CUSTER COUNTY

COMMUNITY WILDFIRE PROTECTION PLAN

PREPARED BY

CUSTER COUNTY EMERGENCY SERVICES

OCTOBER 2006

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RESOLUTION

CUSTER COUNTY

BOARD OF COMMISSIONERS

RESOLUTION #

RESOLUTION ADOPTING THE
CUSTER COUNTY COMMUNITY WILDFIRE PROTECTION PLAN

_____
Chairman

ATTESTED

_____
Auditor

Acknowledgement

The Custer County Board of Commissioners wishes to express their appreciation to all that helped develop the Custer County Community Wildfire Protection Plan.

- The Bureau of Land Management
- The United States Forest Service, Black Hills Forest District
- South Dakota Division of Resource Management and Forestry
- The Community Volunteer Fire Departments within Custer County
- The Public Advisory Group participants that attended the informational meetings
- Custer County GIS, technical assistance
- Custer County Planning and Zoning Office, technical assistance
- City of Custer Planning and Zoning Office, technical assistance
- Custer County Housing and Redevelopment, technical assistance
- Silver Star Subdivision I & II
- Those sources of information listed in the Bibliography that provided the data to compile this plan

The Custer County Board of Commissioners further acknowledges that the Custer County Community Wildfire Protection Plan is the sole responsibility of the Custer County Office of Emergency Services.

Executive Summary

The Custer County Board of Commissioners entered into an agreement with the Bureau of Land Management to develop a Community Wildfire Protection Plan for entities within the county. Funding for this project was made available through the Healthy Forest Restoration Act of 2003 (PL 108-148).

This document is intended to act as a policy and project guide for decision makers in taking action. It concentrates on areas of highest risk and greatest social and economic loss with special emphasis on mitigation strategies to counter the damaging effects of Wildland/Urban Interface fires.

Authorities and References

The Plan format, content and recommendations are based, in part, on forest management and wildland fire suppression plans, policies and procedures currently utilized by federal, state, and local agencies.

A list of specific Authorities and References is found in Appendix A.

Mission

It is the mission of this plan to develop strategies and a plan of action to better protect Custer County *communities at-risk* from the effects of Wildland/Urban Interface fires.

Purpose

The purpose of this project is to develop a Community Wildfire Protection Plan that addresses the need to protect the area immediately adjacent to community development from the effects of a wildland/urban interface.

Goal

The goal is to reduce the threat of catastrophic wildland fires impacting life, property or infrastructure within the boundaries of Custer County by adopting sound forest management practices.

Objectives

This Plan is developed to accomplish the following:

- Identify areas and *communities at-risk* within Custer County that may be affected by large scale wildland fires.
- Interface with federal and state forestry agencies in establishing a comprehensive forest management plan for those areas associated with Wildland/Urban Interface.
- Prepare an interagency strategy to address issues of forest fire suppression on public and private land.
- Develop strategies for each community, subdivision or rural area identified as "*at-risk*".
- Provide mitigation strategies and solutions to reduce the threat and impact of wildland fire upon infrastructure, buildings and the environment.

Scope

Unlike the *Custer County Natural Hazards Mitigation Management Plan, 2003* that addresses a multitude of natural hazards, this document only focuses on the wildland fire impact upon communities, subdivisions and infrastructure within Custer County. It is a strategy document that is intended to establish a mitigation management philosophy for Wildland/Urban Interface fire suppression.

I. Introduction

A. Background

The regulated management of the wildland environment in the United States is a concept that has existed for a more than a century. Congressional actions recognized the need to protect public lands by designating certain areas as being held *in trust* for the use and enjoyment of future generations. This designation quite often manifested itself in the creation of parks, monuments, wilderness areas, and national forests. The principle federal agencies charged with the role of public stewardship are the National Forest Service, the National Park Service, the Bureau of Land Management and the Fish and Wildlife Service. They are responsible to see that the public resources of the land, mineral, flora and fauna are maintained, utilized, preserved and protected for the maximum benefit of all Americans.

Within the past five decades, a real dilemma has developed over what constitutes sound natural resource management practices. Various public and private groups have openly, and often vocally, expressed their concerns and opinions regarding the operation of public lands. Perhaps nowhere has this issue been more noticeably expressed than in the area of forest land management.

Groups representing environmental, timber industry, agricultural and recreation interests all have special reasons for the consideration of their position. Each group appears to support maximum utilization of the forest resources without causing permanent and irreparable harm or damage to the forest ecology. Often the various groups' interests are somewhat attuned but from diverse points of view. There are, however, certain issues where competing interests are diametrically opposed. Methodology in maintaining a healthy forest environment is at the heart of the forest management controversy.

Historically, natural events were considered as the best way to maintain a healthy balance within the forest system. Two distinct events have brought about an in-depth reassessment of national forest management policies and factors that influence the decision making process. One factor was the numerous litigation actions brought by environmental groups in the 1990's to limit or impede forest management practices they viewed as being contrary to their interests. The other factor was the outbreak of massive wildfires throughout the Western United States in 2000 and subsequent years. This combination of events brought about federal administrative and legislative actions to help reduce the devastating impact of wildland fires upon the environment, lives and property. The end result has been the passage of federal legislation entitled *The Healthy Forest Restoration Act of 2003.*

B. CUSTER COUNTY ENVIRONMENT

Custer County is very much involved in the wildland management planning process, by virtue of its geographic ties to the Black Hills and forested public lands. To comprehend the magnitude of this involvement, it is first necessary to understand geographic and historic factors that influenced the development of the county.

Geographic Area

Custer County is located in the extreme southwest part of South Dakota and in the southern portion of the Black Hills. The total area is 1,558 square miles or 996,974 acres. The east-west length varies between 52.5 miles and 68 miles. The north-south distance is about 26.5 miles.

Unlike the majority of South Dakota counties where there are common but subtle differences in the geology and topography, Custer County has two distinct profiles. There is a true geographic dichotomy in the county. The eastern portion has rolling hills, dry creek bottoms, and gullies, features common in the Northern Plains Topography. The western portion has a fairly consistent mountainous terrain. The geologic features consist mainly of granite-based formations with sedimentary rocks such as sandstone, shale and limestone making up the remaining geologic structure. The landscape is heavy timber intermixed with some meadows and valleys. The terrain is extremely rugged and contains deep canyons and numerous draws. See Appendix C for details

Land Ownership.

The early settlement of the Black Hills brought with it a mixture of homestead and mining claims that was scattered throughout the Black Hills region. This resulted in a vast array of private land parcels interspersed with federal forestlands. It has been said that the Black Hills National Forest contains the greatest percentage of privately owned land of any national forest system.

The US Forest Service manages the Black Hills National Forest in central and western Custer County. It also manages prairie lands within the Buffalo Gap National Grasslands located in the very eastern portion of Custer County.

The National Park Service maintains two very special geologic features. Wind Cave National Park is in the southeastern part of Custer County south of Custer State Park. Jewel Cave National Monument is approximately 15 miles west of Custer. Both locations are world-renowned for their extensive underground caverns and passageways.

The Bureau of Land Management manages other public lands scattered throughout the county. The Norbeck Wildlife Preserve consists of federal and state acres located between Custer State Park and the Black Hills National Forest to the north. Custer State Park is located in the eastern part of the county. This is the largest of the twelve South Dakota State parks. Custer State Park was so designated in 1919 when its name was changed from Custer State Forest. It is located 3 miles east of the City of Custer on Highway 16A. It extends eastward toward the community of Hermosa. The park landscape includes open meadows, heavily timbered areas, numerous streams and mountainous terrain. Harney Peak (elevation 7,242) and four lakes (Sylvan, Stockade, Legion and Center) are located near or within the boundaries of the park.

Significant governmental land management endeavors include:

United State Forest Service	
Black Hills National Forest	311,329 acres
Buffalo Gap National Grassland	57,348 acres

National Park Service	
Jewel Cave National Monument	1,273 acres
Wind Cave National Park	28,295 acres
Bureau of Land Management	
Federal Lands	3,680 acres
State of South Dakota	
Custer State Park	73,000 acres
School & Public Lands	7,321 acres
Game, Fish & Parks (Wildlife Division)	2,071 acres
Total	484,317 acres

Custer County contains a hodgepodge of federal, state, local government, and privately owned lands. Roughly 48% of the county is under governmental ownership, either by the State of South Dakota or by the United States Government. Custer County private land ownership is comprised of three basic components, agricultural (farming & ranching), recreational, and homeowners (residential & seasonal). Approximately 47.8% of Custer County land falls within the agricultural designation. The remaining 3-4 % is comprised of local government properties, private residences, businesses, and non-profit organizations. See Appendix E for details.

Demographics

Custer County, like most South Dakota counties, experienced a series of fluctuating cycles in population growth throughout the past 130 years. The majority of the interest in Custer County is associated with the natural environment that exists in the Black Hills and is so different from the remainder of South Dakota. The natural resources, favorable climate, opportunity for wealth and availability of desirable land have all played major roles in the development of a diverse population and economic base.

The demographics of the Black Hills is unique in that no other federal forest in the system has as much multiple use impact as can be found in the Black Hills National Forest. Historically, agriculture, including cattle ranching, was the chief source of income for Custer County from the late 1800s through the 1960s. Other important contributors to the economy were the timber industry and mining.

The largest part of the agricultural industry (farming and ranching) occurs in the eastern portion of the county. The area around Buffalo Gap, Fairburn, and Hermosa was known for the extensive ranching and irrigated land activity. The areas associated with French Creek, Battle Creek and the Cheyenne River are agricultural regions supported by the rich Hermosa soils.
The area around Pringle and southwestern Custer County near the Fall River County border was known for extensive ranching and mining activities. The northwestern portion associated with the Custer Limestone topography was also considered an area to raise sheep and cattle.
Agriculture, in the form of farming and ranching, still plays an import role in the economy and culture of Custer County. The majority of the available private-sector land in Custer County is listed as agricultural land. The majority of the agriculture section is associated with the ranching

industry. It has had its ups and downs. Instability in the agricultural markets led to a diminishing interest in cattle and sheep ranching. Availability of reasonably priced ranch lands has curtailed the opportunity to expand current operations and establish new ranches especially in central and western Custer County.

Forest products industries have had a very significant impact upon Custer County since the late 1800s. It is doubtful if there are any forested areas within the county that have not experienced some amount of logging during the past one hundred years. The demand for timber during the gold rush era gave way to sawmills producing finished lumber, posts and poles, wood pallets and other by-products. Timber production in terms of millions of board feet harvested was at its peak during these earlier years. Custer County was reported to having as many as 20 sawmills in the late 1800s and early 1900s. Most of these mills were owned by, and run to support, the various mining operations.

Recent restrictions on the timber industry by forest managers and special interest groups reduced the opportunity for economical timber harvesting. The number of sawmills in the county has been slowly reduced over the years until there were only five operating in 1999. Three mills produce primarily lumber, one produces cabin logs and one mill produces posts and poles. Saw log production was cited as being 32,441,000 board feet in 1993. Production had diminished to 20,231,000 board feet by 1999.

During the peak years of 1940-1970 the economy flourished with mining, timber and agriculture. However, there has been a steady, but gradual shift in the economic base of Custer County since the 1970's. In the City of Custer [the County Seat] industrial development in mining and timber served as the primary source of employment. All other communities within the county had satellite facilities that mirrored these operations. Local industry focused around combinations of these catalysts.

Tourism is a very important industry that greatly augments the Custer County economy. Millions of visitors come to the Black Hills and Custer County each year to enjoy and participate in the numerous outdoor activities associated with this mountainous region. These include, hunting, fishing, camping, hiking, motorcycling, snowmobiling and skiing. In the more recent years, area tourism and recreation have developed into a mainstay of the Custer County economy.

The limited amount of private property in a county with such a high percentage of public land has resulted in a boom time for realtors and developers. Most private acreages are still listed as being held by the agriculture sector. However the demand for small parcels for residential and recreational purposes, especially timbered acreages, has placed a very high premium on the value of rural land. Custer County ranch and agriculture lands have a commodity value of $300-$1200 per acre depending upon use and location. However, non-agricultural value for the same property may be any where from $2,000- $30,000 per acre depending on size of parcels and location. Out of area interest in Custer County/Black Hills property has brought an influx of part-time residents and retirees into the county. See Appendix F for details**.**

II. Forest Management

A. Present Forest Conditions

The present condition of the Black Hills National Forest and surrounding wildland is very different from the environment that existed 125 years ago. The Custer Expedition of the late 1870s provided both written and pictorial records of the landscape and vegetation they found. This data has been examined and compared with pictures taken of the same locations over one hundred years later. More recent photographs reveal both a more heavily timbered terrain and a pronounced reduction in the amount of open space existing as meadows and grasslands.

Human intervention in the biosystem is a major factor in this change. Nature has a way of controlling the forest environment through the natural processes of fire and disease. Allowing these processes to occur naturally is not always feasible in an area that is heavily influenced by human activity, especially in the Black Hills.

The result is a forest system that is seriously affected by unchecked growth of Ponderosa Pine trees. Trees are allowed to develop into thick stands of immature dog hair or young pine that do not fully develop because of competition for nutrients and living space. Other forms of native vegetation are choked out by this overgrowth. Plants and grasses that contribute to a healthy ecosystem are often diminished in scope.

The secondary effect of an unhealthy forest system is the buildup of dead and dying vegetation that contributes to an increased fire threat. This may be caused by weather events such as droughts, severe winter storms and summer storms which often stress tree development or damage the tree trunks. Insect infestation like the Northern pine beetle is more easily transmitted in areas where trees are closely spaced or under stress.

Fires often have a more damaging affect on thick timber stands. Fires that burn ground cover generally do not leave a long-term impact upon either the trees or topography. However, in circumstances where there has been a heavy buildup of natural fuels, fires tend to burn at such a high temperature that they not only kill the trees but also often sterilize the soil. Thick timber stands also afford an opportunity for fires to reach the crown of the trees and spread the fire more rapidly. Fires also leave partially damaged timber that often can not survive. This residue can become fuel for future fire events.

Regulatory intervention and litigation are also cited as reasons that hinder forest management practices. Unnecessary or lengthy administrative procedural practices and lawsuits create delays in implementing needed fuel reduction projects. The need to comply with a myriad of rules and regulations has resulted in not only delayed planning and implementation of projects but also in added overall expense in ultimately carrying out the activity.

B. LEGISLATION

Healthy Forest Restoration Act (Public Law 108-148)

This act was signed into law on December 3, 2003. It involves federal lands under the direction of the Secretary of Agriculture (US Forest Service) and the Secretary of the Interior (Bureau of Land Management). It is primarily intended to affect forest and range lands in the proximity of communities. While this Act focuses on federal lands and their proximity to *at-risk communities*, it also considers the impact of other wild lands near or adjacent to federal property.

The Healthy Forest Restoration Act of 2003 has a number of provisions intended to strengthen wildland mitigation activities. The principle components of this legislation focus upon the following key elements:

- Reduce wildfire risk to communities, municipal water supplies, and other *at-risk* federal land through a collaborative planning effort.
- Authorize grant programs to improve the commercial value of forest biomass that may otherwise become a fuel source in catastrophic fires.
- Enhance efforts to protect watersheds and address threats to forests and rangelands.
- Gather information on the impact of insect and disease infestations and to improve the capacity to detect insect and disease infestations.
- Protect, restore, and enhance forest ecosystems by promoting the recovery of threatened and endangered species; improving biological diversity; and enhancing forest productivity.

This law looks at ways to clean up certain portions of the forest system in a manner that is consistent with the provisions of other pieces of federal legislation. It is an attempt to mitigate the economic and environmental losses of fire damages to communities and the forest system while protecting endangered species and other sensitive forest conditions.

The section of this law that has the greatest direct impact on community preparedness and protection is *TITLE I—HAZARDOUS FUEL REDUCTION ON FEDERAL LAND*. It establishes definitions and criteria to determine *communities at-risk* from wildland fires. It also sets the conditions for evaluating and funding projects intended to reduce the vulnerability of forested areas in the proximity of urban environments from the effects of large-scale wild fires and provides opportunities for local governments and private landowners to implement cost effective fire suppression mitigation measures.

III. Mitigation Management Activities and Accomplishments

Custer County is participating in this planning activity as one means to broaden its planning and response base to mitigate the effects of wildland fires. The County has participated in a number of projects, interagency taskforces and boards that focus on forest management, and fire suppression and reduction issues. The following is a list of interagency accomplishments that have helped make Custer County a safer place to live.

- Custer County adopted the *Custer County Natural Hazards Mitigation Management Plan in 2003.* This plan identified all natural hazard phenomena that have had a significant impact upon life, safety, economy and environment throughout Custer County. The plan not only identified the various hazards but also analyzed the risks they pose and prepared a mitigation strategy for each hazard.

- Custer County has public officials that are members of the Black Hills National Forest Advisory Board. This Board was established to provide advice and recommendations on forest management. It considers issues such as: forest plan revisions or amendments; travel management; forest monitoring and evaluation; and site specific projects.

- Custer County has formed a Resource Advisory Committee (RAC) to address the allocation of federal funds for community based projects on or near National Forest lands within the county. The funding source for the grant comes from the Secure Rural Schools and Community Restoration Act of 2000. It allows a portion of the federal timber receipts fund to be used for authorized projects to enhance forest management.

- Custer County has adopted the National Incident Management System (NIMS) in accordance with Homeland Security Presidential Directive (HSPD)-5. NIMS is designed to provide a national framework for all levels of government to prepare for, respond to, and recover from domestic incidents of any type and size. It is comprised of three basic components, Incident Command System (ICS), Multiagency Coordination System and Public Information System.

- Custer County subscribes to the principles and concepts of the National Emergency Incident Management System. This includes following the operational structure associated with Incident Command. Custer County has offered to first responders and public officials a number of training activities associated with the ICS training series.

- Custer County Planning & Advisory Board is comprised of local officials who are responsible for and have a direct interest in the organized development of Custer County. Issues relating to a number of topics including health, safety and transportation are discussed and included in the building permit process for new developments and building sites.

- Great Plains Interagency Dispatch Center is the principal organization for the coordination of fire response resources and personnel within the Black Hills. This activity is found within the South Dakota Department of Agriculture, Division of Wildfire Suppression. The Great Plains Interagency Dispatch Center is located in Rapid City at the old Regional Airport building. The Volunteer Fire Departments and Fire Districts within Custer County perform their wildfire suppression activities as a part of the interagency response organization.

- Custer County has re-instituted the position of County Fire Coordinator. This position is located within the Custer County Office of Emergency Services. The person in this position is responsible to act as a liaison between the County and other fire departments

- The City of Custer has undertaken a forest management mitigation project on "Big Rock Park". This is a 54 acre city park that takes in the southern side of Custer. It is a very steep and heavily timbered area.

- Custer County has been a long time promoter of the Firewise Program**.** This is an effort to show landowners how to better protect their homes and property from the affects of wildland fires.

IV. Planning Requirements

A. Criteria for Evaluating Community Risk

Title I of PL 108-148, Healthy Forest Restoration Act contains two key items relating to community wildfire preparedness. They are the definition of the elements of an *at-risk community* and the establishment of the composition of a community wildfire protection plan.

1. *At-Risk Community* means an area that meets the following conditions:
   - meets the definition of a wildland urban interface community
   - includes an environment that is conductive of a large-scale wildland fire
   - involves a significant threat to human life or property

2. Community Wildfire Protection Plan is a fire mitigation plan for *at-risk communities* that:
   - meets specific standards developed by Wildland Fire Leadership Council and agreed to by applicable federal, state and local government agencies affected by its composition,
   - identifies and prioritizes areas for hazardous fuel reduction; recommends the types and methods of treatment on Federal and non-Federal land; and includes actions that will protect 1 or more *at-risk communities* and essential infrastructure, and
   - includes recommendations to reduce structural ignitability of public and private property throughout the *at-risk community*.

The process to identify specific *communities at-risk* is based upon a document prepared by the National Association of State Foresters entitled *Field Guidance, Identifying and Prioritizing Communities at-risk.* It includes information obtained from other wildland protection documents and federal legislation. The intent of this document is to establish nationally compatible standards to identify and prioritize *communities at-risk.* Each state is responsible to utilize their own resources and personnel to identify the *at-risk* areas on a county by county basis.

Utilizing this criteria, the State Forester, in collaboration with others involved with forest management issues, identified six areas in Custer County that qualify as *at-risk communities*. These areas are Argyle, Custer, Custer Highlands, Dewey, Hermosa, and Pringle. See Appendix G for details

B. PLANNING PROCESS

The Healthy Forest Restoration Act contains specific requirements for the preparation of a Community Wildland Protection Plan. They include:

- Determining population density that can be affected by a wildland fire.
- Requiring that consideration be given to all lands *at-risk* regardless of ownership.
- Developing criteria to establish categories of threat to a community or specific landscape
- Ranking the level of threat by priority
- Preparing maps of the community and identifying various zones of threat based upon fuel conditions and topography
- Requiring that three entities must mutually agree to the final contents of a Community Wildland Protection Plan.
    - the applicable local government (i.e., counties or cities),
    - the local fire department(s), and
    - the state entity responsible for forest management.
- Including a broad base of interests in the planning process
- Encouraging the development of individual wildfire mitigation plans for each community or area *at-risk*.

The Community Wildfire Protection Plan focuses on homes and structures with common utilities and infrastructure, and transportation routes near or adjacent to federal lands. It evaluates the wildland area in the proximity of the community for fuel conditions that could cause a large-scale fire event. It considers the impact that such an event might have as a significant threat to human life and property. The plan also provides recommendations and solutions to mitigate the effects of a wildland fire on a *community at-risk*.

C. HAZARD ANALYSIS AND RISK ASSESSMENT PROCESS

The ability to plan an effective response to a Wildland/Urban Interface Fire rests heavily on development of a hazard assessment process that evaluates all components that comprise a threat to an *at-risk community*. Currently there are no established uniform national standards for the risk assessment of a wildland fire. However, there are a number of guidance documents that reference items and activities to consider in completing an assessment process. The National Wildfire Coordinating Group, an advisory body comprised of federal natural resource agencies, recommends the use of a publication entitled “Wildland/Urban Interface Fire Hazard Assessment Methodology” as a reference guide. This plan incorporates portions of that methodology.

Federal legislation (*Federal Register 66(3), January 4, 2001*) has established three categories of communities that meet the criteria of a *community at-risk*. They are classified as Interface Community, Intermix Community and Occluded Community. Each contains standards to define a level of involvement with the wildland environment.

1. Interface Community
    - Structures (residences & businesses) adjoin wildland areas
    - There is a defined profile separating structures from wildland fuel sources

- There are three or more structures per acre each with shared services
- Fire protection services are provided for both urban and immediate wildland fires
- Population density may include 250 or more people per square mile

2. Intermix Community
   - Structures are scattered throughout a wildland area
   - No defined profile separating wildland fuels from structures
   - Structure density may be close together or as few as one per forty acres
   - Fire protection services available through a tax base district and provides immediate fire protection and possibly wildland fire protection
   - Population density may vary from 28 to 250 people per square mile

3. Occluded Community
   - Area often includes defined parks or open spaces
   - Clear profile exists between structures and wild lands
   - Population density more closely attributed to that of an urban environment
   - Fire protection provided by local organized fire department with primarily structural responsibility

Each risk factor includes criteria to rate a particular community or area's level of risk to the affects of a wildland fire. Each risk factor and situation ranking provides general guidance to evaluate a community's threat level. However, the ranking is not all inclusive and it may be necessary to consider selecting a mixture of situations to fit a particular community or area.

Risk Evaluation

A *community at-risk* is evaluated in terms of fuel sources, area fire history, geographic location, topography, influence on water sources, impact upon infrastructure and structures, and fire defense capability.

Fuel sources must be evaluated as to their risk potential to feed and transmit wildland fires. Proximity to structures and infrastructure and the type of vegetation are important in the risk analysis process. Condition and source of the ignitable material will affect how a community prepares its response procedures.

Custer County has experienced some of the largest fires in its history during the past 15 years. They included:

Cicero Peak	10,183 ac	1990
Dewey II	833 ac	1991
Shirttail	3,438 ac	1991
Dewey	2,493 ac	1996
Jasper	83,500 ac	2000
Elk Mountain II	2,844 ac	2001
Rogers Shack	11,895 ac	2001
Red Point	10,384 ac	2003

Area fire history considers the size and location of large fires in relation to the proximity of the *at-risk community.* This assessment looks at all fires with an extent of 25 acres or more occurring within a 10 mile radius of the subject area. See Appendix H for details.

The risk assessment should evaluate the threat of wildland fires upon historically recognized cultural resources. Custer County has at least forty one sites listed on the National Registry of Historical Places. They include the following categories:

- Prehistoric
- Native American
- Settlement
- Person
- Architecture/Engineering
- Education
- Transportation
- Government

Many of the sites are located within the three mile zones established for the *at-risk communities*. See Appendix L for details.

Risk Factors

Federal legislation supporting the Healthy Forest Restoration Act has provided specific criteria to assist in guiding the evaluation of an *at-risk community*. It analyzes the conditions surrounding a specific community or area based upon fire behavior, values at-risk and infrastructure.
This analysis is further subdivided into situations that can rate the hazard threat to the community in terms of high, medium or low. Such a ranking system helps in prioritizing what needs to be done and defining the various mitigation strategies needed to accomplish the goals.

The risk factors collectively consider the criteria of Fire Occurrence, Hazard, Values Protected and Protection Capabilities when determining the potential amount of exposure each community (landscape) may experience.

- Fire Occurrence Historic fire occurrence records and other data utilized to assess the probability of a large wildfire ignition in the vicinity of each community (or identified landscape).

- Hazard Assess the fuel conditions on the landscape and surrounding the community. Consider factors such as vegetation, ground cover, impacted timber and fuel load.

- Values Protected Evaluate the human and economic values associated with the community or landscape, such as homes, businesses, community infrastructure as well as, municipal watersheds, and areas of high historical and cultural significance.

- Protection Capabilities Assess the wildland fire protection capabilities, including the capacity and resources to undertake fire prevention measures.

This methodology of evaluating risk and ranking hazards is considered guidance. It may require some adjustment to fit the specific conditions of the community or area.

Risk Factor 1:
Fire Behavior

Situation 1:

- Fuels are in close proximity to structures
- Fuels are conducive to crown fires or high intensity surface fires
- Terrain is steep. Slopes have predominantly southern features
- Wind exposure and fuel sources may hinder effective fire response
- History of large fires and/or high fire occurrence in the area
- Fire fighting response efforts are difficult

Situation 2:

- Fuel source is comprised of broken moderate fuels with some mixture of ladder fuels
- Surrounding fuels are subject to torching and spotting
- Terrain is comprised of moderate slopes
- History of some large fires or moderate fires in the area
- Fire fighting response efforts are moderate

Situation 3:

- Fuel source primarily grass or sparse fuels around structures
- Terrain is either flat or includes gentle slopes with northern features
- Infrequent winds
- History of little or no fire occurrences
- Fire fighting efforts are generally highly effective

Risk Factor 2:
Values At-Risk

Situation 1:

- Urban interface environment
- High density of structures and infrastructure
- Lack of defensible fire protection space
- Community watershed for municipal water source at high risk
- High potential for economic loss
- Likelihood for loss of housing and businesses
- Risk of loss to cultural, historic or natural heritage values

Situation 2:

- Intermix or occluded community setting
- Scattered area of high-density homes, summerhouses and seasonal recreational facilities

- Structures are located less than a mile from each other
- Scenic locations and some watersheds *at-risk*
- Potential for flooding or surface erosion from loss of vegetation

Risk Factor 3:
Infrastructure

Situation 1:
- Limited accessibility due to narrow roads, dead end locations, and steep grades
- Minimal or non-existent fire fighting capability to include adequate water sources and transmission capability
- Limited emergency response capability and evacuation planning

Situation 2:
- Access routes are limited but obtainable
- Terrain is comprised of moderate grades
- Water supplies are limited but obtainable
- Limited fire fighting capability but accessible to scattered areas of a fuel environment

Situation 3:
- Access routes readily available for ingress and egress
- Surface and subsurface water sources easily obtainable
- Fire response organizations well equipped and trained
- Evacuation plans in place
- Area consists of a readily defensible landscape.

V. Community/Wildland Fire Mitigation

A. ISSUES

Mitigation issues affecting Custer County fall within the three classifications of *communities at-risk*, subdivisions and individual land owners. While there may be some commonality in the general issues, each classification has needs that are unique to their resources and circumstances in addressing the risk of wildland fire.

Issues	**Local Government**	**Subdivisions**	**Property Owners**
Hazardous Fuel Reduction	Wildland/Urban Interface	Raw land development	Clearing undesirable vegetation
Access	Community Boundaries	Roads & Lanes	Ingress & Egress
Resources	Community Water System	Centralized Water Storage	Well or Cistern

Response Planning	Community Response Plan	Specific Fire Plan	Check List
Training & Public Information	Uniform Certification	Initial Fire Suppression	Basic Fire Protection
Warning & Notification	Interagency Coordination	Landowner Contact	Notifying Emergency Services

Local Government Issues

Hazardous Fuel Reduction
The principle landownership adjoining community limits is private property. The condition of vegetation and degree of fuel hazards varies along the community boundaries. The *at-risk communities* of Dewey and Hermosa are surrounded with a vegetation source that is primarily prairie grasses.

Access
Emergency response vehicles, equipment and personnel must be able to gain access to property that is closest to the fire source. Portions of Custer and Pringle have private property that involves steep terrain and limited access points.

Resources
The *at-risk communities* have a variety of fire suppression equipment. Argyle, Custer Highlands, Dewey and Pringle have equipment more suitable to wildfire suppression. Most of the pieces have a limited capacity to carry water. Availability of water within the community and in many of the rural areas is extremely limited.

Planning
Most of the communities have internal fire suppression plans and procedures. The extent of the operational procedures varies among the different community response organizations. These documents are not always shared between the different communities.

Training & Certification
Presently, there are no state-mandated standards that a Volunteer Fire Department must achieve. The State Fire Marshall's office recommends that fire service personnel complete the Fire Fighter I & II courses for structural fire protection. US Forest Service and State Division of Wildfire Suppression require that volunteer fire fighters pass a stress test (pack test) and have a Red Card certification to remain on a wildland fire after the initial attack period.

Warning, Notification and Coordination
Wildland fire response is coordinated through the Great Plains Dispatch Center in Rapid City. Volunteer Fire Departments and the Custer County Communication Center are required to notify Great Plains immediately so that required resources may be ordered. However, local government is not always notified when Great Plains received a wildfire

notification from another source and orders resources to the fire. Local Volunteer Fire Departments feel left out of the communication loop.

Subdivision Development Issues

Hazardous Fuel Reduction

The number of housing developments in Custer County is increasing rapidly. They are being developed on agricultural and ranch land that may contain heavily timbered parcels. Custer County places very few restrictions on the developer concerning site preparation or management of hazardous fuels. It is deemed the responsibility of the future landowner to manage the property. Many of the subdivisions are being created near the communities of Custer and Hermosa. Unmanaged timber plots can add to the Wildland/Urban Interface problem and create a potential hazard for adjoining property owners.

Access

Subdivisions contain internal road systems and lanes leading to separate parcels. Some of the properties are isolated by the lanes for privacy purposes. Access can become a problem when emergency vehicles are restricted to single ingress and egress points.

Resources

The availability of a reliable water source can be a problem in subdivisions where there is a limited water supply. Many property owners have cisterns as their only water source. This may be due to a lack of an adequate subsurface water supply, or to the prohibitive cost of drilling a deep well due to unfavorable geologic formations. Replenishing cisterns often requires hauling water twenty or more miles one way. The capacity of the cisterns may be sufficient to serve the residence but have little additional capacity for other outside needs.

Planning

Subdivisions normally do not have written procedures that address internal fire suppression. Individual property owners are responsible for their own protection. Volunteer Fire Departments may have limited information on the subdivision layout and the location of developed sites.

Training and Public Information

Fire suppression efforts are primarily the responsibility of the volunteer fire department serving the area. Local land owners generally have little or no knowledge or experience on how to minimally protect their property before a fire occurs.

Warning and Notification

Not all subdivisions have associations with members permanently residing on the location. Subdivision property owners (residential and seasonal) need to know how to notify local homeowners of the fire hazard to life and property.

Local Property Owners Issues

Hazardous Fuels Reduction

Individual landowners that are not familiar with living in a timbered environment often do not know how, or are unwilling to take action, to remove hazardous fuels. Heavy timber and vegetation is often seen as an appropriate environment for habitat. It is further viewed as a means to enhance and protect personal privacy. Those who want to take corrective action regarding hazardous fuels do not always know how to plan a project or where to obtain technical advice.

Access

Many properties are located a mile or more off of county roads. They may be located in rough terrain with limited ingress and egress. This is a concern of emergency response personnel who must bring fire equipment to the site.

Resources

The majority of landowners in Custer County rely upon cisterns as a source of potable water. Generally, these reservoirs have a 1,000 - 1,500 gallon capacity. This is normally adequate for personal consumption but may not be sufficient for outside and emergency needs. Replenishing the cisterns may require a ten to twenty mile one way trip to a community or area water supply.

Planning

Generally, a site description must be provided to Custer County and the zoning board in order to obtain a building permit. It is doubtful that the local volunteer fire departments have a copy of the site plan. Often the landowners do not consider establishing a fire safety zone around structures and outbuildings. This can result in an increased hazard to the property.

Training and Public Information

Landowners that are unfamiliar with living in a rural environment often have mistaken expectations regarding availability of basic services. Timely delivery of emergency services may not meet conditions that exist in a city or town with full time personnel. Property owners need to know how to access emergency services and the availability of resources to support those services.

Warning and Notification

Communication systems in a rural mountainous environment are often limited. Telephone service may be limited to land line systems because cellular resources are unavailable or non-obtainable due to terrain or tower locations. Television service in rural areas is primarily obtained through satellites. It is not always possible to access local or area stations due to location of the structure. Local responders need to have a means of notifying isolated property owners in the event a major fire is occurring near them.

B. MITIGATION RECOMMENDATIONS

Wildland fires occurring in Custer County transcend all levels of government and affect both public and private landowners. Custer County needs to adopt concepts similar to those advocated in the National Fire Plan as a means of mitigating the impact of wildland fires.

1. Activity: Fire Fighting Resources and Personnel

   Issue A: Universal wildfire training of volunteer fire fighters

   Recommendations:
   - Establish uniform wildland fire suppression training standards for volunteer fire department personnel.
   - Establish a cadre of intergovernmental experienced wildland fire experts to offer annual introductory and refresher training.

   Issue B: Meeting Interagency standards for fire suppressions positions.

   Recommendations:
   - Maintain records on all volunteer fire department members as to their annual physical fitness status and their proficiency in filling designated fire suppression positions.
   - Assess the training, equipment and wildfire suppression proficiency of each volunteer fire department within the county.

   Issue C: Maintaining an adequate water source for wildland fire suppression.

   Recommendations:
   - Establish a countywide data base on all reliable water supplies, both urban and rural.
   - Conduct an annual pre-fire season assessment of the condition of surface water sources to evaluate the condition of reservoirs and the level of supply.
   - Establish written agreements with property owners with larger water resources to enter property and access water.
   - Preposition above ground temporary water reservoirs in *communities at-risk* that have limited onsite water resources.
   - Encourage subdivision developers to include a renewable water reservoir and maintain it during fire season.

2. Activity: Reducing Hazardous Fuels

   Issue A: Establishing a buffer zone around *communities at-risk* of a wildland/urban interface fire.

Recommendations:

- Conduct an annual evaluation of timbered properties on the boundary of an organized community.
- Establish a program to assist property owners in identifying unhealthy or potentially hazardous vegetation for removal. Enforce local fire safety codes and ordinances as appropriate.
- Organize meetings with property owners adjoining community boundaries and solicit their support in reducing and removing hazardous vegetation and fuels.

Issue B: Managing vegetation on individual parcels within subdivisions.

Recommendations:

- Encourage Subdivision Associations to include provisions in their covenants to evaluate vegetation conditions on members' property. Removal of unhealthy timber should be strongly suggested.
- Property owners in subdivisions without covenants should be advised on how to access forest management expertise in evaluating individual parcels.
- The Custer County Planning and Zoning Board should include evaluations of hazardous fuels and vegetation as a provision in considering new development site applications.

Issue C: Timber and vegetation management on individual non-affiliated pieces of property.

Recommendations:

- Provide outreach to property owners to advise them in assessing their property for unhealthy and hazardous fuel conditions.
- Provide public information through media and internet sites on how to secure technical assistance in evaluating their property and potential cost share grants to implement recommendations.
- Identify points of contact within county government and volunteer fire departments to assist with timber management questions.
- Provide guidance to subdivisions and individual property owners in assessing burned lands for mitigation actions including establishing native grass and plant material. Provide information to property owners on proper disposal of thinned material and vegetation.

3. Activity: Site Development of Rural Property

Issue A: Establishing a defendable zone around property boundaries and structures.

Recommendations:

- Custer County Planning and Zoning should include technical information on site preparation when a landowner applies for a building permit.

- Develop local land use plans that include provisions for the maintenance of defensible space on municipal and individual property.
- County Emergency Services, Cooperative Extension and Volunteer Fire Departments should provide *Firewise Landscaping Checklist, Living with Fire- A Guide for the Black Hills Homeowner*, and other locally adaptable information to landowners of developed property.
- Urban residents with timbered property should be provided *Firewise* information and other public information regarding meeting city codes and fire safety standards.
- Prepare a fire suppression planning model for *communities at-risk* and subdivisions.

Issue B: Promoting reasonable access to isolated property for emergency vehicles.

Recommendations:
- Custer County Planning and Zoning should consider the layout of internal roads and lanes within proposed developments and new building sites.
- Community planning boards should adopt similar actions when evaluating new developments within the three mile zone of influence.
- Public information should be provided to property owners of individual parcels advising them to evaluate existing roads for ingress and egress of emergency vehicles. Consideration should be given to assuring adequate clearance by removing timber, vegetation and rocks that might impede access.

4. Activity: Warning and Notification

Issue A: Timely notification to local volunteer fire department representatives of interagency suppression actions.

Recommendations:
- Great Plains Dispatch Center notifies Custer County Communications when interagency personnel are responding to a wildfire anywhere in the county. It is the responsibility of Custer County dispatch to contact the local volunteer fire department representative within that respective area. Custer County Dispatch should notify Great Plains Dispatch that the local fire representative has been contacted and is in route. Great Plains Dispatch should try to include the local department representative in the initial attack for coordination of resources.
- Improve interagency incident command decision making training for Volunteer Fire Department officers and other responsible fire suppression officials regarding utilization of firefighter resources and suppression strategies.

Issue B: Notifying property owners within a subdivision.

Recommendation:
- Provide a list of permanent residents and a diagram of the development to the appropriate volunteer fire department and Custer County Dispatch. Information

- Develop and distribute fire prevention information that includes notification and evacuation strategies for property owners.

Issue C: Notifying landowners of individual parcels.

Recommendations:
- Each landowner should be contacted and requested to provide information regarding the location of the property and phone number(s).
- Volunteer Fire Department and Custer County Dispatch should have a data base on each property.
- Landowners should have a card listing who to contact and what specific information to provide.

C. MITIGATION PROJECT STUDIES

The mitigation evaluations and recommendations point out what could and should be done to institute effective wildland fire mitigation measures for private land owners, subdivision developments and communities. What is not discussed is how this is actually accomplished. Three project studies are included as examples of wildfire mitigation actions. Each study presents the rational for undertaking the mitigation actions. It identifies what steps were taken to accomplish the goals. Lastly, it discusses the outcome of the mitigation activity.

Pringle Property Project is a study of a small individual parcel of heavily timbered property on the edge of Pringle, South Dakota. It focuses on how to accomplish effective timber management on the 8 acres when there is little personal knowledge of living in a pine forest environment. The study looks at how an uninformed person (novice) goes about evaluating what needs to be done to establish a healthy property environment, where to acquire the technical support for sound decision making, and how to find the physical and financial resources to get the job done.

Silver Star Subdivision Project is a study that involves an established subdivision southwest of Custer and the interrelationship of the individual property owners. Wildland fire mitigation is approached from the aspect that the numerous landholders are a community that is somewhat dependent upon each other. A few of the property owners who had previous forest management experience through the US Forest Service and Bureau of Land Management have been assisting other owners in achieving a Firewise Community Status.

Big Rock Park Project is a study that involves the City of Custer. Big Rock Park is a 54 acre wood parcel on the southern edge of the city. It has a very steep northern face that rises to a flat table feature surrounded by private land. The study is a description of a two phased project that the city contracted to clean up previous timber debris and conduct a thinning activity of the entire 54 acres. The purpose of the project was two fold. One was to reduce the threat that area posed in the event of a wildland/urban interface fire. The other goal was to create a more esthetically pleasing public park environment by removing slash piles and unhealthy vegetation.

PRINGLE PROPERTY PROJECT

BACKGROUND

Several parcels of land owned by the United States Forest Service in and around the northwest corner of Pringle, South Dakota did not adjoin other parcels of federal land. These parcels, which totaled 76.43 acres (Lot designations), were Public Domain lands which were reserved as part of the national forest on March 1, 1898. Since the US Forest Service wants to consolidate their land holdings in the Black Hills National Forest in order to simplify forest management, smaller isolated parcels of private land surrounded by national forest are occasionally exchanged for isolated parcels of federal land surrounded by private land. This usually occurs in an area near a community. It is beneficial for both the community and the forest since it facilitates development near the community thereby increasing the tax base. It also limits development farther from the communities in the more rural forested areas. This greatly simplifies the land ownership patterns for the management of fuels reduction projects and other issues.

On September 28, 2000 the Pringle Parcels left federal ownership as part of the "Custer Area Land Exchange". The property was acquired by the South Dakota Nature Conservancy, a non-profit organization. This organization sometimes works with various private parties to acquire parcels that the Forest Service would like to obtain. The organization then trades them for parcels closer to a community. This property is usually more suitable for development. The Conservancy really does a good deed for the taxpayers by helping in an exchange. These purchases can be made much more quickly and with more flexibility without the federal red tape.

The South Dakota Conservancy requested that the Custer County Housing and Redevelopment act as the point of contact for the resale of those parcels of land at an appraised value. They, in turn, offered the land to the principle adjoining land holders at a set per acre value. Once the land transfer was finalized, the new owners could keep or dispose of the property as they wished.

PROJECT STUDY

The parcel in this project study is 8.2 acres of the original 76.43 acres. It is located north and west of the former Pringle School in the northwest portion of the town. It is bound by a 5 acre parcel on the south and by an 11 acre parcel to the north, both of which were part of the original federal transfer. The land begins on a level with Howard Street to the east and rises to a sloping ridgeline to the west. The change in elevation from the street to the top of the property boundary is approximately 79 feet (4921 to 5100).

The building site is located on the mid portion of the slope about 100 yards from the street. It consists of a 16 X 64 foot mobile home, a 1,000 gallon cistern and a 1,000 gallon septic tank. Pringle does not have a central water or sewer system. Private residences rely on individual wells, cisterns and septic systems.

The principle vegetation consists of Ponderosa Pine and native grass with a mixture of berry bushes, hardwood seedlings, buck brush and native flowers. Since the property was originally part of the Black Hills National Forest, the condition of the timber is essentially untouched. It is

unknown if there was any previous logging on this parcel. There does not appear to be signs of stumps or other recent logging activity. The more mature trees were estimated to be in excess of 100 years old.

The overall appearance of the property varies with location. The lower portion is a mixture of open space and large old growth trees. It also has small dense clusters of young ponderosa pine sometimes incorrectly called jack pine. These trees are of small diameter and many show upper trunk damage from heavy snows. They are of little or no value esthetically or environmentally.

The upper portion contains the majority of old growth timber and many larger diameter trees qualify as commercial grade timber. These add a unique quality to the property due to their size and age but there is a need to remove some of them to give the more desirable ones a chance to fully mature. It is also necessary to remove ground clutter and downed timber. These steps will enhance the rustic appearance of the property and greatly improve the survivability of the remaining trees in the event of a wildland fire.

The present owners have purchased this property about 4-5 years ago. They live in eastern South Dakota and periodically spent vacation time in this area during the past 15 years. Like many people who come to the Black Hills, the owners enjoy the climate, topography, and environment that this area offers. They were also interested in acquiring a piece of property as a future site for a vacation or retirement residence. Their interest in the southern Black Hills can best be summed up by a November 15, 2005, Rapid City Journal article about retirees in the Custer area. It contains quotes such as “I call it our intangible riches,”…“You can’t put a price on that.” Or “When I first stood up on this hill, I felt at peace.” Perhaps the best way to explain the interest in owning property is the quote “Everybody wants 10 acres, a rock and a tree”.

The majority of small property owners fall within the 5-20 acre classification. They want a rustic environment, peace and quite, and privacy. Timber and a varied terrain is important is achieving this pleasing atmosphere. The price per acre of such property has increased rapidly over the past 10-15 years. It is not unusual to pay five thousand to twenty thousand dollars an acres depending upon location and amenities.

A property owner who makes an investment of this amount is generally somewhat reluctant to make substantial changes in the landscape. It is a difficult decision to make, but the owners of the project property realize that it is necessary to remove some of the timber and deadfall. This will improve the general appearance of the property and make it less subject to the hazards of a fire. The question is, how do you accomplish this when you do not have the physical resources or the technical knowledge to make the changes yourself?

PROJECT STEPS

1. Determine what has to be done

The property owners first decided to maintain the property as a single parcel rather than subdivide it. Since the property is actually in the city limits, they also wanted to keep a buffer of trees between the adjoining landowners, the town and themselves. In order to determine what

timber and vegetation should be maintained, they searched the internet for information. There are some excellent websites that list sources of information on the steps needed to evaluate the property. These sites also include an explanation of terms such as basal area, canopy cover, crown fires, ladders fuels, thinning, slash piles and other terminology common to the forest management community. See Appendix Q for details.

2. Locating local technical expertise

A number of government service agencies such as the County Extension Service, the US Forest Service and SD State Forestry can provide valuable information about businesses and individuals who can evaluate timbered property, commercially log identified trees, conduct thinning of undesirable timber, and pile and dispose of residue. Often local residents can also provide similar information.

The property owners contacted the State Forester in the South Dakota Department of Agriculture, Division of Resource Conservation and Forestry. They were referred to Dave Hettick, the Southern Black Hills State Forester in Hot Springs who agreed to evaluate the timber on the property. This is a free service provided by the State of South Dakota as one of the activities available through by the Division of Resource Conservation and Forestry. It is important that requests for timber survey be submitted far enough in advance to fit in with other scheduled office activities.

3. Evaluating the Property

State forestry personnel made two visits to the property. During the first visit the property boundaries were marked. The property owners were required to provide a surveyor's land plat clearly listing the dimensions and a copy of the property tax statement. The first was obtained from the Custer County Register of Deeds and the second from the Custer County Auditor. The land plat is used to insure that any timber marked for removal is within the legal property boundaries. The tax assessment information lists the current owners for liability purposes.

The timber survey was performed during the second visit. The primary emphasis was marking commercial grade timber that needed to be removed before the thinning process could begin. The large trees are removed first because logging can cause damage to smaller growth that might otherwise be maintained for future development.

Mr. Hettick and a college intern evaluated and marked approximately 120 trees for removal and potential sale. It is important to note that not all excess trees are of commercial saw lumber quality. Trees must be at least 8 inches in diameter at a height of 4.5 feet above the ground to be of commercial value. Trees for removal were evaluated on condition and proximity to other more desirable timber. Trees with weak root systems, forked trunks, leaning trunks, damage from lightning strike, insect or disease impact were marked for removal. Some of the large trees had grown in clusters and needed to be thinned so the remainder could develop more fully. Other trees were growing close to rock outcropping and had little chance to reach maturity.

Removing marketable trees in this manner has at least a two fold purpose. The first is to allow younger trees and ground vegetation a chance to grow by providing more open space for sunlight and moisture. The second is to mitigate the potential effects of wildland fires by widening the distance between mature trees thus reducing chance that a fire would spread into the crowns of the trees and rapidly travel throughout the entire parcel.

Mr. Hettick was also available to answer question regarding the rational in selecting individual trees for removal. He also answered many questions regarding the different types of vegetation and what needed to be done to improve the general forest health on the property. The property owners feel that when the project is completed, there will be a definite improvement in the condition and quality of the landscape.

4. Timber Removal

The landowner is responsible for arranging the logging of saw grade timber. Again, local residents, saw mills or area governmental services generally know businesses and individuals who might be interested. In the case of the Pringle project, a local saw mill has people who do professional logging. A professional logger can inspect the timber and establish a value for the lumber. The price quote will depend on a number of factors including the number and quality of the trees, the accessibility of the property for removing the logs, the amount of work required for the piling of slash, ground restoration and repair of surface damage caused by heavy equipment, and the hauling distance to the saw mill. The negotiated price should be summarized in a contract.

5. Thinning and Clean up

This process will occur after the commercial logging is completed. A retired US Forest Service forest management specialist conducted a visual inspection of the land. This person helped to lay out the actions necessary to re-create a health forest environment.

Timber thinning has two major functions. First it removes undesirable trees that do not meet saw mill grade standards. This includes small dense stands of immature pine trees and downed and dead trees of no value. Secondly, thinning helps to establish the appropriate spatial distance between the various size trees. This result of such action is to create a healthier environment for existing and new vegetation. More importantly, it helps to reduce the impact of fire on the trees.

Cleaning up residual vegetation is an important part of the thinning process. Tree limbs, downed trees and other slash must be removed and disposed. Residue left scattered on the ground is an open invitation for insect infestation and disease. It is also a serious source of fire fuel. The most common practice for debris removal is to pile and burn. Forest management practices suggest that the piles be established in a somewhat open area and allowed to dry before burning for more complete consumption. December, January and February are generally the best months for burning the piles because this is usually the time of year when there is the most snow on the ground. Snow helps reduce the possibility of spreading the fire to other locations. Once the piles have been destroyed it may be necessary to reseed the burned area as the heat of the fire can sterilize the soil. Local contractors who are hired to do the thinning, clean up and reconditioning

of the ground must observe proper burning techniques and regulations. Federal and State Forestry personnel provide information on these requirements, usually through agency websites.

Chipping is another process for removing timber residue. Commercial grade equipment is available for rent in the area. Chipping necessitates the removal of the accumulated piles of material. Saw mills may be able to provide information on marketable uses of the wood chips.

6. Cost of the Project

The cost estimates for the Pringle project are between three and five thousand dollars. The actual cost to the owners will not be known until the contracts are finalized with the commercial logger and the people doing the thinning and clean up. The entire cost of the operation may be assumed wholly by the landowners. However, there is also the possibility that this activity may be cost shared through a grant from the SD State Division of Resource Conservation and Forestry or State Division of Wildland Fire Suppression. These agencies receive grants from the federal government to assist private landowners with timber management. The availability and amount of grant funds may vary. It is important to establish a contract before starting the work. Each agency has specific eligibility rules that must be followed for cost share reimbursement. Federal agencies such as the US Forest Service or Bureau of Land Management may know of other available grant sources. See Appendix N for site pictures.

7. Wildland Fire Mitigation Public Information

Developing a building site in a wildland environment involves a lot more than putting in a road and carving out a flat area for the structures and utilities. The property owner should give consideration to such items as type of access road, terrain of the building site, and construction material of the structure. Consideration should also be given to type and proximity of trees and vegetation to the structures and care and maintenance of the grounds.

There are several public information sources to assist the property owner with site development decisions. One is the Firewise Communities Program website www.firewise.org. that will assist landowners in making their property and residence less vulnerable to the impact of wildland fires. There are two publications that are especially helpful a new home builder or a person who wants to improve existing property.

FIREWISE HINTS offers suggestions on site development that includes the topics of Construction, Landscaping, Fuels, topography and Access.

1. Construction
    - Roof Construction- Fire retardant material such as Class A asphalt shingles, metal, cement and concrete products.
    - Exterior Construction- Brick, cement, plaster, stucco, or cement masonry wall material.
    - Double pane glass windows

2. Landscaping

- Employ good landscaping practices within 100 feet-200 feet area around residence.
- Remove firewood, dead and dense vegetation within 30 feet of structure.
- Plant vegetation that retains high moisture.
- Maintain adequate space between trees and shrubs.
- Prune branches and thick vegetation to reduce the spread of fire.

3. Fuels
    - Dispose of branches and grasses in an approved manner.
    - Remove ladder fuels (low hanging branches and vines) from large trees to reduce possibility of crown fires.

4. Topography
    - Consider the degree of slope when choosing a residence site. Fires move faster up hill and with longer flame.
    - Structures should be located at least 30 feet back from a ridge line.
    - Structures built on a slope should have the surrounding vegetation modified to reduce the impact of uphill fames and heat.

5. Access
    - Property location should be marked and clearly visible from the road.
    - Driveways and lanes should be at least twelve feet wide and have a height clearance of fifteen feet.
    - There should be adequate ingress and egress, to include turn around space, for emergency vehicles.

PREPARING A HOUSE FOR WILDLAND FIRE SEASON provides tips to homeowners on how to improve the appearance of the area around a structure and to reduce the fire hazard.

1. Remove dead or overhanging branches to reduce change of sparks or firebrands from reaching the roof.

2. Remove leaf and other dead vegetation accumulation from lawns and around buildings.

3. Remove leaf clutter from roofs and gutters that might serve as a fuel source for embers.

4. Remove tall, dry grasses that might act as a pathway for a fire to reach the house or out building.

5. Remove ladder fuels that might act as a source to spread the fire by climbing into the crown of tress. Prune limbs that are within 6-10 feet of the ground.

6. Check fuel operated yard maintenance equipment for leaks, faulty exhaust and other operational systems that might cause a fire.

7. Prune bushes and shrubs regularly to remove excess growth and dead material.

8. Dispose of cuttings and debris in a prompt manner in accordance with local regulations.

Another excellent source of information is available through the South Dakota State Department of Agriculture website www.state.sd.us/doa. The Resource Conservation and Forestry Division and the Wildland Fire Suppression Division both have numerous publications that address the wildland environment. One publication that specifically focus on wildfire safety is a 17 page pamphlet entitled *Wildfire Safety Guidelines for South Dakota Rural Homeowners* prepared by Keep South Dakota Green Association and South Dakota Department of Agriculture, Resource Conservation and Forestry Division. It is an easily understood explanation of what a homeowner in a rural, wildland environment needs to consider in mitigating the affects of a wildfire. The Table of Contents includes the various topics.

Introduction
Basic Home Fire Safety
Safety Zones Around Your Home
Common Forest Fuel Classes & What to Do About Them
Proper Forest Management
Water Supplies Can Make a Difference
Accessibility: Can Your Home Be Protected?
Additional Fire Safety Activities
Glossary
Your Fire Safety Checklist

There are public information resources available from all state, federal and private non-profit agencies and organizations interested in wildland protection. It is just a matter of accessing the specific agency's website via the Internet. There are several Search Engine sites to assist in obtaining the information. Internet access is generally available through public libraries for those without an Internet link. See Appendix Q for details.

SILVER STAR SUBDIVISION
FIREWISE COMMUNITY PROJECT

Silver Star is a developed community made up of two subdivisions covering an area of 164 acres. It is former ranch land and is located six miles south of Custer on Highway 385 and one mile off Carroll Creek road. Subdivisions I and II contain 30 tracts varying in size from 5 to 13 acres. Presently, the Community consists of 16 homes with 25 outbuildings. Property ownership is a mixture of year around residents, part-time residents, and absentee landholders. One third of the tracts are owned by out-of-area individuals. Three of these contain structures and the remaining seven are unimproved.

Access to the two subdivisions is from Carroll Creek Road, a two lane road maintained by the county. Internally, the subdivisions are served by Silver Star Drive and Fox Ridge Road plus several lanes to residences.

The topography of the subdivisions is rolling and fairly gently. There are areas with rock outcroppings and bluffs. The Silver Star community is bordered on three sides by US Forest Service property.

Vegetation within this complex is approximately 60% Ponderosa Pine and 40% open grassy meadows on the slopes and drainage areas. The deteriorating condition of the vegetation and timber caused concern among many of the permanent residents. Years of suppressing fires resulted in a dense growth of immature trees and the accumulation of heavy tree debris and pine needles as a ground blanket. This condition was further aggravated by severe tree damage from an early spring snow storm in 2000 that affected most of the Black Hills and especially Custer County. Finally, the area experienced several years of drought that increased hazardous fire conditions.

The combination of these events, plus the occurrence of several lightning strikes within the confines of the Subdivision, prompted the community homeowners association to take positive action. Four of the homeowners had forest management experience through previous employment with either the US Forest Service or Bureau of Land Management. This experience was used to help the homeowners association to establish a local cache of fire equipment for initial attack and to offer fire suppression training for other resident volunteers.

These actions were followed by local volunteer efforts to clean up the 2000 storm damage on individual properties. This was the beginning of applying the Firewise principles throughout the two subdivisions.

At its annual home owners meeting in August 2003, Silver Star voted to work toward a Firewise Community designation. This is more than a symbolic gesture because it clearly demonstrates that the property owners have, and will take proactive measures to protect their property from wildland fires.

The Homeowners Association requested the South Dakota Department of Agriculture, Wildfire Division to conduct Wildfire Risk and Hazards Assessment on each of the properties within the Silver Star Community. The results of the assessments were provided to each property owner with an explanation of the benefits of wildfire mitigation actions during a September 2004 meeting.

Silver Star Subdivision became just the second community in the Black Hills and the first in the southern Black Hills to obtain Firewise status. Silver Star Homeowners Association continues to work to maintain the Firewise Community status by assisting each willing landowner to reduce vegetation and timber hazards on their property. This hazard reduction activity is strictly voluntary for the property owners. However, it has been stated that the majority of the property owners either have participated in, or are currently participating in, the clean up activity.

Applying the Firewise principles to the Subdivisions' property owners proved to be a winning proposition for all parties. The landholders have a better chance to protect their property and structures from the effects of a wildfire. The landowners adjoining those who participate in the mitigation activity may have a smaller impact from a wildfire than they would if properties were not cleaned up. A well maintained subdivision also enhances the visual and economic value of the properties. See Appendix O for site overview.

CITY OF CUSTER
BIG ROCK PARK PROJECT

The City of Custer owns a 54-acre, heavily timbered parcel located in the south central portion of the community. The area was part of the original town site from the beginning. It has been designated as a park and adjoins developed private property to the north, east and west.

The topography of the park consists of a very steep ridge line facing north. The east and west sides are less steep but are sloping toward the top. The area on top is mostly uneven with a mixture of small open spaces.

The 54 acres officially designed as a city park was actually a heavily timbered area more similar to a forest than a traditional park environment. The area had close growth stands, immature trees; storm damaged timber and heavy residue from downed trees and undergrowth. Limited logging activity over the years had left residue and slash piles to decompose naturally. This environment was viewed as a serious issue and a potential problem for wildland/urban interface fire and insect infestation.

The City of Custer Common Council decided that it was necessary to take action in reducing the potential fire hazard in the Park. The City Council authorized a two phase operation to clean up the 54 acres.

Phase I began in 2002. The project, funded on a 50/50 percent cost share basis with a grant from the South Dakota Department of Agriculture, Wildfire Suppression Division, was designed to clean up approximately 20 previously timbered acres. This step was necessary before other thinning and clean up activities could progress.

Phase II began in 2004 with a survey of the area and a determination of what timber was to be removed and the spatial density of the standing trees. A US Forest Service forest management specialist conducted the evaluation. This effort was considered as a donated activity by the US Forest Service.

The City of Custer created a bid proposal based on the recommendations of the forest management specialist and in April, 2004 the City of Custer Common Council let bids to log, thin and clean up all 54 acres of the Park. The proposal required the contractor to remove undesirable timber based upon a spatial distance varying from twenty feet to twelve feet depending on unit designation. It also limited the diameter of the trees to be harvested to less than 20 inches in circumference unless they were defective, diseased or infested. The variance in distance between trees reflected a desire by the City to create a park like atmosphere in various portions of the 54 acre locale.

Other conditions the contractor was required to meet included tree felling, stump height, slash piles, clearing of leaning timber and removal of all insect infested trees unless otherwise directed. The contractor was also to adhere to certain conditions relating to the landscape, archeological sites and park infrastructure.

The contractor received, in consideration of the work, all salvageable timber and a pre-determined monetary fee for anticipated expenses not covered through the timber sale. This agreement was established through a bid process that awarded the contract to the lowest acceptable bidder. The City also agreed to dispose of all slash piles through the use of city personnel.

The City of Custer was able to clean up, thin and remove undesirable timber for less than five thousand dollars. This project was a very cost effective way to enhance the quality of the Park environment. It also has proven to be a meaningful method to mitigate the effects of the wildland/urban interface. See Appendix P for site overview.

VI. Summary

The citizens of Custer County have been extremely fortunate in their encounters with wildland fires. The Jasper Fire event, the largest in the history of Custer County and the Black Hills National Forest, resulted in no deaths or serious injuries and the loss of just one summer cabin and two outbuildings.

This degree of wildfire suppression success is not attributed solely to luck but rather to a very high degree of interagency planning, coordination and response on the part of the volunteer fire departments, and state and federal agency fire management personnel. It is hoped that this high level of success will continue in the future but the reality is that it is becoming more difficult to achieve.

Fire departments have been experiencing increased difficulty in maintaining the level of personnel and training certification necessary to participate in interagency wildfire suppression operations. Custer County and the communities of Custer and Hermosa have been experiencing a steady growth in population. Much of the development is occurring around the outside of community boundaries in timbered terrain. Other pieces of property that formerly had agricultural and ranch origins are slowly becoming individual residential home sites and subdivisions.

All of these activities place additional demands and strains on local government personnel and resources. They are equally taxing to state and federal fire management resources.

Appendix A

Authorities and References

Authorities & References

Federal:

- Disaster Mitigation Act, 2000 Public Law 106-390
- Federal Register 66(3), January 4, 2001,
- Federal Register 66(160), August 17, 2001
- Healthy Forest Restoration Act 2003 (PL 108-148).
- Secure Rural School and Community Self-Determination Act of 2000 (PL 106-393)
- The National Fire Plan (NFP), April 10, 2002
- A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, A 10-Year Comprehensive Strategy. Prepared with the support of the Western Governor's Association, 2002.
- The Department of Interior, Bureau of Land Management directive to complete Community Assessment and Mitigation Plans (OFA IM-2003-020).
- Interagency Memorandum of Understanding for Fuel Treatment Collaboration.
- National Association of State Foresters (NASF) Document: Field Guidance: Identifying and Prioritizing Communities *at-risk* 2003

State:

- SDCL 11-2 County Planning and Zoning
- SDCL 11-4 Municipal Planning and Zoning
- SDCL 33-15 Emergency Management
- SDCL 34-29B Fire Prevention
- SDCL 34-31 Firefighting Equipment and Agreements
- SDCL 34-31A Rural Fire Protection Districts
- SDCL 34-35 Range and Forest Fire Prevention
- SDCL 38-7 Division of Resource Conservation and Forestry
- SDCL 41-20 Forestry

Local:

Custer County

- SDCL 11-2, 11-4, & 11-6
- Custer County Comprehensive Plan, 2006 Revision

Custer County Ordinance #2 Revised (Providing Regulations for the Subdivision and Use of Land in Custer County) 10/15/99 Currently under review and revision

- Custer County Ordinance #6 Revised (Flood Damage Prevention Ordinance)

City of Custer

- 1997 Uniform Building Code
- 1997 Uniform Fire Code
- 1997 Uniform Mechanical Code
- 1994 Uniform Housing Code

- 1994 Uniform Code for Abatement of Dangerous Building
- National Flood Insurance Program Flood Plain Ordinance
- Upper French Creek Hazard Mitigation Plan
- Comprehensive Plan

Town of Hermosa
- Ordinance 10.6- Zoning
- Ordinance 10.9- Subdivision
- Comprehensive Plan- February 18, 1998

APPENDIX B

GLOSSARY

GLOSSARY

"A"

Aerial Fuels:
All live and dead vegetation in the forest canopy or above surface fuels, including tree branches, twigs and cones, snags, moss, and high brush.

Agency:
Any federal, state, or county government organization with jurisdictional responsibilities.

Airtanker:
A fixed-wing aircraft equipped to drop fire retardant or suppressant.

Anchor Point:
An advantageous location, usually a barrier to fire spread, from which to start building a fireline. An anchor point is used to reduce the chance of firefighters' being flanked by fire.

Aspect:
Direction toward which a slope faces.

"B"

Backfire:
A fire set along the inner edge of a fireline to consume the fuels in the path of a wildfire and/or to change the direction of force of the fire's convection column.

Basal area: The total cross sectional area of the trees in a stand measured in square feet (in the U.S., outside bark at 4 ½ feet above the average ground level.

Behave:
A system of interactive computer programs for modeling fuels and fire behavior that includes two systems: BURN and FUEL.

Blow-up:
A sudden increase in fire intensity or rate of spread strong enough to prevent direct control or to upset control plans. Blow-ups are often accompanied by violent convection and may have other characteristics of a fire storm. (See Flare-up.)

Brush:
A collective term that refers to stands of vegetation dominated by shrubby, woody plants or low-growing trees, usually of a type undesirable for livestock or timber management.

Brush Fire:
A fire burning in vegetation that is predominantly shrubs, brush, and scrub growth.

Buffer Zones:
An area of reduced vegetation that separates wildland areas from vulnerable residential or business developments. This barrier is similar to a greenbelt in that it is often used for another purpose such as agriculture or recreation, or parks or golf courses.

Burn Out:
Setting fire inside a control line to widen it or to consume fuels between the edge of the fire and the control line.

Burn Plan:
This document provides the prescribed fire burn boss the information needed to implement an individual prescribed fire project. Also called prescribed fire plan.

Burning Ban:
A declared ban on open-air burning within a specified area, usually put into place by the agency in charge of managing that area and usually in cases of sustained high fire danger.

Burning Period:
That part of each 24-hour period when fires spread most rapidly, typically from 10:00 a.m. to sundown.

"C"

Campfire:
As used to classify the cause of a wildland fire, a small fire that was started for cooking or warming that spreads sufficiently from its source to require action by a fire control agency.

Candle:
A single tree or a small clump of trees that is candling, or burning from the bottom up.

Closure:
Legal restriction on -- but not necessarily elimination of -- specified activities such as smoking, camping, or entry that might cause fires in a given area.

Condition Class 1:
Fire regimes are within a historical range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within the historical range.

Condition Class 2:
Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range.

Condition Class 3:
Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range.

Contain a Fire:
A fuel break around the fire has been completed. This break may include natural barriers such as a river or road, and/or fireline built by hand, and/or fireline constructed mechanically.

Control a Fire:
The complete extinguishment of a fire, including spot fires. Fireline has been strengthened so that flare-ups from within the perimeter of the fire will not break through the line.

Cooperating Agency:
An agency supplying assistance other than direct suppression, rescue, support, or service functions to the incident control effort; e.g., Red Cross, law enforcement agency, telephone company, etc.

Creeping Fire:
A fire that is burning with a low flame and spreading slowly.

Crown Fire:
The movement of fire through the crowns or tops of trees or shrubs more or less independently of the surface fire. A fire is said to be crowning when the flames get up into the tops of trees and spreads.

"D"

Dead Fuels:
Fuels with no living tissue in which moisture content is governed almost entirely by atmospheric moisture (relative humidity and precipitation), dry-bulb temperature, and solar radiation.

Debris Burning:
A fire originally set for the purpose of clearing land or for rubbish, garbage, range, stubble, or meadow burning.

Defensible Space:
An area either natural or manmade where material capable of causing a fire to spread has been treated, cleared, reduced, or changed to act as a barrier between an advancing wildland fire and resources or lives *at-risk*. In practice, defensible space is generally defined as an area of 30 feet or more around a structure that is cleared of flammable brush or vegetation or other fuels.

Detection:
The act or system of discovering and locating fires, for example, by staff or volunteers in lookout towers.

Dispatch Center:
A facility from which resources are directly assigned to an incident.

Dispatcher:
A staff person, who receives reports of discovery and status of fires, confirms their locations, receives orders for resources and takes action to provide people and equipment needed for control, and sends them to the designated locations.

Drop Zone:
Target area for air tankers, helicopters, and cargo dropping.

Dry Lightning Storm:
Thunderstorm in which negligible precipitation reaches the ground. Also called a dry storm.

Duff:
The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, and leaves and immediately above the mineral soil.

"E"

Engine:
A ground vehicle providing specified levels of pumping, water, and hose capacity.

Engine Crew:
Firefighters assigned to an engine. The Fireline Handbook defines the minimum crew makeup by engine type.

Environmental Assessment (EA):
EAs were authorized by the National Environmental Policy Act (NEPA) of 1969. They are analytical documents prepared with public participation to determine whether an Environmental Impact Statement (EIS) is needed for a project or action. If an EA determines an EIS is not needed, the EA becomes the document allowing agency compliance with NEPA requirements.

Environmental Impact Statement (EIS):
EISs were authorized by the National Environmental Policy Act (NEPA) of 1969. Prepared with public participation, they assist decision-makers by providing information, analysis, and an array of action alternatives, allowing managers to see the probable effects of management decisions on the environment. Generally, an EIS is written for a large-scale action or geographical area.

Extreme Fire Behavior:
"Extreme" implies a level of fire behavior characteristics that ordinarily precludes methods of direct control action. One or more of the following are usually involved: high rate of spread, prolific crowning and/or spotting, presence of fire whirls, a strong convection column. Predictability is difficult because such fires often exercise influence on their environment and behave erratically, sometimes dangerously.

"F"

Fine Fuels:
Fast-drying fuels, generally with a comparatively high surface area-to-volume ratio, which are less than 1/4-inch in diameter and have a time lag of one hour or less. These fuels ignite readily and are rapidly consumed by fire when dry.

Fire Behavior:
The manner in which a fire reacts to the influences of fuels, weather, and topography.

Fire Break:
A natural or constructed barrier used to stop or check fires, or to provide a control line from which to work.

Fire Crew:
An organized group of firefighters under the leadership of a crew leader or other designated official.

Fire Intensity:
A general term relating to the heat energy released by a fire.

Fireline:
A linear fire barrier that is scraped or dug to mineral soil after being cleared of all vegetation.

Fire Load:
The number and size of fires historically experienced on a specified unit over a specified period (usually one day) at a specified index of fire danger.

Fire Management Plan (FMP):
A strategic plan that defines a program to manage wildland and prescribed fires and documents the Fire Management Program in the approved land use plan. The plan is supplemented by operational plans such as preparedness plans, preplanned dispatch plans, prescribed fire plans, and prevention plans.

Fire Perimeter:
The entire outer edge or boundary of a fire, which may contain within it substantial areas of unburned fuels.

Fire Season:
1) Period(s) of the year during which wildland fires are likely to occur, spread, and affect resource values sufficient to warrant organized fire management activities. 2) A legally enacted time during which burning activities are regulated by state or local authority.

Fire Storm:
Violent convection caused by a large continuous area of intense fire. Often characterized by

destructively violent surface indrafts, near and beyond the perimeter, and sometimes by tornado-like whirls.

Fire Triangle:
Instructional aid in which the sides of a triangle are used to represent the three factors (oxygen, heat, fuel) necessary for combustion and flame production; removal of any of the three factors causes flame production to cease.

Fire Weather:
Weather conditions that influence fire ignition, fire behavior, and suppression.

Fire Whirl:
A spinning vortex column of ascending hot air and gases rising from a fire and carrying aloft smoke, debris, and flame. Fire whirls range in size from less than one foot to more than 500 feet in diameter. Large fire whirls can equal the intensity of a small tornado.

Firefighting Resources:
All people and major items of equipment that are or could be assigned to fires, ranging from crews and other personnel to engines to aircraft to dozers to water tenders and including a large variety of support personnel and services.

Flare-up:
Any sudden acceleration of fire spread or intensification of a fire. Unlike a blow-up, a flare-up lasts a relatively short time and does not radically change control plans.

Flash Fuels:
Fuels such as grass, leaves, pine needles, ferns, tree moss, and some types of slash, flash fuels or flashy fuels ignite readily and are consumed rapidly when dry. Also called fine fuels.

Fuel:
Combustible material. Includes vegetation such as grass, leaves, ground litter, plants, shrubs, and trees that feed a fire. (Also see Surface Fuels.)

Fuels Reduction:
Manipulation, including combustion or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control. Often includes thinning and/or prescribed burning.

Fuel Type:
An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

"G"

.Geographic Area:
A political boundary designated by the wildland fire protection agencies, where these agencies work together in the coordination and effective utilization of fire management resources.

Ground Fuels:
All combustible materials below the surface litter, including duff, tree or shrub roots, punky wood, peat, sawdust, and other materials that can support a glowing combustion without flame.

"H"

Hazard Reduction:
Any treatment of a hazard that reduces the threat of ignition and fire intensity or rate of spread.

“I”

Incident Command System (ICS):
The combination of facilities, equipment, personnel, procedures, and communication operating within a common organizational structure, with responsibility for the management of assigned resources to effectively accomplish stated objectives on an incident.

Initial Attack:
The action taken by the first resources upon arrival at a wildfire to protect lives and property and prevent further expansion of the fire.

“L”

Ladder Fuels:
Fuels which provide vertical continuity between strata, thereby allowing fire to care from surface fuels into the crowns of trees or shrubs with relative ease. They help start and continue crowning on a fire.

Litter:
Top layer of the forest, scrubland, or grassland floor, directly above the fermentation layer. It’s composed of loose debris including sticks, branches, twigs, and recently fallen leaves or needles, little altered in structure by decomposition.

"M"

Mineral Soil:
Soil layers below the predominantly organic layers; soil with little combustible material.
Mobilization:

The process and procedures used by all organizations -- federal, state, and local -- for activating, assembling, and transporting all resources requested to respond to or support an incident.

Mop up:
To make a fire safe or reduce residual smoke after the fire has been contained, by extinguishing or removing burning material along or near the control line, felling snags, or moving logs and large rocks so they won't roll downhill. Mop-up work is usually (but not always) handled by hand crews.

Multi-Agency Coordination (MAC):
A generalized term describing the functions and activities of representatives of involved agencies and/or jurisdictions who make decisions regarding the prioritization of incidents and the sharing and use of critical resources. The MAC organization is not a part of the on-scene ICS and is not involved in developing incident strategy or tactics.

Mutual Aid Agreement:
Written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request by furnishing personnel and equipment.

"N"

National Environmental Policy Act (NEPA):
NEPA is the basic national law for protection of the environment, passed by Congress in 1969. It sets policy and procedures for environmental protection, and authorizes Environmental Impact Statements and Environmental Assessments to be used as analytical tools to help federal managers make land management decisions.

National Wildlife Coordinating Group (NWCG):
A group formed under the direction of the Secretaries of Agriculture and the Interior that includes representatives of the U.S. Forest Service, Bureau of Land Management, Bureau of Indian Affairs, National Park Service, U.S. Fish and Wildlife Service, and National Association of State Foresters. The group's purpose is to handle coordination and effectiveness of wildland fire activities and provide a forum to discuss and resolve issues and problems of substantive nature. NWCG is the certifying body for all courses in the National Fire Curriculum.

Normal Fire Season:
1) A season during which the weather, fire danger, and number and distribution of fires are about average. 2) Period of the year that normally comprises the fire season.

"O"

Operational Period:
The period of time scheduled for execution of a given set of tactical actions as specified in the Incident Action Plan. Operational periods can be of various lengths, although usually are not more than 24 hours.

"P"

Pack Test:
The pack test gauges the aerobic capacity of fire suppression and support personnel and assigns physical fitness scores. The test consists of walking a specified distance, with or without a weighted pack, in a predetermined period of time, with altitude corrections. Various levels of the test apply to various levels of firefighting duties or jobs.

Peak Fire Season:
That period of the fire season during which fires are expected to ignite most readily, to burn with greater than average intensity, and to cause damage at an unacceptable level.

Personal Protective Equipment (PPE):
All firefighting personnel must be equipped with protective equipment and clothing in order to mitigate the risk of injury from or exposure to hazardous conditions encountered while working. PPE includes, but is not limited to, 8-inch high-laced leather boots with lug soles, fire shelter, hard hat with chin strap, goggles, ear plugs, aramid shirts and trousers, leather gloves, and individual first aid kits.

Preparedness:
Condition or degree of being ready to cope with a potential fire situation. Preparedness Levels are determined by region and nationally as the season progresses, based on current and expected conditions.

Prescribed Fire:
Any fire ignited by management actions under certain pre-determined conditions to meet specific objectives related to hazardous fuels reduction or habitat improvement. A written, approved prescribed fire plan must exist, and NEPA requirements must be met prior to ignition. Prescribed fires are ignited and managed within a "window" (see "Prescription" below) of very specific conditions including winds, temperatures, humidity, and other factors specified in the burn plan.

Prevention:
Activities directed at reducing the incidence of fires, including public education, law enforcement, personal contact, and reduction of fuels hazards.

Project Fire:
A fire of such size or complexity that a large incident management organization and prolonged activity are required to suppress it.

"R"

Rate of Spread:
The relative activity of a fire in extending its horizontal dimensions. It is expressed as a rate of increase of the total perimeter of the fire, as rate of forward spread of the fire front, or as rate of

increase in area, depending on the intended use of the information. Usually it is expressed in chains or acres per hour for a specific period in the fire's history.

Reburn:
The burning of an area that has previously burned but that contains flammable fuels that ignite when burning conditions are more conducive to ignition. Can also refer to an area that has reburned.

Red Card:
Fire qualifications card issued to fire-rated persons showing their training needs and their qualifications to fill specified fire suppression and support positions on a fire or other incident.

Red Flag Warning:
Alert issued by fire weather forecasters to warn personnel about an ongoing or imminent critical fire weather situation.

Resources:
1) Personnel, equipment, services, and supplies available, or potentially available, for assignment to fires or other incidents. 2) The natural resources of an area, such as timber, wildlife habitat, grasslands, watershed values, and recreational and other values.

"S"

Single Resource:
An individual, a piece of equipment (such as an engine) and its staff, or a crew or team of persons with an identified work supervisor.
Slash:
Debris left after logging, pruning, thinning, or brush cutting; can include logs, chips, bark, branches, stumps and broken understory trees or brush.

Smoldering Fire:
A fire burning without flame and barely spreading.

Snag:
A standing dead tree or part of a dead tree from which at least the smaller branches have fallen.
Spark Arrester:
A device installed in a chimney, flue, or exhaust pipe to stop the emission of sparks and burning fragments.

Spot Fire:
A fire ignited outside the perimeter of the main fire by flying sparks or embers.
.
Spotting:
Behavior of a fire producing sparks or embers that are carried by the wind and start new fires beyond the zone of direct ignition by the main fire.

Staging Area:
Locations set up at an incident where resources can be placed while awaiting a tactical assignment on an available basis. Staging areas are managed by the operations section.

Strike Team:
Specified combinations of the same kind and type of resources -- such as a group of staffed engines -- with common communications and a leader.

Structure Fire:
Fire burning any part or all of any building or structure.

Suppressant:
An agent, such as water or foam, used to extinguish the flaming and glowing phases of combustion when directly applied to burning fuels.

Suppression:
All the work of extinguishing or containing a fire, beginning with its discovery.

Surface Fuels:
Loose litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branch wood, downed logs, and stumps interspersed with or partially replacing the litter.

"T"

Tactics:
Deploying and directing resources on an incident to accomplish the objectives designated by strategy.

Torching:
The ignition and flare-up of a tree or small group of trees, usually from bottom to top.

Two-way Radio:
Radio equipment with transmitters on the same frequency as the base station, permitting conversation in two directions using the same frequency in turn.

Type:
The capability of a firefighting resource in comparison to another type. Type 1 usually means a greater capability in power, size, or capacity. Can refer to type of engine or type of crew or type of team.

"U"

Uncontrolled Fire:
Any fire which threatens life, property, or natural resources.

Underburn:
A fire that consumes surface fuels but not trees or shrubs

"V"

Vectors:
Directions of fire spread as related to rate of spread calculations (in degrees from upslope).

Volunteer Fire Department (VFD):
A fire department of which some or all members are unpaid.

"W"

Water Tender:
A ground vehicle capable of transporting water in the field, generally used to supply engines.

Wildland Fire:
Any non-structure fire, other than prescribed fire, that occurs in a wildland area.

Wildland Fire Implementation Plan (WFIP):
A progressively developed assessment and operational management plan that documents the analysis and selection of strategies and describes the appropriate management response for a wildland fire that is managed for resource benefits.

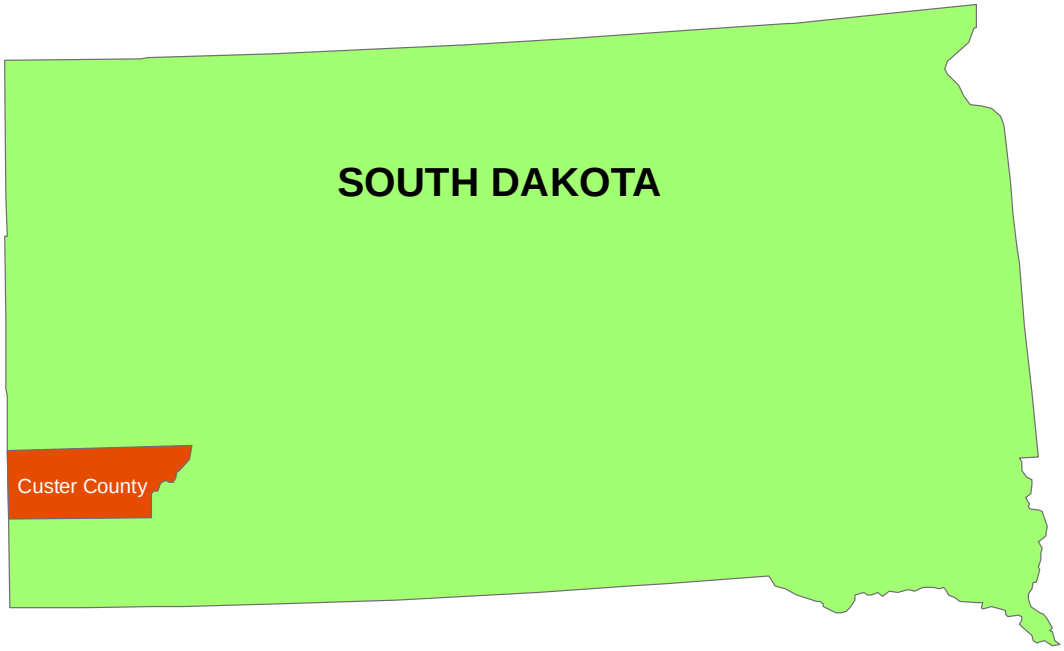
Wildland/Urban Interface:
The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Often incorrectly referred to as the "interzone" or "urban/wildland interface."

Wind Vectors:
Wind directions used to calculate fire behavior.

Information Source: Excerpts from National Fire Plan Glossary of Terms

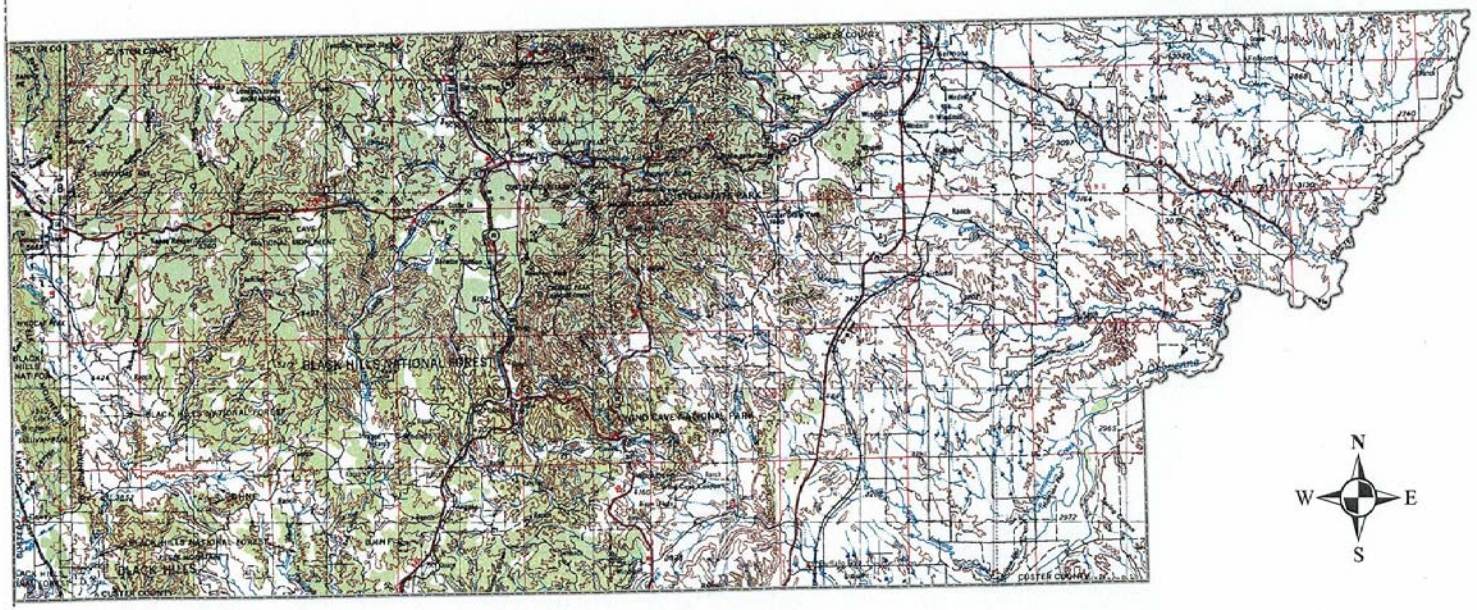
APPENDIX C

CUSTER COUNTY GEOGRAPHY



Custer County GIS

Custer County

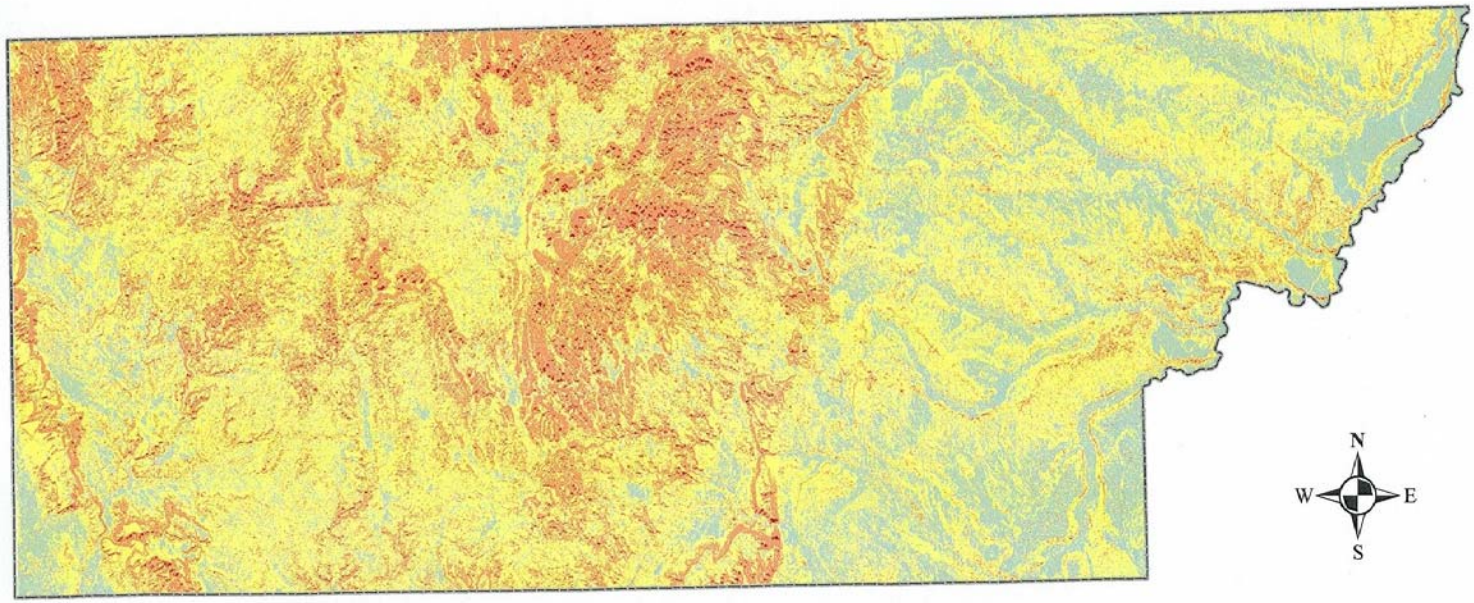


The Following map lays out the primary features in Custer County

Legend

Custer Boundary

Custer County Terrain: Slope & Aspect



Legend

- Custer Boundary
- Mild Slope/Aspect
- Moderate Slope/Aspect
- Steep Slope/Aspect
- Extreme Slope/Aspect

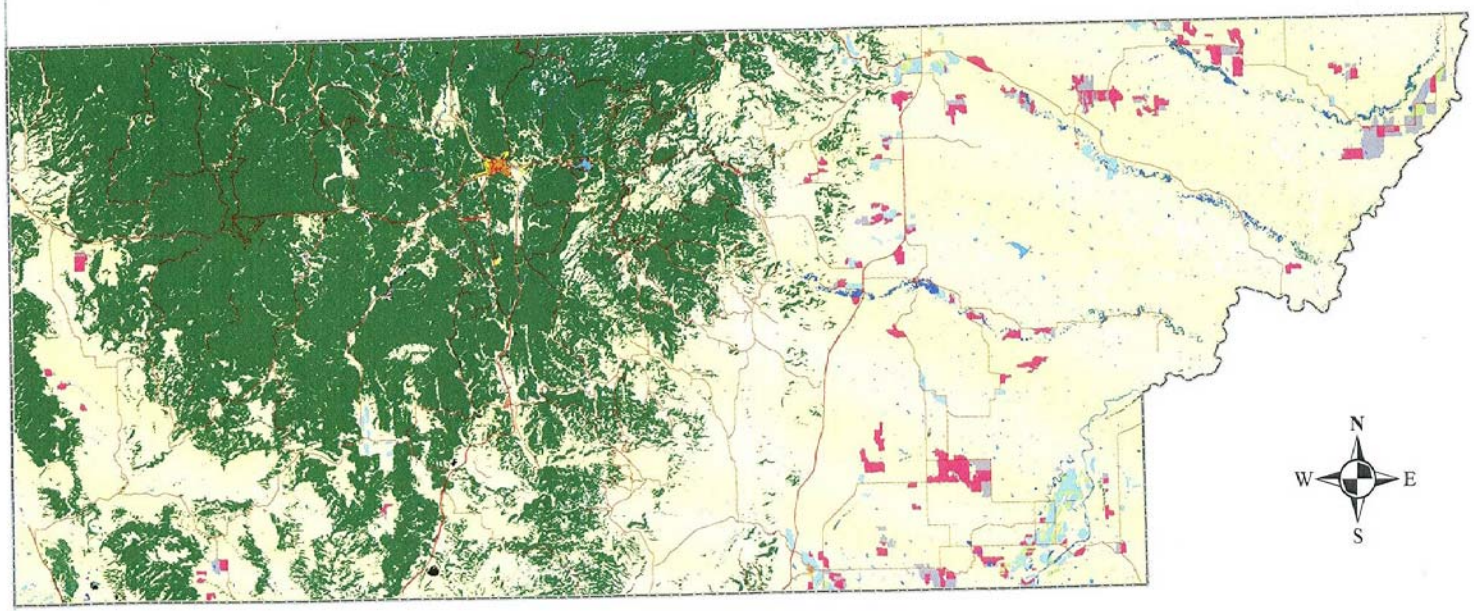
Steep slopes allow wildfire to spread faster than mild slopes

South facing terrain dries out quicker than north facing terrain

Steep south facing terrain is considered extreme hazards.

Custer County Vegetation Landcover

Primary Landcover is coniferous pine forest & grassland-pastureland.



Legend

Landcover Description						
Alfalfa	Corn	High Intensity Commercial/Indust	Other Grasses	Soybeans	Woody Wetlands	
Bare Rock/Sand/Clay	Corn/Soybeans Mixed	High Intensity Residential	Other summer crops	Spring Grains, Fallow	Custer Boundary	
Cloud, Cloud Shadow	Deciduous Forests	Low Intensity Residential	Planted/Cultivated Woody	Sunflowers		
Coniferous Forests	Emergent Herbaceous Wetlands	Mixed Forests	Quarries/Strip Mines/Gravel Pits	Transitional Lands		
	Grassland, Hay/Pasture	Open Water	Shrubland/Sagebrush	Winter Wheat		

APPENDIX D

CUSTER COUNTY DESCRIPTION

County Description

Geography

Custer County is located in the southwestern portion of South Dakota. It is part of the geographical area commonly known as the Black Hills Region. The name Black Hills comes from the Lakota (Sioux) words “Paha Sapa”, which means that the hills are black.

The Black Hills encompasses an area of western South Dakota and northeastern Wyoming that is approximately 125 miles long by 65 miles wide. This landmass encompasses rugged rock formations, canyons, gullies, open meadows, streams, lakes and massive caves.

The Black Hills geologic features are not hills but rather they are an eastern outcropping of the Rocky Mountains. This area rises about 4,000 feet above the prairie. The highest point is Harney Peak in Custer County with an elevation of 7,242 feet. This peak is the highest point in the United States east of the Rocky Mountains.

The Cheyenne River borders the eastern portion of the county. The geographic features are of the Northern High Plains with the majority of the land features being rolling foothills, creek bottoms, draws and gullies. The western terrain of Custer County is rough, mountainous and heavily forested. The creeks and streams feeding the Cheyenne River provide the majority of drainage within the county.

The prairie landscape exists from the eastern border of Custer County west past the north-south Highway 79, a distance varying between 16 to 25 miles. The elevation remains fairly constant within this area. It varies from 2,500 feet above sea level at the northern border with Pennington County to 3,175 feet at the southern border with Fall River County.

On the west side of Highway 79 the landscape begins to take on the foot-hills aspect of the Black Hills. The topography begins to reflect the more mountainous features of higher ridges, rock out-croppings and a noticeable increase in elevation. This change all begins within a distance of four to six miles as you approach the boundaries of Custer State Park, Wind Cave National Park and the Black Hills National Forest.

The elevation throughout this portion of Custer County varies from 7,242 (Harney Peak) in the North to 4,500 feet in the south. The northern border has a fairly consistent average elevation of 6,000 ft. The elevation along the southern border with Fall River County varies from 3,500 feet in the west to 4,300 feet toward the east. The average elevation is approximately 4,000 feet.

Geology

The western part of Custer County is comprised primarily of granite-based formations with sedimentary rocks such as sandstone, shale and limestone making up the remaining geologic

structure. The eastern part of the county reflects the influence of a pre-historic inland sea. The county has an abundance of minerals. Mica, feldspar, granite, quartz, beryl, and lithium can be found primarily in the mountainous terrain. Some tin and tungsten have also been mined. Limited deposits of gold still remain to be discovered. The Madison and the Minnelusa aquifers are very important to the Black Hills because of an abundance of potable water.

Geopolitical

The county is named in honor of George Armstrong Custer, the leader of the 1874-expedition. The county was created in 1875 and organized in 1877. The City of Custer (the first city in the Black Hills) is the county seat of record. The 2000 US Census Bureau lists a countywide population of 7,275 and a total of 3,624 housing units. The county includes the populated areas of Argyle, Berne, Blue Bell, Buffalo Gap, Dewey, Fairburn, Folsom, Fourmile, Hermosa, Junction Ranger Station, Nihart, Pringle, Sanator, Spokane, Vestal Springs

Climate

The climate of the Black Hills is considerably different from that of the rest of the state. This is based primarily on a considerable difference in elevation. Cold arctic air masses tend to impact the rest of the state much more than they affect the higher elevations. Warm winds affecting the entire area during the winter result in the Black Hills being consistently warmer than the rest of the state. Custer County benefits from these geologic conditions. Even the eastern part of the county, with an elevation 2000 feet less than Custer, has a generally milder climate.

Custer County receives the majority of its precipitation in the form of rain during the months of April through September. Approximately 13.5 inches of the average annual precipitation of over 17 inches, occurs during this six-month period. The higher elevations found in western Custer County often experience freezing temperatures most of the year.

Black Hills National Forest

The Black Hills National Forest encompasses a large portion of the Black Hills. It is the most heavily forested area in the entire State of South Dakota. The Black Hills National Forest consists of 1.2 million acres that includes all or part of the South Dakota counties of Custer, Fall River, Lawrence, Meade, and Pennington, as well as Crook and Weston counties in Wyoming. 1,071,741 acres are in South Dakota and 175,391 in Wyoming

The Black Hills has experienced outside exploration since the 1840’s. Fur traders and fur trappers were the first non-Indians to travel this area. Later, in 1874, the Custer expedition explored portions of the Black Hills and discovered gold deposits at French Creek, near the present community of Custer, South Dakota. Numerous settlements and mining camps sprang up throughout the Black Hills.

Civilization brought with it an ever-increasing need for lumber to sustain the ranches, homes, business and mining operations. Timber within the Black Hills was viewed as being an inexhaustible resource. Little or no thought was given the effects upon the land from these timbering practices.

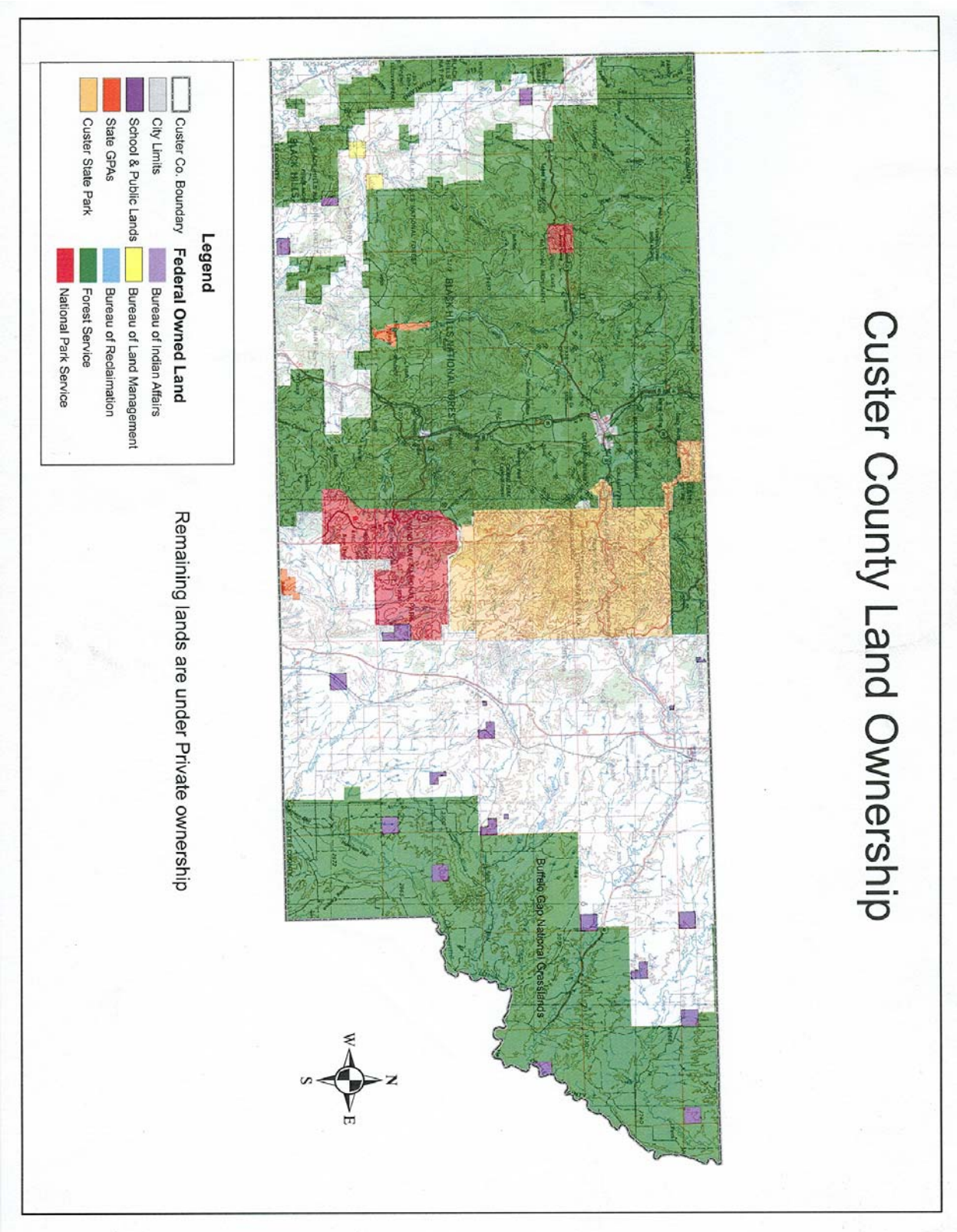
The need to protect these timber resources was brought to the attention of the public by wide spread logging operations and a series of large fires in the early 1890's. In order to protect the land against fires and poor lumbering practices, President Grover Cleveland established the Black Hills Forest Reserve on February 22, 1897. The Black Hills Forest Reserve was transferred to the Forest Service and was renamed the Black Hills National Forest in 1907. Extensive re-forestation was required to replace large tracts of timber that had been depleted or seriously diminished by fires, insect infestation and indiscriminate harvesting. Large scale planting and thinning projects occurred in 1905, 1914, the 1930s and the 1940s.

On May 16, 1911, President Taft signed an act that used certain unreserved lands, and reserved lands that were part of the Black Hills National Forest, to establish the Harney National Forest. The boundaries were later modified on February 15, 1912 and on June 15, 1920 President Wilson signed a proclamation that set aside up to 30,000 acres of the Harney National Forest for the establishment of Custer State Park Game Sanctuary.

The Custer National Forest was created January 13, 1920 and in 1928, an area of 678,189 acres was transferred to the Black Hills National Forest. The Black Hills National Forest and the Harney National Forest were combined on February 1, 1954 to form one consolidated Black Hills National Forest.

APPENDIX E

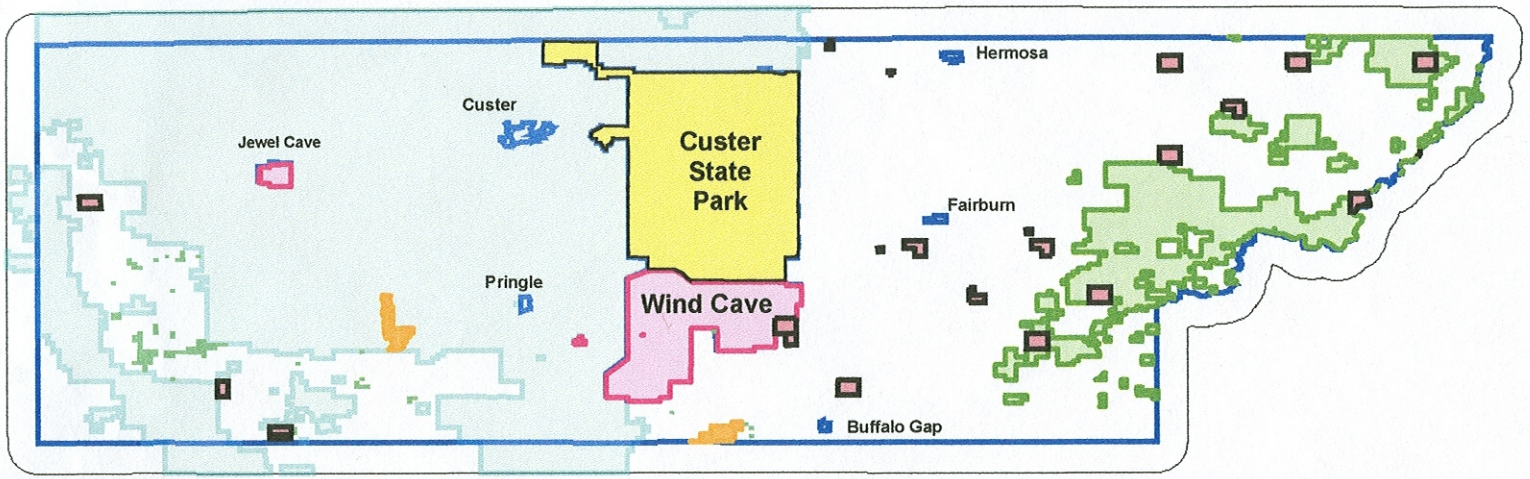
LAND OWNERSHIP



Division of Resource Conservation and Forestry

Custer County

Land Jurisdiction



Custer County

- USFS
- School Land
- Custer State Park
- Municipal Boundary
- National Park Service
- Game Production Areas
- Bureau of Land Management
- Buffalo Gap National Grasslands
- Cuscobuffer2mi

OTHER - Private

0 2.5 5 10 15 20 Miles

Office of GIS

Custer County

by Loren W. Cofell

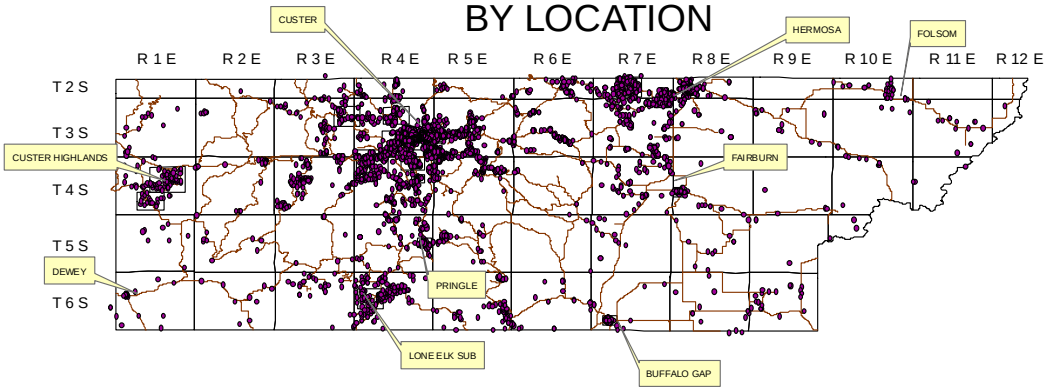
May 2005

APPENDIX F

DEMOGRAPHICS

CUSTER COUNTY

POPULATION/ADDRESS CONCENTRATIONS BY LOCATION



Custer County

- Addresses
- Townships
- Roads

0 5 10 20 30 40 Miles

2

2005

cuscogis@gwtc.net
by Loren W. Cofell
Data by
Custer County Planning

Custer County Demographics

General Population

Custer County Population: 1900-2004

1900- 2,728	1910- 4,458	1920- 3,907	1930- 5,353	1940- 6,023	1950- 5,517
1960- 4,906	1970- 4,698	1980- 6,000	1990- 6,179	1991- 6,167	1992- 6,345
1993- 6,441	1994- 6,663	1995- 6,737	1996- 6,823	1997- 6,910	1998- 6,945
1999- 7,025	2000- 7,275	2001- 7,370	2002- 7,467	2003- unk	2004- 7,665

Population change 1990-2000: + 17.7%
Population Change 2001-2003: + 04.3%

Custer, City Population: 1940-2004

1940- 1,845	1950- 2,017	1960- 2,105	1970- 1,597	1980- 1,830	1990- 1,741
1991- 1,781	1992- 1,822	1993- 1,831	1994- 1,869	1995- 1,865	1996- 1,863
1997- 1,860	1998- 1,849	1999- 1,853	2000- 1,860	2001- 1,864	2002- 1,881
2003-unk	2004- 1,924				

Hermosa, Town Population: 1940-2004

1940- 121	1950- 123	1960- 126	1970- 150	1980- 251 est.	1990- 242
1991- 243	1992- 251	1993- 254	1994- 262	1995- 267	1996- 270
1997- 274	1998- 279	1999- 282	2000- 315	2001- 312	2002- 317
2003- unk	2004- 332				

Pringle, Town Population: 1940-2004

1940- 273	1950- 193	1960- 145	1970- 86	1980- 105 est.	1990- 96
1991- 95	1992- 98	1993- 100	1994- 102	1995- 102	1996- 104
1997- 106	1998- 107	1999- 108	2000- 125	2001-	2002-
2003- unk	2004- 124				

Custer County Unorganized Territory (UT) Population: 1940-2000

1940- 3,482	1950- 2,918	1960- 2,289	1970- 2,660	1980-3,587	1990- 3,798
1991- 3,812	1992- 3,933	1993- 4,009	1994- 4,172	1995- 4,241	1996- 4,321
1997- 4,399	1998- 4,437	1999- 4,505	2000- 4,731		

Population/Age

Custer County

Under 5 years old	4.6%
Under 18 years old	24.1%
Persons 65 and older	16.0%

Custer

Under 5 years old	6,0%
Under 20 years old	19.7%
Under 55 years old	49.7%
Persons 55 and older	24.6%
Median Age	41.7 Yr.

Hermosa

Under 5 years old	5.7%
Under 20 years old	23.5%
Under 55 years old	48.2%
Persons 55 and older	22.5%
Median Age	37.4 Yr.

Pringle

Under 5 years old	6.4%
Under 20 years old	24.0%
Under 55 years old	44.0%
Persons 55 and older	25.6%
Median Age	38.5 Yr.

East Custer UT

Under 5 years old	4.1%
Under 20 years old	22.5%
Under 55 years old	48.5%
Persons 55 and older	24.8%
Median Age	42.6 Yr.

West Custer UT

Under 5 years old	3.9%
Under 20 years old	23.2%
Under 55 years old	41.1%
Persons 55 and older	31.8%
Median Age 45Yr.	

Housing

Custer County

Total Units	3,624	
Occupied	2,970	
Seasonal	366	
Structure		
1 Unit	1,941	65.3%
2 Units	7	0.2%
3-4 Units	49	1.6%
5-9 Units	36	1.2%
10-19 Units	44	1.5%
20 + Units	85	2.9%
Mobile Homes	798	26.9%
Heating Fuel		
Bottled Gas	1496	50.4%
Electricity	837	28.2%
Fuel Oil	107	3.6%
Wood	436	14.7%
Year Built		
2000-1980	1348	45.4%
1979-1960	800	26.9%
1959-1940	413	13.9%
1939		
Ave. Value		
<50,000	184	17.1%
<100,000	483	45.0%
<150,000	120	11.2%
200,000-300,000	92	8.6%
300,000-500,000	14	1.3%
Median Value $89,100		

Custer

Total Units	934	
Occupied	825	88.3%
Seasonal	30	3.2%
Structure		
1 Unit	585	61.9%
2 Units	8	. 8 %
3-4 Units	46	4.9%
5-9 Units	40	4.2%
10-19 Units	44	4.7%
20 + Units	96	10.2%
Mobile Homes	126	13.3%
Heating Fuel		
Bottled Gas	418	49.8%
Electricity	265	31.5%
Fuel Oil	64	7.6%
Wood	64	7.6%
Year Built		
2000-1980	320	33.9%
1979-1960	184	19.5%
1959-1940	226	23.9%
1939	215	22.8%
Ave. Value		
<50,000	64	16.9%
<100,000	239	63.2%
<150,000	46	12.2%
<200,000	17	4.5%
300,000-500,000	12	3.2%
Median value $72,600		

Hermosa

Total Units	132	
Occupied	130	93.5%
Seasonal	3	2.2%
Structure		
1 Unit	71	51.8%
3-4 Units	2	1.5%
Mobile Homes	62	45.3%

Heating Fuel		
Bottled & Utility Gas	85	65.9%
Electricity	17	13.2%
Fuel Oil	6	4.7%
Wood	11	8.5%
Year Built		
2000-1980	49	35.5%
1979-1960	54	39.4%
1959-1940	21	15.3%
1939	13	9.5%
Ave. Value		
<50,000	17	37.8%
<100,000	20	44.4%
<150,000	4	8.9%
<200,000	2	4.4%
200,000-300,000	2	4.4%
Median Value $71,100		

Pringle

Total Units	64	
Occupied	46	71.9%
Seasonal	2	3.1%
Structure		
1 Unit	29	42 %
2 Units	2	2.9%
Mobile Homes	36	52.2%
Heating Fuel		
Bottled Gas	36	72 %
Electricity	3	6 %
Fuel Oil	0	
Wood	11	22 %
Year Built		
2000-1980	19	27.5%
1979-1960	30	43.5%
1959-1940	6	8.7%
1939	14	20.3%

Ave. Value		
<50,000	8	61.5%
<100,000	5	38.5%
Median Value $47,900		

Information Source: US Census Bureau

Agricultural Land

Year	Number of Farms	Number of Acres	Average Acre/Farm
1890	346	72,434	209.3
1900	402	126,278	314.1
1910	965	282,345	292.6
1920	646	407,060	630.1
1925	561	440,875	785.9
1930	629	521,186	828.6
1935	645	555,072	860.6
1940	554	526,219	949.9
1945	453	626,907	1,384
1950	469	692,996	1,477
1954	380	684,354	1,800
1959	355	642,492	1,809
1964	305	605,495	1,985
1969	306	573,273	1,873
1974	266	476,732	1,794
1978	272	525,278	1,931
1987	303	477,361	1,575
1992	323	462,238	1,431
1997	326	476,238	1,462
2002	303	589,129	1,944

Total land area in Custer County 996,480 Acres

Percentage of Land in Agriculture

1950	692,996	70.0%
1969	573,273	57.5%
1974	476,732	47.8%
1987	477,361	47.9%
1997	476,238	47.8%

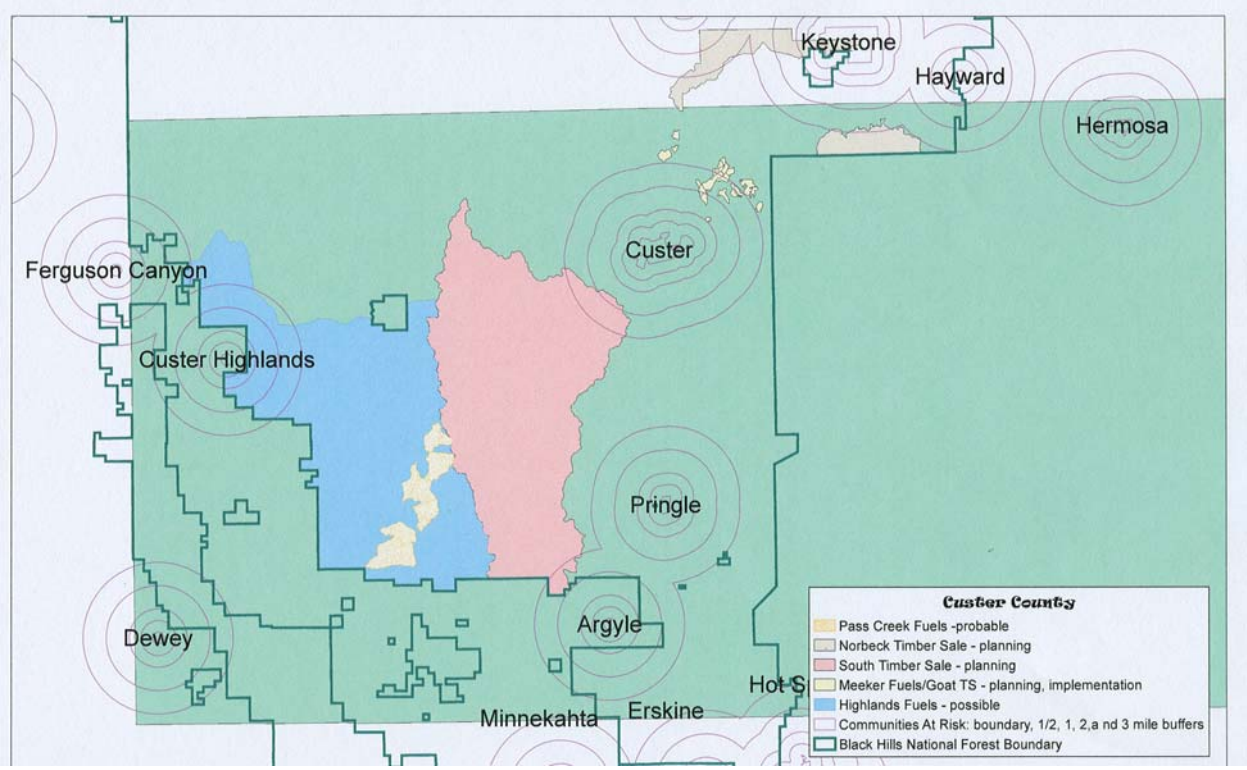
Information Source: South Dakota Crop and Livestock Reporting Service, SDSU

APPENDIX G

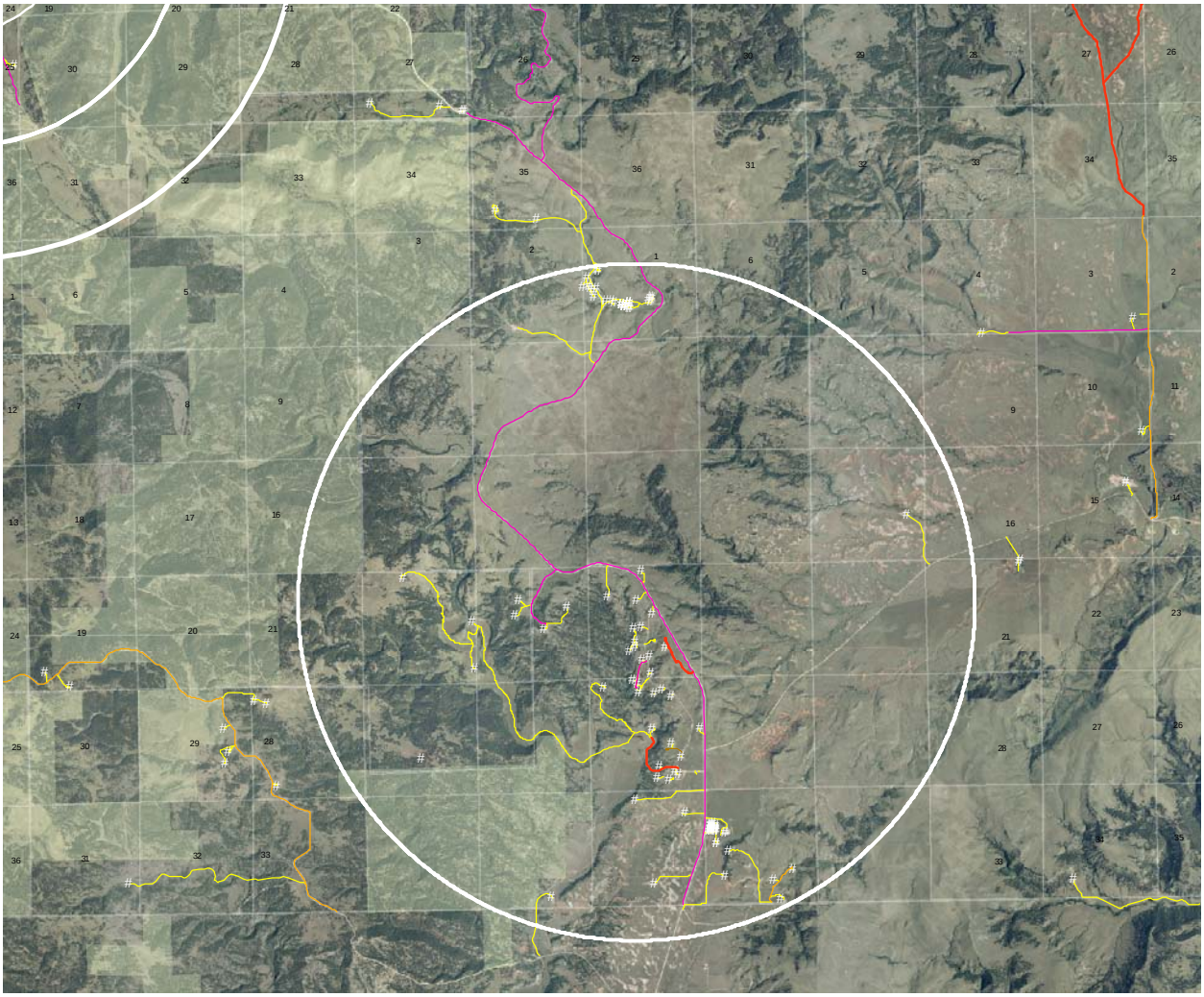
COMMUNITIES *AT-RISK*

ZONES AND PROFILES

CUSTER COUNTY COMMUNITIES AT RISK



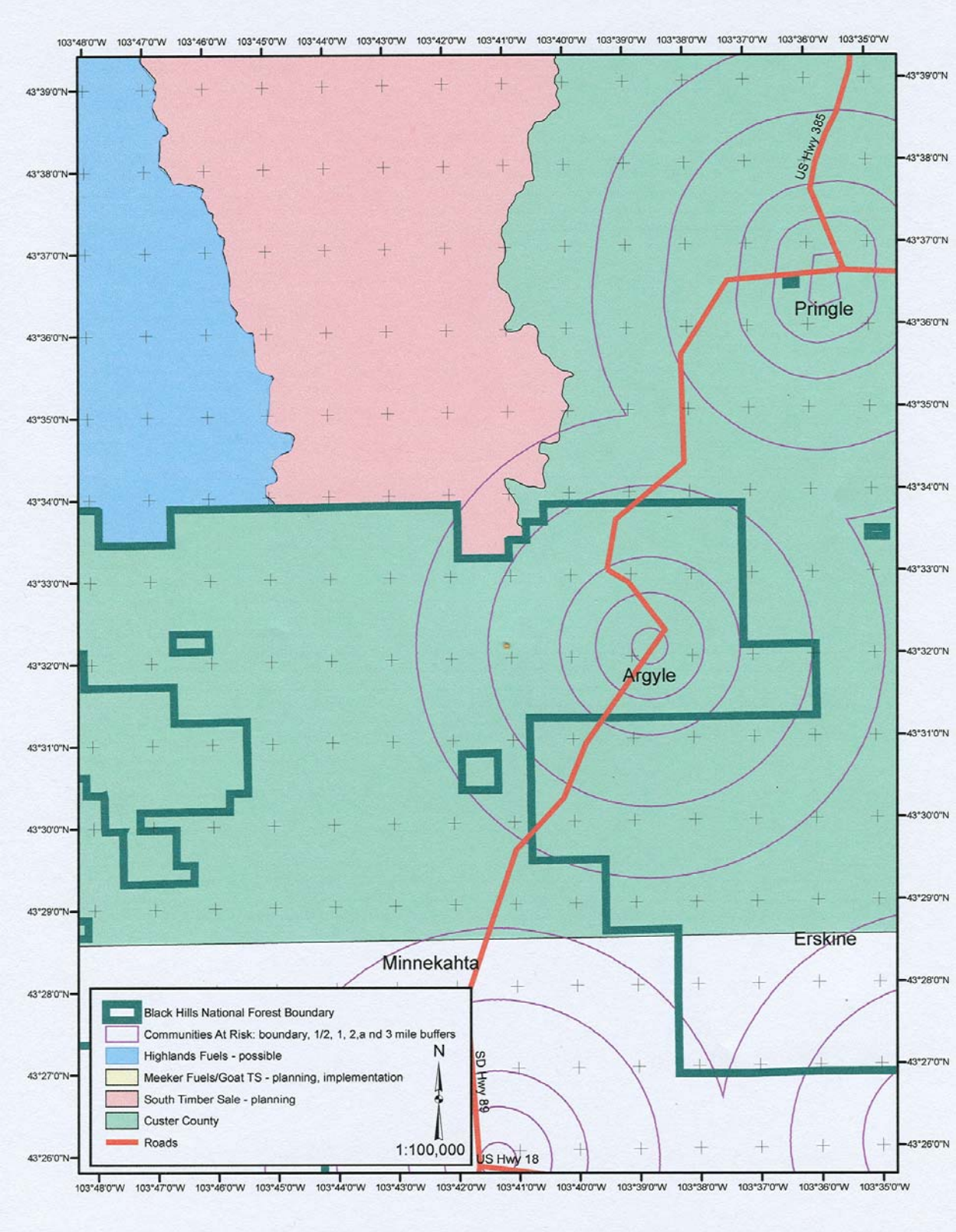
ARGYLE



ARGYLE
AT-RISK COMMUNITY
PROFILE

Community Description Intermix	Argyle Road #333 Latitude (43-36-44 N) Longitude(103-39-15W) Base Elevation (4823) Argyle is an area 6 miles south of Pringle adjacent to Highway 89. It is a rural area with numerous housing units located on a variety of acreages. The majority of property contains some timbered areas with structures often located in close proximity.
Topography	This area is comprised of hills, ridges and meadows. Terrain is more open and flat to the East. Topography is a little more rugged to the North but there is not a very pronounced difference in elevation throughout the area.
Primary Vegetation & Fuel Condition	Vegetation consists of a mixture of Ponderosa pine trees and prairie grasses. Area did receive some early spring snowstorm damage in 2000. There is a mix of timber and grasses to the northwest and south. West of Highway 89 the area is more timbered.
Area Fire History: Fire Number & Name and Number of Acres (25 minimum) within a 10 mile radius of the community. Appendix H lists all fires	1948-Battle Mt-1150a 2213-Argyle #2-4350a 1956-Zuber-80a 2601-Easter-29a 2252-Ben Miller-35.5a 2580-Highland Creek-145a 2196-Argyle #1-70a 2608-Shirttail-4000a 2458-Bison Trap-400a 3327-Southerland School-300 1803-Lookout Pt-1350a 1624-Southerland Spr.-100a
Infrastructure *at-risk*	Type of water system, Utilities in immediate area of boundary The water supply for the majority of structures is cisterns. The nearest point to obtain water is from town well in Pringle approximately 6-12 miles away or Edgemont 20 miles away.
Fire Protection Capability	Argyle Volunteer Fire Department See Appendix K for a description of personnel, resources, and geographic area of responsibility.

Hazard Rating High Moderate Moderate	Risk Consideration Risk Factor 1(Fire Behavior) Situation 2 Risk Factor 2(Values *at-risk*) Situation 2 Risk Factor 3(Infrastructure) Situation 2
Community Profile	The area of three to five miles around Argyle is predominately private land consisting of housing units and ranch land. There are numerous housing units located within a three mile area of Argyle.
Response & Evacuation Routes	Highway 89 North and South County Road 333 to the East and South
Project Site Proposal	G-5 shows Forest Service land near Argyle that contains areas for potential fuel reduction. No sites are specifically identified at this time within the three mile zone.
Mitigation Recommendations	Establishing a water supply sufficient to protect structures. Identify wells and naturally reliable ponds and reservoirs. County communication center and local volunteer fire department maintain a computerized location and description of each property. Identify landowner residency status and limiting features of the property. Provide fire safety information to property owners.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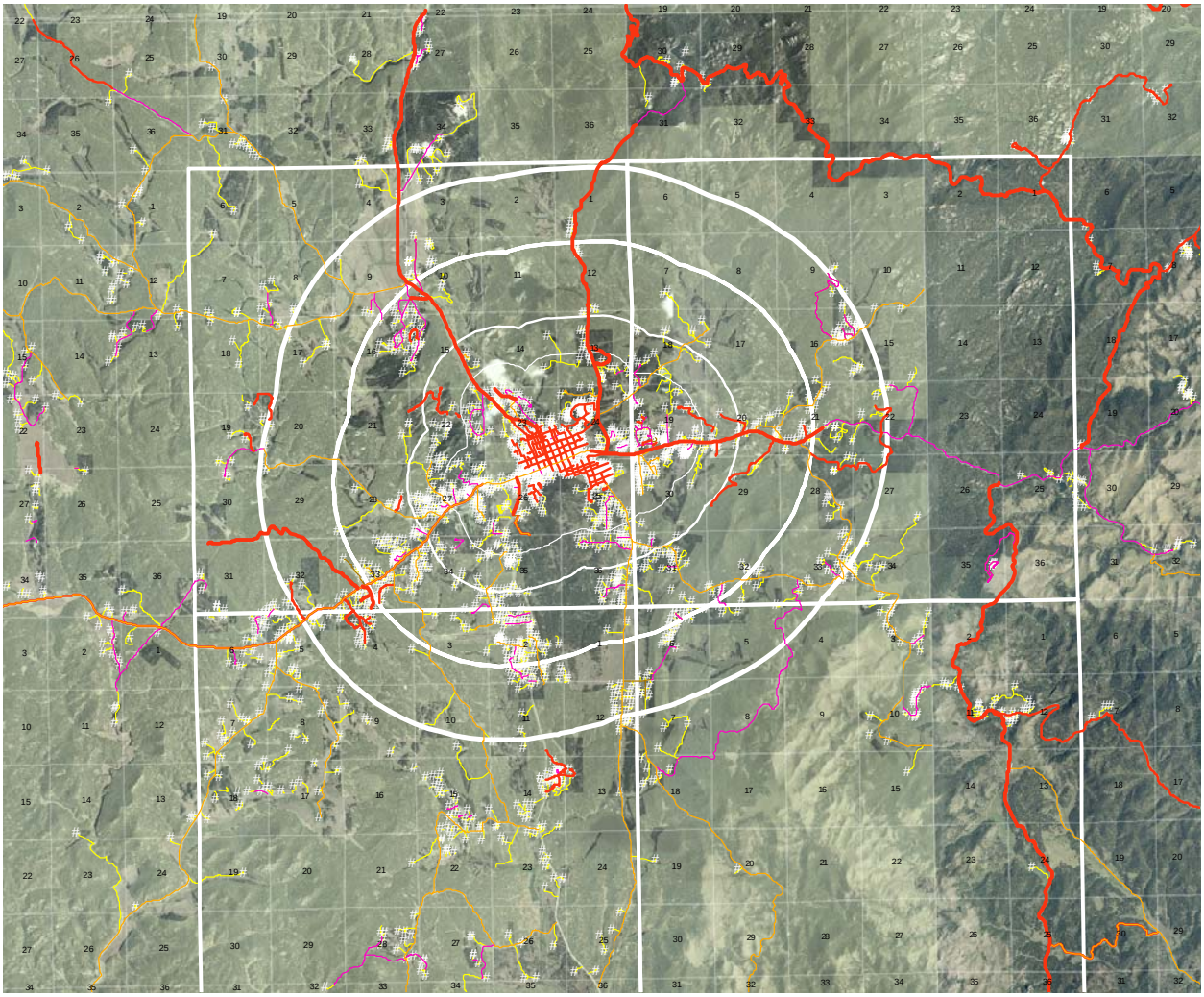
43°29'0"N
43°28'0"N
43°27'0"N
43°26'0"N
US Hwy 385
Pringle
Argyle
Erskine
Minnekahta
SD Hwy 89
US Hwy 18
Black Hills National Forest Boundary
Communities At Risk: boundary, 1/2, 1, 2,a nd 3 mile buffers
Highlands Fuels - possible
Meeker Fuels/Goat TS - planning, implementation
South Timber Sale - planning
Custer County
Roads
N
1:100,000

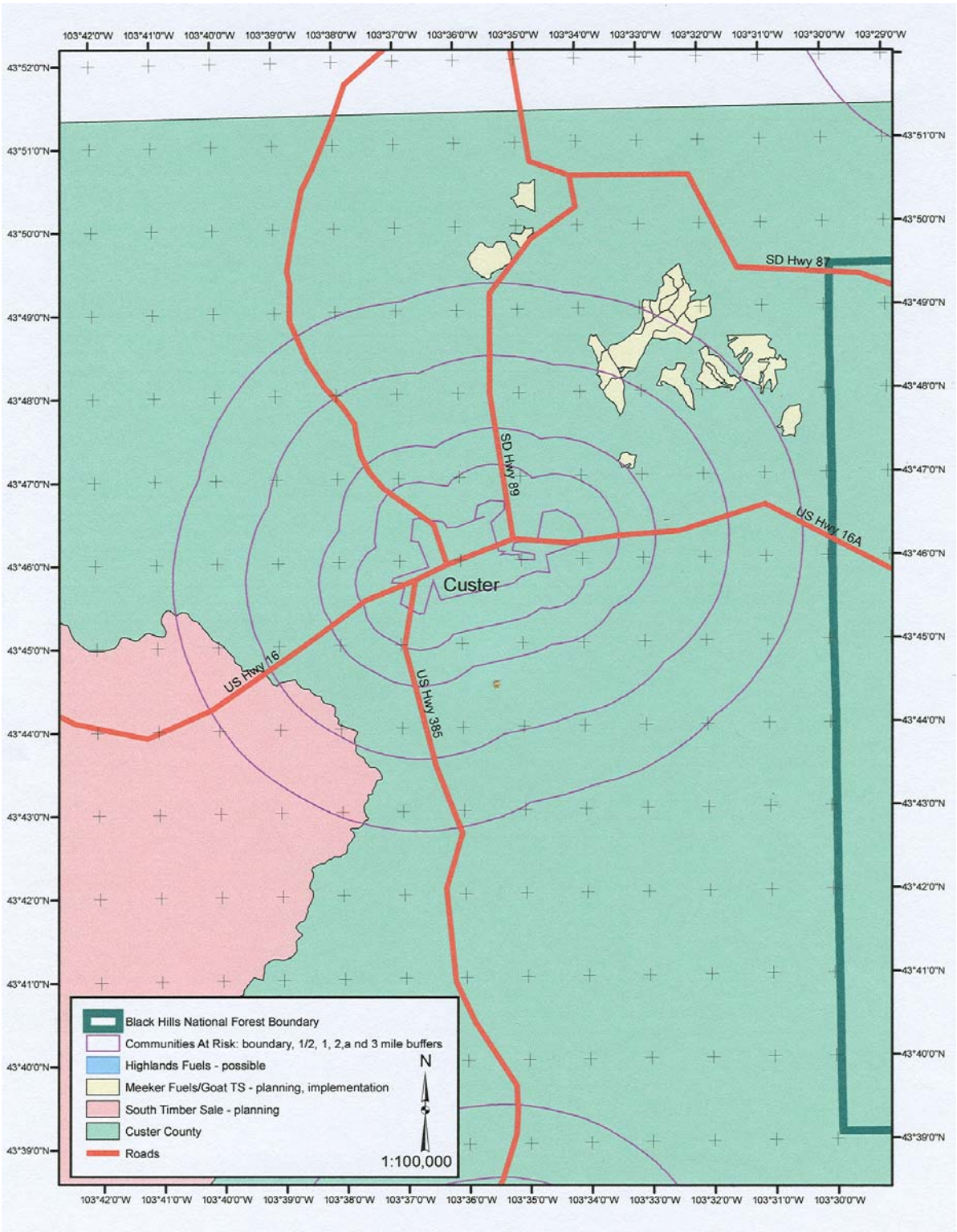
CUSTER



CITY OF CUSTER
AT-RISK COMMUNITY
PROFILE

Community Description: Interface	Latitude(N43-45-96) Longitude (W103-36-011) Base Elevation (5322). Custer is located in the center of Custer County. It lies in a Northwest to Southeast direction. It is approximately 2 miles long and 1 ¼ miles wide.
Topography	Custer lies in a valley that runs east to west. The central portion of the community rises 200 feet to the north for a distance of about a mile. The southern part of Custer is fairly flat for approximately 3 city blocks. There is a sharp rise to the top of Big Rock Park (a 54 acre area) about 300 feet. The east side of Custer is fairly flat for a distance of 5 mile. The western side has a gradual incline of 50 feet in a distance of 1.5 miles along Highway 16
Primary Vegetation & Fuel Condition	The area around Custer is comprised mainly of Ponderosa Pine and short grasses. The Big Rock Park area to the South has been undergoing a thinning and slash project to reduce the fire hazard.
Area Fire History: Fire Number & Name and Number of Acres (25 minimum) within a 10 mile radius of the community. Appendix H lists all fires	2622-Lithograph-64a 2579-Adams-34a 1599-Slash-40a 2252-Ben Miller-35.5a 1135-Morrison-33a 294-Raven Canyon-30a 2992-Jasper Fire-83,500a 2578-Cicero Peak-14,204a 2815-Carroll Creek.-30a
Infrastructure *at-risk*	Water is provided by municipal system. Principal water source is from wells.
Fire Protection Capability	Custer Volunteer Fire Department See Appendix K for a description of personnel, resources, and geographic area of responsibility.

Hazard Rating High High Moderate	Risk Consideration Risk Factor 1(Fire Behavior) Situation 2 Risk Factor 2(Values *at-risk*) Situation 1 Risk Factor 3(Infrastructure) Situation 2
Community Profile	The land immediately around Custer is mostly private with some Forest Service land to the west and north.
Response & Evacuation Routes	Highway 16 North to Hill City and West to Newcastle. Highway 16A East to Custer State Park. Highway 89/385 South to Pringle and Hot Springs.
Project Site Proposal	G-10 & 11 shows Forest Service land near Custer that contains area for potential fuel reduction. Site #1 is the West edge and Southwest area near Big Rock Park Site #2 is the area behind the Comfort Inn and Rock Crest Motel. Site # 3 is the Buckhorn area North of Custer and Eastern edge of Custer.
Mitigation Recommendations	Identify wells and naturally reliable ponds and reservoirs outside of city limits. County communication center and local volunteer fire department maintain a computerized location and description of each individual property and subdivision. Establish fire safety building and access requirements for properties within the three mile area of planning and zoning jurisdiction.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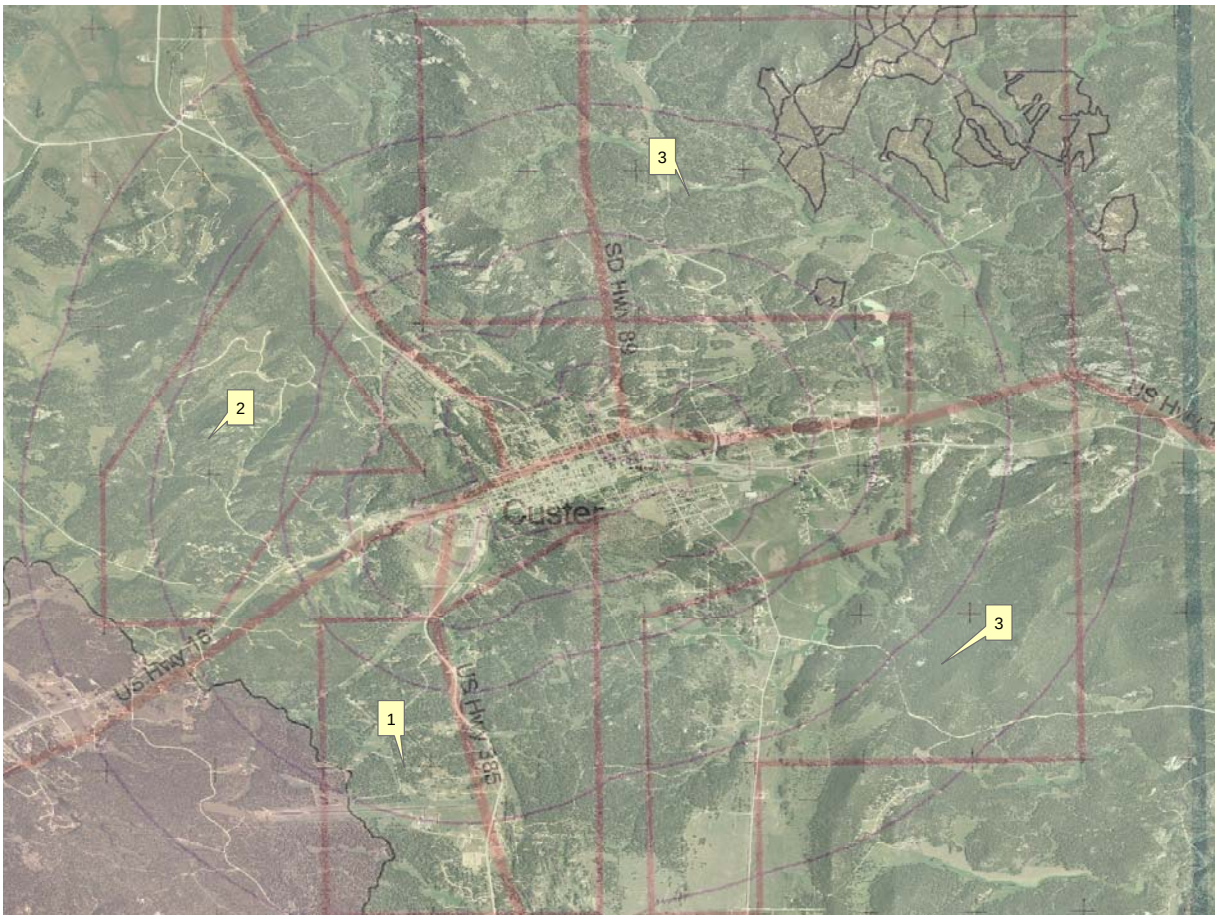
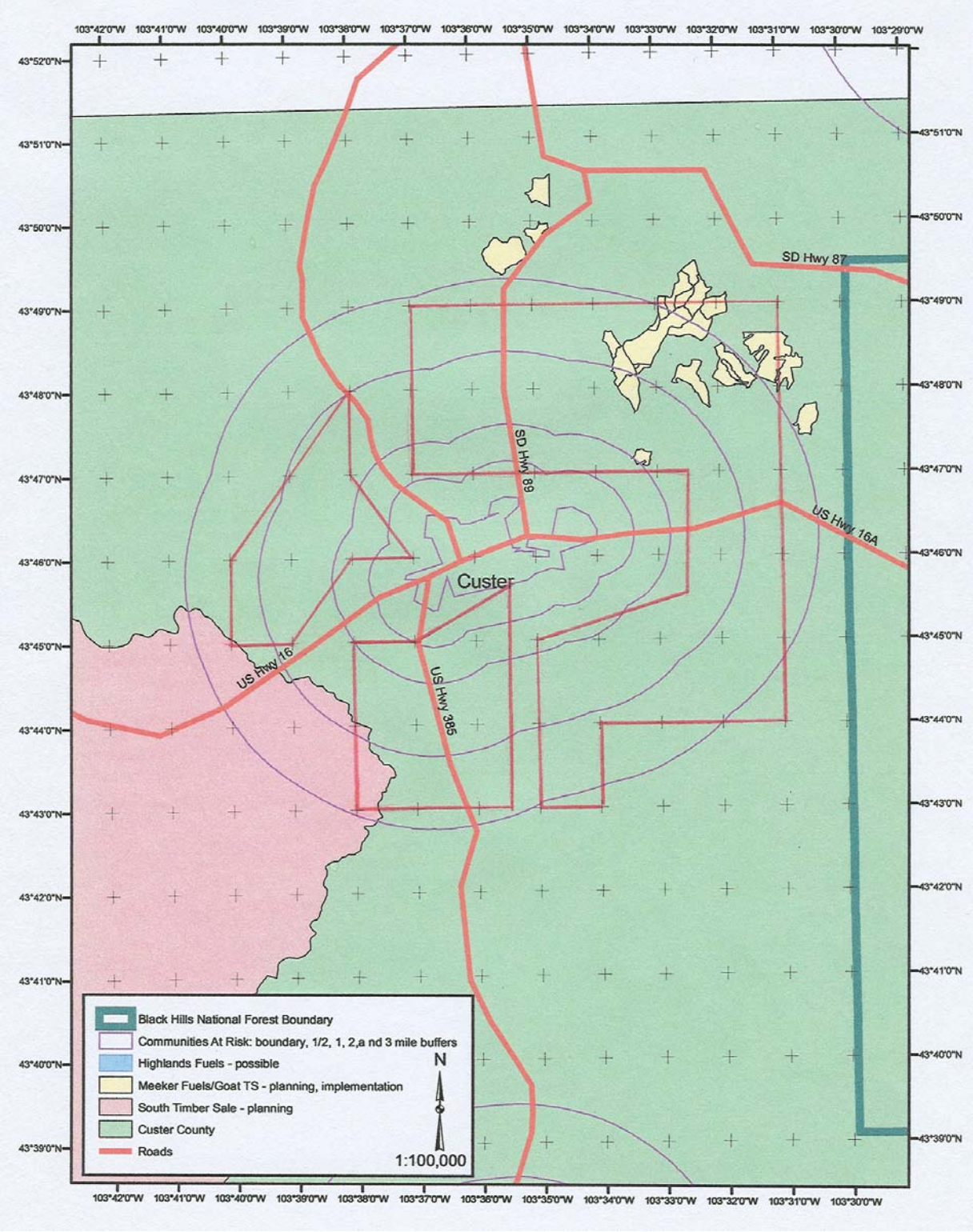
43°40'0"N
43°39'0"N
SD Hwy 87
SD Hwy 89
US Hwy 16A
US Hwy 16
US Hwy 385
Custer
Black Hills National Forest Boundary
Communities At Risk: boundary, 1/2, 1, 2,a nd 3 mile buffers
Highlands Fuels - possible
Meeker Fuels/Goat TS - planning, implementation
South Timber Sale - planning
Custer County
Roads
N
1:100,000

MITIGATION PROJECTS



#1 – West edge of Big Rock Park
#2 – Northwest part of Custer
#3 – Buckhorn area past Bavarian Inn and Eastern edge of Custer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43°42'0"N
43°41'0"N
43°40'0"N
43°39'0"N
SD Hwy 87
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US Hwy 16A
Custer
US Hwy 16
US Hwy 385
Black Hills National Forest Boundary
Communities At Risk: boundary, 1/2, 1, 2,a nd 3 mile buffers
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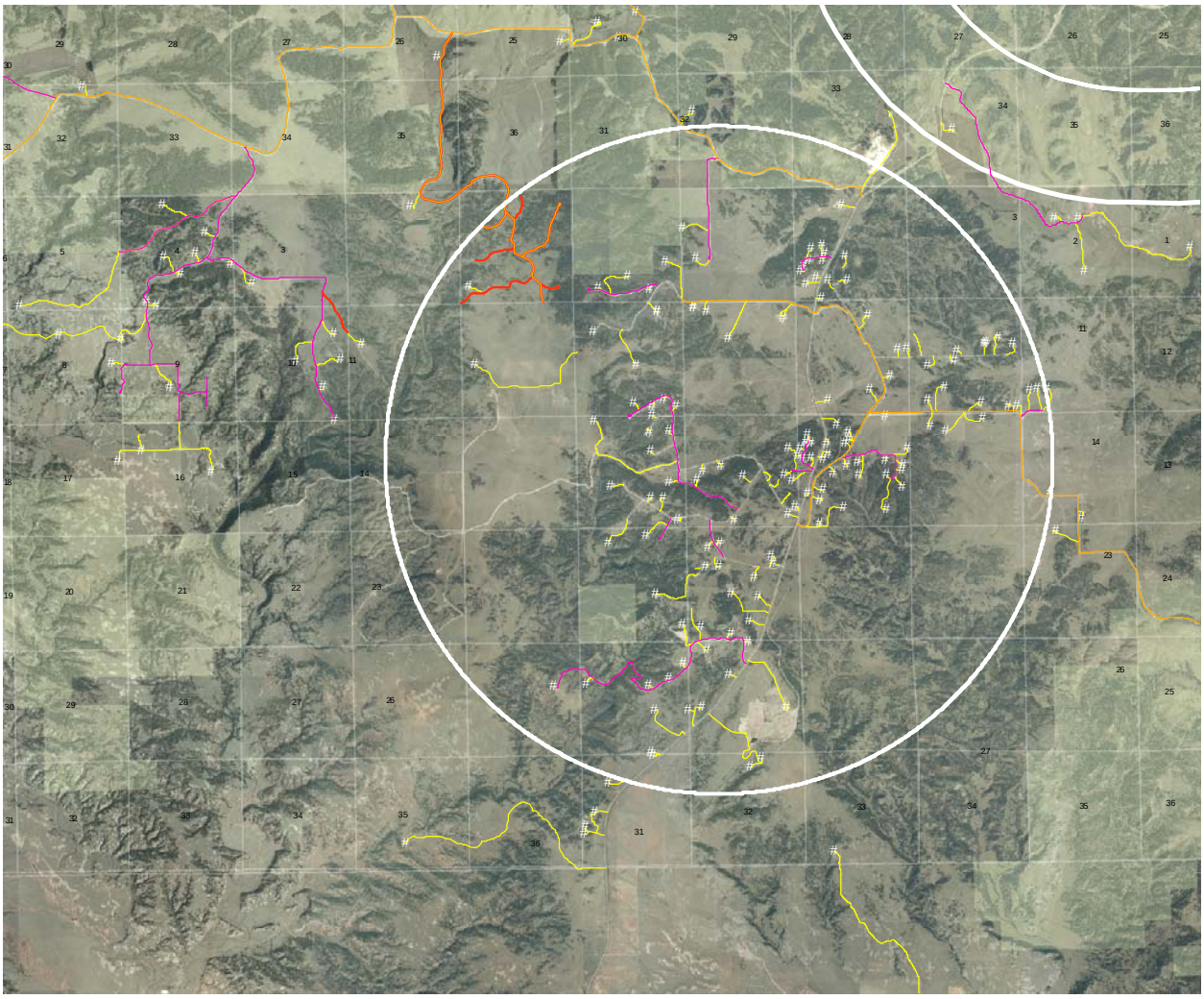
South Timber Sale - planning
Custer County
Roads
N
1:100,000

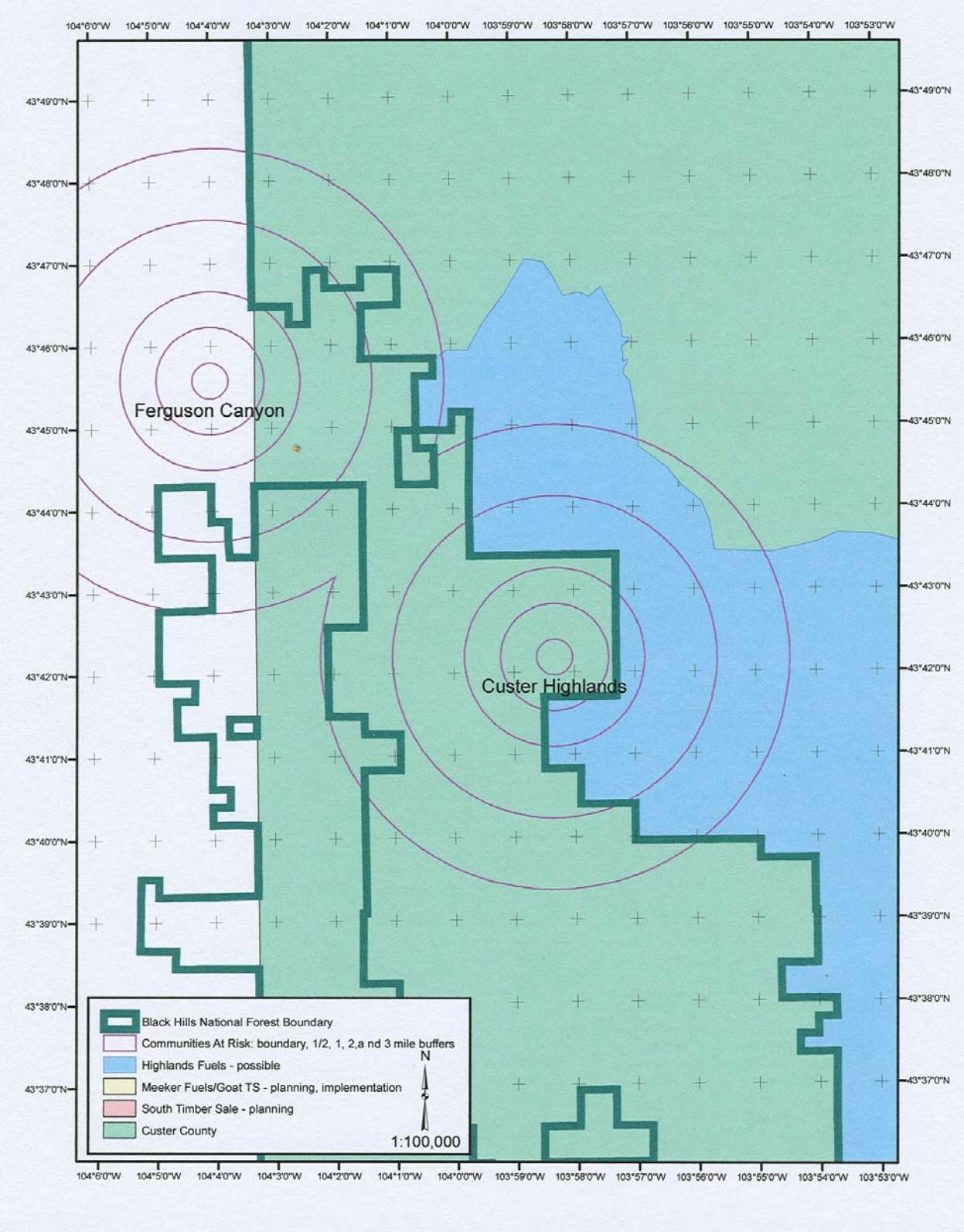
CUSTER HIGHLANDS



CUSTER HIGHLANDS
AT-RISK COMMUNITY
PROFILE

Community Description Intermix	Latitude(N43-43-199), Longitude (W103-58-495), Base Elevation (5085) This is a subdivision located 19 miles west of Custer on Highway 16. It is approximately 1 ¾ miles East to West and 2 ½ miles North to South
Topography	The Custer Highlands is a very large geographic area located on the far west side of Custer County. It is about 12 miles long and 5 miles wide. The Subdivision is mostly open meadows intermixed with pockets of timbered areas.
Primary Vegetation & Fuel Condition	The Subdivision is comprised mainly of prairie grasses and a mixture of Ponderosa Pine trees.
Area Fire History: Fire number & name and Number of Acres (25 minimum) within a 10 mile radius of the community. Appendix H lists all fires	111-Lyman-35a 2992-Jasper Fire-83,500a 2686-Dugout-103.5a 7424-Ranch1-300a 1856-Dewey#2-4415a 2096-Dewey-2562a 1135-Morrison-33a 1035-Mud Springs-950a 2578-Cicero Peak-14,204
Infrastructure *at-risk*	A reliable source of water is a problem in this area. The vast majority of homes are supplied by cisterns that require filling from a water source in Newcastle, WY. Custer or Dewey.
Fire Protection Capability	See Appendix K for a description of personnel, resources, and geographic area of responsibility.
Hazard Rating Moderate Moderate High	Risk Consideration Risk Factor 1(Fire Behavior) Situation 2 Risk Factor 2(Values *at-risk*) Situation 2 Risk Factor 3(Infrastructure) Situation 1

Community Profile	This area is private lands that are bordered on the East and West by the Black Hills National Forest.
Response & Evacuation Routes	Highway 16
Project Site Proposal	G-15 shows Forest Service land near the Custer Highlands that contains areas for potential fuel reduction. No sites are specifically identified at this time within the three mile zone.
Mitigation Recommendations	Establishing a water supply sufficient to protect structures. Identify wells and naturally reliable ponds and reservoirs. County communication center and local volunteer fire department maintain a computerized location and description of each property. Identify landowner residency status and limiting features of the property. Provide fire safety information to property owners.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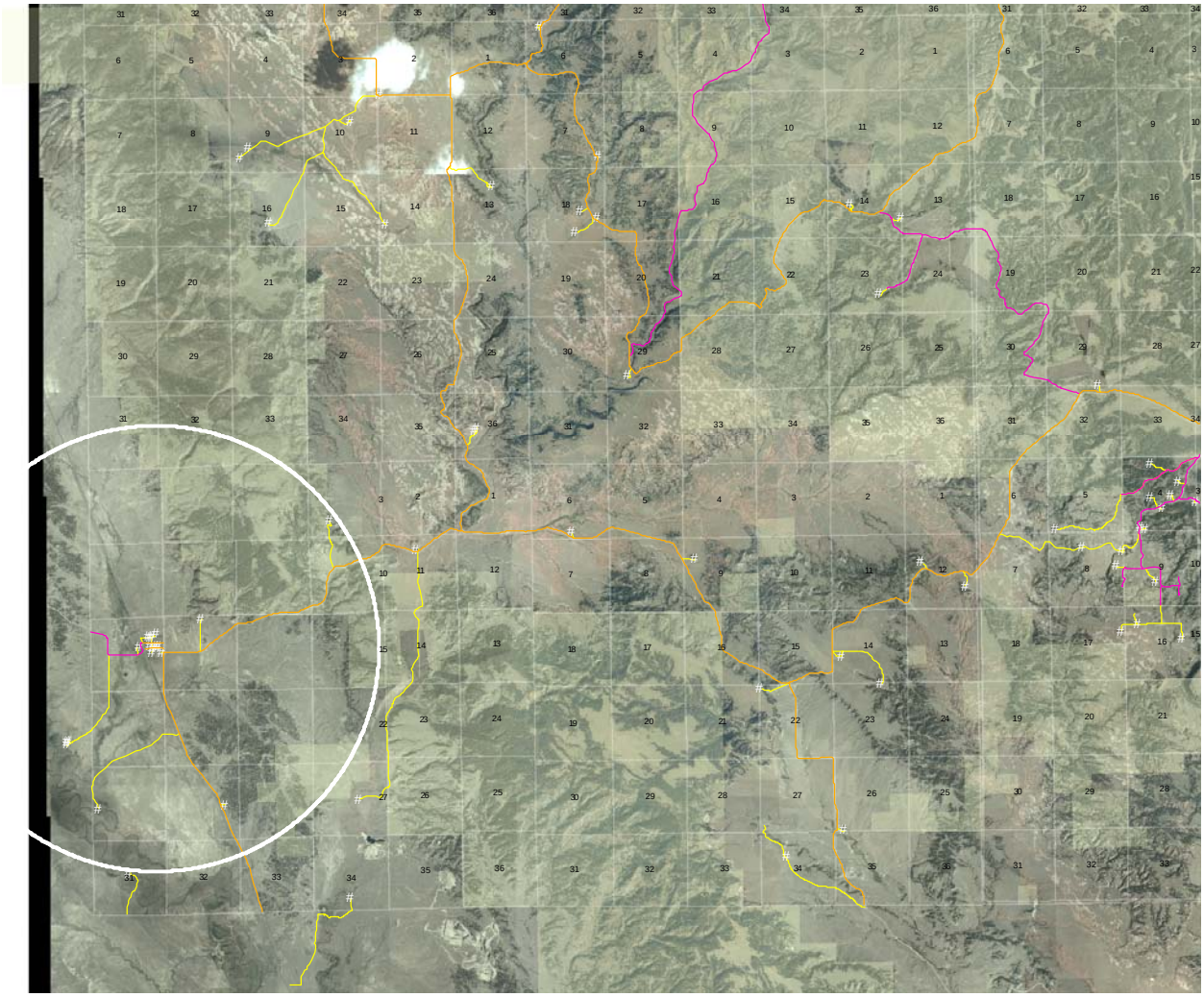
43°42'0"N
43°41'0"N
43°40'0"N
43°39'0"N
43°38'0"N
43°37'0"N
Ferguson Canyon
Custer Highlands
Black Hills National Forest Boundary
Communities At Risk: boundary, 1/2, 1, 2,a nd 3 mile buffers
Highlands Fuels - possible
Meeker Fuels/Goat TS - planning, implementation
South Timber Sale - planning
Custer County
N
1:100,000

DEWEY

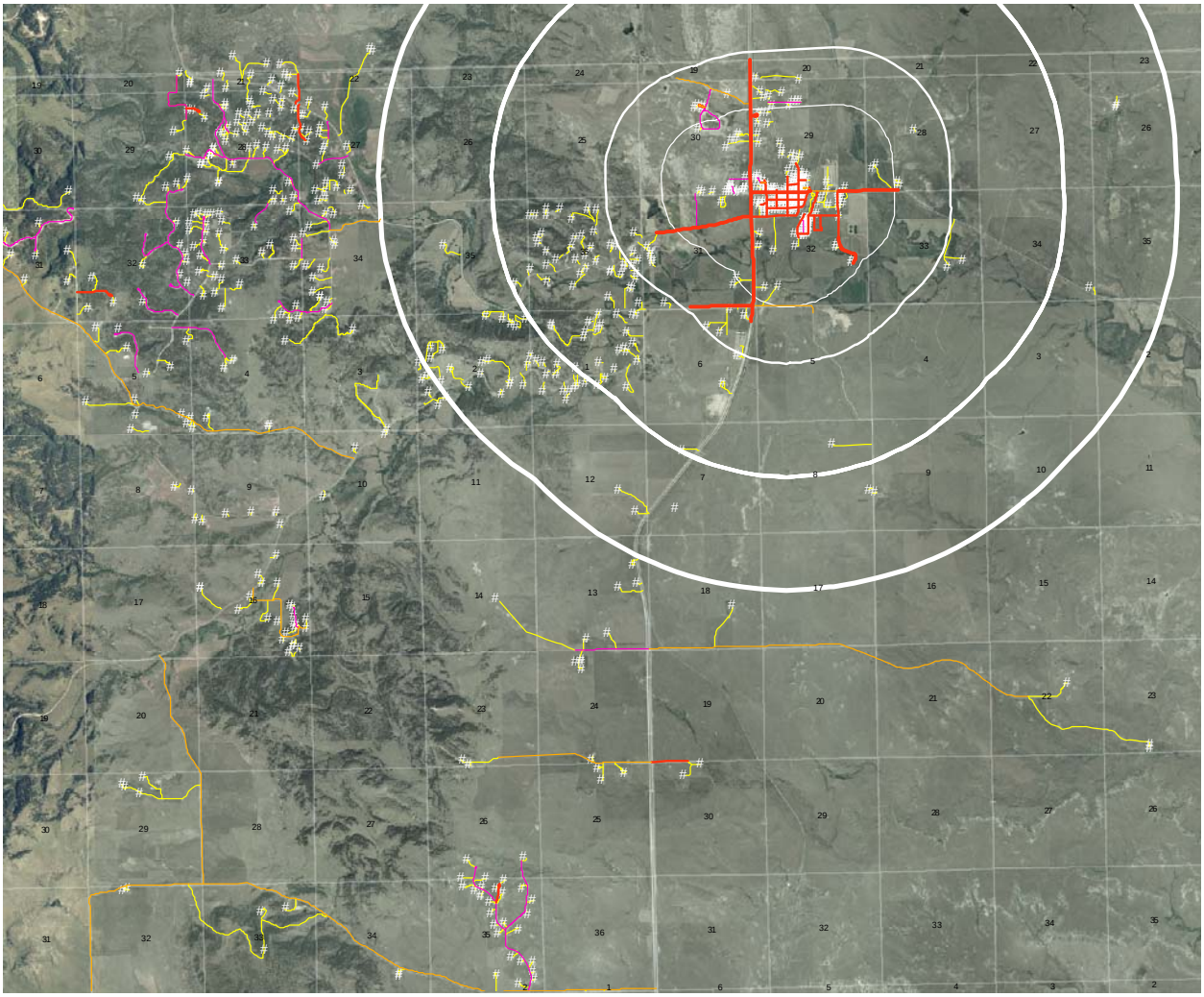


DEWEY
AT-RISK COMMUNITY
PROFILE

Community Description Intermix	Latitude (N43-31-77), Longitude (W104-2-09), Base Elevation (3733). Very few structures remain. It more resembles an *at-risk* area than a community.
Topography	It is located approximately 1 mile west of the Black Hills National Forest. The Burlington Northern & Santa Fe rail line is adjacent to the town. Dewey is 1 mile east of the Wyoming line and 3.5 miles north of the Nebraska line.
Primary Vegetation & Fuel Condition	The area is almost totally comprised of prairie grasses. The Forest Service land to the east is a mix of prairie and Ponderosa Pine trees.
Area Fire History: Fire number & name and Number of Acres (25 minimum) within a 10 mile radius of the community. Appendix H lists all fires	2096-Dewey-2562a 1624-Southerland Spr.-100a 1856-Dewey #2-4415a 1755-Pilger #2-30a 3266-Pass Creek Well-70a 2817-Hell Canyon#2-82a 971-Elk Mt-1500a 2686-Dugout-103.5a 3231-Rodgers Schack-11,770a 3266 Pass Ck. Well-70a 6193-Bennett Canyon-65a 4298-Bennet Canyon-65a
Infrastructure *at-risk*	There is a creek and open water source southwest of the town.
Fire Protection Capability	See Appendix K for a description of personnel, resources, and geographic area of responsibility.

Hazard Rating Moderate Low High	Risk Consideration Risk Factor 1(Fire Behavior) Situation 2-3 mix Risk Factor 2(Values *at-risk*) Situation 2 Risk Factor 3(Infrastructure) Situation 1
Community Profile	The majority of the land surrounding Dewey is privately owned. Forest Service land is approximately 3 miles to the northeast. There are a limited number of structures and outbuildings in the community. However, there is the real possibility for extensive development in the future.
Response & Evacuation Routes	Main access road is County Road 769.
Project Site Proposal	G-1 shows Forest Service land that contains areas for potential fuel reduction. No sites are specifically identified at this time within the three mile zone.
Mitigation Recommendations	Identify wells and naturally reliable ponds and reservoirs. County communication center and local volunteer fire department maintain a computerized location and description of each property.

HERMOSA

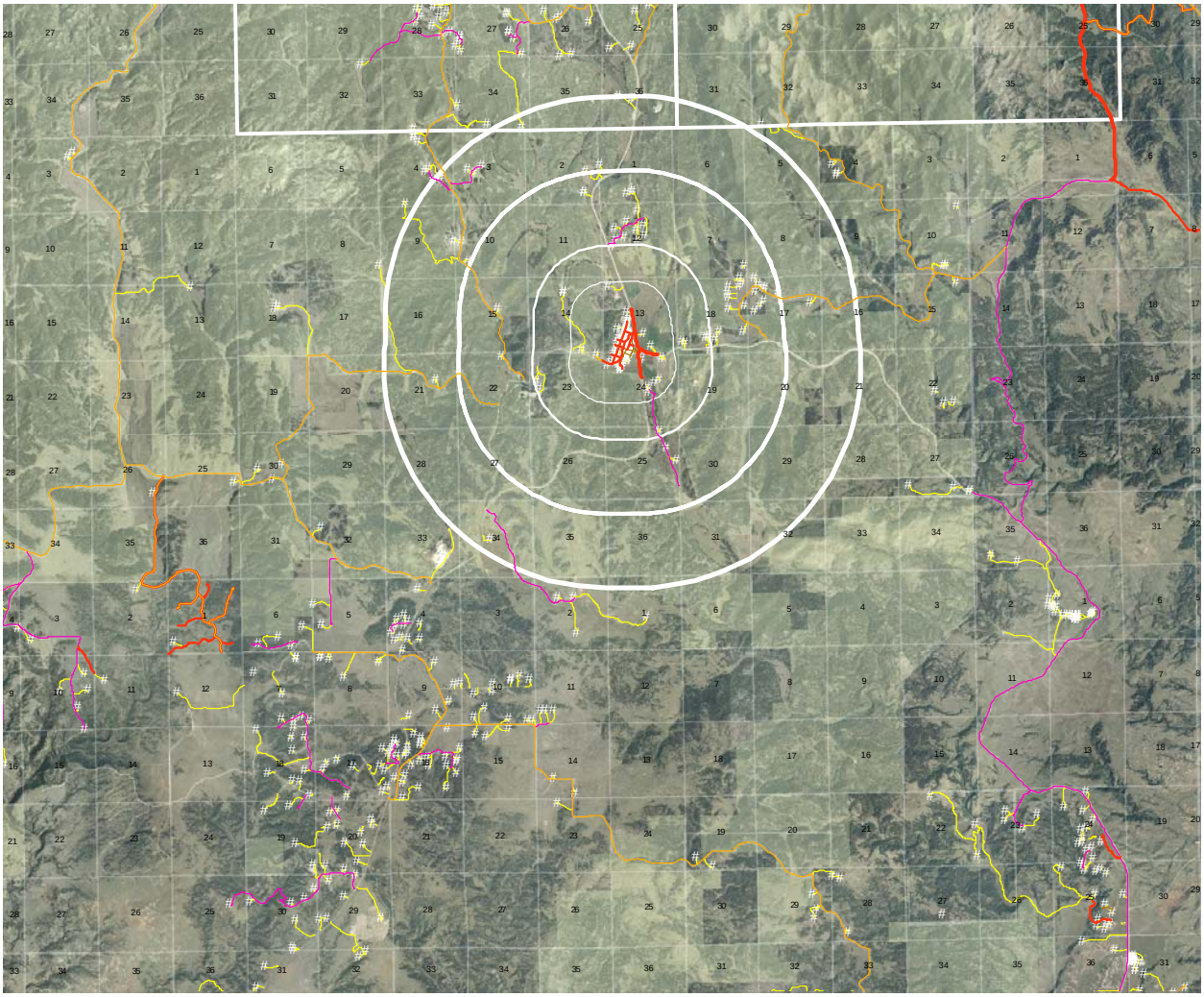


TOWN OF HERMOSA
AT-RISK COMMUNITY
PROFILE

Community Description Interface	Latitude (N43-50-38), Longitude (W103-11-786), Base Elevation (3381). Community is located 1 mile south of Pennington County line and to the East of Highway 79.
Topography	The town is located in a prairie environment. The area to the North, East and South is comprised of rolling hills with vary little change is elevation. The area to the west of Highway 79 shows a 200 feet rise in elevation at approximately 1.5 miles. Three miles west of Hermosa there are ridges at 3-400 feet higher elevation. The area around the town has major creeks and streams flowing out of the foot hills.
Primary Vegetation & Fuel Condition	Prairie grasses comprise the majority of vegetation around Hermosa. The area west of the town is a mix of grasses and stands of Ponderosa Pine trees.
Area Fire History: Fire number & name and Number of acres (25 minimum) within a 10 mile radius of the community. Appendix H lists all fires	2593-No name #1-25a 2592-No Name #2-9000a 194-Hermosa Fire-3734a 7-Cherry Creek-50a 3096-South Sixty-130a 986-Burro #1- 900a 1626-Lost Canyon-57a 1627-East Gate-996a 7668-Fairburn Co.Asst-250 acres.
Infrastructure *at-risk*	The primary water source is from a local rural water system. There are some streams and creeks in the area.
Fire Protection Capability	See Appendix K for a description of personnel, resources, and geographic area of responsibility.

Hazard Rating High High Moderate	Risk Consideration Risk Factor 1(Fire Behavior) Situation 3 Risk Factor 2(Values *at-risk*) Situation 1 Risk Factor 3(Infrastructure) Situation 2
Community Profile	There is a high degree of development near the town limits. Several subdivisions exist or are in the planning stage. The majority of building activity is on the western side of Highway 79. Rapid City is 15 miles to the north and accessible on a 4 lane highway.
Response & Evacuation Routes	Highway 79 to the North and South. Highway 40 to the West and East. Highway 36 to the West
Project Site Proposal	G-1 shows Forest Service land that contains areas for potential fuel reduction. No sites are specifically identified at this time within the three mile zone.
Mitigation Recommendations	Identify wells and naturally reliable ponds and reservoirs outside of city limits. County communication center and local volunteer fire department maintain a computerized location and description of each individual property and subdivision. Establish fire safety building and access requirements for properties within the three mile area of planning and zoning jurisdiction.

PRINGLE



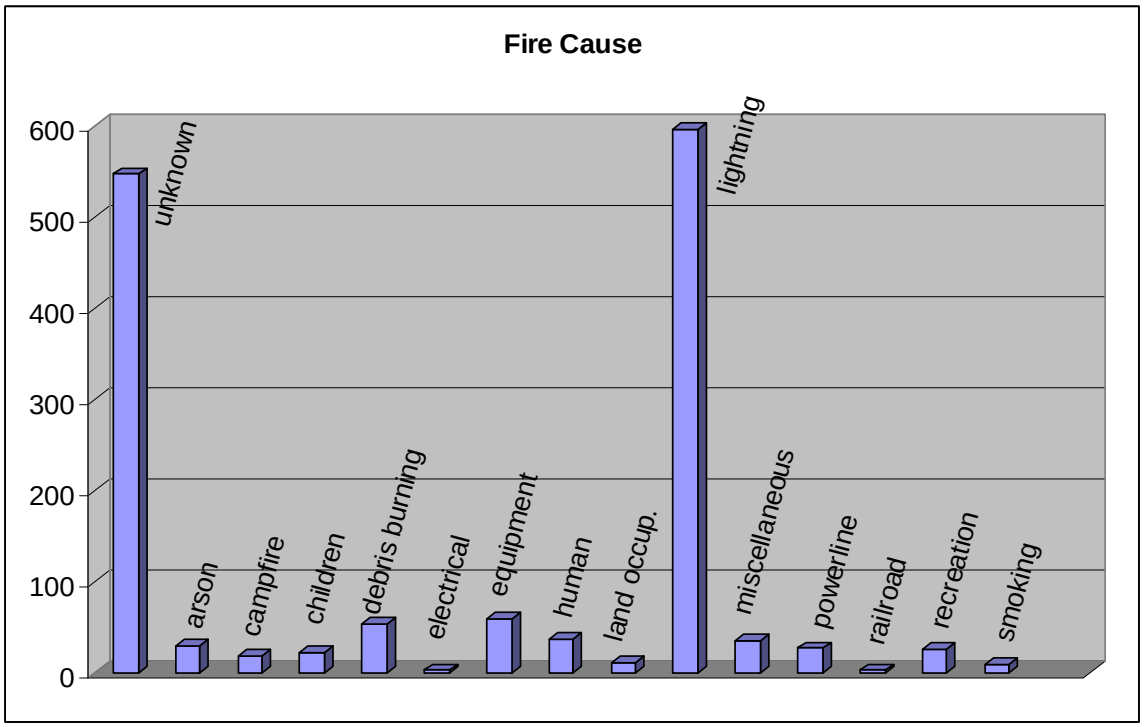
TOWN OF PRINGLE
AT-RISK COMMUNITY
PROFILE

Community Description Intermix	Latitude (N43-36-476), Longitude (W103-35-403), Base Elevation (4885). Pringle is located 12 miles south of Custer along Highway 385. At the South end of town the highway splits and 385 angles to the southeast to Hot Springs. Highway 89 branches off to the Southwest to Argyle and Edgemont. Pringle lies in Beaver Valley in a northeast to southwest direction. It is approximately 1 mile long and ¼ mile wide.
Topography	Pringle lies in a valley that is approximately 5 miles long and ½ miles across. It is built along side a very steep timbered ridge directly to the west. The town rises about 150 feet to the west and then encounters a 100-150 feet high sheer wall that runs north and south for the majority of the town's length.
Primary Vegetation & Fuel Condition	The open valley is mostly prairie and pasture grasses with a mix of timbered areas. The area to the north west and south is mostly heavy timber comprised of Ponderosa Pine trees.
Area Fire History: Fire number & name and Number of acres (25 minimum) within a 10 mile radius of the community. Appendix H lists all fires	1957-Argyle-28a 2231-Argyle #2-4350 2601-Easter-29a 133-RankinRidge-100a 294-Raven Canyon-30a 1803-Lookout Pt-1,350a 2622-Lithograph-64a 2458-Bison Trap-400a 2196-Argyle #1-70a 2579-Adams-34a 2608-Shirttail-4,000a 2252-Ben Miller Fire-35.8a 2815-Carroll Creek-30a 1956-Zuber-80a 1983-Highland Creek.-145a 2903-Highland Creek.-1,136a
Infrastructure *at-risk*	The town is supplied almost entirely by wells and cisterns. The town does have two community wells to supply the area for cistern use. This source is heavily used by residents and local landowners in the surrounding area. Pringle does not have a community water system.

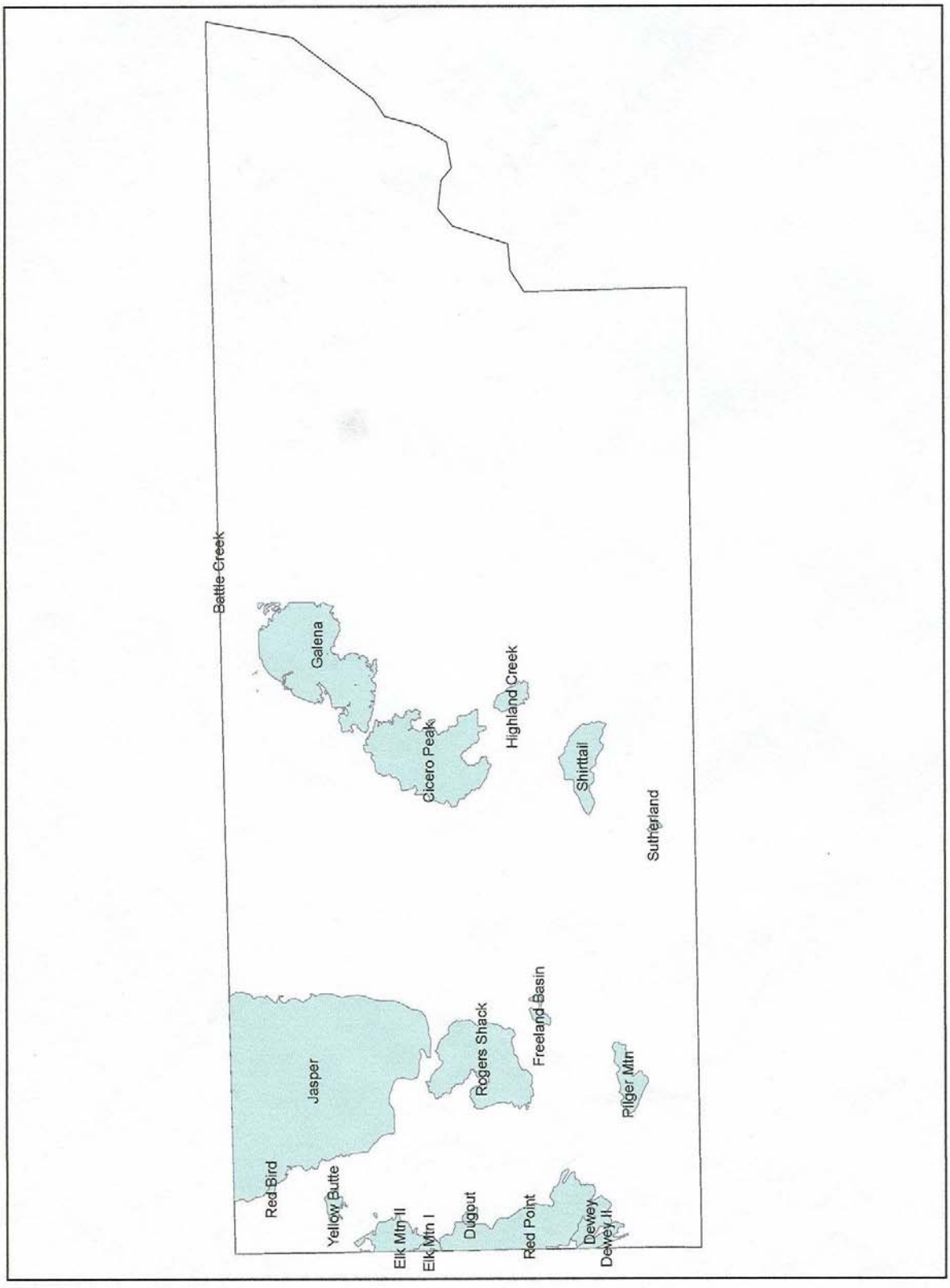
Fire Protection Capability	See Appendix K for a description of personnel, resources, and geographic area of responsibility.
Hazard Rating High High High	Risk Consideration Risk Factor 1(Fire Behavior) Situation 1 Risk Factor 2(Values *at-risk*) Situation 1 Risk Factor 3(Infrastructure) Situation 2
Community Profile	The west side of the community is comprised of a heavily timbered ridge. Access to this area is limited. The north end of town has a considerable amount of timber on private property that was recently acquired from the Forest Service.
Response & Evacuation Routes	North-South Highway 385; Southwest Highway 87; North-South Howard Street in Pringle.
Project Site Proposal	G-1 shows Forest Service land that contains areas for potential fuel reduction. No sites are specifically identified at this time within the three mile zone.
Mitigation Recommendations	Establishing a water supply sufficient to protect structures especially in rural areas. Identify wells and naturally reliable ponds and reservoirs. County communication center and local volunteer fire department maintain a computerized location and description of each property. Identify landowner residency status and limiting features of the property. Provide fire safety information to property owners.

APPENDIX H

CUSTER COUNTY FIRE DATA



US FOREST SERVICE DATA BASE



US FOREST SERVICE DATA BASE

COUNTY WIDE FIRE DATA BASE

NUMBER	FIRE_DATE	INCIDENT_N	ACRES	LONG1	LAT1	LOCATION
1948	11/1/1949	BATTLE MT	1150	-103-24-41	43-26-32	W of Buffalo Gap & No of Battle Mt Reserve
1956	8/4/1960	ZUBER	80	-103-29-22	43-30-23	W of 385 between Fossil Ridge & Cold Brook
1957	8/23/1960	ARGYLE	28	-103-34-34	43-30-29	Between 89 & 385 No of Cotton Wood Springs
2252	2/22/1962	BEN MILLER FIRE	36	-103-42-16	43-37-53	E of CR 715 NE of Dean Ranch
2034	4/16/1964	WILLOW CREEK	595	-103-35-10	43-46-35	Junction 16 & 89 (W) East of Custer
2092	6/26/1966	RED CANYON A	52	-103-46-20	43-19-24	
2096	7/8/1966	DEWEY	2562	-104-03-53	43-34-52	N of Dewey & SW of Sullivan Peak
2186	3/28/1974	HERMOSA	700	-103-11-01	43-58-16	SE of Fairburn
2196	6/19/1974	ARYGLE #1	70	-103-43-47	43-31-40	W of Argyle & below Richmond Ranch
2204	6/20/1974	PILLGER MT.	1782	-103-54-21	43-31-52	SE of Dewey
2230	7/19/1974	HERMOSA RR FIRE	35	-103-08-53	43-54-36	W of Squaw Humper Table
1135	11/18/1975	MORRISON	33	-103-46-25	43-43-52	East of Jewel Cave
2213	7/6/1976	ARGYLE #2	4350	-103-37-49	43-28-48	So of Argyle
2601	4/15/1979	EASTER	29	-103-41-10	43-34-25	WSW of Pringle
2079	5/22/1966	CROSSING	20	-103-52-40	44-17-49	
2593	1/1/1980	NO NAME #1	25	-103-11-06	43-45-21	Fairburn area
2592	3/31/1980	NO NAME #2	9000	-103-12-58	43-46-35	E pf CSP & above Fairburn
1035	7/19/1980	MUD SPRINGS	950	-103-50-19	43-47-45	E of Cr283 & Antelope Ridge & below of Signa
2605	7/19/1980	NO NAME #7	20	-103-41-56	43-33-50	W of Stringham Ranch & Loring Siding
2579	3/24/1981	ADAMS	34	-103-36-26	43-41-08	Sanator & 385
986	4/1/1981	BURRO #1	900	-103-21-29	43-49-19	Hy16A Loop between Custer & Keystone
2622	7/8/1981	LITHOGRAPH	64	-103-38-48	43-44-15	E of 4 Mile between 16 & 385 Sw of Custer
1009	9/21/1981	SPRING CREEK SCHOOL	250	-103-09-42	43-57-37	NE of Squaw Humper Table in BG Grassland
2580	2/23/1983	HIGHLAND CREEK	145	-103-26-06	43-23-49	E of Haven Canyon & Norbeck Wildlife Preserve
2591	8/1/1983	NO NAME #3	25	-103-13-49	43-41-03	Fairburn area
971	8/28/1983	ELK MOUNTIAN	1500	-104-02-25	43-43-30	Below Dewey
2623	3/25/1985	MILLER	21	-103-46-02	43-42-13	E of Lithograph & below Wolf & Morris Ranch
2458	3/6/1987	BISON TRAP	400	-103-06-02	43-38-03	N of Wind Cave & S of CSP E of Hy 87
2520	7/31/1987	SOSKE	20	-103-50-14	43-32-35	CR 715 NE of Pilger Mt & SW of Pleasant Valley
2578	9/12/1990	CICERO PEAK	14204	-103-49-04	43-42-58	Below Lithograph Canyon & NE Smith Ranch
2608	4/5/1991	SHIRTTAIL	4000	-103-34-18	43-33-27	Shirttail Canyon Road E of Zeimet Ranch
133	7/11/1991	RANKIN RIDGE	100	-103-28-39	43-38-07	Hy 87 E of Pringle
294	9/28/1991	RAVEN CANYON	30	-103-28-19	43-41-09	E of Cicero Peak & W of Hy 87 (Pringle area)

290	10/1/1991	DEWEY 2	748	-104-01-46	43-33-04	N of Dewey & E of Wyo. Hill
102	3/30/1992	HEREFOROAD	20	-103-19-35	43-45-35	16 A & 36 E of CSP
194	10/13/1992	HERMOSA FIRE	3734	-103-15-45	43-50-26	Hy 40 W of Hermosa
7	3/31/1994	CHERRY CREEK	50	-103-16-10	43-46-30	East of 16A & 36 West of 79
92	7/10/1994	18 MILE	20	-103-42-18	43-36-03	East of Pringle
111	7/11/1994	LYMAN	35	-103-52-01	43-42-53	S of Hy 16 & SW Jewel Cave
1624	8/11/1994	SOUTHERLAND SPRING	100	-103-51-48	43-32-31	Cr 715 NW of Pilger Mt
1661	8/18/1994	LOW BOY	25	-103-18-39	43-37-50	W of Hy79, SE of Race Track Butte
1599	2/10/1996	SLASH	40	-103-30-44	43-45-40	CSP Hy 16 Below Stockade Lake
1626	2/10/1996	LOST CANYON	57	-103-22-56	43-45-31	So. of 16A & E of Mt. Coolidge
1627	2/10/1996	EAST GATE	996	-103-20-11	43-46-23	CSP Junction 16A & 36
1755	9/4/1996	PILGER #2	30	-103-54-30	43-32-06	No. of Pilger Mt & East of Dewey
1756	9/4/1996	PASS CREEK	20	-103-58-28	43-31-33	East of Dewey
1803	5/9/1997	LOOKOUT POINT	1350	-103-29-28	43-34-55	SE of Pringle Hy 385 & 87 No of Elk Mt
1803	5/9/1997	LOOKOUT POINT	1350	-103.470398	43.586009	E SE of Pringle
1836	7/12/1997	SKIDDER HILL	7	-103.40837	43.788906	Hy16A CSP W of Custer
1856	9/1/1997	DEWEY #2	4415	-104-05-13	43-38-06	N of Dewey & SW of Sullivan Peak
2361	1/1/1998	VIRGINIA	12	-103.588984	43.629264	E of Hy385 & NE of Pringle
2415	4/11/1998	EASTER	5	-103.443231	43.727398	Below Hy16A & W of Butcher Hill
2418	4/21/1998	COLDBROOK (C)	155	-103.549543	43.499314	NW of Hot Springs & NW of Cold Brook Unit
2680	2/26/1999	WILDCAT	101	-103.54460	43.52466	SE of Pringle near Power line
2686	3/16/1999	DUGOUT	104	-104.01951	43.66973	W of Cr 769 & Mt. Ct.
2802	2/28/2000	BUCK HORN	6	-103.61199	43.78537	Hy 16 N of Custer
2815	3/24/2000	CARROLL CREEK	30	-103.62840	43.64368	W of Hy385 & NW of Pringle
2817	3/24/2000	Hell Canyon #2	82	-103.88557	43.62976	NW of Sullivan Peak
2854	6/9/2000	BOWMAN RIDGE	5	-103.56947	43.62932	NE of Pringle
2886	7/6/2000	BEAVER CREEK	10	-103.46544	43.58240	E of Hy 87 & E of Hy385 SE of Pringle
2904	7/14/2000	YELLOW BUTTE	785	-103.80563	43.96102	W of Hy 16 & NW of Custer
2903	7/14/2000	HIGHLAND CREEK	1136	-103.45015	43.62972	ENE of Pringle
2992	8/24/2000	JASPER FIRE	83500	-103.88526	43.81800	CR 283 N of Jewel Cave
3005	8/27/2000	COLD BROOK	8	-103.54790	43.73106	Between Hy 87 & 385 SE of Custer
3002	8/27/2000	BUD	15	-103.30857	43.60075	Hy 79 between Fairburn & Buffalo Gap
3096	1/2/2001	SOUTH SIXTY	130	-103.24843	43.80339	W of 79 & SW of Hermosa
3154	4/25/2001	HAND SPRINGS	6	-103.63333	43.58242	E of DM&E Line & SW of Fairburn
3159	5/8/2001	JOE GULTCH	6	-103.68647	43.77450	W of Custer
3201	6/26/2001	BOWMAN #2	5	-103.56778	43.65862	E of HY 385 & NE of Pringle

3427	7/8/2001	WINDY POINT	6	-103.51001	43.54276	E of Hy 385 & S of Pringle
3226	7/30/2001	Hell Canyon #2	35	-103.90049	43.61893	NW of Sullivan Peak
3231	7/31/2001	RODGERS SHACK	11770	-103.90546	43.62976	E of Cr 270,272,&789 NW of Sullivan Peak
3266	8/12/2001	PASS CREEK WELL	70	-104.00503	43.51484	SE of Dewey
3327	9/2/2001	SOUTHERLAND SCHOOL	300	-103.58894	43.51032	S of Pringle between Hy 385 & Hy 89
3405	1/26/2002	BLUE BELL	12	-103.48824	43.71658	S of Hy16A in CSP
3442	4/3/2002	HORSE CAMP	7	-103.57492	43.80165	NE of Custer
3446	4/7/2002	CARROLL CREEK	5	-103.65304	43.64007	NW of Pringle
3455	4/18/2002	BOBCAT	160	-103.31356	43.69843	S of Butcher Hill & W of Fairburn
3502	6/1/2002	HOPKINS FLAT	6	-103.70206	44.58998	SW of Pringle
3490	6/1/2002	BOLAND RIDGE	20	-103.37070	43.57178	W of Hy79 & NW Buffalo Gap
3634	7/7/2002	LIGHTNING CREEK	5	-103.72892	43.70390	So of Hy 16 & W of Hy 385
3628	7/20/2002	LANE JOHNNY 2	1000	-103.27662	43.56800	DM&E Line N of Buffalo Gap
3716	8/25/2002	HAGEN CANYON	45	-103.34679	43.47379	Hy 79 SW of Buffalo Gap
3737	9/5/2002	ARGLYE ROAD	5	-103.52978	43.48483	So of Pringle near Power Line
3748	9/8/2002	HAVEN	6	103.64319	43.56801	Hy 89 SW of Pringle
3811	5/22/2003	CSP AIRPORT RX	9	-103.3614	43.7347	W of Butcher Hill CSP
3900	7/21/2003	RED POINT	17638	-104.01010	43.61916	Hy 16 & Wyoming Border
5684	8/5/2003	129 FIRE	107			UNK
4076	8/26/2003	CURLY CANYON	12	-103.47040	43.58601	E of Hy 87 & E of Hy385 SE of Pringle
6011	9/8/2003	MOSS AGATE	5			UNK
6409	2/24/2004	HUFF	30			UNK
4214	7/6/2004	SHIRTTAIL	37	-103.51001	43.48483	W of Hy385 & E of Power Line below Pringle
4298	7/31/2004	BENNET CANYON	65	-103.92540	43.48541	N of Bennett Well & SW of Pilger Mt
6193	7/31/2004	BENNETT CANYON	65			N of Bennett Well & SW of Pilger Mt
4345	8/23/2004	SOUTH SHIRTTAIL	5	-103.5495	43.4848	So of Pringle along Fall River County line
6642	8/23/2004	NORTH MARRIETTA	6			UNK
4343	8/23/2004	NORTH FORK	8	-103.6884	43.8178	No of Custer & W of Hy 16
4354	8/23/2004	CLARK	8	-103.3884	43.7889	E of Custer Hy 16A
4402	12/2/2004	CENTER LAKE	8	-103.40837	43.80337	W or 16A North
6807	3/10/2005	SPOKANE	7	-103.3686	43.8347	Hy 16A North CSP
7198	7/18/2005	FRENCH FORK	140	-103.1003	43.6316	Power Line SE of Fairburn
7651	7/22/2005	FRENCH FORK 2	274	-103.1083	43.6333	SSE Fairburn
7301	7/29/2005	COTTONWOOD 2	15	-102.8344	43.6633	W of CR 715 & below Ventling Ranch
7452	8/7/2005	FLYNN CREEK	5	-103.5183	43.6750	E of Hy 385 between Custer & Pringle
7431	8/7/2005	FRENCH CREEK	5	-103.3872	43.7165	Below Hy16A & along French Creek Trail

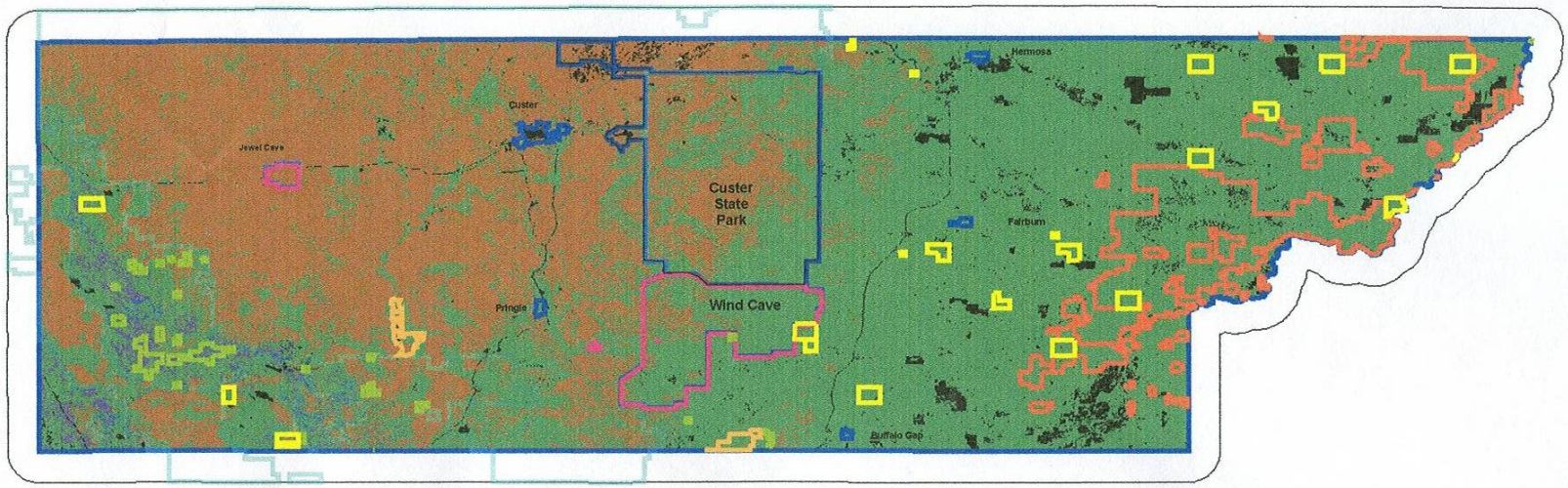
		BOTTOM				
7449	8/7/2005	SOUTH FORK 2	41	-103.0939	43.6147	E of Power Line & SE of Fairburn
7424	8/7/2005	RANCH 1	300	-102.8699	43.7286	Hy 16 W of Custer
7604	8/27/2005	MCCLURE DAM	1	-103.6754	43.6332	
7779	8/30/2005	COUNTY ASSIST	250			UNK
7668	9/10/2005	FAIRBURN County Assist	250	-103.1868	43.6943	NE of Fairburn
7725	9/21/2005	COUNTY ASSIST	13			UNK

SOUTH DAKOTA DEPARTMENT OF AGRICULTURE
WILDFIRE SUPPRESSION DIVISION

Division of Resource Conservation and Forestry

Custer County

Fuel Hazards



Legend

- Custer State Park
- School Land
- Game Production Areas
- Bureau of Land Management
- Buffalo Gap National Grasslands
- National Park Service
- USFS
- Municipal Boundary
- 1 *Low Fuel & Wetlands*
- 2 *Medium Fuel & Grasslands*
- 3 *High Fuel & Upland Vegetation*
- 4 *Extreme Fuel & Forested*
- Cuscobuffer2mi

0 2 4 8 12 16 Miles

Office of GIS

Custer County

by Loren W. Cofell

May 2005

APPENDIX I

CUSTER COUNTY WATER SOURCES

WATER SOURCE INVENTORY

ID NUMBER	Description	Latitude (N) (Deg-Min-Sec)	Longitude (W) (Deg-Min-Sec)
001		43-32-44	104-02-20
002	MW Lake NW of Dewey along old WY HWY 5	43-37-36	104-07-01
003	LAK Lake off Beaver Creek Road. (old stage route sign)	43-49-24	104-06-18
004		43-45.78	104-01.59
005		43-89.78	103-58.80
006		44-00.73	103-88.50
007		44-07.29	104-00.90
008	No air access Power lines across pond	44-09.44	103-59.71
009		43-35.18	103-54.76
010	200 yds SW of Jewel Cave by service road ground access limited Power line-west end	43-38.02 43-43-40	103-48.80 103-50-08
011		43-43.67	103-81.10
012	Off Medicine Mt. Road. Good Air & Ground. Access	43-5-10	103-41-09
013	Off Saginaw Road. Good Ground & Air Access	43-49-25	103-42-31
014		43-48-46	103-42-31
015	End of Harry Mills Road. N-S Air Access	43-40.21 43-43-11	103-43.12 103-43-07
016	Three ponds in this area	43-41-06	103-41-51
017	Spring Valley Ranch off Hopkins Flat Road Air & Ground access OK	43-30.65 43-36-57	103-41.52 103-41-15
018	Near End of Lone Elk Dr. Air access from SE ground access tricky	43-29.44 43-30-54	103-11.11 103-40-41
019	Pete Lien Quarry Locked Gate	43-29-35	103-39-59
020	NW of Hot Springs Access thru ranch W of Minnekata Fire Station	43-26.16	103-38.58
021	Larive Lake Cold Brook Recreation Area Access off County Road.	43-27-25	103-29-25
022	Poor ground access 2 ponds-Access thru Prairie Dog town	43-39-57	103-28-40
023	Next to Hwy 385 Dierensfields Limited ground access No air access	43-38-33	103-35-40

024	Tank at Star Academy	43-42-19	103-35-42
025	Far north end of jack O'Conner Drive (dirt road) inside Star Academy	43-42-38	103-35-42
026	Cottonwood Lake at the end of Memorial Road. NW of Hot Springs	43-26-33	103-34-12
027	West end of Mountain Lion Road.	43-31-53	103-41-39
028	Along Pleasant Valley Road Stock pond N-S Air access	43-40-50	103-42-51
029	Wind Song Valley Road Limited air access- power line	43-42-24	103-39-38
030	Beaver Lake I E-W air access	43-44-15	103-39-19
031	Beaver Lake II No air access	43-43-57	103-38-56
032	Beaver Lake III Limited air access. Hydrant Available	43-44-05	103-39-02
033	West Dam Lake North of golf course Hydrant available	43-45-29	103-37-33
034	Off Custer limestone near Mud Springs Road.	43-48-06	103-47-03
035	5 mi E of Buffalo Gap on 656	43-29-11	103-11-24
036	8 mi E of Buffalo Gap	43-29-44	103-06-31
037	N of Cheyenne River W of irrigated crop	43-30-57	103-04-14
038	Near the end of Sage Road	43-32-56	103-03-53
039	E of Hwy 79 Poor access Air & Ground	43-33-51	103-19-17
040	W of Hwy 79 ½ mile N of creek on Snow Ranch. unable to get to it	43-33-51	103-19-17
041	¼ mi E of Hwy 79 Dirt trail along creek poor ground access	43-34-52	103-17-17
042	1 mi N of Buffalo Gap W. of 79	43-31-56	103-19-40
043	Reservoir between Buffalo Gap & 79	43-29-37	103-19-55
044	1 Mi. E of Hwy 79 Off Fairburn Road. thru ranch	43-36.15	103-13.67
045	S. of Lame Johnny Road. Three ponds Access thru Smith Ranch	43-36-26	103-18-39
046	Triangle pond just East of Hwy 79 2nd pond to North	43-34-36	103-18-13
047	N of Dry Creek Road. Reservoir- 4 mi. E. of 79 Access ¾ mi. N of N Fairburn Road. on 79	43-42-12	103-06-22
048	Off the end of Dry Creek Road. S of ranch Rec 48 is S of house Rec-49 to NE	43-40-19	103-04-40

049	1 mi. E of Hwy 17 No easy Ground access	43-42-14	103-02-40
050	E of intersection Hwy 40 & Cheyenne River Near Red Shirt	43-40-00	102-52-10
051	Sewage ponds SE of Hermosa	43-50-08	103-10-56
052	N of Hwy 40 W. of Hermosa	43-50-12	103-13-05
053	Off Shorb Road. NW of Hermosa-4 ponds around house	43-51-39	103-13-06
054	E. of RR tracks N of Hermosa No easy access	43-52.81	103-11.39
055	Along creek E of Rypkemas	43-50-01	102-58-45
056	Along Spring Creek Cutoff Trees along E. end	43-50-47	102-53-09
057	Lower Spring Creek. Road.	43-48-19	102-51-05
058	Lower Spring Creek. Road. two ponds	43-50-04	102-50-04
059	Long trail in-off Lower Spring Creek. Road.	43-46.31 43-50-04	102-43.46 102-48-21
060	Lower Spring Creek. Road. N of ranch house	43-49-08	102-43-10
061	Near end of Spring Creek Road. NE corner of Custer Co.	43-52.28	102-41.12
062	N. of Custer State Park Airport (3VO) Ground access from N.	43-44-58	103-22-00
063	N of argyle Road. E. of Hwy 385 No easy Ground. Access	43-31-20	103-35-55
064	S. of 7-11 Road. thru ranch Poor Ground access Usually too shallow for air	43-30-48	103-24-40
065	Pond E. of Red Valley Road. Poor Ground. Access. Too Shallow for air	43-33-00	103-21-35
066	Sewage Lagoon at Wind Cave	43-33-17	103-28-00
067	Fred Stephan property NW of Wind Cave	43-34-46	103-31-21
068	E. of Pringle N of Hwy Evans	43-36-28	103-35-01
069	Glen Erin Road. Good air and Ground. Access	43-43-4-	103-32-11
070	Stockade/Bismarck Lake	43-46-22	103-31-01
071	Legion Lake	43-45-42	103-27-50
072	Sewage ponds near Star Academy East	43-44-38	103-26-10
073	Access off Four Wheel Dr. 2nd pond S. of American Center Road	43-47-27	103-31-04

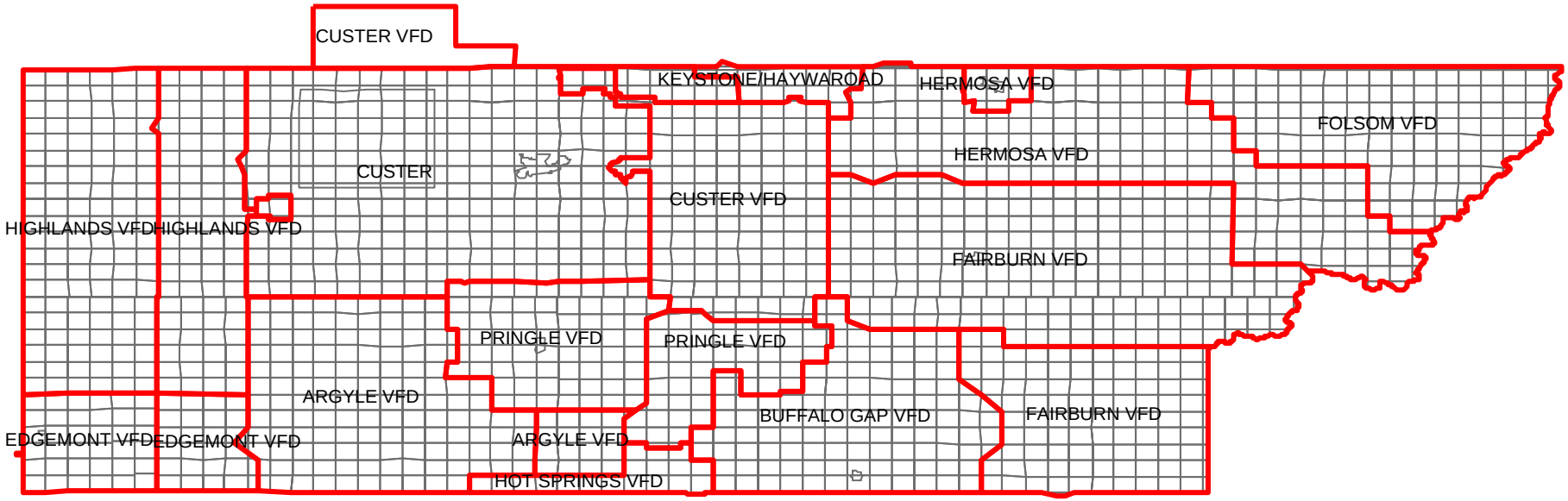
074	N. end of Rocky Road. off Amer. Center Road Ground. Access thru FS Gate Good Air Access	43-48-36	103-31-35
075	Sylvan Lake	43-50-45	103-33-40
076	Sewage ponds off Sylvan Lake Road. End of Sunday Gulch Tr. Two locked gates	43-50-13	103-34-19
077	Sewage Ponds E. of Custer off Willow Creek	43-47-04	103-34-15
078	Harbach Lane E. of new H.S. Good Air & Ground Access	43-45-56	103-34-30
079	Two Ponds behind Western Woodcarvings Air Access N-S and Ground. Access off Ridgeview Road.	43-44-51	103-38-08
080	E of Pleasant Valley Road near Gold Camp Cabins	43-43-49	103-40-08
081	Sewage lagoon at Blue Bell Lodge Two locked gates off Lower Fr. Creek Road.	43-42-5-	103-29-23
082	Center Lake	43-48-06	103-39-54
083	N of Hwy 16 Address 11970 Hydrant Available	43-44-23	103-39-54
084	Off Stagg Road. Poor Air & Ground. Access	43-44-21	103-37-53
085	Water Treatment Facility Off Spring Place East of Custer	43-46-26	103-34-05
086	Wastewater Pond Near Badger Hole	43-45-15	103-27-13
087	Along upper Lame Johnny Road.	43-41-36	103-24-43
088	Fish Hook Picnic Area in CSP- No Air Access	43-46-17	103-23-38
089	East Campground pond in CSP	43-45-40	103-22-16
090	Pond along Shirttail Canyon Road.	43-35-50	103-35-09
091	Repeat of 090		
092	Grace Coolidge Fishing Area- Hydrant Available More ponds up foot trail	43-46-43	103-24-11
093	Grace Coolidge Fishing Area- Second pond ¼ mi. North	43-47-00	103-24-31
094	Spokane Creek Resort Good Air/Ground. Access	43-50-08	103-22-36
095	Lakota Lake Hwy 16A Good Air/Ground, Access	43-51-02	103-23-55
096	N. Lame Johnny Road. by horse Camp Ground. Access only	43-42-49	103-27-29

097	Rose Quartz Mine off Glen Erin Ground. Access only	43-42-45	103-28-09
098	Flynn Creek Road. NE of Cicero Peak Air & Ground. Access	43-41-09	103-32-55
099	Wind Dance Ranch Road. Good Air/Ground. Access	43-44-16	103-39-50
100	End of Wind Song Road. Tennyson property Good air/Ground. Access	43-41-53	103-39-50
101	Lake Alexander at the Boy Scout Camp	43-53-55	103-43-58
102	At Elliot & Wild Turkey Road. Good Air/Ground Access	43-48-25	103-42-52
103	Off De Haven Road. Gate thru De Haven Property for Ground. Access. Good Air Access	43-49-21	103-43-57
104	Upper Fr, Creek Road. N of Diamond Road. Good air & Ground. Access 2nd pond S. of Diamond	43-46-17	103-40-36
105		43-39.11	103-28.75
106	N. of Buffalo Corrals	43-10-12	103-24-39
107	W of 79 5 N and 1 W. of Buffalo Gap	43-34-18	103-19-49

APPENDIX J

VOLUNTEER FIRE DEPARTMENTS
AREAS OF RESPONSIBILITY

VOLUNTARY FIRE DEPARTMENTS AREAS OF RESPONSIBILITY



Custer County GIS Office

APPENDIX K

WILDFIRE SUPPRESSION RESOURCES

ARGYLE VOLUNTEER FIRE DEPARTMENT
FIRE SERVICE RESOURCE DATA

AGENCY	Argyle Volunteer Fire Department		
TOTAL PERSONNEL	21	13 Structural	21 Wildland Fire
ENGINE	1 Type I 1000 gpm Minimum Structural Equipment	3 Type III Wildland Engine 300 gal Tank	1 Type IV Wildland Engine 200 gal Tank
TENDER/TANKER	1 Type I 1000 gal +	1 Type II Less Than 1000 gal	
SPECIAL/UNIQUE EQUIPMENT	Fully Equipped Ambulance for 1st Responders		
TRAINING	20 ICS 100		
CAPABILITY	Structural Wildland Fire		

CUSTER VOLUNTEER FIRE DEPARTMENT
FIRE SERVICE RESOURCE DATA

AGENCY	Custer Volunteer Fire Department			
TOTAL PERSONNEL	31	3 Structural	30 Wildland	
ENGINE	3 Type I 1000 gpm Minimum	2 Type IV 120 gpm Wildland		
TENDER/TANKER	1 Type I 1000 gal +			
SPECIAL/UNIQUE EQUIPMENT	2 2500 Portable Tanks	4,500psi Cascade system (mobile& stationary)	Backup generator for system	
TRAINING	4 ICS 100	17 ICS 200	7 ICS 300	1 ICS 400
CAPABILITY	Structural	Wildland	Haz Mat Response	Extrication

CUSTER HIGHLANDS VOLUNTEER FIRE DEPARTMENT
FIRE SERVICE RESOURCE DATA

AGENCY	Highlands Volunteer Fire Department		
TOTAL PERSONNEL	15	3 Structural	15 Wildland Fire
ENGINE	0 Type I 1000 gpm Minimum Structural Equipment	0 Type III Wildland Engine 300 gal Tank	1 Type IV Wildland Engine 200 gal Tank
TENDER/TANKER	0 Type I 1000 gal +	2 Type II Less Than 1000 gal	
SPECIAL/UNIQUE EQUIPMENT	1500 gal Drop Tank, Portable light plant		
TRAINING	15 ICS 100	1 ICS 300	1 ICS 400
CAPABILITY	Structural Wildland Fire		

DEWEY VOLUNTEER FIRE DEPARTMENT
FIRE SERVICE RESOURCE DATA

AGENCY	Dewey Volunteer Fire Department		
TOTAL PERSONNEL	10	0 Structural	X Wildland Fire
ENGINE	3 Type IV Wildland Engine 200 gal Tank		
TENDER/TANKER	0 Type I 1000 gal +	0 Type II Less Than 1000 gal	
SPECIAL/UNIQUE EQUIPMENT	Jaws of Life		
TRAINING			
CAPABILITY	Wildland Fire		

HERMOSA VOLUNTEER FIRE DEPARTMENT
FIRE SERVICE RESOURCE DATA

AGENCY	Hermosa Volunteer Fire Department		
TOTAL PERSONNEL	22	10 Structural	10 Wildland Fire
ENGINE	1 Type I 1000 gpm Minimum Structural Equipment	3 Type III Wildland Engine 300 gal Tank	
TENDER/TANKER	0 Type I 1000 gal +	0 Type II Less Than 1000 gal	
SPECIAL/UNIQUE EQUIPMENT	Hydraulic extrication equipment		
TRAINING			
CAPABILITY	Structural Wildland Fire	Extrication	

PRINGLE VOLUNTEER FIRE DEPARTMENT
FIRE SERVICE RESOURCE DATA

AGENCY	Pringle Volunteer Fire Department		
TOTAL PERSONNEL	22	10 Structural	22 Wildland Fire
ENGINE	1 Type I 1000 gpm Minimum Structural Equipment	1 Type II 500 gpm Minimum Structural	2 Type III Wildland Engine 300 gal Tank
TENDER/TANKER	1 Type I 1000 gal +	1 Type II Less Than 1000 gal	
SPECIAL/UNIQUE EQUIPMENT	2100 gal porta-tank, light plant	Portable pump@ 150gpmx2	
TRAINING	10 ICS 100		
CAPABILITY	Structural Wildland Fire		

SOUTH DAKOTA
DIVISION OF WILDLAND FIRE SUPPRESSION
FIRE SERVICE RESOURCE DATA

AGENCY	SD Wildland Fire Division	
TOTAL PERSONNEL	Wildland Fire Fighters	
ENGINE	Type III Wildland Engine 300 gal Tank	
TENDER/TANKER	Yes Type I 1000 gal +	Yes Type II Less Than 1000 gal
TRAINING	Knowledge of ICS Principles	
CAPABILITY	Wildland Fire	

US FOREST SERVICE
CUSTER

AGENCY	US Forest Service			
TOTAL PERSONNEL	Structural Fire Fighters	Wildland Fire Fighters	Haz Mat Operations Level	EMT-B
ENGINE	Type III Wildland Engine 300 gal Tank	Type IV Wildland Engine 200 gal tank		
TENDER/TANKER	0			
TRAINING	Knowledge of ICS Principles			
CAPABILITY	Structural Fire Wildland Fire			

WIND CAVE NATIONAL PARK

AGENCY	Wind Cave National Park	
TOTAL PERSONNEL	Wildland Fire Fighters	EMT-B
ENGINE	Type IV Wildland Engine 200 gal tank	
TENDER/TANKER	Type I Large Tender 1,000 gal +	
TRAINING	Knowledge of ICS Principles	
CAPABILITY	Wildland Fire	

APPENDIX L

CUSTER COUNTY

NATIONAL REGISTRY OF HISTORICAL PLACES

CUSTER COUNTY
NATIONAL REGISTERY OF HISTORICAL PLACES

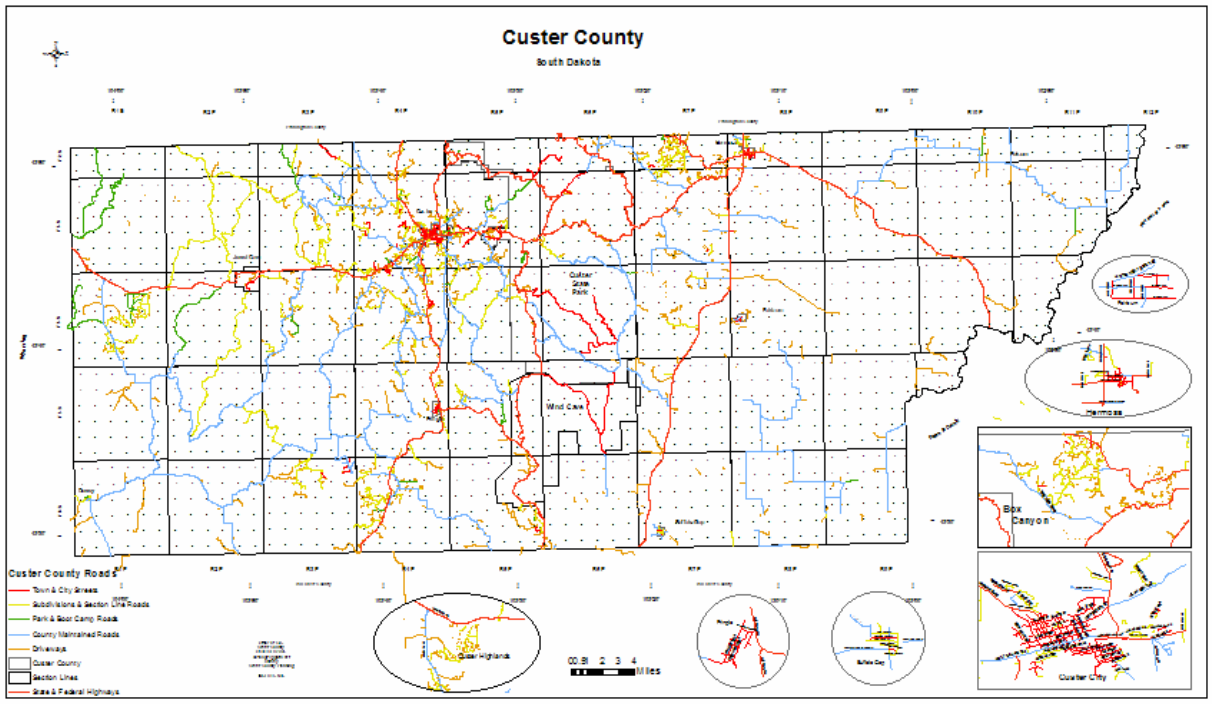
NAME	LOCATION	SIGNIFICANCE
Pringle Pictograph	Custer, Restricted	Native American
Site # 39CU890	Hermosa, Restricted	Native American
Hells Crossing Tipi Rings	Custer, Restricted	Native American
Fox Ranch; CU-SA-4	Hy 16 West of Custer	Settlement
Badger Clark's Home	E of Hy 16A Custer	Person
M. Bauer Homestead Ranch	SE Jewel Cave, Custer	Settlement
Beaver Creek Bridge	Wind Cave National Park	Architecture/ Engineering
Beaver Creek Rockshelter	Pringle, Restricted	Prehistoric
Buffalo Gap Cheyenne River Bridge	Buffalo Gap	Transportation Event
Buffalo gap Historic Commercial District	Buffalo Gap	Architecture/Engineering
CCC Camp Custer Officers' Cabin	NW of Custer	Architecture/Engineering
Cold Springs Schoolhouse	SE of Custer	History/Education
Custer County Courthouse	Custer	Government
Custer Initials Site	US 16 & FS Road 346, Custer	Exploration/ Settlement
Custer State Game Lodge	Custer State Park	Architecture/ Engineering
Custer State Park Museum	Custer State Park	Architecture/ Engineering
Fairburn Historic Commercial District	Fairburn	Architecture/ Engineering
First National Bank Building	Custer	Architecture/ Engineering
Fourmile School	Hy16 West of Custer	Education
Garlock Building	Custer	Architecture/ Engineering
Grace Coolidge Memorial Log Building	Custer	Architecture/ Engineering
Historic Trail and Cave Entrance	Jewel Cave	Architecture/ Engineering
Lampert Ranch	North of Dewey	Exploration/Settlement
Walter Ranch	Cr 270 West of Custer	Exploration /Settlement
Norbeck Summer House	Custer State Park	Person/ Architecture
Pig Tail Bridge	Wind Cave	Architecture/ Engineering
Ranger Station	Jewel Cave	Architecture/ Engineering
Red Shirt Bridge	Cheyenne River, Red Shirt	Event/ Government
Roetzel Ranch (Deer Camp)	Saginaw & Roetzel Roads	Event/ Settlement
Sites #39 Cu 510 through 516	Restricted	Prehistoric
Site # 39 Cu 91(Scored Rocks)	Restricted	Historic/ Aboriginal

SD DOT Bridge # 17-289-107	Custer State Park	Event/Government
Sterns Ranch	HY 769 W of Custer	Settlement
Streeter Homestead	Beaver Creek, Buffalo Gap	Exploration/ Settlement
Francis Towner & Janet Leach House	Custer	Architecture/ Engineering
Tubbs House (Custer Mansion)	Custer	Architecture/ Engineering
Ward Ranch	S of Hy 16, Custer	Settlement
Way Park Museum	Custer	Exploration/ Settlement
Williams's Ranch	S of Hy385 & Shirttail Canyon, Pringle	Settlement
Wind Cave National Park Historic District	Wind Cave	Architecture/ Engineering
Young Ranch	S of Dewey	Settlement

APPENDIX M

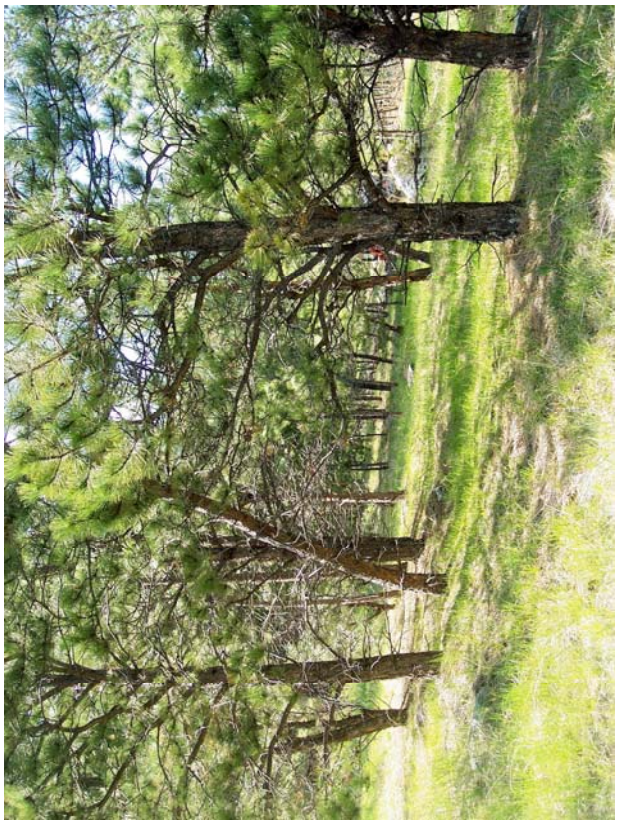
COUNTY HIGHWAY MAP

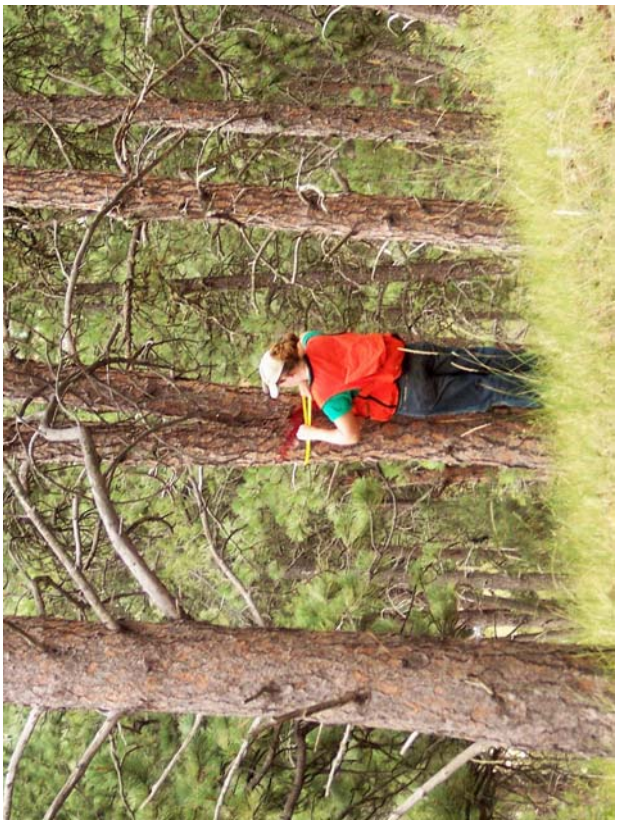
COUNTY HIGHWAY MAP



APPENDIX N

Pringle Property Project





APPENDIX O

SILVER STAR COMMUNITY MITIGATION PROJECT

Custer County GIS Office

APPENDIX P
City of Custer

Big Rock Park Mitigation Project

Custer County GIS Office

APPENDIX Q

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