterroot ceremony be conducted if there are no more bitterroot? What would happen to Tribal people if this were to happen? The risk to the systems in this planning area is high and the priority is high.

5. Goals and Actions

This section provides the recommended preparedness goals and actions for addressing the climate change impacts. Preparedness goals are priorities that the Tribes' want to accomplish in the planning sectors. Preparedness actions are activities that the Tribes could take to achieve the climate change preparedness goals. These goals and actions vary based on a variety of factors, such as the types and magnitudes of projected climate change impacts and the scale of the planning effort.[xviii] Information related to timeframes, authority, and funding is also included in this section. Given the importance and nature of these efforts, considerations for Traditional Ecological Knowledge are provided.

5. 1 Forestry Goals and Actions

Responsible: Forestry Department

Purpose: Ensure the health of the forest through effective resource planning and management.

Priorities: The priority of Non-Lethal Fire Regimes is low, Mixed Fire Regimes is medium, Lethal Fire Regimes is high, and Timberline Fire Regimes is medium.

Forestry sector's preparedness goals for all priorities include:

- Update and revise the Forest and Fire Management Plans.
- Develop and implement a Forest and Rangeland Monitoring Plan.
- Develop and implement a Whitebark Pine Habitat Management Plan (Timberline Fire Regime only).
- Conduct Forestry Sector Climate Adaptation Needs Assessments for planning, monitoring, operations, greenhouse capacity, research, communication, staff education, and funding.
- Develop and maintain greenhouse capacity to grow and plant native and cultural plant species.

Forestry sector's preparedness actions and their timeframes include:

All Priorities (All Fire Regimes):

- Develop and maintain greenhouse capacity to grow and plant native and cultural plant species (11-25 years).
- Design and employ strategies for aggressive tree mortality salvage systems (11-25 years).

- Create and employ strategies for the use of appropriate silvicultural systems to provide resilient landscape ecological conditions (0-10 years).
- Create and employ strategies to manage invasive species across the landscape (0-10 years).
- Increase coordination of interagency and inter-departmental climate change adaptation education, research, and communications (0-10 years).
- Continue and increase inter-departmental cultural awareness and incorporation of Traditional Ecological Knowledge as a necessary component to climate adaptation forest and rangeland planning and actions (0-10 years).

Higher Priority (Lethal Fire Regime):

- Create and implement strategies that employ silvicultural systems and wildland fire response actions to maintain appropriate fire regime structures and functions (i.e., early and late seral conditions) (26+ years).

Medium Priority (Mixed Fire Regime):

- Create and implement strategies that employ appropriate silvicultural systems and prescribed fire use to provide diverse fuel mosaic conditions (i.e. early and mid-seral conditions) (26+ years).
- Increase re-introduction of periodic prescribed fire to non-lethal stand types (0-10 years).
- Increase and maintain hazardous fuel mitigation activities (0-10 years).

Medium Priority (Timberline Fire Regime):

- Employ appropriate projects, prescribed fire, and wildland fire response actions to sustain viable Whitebark Pine habitats (i.e. early to late seral condition) (11-25 years).
- Coordinate and collaborate with academic and research institutions to develop Whitebark Pine Restoration Strategies (11-25 years).

Lower Priority (Non-Lethal Fire Regime):

- Create and implement strategies that employ appropriate silvicultural systems to maintain mature and park-like forest conditions (i.e. mid and late seral conditions) (26+ years).
- Increase re-introduction of periodic prescribed fire (0-10 years).
- Increase and maintain hazardous fuel mitigation activities (0-10 years).

Required and Existing Authority/Capacity

The required authority needed to implement these preparedness actions is held by the Confederated Salish and Kootenai Tribes. They have the required self-governance authority. By a federal directive from the U.S. Department of Interior, the Department of Forestry is required to address climate change in agency management plans. Climate change information will be included in future forestry and fire management plans as updated or revised.

Existing capacity to implement the preparedness actions include:

- Tribal Government (i.e. Constitution, Ordinance, Resolution, and Referendum)
- Tribal Policy (i.e. Forest and Fire Management Plans, Comprehensive Resource Management Plan)
- U.S. Department of Interior, (DOI) Bureau of Indian Affairs (BIA) (i.e. Policy, Regulations, Directives, and other guidance)
- Counties (i.e. County Wildfire Protection Plans)
- Code of Federal Regulations
- National Indian Forest Resources Management Act

Partners and Potential Funding Sources

Partners capable of assisting with the preparedness goals and actions include:

- CSKT Natural Resources Department
- CSKT Department of Lands
- CSKT Tribal Preservation and Tribal Culture Committees
- Local Public School Districts
- Salish Kootenai College (SKC)
- University Systems (i.e. University of Montana, Northern Arizona University)
- Northern Rockies Fire Science Network
- U.S. Forest Service
- U.S. Fish and Wildlife Service
- Intertribal Timber Council
- DOI, BIA
- Lake, Sanders, Missoula, and Flathead Counties
- Montana Department of Natural Resource and Conservation
- Rocky Mountain Research Station
- Aldo Leopold Wilderness Research Institute

Potential funding sources for addressing the estimated impacts include:

- Forest and Fire Management Planning (i.e. BIA, CSKT, and grants)
- Monitoring Planning and Coordinator Position (i.e. BIA, CSKT, and grants)
- Department of Forestry Forester Positions (i.e. BIA and CSKT)
- Department of Forestry Research Projects (i.e. DOI, BIA, USFS, SKC, CSKT, and grants)
- Fuels Mitigation Program Staff and Projects (i.e. DOI, BIA, USFS-TFPA, and CSKT)
- Greenhouse Capacity (i.e. BIA and CSKT)

Funding needs for addressing the estimated impacts to forestry are to be determined.

5. 2 Land Goals and Actions

Responsible: Tribal Lands Department

Purpose: Ensure the health of soils, plants, and water sources through research and management.

Priorities: The priority of the plants, noxious weeds, and agriculture is medium.

Land sector's preparedness goals include:

- Evaluate soil health, crop requirements, and irrigation water sources to support shifting to alternative crops.
- Engage in practices to promote more vigorous native plant communities.

Land sector's preparedness actions include:

- Use prescribed burning to improve land health (0-10 years).
- Continue noxious weed management (0-10 years).
- Managed grazing systems (0-10 years).
- Identify alternative crops and educate producers, as needed (0-10 years).

Required and Existing Authority/Capacity

The Tribes have the authority to implement the preparedness actions. However, there is a need to increase the land planning area's staff and staff capacity.

Partners and Potential Funding Sources

Partners capable of assisting with the preparedness goals and actions include:

- Tribal Forestry Department
- Natural Resources Department
- Natural Resources Conservation Service
- U.S. Fish and Wildlife Service Home
- U.S. Department of Agriculture Farm Service Agency
- Flathead Reservation Extension

Specific funding needs and sources for addressing the estimated impacts to land are to be determined. However, additional funding for rangeland and cropland management is needed.

5. 3 Fish Goals and Actions

Responsible: Natural Resources Department - Fish

Purpose: Ensure the health of fish through improved planning and use of ecological principles.

Priority: The priority of fish and fish habitat is high.

Fish sector's preparedness goal includes:

- Improve integration of ecological principles into tribal agricultural leases that negatively affect native trout.

Fish sector's preparedness action and its timeframe include:

- Develop comprehensive fish habitat restoration plans (0-10 years).

Required and Existing Authority/Capacity

Tribal Council has the required and existing capacity to implement the preparedness actions.

Partners and Potential Funding Sources

Partners capable of assisting with the preparedness goals and actions include:

- Montana Fish Wildlife and Parks
- US Fish and Wildlife Service

Potential funding sources for addressing the estimated impacts include:

- Water Compact damage claim funds
- Hydro power mitigation funding
- Grant funding

Funding needs for and sources for addressing the estimated impacts to fish are to be determined.

5. 4 Wildlife Goals and Actions

Responsible: Natural Resources Department - Wildlife Management Program

Purpose: Ensure the health of wildlife through improved research and planning.

Priorities: The priority of forested habitat is low, wetland habitat is high, grassland habitat is medium, alpine habitat is medium, riparian habitat is low, and agricultural habitat is medium.

Wildlife sector's preparedness goal includes:

- Anticipate and plan for climate change impacts upon each species.

Wildlife sector's preparedness actions and timeframes include:

- Conduct a thorough analysis of the level of documented and anticipated adverse impacts upon all species of wildlife and their habitats (0-10 years).
- Complete multi-function climate change modeling and analysis (0-10 years).

Required and Existing Authority/Capacity

The required authority needed to implement the preparedness actions is held by the Tribes. The required capacity includes a coordinated planning effort between the Wildlife Management Program and other wildlife and habitat management programs and agencies in western Montana. Jurisdictional differences should be considered throughout this planning process.

Existing capacity to implement the preparedness actions include:

- Montana Fish, Wildlife and Parks
- Montana Natural Resources Department
- U.S. Forest Service

- U. S. Fish and Wildlife Service
- The University of Montana
- Lake, Sanders, Missoula, and Flathead Counties

Partners and Potential Funding Sources

Partners capable of assisting with the preparedness goals and actions include:

- Montana Fish, Wildlife and Parks
- Montana Natural Resources Department
- U. S. Forest Service
- U. S. Fish and Wildlife Service
- The University of Montana
- Lake, Sanders, Missoula, and Flathead Counties

Specific funding needs and sources for addressing the estimated impacts to wildlife are to be determined. However, additional funding is needed to research and monitor potentially-affected wildlife and their habitats.

5. 5 Water Goals and Actions

Responsible: Natural Resources Department – Division of Water

Purpose: Ensure the health of and access to water through improved planning and management.

Priorities: The priority of water quality and quantity is high.

Water quality and quantity preparedness goal include:

- Improve water resources management through research, planning, and mapping.

Water quality and quantity preparedness actions and timeframes include:

- Develop a drought management plan (0-10 years).
- Develop a hydroelectric management plan (0-10 years).
- Develop a reservoir storage plan (0-10 years).
- Develop a flood management plan (0-10 years).
- Develop a groundwater management plan (0-10 years).
- Develop an irrigation efficiency plan (0-10 years).

- Develop a municipality's drinking water management plan (0-10 years).
- Continue monitoring and real-time management, early warning, and mapping (0-10 years).

Required and Existing Authority/Capacity

The required authority needed to implement the preparedness actions is held by the Tribes. The required capacity includes a coordinated planning effort between Tribes, state, local governments. These should collaborate on water resource management and planning.

The Tribes have developed a draft water rights compact with the state of Montana. Many of the compact's terms protect water resources. This compact is necessary for the protection of the quantity of the water on the Flathead Reservation.

Partners and Potential Funding Sources

Partners capable of assisting with these preparedness goals and actions include:

- Natural Resources Department
- State of Montana
- Montana Department of Natural Resources and Conservation
- Lake County Commissioners
- Flathead Indian Irrigation Project
- Flathead Basin Commission
- The University of Montana Biological station
- Regional municipalities
- Cooperative Management Entity (CME)
- Local users

Water quality funding needs are to be determined. Water quantity requires $500,000 per year. The capacity of the Water Management Program should be increased. The Environmental Protection Agency is a potential funding source.

5. 6 Air Quality Goals and Actions

Responsible: Natural Resources Department – Air

Purpose: Ensure the quality of air through improved investigation and management.

Priorities: The priority of Non-Attainment Polson, Non –Attainment Ronan, and Prevention of Significant Deterioration is medium.

Air quality preparedness goal for all priorities include:

- Monitor air quality changes through inventories and assessments.

Air quality preparedness actions and timeframes for all priorities include:

- Update the Emissions Inventory (0-10 years).
- Conduct the Tribal Minor New Source Review assessment (0-10 years).

Required and Existing Authority/Capacity

The Tribes have Treatment as State for Management of the Air shed within the exterior boundaries of the Reservation under the Tribal Authority Rule of the Clean Air Act. The CSKT is a class I air shed as approved by Congress in 1980. Areas designated as Class I areas are those national parks greater than 6,000 acres, wilderness areas, national memorial parks greater than 5,000 acres, and all international parks in existence on August 7, 1977. States and Tribes may designate additional areas. (Quality, 2011)

Partners and Potential Funding Sources

Partners capable of assisting with the preparedness goals and actions include:

- Environmental Protection Agency
- Lake, Sanders, Missoula, and Flathead Counties

Air quality funding needs are to be determined. Environmental Protection Agency Section 103 and 105 grants are potential funding sources.

5. 7 Infrastructure Goals and Actions

Responsible: Salish Kootenai Housing Authority and Mission Valley Power

Purpose: Ensure access to housing and power through research and long-range planning.

Priorities: The priority of housing and power is low.

Infrastructure preparedness goal includes:

- Improve the integrity of housing and access to power through enhanced investigation.

Housing preparedness actions and timeframes include:

- Investigate the use of different building methods for housing in case traditional wood products became scarce due to climate change impacts (0-20 years).
- Investigate new methods for providing water and waste water systems, with an emphasis on addressing those systems vulnerable to the impacts of climate change (0-20 years).

Power preparedness action and timeframe includes:

- Investigate and adopt new power delivery methods continuously (0-20 years).

Required and Existing Authority/Capacity

The required and existing authority to implement the housing preparedness actions rests with the Executive Director and Staff of the Salish Kootenai Housing Authority. The required and existing authority to implement the power preparedness actions rests with the Mission Valley Power Utility Board. Both the Tribes and the Bureau of Indian Affairs review and approve any major policy and procedures changes.

Partners and Potential Funding Sources

Partners capable of assisting with the preparedness goals and actions include:

- Affordable housing providers in the State of Montana and the Northern Plains region
- Builders and craftsmen that design new products and methods for building housing
- Municipalities in Montana that provide water and waste water services
- Designers and developers of water and waste water systems
- Utilities in the Northwest

Specific funding needs and potential funding sources is to be determined. Mission Valley Power's operating funds are provided by rate payers.

5. 8 People Goals and Actions

Responsible: Social Services, Office of Administrative Services, Tribal Health & Human Services, and Department of Human Resources Development

Purpose: Ensure the health and safety of people through improved planning, coordination, and system developments.

Priorities: The priority of social services ranges from low to high. The priority of safety is medium. The priorities of healthcare medium and human resources are low.

Social services preparedness goals include:

- Enhance or develop a system to address people's risk to disease vectors.
- Develop a cooling plan for increased temperatures for each community, especially for those populations most vulnerable to heat-related illnesses.
- Develop a potable water plan for each community to address the needs of those at risk of not having access to clean water.
- Develop a response plan to high particulate counts for various sub-eco systems within the Reservation.
- Develop education and policies to decrease catastrophic fire incidence.
- Identify and map the geographical location of the most vulnerable populations.
- Develop a collaborative plan that addresses the most vulnerable populations needs.

Social services preparedness actions and timeframes include:

- Ensure disease vector monitoring and reporting is robust and resilient (1-3 years).
- Ensure most vulnerable populations have heat and cooling sources (0-10 years).
- Ensure building codes include adequate provisions for cooling (11-25 years).
- Provide emergency cooling centers and retro-fit community centers (26+ years).
- Analyze most vulnerable populations' water sources and impact of flooding and drought (0-10 years).
- Educate communities on sustainable water preservation measures (11-25 years).
- Ensure households have ways to purify water (26+ years).
- Analyze buffer zone and fire closure areas and increase, if needed (0-10 years).
- Ensure vulnerable populations and communities have air quality education (11-25 years).
- Decreased use of wood for heating (11-25 years).
- Increase medical response to those most vulnerable (11-25 years).
- Implement strategies for burning protocols and home heating policies (26+ years).

Safety services preparedness goals include:

- Improve social services through collaboration, planning, and resource development.

Safety services preparedness actions and timeframes include:

- Develop proactive committees to address future climate change events (0-10 years).
- Update shelf plans that should address current needs (0-10 years).
- Direct more funding to Tribal infrastructure (0-10 years).

Health and human resources preparedness goals include:

- Promote the healthy lifestyles of Tribal members.
- Improve the use of the Tribal transportation system to reduce fossil fuel consumption and carbon emissions created by vehicles.
- Provide practical knowledge about growing gardens and how to preserve the vegetables through the community gardening.

Health and human resources preparedness actions and timeframes include:

- Provide ongoing education to the Tribal Health Department (0-10 years).
- Expand the bus fleet to accommodate more riders (3-5 years).
- Expand the community gardens and recruit more participates (3-5 years).

Required and Existing Authority/Capacity

The required and existing authority to implement these preparedness actions rests with the Tribal Council and Tribal Administration.

Partners and Potential Funding Sources

Partners capable of assisting with the preparedness goals and actions include:

- Tribal Departments
- Health Departments
- School Systems
- Salish Culture Committee
- Kootenai Culture Committee

Specific social services, safety, health, and human resources funding amounts and potential sources are to be determined. Safety services planning areas requires funding to address climate change related facility and safety improvements. Human resources planning area requires funding to purchase buses to enhance the current transportation program and to buy more seeds and gardening tools for the community gardens.

5.9 Cultural Goals and Actions

Responsible: Salish-Pend d'Oreille Culture Committee, Kootenai Culture Committee, and Historic Preservation/ Cultural Preservation Department

Purpose: Ensure cultural preservation through education and advocacy.

Priorities: The priority of culture is high.

Cultural preparedness goal includes:

- Educate people about climate change, its cultural import, and the need to speak out for action (local, national, international) to minimize its severity.

Cultural preparedness actions are to be defined.

Required and Existing Authority/Capacity

The required and existing authority/capacity to implement the preparedness actions rests with the Tribal Council and CSKT Elders Advisory Council.

Partners and Potential Funding Sources

Partners capable of assisting with the preparedness goals and actions include:

- Tribal Council
- CSKT Elders Advisory Council
- National Forest Service and National Parks
- Federal Fish and Wildlife
- Bureau of Land Management

Specific funding needs for addressing the estimated impacts are to be determined. Potential sources of funding include U.S. Army Corps of Engineers and Bonneville Power Administration.

6. Implementation of Plan

The CSKT Climate Change Strategic Plan represents an ongoing and evolving adaptive management process. It presents an overview of current climate issues and concerns, including potential impacts. This plan is to be regularly revisited and modified as new information regarding the climate science and impacts becomes available and as priorities and needs of the Tribes change.

As part of an adaptive management process, the Tribes will:

- Establish and maintain a Climate Change Oversight committee which would coordinate funding requests and collaboration with regional climate change centers, research centers, academic institutes, and other relevant entities.
- Monitor and measure progress in implementing the preparedness actions you have recommended, and identify whether these efforts are helping the Tribes meet their goals regarding climate change preparedness.
- Review basic assumptions, including those related to assessing the vulnerabilities and risks that guided the planning committees in identifying of priority planning areas, the Tribes' overarching vision and goals, the preparedness goals that establish the priority planning areas, and the information collected measuring the results of the actions.
- Continue to research Traditional Ecological Knowledge (TEK) and its application towards climate change adaptation and mitigation planning.
- Incorporate the strategic planning results into the guiding documents such as the Flathead Reservation Comprehensive Resource Plan and the Forestry Management Plan.
- Update the climate change adaptation plan regularly, based on the information collected from measuring progress and reviewing assumptions.

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Endnotes

[i] Key terms and definitions have been adapted from the Tribal Climate Change Adaption Plan Template, developed by the Institute for Tribal Environmental Professionals. This content has been provided to be inserted and/or modified to for the development of climate change strategic plans.

[ii] Paragraph one featured in Section 1.1 General Characteristics and History of the Tribes, part History of tribe, including traditional ways of life, was adapted from the 1996 Flathead Reservation Comprehensive Resource Plan, Volume I Existing Resources, Chapter 3: History and Culture, Tribal Differences and Similarities 3-8. Project Coordinators of this plan are Janet Camel and Doug Dupuis.

[iii] Content featured in Section 1.1.2 Salish Culture was adapted from the 1996 Flathead Reservation Comprehensive Resource Plan, Volume I Existing Resources, Chapter 3: History and Culture, Salish Culture, 3-2. Project Coordinators of this plan are Janet Camel and Doug Dupuis.

[iv] Content featured in Section 1.1.2 Kootenai Culture was adapted from the 1996 Flathead Reservation Comprehensive Resource Plan, Volume I Existing Resources, Chapter 3: History and Culture, Kootenai Culture, 3-6. Project Coordinators of this plan are Janet Camel and Doug Dupuis.

[v] Tribal enterprises and organizations descriptions are summarized from the 2012 Confederated Salish and Kootenai Tribes Economic Development Facts at a Glance. This report was created by Janet Camel, CSKT Office of Economic Development.

[vi] Content featured in 1.1.4 Cultural Considerations Regarding Natural Resources was adapted from the 1996 Flathead Reservation Comprehensive Resource Plan, Volume I Existing Resources, Chapter 17: Land-Based Cultural Resources, Existing Conditions, 17-3. Project Coordinators of this plan are Janet Camel and Doug Dupuis.

[vii] The national concerns featured in Section 2. Climate Impacts have been adapted from the "Preparing for Climate Change, A Guidebook for Local, Regional, and State Governments," page 22. This guide was developed by Center for Science in the Early System, Joint Institute for the Study of Atmosphere and Ocean, and University of Washington. It can be accessed at http://www.cses.washington.edu/db/pdf/snoveretalgb574.pdf.

[viii] Content featured in Section 2.1 Climate Impacts in the Northwest has been adapted from the Tribal Climate Change Adaption Plan Template, developed by the Institute for Tribal Environmental Professionals. This material has been provided to be inserted and/or modified in the regional climate change impact section of climate change strategic plans. All appropriate citations have been included.

[ix] More information at about climate change scenarios can be found that the Climate Change Impact Group's website at http://cses.washington.edu/cig/fpt/ccscenarios.shtml.

[x] The climate change trends and scenarios featured in Section 2.2 Climate Impacts Locally have been adapted from the Missoula County Climate Action: Creating a Resilient and Sustainable Community report, Section I. Climate Change in Missoula County. The Flathead Reservation and Missoula County share geographic, topographic, and climatic characteristics. As such, Anne Carlson, Ph.D., Climate Associate, The Wilderness Society determined during the March 20, 2013 Planning Meeting that this information is applicable to the Flathead Reservation. Jill Alban, Clark Fork Coalition, provided permission to use this information in this plan on March 27, 2013 via email.

[xi] The introduction in Section 2.3 Climate Change Impacts on the Tribes was adapted from Section 9.3 Historic Preservation of the Confederated Salish and Kootenai Tribes Local Impact Assessment Results Report, released June 30, 2013. It was provided by Michael Durglo Sr., Co-Director of Historic Preservation/Cultural Preservation.

[xii] The Traditional Ecological Knowledge introduction was in large contributed by the CSKT Forestry Department. Other contributions were made by the Tribal Lands Department, Salish & Kootenai Housing Authority, Mission Valley Power, Social Services, Office of Administrative Services, Department of Human Resources Development, and Salish-Pend d'Oreille Culture Committee, Kootenai Culture Committee, and Historic Preservation/Cultural Preservation Department.

[xiii] These Tribal Elder interviews were recorded on video and the conversations were transcribed. The excerpts provided in this plan have been approved by the respective cultural committees for this purpose.

[xiv] This committee formally convened to collaborate on this project during the dates of October 24, 2012, November 13, 2012, December 23, 2012, January 16, 2013, February 27, 2013, March 20, 2013, April 17, 2013, May 15, 2013, and June 12, 2013.

[xv] The Confederated Salish and Kootenai Tribes Local Impact Assessment Results Report, released June 30, 2013, provides the raw, qualitative data collected by the Climate Change Strategic Planning Committee and its partners.

[xvi] The qualitative data from of this research is featured in the Confederated Salish and Kootenai Tribes Local Impact Assessment Results Report, released June 30, 2013.

[xvii] Additional vulnerability and risk assessment resources include Preparing for Climate Change guidebook, Chapter 8: "Conduct a Vulnerability Assessment", and Chapter 9: "Conduct a Climate Change Risk Analysis" Section 9.1 "Assess Your Climate Change Risks." They are located at http://cses.washington.edu/cig/fpt/guidebook.shtml.

[xviii] Additional preparedness goals and actions planning resources include Preparing for Climate Change guidebook, Chapter 10: "Set Preparedness Goals and Develop Your Preparedness Plan." This is located at http://cses.washington.edu/cig/fpt/guidebook.shtml.