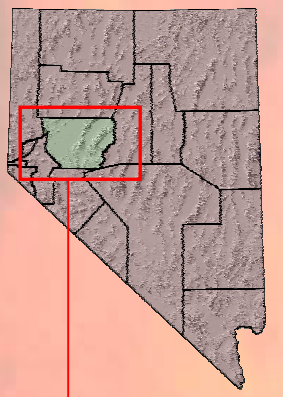
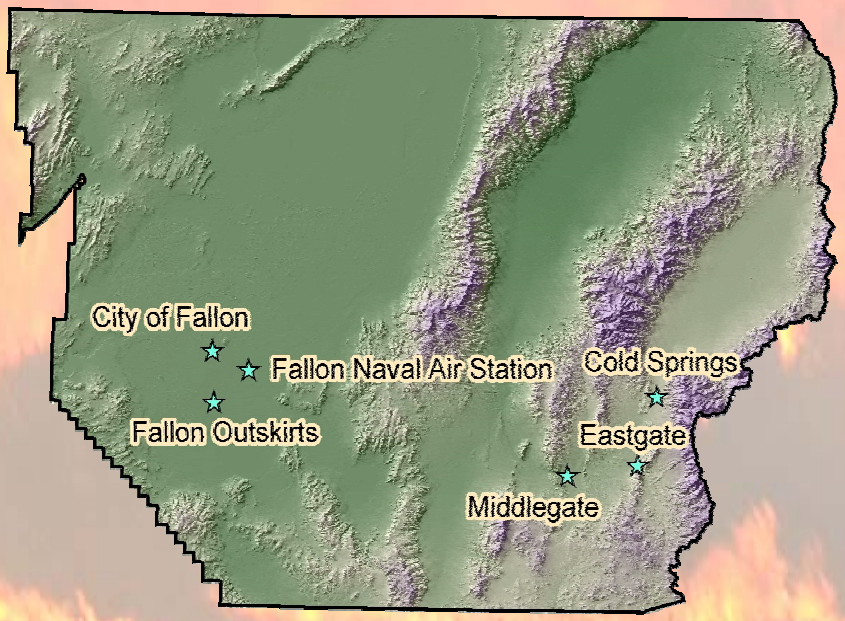
Nevada Community Wildfire

Risk/Hazard Assessment Project

# CHURCHILL COUNTY

November 2004



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This project was administered by the Nevada Fire Safe Council and funded through National Fire Plan grants from the Bureau of Land Management, the U.S. Forest Service, and the Nevada Division of Forestry.

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# Executive Summary

The Healthy Forests Initiative was announced by the White House in 2002 to implement the core components of the *National Fire Plan Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-year Comprehensive Strategy*. The Plan calls for more active forest and rangeland management to reduce the threat of wildland fire in the wildland-urban interface, the area where homes and wildland meet.

This report was prepared specifically for the communities within Churchill County identified in the Federal Register list of communities at risk within the vicinity of federal lands that are most vulnerable to the threat of wildfire. The communities assessed in Churchill County are listed in Table 1-1. The majority of the communities in Churchill County lie along the U.S. Highway 50 corridor.

The Nevada Fire Safe Council contracted with Resource Concepts, Inc. (RCI) to assemble a project team consisting of experts in the fields of fire behavior and suppression, natural resource ecology, and geographic information systems (GIS) to complete the assessment for each Churchill County community listed in the Federal Register. The RCI Project Team spent several days inventorying conditions in Churchill County and completing the primary data collection and verification portion of the risk assessment.

This report describes in detail the data and information analyzed and considered during the assessment of each community. The general results are summarized in Table 1-1. Five primary factors that affect potential fire hazard were assessed to arrive at the community hazard assessment score: community design, structure survivability, defensible space, availability of fire suppression resources, and physical conditions such as the vegetative fuel load and topography. Information on fire suppression capabilities and responsibilities for Churchill County communities was obtained through interviews with local fire chiefs and agency fire management officers. The RCI Project Team Fire Specialist assigned an ignition risk rating for each community of low, moderate, or high. The rating was based upon historical ignition patterns, interviews with fire department personnel and state and federal fire agencies, field visits to each community, and professional judgment based on experience with wildland fire ignitions in Nevada.

Fire suppression in Churchill County is provided by the Fallon/Churchill Volunteer Fire Department, and the only paid fire department in Churchill County at the Fallon Naval Air Station (NAS). Additional resources are available from the Bureau of Land Management as needed and are dispatched from the Sierra Front Interagency Dispatch Center in Minden, Nevada.

The predominant fuel type in Churchill County is salt desert shrub vegetation comprised of sagebrush, rabbitbrush, greasewood, Indian ricegrass, and bottlebrush squirreltail, with cheatgrass which is an invasive annual grass, in every community. Salt desert shrub is generally considered a low to moderate fuel hazard. Fallon and the Fallon Outskirts have irrigated agricultural fields and pastures that provide a buffer zone between residential areas and wildland fuels. The primary hazard to these communities is irrigation ditches with poplar, Russian olive, cottonwood, and cattails. Irrigation ditches pose a hazard in that they

can act as a wick, and draw fire through accumulated vegetation with rapid spread rates toward structures in the Fallon and Fallon Outskirts Communities.

**Table 1-1. Community Risk and Hazard Assessment Results**

| COMMUNITY | INTERFACE CLASSIFICATION | FUEL HAZARD CONDITIONS IN THE WILDLAND- URBAN INTERFACE | IGNITION RISK | FIRE HAZARD RATING |
|---|---|---|---|---|
| Cold Springs | Intermix | Low | Moderate | Moderate |
| Eastgate | Rural | Low | Moderate | High |
| Fallon | Classic | Low | Low | Low |
| Fallon Naval Air Station | Classic | Low | Low | Low |
| Fallon Outskirts | Rural | Moderate | Low | Low |
| Middlegate | Intermix | Low | Moderate | Moderate |

There is extensive wildfire history in Churchill County. Wildfire history is summarized in Table 3-2, and detailed on Figure 3-2. There have been no recent efforts undertaken in Churchill County to reduce the risk of wildland fire or mitigate hazardous conditions that may contribute to the uncontrolled advance of a wildfire or loss of life or property during a wildfire event.

There is no way to completely eliminate the threat of wildfire in the wildland-urban interface. The recommendations in the Community Wildfire Risk/Hazard Assessment Report are based upon analyses of community-specific conditions in Churchill County. The recommendations are meant to:

- Encourage defensible space and fuel reduction projects where needed to reduce the hazards inherent in wildland interface areas. Greenstrips can slow the advance of a fire and provide a place where firefighters can stand against an oncoming fire. Residents in all communities need to read the recommendations for their community, examine their property in light of the risks and hazards detailed in the community sections of this report, and implement the recommendations pertinent to their community.
- Promote community-wide involvement to effectively reduce the risk of wildfire ignitions in and near communities. When neighbors work together, much more can be accomplished community-wide to make a community more fire safe.
- Increase public awareness of wildfire risks and hazards in communities, and communicate to homeowners regarding what they can do to reduce those risks and hazards.

Close and continued coordination between citizens, local fire agencies, and the Bureau of Land Management is crucial for the implementation of the proposed greenstrips, fuel reduction projects, and fire safety efforts in Churchill County. To be most effective, fire safe practices need to be implemented on a community-wide basis. Proactive efforts to effectively reduce the risk of wildfire ignitions near communities, implementing defensible space and fuel reduction projects, and public education programs, will help to mitigate the hazards inherent in wildland interface areas.

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*[May 20, 2005]*

# 1.0 INTRODUCTION

## 1.1 PROJECT BACKGROUND

A key element of the Healthy Forests Initiative announced by the White House in 2002 is to implement core components of the *National Fire Plan Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-year Comprehensive Strategy.* Federal agencies and western state governors adopted the Plan in the spring of 2002, in collaboration with county commissioners, state foresters, and tribal officials. The Plan calls for more active forest and rangeland management.

The Healthy Forest Restoration Act (H.R. 1904) was signed into law in December of 2003. The Act creates provisions for expanding the activities outlined in the National Fire Plan. In the same year the Nevada Fire Safe Council received National Fire Plan funding through the Department of Interior Bureau of Land Management to conduct a Community Risk/Hazard Assessment for at risk communities in Nevada. The communities to be assessed are among those named in the 2001 Federal Register list of communities at high risk from wildfire within the vicinity of Federal lands (66 FR 160). The list identifies Nevada communities adjacent to Federal lands that are most vulnerable to wildfire threat in Nevada.

Resource Concepts, Inc. (RCI), a Carson City-based consulting firm, was selected to conduct the Community Risk/Hazard Assessments. During 2004, the RCI Project Team inventoried over 250 communities in 17 Nevada Counties to assess both the risk of ignition and the potential fire behavior hazard. With the use of procedures accepted by Nevada's wildland fire agencies, these specialists focused their analysis on the wildland-urban interface areas – places where homes and wildland meet.

The specific goals of the Nevada Community Risk/Hazard Assessment Project are to:

- Assess the wildfire hazards present in each community on the Federal Register list of communities at risk in Nevada.
- Identify firefighting resource needs (equipment, personnel, and infrastructure).
- Conduct fuel hazard mapping for high and extreme fuel hazard communities.
- Describe recommended risk and hazard mitigation projects in enough detail to aid communities in applying for future implementation funds.
- Distribute assessment results and recommend mitigation project descriptions to each county in a format that can be easily updated and useful for public meetings and other public education activities.

The community risk/hazard assessments were conducted systematically. The RCI Project Team observed and recorded the factors that significantly influence the risk of wildfire ignition along the wildland-urban interface, and they inventoried features that have an influence on hazardous conditions in the event of a wildfire. Interviews with local fire agency and emergency response personnel were completed to assess the availability and capability of suppression resources and to identify opportunities for increased community preparedness. A description of the existing fuel hazard and potential fire behavior is

discussed. Photos and maps are presented for each community where the fuel hazard in the interface area is high or extreme. However, fuel hazard mapping was not done in any Churchill County communities because none of the communities had high or extreme fuel hazard conditions.

The results of the assessments are formatted to facilitate ease of reference and reproduction for individual communities. Each community is mapped and ignition risks, fire hazards, and recommended mitigation projects are described for each community. The recommendations are summarized in table form and presented on a separate map, if the proposed mitigation project can be represented spatially. These tools will aid local, state and federal agencies in strategic planning, increasing public awareness, and seeking funding for future risk and hazard reduction projects. Mitigating the risks and hazards identified by these assessments is not only crucial to the long term goals of the National Fire Plan, but it is also crucial to the short and long-term viability of Nevada's communities, natural resources, infrastructures, and watersheds.

Numerous agencies and individuals were involved in the planning and implementation of this effort. Special thanks and acknowledgement is given to:

- Nevada Fire Safe Council (NFSC)
- USDI Bureau of Land Management (BLM)
- USDA Forest Service (USFS)
- Nevada Division of Forestry (NDF)
- University of Nevada Cooperative Extension (UNCE)
- Nevada Association of Counties (NACO)
- Nevada's Counties
- Fire Chiefs and Firefighters Statewide

## 1.2 Communities Assessed

The following communities in Churchill County were included in the assessment:

- Cold Springs
- Eastgate
- Fallon
- Fallon Naval Air Station
- Fallon Outskirts
- Middlegate

# 2.0 METHODOLOGY

## 2.1 PROJECT TEAM

RCI Project Team experts in the fields of fire behavior and suppression, geographic information systems (GIS), natural resource ecology, and forest health collaborated to complete a Community Risk/Hazard Assessment for each community. Each Project Team included a Fire Specialist with extensive wildland fire prevention and suppression experience in Nevada and a Resource Specialist experienced in the natural resource environment of the Great Basin.

The Project Teams used standardized procedures developed from the *Draft Community Wildland Fire Assessment For Existing and Planned Wildland Residential Interface Developments in Nevada* during the assessment process (Nevada's Wildland Fire Agencies, Board of Fire Directors, April 2001; revised 2002). This approach incorporates values for fuel hazards, structural hazards, community preparedness, and fire protection capabilities into an overall community rating. A glossary of wildland fire terms is included in Appendix A.

## 2.2 BASE MAP DATA COLLECTION

The project geographic information system (GIS) specialists compiled and reviewed statewide geospatial data and provided the assessment teams with maps for use and verification in the field. Data sources for the maps were the Nevada Fire Safe Council, the Nevada Department of Transportation, the Natural Resource Conservation Service, the Forest Service, and the BLM. Data includes:

| SPATIAL DATASET | DATA SOURCE |
|---|---|
| LAND OWNERSHIP | BLM Nevada State Office Mapping Services |
| VEGETATION COMMUNITIES | Nevada Gap Analysis Program Data, Utah Cooperative Fish and Wildlife Research Unit, Utah State University |
| TOPOGRAPHY | USGS Digital Elevation Models and Topographic Maps |
| FIRE SUPPRESSION RESOURCES | Field Interviews |
| ROADS | 'TIGER' Census data 2000 |
| CURRENT AERIAL PHOTOGRAPHS | US Geologic Survey Digital Orthophoto Quadrangles (1994, 1996, or 1998) |
| FUEL TYPES | BLM Utah State Office Fire Hazard Potential Data |
| FIRE HISTORY | BLM Nevada State Office Mapping Services<br>USFS Nevada State Office |

Existing data was reviewed and the pertinent information was compiled on maps in GIS format. The Project Teams verified the GIS data during field assessments. The GIS specialist provided the data management for quality assurance and accuracy analysis of the statewide geospatial data and map production.

### *2.2.1 Wildfire History*

Wildfire history information was mapped using BLM and USFS datasets and GIS databases that identify wildfire perimeters on federally managed lands covering the past 24 years. Fire perimeters were mapped by agency personnel using Global Positioning System (GPS) and screen digitizing on source maps with a minimum detail level of 1:250,000. This dataset was updated at the BLM Nevada State Office at the end of each fire season from information provided by each Nevada BLM Field Office. The dataset is the central source of historical GIS fire data used for fire management and land use planning on federal lands.

The Project Team Fire Specialists identified additional fire perimeters not present in the BLM and USFS datasets as a result of interviews with local fire experts. Fires that occur on private lands are generally recorded on paper maps and have not been consistently included in the federal agency GIS datasets. Additional fire locations identified during the interviews were recorded on the field maps where possible and added to the project wildfire perimeter dataset.

In addition to the fire perimeter information, point data for all fire ignitions within Nevada from 1980 to 2003 were obtained from the National Interagency Fire Center (NIFC) database in Boise, Idaho. This dataset includes an ignition point coordinate and an acreage component as reported to NIFC through a variety of agencies. This data is summarized in Table 3-2 and provides the ignition point locations for the maps in this report. In many cases, the ignition point location is only accurate to the section; in such cases, the point coordinate is located in the section center on the maps.

The wildfire history and ignition history data were used to formulate risk ratings and to develop recommendations specific to areas that have been repeatedly impacted by wildland fires. Observations made from the RCI Project Team Fire Specialists and comments from local fire agencies were used to develop recommendations in areas without recent wildfire activity where accumulations of fuels or expansion of urban development into the interface area represents a growing risk.

## 2.3 COMMUNITY RISK/HAZARD ASSESSMENT

The wildland-urban interface is the place where homes and wildland meet. This project focuses on identifying risks and hazards in the wildland-urban interface areas by assessing each community individually. Site-specific information for each community was collected during field visits conducted March 1 through 3, 2004. The predominant conditions recorded during these site visits were used as the basis for the Community Risk/Hazard Assessment ratings.

### *2.3.1 Ignition Risk Assessment Criteria*

The Project Team Fire Specialists assigned an ignition risk rating of low, moderate, or high to each community assessed. This rating is based on interpretation of the historical record of ignition patterns and fire polygons provided by NIFC, BLM, and USFS databases, interviews with local fire department personnel and regional Fire Management Officers, field visits to each community, and the professional judgment of the fire specialists based on their experience with wildfire ignitions in Nevada.

### *2.3.2 Hazard Assessment Criteria*

The Community Risk/Hazard Assessments were completed using methodology outlined in the *Draft Community Wildland Fire Assessment: For Existing Wildland Residential Interface Developments in Nevada* (Nevada's Wildland Fire Agencies 2001; revised 2002). This system assigns community hazard and risk values low through extreme based on the following scoring system:

| CATEGORY | SCORE |
|---|---|
| Low Hazard | < 41 |
| Moderate Hazard | 41-60 |
| High Hazard | 61-75 |
| Extreme Hazard | 76+ |

To arrive at a score for the community, five primary factors that affect potential fire hazard are assessed: community design, structure survivability, defensible space, availability and capability of fire suppression resources, and physical conditions such as fuel loading and topography. A description of each of these factors and their importance in developing the overall score for the community is provided below. Individual community score sheets presenting the point values assigned to each factor in the hazard assessment score are provided at the end of each community section. Tables presenting the point values assigned to each element in the hazard assessment are provided for each community at the end of its respective section.

**Community Design**

Community design accounts for 26 percent of the total assessment score. Many aspects of community design can be modified to make a community more fire safe. Factors considered include:

- **Interface Condition**. Community safety is affected by the density and distribution of structures with respect to the surrounding wildland environment. Four condition classes are used to categorize the wildland-urban interface: Classic, Intermix, Occluded, and Rural. Definitions for each Condition Class are defined in the glossary of wildland terms in Appendix A.
- **Access.** Design aspects of roadways influence the hazard rating assigned to a community. The presence of secondary entrances and exits and loop roads in a community improves evacuation and access. Roads less than twenty feet in width often impede two-way movement of vehicles and fire suppression equipment. A road gradient of greater than five percent can imply increased response times for vehicles carrying water. Hairpin turns and cul-de-sacs with radii of less than 45 feet can cause problems for equipment mobility. Fire-resistant street signs consistently placed at neighborhood intersections and easily visible house addresses help to lower the hazard rating of a community.
- **Utilities.** The condition of electric utilities and the maintenance of vegetation within the power line corridor accounts for four percent of the overall hazard total. It is important to keep power line corridors clear of

flammable vegetation, especially around power poles. In the event of a wildfire, flames from excessive fuels in the electric utility corridor can be of sufficient length and intensity to damage power lines, transformers, and the power poles that support them. Damage to this infrastructure during a wildfire event commonly causes power failures. Proper vegetation maintenance in power line corridors also reduces the risk of additional ignitions, as fires have been known to start from arcing power lines and transformers during windy conditions.

**Construction Materials**

Construction materials account for sixteen percent of the total score for the risk and hazard assessment. While it is not feasible to expect all structures in the wildland-urban interface area to be rebuilt with non-combustible materials, there are steps that can be taken to address specific elements that affect the potential for structure ignition in the interface area. Construction factors considered in the assessment include:

- **Structure Building Materials.** The composition of building materials determines the length of time a structure could withstand high temperatures before ignition occurs. Houses composed of wood siding and wood shake roofing are usually the most susceptible to ignitions. Houses built with stucco exteriors and tile, metal, or composition roofing are able to withstand much higher temperatures and longer heat durations and, thereby, present a much lower ignition risk from firebrands or the radiant heat from advancing flames.
- **Architectural Features.** Unenclosed balconies, decks, porches, or eaves on homes provide areas where sparks and embers can be trapped, smolder and ignite, rapidly spreading fire to the house. A high number of houses within a wildland-urban interface with these features implies a greater hazard to the community.

**Defensible Space**

Defensible Space accounts for sixteen percent of the total score in the risk/hazard assessment. Density and type of fuel around a home determines the potential fire exposure and the potential for damage to the home. A greater number of trees and shrubs and a greater volume of dry weeds and grass, woodpiles, and other combustible materials near the home will ignite more readily and produce more intense heat during a fire, increasing the threat of losing the home.

**Suppression Capabilities**

Suppression capabilities account for sixteen percent of the total assessment score. Knowledge of the capabilities or limitations of the fire suppression resources in a community can help county officials and residents take action to maximize the resources available. Factors considered in the assessment include:

- **Availability, Quantity, and Training Level of Firefighting Personnel**. When a fire begins in or near a community, having the appropriate firefighting personnel available to respond quickly is critical to saving structures. Whether there is a local paid fire department, volunteer

department, or no local fire department impacts how long it takes for firefighting personnel to respond to a reported wildland fire or a threatened community.

- **Quantity and Type of Fire Suppression Equipment**. The quantity and type of available fire suppression equipment has an important role in minimizing the effect of a wildfire on a community. Effective wildland firefighting requires specialized equipment not commonly carried by urban firefighting forces.
- **Water Resources**. The availability of water resources is critical to fighting a wildland fire. Whether there is a community water system with adequate fire flow capabilities or whether firefighters must rely on local ponds or other drafting sites affects how difficult it will be for firefighters to protect the community.

**Physical Conditions**

Physical conditions account for 26 percent of the assessment. Fire behavior is influenced by physical conditions and is dynamic throughout the life of the fire. With the exception of changes to the fuel type and fuel density, the physical conditions in and around a community cannot be altered to make the community more fire safe. An understanding of how these physical conditions can influence the behavior of a fire is essential to planning effective preparedness activities, such as fuel reduction treatments. Physical conditions considered in the assessment include:

- **Slope, Aspect, and Topography.** In addition to local weather conditions, slope, aspect, and topographical variations can be used to predict fire behavior. West and south facing aspects are most prone to severe fire behavior due to preheated vegetation that has lower moisture content from daylong sun exposure. East aspect slopes in the Great Basin may experience afternoon downslope winds that may spread fire downhill. Steep slopes greatly influence fire behavior. Fire usually burns upslope with greater speed and longer flame lengths than on flat areas. Fire will burn downslope; however, it usually burns downhill at a slower rate and with shorter flame lengths than in upslope burns. Canyons, ravines, and saddles are topographical features that are prone to higher wind speeds than adjacent areas. Fires driven by winds grow at an accelerated rate compared to fires burning in non-windy conditions. Homes built mid-slope, at the crest of slopes or in saddles are most at risk due to wind-prone topography.
- **Fuel Type and Density.** Vegetation type, fuel moisture values, and fuel density around a community affect the potential fire behavior. Areas with thick, continuous, vegetative fuels carry a higher hazard rating than communities situated in areas of irrigated, sparse, or non-continuous fuels. Photos of representative fuel types are included in Appendix B.

### *2.3.3 Hazard Mapping*

Initial wildfire hazard maps were generated using wildfire hazard delineations derived by the Nevada and Utah BLM from vegetation type data provided by the Nevada Gap Analysis Program dataset, which identifies vegetation types derived from satellite data. Land cover

for the entire state was classified into one of 65 vegetation types at a resolution of thirty meters. The BLM fire specialist team reclassified the vegetation types into wildfire hazard potentials based on the hazard for that particular cover type. For example, pinyon-juniper cover types may be rated as extreme, while low sagebrush cover types are typically rated low. Hazard mapping was conducted for communities where high and extreme fuel types exist. No Churchill County communities had high or extreme fuel loading; therefore, hazard mapping was not conducted in the county.

### *2.3.4 Fire Behavior Worst-Case Scenario*

The Project Team Fire Specialists described the worst-case scenarios included in this evaluation based on their analyses of the severe fire behavior that could occur given a set of weather conditions, observed fuel load conditions, and minimal fire suppression resources. Dry weather conditions, particularly successive years of drought in combination with steep slopes or high winds can create situations in which the worst-case fire severity scenario can occur. These scenarios describe a maximum potential for loss of property and, in some cases, human lives. The worst-case scenario does not describe the most likely outcome of a wildfire event in the interface, but it illustrates the potential for damage if a given set of conditions were to occur simultaneously. The worst-case scenarios are described in this document for public education purposes and are part of the basis for the fuel reduction recommendations.

## 2.4 INTERVIEWS WITH FIRE PERSONNEL

The RCI Project Teams interviewed local fire department personnel and local area Fire Management Officers to obtain information on wildfire training, emergency response time, personnel and equipment availability and capability, evacuation plans, pre-attack plans, and estimates of possible worst-case scenarios. Local fire personnel reviewed maps showing the history of wildfires to ensure that local information on wildland fires was included. Refer to Appendix C for a list of persons contacted.

## 2.5 RECOMMENDATION DEVELOPMENT

A wide variety of treatments and alternative measures can be used to reduce ignition risks, mitigate fire hazards, and promote fire-safe communities. Proposed recommendations typically include physical removal or reduction of flammable vegetation, increased community awareness to the risk of fires and how to reduce that risk, and coordination among fire suppression agencies to optimize efforts and resources. The project team met repeatedly to analyze community risks and hazards, treatment alternatives, and treatment benefits. Treatment recommendations to reduce existing risks and hazards were formulated based upon professional experience, quantitative hazard assessment, and information developed in conjunction with the *Living With Fire* publications, National Fire Plan, and FIREWISE resources (National Fire Plan website; FIREWISE website; and Nevada Cooperative Extension publications.)

# 3.0 DESCRIPTION OF THE COUNTY

## 3.1 DEMOGRAPHICS, LOCATION, TOPOGRAPHY, AND CLIMATIC DATA

Churchill County is located in the western portion of central Nevada, with an approximate land area of 3,145,000 acres. Land management acreage in Churchill County is summarized in Table 3-1 and illustrated in Figure 3-1.

**Table 3-1. Land Management Acreage within Churchill County**

| LAND ADMINISTRATOR | BLM | FWS | Dept. of Defense | BIA | State of NV | Private | Other |
|---|---|---|---|---|---|---|---|
| ACREAGE | 2,059,268 | 163,021 | 240,792 | 42,880 | 103,812 | 482,212 | 52,335 |

*Source: BLM land ownership GIS database.*

The Nevada State Demographer website listed 25,808 people in Churchill County, and 8,301 people in the incorporated City of Fallon in 2003. Major employers in the county are those in the service, government, and trade sectors, including the Fallon Naval Air Station and the Nevada Commission on Economic Development website.

Elevation within the county ranges from 3,963 feet at Fallon, to 9,966 feet at Mt. Augusta in the Clan Alpine Mountains. The Carson Sink is a swampy 100-square mile area, part of a larger playa covering over 1,000 square miles in Churchill County. The sink, a remnant of Pleistocene Lake Lahontan, is the terminus of the Carson River. Rainfall in the county averages from four to seven inches, and temperatures can range from lows between thirty and forty degrees Fahrenheit during winter months to highs ranging between eighty and ninety degrees Fahrenheit in the summer (Western Regional Climate Center website).

## 3.2 WILDFIRE HISTORY

The fire history of Churchill County was researched through the Nevada BLM State office. There were 150 wildfire ignitions recorded in Churchill County between 1980 and 2003. Wildfire history within the County is detailed in Figure 3-2. Table 3-2 summarizes fire history and fire ignitions by year.

**Table 3-2. Summary of Fire History Data 1980-2003**

| YEAR | NUMBER OF FIRE IGNITIONS[1] | TOTAL FIRE ACREAGE[2, 3] |
|---|---|---|
| 1980 | 1 | NA |
| 1981 | 1 | 300 |
| 1982 | 0 | 0 |
| 1983 | 2 | 9 |
| 1984 | 6 | 1,705 |
| 1985 | 13 | 15,114 |
| 1986 | 11 | 510 |
| 1987 | 6 | 28 |
| 1988 | 6 | 4 |
| 1989 | 1 | 70 |
| 1990 | 1 | 3 |
| 1991 | 5 | 31 |
| 1992 | 7 | 1,170 |
| 1993 | 2 | 605 |
| 1994 | 3 | 312 |
| 1995 | 1 | 1 |
| 1996 | 16 | 13,977 |
| 1997 | 4 | 7,461 |
| 1998 | 3 | 171 |
| 1999 | 18 | 227,608 |
| 2000 | 9 | 67,271[4] |
| 2001 | 14 | 1,736[4] |
| 2002 | 12 | 3,013[4] |
| 2003 | 8 | 1,263[4] |
| **TOTAL** | **150** | **342,362** |

[1/] Fire ignitions provided by the National Interagency Fire Center (NIFC), Boise, Idaho as spatial data (point format).

[2/] Acreage is provided by the Nevada BLM spatial data when available, otherwise acreage is derived from the NIFC data.

[3/] Total Fire acreage is not specific to Churchill County. For some fires acreage could not be determined specifically within Churchill County.

[4/] Additional fire history information provided by the Fallon/Churchill VFD.

### *3.2.1 Ignition Risk Factors*

Ignition risks for wildfires fall into two categories: lightning and human caused. Human caused ignitions can come from a variety of sources: fires started along roads from burning material thrown out of vehicle windows or ignited during auto accidents, off-road vehicles, railroads, arcing power lines, agricultural fires, ditch burning, debris burning in piles or burn barrels, target shooting, unattended campfires, and fireworks. The ignition source records for Churchill County indicate that for 150 fire incidents, 103 were due to lightning, 34 were human caused, and thirteen were not recorded according to origin.

### *3.2.2 Effect of Cheatgrass on Fire Ecology*

The science of fire ecology is the study of how fire contributes to plant community structure and species composition. A 'fire regime' is defined in terms of the average number of years between fires under natural conditions (fire frequency), and fire severity, or the amount of dominant vegetation replacement. Natural fire regimes have been affected throughout most of Nevada by twentieth century fire suppression policies. Large areas that formerly burned with high frequency but low intensity (fires more amenable to control and suppression) are now characterized by large accumulations of unburned fuels, which once ignited, will burn at higher intensities.

Big sagebrush is the most common plant community in Nevada with an altered fire regime, now characterized by infrequent, high-intensity fires. Sagebrush requires ten to twenty or more years to reestablish on burned areas. During the interim these areas can provide the conditions for the establishment and spread of invasive species and in some cases inhibit sagebrush reestablishment. The most common invasive species to reoccupy burned areas in northern Nevada is cheatgrass (*Bromus tectorum*).

Cheatgrass growth is dependent on annual moisture. In years of normal precipitation, production is typically low to no growth; in years of higher than normal precipitation cheatgrass will produce at much higher rates. While it presents a variable hazard dependent on moisture and annual growth, it is considered a high hazard fuel type because it presents an extremely receptive fuel bed for ignitions that rapidly burn into adjacent vegetation. A fire spreading from a cheatgrass stand into adjacent, unburned, native vegetation creates additional disturbed areas vulnerable to cheatgrass invasion. Associated losses of natural resource values such as wildlife habitat, soil stability, and watershed functions may also occur.

Eliminating cheatgrass is an arduous task. Mowing defensible space and fuelbreak areas annually before seed set is effective in reducing cheatgrass growth. In areas with livestock, implementing early-season intensive grazing up to and during flowering may aid in depleting the seed bank. It may take years and intensive treatment efforts to fully eliminate cheatgrass in a given area, but it is necessary in order to revert the landscape to the natural fire cycle and reduce the occurrence of large, catastrophic wildfires. Community-wide efforts in cooperation with county, state, and federal agencies are vital to reducing the wildfire hazard from cheatgrass.

## 3.3 NATURAL RESOURCES AND CRITICAL FEATURES POTENTIALLY AT RISK

Critical features at risk of loss during a wildfire event can be economic assets such as agricultural and industrial resources or cultural features such as historic structures, archaeological sites, and recreation-based resources.

### *3.3.1 Historical Registers*

Two Historic Registers were researched for this report. There are eighteen sites listed on the National Register of Historic Places for Churchill County. The Nevada State Register of Historical Places lists ten sites. Historic districts, historic buildings, and resources that lie in the wildland-urban interface and could be negatively impacted by wildfire are summarized in Table 3-3.

**Table 3-3. At Risk Historical Places in Churchill County**

| SITE NAME | LOCATION | SOURCE REGISTER |
|---|---|---|
| Harmon School | NW corner of N. Harmon and Kirn Roads, Fallon | Nevada State Register of Historic Places |
| Hazen Store | 600 Reno Highway (U.S. Highway 50 Alt), Hazen | National Register of Historic Places |

### *3.3.2 Flora and Fauna*

There are three federally listed threatened or endangered species with potential habitat in Churchill County; one is proposed for delisting. Four species are protected by Nevada state legislation and are identified in Table 3-4. One species is pending final decision on status. The Nevada Natural Heritage Program, the Nevada Division of Forestry, and the Nevada Department of Wildlife should be consulted regarding specific concerns and potential mitigation to minimize impacts to these species in the event of a catastrophic wildfire.

**Table 3-4. Federal and State Listed Flora and Fauna At Risk in Churchill County**

| SCIENTIFIC NAME | COMMON NAME | LEGISLATION |
|---|---|---|
| **Plants** | | |
| *Opuntia pulchella* | Sand cholla | Pending - NRS 527.060.120 |
| **Fish** | | |
| *Oncorhynchus clarki henshawi* | Lahontan cutthroat trout | Endangered Species Act – listed threatened;<br>NRS 501 |
| **Mammals** | | |
| *Brachylagus idahoensis* | Pygmy rabbit | NRS 501 |
| *Euderma maculatum* | Spotted bat | NRS 501 |
| *Lontra canadensis* | River otter | NRS 501 |
| **Birds** | | |
| *Charadrius alexandrinus nivosus* | Western snowy plover | Endangered Species Act – listed threatened;<br>NRS 501 |
| *Haliaeetus leucocephalus* | Bald eagle | Endangered Species Act – listed threatened, proposed delisting;<br>NRS 501 |

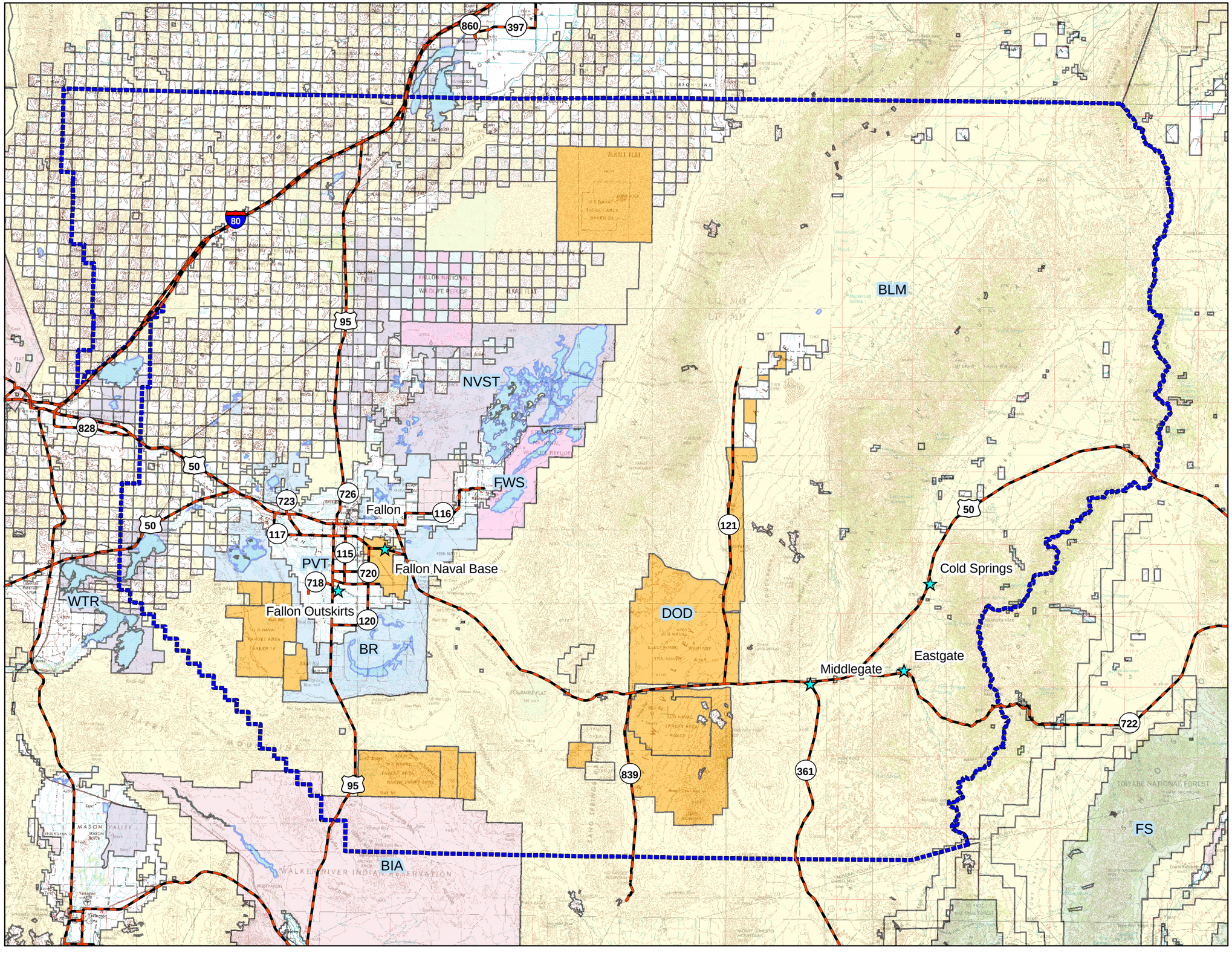
The Stillwater National Wildlife Reserve Complex (NWRC) is located six miles northeast of Fallon and covers 163,021 contiguous acres of Federal land in three contiguous reserves managed by the U.S. Fish and Wildlife Service (USFWS): the 79,570-acre Stillwater National Wildlife Refuge (NWR), the 65,603-acre Stillwater Wildlife Management Area (WMA), and the 17,848-acre Fallon NWR. The varied habitat contained in this complex such as freshwater and brackish water marshes, alkali playas, salt desert shrublands, riverine riparian areas, a 25-mile long dunal complex, and a desert lake containing island habitats makes a substantial contribution to wildlife conservation. These habitats attract nearly 400 species of vertebrate wildlife (more than 260 bird species) and countless species of invertebrates. Well-known to birdwatchers and conservationists, the

Stillwater WMA is listed as a 'Globally Important Bird Area' by the American Bird Conservancy, and the reserve complex has been designated a site of international importance by the Western Hemispheric Shorebird Reserve Network due to the hundreds of thousands of shorebirds and waterfowl that abound during spring and fall migration.

The Humboldt Wildlife Management Area is located in both Churchill and Pershing Counties, approximately 35 miles north of Fallon, Nevada along U.S. Interstate 80. The Humboldt Wildlife Management Area includes alkali playas, salt desert shrublands, Toulon Lake, Humboldt Lake, and several other lakes and marshes. The approximate 38,700-acre complex is managed by the Nevada Division of Wildlife and also contains Bureau of Land Management lands. Tamarisk, a noxious weed, dominates large areas of the wildlife management area and sprouts vigorously after fire.

## 3.4 PREVIOUS FUEL HAZARD REDUCTION PROJECTS

There have been no fuel hazard reduction projects in Churchill County planned or realized during the last ten years.



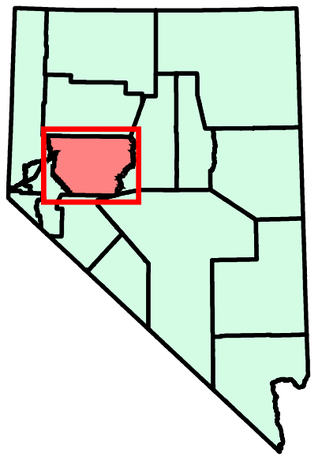



Figure 3-1. General Location of Communities and Land Ownership Churchill County, Nevada

**Legend**

- Churchill Communities
- Churchill County
- Highways and State Routes

**Land Ownership**

- Nevata State Land (NVST)
- Bureau of Indian Affairs (BIA)
- Bureau of Land Management (BLM)
- Bureau of Reclamation (BR)
- Department of Defense (DOD)
- Fish and Wildlife Service (FWS)
- Forest Service (FS)
- Private (PVT)
- Water (WTR)

N
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S

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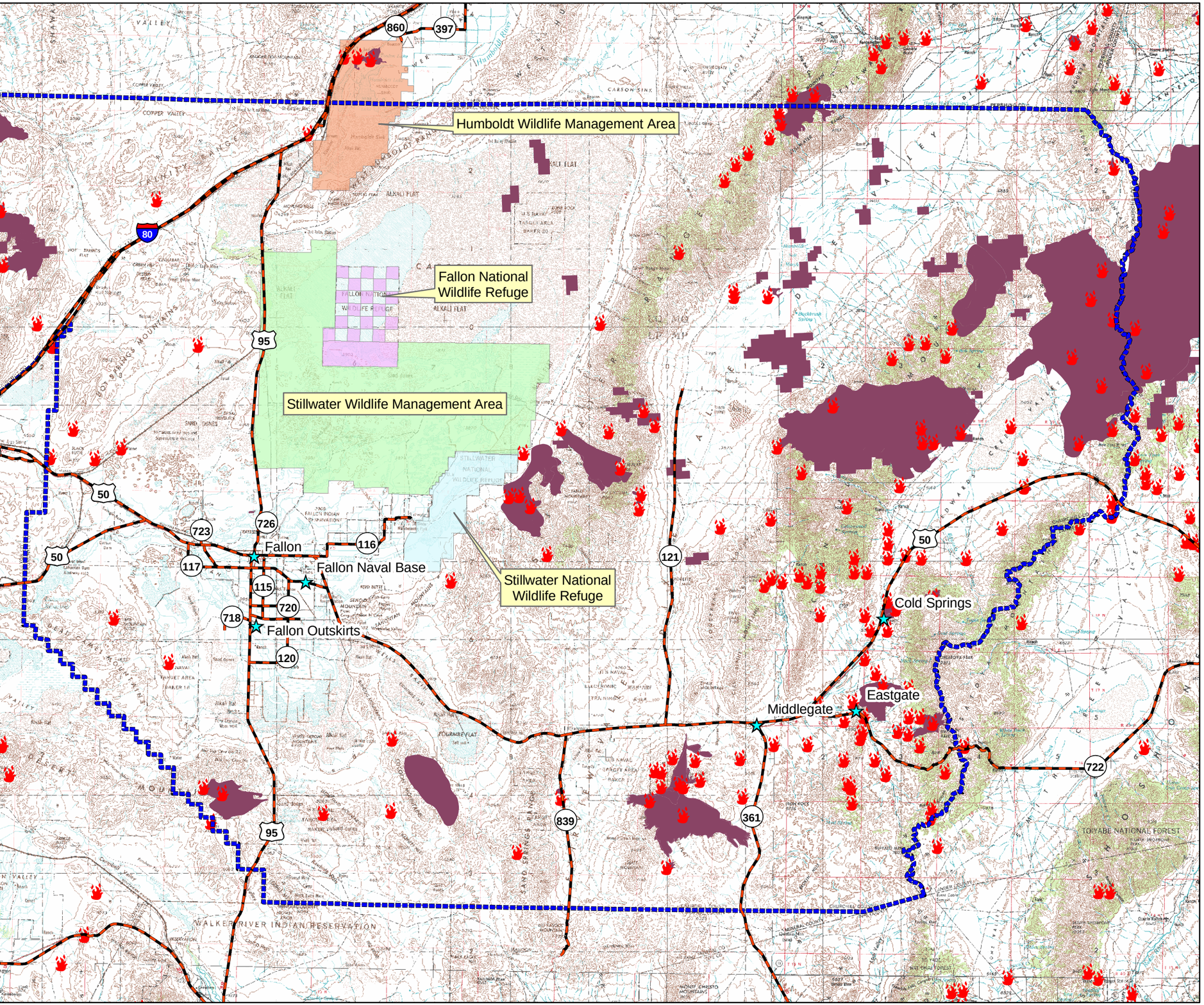
***Nevada Community Wildfire Risk/Hazard Assessment***

Resource Concepts, Inc. has made every effort to accurately compile the information depicted on this map but cannot warrant the reliability or completeness of the source data.



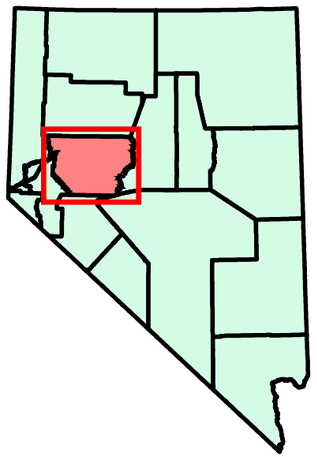



Figure 3-2. Fire History, Ignition Risks, and Potentially at Risk Resources
Churchill County, Nevada

***Nevada Community Wildfire Risk/Hazard Assessment***

Resource Concepts, Inc. has made every effort to accurately compile the information depicted on this map but cannot warrant the reliability or completeness of the source data.

# 4.0 COUNTY-WIDE ASSESSMENT RESULTS

## 4.1 COUNTY-WIDE RISK AND HAZARD ASSESSMENT OVERVIEW

In early March of 2004, RCI Project Teams visited the six communities described in this report. Their evaluations of community design aspects (roads, signage, utility infrastructure), defensible space characteristics, construction materials and architectural features, wildland-urban interface qualities, and fuel densities resulted in the overall hazard rating for each community. The key quantifiable components of these assessments are summarized in Table 4-1.

**Table 4-1. Assessment Results Summary**

| COMMUNITY | INTERFACE CLASSIFICATION | INTERFACE FUEL HAZARD | IGNITION RISK | HAZARD RATING |
|---|---|---|---|---|
| Cold Springs | Intermix | Low | Moderate | Moderate |
| Eastgate | Rural | Low | Moderate | High |
| Fallon | Classic | Low | Low | Low |
| Fallon Naval Air Station | Classic | Low | Low | Low |
| Fallon Outskirts | Rural | Moderate | Low | Low |
| Middlegate | Intermix | Low | Moderate | Moderate |

### *4.1.1 Wildfire Protection Resources*

Wildfire suppression resources are available throughout Churchill County from the 41-member Fallon/Churchill Volunteer Fire Department to the 45-member career staffed Fallon Naval Air Station Fire Department. The Fallon/Churchill VFD received the nation's first Insurance Services Offices Class 1 Volunteer Fire Department rating. The Fallon/Churchill Volunteer Fire Department has three career positions including Fire Chief, Fire Marshal, and Equipment Supervisor. It houses equipment at four stations, and responds to an average of 400 calls per year (Fallon/Churchill Volunteer Fire Department website).

The Fallon Naval Air Station (NAS) has two fire stations and responds to wildland-urban interface fires outside the Fallon NAS by request. Additional resources are available from the BLM. Table 4-2 lists the types of wildfire resources, cooperating partners, and equipment available to respond to wildland fires in all Churchill County communities. The availability of the listed resources may vary depending on the time of year and resource needs in other areas. Additional BLM resources may be sent based upon the report of a fire and by request of the Fallon/Churchill Volunteer Fire Department.

**Table 4-2. Churchill County Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT OF EQUIPMENT | COOPERATING PARTNER (RESOURCE LOCATION) |
|---|---|---|
| Type 1 Engine | 6 | Fallon/Churchill VFD |
| Type 3 Engine | 2 | |
| Type 1 Water Tender (4,000 gal.) | 3 | |
| Command Officer | 1 | |
| Type 1 Engine | 1 | Fallon Naval Air Station (by request only) |
| Type 3 Engine[1] | 1 | |
| Type 6 Engine | 1 | |
| Type 1 Water Tender | 1 | |

[1/] The Type 3 engine listed under the Fallon Naval Air Station was in a state of disrepair at the time of the assessment.

**Table 4-3. Out of County Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT OF EQUIPMENT | COOPERATING PARTNER (RESOURCE LOCATION) |
|---|---|---|
| Type 3 Engine | 1 | The closest available Bureau of Land Management resources dispatched by the Sierra Interagency Dispatch Center in Minden, Nevada |
| Water Tender | 1 | |
| Incident Command | 1 | |
| Type 1 Air Tanker | 1 | |
| Air Attack | 1 | |

*Source: Personal Communication with Leonard Waking Fire Management Officer BLM Carson City Field Office, Steven Edgar Fire Mitigation and Education Specialist BLM Carson City Field Office, Ed Harris Equipment Manager Fallon/Churchill VFD, and Stuart Cook Fire Management Officer Fallon Naval Air Station.*

## Detection and Communication

Fires are reported in Churchill County through 911 calls to the Churchill County Sheriff's Office in Fallon.

Fires are communicated to fire response personnel through:

- Emergency Dispatch through the Churchill County Sheriff's Office in Fallon
- Radios using the primary frequency - 155.0555
- Pagers and telephones where volunteer fire departments exist

BLM fire suppression resources are dispatched by the Sierra Front Interagency Dispatch Center in Minden, Nevada. The Churchill County Sheriff's Office has access to the state mutual aid frequencies and the radio system is compatible with neighboring agencies.

## Fire Protection Personnel Qualifications

All firefighters are trained to a minimum of Incident Command Systems, Firefighter I and II, and Hazardous Materials Decontamination training. The Fallon/Churchill VFD does not utilize the Red Card certification for individual qualifications. Red

Card certification is part of a fire qualifications management system used by many state and all federal wildland fire management agencies that certifies an individual's qualifications to fight wildland fires.

**Work Load**

The Fallon/Churchill VFD responded to 325 calls in 2003:

- 50 wildland /brush fire calls
- 275 other calls

**Financial Support**

Financial support for the Fallon/Churchill VFD comes primarily from the Churchill County General Fund and funding from the Churchill County tax budget. Over the last three years the Fallon/Churchill VFD has also received funding from the BLM Carson City Field Office through the rural fire assistance program. The funding from BLM was used to purchase personal protection equipment, purchase suppression equipment, purchase communication equipment and fund additional wildland fire training.

**Community Preparedness**

Churchill County has an active Local Emergency Planning Committee and has adopted an all-risk emergency plan in cooperation with the City of Fallon. It is periodically updated and was last revised in March 2004.

The Fallon/Churchill VFD currently works under the Uniform Building Code, Uniform Fire Code, and National Fire Protection Association (NPFA) Life Safety, and NFPA 1500 fire codes. The Fallon/Churchill VFD reviews development plans to ensure that new development meets current fire code standards. The Fallon/Churchill VFD has a brush clearance program enforced by the local Fire Marshal. The Fire Marshal conducts surveys and works with specific landowners for brush clearance. The Fire Marshal has enforcement power to issue citations if homeowners refuse to cooperate.

## 4.2 COUNTY-WIDE RECOMMENDATIONS

The Churchill County risk and hazard reduction recommendations address the primary concern regarding protection of existing and future development in the wildland-urban interfaces areas within the county. Other recommendations pertain to community coordination and public education efforts that could be undertaken to enhance fire safety in Churchill County.

### *4.2.1 Property Owner Responsibilities:*

- Implement defensible space treatments as an essential first line of defense for residential structures. General guidelines for creating defensible space around residences and structures are provided in each community section and Appendix D.

- Coordinate with the Bureau of Land Management to construct two greenstrips around the communities of Cold Springs and Middlegate.

### *4.2.2 Fallon/Churchill Volunteer Fire Department Responsibilities:*

- Coordinate with the Bureau of Land Management, University of Nevada Cooperative Extension, and Nevada Division of Forestry to conduct public education and fire awareness programs.
- Schedule an annual County-Wide Fire Awareness Day for citizens to learn about fire safety, defensible space, and other fire-related issues. Notify outlying communities served by the VFD of the event.
- Incorporate Fire Safe Community Planning Recommendations for New Developments in development plan reviews. See Appendix E for an example.
- Implement a burn permit program or a call-in burn program in which landowners notify the Fallon/Churchill VFD before initiating any type of debris burning. A sample burn permit is included in Appendix E.
- Coordinate with residents of Cold Springs and Middlegate to help provide wildland fire training and pursue grant funding for a 100 to 200-gallon slip-on pump and tank unit and a truck for each community.

### *4.2.3 Churchill County Responsibilities:*

- Enforce or develop county laws, regulations, and ordinances that support implementation and maintenance of defensible space and address fuel reduction responsibilities for absentee homeowners and vacant lots in the communities of Fallon and Fallon Outskirts.
- Install a 5,000-gallon water tank for fire suppression water supplies at the NDOT Maintenance Station in Cold Springs.
- Station a pick-up truck and a one-piece, slip-on, 100 to 200-gallon pump and tank unit with hose and hose reel in the communities of Cold Springs and Middlegate. This equipment, fitted properly for the size and weight limitations of the truck, can be used to provide initial attack of wildfires threatening the communities.

### *4.2.4 Bureau of Land Management Responsibilities:*

- Construct a minimum 100-foot wide greenstrip around the communities of Cold Springs and Middlegate.
- Identify a minimum of four people from each of the communities of Cold Springs and Middlegate and train them using the Basic Wildland Firefighter Training course.
- Distribute copies of the publication “Living With Fire.” This publication is free of charge. Copies can be requested from the University of Nevada Cooperative Extension, (775) 784-4848.

Specific community-level mitigation recommendations are made in the following sections where assessments of ignition risks and fire hazards warrant additional attention.

# 5.0 COLD SPRINGS

## 5.1 RISK AND HAZARD ASSESSMENT

Cold Springs is located in the southeastern portion of Churchill County on U.S. Highway 50. There are eight total residential structures, five of which are within an NDOT Maintenance Station. **The hazard assessment resulted in classifying Cold Springs in the Moderate Hazard category** (48 points). A summary of the factors that contributed to the hazard rating is included in Table 5-4. The primary risk factors for Cold Springs were the lack of fire suppression and protection resources, lack of water sources, and the isolated location of the community.

### *5.1.1 Community Design*

Cold Springs is classified as an intermix condition. Structures are scattered throughout the wildland area with no clear line of demarcation between wildland fuels and back property fences, roads, and structures. Structure spacing varies: the NDOT Maintenance Station buildings are clustered together; the remaining structures are situated randomly within the community boundary.

**Roads:** U.S. Highway 50, a paved two-lane highway, twenty to 24 feet in width, is the primary transportation route to Cold Springs.

**Signage:** Street signage and address visibility were considered Not Applicable in Cold Springs. All residences were easily visible and could be located in the event of a wildfire.

**Utilities:** Electric utilities were all above ground. In general, power line right-of-ways were adequately maintained and pose only a low ignition risk to the community.

### *5.1.2 Construction Materials*

All of the homes in the interface were built with non-combustible siding materials and composition, tile, or metal roofing. None of the homes observed had unenclosed balconies, porches, decks, or other architecture features that could create drafts and provide areas where sparks and embers can smolder and rapidly spread fire if ignited.

### *5.1.3 Defensible Space*

One of the homes did not meet the minimum defensible space in order to protect it from damage or loss during a wildfire. There is also one abandoned structure with debris accumulated around it.

### *5.1.4 Suppression Capabilities*

#### Wildfire Protection Resources

There is no paid or volunteer fire department in Cold Springs, although there are two Nevada Department of Transportation (NDOT) dump trucks with slip-in water tanks (1,000 and 2,800-gallons) housed at the NDOT Maintenance Station that can be used to take water to wildfire suppression vehicles. Fire protection resources are available from the Fallon/Churchill VFD or Fallon NAS (by request). Additional resources are available through the Bureau of Land Management, dispatched from the Sierra Front Interagency Dispatch, Minden, Nevada. Tables 5-1 and 5-2 list the types of wildfire resources, cooperating partners, and equipment available to Cold Springs to respond to a reported wildland fire. For any of the fire protection agencies the minimum response time to Cold Springs is approximately sixty to ninety minutes depending upon resource availability.

**Table 5-1. Cold Springs Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT | COOPERATING PARTNER |
|---|---|---|
| Water Tender<br>(dump truck with slip-in tanks) | 2 | Cold Springs NDOT Maintenance Station |
| Type 1 Engine<br>Type 3 Engine<br>Type 1 Water Tender (4,000 gal.)<br>Command Officer | 6<br>2<br>3<br>1 | Fallon/Churchill VFD |
| Type 1 Engine<br>Type 3 Engine<br>Type 6 Engine<br>Type 1 Water Tender | 1<br>1<br>1<br>1 | Fallon Naval Air Station |

**Table 5-2. Out of County Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT OF EQUIPMENT | COOPERATING PARTNER (RESOURCE LOCATION) |
|---|---|---|
| Type 3 Engine<br>Water Tender<br>Incident Command<br>Type 1 Air Tanker<br>Air Attack | 1<br>1<br>1<br>1<br>1 | The closest available Bureau of Land Management resources dispatched by the Sierra Interagency Dispatch Center in Minden, Nevada |

*Source: Personal Communication with Leonard Waking Fire Management Officer BLM Carson City Field Office, Steven Edgar Fire Mitigation and Education Specialist BLM Carson City Field Office, Ed Harris Equipment Manager Fallon/Churchill VFD, Stuart Cook Fire Management Officer Fallon Naval Air Station, and Phil Cammarata Maintenance Manager Nevada Department of Transportation.*

#### Water Sources and Infrastructure

One well with a 1,000-gallon storage tank is available as a draft source for fire suppression equipment at the NDOT Maintenance Station in Cold Springs.

**Detection and Communication**

Fires are reported in the Cold Springs area through 911 calls to the Churchill County Sheriff's Office in Fallon.

**Community Preparedness**

Cold Springs has no formal community warning system in place for emergencies. Since all residents live in close proximity to one another, telephone or word-of-mouth is the primary warning method.

### *5.1.5 Factors Affecting Fire Behavior*

Cold Springs is located on a slightly sloping alluvial fan, with prevailing winds from the south/southwest. The terrain measures generally less than a five percent slope. In 1998 a 254-acre fire burned at Cold Springs, and in 1999 a 735-acre fire burned to the west of the 1998 fire. Fuel density was mostly light in the area surrounding the structures, estimated at less than one ton per acre. Fuels consisted primarily of sagebrush, Indian ricegrass, and rabbitbrush, with cheatgrass invasion. The light fuels around Cold Springs were considered a low fuel hazard at the time of the assessment, however annual cheatgrass production could dramatically increase in years of high precipitation and would pose a moderate fuel hazard to the community.

### *5.1.6 Worst Case Wildfire Scenario*

The worst-case scenario for Cold Springs would be a wildland fire that starts south of the community and spreads with a southwest wind into Cold Springs. Flame lengths would be low because of the sparse, low vegetation and would not be likely to ignite structures, though in a high cheatgrass production year, fire spread rates are likely and will decrease time before structures are threatened.

### *5.1.7 Ignition Risk Assessment*

The historical record for fire ignitions indicates that ignition risks in the area are moderate. Cold Springs has no local fire suppression capabilities and no nearby water sources. That increases the possibility that any ignition might spread and ignite structures before fire suppression resources could arrive on the scene. The primary ignition risk factor in Cold Springs is lightning, given the previous lightning-caused ignitions that led to two large fires in the area. In years of increased moisture and cheatgrass growth, the ignition risk would be higher due to increased fuel loading.

## 5.2 RISK AND HAZARD REDUCTION RECOMMENDATIONS, ROLES, AND RESPONSIBILITIES

Cold Springs is a very small community with no local fire suppression resources. Recommendations to reduce the risk of property loss due to a wildland fire are detailed below and summarized in Table 5-3.

### *5.2.1 Property Owner Responsibilities*

**Defensible Space Treatments**

Density and type of fuel around a home determines the potential fire exposure levels to the home. The goal of defensible space is to reduce the chances of a wildfire

spreading into adjacent property and igniting homes and to reduce the risk of loss from a wildfire. General guidelines for creating defensible space around residences and structures in the community are given below, and illustrated in the Defensible Space Guidelines in Appendix D. See also the Homeowner's Annual Checklist in Appendix D for additional information.

- Remove, reduce, and replace vegetation around homes according to the guidelines in Appendix D. This area should be kept:

  Lean: There are only small amounts of flammable vegetation.

  Clean: There is no accumulation of dead vegetation or other flammable debris.

  Green: Existing plants are healthy and green during the fire season.

- Maintain defensible space annually.
- Immediately dispose of cleared vegetation when implementing defensible space treatments. This material dries quickly and poses a fire hazard if left on site.
- Abandoned trailers and structures should be removed or boarded up to prevent flying embers entering and igniting the structure.
- Clear a minimum ten-foot space of all vegetation and combustible materials around propane and above ground fuel tanks.
- Where cheatgrass has become dominant within the defensible space area, the cheatgrass should be mowed prior to seed set, or treated with an application of a pre-emergent herbicide. Mowing may need to be repeated the following year to ensure that the seed bank of unwanted grasses has been depleted. Refer to Appendix E for approved seed mixes and planting guidelines that can be used in conjunction with removal of this annual grass.

**Fuel Reduction Treatments**

- Coordinate with Bureau of Land Management to construct a minimum 100-foot wide greenstrip around the community (Figure 5-1). Seed the greenstrip area with fire-resistant and low growing perennial grasses and forbs suited to the climate and soils in Cold Springs (Appendix E). Use the community pick-up/water truck to provide temporary irrigation of seeded greenstrips during the first complete growing season to assure seeding success. The goal of the greenstrip is to create an area of perennial, fire-resistant, vegetation with lower cheatgrass density than the surrounding areas. The proposed project is approximately 1.2 miles long and a minimum of fourteen acres in size.

### *5.2.2 Churchill County Responsibilities*

**Fire Suppression Resources**

- Install a 5,000-gallon water tank for fire suppression water supplies at the NDOT Maintenance Station in Cold Springs.

- Station a pick-up truck and a one-piece, slip-on, 100 to 200-gallon pump and tank unit with hose and hose reel in the community of Cold Springs. This equipment, fitted properly for the size and weight limitations of the truck, can be used to provide initial attack of wildfires threatening the community.

### *5.2.3 Fallon/Churchill VFD Responsibilities*

**Fire Suppression Resources**

- Coordinate with residents of Cold Springs to help provide wildland fire training and pursue grant funding for a 100 to 200-gallon slip-on pump and tank unit and truck.

### *5.2.4 Bureau of Land Management Responsibilities*

**Fuel Reduction Treatments**

- Coordinate with residents of Cold Springs to construct a minimum 100-foot wide greenstrip around the community (Figure 5-1). Seed the greenstrip area with fire-resistant and low growing perennial grasses and forbs suited to the climate and soils in Cold Springs (Appendix E). Use the community pick-up/water truck to provide temporary irrigation of seeded greenstrips during the first complete growing season to assure seeding success. The goal of the greenstrip is to create an area of perennial, fire-resistant, vegetation with lower cheatgrass density than the surrounding areas. The proposed project is approximately 1.2 miles long and a minimum of fourteen acres in size.

**Fire Suppression Resources**

- Identify a minimum of four people from the community of Cold Springs and train them using the Basin Wildland Firefighter Training course.

**Public Education**

- Distribute copies of the publication “Living With Fire”. This publication is free of charge. Copies can be requested from the University of Nevada Cooperative Extension, (775) 784-4848.

## 5.3 SUMMARY OF RECOMMENDATIONS

**Table 5-3. Priority Recommendations to Reduce Wildfire Risks and Hazards in Cold Springs**

| RESPONSIBLE PARTY | RECOMMENDED TREATMENT | RECOMMENDATION DESCRIPTION |
|---|---|---|
| **Property Owners** | Defensible Space Treatments | Remove, reduce, and replace vegetation around homes according to the guidelines in Appendix D.<br>Maintain defensible space as needed to keep the space lean, clean, and green. |
| | Fuel Reduction Treatments | Coordinate with Bureau of Land Management to construct a minimum 100-foot wide greenstrip around the community (Figure 5-1). |
| **Churchill County** | Fire Suppression Resources | Install a 5000-gallon water tank for fire suppression water supplies at the NDOT Maintenance Station.<br>Station a pick-up truck and a one-piece, slip-on, 100 to 200-gallon pump and tank unit with hose and hose reel in the community of Cold Springs. |
| **Fallon/Churchill VFD** | Fire Suppression Resources | Coordinate with residents of Cold Springs to help provide wildland fire training and pursue grant funding for a 100 to 200-gallon slip-on pump and tank unit and truck. |
| **Bureau of Land Management** | Fuel Reduction Treatments | Coordinate with Cold Springs' residents to construct a minimum 100-foot wide greenstrip around the community (Figure 5-1). |
| | Fire Suppression Resources | Identify a minimum of four people from the community of Cold Springs and train them using the Basin Wildland Firefighter Training course. |
| | Public Education | Distribute copies of the publication "Living With Fire". This publication is free of charge. Copies can be requested from the University of Nevada Cooperative Extension, (775) 784-4848. |

## Table 5-4 Cold Springs Wildfire Hazard Rating Summary

**A. Urban Interface Condition** ***2***

**B. Community Design**

| | | |
|---|---|---|
| 1. Ingress / Egress | 3 | /5 |
| 2. Width of Road | 1 | /5 |
| 3. Accessibility | 1 | /3 |
| 4. Secondary Road | 1 | /5 |
| 5. Street Signs | | /5 |
| 6. Address Signs | | /5 |
| 7. Utilities | 1 | /5 |

**C. Construction Materials**

| | | |
|---|---|---|
| 1. Roofs | 1 | /10 |
| 2. Siding | 1 | /5 |
| 3. Unenclosed Structures | 1 | /5 |

**D. Defensible Space**

| | | |
|---|---|---|
| 1. Lot Size | 5 | /5 |
| 2. Defensible Space | 1 | /15 |

**F. Fire Behavior**

| | | |
|---|---|---|
| 1. Fuels | 1 | /5 |
| 2. Fire Behavior | 3 | /10 |
| 3. Slope | 1 | /10 |
| 4. Aspect | 7 | /10 |

**E. Suppression Capabilities**

| | | |
|---|---|---|
| 1. Water Source | 10 | /10 |
| 2. Department | 10 | /10 |

***TALLIES***

**8 Total Houses**

**C1. Roofs**

0 combust | 8 not combust | 100% not combust

**C2. Siding**

0 combust | 8 not combust | 100% not combust

**C3. Unenclosed Structures on Lot**

0 not enclosed | 8 enclosed | 0% not enclosed

**D1. Lot Sizes**

4 <1ac | 4 >1ac <10ac | 0 >10ac

**D2. Defensible Space**

1 not adequat | 7 adequate | 88% adequate

**Score** **48** /128

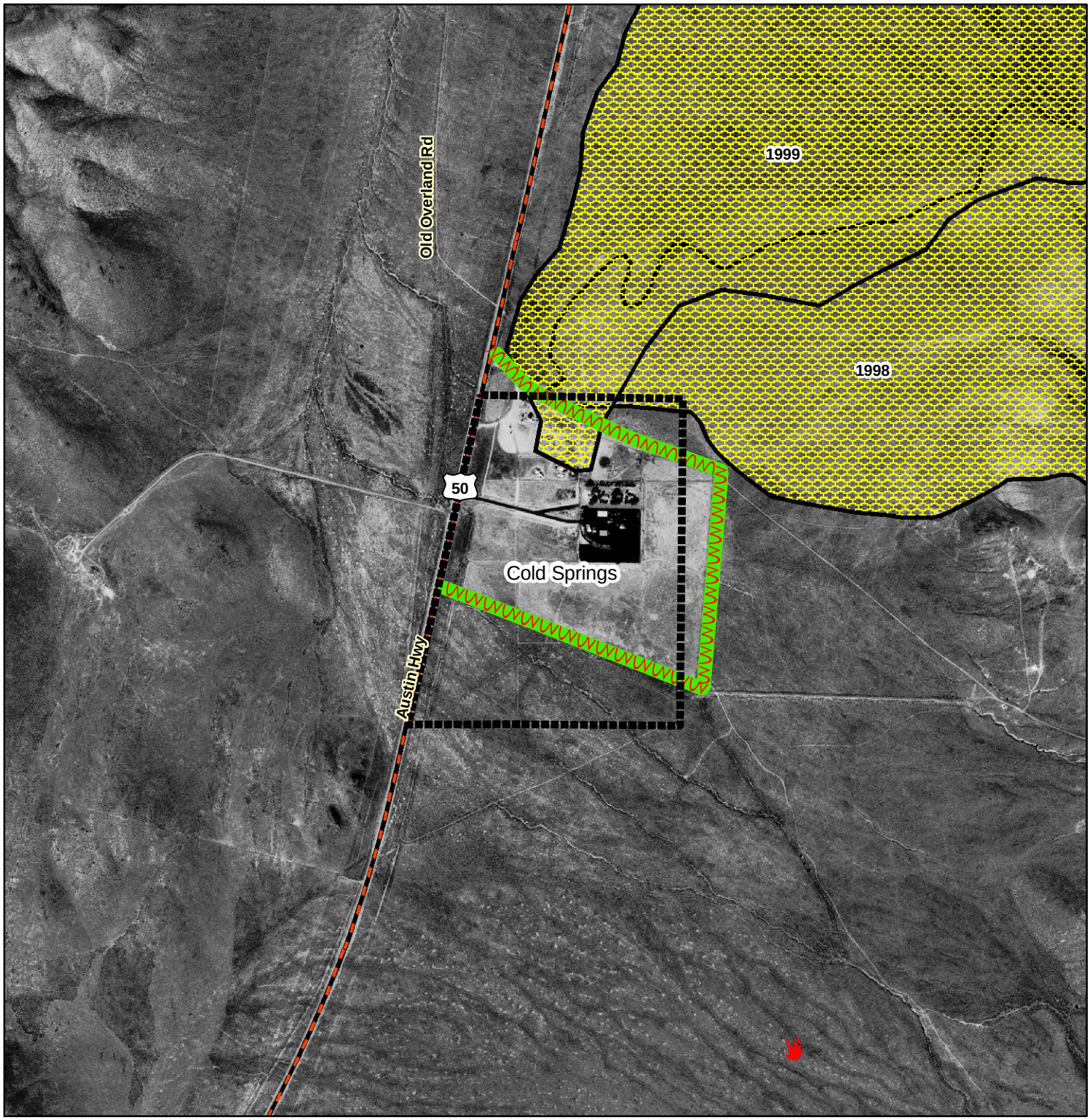



Figure 5-1. Cold Springs Fire History and Proposed Mitigation Project

**Legend**

- Community Boundary
- Proposed Greenstrip
- Fire Ignition
- Fire Boundaries
- Highways and State Routes

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Feet

Resource Concepts, Inc.
340 N. Minnesota St.
Carson City, NV 89703
(775)-883-1600

***Nevada Community Wildfire Risk / Hazard Assessment Project***

# 6.0 EASTGATE

## 6.1 RISK AND HAZARD REDUCTION

Eastgate is located in the southeastern portion of Churchill County on State Route 722. Eastgate has two residential structures, but only one may actually be occupied. **The hazard assessment resulted in classifying Eastgate in the High Hazard category** (68 points). The primary factors that contribute to Eastgate's hazards are the lack of a community water system, the lack of fire suppression resources, the isolated location of the community at the mouth of a narrow canyon, and the steep topography to the north and to the east of the community.

### *6.1.1 Community Design*

Eastgate is a rural interface community. The ranch structures are clustered together at the east boundary of the property, at the mouth of a narrow, east-west running canyon.

**Roads:** SR 722 is the primary transportation route to Eastgate; it is a paved two-lane highway, and is of a typical width between twenty to 24-feet.

**Signage:** Street signs and address visibility were considered Not Applicable in Eastgate. All residences were easily visible and could be located in the event of a wildfire.

**Utilities:** Electric utilities were all above ground. In general, power line right-of-ways were adequately maintained and pose only a low ignition risk to the community.

### *6.1.2 Construction Materials*

Both of the structures in the interface were built with non-combustible siding materials. One of the homes had fire resistant roofing materials. Neither of the structures observed had unenclosed balconies, porches, decks, or other architecture features that could create drafts and provide areas where sparks and embers could smolder and rapidly spread fire if ignited.

### *6.1.3 Defensible Space*

One of the structures had landscaping that met the minimum recommended defensible space to protect the home from damage or loss during a wildfire.

### *6.1.4 Suppression Capabilities*

**Wildfire Protection Resources**

There is no organized volunteer or paid fire department in Eastgate. Fire protection resources are available from the Fallon/Churchill VFD or Fallon NAS (by request). Additional resources are available through the Bureau of Land Management, dispatched from the Sierra Front Interagency Dispatch, Minden, Nevada. Tables 6-1 and 6-2 list the types of wildfire resources, cooperating partners and equipment available to Eastgate to respond to a reported wildland fire. For any of the fire protection agencies the minimum response time to Eastgate is approximately sixty to ninety minutes depending upon resource availability.

**Table 6-1. Eastgate Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT | COOPERATING PARTNER |
|---|---|---|
| Water Tender (dump truck with slip-in tanks) | 2 | Cold Springs NDOT Maintenance Station |
| Type 1 Engine<br>Type 3 Engine<br>Type 1 Water Tender (4,000 gal.)<br>Command Officer | 6<br>2<br>3<br>1 | Fallon/Churchill VFD |
| Type 1 Engine<br>Type 3 Engine<br>Type 6 Engine<br>Type 1 Water Tender | 1<br>1<br>1<br>1 | Fallon Naval Air Station |

**Table 6-2. Out of County Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT OF EQUIPMENT | COOPERATING PARTNER (RESOURCE LOCATION) |
|---|---|---|
| Type 3 Engine<br>Water Tender<br>Incident Command<br>Type 1 Air Tanker<br>Air Attack | 1<br>1<br>1<br>1<br>1 | The closest available Bureau of Land Management resources dispatched by the Sierra Interagency Dispatch Center in Minden, Nevada |

*Source: Personal Communication with Leonard Waking Fire Management Officer BLM Carson City Field Office, Steven Edgar Fire Mitigation and Education Specialist BLM Carson City Field Office, Ed Harris Equipment Manager Fallon/Churchill VFD, Stuart Cook Fire Management Officer Fallon Naval Air Station, and Phil Cammarata Maintenance Manager Nevada Department of Transportation.*

## Water Sources and Infrastructure

There is no community water system in Eastgate. It is unknown whether the property owner has any water sources onsite. The closest known water sources are the same as those available for fire suppression in Middlegate and Cold Springs and include drafting sources that may be used with landowner permission:

- Community well at Middlegate Store/Café.
- One windmill/stock tank ¼ mile west of Middlegate.
- One irrigation pump at ranch ¼ mile east of Middlegate.
- One 1,000-gallon water storage tank and well at the NDOT Maintenance Station in Cold Springs.

## Detection and Communication

Fires are reported in the Eastgate area through 911 calls to the Churchill County Sheriff's Office.

Fires are communicated to fire response personnel through the use of:

- Fire Dispatch through the Churchill County Sheriff's Office in Fallon.

### *6.1.5 Factors That Affect Fire Behavior*

Eastgate is located at the mouth of a narrow canyon with prevailing winds from the west/southwest. The terrain is flat with less than five percent slope west of Eastgate, but it is very steep immediately east and north. In 1996 a 4,415-acre fire burned to the northeast of Eastgate. Fuel density is light in the area surrounding the structures, estimated at less than one ton per acre. Fuels consist primarily of sagebrush, greasewood, Indian ricegrass, rabbitbrush, and bottlebrush squirreltail, with an invasion of cheatgrass. The light fuels around Eastgate were considered a low fuel hazard at the time of the assessment; however, annual cheatgrass production could dramatically increase in years of high precipitation and would pose a moderate fuel hazard to the community.

### *6.1.6 Worst Case Wildfire Scenario*

The worst-case scenario for Eastgate would be a wind-driven wildland fire that starts southwest of Eastgate and spreads into the structures and through the canyon. Historical fire records indicate that ignition risks are moderate. Flame lengths would be low because of the sparse, low vegetation and would not likely ignite structures.

### *6.1.7 Ignition Risk Assessment*

The ignition risk in the Eastgate area is moderate, based primarily on the record of historical ignitions. The lack of water and local fire suppression capabilities contributes to the possibility of an ignition spreading before fire suppression resources could arrive. The risk of property loss due to wildland fire is low due to the sparse, low brush in and around the community. The primary ignition risk factor in Eastgate is lightning. In years of increased moisture and cheatgrass growth, the ignition risk would be higher due to increased fuel loading.

## 6.2 RISK AND HAZARD REDUCTION RECOMMENDATIONS, ROLES, AND RESPONSIBILITIES

Eastgate is a very small community with no local fire suppression resources. Recommendations to reduce the risk of property loss due to a wildland fire are detailed below and summarized in Table 6-3.

### *6.2.1 Property Owner Responsibilities*

**Defensible Space Treatments**

Density and type of fuel around a home determines the potential fire exposure levels to the home. The goal of defensible space is to reduce the chances of a wildfire spreading into adjacent property, igniting homes, and reducing the risk of loss from a wildfire. General guidelines for creating defensible space around residences and structures in the community are given below, and illustrated in the Defensible Space Guidelines in Appendix D. See also the Homeowner's Annual Checklist in Appendix D for additional information.

- Remove, reduce, and replace vegetation around homes according to the guidelines in Appendix D. This area should be kept:

  Lean: There are only small amounts of flammable vegetation.

Clean: There is no accumulation of dead vegetation or other flammable debris.

Green: Existing plants are healthy and green during the fire season.

- Maintain defensible space annually.
- Immediately dispose of cleared vegetation when implementing defensible space treatments. This material dries quickly and poses a fire hazard if left on site.
- Clear all vegetation and combustible materials around propane and above ground fuel tanks for a minimum distance of ten feet.
- Where cheatgrass has become dominant within the defensible space area it should be mowed prior to seed set, or an application of a pre-emergent herbicide can be used. Mowing may need to be repeated the following year to ensure that the seed bank of unwanted grasses has been depleted. Refer to Appendix E for approved seed mixes and planting guidelines that can be used in conjunction with removal of this annual grass.

### *6.2.2 Bureau of Land Management Responsibilities*

**Public Education**

- Distribute copies of the publication "Living With Fire." This publication is free of charge. Copies can be requested for the University of Nevada Cooperative Extension, (775) 784-4848.

## 6.3 SUMMARY OF RECOMMENDATIONS

**Table 6-3. Priority Recommendations to Reduce Wildfire Risks and Hazards in the Eastgate Area**

| RESPONSIBLE PARTY | RECOMMENDED TREATMENT | RECOMMENDATION DESCRIPTION |
|---|---|---|
| **Property Owners** | Defensible Space Treatments | Remove, reduce, and replace vegetation around homes according to the guidelines in Appendix D.<br>Maintain defensible space as needed to keep the space lean, clean, and green. |
| **Bureau of Land Management** | Public Education | Distribute copies of the publication "Living With Fire." This publication is free of charge. Copies can be requested for the University of Nevada Cooperative Extension, (775) 784-4848. |

**Table 6-4 Eastgate Wildfire Hazard Rating Summary**

**A. Urban Interface Condition** ***2***

**B. Community Design**

| | | |
|---|---|---|
| 1. Ingress / Egress | 3 | /5 |
| 2. Width of Road | 3 | /5 |
| 3. Accessibility | 1 | /3 |
| 4. Secondary Road | 1 | /5 |
| 5. Street Signs | | /5 |
| 6. Address Signs | | /5 |
| 7. Utilities | 1 | /5 |

**C. Construction Materials**

| | | |
|---|---|---|
| 1. Roofs | 10 | /10 |
| 2. Siding | 1 | /5 |
| 3. Unenclosed Structures | 1 | /5 |

**D. Defensible Space**

| | | |
|---|---|---|
| 1. Lot Size | 5 | /5 |
| 2. Defensible Space | 7 | /15 |

**F. Fire Behavior**

| | | |
|---|---|---|
| 1. Fuels | 1 | /5 |
| 2. Fire Behavior | 3 | /10 |
| 3. Slope | 4 | /10 |
| 4. Aspect | 7 | /10 |

**E. Suppression Capabilities**

| | | |
|---|---|---|
| 1. Water Source | 10 | /10 |
| 2. Department | 10 | /10 |

***TALLIES***

**2 Total Houses**

**C1. Roofs**

1 combust | 1 not combust | 50% not combust

**C2. Siding**

0 combust | 2 not combust | 100% not combust

**C3. Unenclosed Structures on Lot**

0 not enclosed | 2 enclosed | 0% not enclosed

**D1. Lot Sizes**

1 <1ac | 1 >1ac <10ac | 0 >10ac

**D2. Defensible Space**

1 not adequat | 1 adequate | 50% adequate

**Score** **68** /128

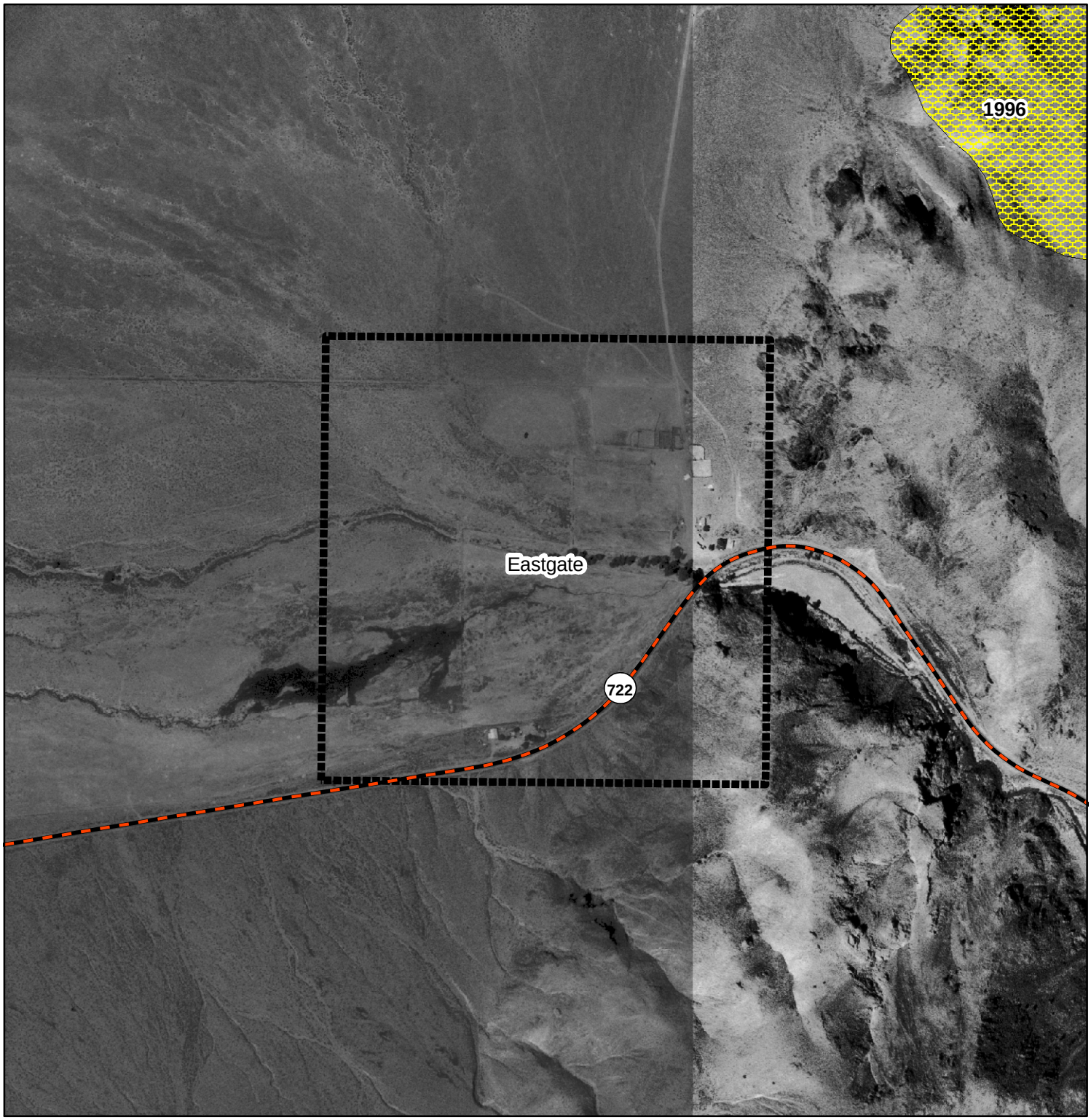


Figure 6-1. Eastgate Fire History

N
W E
S

Legend

- Community Boundary
- Fire Boundary
- Highways and State Routes

0 500 1,000 2,000
Feet

Resource Concepts, Inc.
340 N. Minnesota St.
Carson City, NV 89703
(775)-883-1600

***Nevada Community Wildfire Risk / Hazard Assessment Project***

# 7.0 FALLON

## 7.1 RISK AND HAZARD ASSESSMENT

The City of Fallon, located in western Churchill County, is surrounded by the agricultural land of the Fallon Outskirts. There were approximately 57 residences observed in the wildland-urban interface area of Fallon. **The hazard assessment resulted in classifying Fallon, as a whole, in the Low Hazard category** (30 points). A summary of the factors that contributed to the hazard rating is included in Table 7-4. The score is attributed primarily to the sparse vegetation surrounding the community, the buffer of agricultural land to the south, and the fire-safe construction of many structures in the interface.

### *7.1.1 Community Design*

Fallon is a classic interface condition community. Most residences have a clear line of demarcation between the structure and any wildland fuels. Several residential neighborhoods have block walls and dirt roadways between the wall and the wildland area that serve as fuelbreaks. Of the 57 houses included in the assessment – 49 were on lots of less than one acre, and eight were on lots of between one and ten acres.

**Roads:** The primary access routes in and out of Fallon are Interstate 95 and U.S. Highway 50. Both of the highways are paved, two-lane roads with a typical 24-foot width, allowing adequate room for fire suppression equipment to maneuver. Most of the secondary roads in the community are paved roads. These roads typically have less than a five percent gradient and provide adequate width and turning radius for fire suppression equipment.

**Signage:** Street signs were present and visible along all streets. Residential addresses are visible on 93 percent of the homes surveyed. Clear and visible signage is important to assist fire suppression personnel in locating at risk residences during poor visibility conditions that often occur during a wildland fire.

**Utilities:** All electric power utilities were above ground. In general, power line right-of-ways were adequately maintained and pose only a low ignition risk to the community.

### *7.1.2 Construction Materials*

Ninety-one percent of homes observed in the interface area were built with fire-resistant siding and roofing materials. Fire-resistant roofing includes such materials as composition, metal, or tile roofing. Only two percent of the homes observed had an unenclosed balcony, porch, deck, or other architectural feature. Such features can create drafts and provide areas where sparks and embers can lodge, smolder, and rapidly spread fire to the home itself.

### *7.1.3 Defensible Space*

Eighty-eight percent of the homes had landscaping that met the minimum defensible space criteria to protect the home from damage or loss during a wildfire.

### *7.1.4 Suppression Capabilities*

**Wildfire Protection Resources**

The City of Fallon is protected by the 41-member Fallon/Churchill VFD. The Fallon/Churchill VFD received the nation's first Insurance Services Offices Class 1 Volunteer Fire Department rating. Additional resources are available through the Bureau of Land Management, dispatched from the Sierra Front Interagency Dispatch, Minden, Nevada and the Fallon Naval Air Station Fire Department (by request). Tables 7-1 and 7-2 list the types of wildfire resources, cooperating partners, and equipment available to Fallon to respond to a reported wildland fire. Some volunteers may be unable to respond immediately to fire calls during typical working hours, and response from outside resources will be affected by equipment and personnel availability.

**Table 7-1. Fallon Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT OF EQUIPMENT | COOPERATING PARTNER (RESOURCE LOCATION) |
|---|---|---|
| Type 1 Engine | 6 | Fallon/Churchill VFD |
| Type 3 Engine | 2 | |
| Type 1 Water Tender (4,000 gal.) | 3 | |
| Command Officer | 1 | |
| Type 1 Engine | 1 | Fallon Naval Air Station (by request only) |
| Type 3 Engine[1] | 1 | |
| Type 6 Engine | 1 | |
| Type 1 Water Tender | 1 | |

[1/] The Type 3 engine listed under the Fallon Naval Air Station was in a state of disrepair at the time of the assessment.

**Table 7-2. Out of County Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT OF EQUIPMENT | COOPERATING PARTNER (RESOURCE LOCATION) |
|---|---|---|
| Type 3 Engine | 1 | The closest available Bureau of Land Management resources dispatched by the Sierra Interagency Dispatch Center in Minden, Nevada |
| Water Tender | 1 | |
| Incident Command | 1 | |
| Type 1 Air Tanker | 1 | |
| Air Attack | 1 | |

*Source: Personal Communication with Leonard Waking Fire Management Officer BLM Carson City Field Office, Steven Edgar Fire Mitigation and Education Specialist BLM Carson City Field Office, Ed Harris Equipment Manager Fallon/Churchill VFD, and Stuart Cook Fire Management Officer Fallon Naval Air Station.*

**Water Sources and Infrastructure**

Water availability for fire suppression in Fallon includes:

- 500 gpm hydrants within 1,000 feet of structures.
- One 1.8 million gallon storage tank.

- One 1 million gallon water tank.
- Irrigation canals that can be used as a drafting or dip site with the permission of property owners.

The Project Team Fire Specialists noted three wells with pipes or filler valves that could be used to fill fire suppression equipment in case of fire. The community water system relies on electrical pumps. There is a backup emergency generator to run the pumps, in the event of a power outage. Maintenance of the backup generator is the responsibility of the water system owner.

**Detection and Communication**

Fires are reported in the Fallon area through 911 calls to the Churchill County Sheriff's Office in Fallon.

Fires are communicated to fire response personnel through:

- Emergency Dispatch through the Churchill County Sheriff's Office in Fallon.
- Radios using the following frequency: 155.055.
- Pagers

The Churchill County Sheriff's Office has access to the state mutual aid frequencies and the radio system is compatible with neighboring agencies. BLM fire suppression personnel and equipment are dispatched by the Sierra Front Interagency Dispatch Center in Minden, Nevada.

### *7.1.5 Factors Affecting Fire Behavior*

The vegetative fuel density in the Fallon interface area was primarily light. Fuels consisted of salt desert shrub vegetation such as greasewood and annual and perennial grasses. Fuels along the irrigation canals that traverse the community consisted of Russian thistle, cattails, cottonwood, and poplar. The vegetative fuel load was estimated to be less than two tons per acre and considered a low fuel hazard. The terrain is fairly flat. The predominant wind is from the west/southwest in the late afternoon.

At the boundary of the City of Fallon and the agricultural Fallon Outskirts, there were large accumulations of dried Russian thistle tumbleweeds on fences. In the irrigation canals that traverse the community, large amounts of this dry vegetation were present along with fine fuels, downed tree limbs, and leaf biomass. In the last 24 years, there have been no large wildfires near the City of Fallon.

### *7.1.6 Fire Behavior Worst-Case Scenario*

The worst-case scenario for a major wildfire in the Fallon area would occur as a wind-driven event burning through the irrigation canals that traverse the community, spreading to vacant lots with high accumulations of debris and biomass, and/or occurring along a fence line with accumulated dry Russian thistle and other biomass. A fire in an irrigation ditch meant to clear vegetation could escape and spread through the network of irrigation ditches that traverse the community. If the fire began during normal working hours, there could be a limited or delayed response by volunteer firefighters, giving the fire a chance to spread before fire suppression resources could respond. The scenario would be worsened if mutual aid resources were unavailable or assigned to an emergency situation elsewhere.

### *7.1.7 Ignition Risk Assessment*

The risk assessment resulted in classifying Fallon with a low ignition risk potential due to the low, sparse brush in and around the community and the irrigated lands to the south that provide a buffer from any wildfire that may occur and spread from that direction. The primary ignition risk factor in Fallon is ditch burning.

## 7.2 RISK AND HAZARD REDUCTION RECOMMENDATIONS, ROLES, AND RESPONSIBILITIES

The Fallon risk and hazard reduction recommendations focus on homeowner and agency efforts in defensible space, fuel reduction, and power line clearance and maintenance. Other recommendations pertain to community coordination and public education efforts that could be initiated to enhance fire safety in Fallon. Recommendations are detailed below and summarized in Table 7-3.

### *7.2.1 Property Owner Responsibilities*

**Defensible Space**

Density and type of fuel around a home determines the potential fire exposure levels to the home. The goal of defensible space is to reduce the chances of a wildfire spreading into adjacent property and igniting homes, and to reduce the risk of loss from a wildfire. General guidelines for creating defensible space around residences and structures in the community are given below, and illustrated in the Defensible Space Guidelines in Appendix D. See also the Homeowner's Annual Checklist in Appendix D for additional information.

- Remove, reduce, and replace vegetation around homes according to the guidelines in Appendix D. This area should be kept:
  - Lean: There are only small amounts of flammable vegetation.
  - Clean: There is no accumulation of dead vegetation or other flammable debris.
  - Green: Existing plants are healthy and green during the fire season.
- Maintain defensible space annually.
- Immediately dispose of cleared vegetation when implementing defensible space treatments. This material dries quickly and poses a fire hazard if left on site.
- Prune trees so that the branches are at least fifteen feet away from chimneys and/or structures. Dead and diseased branches should be removed and disposed of along with other biomass.
- Clear all vegetation and combustible materials around propane tanks for a minimum distance of ten feet.
- Make sure residential addresses are visible from the road. Address numbers should be fire resistant and at least four inches high. Improving address visibility will make it easier for those unfamiliar with the area to navigate during a wildland fire event.

### *7.2.2 Fallon/Churchill VFD Responsibilities*

**Fuel Reduction Treatments**

- Remove or mow vegetation within ten feet of all fire hydrants to improve visibility and access by fire personnel.

**Community Coordination**

- Incorporate Fire Safe Community Planning Recommendations for New Developments in development plan reviews. See Appendix E for an example.
- Implement either a call-in burn program in which landowners must first call the Fallon/Churchill VFD before burning, or a burn permit program. A sample burn permit is included in Appendix E.

**Public Education**

- Distribute copies of the publication "Living With Fire" to all property owners. This publication is free of charge. Copies can be requested from the University of Nevada Cooperative Extension, (775) 784-4848.

### *7.2.3 Churchill County Responsibilities*

**Fuel Reduction Treatments**

- Reduce vegetation and maintain county road shoulders by mowing to a height of not more than four inches at least fifteen feet from the edge of pavement on both sides of the road. This will reduce ignition risk and create a firebreak. The biomass should be quickly removed to an appropriate site for disposal.

**Community Coordination**

- Development and enforcement of county laws, regulations, and ordinances that support implementation and maintenance of defensible space and address fuel reduction responsibilities for absentee homeowners and vacant lots in the communities of Fallon and Fallon Outskirts.

### *7.2.4 Railroad Responsibility*

**Fuel Reduction Treatments**

- Reduce vegetation to a minimum distance of fifteen feet along both sides of the railbed. The biomass should be quickly removed to an appropriate site for disposal.

### *7.2.5 Utility Company Responsibilities*

**Fuel Reduction Treatments**

- Clear and maintain a minimum distance of thirty feet from electrical transfer station fencelines free of all vegetation.
- Reduce vegetation to maintain a minimum distance of fifteen feet from all utility poles.
- The biomass should be quickly removed to an appropriate site for disposal.

## 7.3 SUMMARY OF RECOMMENDATIONS

**Table 7-3. Priority Recommendations to Reduce Wildfire Risks and Hazards in Fallon**

| RESPONSIBLE PARTY | RECOMMENDED TREATMENT | RECOMMENDATION DESCRIPTION |
|---|---|---|
| **Property Owners** | Defensible Space Treatments | Remove, reduce, and replace vegetation around homes according to the guidelines in Appendix D.<br>Maintain defensible space as needed to keep the space lean, clean, and green.<br>Improve address visibility. |
| **Churchill County** | Fuel Reduction Treatments | Reduce vegetation and maintain county road shoulders by mowing to a height of not more than four inches and a width of fifteen feet from the edge of pavement on both sides of the road. |
| | Community Coordination | Development and enforcement of county laws, regulations, and ordinances that support implementation and maintenance of defensible space and address fuel reduction responsibilities for absentee homeowners and vacant lots in the communities of Fallon and Fallon Outskirts. |
| **Railroad** | Fuel Reduction Treatments | Reduce vegetation to maintain a minimum distance of fifteen feet along each side of the railroad.<br>Biomass should be quickly removed to an appropriate site for disposal. |
| **Fallon/Churchill VFD** | Fuel Reduction Treatments | Clear weeds within ten feet of all fire hydrants.<br>The biomass should be quickly removed to an appropriate site for disposal. |
| | Community Coordination | Incorporate Fire Safe Community Planning Recommendations for New Developments in development plan reviews. See Appendix E for an example. |
| | Public Education | Distribute copies of the publication “Living With Fire” to all property owners. |
| **Utility Company** | Fuel Reduction Treatments | Clear all vegetation within thirty feet of electrical transfer station fencelines.<br>Clear all vegetation to a minimum distance of fifteen feet from all utility poles. The biomass should be removed to an appropriate site for disposal. |

## Table 7-4 City of Fallon Wildfire Hazard Rating Summary

**A. Urban Interface Condition** ***3***

**B. Community Design**

| | | |
|---|---|---|
| 1. Ingress / Egress | 1 | /5 |
| 2. Width of Road | 1 | /5 |
| 3. Accessibility | 1 | /3 |
| 4. Secondary Road | 1 | /5 |
| 5. Street Signs | 1 | /5 |
| 6. Address Signs | 1 | /5 |
| 7. Utilities | 1 | /5 |

**C. Construction Materials**

| | | |
|---|---|---|
| 1. Roofs | 1 | /10 |
| 2. Siding | 1 | /5 |
| 3. Unenclosed Structures | 1 | /5 |

**D. Defensible Space**

| | | |
|---|---|---|
| 1. Lot Size | 5 | /5 |
| 2. Defensible Space | 1 | /15 |

**F. Fire Behavior**

| | | |
|---|---|---|
| 1. Fuels | 1 | /5 |
| 2. Fire Behavior | 3 | /10 |
| 3. Slope | 1 | /10 |
| 4. Aspect | 1 | /10 |

**E. Suppression Capabilities**

| | | |
|---|---|---|
| 1. Water Source | 1 | /10 |
| 2. Department | 7 | /10 |

***TALLIES***

**57 Total Houses** **15 Residential Streets**

**B5. Street Signs**

| | | | | | |
|---|---|---|---|---|---|
| 0 | not visible | 15 | visible | 100% | visible |

**B6. Address Signs**

| | | | | | |
|---|---|---|---|---|---|
| 4 | not visible | 53 | visible | 93% | visible |

**C1. Roofs**

| | | | | | |
|---|---|---|---|---|---|
| 5 | combust | 52 | not combust | 91% | not combust |

**C2. Siding**

| | | | | | |
|---|---|---|---|---|---|
| 5 | combust | 52 | not combust | 91% | not combust |

**C3. Unenclosed Structures on Lot**

| | | | | | |
|---|---|---|---|---|---|
| 1 | not enclosed | 56 | enclosed | 2% | not enclosed |

**D1. Lot Sizes**

| | | | | | |
|---|---|---|---|---|---|
| 49 | <1ac | 8 | >1ac <10ac | 0 | >10ac |

**D2. Defensible Space**

| | | | | | |
|---|---|---|---|---|---|
| 7 | not adequat | 50 | adequate | 88% | adequate |

**Score** **30** /128

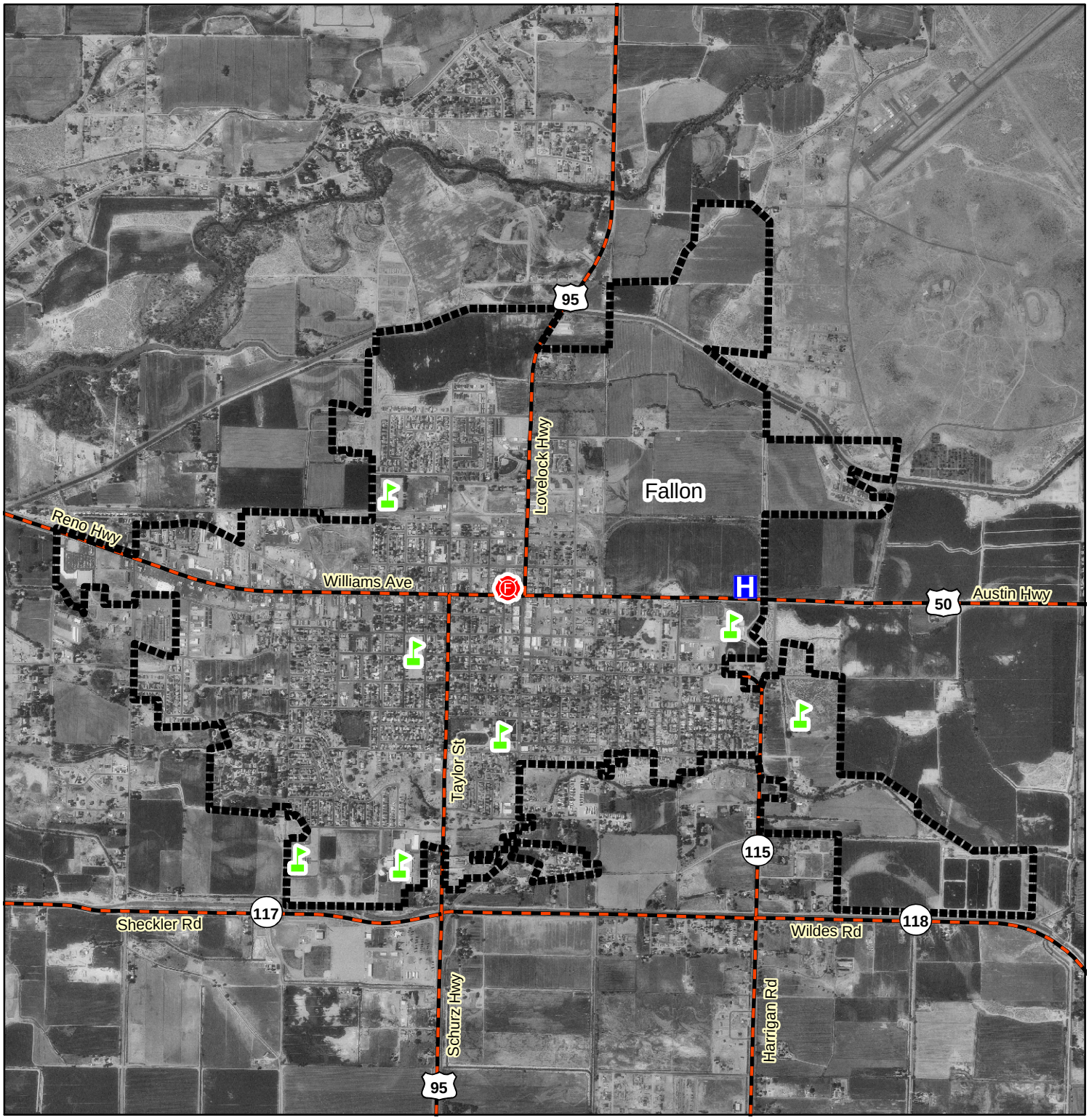


Figure 7-1. Fallon Suppression Resources and Critical Community Features

Legend

- Community Boundary
- Schools
- Hospital
- Fire Station
- Highways and State Routes

N
W E
S

0 0.25 0.5 1
Miles

Resource Concepts, Inc.
340 N. Minnesota St.
Carson City, NV 89703
(775)-883-1600

***Nevada Community Wildfire Risk / Hazard Assessment Project***

# 8.0 FALLON NAVAL AIR STATION

## 8.1 RISK AND HAZARD ASSESSMENT

The Fallon Naval Air Station is located approximately seven miles southeast of the City of Fallon, accessible by U.S. Highways 50 and 95. **The hazard assessment resulted in classifying the Fallon NAS in the Low Hazard category** (24 points). A summary of the factors that contributed to the hazard rating is included in Table 8-4. The primary factors that contributed to the low rating were the buffer zones around the base, sparse vegetation, as well as good community design and adequate defensible space.

### *8.1.1 Community Design*

The Fallon NAS is a classic interface community. There is a clear line of demarcation between the structures and the wildland area. All of the residences are on lots of less than one acre in size. Sixty homes on the NAS were included in the assessment.

**Roads:** State Route 118, a paved two-lane highway, is the major transportation route into the base. All secondary roads are paved and provide adequate room for fire suppression equipment to maneuver.

**Signage:** Street signs and residential addresses were clearly posted and visible on all roads and homes on the NAS. Clear and visible residential addresses are important to aid fire protection personnel in locating homes during low visibility conditions that may occur during a wildland fire.

**Utilities:** Electric utilities were all above ground. In general, power line right-of-ways were adequately maintained and posed only a low ignition risk to the community.

### *8.1.2 Construction Materials*

All of the homes in the interface were built with non-combustible siding and roofing materials. None of the homes on the NAS had unenclosed balconies, porches, decks, or other architectural features that create drafts and provide areas where sparks and embers can smolder and rapidly spread fire if the home ignites.

### *8.1.3 Defensible Space*

All of the homes met the minimum defensible space requirements to protect the home from damage or loss during a wildfire.

### *8.1.4 Suppression Capabilities*

**Wildfire Protection Resources**

The Fallon NAS is protected by a career fire department staffed by 45 members in two stations. Additional resources are available from the Fallon/Churchill VFD and the BLM, dispatched from the Sierra Front Interagency Dispatch in Minden, Nevada. Tables 8-1 and 8-2 list the types of wildfire resources, cooperating partners, and equipment available to the NAS for response to respond to a reported wildland fire.

**Table 8-1. Fallon NAS Wildfire Suppression Resources and Cooperating Partners**

| TYPE OF EQUIPMENT | AMOUNT OF EQUIPMENT | COOPERATING PARTNER (RESOURCE LOCATION) |
|---|---|---|
| Type 1 Engine | 1 | Fallon Naval Air Station |
| Type 3 Engine[1] | 1 | |
| Type 6 Engine | 1 | |
| Type 1 Water Tender | 1 | |
| Type 1 Engine | 6 | Fallon/Churchill VFD |
| Type 3 Engine | 2 | |
| Type 1 Water Tender (4,000 gal.) | 3 | |
| Command Officer | 1 | |

[1/] The Type 3 engine listed under the Fallon Naval Air Station was in a state of disrepair at the time of the assessment.

**Table 8-2. Out of County Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT OF EQUIPMENT | COOPERATING PARTNER (RESOURCE LOCATION) |
|---|---|---|
| Type 3 Engine | 1 | The closest available Bureau of Land Management resources dispatched by the Sierra Interagency Dispatch Center in Minden, Nevada |
| Water Tender | 1 | |
| Incident Command | 1 | |
| Type 1 Air Tanker | 1 | |
| Air Attack | 1 | |

*Source: Personal Communication with Leonard Waking Fire Management Officer BLM Carson City Field Office, Steven Edgar Fire Mitigation and Education Specialist BLM Carson City Field Office, Ed Harris Equipment Manager Fallon/Churchill VFD, and Stuart Cook Fire Management Officer Fallon Naval Air Station.*

## Water Sources and Infrastructure

Water availability for fire suppression on the Fallon NAS include:

- Community wells.
- 500 gpm hydrants within 500 feet of structures.
- 2 water storage tanks.

The water system relies on gravity and electric pumps, and is backed up by a diesel emergency generator in the event of a power outage.

## Detection and Communication

Fires are reported on the Fallon NAS area through 911 calls to Fallon NAS Fire Dispatch. The Base utilizes tower lookouts, reconnaissance flights, and Base Security patrols.

Fires are communicated to fire response personnel through:

- Dispatch through Base Security.
- Radios using Base frequency.
- Pagers.

The Fallon NAS relies primarily on its Base frequency, but as of April 2004 it also has access to the state mutual aid frequencies and compatibility with neighboring agencies. There is a community siren to notify residents of an emergency. There are gaps in radio coverage in Dixie Valley, where the Fallon NAS performs practice drills.

**Fire Protection Personnel Qualifications**

The Fallon NAS Fire Department personnel are trained under the Department of Defense Training Guidelines set by National Fire Protection Agency (NFPA). All staff members have completed the forty-hour BLM Advanced Wildland Fire Training course. The Fallon NAS Fire department does not utilize the Red Card System for individual qualifications. A Red Card certification is part of a fire qualifications management system used by many state and all federal wildland fire management agencies to certify that an individual is qualified to fight wildland fires.

**Work Load**

On average, the Fallon NAS Fire Department responds to the following number of emergency calls annually:

- 800-1,000 emergency medical calls.
- 5-10 wildland/brush fires.
- 3,000 airfield/structure fires.

**Financial Support**

Financial support for the Fallon NAS Fire Department comes from the Federal Government, Department of the Navy. Federal budget cuts have reduced funding available to the Fire Department for equipment and repairs.

**Community Preparedness**

The Fallon NAS has an active Local Emergency Management Plan that includes a pre-attack plan, disaster plan, mitigation plan, and an evacuation plan. The Base Emergency Management Coordinator is responsible for management of the plan. The plan is periodically updated. The Fallon NAS currently operates under NFPA standards and Naval Regional Regulations for fire code. The Fallon NAS Fire Department reviews development plans to ensure that new development meets current fire code standards. The Fallon NAS Fire department has a brush clearance program that follows Navy Requirements of 25-foot minimum defensible space areas around structures. The requirements apply to structures on the Base and in Dixie Valley.

### *8.1.5 Factors That Affect Fire Behavior*

The vegetative fuel density on the Fallon NAS interface area was light. Fuels on the base itself consisted primarily of a salt desert shrub community of greasewood and saltgrass. Fuels in the buffer zone surrounding the base were the same but of a heavier density. The fuel load was estimated to be one to two tons per acre and considered a low fuel hazard. There has been no recent wildfire activity recorded in the area. The Fallon NAS is located in a valley with a fairly flat aspect and minimal slope. The predominant wind comes from the southwest in the late afternoon.

### *8.1.6 Worst Case Wildfire Scenario*

The worst-case scenario for the Fallon NAS would be an ignition starting south of the base and then spreading onto the Base with the prevailing southwest wind. Possible ignition sources include lightning, ditch burning, or a plane crash. Because of the low, sparse brush, the wildfire threat is low, as is the potential for structure loss.

### *8.1.7 Risk Assessment*

The Fallon NAS is viewed as having a low ignition risk area due to sparse, low brush in and around the community, non-combustible structure materials, good defensible space, adequate road access, and appropriate road/address signage. The dominant ignition risk factor on the Fallon NAS would be an aviation accident.

## 8.2 RISK AND HAZARD REDUCTION RECOMMENDATIONS, ROLES, AND RESPONSIBILITIES

The Fallon NAS risk and hazard reduction recommendations focus on defensible space in some areas of the Base with regard to structures on land leased from the Navy and upgrading/repair of the existing fire suppression equipment. The recommendations are detailed below and summarized in Table 8-3.

### *8.2.1 Property Owner Responsibilities*

**Defensible Space Treatments**

Density and type of fuel around a home determines the potential fire exposure levels to the home. The goal of defensible space is to reduce the chances of a wildfire spreading into adjacent property, igniting homes, and reducing the risk of loss from a wildfire. All of the homes on the Fallon NAS are maintained by the Base and do not have issues with defensible space or debris. General guidelines for creating defensible space around residences and structures on lands leased from the Navy by private persons are given below, and illustrated in the Defensible Space Guidelines in Appendix D. See also the Homeowner's Annual Checklist in Appendix D for additional information.

- Leaseholders on Navy lands should ensure that appropriate defensible space is maintained around structures by removing, reducing, and replacing vegetation around homes according to the guidelines in Appendix D. This area should be kept:
  - Lean: There are only small amounts of flammable vegetation.
  - Clean: There is no accumulation of dead vegetation or other flammable debris.
  - Green: Existing plants are healthy and green during the fire season.
- Maintain defensible space annually.
- Immediately dispose of cleared vegetation when implementing defensible space treatments. This material dries quickly and poses a fire hazard if left on site. While the Navy guidelines require 25 feet of defensible space, the UNR Defensible Space figure in Appendix D recommends a minimum of thirty feet clearance.

### *8.2.2 Fallon NAS Fire Department Responsibilities*

**Fire Suppression Resources**

- The Fallon Naval Air Station Fire Department should explore opportunities to gain funding to repair the Type 3 brush engine and/or find funding to replace the engine. Type 3 engines are the primary vehicle used in suppression of wildland fires, and repair or replacement would enhance the ability of the Fallon NAS Fire Department to respond to wildland-urban interface fires both on and off the base.

**Community Coordination**

- The Fallon NAS Fire Department should work with the Fallon/Churchill VFD to implement a call-in or burn permit program that includes NAS leaseholders.

**Public Education**

- Distribute copies of the publication "Living With Fire" to all Base residents and leaseholders. This publication is free of charge. Copies can be requested from the University of Nevada Cooperative Extension, (775) 784-4848.

## 8.3 SUMMARY OF RECOMMENDATIONS

**Table 8-3. Priority Recommendations to Reduce Wildfire Risks and Hazards in the Fallon NAS Area**

| RESPONSIBLE PARTY | RECOMMENDED TREATMENT | RECOMMENDATION DESCRIPTION |
|---|---|---|
| **Property Owners** | Defensible Space Treatments | Remove, reduce, and replace vegetation around homes according to the guidelines in Appendix D.<br>Maintain defensible space as needed to keep the space lean, clean, and green. |
| **Fallon NAS FD** | Fire Suppression Resources | Explore funding opportunities to repair Type 3 engine and/or replace with another Type 3 engine. |
| | Community Coordination | The Fallon NAS Fire Department should work with the Fallon/Churchill VFD to implement a call-in or burn permit program that includes NAS leaseholders. |
| | Public Education | Distribute copies of the publication "Living With Fire" to all residents and leaseholders. |

## Table 8-4 NAS Fallon Wildfire Hazard Rating Summary

**A. Urban Interface Condition** ***1***

**B. Community Design**

| | | |
|---|---|---|
| 1. Ingress / Egress | 1 | /5 |
| 2. Width of Road | 1 | /5 |
| 3. Accessibility | 1 | /3 |
| 4. Secondary Road | 1 | /5 |
| 5. Street Signs | 1 | /5 |
| 6. Address Signs | 1 | /5 |
| 7. Utilities | 1 | /5 |

**C. Construction Materials**

| | | |
|---|---|---|
| 1. Roofs | 1 | /10 |
| 2. Siding | 1 | /5 |
| 3. Unenclosed Structures | 1 | /5 |

**D. Defensible Space**

| | | |
|---|---|---|
| 1. Lot Size | 5 | /5 |
| 2. Defensible Space | 1 | /15 |

**F. Fire Behavior**

| | | |
|---|---|---|
| 1. Fuels | 1 | /5 |
| 2. Fire Behavior | 3 | /10 |
| 3. Slope | 1 | /10 |
| 4. Aspect | 1 | /10 |

**E. Suppression Capabilities**

| | | |
|---|---|---|
| 1. Water Source | 1 | /10 |
| 2. Department | 1 | /10 |

***TALLIES***

**60 Total Houses** **9 Residential Streets**

**B5. Street Signs**

0 not visible | 9 visible | 100% visible

**B6. Address Signs**

0 not visible | 60 visible | 100% visible

**C1. Roofs**

0 combust | 60 not combust | 100% not combust

**C2. Siding**

0 combust | 60 not combust | 100% not combust

**C3. Unenclosed Structures on Lot**

0 not enclosed | 60 enclosed | 0% not enclosed

**D1. Lot Sizes**

60 <1ac | 0 >1ac <10ac | 0 >10ac

**D2. Defensible Space**

0 not adequat | 60 adequate | 100% adequate

**Score** **24** /128

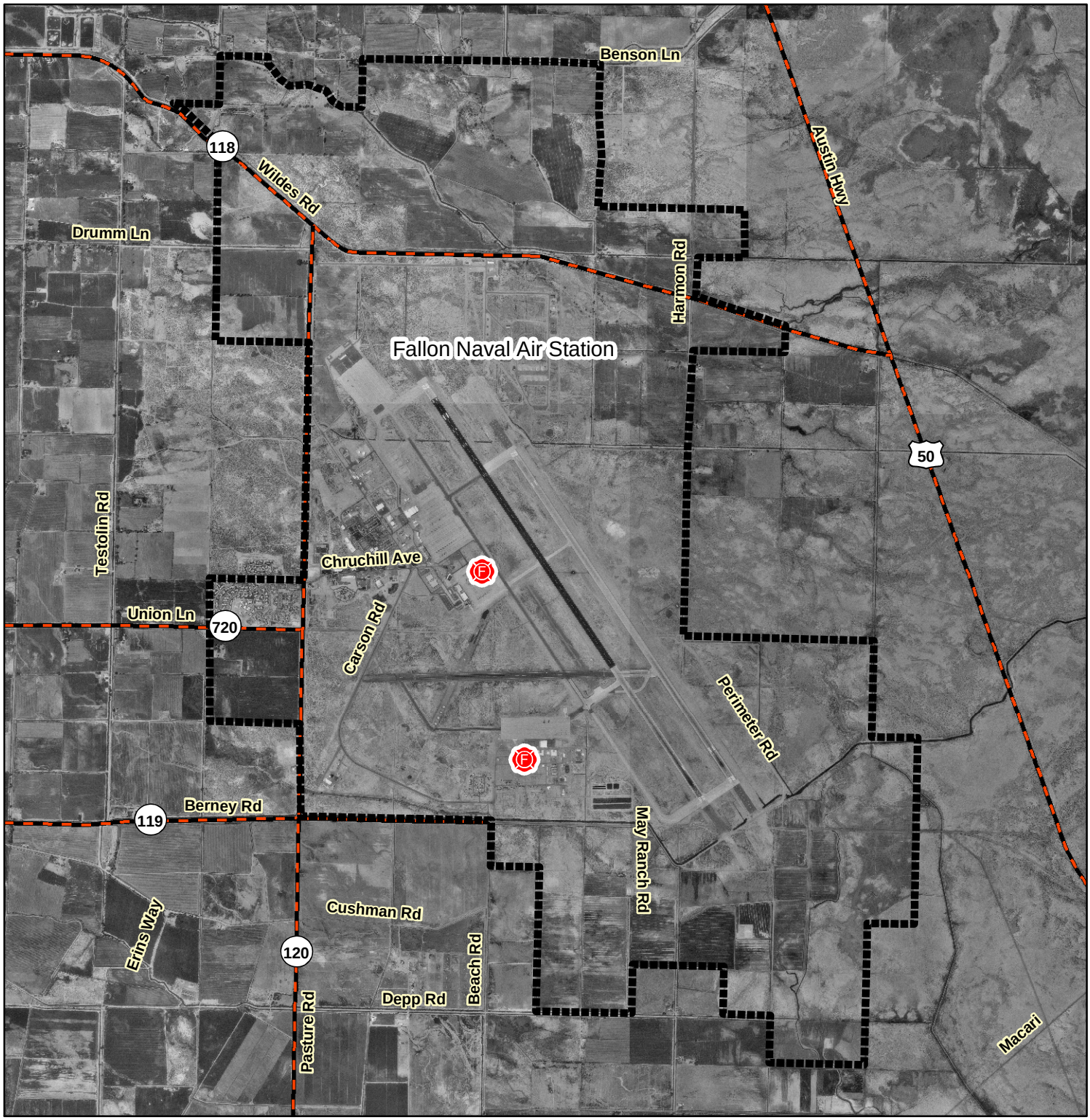


Figure 8-1. Fallon Naval Air Station
Suppression Resources

N
W E
S

Legend

- Community Boundary
- Fire Stations
- Highways and State Routes

0 0.5 1 2
Miles

Resource Concepts, Inc.
340 N. Minnesota St.
Carson City, NV 89703
(775)-883-1600

***Nevada Community Wildfire Risk / Hazard Assessment Project***

# 9.0 FALLON OUTSKIRTS

## 9.1 RISK AND HAZARD ASSESSMENT

The Fallon Outskirts are located in western Churchill County, surrounding the City of Fallon. **The hazard assessment resulted in classifying the Fallon Outskirts in the Low Hazard category** (40 points). A summary of the factors that contributed to the hazard rating is included in Table 9-4. The primary factors that contributed to the low rating were good defensible space and community design, adequate fire suppression and water sources, and low fuel loads.

### *9.1.1 Community Design*

The interface condition surrounding the Fallon Outskirts is classified as rural**,** with small, scattered clusters of structures exposed to wildland fuels. Some residences are clustered on lots of less than one acre; the majority of residences are built on lots of between one and ten acres. There are some residences on more than ten acres of land with sizeable expanses of ranch or farmland separating structures or clusters of structures.

**Roads:** Interstate 95 and U.S. Highway 50 are the major transportation routes through the Fallon Outskirts. Both are paved, 24-foot wide, two-lane highways, with adequate width for the movement of fire suppression equipment.

Within the community, the secondary roads were typically unpaved, between twenty and 24 feet in width with grades less than five percent. Long driveways into residential farms characterize this area. Many narrower unimproved dirt roads lead away from the community.

**Signage:** Street signs were present and visible along eighty percent of the streets. Residential addresses were visible on 79 percent of the homes surveyed.

**Utilities:** Electric utilities were all above ground. In general, power line right-of-ways were adequately maintained and pose only a low ignition risk to the community.

### *9.1.2 Construction Materials*

Most of the structures (96 percent) in the interface were built with non-combustible siding materials, and 94 percent of the homes were built with composition, tile, or metal roofing materials. Sixty-six percent of the homes observed had unenclosed balconies, porches, decks, or other architectural features that create drafts and provide areas where sparks and embers can smolder and rapidly spread fire if the home ignites.

### *9.1.3 Defensible Space*

Nearly all of the homes (97 percent) surveyed met the minimum defensible space to protect the home from damage or loss during a wildfire.

### *9.1.4 Suppression Capabilities*

**Wildfire Protection Resources**

The Fallon Outskirts community has the same fire protection as the City of Fallon. Additional resources are available through the BLM, dispatched from the Sierra Front Interagency Dispatch, Minden, Nevada. Tables 9-1 and 9-2 list the types of wildfire resources, cooperating partners, and equipment available to the Fallon Outskirts to respond to a reported wildland fire.

**Table 9-1. Fallon Outskirts Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT OF EQUIPMENT | COOPERATING PARTNER (RESOURCE LOCATION) |
|---|---|---|
| Type 1 Engine | 6 | Fallon/Churchill VFD |
| Type 3 Engine | 2 | |
| Type 1 Water Tender (4,000 gal.) | 3 | |
| Command Officer | 1 | |
| Type 1 Engine | 1 | Fallon Naval Air Station (by request only) |
| Type 3 Engine[1] | 1 | |
| Type 6 Engine | 1 | |
| Type 1 Water Tender | 1 | |

[1/] The Type 3 engine listed under the Fallon Naval Air Station was in a state of disrepair at the time of the assessment.

**Table 9-2. Out of County Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT OF EQUIPMENT | COOPERATING PARTNER (RESOURCE LOCATION) |
|---|---|---|
| Type 3 Engine | 1 | The closest available Bureau of Land Management resources dispatched by the Sierra Interagency Dispatch Center in Minden, Nevada |
| Water Tender | 1 | |
| Incident Command | 1 | |
| Type 1 Air Tanker | 1 | |
| Air Attack | 1 | |

*Source: Personal Communication with Leonard Waking Fire Management Officer BLM Carson City Field Office, Steven Edgar Fire Mitigation and Education Specialist BLM Carson City Field Office, Ed Harris Equipment Manager Fallon/Churchill VFD, and Stuart Cook Fire Management Officer Fallon Naval Air Station.*

**Water Sources and Infrastructure**

There are no hydrants in the Fallon Outskirts. Water for fire suppression activities are located in the City of Fallon, which is generally a twenty-minute or more round-trip. The water sources in the City of Fallon are the following:

- 500 gpm hydrants.
- One 1.8 million gallon storage tank.
- One 1 million gallon water tank.
- Irrigation canals that can be used as a drafting or dip site with the permission of property owners.

Project Team Fire Specialists noted three wells in Fallon with pipes or filler hoses that could be used to fill fire suppression equipment in case of fire in the Fallon Outskirts.

**Detection and Communication**

Fires are reported in the Fallon Outskirts area through 911 calls to the Churchill County Sheriff's Office in Fallon.

Fires are communicated to fire response personnel through:

- Emergency Dispatch through the Churchill County Sheriff's Office in Fallon.
- Radios using the following frequency- 155.055.
- Pagers.

BLM fire suppression personnel are dispatched by the Sierra Front Interagency Dispatch Center in Minden, Nevada.

The Churchill County Sheriff's Office has access to the state mutual aid frequencies and the radio system is compatible with neighboring agencies.

### *9.1.5 Factors Affecting Fire Behavior*

The vegetative fuel density in the Fallon Outskirts interface area varies from light to medium. Fuels in the Fallon Outskirts consist primarily of a salt desert shrub community of rabbitbrush, greasewood, and four-wing saltbush at an estimated vegetation density of one to two tons per acre. There are instances of Russian thistle in disturbed areas, and dried Russian thistle tumbleweeds along fencelines and in irrigation ditches. Fuels along irrigation ditches are denser than elsewhere in the Fallon Outskirts and consist of Russian olive and elm. The overall fuel load was estimated to be two to four tons per acre and was considered a moderate fuel hazard. Russian knapweed was observed in the Fallon Outskirts, and because it is a noxious weed, its spread should be checked. See the Russian knapweed fact sheet in Appendix E for more information. The Fallon Outskirts is located in a valley on flat to slightly rolling terrain with a minimal slope of five percent or less. The predominant wind is from the southwest in the late afternoon. The Fallon Outskirts area has not experienced recent wildland fires.

### *9.1.6 Fire Behavior Worst Case Scenario*

The worst-case scenario of a major wildland fire in the area of the Fallon Outskirts would occur during a dry lightning storm with high winds in late summer. This type of wind-driven fire would spread fire through irrigation canals and into the City of Fallon. An ignition close to the western or southwestern edge of the community in the mid-afternoon could be pushed towards the community by winds out of the southwest. The initial attack resources would respond from Fallon/Churchill VFD and Fallon NAS Fire Department with a minimum response time between ten and thirty minutes. The scenario would be worsened if mutual aid resources were unavailable due to an assignment of an emergency situation elsewhere.

### *9.1.7 Risk Assessment*

Based on previous fire history, the Fallon Outskirts is considered to have a low risk of ignition. The primary ignition risk factor in the Fallon Outskirts is ditch burning, as the Truckee-Carson Irrigation District burns ditches annually (Debbie Sherman pers. comm.). A fire in an irrigation ditch meant to clear vegetation could escape and spread through the network of irrigation ditches that traverse the community.

## 9.2 RISK AND HAZARD REDUCTION RECOMMENDATIONS, ROLES, AND RESPONSIBILITIES

The responsibility for developing fire safe practices in a community falls not only on the local fire department but also on the residents, businesses, and local governments of the community. The Fallon Outskirts risk and hazard reduction recommendations focus primarily on defensible space activities that community members and public agencies can promote to improve wildland fire safety. Other recommendations pertain to community coordination and public education efforts proposed to enhance fire safety in the Fallon Outskirts. Recommendations are detailed below and summarized in Table 9-3.

### *9.2.1 Property Owner Responsibilities*

**Defensible Space Treatments**

Density and type of fuel around a home determines the potential fire exposure levels to the home. The goal of defensible space is to reduce the chances of a wildfire spreading into adjacent property, igniting homes, and reducing the risk of loss from a wildfire. General guidelines for creating defensible space around residences and structures in the community are given below, and illustrated in the Defensible Space Guidelines in Appendix D. See also the Homeowner's Annual Checklist in Appendix D for additional information.

- Remove, reduce, and replace vegetation around homes. This area should be kept:
  - Lean: There are only small amounts of flammable vegetation.
  - Clean: There is no accumulation of dead vegetation or other flammable debris.
  - Green: Existing plants are healthy and green during the fire season.
- Maintain defensible space annually.
- Immediately dispose of cleared vegetation when implementing defensible space treatments. This material dries quickly and poses a fire hazard if left on site.
- Make sure residential addresses are visible from the road. Address numbers should be at least four inches high and fire resistant. Improving visibility of addresses will make it easier for those unfamiliar with the area to navigate an area during a wildland fire.
- Leaves and debris should be removed from roofs and rain gutters.
- Spark arrestors should be installed on chimneys.
- Prune tree branches to at least fifteen feet from structures and chimneys. Dead and diseased branches should be removed and disposed of along with other biomass.
- Clear all vegetation and combustible materials to a minimum distance of ten feet around propane tanks.
- Reduce fuels at least ten feet along both sides of private driveways longer than 200 feet. Flammable fuels should be replaced with fire-resistant species. Refer to Appendix E for approved seed mixes.

### *9.2.2 Irrigation District Responsibilities*

**Fuel Reduction Treatments**

- Cooperate with the Fallon/Churchill VFD to further develop and enforce fire-safe burning policies in order to comply with proposed county burn call-in or burn permit procedures.

### *9.2.3 Fallon/Churchill VFD Responsibilities*

**Public Education**

- Distribute copies of the publication "Living With Fire" to all property owners. This publication is free of charge. Copies can be requested from the University of Nevada Cooperative Extension, (775) 784-4848.

### *9.2.4 Churchill County Responsibilities*

**Community Coordination**

- Enforce or develop county laws, regulations, and ordinances that support implementation and maintenance of defensible space and address fuel reduction responsibilities for absentee homeowners and vacant lots in the Fallon and Fallon Outskirts communities.

## 9.3 SUMMARY OF RECOMMENDATIONS

**Table 9-3. Priority Recommendations to Reduce Wildfire Risks and Hazards in the Fallon Outskirts**

| RESPONSIBLE PARTY | RECOMMENDED TREATMENT | RECOMMENDATION DESCRIPTION |
|---|---|---|
| **Property Owners** | Defensible Space Treatments | Remove, reduce, and replace vegetation around homes according to the guidelines in Appendix D.<br>Maintain defensible space as needed to keep the space lean, clean, and green. |
| **Truckee-Carson Irrigation District** | Fuel Reduction Treatment | Cooperate with the Fallon/Churchill VFD to further develop and enforce fire-safe burning policies in order to comply with proposed county burn call-in or burn permit procedures. |
| **Fallon/Churchill VFD** | Public Education | Distribute copies of the publication "Living With Fire" to all residents and leaseholders. |
| **Churchill County** | Community Coordination | Enforce or develop county laws, regulations, and ordinances that support implementation and maintenance of defensible space and address fuel reduction responsibilities for absentee homeowners and vacant lots in the Fallon and Fallon Outskirts communities. |

## Table 9-4 Fallon Outskirts Wildfire Hazard Rating Summary

**A. Urban Interface Condition** ***2***

**B. Community Design**

| | | |
|---|---|---|
| 1. Ingress / Egress | 1 | /5 |
| 2. Width of Road | 1 | /5 |
| 3. Accessibility | 1 | /3 |
| 4. Secondary Road | 1 | /5 |
| 5. Street Signs | 3 | /5 |
| 6. Address Signs | 3 | /5 |
| 7. Utilities | 1 | /5 |

**C. Construction Materials**

| | | |
|---|---|---|
| 1. Roofs | 1 | /10 |
| 2. Siding | 1 | /5 |
| 3. Unenclosed Structures | 3 | /5 |

**D. Defensible Space**

| | | |
|---|---|---|
| 1. Lot Size | 3 | /5 |
| 2. Defensible Space | 1 | /15 |

**F. Fire Behavior**

| | | |
|---|---|---|
| 1. Fuels | 3 | /5 |
| 2. Fire Behavior | 3 | /10 |
| 3. Slope | 1 | /10 |
| 4. Aspect | 1 | /10 |

**E. Suppression Capabilities**

| | | |
|---|---|---|
| 1. Water Source | 5 | /10 |
| 2. Department | 7 | /10 |

***TALLIES***

**1710 Total Houses** **161 Residential Streets**

**B5. Street Signs**

33 not visible | 128 visible | 80% visible

**B6. Address Signs**

358 not visible | 1352 visible | 79% visible

**C1. Roofs**

95 combust | 1615 not combust | 94% not combust

**C2. Siding**

74 combust | 1636 not combust | 96% not combust

**C3. Unenclosed Structures on Lot**

554 not enclosed | 1156 enclosed | 32% not enclosed

**D1. Lot Sizes**

493 <1ac | 1150 >1ac <10ac | 67 >10ac

**D2. Defensible Space**

56 not adequat | 1654 adequate | 97% adequate

**Score** **40** /128

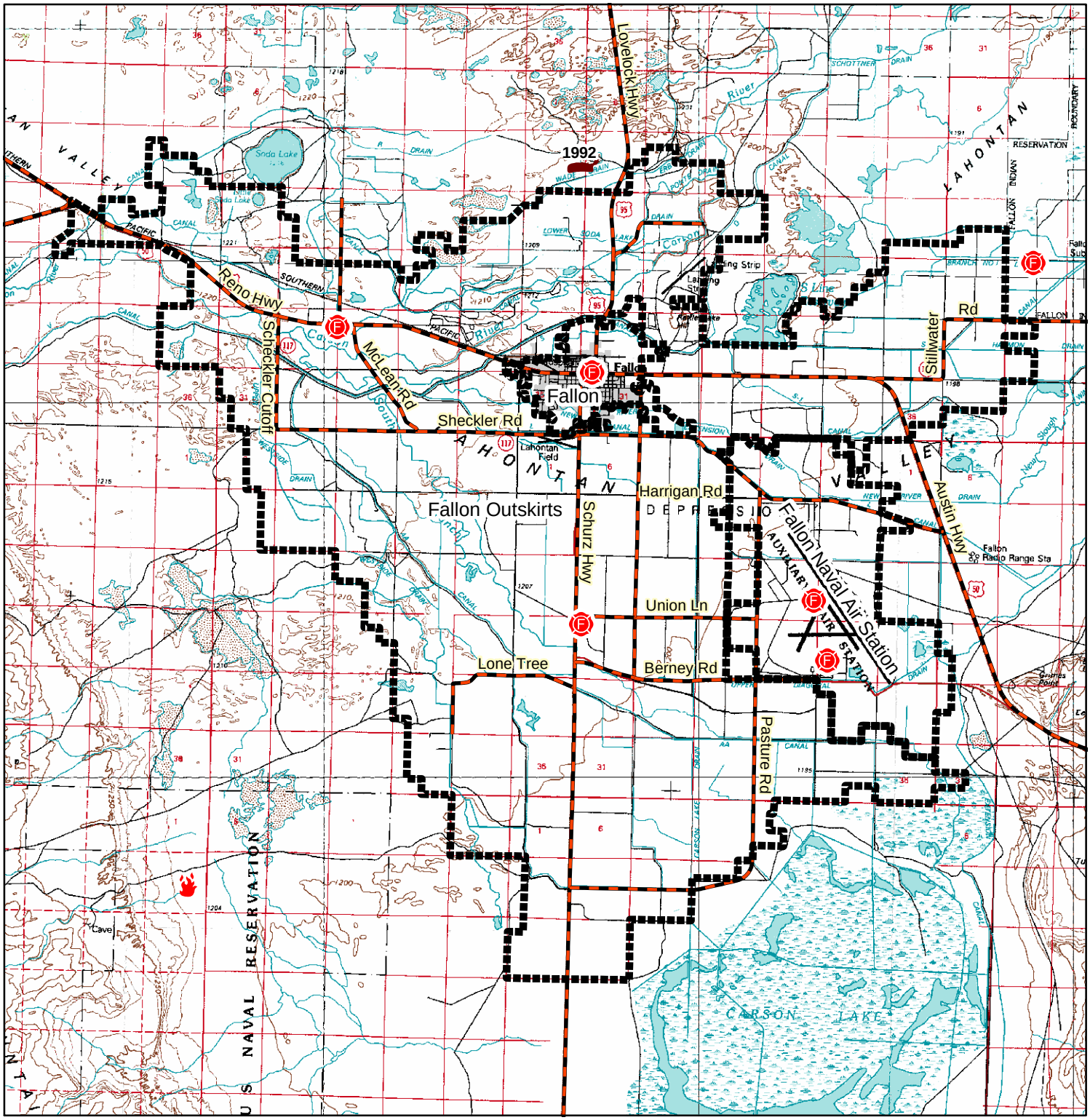


Figure 9-1. Fallon Outskirts
Fire History and Suppression Resources

Legend

- Community Boundary
- Fire Stations
- Fire Ignitions
- Fire Boundary
- Highways and State Routes

N
W E
S

0 1 2 4
Miles

Resource Concepts, Inc.
340 N. Minnesota St.
Carson City, NV 89703
(775)-883-1600

***Nevada Community Wildfire Risk / Hazard Assessment Project***

# 10.0 MIDDLEGATE

## 10.1 RISK AND HAZARD ASSESSMENT

Middlegate is located in the southeastern corner of Churchill County at the junction of U.S. Highway 50 and State Route 361. Nine residences were included in the risk and hazard assessment. **The hazard assessment classified Middlegate in the Moderate Hazard category** (58 points). A summary of the factors that contributed to the hazard rating is included in Table 10-4. The primary factors that contributed to the rating were the lack of fire suppression and protection resources, lack of water resources, and the isolated location of the community.

### *10.1.1 Community Design*

Middlegate is an intermix interface community. Most of the structures assessed were older mobile homes clustered behind the Middlegate Store and Café; however, there were a few structures scattered throughout the wildland area with no clear line of demarcation between wildland fuels and the residences.

**Roads:** U.S. Highway 50 and SR 361 are the major transportation routes through Middlegate. Both roads are paved two-lane highways at least 24 feet in width. There were no secondary roads in the community.

**Signage:** Street sign visibility and residential addresses were considered Not Applicable in Middlegate. All residences were easily visible and could be located in the event of a wildfire.

**Utilities**: Electric utilities were all above ground. In general, power line right-of-ways were adequately maintained and pose only a low ignition risk to the community.

### *10.1.2 Construction Materials*

All of the homes were built with combustible siding and roofing materials. Most of the homes in the interface area were older mobile homes, and the remaining residences were constructed of old, weathered, wood siding with highly weathered roofs. Flying embers from a wildfire could ignite these homes quickly.

Over half of the homes observed had unenclosed balconies, porches, decks, or other architectural features that could create drafts and provide areas where sparks and embers can smolder and rapidly spread fire if ignited.

### *10.1.3 Defensible Space*

About half of the homes in the interface met the minimum defensible space to protect the home from damage or loss during a wildfire.

### *10.1.4 Suppression Capabilities*

**Wildfire Protection Resources**

There is no organized fire suppression in Middlegate. The community receives fire protection from the Fallon/Churchill Volunteer Fire Department and the Fallon NAS Fire Department (by request). Additional resources are available through the Bureau of Land Management, dispatched from the Sierra Front Interagency Dispatch, Minden, Nevada. For any of the fire protection agencies the response time to Middlegate is approximately thirty minutes up to ninety minutes depending upon resource availability. Tables 10-1 and 10-2 list the types of wildfire resources, cooperating partners and equipment available to Middlegate in the event of a reported wildland fire.

**Table 10-1. Middlegate Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT | COOPERATING PARTNER |
|---|---|---|
| Water Tender (dump truck with slip-in tanks) | 2 | Cold Springs Nevada Department of Transportation Maintenance Station |
| Type 1 Engine<br>Type 3 Engine<br>Type 1 Water Tender (4,000 gal.)<br>Command Officer | 6<br>2<br>3<br>1 | Fallon/Churchill VFD |
| Type 1 Engine<br>Type 3 Engine[1]<br>Type 6 Engine<br>Type 1 Water Tender | 1<br>1<br>1<br>1 | Fallon Naval Air Station |

[1/] The Type 3 engine listed under the Fallon Naval Air Station was in a state of disrepair at the time of the assessment.

**Table 10-2. Out of County Wildfire Resources, Cooperating Partners, and Equipment Available**

| TYPE OF EQUIPMENT | AMOUNT OF EQUIPMENT | COOPERATING PARTNER (RESOURCE LOCATION) |
|---|---|---|
| Type 3 Engine<br>Water Tender<br>Incident Command<br>Type 1 Air Tanker<br>Air Attack | 1<br>1<br>1<br>1<br>1 | The closest available Bureau of Land Management resources dispatched by the Sierra Interagency Dispatch Center in Minden, Nevada |

*Source: Personal Communication with Leonard Waking Fire Management Officer BLM Carson City Field Office, Steven Edgar Fire Mitigation and Education Specialist BLM Carson City Field Office, Ed Harris Equipment Manager Fallon/Churchill VFD, Stuart Cook Fire Management Officer Fallon Naval Air Station, and Phil Cammarata Maintenance Manager Nevada Department of Transportation.*

**Water Sources and Infrastructure**

There were no hydrants in Middlegate. Water availability for fire suppression in Middlegate includes the following drafting sources that may be used with landowner permission:

- Community well at Middlegate Store/Café.
- One windmill/stock tank ¼ mile west of Middlegate.
- One irrigation pump at ranch ¼ mile east of Middlegate.

**Detection and Communication**

Fires are reported in the Middlegate area through 911 calls to the Churchill County Sheriff's Office in Fallon. Fires are communicated to fire response personnel through dispatch from the Churchill County Sheriff's Office in Fallon.

BLM resources are dispatched by the Sierra Front Interagency Dispatch Center in Minden, Nevada.

**Community Preparedness**

Middlegate has no organized community preparation in place for emergencies. Since all residents live in close proximity to one another, phone or word-of-mouth is the primary warning method.

### *10.1.5 Factors That Affect Fire Behavior*

Middlegate is located in a valley with prevailing winds from the west and flat terrain with less than five percent slopes. Fuel density was light in the area surrounding the structures, estimated at less than ½ ton per acre. Fuels consisted primarily of sagebrush, greasewood, Indian ricegrass, bottlebrush squirreltail, and cheatgrass, an invasive annual grass. The light fuels around Middlegate were considered a low fuel hazard at the time of the assessment; however, annual cheatgrass production could dramatically increase in years of high precipitation and would pose a moderate fuel hazard to the community.

### *10.1.6 Worst Case Wildfire Scenario*

The worst-case scenario for Middlegate would be a dry lightning ignition with winds from the west driving the fire through the community. Given the combustible nature of the residences in Middlegate, the close spacing of all the residences, and the distance that fire protection and suppression resources would have to travel to respond to a call, the community could be consumed by a fire before resources could respond.

### *10.1.7 Ignition Risk Assessment*

The risk assessment, taken into consideration along with a record of numerous historical dry lightning ignitions, resulted in a moderate ignition risk classification for Middlegate. The vegetation composition of sparse low brush and grass significantly reduces ignition risk and potential fire behavior; however, the risk of losing structures is moderate, given the combustible nature of the most common building materials. The primary ignition risk factor in Middlegate is lightning. In years of increased moisture and cheatgrass growth, the ignition risk would be higher due to increased fuel loading.

## 10.2 RISK AND HAZARD REDUCTION RECOMMENDATIONS, ROLES, AND RESPONSIBILITIES

The Middlegate risk and hazard reduction recommendations focus on defensible space. The recommendations are detailed below and summarized in the Table 10-3.

### *10.2.1 Property Owner Responsibilities*

**Defensible Space Treatments**

Density and type of fuel around a home determines the potential fire exposure levels to the home. The goal of defensible space is to reduce the chances of a wildfire spreading into adjacent property, igniting homes, and reducing the risk of loss from a wildfire. General guidelines for creating defensible space around residences and structures in the community are given below, and illustrated in the Defensible Space Guidelines in Appendix D. See also the Homeowner's Annual Checklist in Appendix D for additional information.

- Remove, reduce, and replace vegetation around homes according to the guidelines in Appendix D. This area should be kept:
  - Lean: There are only small amounts of flammable vegetation.
  - Clean: There is no accumulation of dead vegetation or other flammable debris.
  - Green: Existing plants are healthy and green during the fire season.
- Maintain defensible space annually.
- Immediately dispose of cleared vegetation when implementing defensible space treatments. This material dries quickly and poses a fire hazard if left on site.
- Clear all vegetation and combustible materials around above ground fuel tanks for a minimum distance of ten feet.
- Abandoned trailers and structures should be removed or boarded up to prevent flying embers entering and igniting the structure.
- Where cheatgrass has become dominant within the defensible space area it should be mowed prior to seed set, or an application of a pre-emergent herbicide can be used. Mowing may need to be repeated the following year to ensure that the seed bank of unwanted grasses has been depleted. Refer to Appendix E for approved seed mixes and planting guidelines that can be used in conjunction with removal of this annual grass.

**Fuel Reduction Treatments**

- Coordinate with Bureau of Land Management to construct a minimum 100-foot wide greenstrip around the community (Figure 10-1). Seed the greenstrip area with fire-resistant and low growing perennial grasses and forbs suited to the climate and soils in Middlegate (Appendix E). Use the community pick-up/water truck to provide temporary irrigation of seeded greenstrips during the first complete growing season to assure seeding success. The goal of the greenstrip is to create an area of perennial, fire-resistant, vegetation with lower cheatgrass density than the surrounding areas. The proposed project is approximately 1.1 miles long and a minimum of thirteen acres in size.

### *10.2.2 Churchill County Responsibilities*

**Fire Suppression Resources**

- Install a 5,000-gallon water tank for fire suppression water supplies at the NDOT Maintenance Station.
- Station a pick-up truck and a one-piece, slip-on, 100 to 200-gallon pump and tank unit with hose and hose reel in the community of Middlegate. This equipment, fitted properly for the size and weight limitations of the truck, can be used to provide initial attack of wildfires threatening the community.

### *10.2.3 Fallon/Churchill VFD Responsibilities*

**Fire Suppression Resources**

- Coordinate with residents of Middlegate to help provide wildland fire training and pursue grant funding for a 100 to 200-gallon slip-on pump and tank unit and truck.

### *10.2.4 Bureau of Land Management Responsibilities*

**Fuel Reduction Treatments**

- Coordinate with residents of Middlegate to construct a minimum 100-foot wide greenstrip around the community (Figure 10-1). Seed the greenstrip area with fire-resistant and low growing perennial grasses and forbs suited to the climate and soils in Middlegate (Appendix E). Use the community pick-up/water truck to provide temporary irrigation of seeded greenstrips during the first complete growing season to assure seeding success. The goal of the greenstrip is to create an area of perennial, fire-resistant, vegetation with lower cheatgrass density than the surrounding areas. The proposed project is approximately 1.1 miles long and a minimum of thirteen acres in size.

**Fire Suppression Resources**

- Identify a minimum of four people from the community of Middlegate and train them using the Basin Wildland Firefighter Training course.

**Public Education**

- Distribute copies of the publication “Living With Fire”. This publication is free of charge. Copies can be requested from the University of Nevada Cooperative Extension, (775) 784-4848.

## 10.3 SUMMARY OF RECOMMENDATIONS

**Table 10-3. Priority Recommendations to Reduce Wildfire Risks and Hazards in the Middlegate Area**

| RESPONSIBLE PARTY | RECOMMENDED TREATMENT | RECOMMENDATION DESCRIPTION |
|---|---|---|
| **Property Owners** | Defensible Space Treatments | Remove, reduce, and replace vegetation around homes according to the guidelines in Appendix D.<br>Maintain defensible space as needed to keep the space lean, clean, and green.<br>Clean up flammable debris around the community. |
| | Fuel Reduction Treatments | Coordinate with Bureau of Land Management to construct a minimum 100-foot wide greenstrip around the community (Figure 10-1). |
| **Churchill County** | Fire Suppression Resources | Install a 5,000-gallon water tank for fire suppression water supplies at the NDOT Maintenance Station.<br>Station a pick-up truck and a one-piece, slip-on, 100 to 200-gallon pump and tank unit with hose and hose reel in the community of Middlegate. |
| **Fallon/Churchill VFD** | Fire Suppression Resources | Coordinate with residents of Middlegate to help provide wildland fire training and pursue grant funding for a 100 to 200-gallon slip-on pump and tank unit and truck. |
| **Bureau of Land Management** | Fuel Reduction Treatments | Coordinate with residents of Middlegate to construct a minimum 100-foot wide greenstrip around the community (Figure 10-1). |
| | Fire Suppression Resources | Identify a minimum of four people from the community of Middlegate and train them using the Basin Wildland Firefighter Training course. |
| | Public Education | Distribute copies of the publication “Living With Fire”. This publication is free of charge. Copies can be requested from the University of Nevada Cooperative Extension, (775) 784-4848. |

**Table 10-4 Middlegate Wildfire Hazard Rating Summary**

**A. Urban Interface Condition** ***2***

**B. Community Design**

| | | |
|---|---|---|
| 1. Ingress / Egress | 1 | /5 |
| 2. Width of Road | 3 | /5 |
| 3. Accessibility | 1 | /3 |
| 4. Secondary Road | 1 | /5 |
| 5. Street Signs | | /5 |
| 6. Address Signs | | /5 |
| 7. Utilities | 1 | /5 |

**C. Construction Materials**

| | | |
|---|---|---|
| 1. Roofs | 10 | /10 |
| 2. Siding | 5 | /5 |
| 3. Unenclosed Structures | 3 | /5 |

**D. Defensible Space**

| | | |
|---|---|---|
| 1. Lot Size | 5 | /5 |
| 2. Defensible Space | 7 | /15 |

**F. Fire Behavior**

| | | |
|---|---|---|
| 1. Fuels | 1 | /5 |
| 2. Fire Behavior | 3 | /10 |
| 3. Slope | 1 | /10 |
| 4. Aspect | 1 | /10 |

**E. Suppression Capabilities**

| | | |
|---|---|---|
| 1. Water Source | 5 | /10 |
| 2. Department | 10 | /10 |

***TALLIES***

**9 Total Houses**

**C1. Roofs**

9 combust 0 not combust 0% not combust

**C2. Siding**

9 combust 0 not combust 0% not combust

**C3. Unenclosed Structures on Lot**

4 not enclosed 5 enclosed 44% not enclosed

**D1. Lot Sizes**

4 <1ac 4 >1ac <10ac 1 >10ac

**D2. Defensible Space**

4 not adequat 5 adequate 56% adequate

**Score** **58** /128

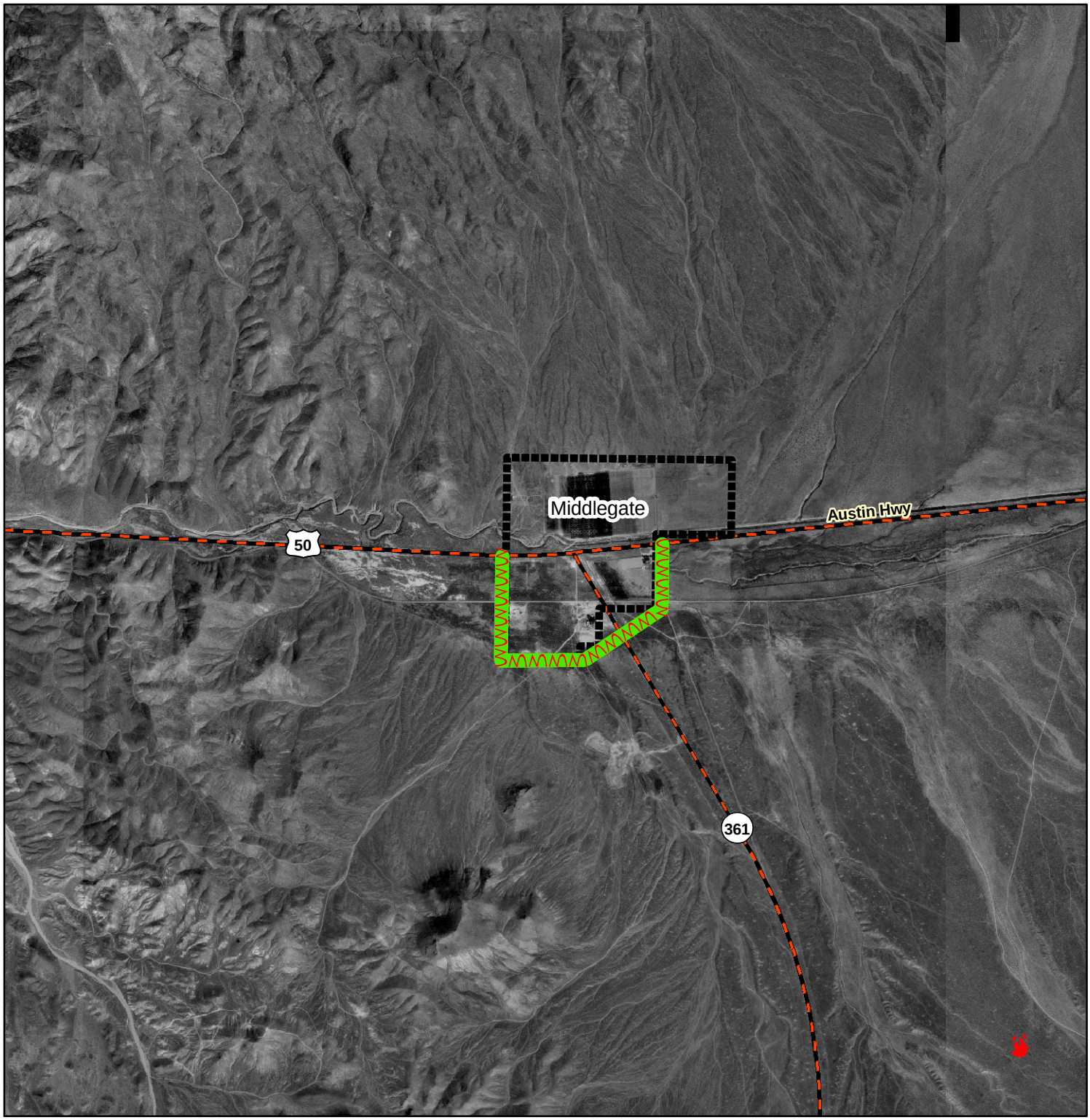


Figure 10-1. Middlegate Fire History
and Proposed Mitigation Project

Legend

- Community Boundary
- Proposed Greenstrip
- Fire Ignition
- Highways

0 1,000 2,000 4,000
Feet

N
W E
S

Resource Concepts, Inc.
340 N. Minnesota St.
Carson City, NV 89703
(775)-883-1600

***Nevada Community Wildfire Risk / Hazard Assessment Project***

# 11.0 CHURCHILL COUNTY RISK/HAZARD ASSESSMENT CONCLUSIONS

The recommendations in this report have been developed based on site-specific characteristics observed during the fire risk and hazard assessments performed by RCI in Churchill County. This report presents general and specific recommendations in order to provide a starting point for each community to take a proactive approach in reducing the risks to life, property, and natural resources from a wildland fire.

The communities in Churchill County vary from having a low risk of ignition and low hazard factors for the communities of Fallon and the Fallon NAS, to having moderate ignition risk and high hazard factors in the community of Eastgate. There have been some wildfires in close proximity to Middlegate, Eastgate, and Cold Springs. In these areas, there is a risk of annual grasses such as cheatgrass becoming the dominant plant species through repetitive fires. Cheatgrass presents a highly variable fuel hazard, as the annual production of flammable material is directly related to rainfall levels, however, neglecting to treat this highly flammable annual grass could lead to a greater ignition risk in the future.

The communities of Cold Springs, Eastgate, and Middlegate are prone to fires that will continue to threaten the communities and surrounding natural resources. To mitigate the potential moderate to high fuel hazard cheatgrass creates depending upon moisture levels, two greenstrips are proposed for the communities of Cold Springs and Middlegate. These proposed greenstrips will provide areas of less flammable vegetation that will reduce fire spread rates and burn intensities, thereby allowing more time for fire suppression resources to arrive on site before structures are threatened.

All of the communities in Churchill County must rely on the limited resources available from the Fallon/Churchill VFD and the Fallon NAS Fire Department, with additional resources available if needed from the Bureau of Land Management. Cold Springs, Middlegate, and Eastgate, the communities that experience the most frequent fire ignitions, do not have local fire protection. It is critical that property owners in these communities take every step possible to create adequate defensible space that will act as a buffer zone between their homes and the wildland areas, and to learn as much as possible about fire risks, hazards, and strategies to avoid damage from a wildland fire in their communities. Recommendations to acquire fire suppression equipment and install water drafting sources may aid in the reduction of fire risks and hazards to other communities in the county as well.

**To be most effective, fire safe practices need to be implemented on a community-wide basis. There is no guarantee that a wildfire will not occur in any of these communities, even if all of the recommendations in this report are implemented. Nonetheless, public awareness, neighbors helping neighbors, and concerned, proactive individuals setting examples for others to follow are just some of the approaches necessary to reduce the risk of wildfire ignition and the hazards inherent in wildland interface areas.**

# 12.0 REFERENCES


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Spatial database information used in this report is listed by source in Section 2.2.

# APPENDICES

# *Appendix A*

*Glossary of Wildland Fire Terms*

# Appendix A - Glossary of Terms Used in Wildfire Management

**Annual grass treatment**: This treatment involves either chemical or mechanical methods for reducing flashy fuels associated with annual grass infestations (cheatgrass). Casarone® or other pre-emergent herbicides can be applied at the proper rates near residential areas to reduce the fuel load from annual grasses. Mowing the annual grasses once they dry-out in the spring, preferably before going to seed, reduces the amount of fine fuels during the summer fire season. Repeated mowing over several years should reduce the density of the annual grass as long as mowing occurs before seed set.

**Biomass Utilization and Disposal:** Biomass utilization is an alternative to open pile burning or landfill disposal. It would result in the use of the natural resource for beneficial purposes such as firewood, wood chips, compost, and other products. If residents cannot find an alternative to burning, then proper burning procedures should be followed.

**Classic Interface:** Structures abut native vegetation with a clear line of separation between structures and the wildland vegetation along roads and fences. The fuels do not extend into the developed areas.

**Defensible space:** Defensible space is defined as a *minimum of a thirty-foot area* around houses and other structures where vegetation has been significantly modified or removed. The purpose of creating defensible space is to reduce the risk of losing homes and other property improvements to a wildfire (Smith and Adams, 1991).

Defensible space is especially important in communities with structures directly adjacent to wildland vegetation, as in the intermix or rural interface conditions where wildfires can spread quickly through the wildland fuels, threatening homes and lives.

**Fire hazard:** As used in this report, vegetative factors that affect the intensity and rate of spread of a fire as well as urban factors that can facilitate or inhibit public safety and the containment of a fire in an interface area.

**Fire regime:** A term used by fire ecologists to describe the periodicity and intensity of fire as specific to a plant community.

**Fire risk:** As used in this report, potential ignition sources and factors that facilitate ignition of wildfires in or near interface areas.

**Fuelbreaks:** A fuelbreak is a strip of land, strategically placed, on which a cover of dense, heavy, or flammable vegetation has been permanently changed to one of lower fuel volume or reduced flammability. Fuelbreak construction may include removing, controlling, and possibly replacing highly flammable vegetation with more fire resistant species. Ridge top fuelbreaks should have continuous length and width, which requires long-range planning. Fuels are reduced, ladder fuel is removed, and the canopy closure is reduced in fuelbreak treatments.

Primary fuelbreaks flank ridge tops and valley bottoms and are used to control large fires. The recommended minimum width is 300 feet.

Secondary fuelbreaks are used to break down large forested areas along roads, drainage ridges, communities, and other valuable resources to support fires suppression into areas of less than 1,000 acres.

**Fuel Reduction Treatment:** This treatment involves strategically locating blocks of land near communities where flammable vegetation has been permanently changed to one of lower fuel volume or reduced flammability. Fuel reduction treatments may also involve replacement of highly flammable vegetation with less flammable or more fire resistant species.

**Fuel Loading:** An ocular estimate of the tons per acre (t/ac) of combustible fuels present on a site. Parameters for this assessment are less than 1 t/ac for "light fuels," 1-4 t/ac for "medium fuels," and >4 t/ac for "heavy fuels."

**Greenstrips:** Greenstrips are irrigated or usually non-irrigated bands of open space on private or public land (at least a minimum of 300 feet wide) that serve as a buffer zone between wildlands and adjacent urban development to promote safer environments. These areas are usually seeded to establish vegetation that is relatively fire resistant or burns slowly and with shortened flame lengths. Seedings also decrease soil erosion and prevent invasion of noxious weeds and other aggressive plants such as cheatgrass and Russian knapweed.

**High Hazard Day:** Also known as a "red flag day", a combination of conditions such as low humidity (<15%), high winds (>25 mph), and low fuel moisture create a high probability of ignition and subsequent increased fire intensity. Various agencies have different trigger points to establish a "high hazard day".

**Interface Condition**. Describes the density and distribution of structures with respect to the surrounding wildland environment. The four Interface Conditions are Rural, Intermixed, Occluded, and Classic.

**Intermix Interface:** Structures are scattered throughout the wildland, with no clear boundary between the wildland vegetation and the community.

**Occluded Interface:** This condition is usually within towns and cities where there are small islands of wildland fuels such as parks or open space. There is a clear boundary between the community and the wildland vegetation.

**Red Card Certification:** A fire qualifications management system used by many state and all federal wildland fire management agencies to ensure that individuals are qualified to fight wildland fires.

**Rural Interface:** Clusters of structures such as ranches or summer homes are widely spaced, sometimes more than a mile apart. The rural homes are surrounded by the wildland vegetation, with no clear line of separation between the fuels and homes.

**Shaded fuelbreaks:** A shaded fuelbreak is created by altering surface fuels and increasing the height of the base of the live crown and opening the canopy by removing trees. This type of fuelbreak spans a wide range of understory and overstory prescriptions and methods of creation through manual, mechanical and the use of prescribed fires.

A fuelbreak network system could be used to protect critical watersheds while more remote areas might have narrower fuelbreaks that might serve as anchor points for prescribed fires. A fuelbreak strategy can be effective even if fuelbreaks are not connected.

# *Appendix B*

*Photographs of Representative Fuel Types*

Typical salt desert shrub vegetation found throughout Churchill County. Sagebrush, rabbitbrush, greasewood, and understory grasses here are estimated at one to two tons per acre.

Irrigation ditches in Fallon and the Fallon Outskirts have accumulations of willow, grasses, and Russian thistle tumbleweeds. Irrigation ditches could act as a wick, drawing an escaped ditch burn through the community. This is a serious hazard in the fall when ditches are dry.


Accumulations of vegetation along the railroad in Fallon present a hazard because sparks from the railroad can ignite dry vegetation and start a fire.

# *Appendix C*

*List of Persons Contacted*

# Appendix C – List of Persons Contacted

| CONTACT NAME | POSITION | DATE CONTACTED |
|---|---|---|
| Gwen Washburn | County Commissioner | January 21, 2004 |
| Lynn Pearce | County Commissioner | January 21, 2004 |
| Norman Frey | Chairman | January 21, 2004 |
| Alan Kalt | Acting County Manager | January 21, 2004 |
| Leonard Waking | Fire Management Officer, Bureau of Land Management | January 26, 2004 |
| Stuart Cook | FMO Fallon NAS | February 23, 2004 |
| Ed Harris | Equipment Supervisor, Fallon/Churchill VFD | March 1, 2004 |
| Steven Edgar | Fire Mitigation and Education Specialist, Bureau of Land Management | July 15, 2004 |
| Phil Cammarata | Maintenance Manager, Nevada Department of Transportation | November 12, 2004 |
| Debbie Sherman | Weed Control Coordinator, Truckee-Carson Irrigation District | November 17, 2004 |

# *Appendix D*

*Homeowner Guidelines*

# DEFENSIBLE SPACE

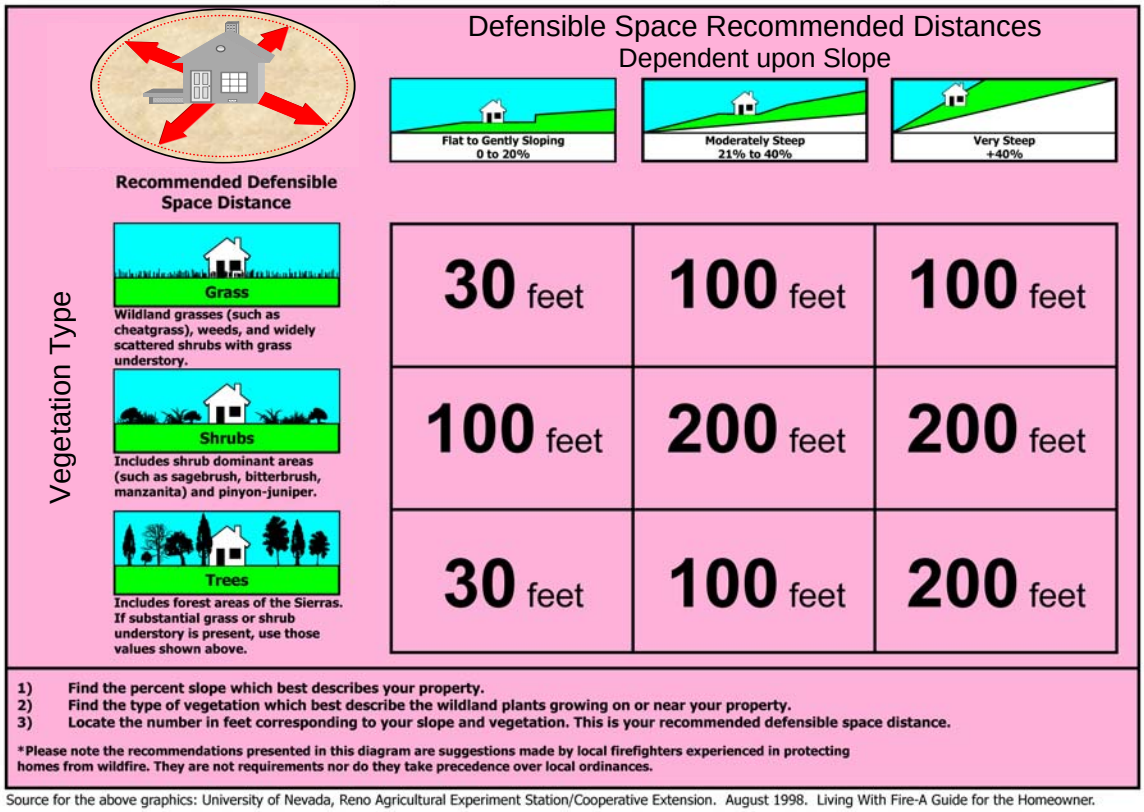
## A FACT SHEET FOR CHURCHILL COUNTY HOMEOWNERS

**Defensible space** refers to a **minimum** 30-foot area around houses and other buildings where vegetation has been significantly reduced or removed. The purpose of creating defensible space is to reduce the risk of losing homes and other property improvements to a wildfire.

### *HOW TO CREATE DEFENSIBLE SPACE*

**STEP 1** **DETERMINE DEFENSIBLE SPACE DISTANCE.** Use the table below to determine the minimum distance for defensible space, dependent upon slope and native vegetation type surrounding homes.

**Standard Defensible Space Guidelines**




Source for the above graphics: University of Nevada, Reno Agricultural Experiment Station/Cooperative Extension. August 1998. Living With Fire-A Guide for the Homeowner.

**STEP 2** **REMOVE.** Cut and remove all dead, diseased or dying trees and shrubs from within the defensible space area. Remove selected trees and shrubs to eliminate continuous fuels extending up to the house. Also remove any flammable debris and firewood piles from within the minimum defensible space distance. Weeds or other dry vegetation should be removed from underneath porches and decks. Eliminate any flammable vegetation or debris within 10 feet of propane tanks. Remove leaves and debris from rain gutters.

**STEP 3** **REDUCE.** Reduce vegetation height of shrubs under mature trees to decrease "ladder" fuels. Prune low tree branches to a minimum height of four feet and prune branches within 15 feet of structures and chimneys. Reduce accumulations of annual grasses (cheatgrass) through mowing or pre-emergent selective herbicide treatments in the fall. Reduce the accumulation of vegetation around wood fences through mowing or plant removal.

**STEP 4** **REPLACE.** Substitute flammable vegetation such as juniper, sagebrush, and rabbitbrush with fire resistant plants. Replacement plantings may include low stature shrubs, decorative rock, lawn, flowerbeds, and succulent vegetation. Irrigation of vegetation throughout the fire season will decrease plant flammability.

**STEP 5** **DISPOSE.** It is essential that all tree branches, shrubs, and other plant biomass be removed from the site immediately to a safe disposal area. This material dries rapidly and can contribute to the fire hazard problem if allowed to remain on the premises.

**STEP 6** **MAINTAIN.** Maintenance of the defensible space area requires an annual review of fuel reduction guidelines around the home. Action should be taken to maintain an effective defensible space area.

***Remember, good defensible space is –***
***Lean – There are only small amounts of flammable vegetation***
***Clean – There is no accumulation of dead vegetation or flammable debris***
***Green – Existing plants are healthy, green, and irrigated during fire season***

(Source: Living With Fire…In the Big Sagebrush/Bitterbrush Environment. University of Nevada Cooperative Extension. Produced by Ed Smith and JoAnne Skelly.)

# HOMEOWNER'S ANNUAL CHECKLIST

## A FACT SHEET FOR CHURCHILL COUNTY HOMEOWNERS

This checklist includes actions homeowners can perform annually to help create a fire safe home and community.

- ❑ Check all address signs for ease of visibility. Metal signs with four-inch high reflective numbers are recommended for visibility by emergency responders.

- ❑ Continue clearing of all trees underneath and adjacent to overhead power lines and poles. This includes the poles and lines to individual parcels. Trees that can touch or blow into the power lines can easily be trimmed or removed, and maintained to reduce fire hazard.

- ❑ Remove shrubs and trees for a distance of ten to 30 feet from propane tanks.

- ❑ Remove all tree limbs within at least 15 feet of chimneys, decks, and open overhangs.

- ❑ Remove woodpiles, obvious accumulations of trash, pine needles or other debris from defensible space areas.

- ❑ Remove all dead and diseased branches. After initial emergency treatments, it is recommended that tree limbing occur during late fall and winter to prevent disease and attacks by pests.

- ❑ Harvested vegetation and trimmings must be immediately removed from the premises to assure that fuel reduction treatments are effective. All harvested biomass should be moved to a predetermined disposal area or safe zone approved by the Fire Department.

- ❑ All soil disturbances including those during biomass removal should be broadcast seeded according to the recommended species and rates provided in Appendix E.

- ❑ Where possible, improve driveway access to assure an adequate turning radius for firefighting apparatus.

- ❑ Clear rain gutters of leaves, needles and other debris. Screen vents to prevent any embers from entering attics in the event of a wildfire.

- ❑ Check hoses, valves, and other water equipment to assure operability should a fire occur.

- ❑ During high precipitation years, when growing conditions produce exceptional amounts of weeds, care should be taken to reduce the height of fire-prone vegetation, particularly weeds and grasses that carry fire to the adjacent shrubs. Implements such as weed-eaters work well for this job.

# *Appendix E*

*Community Guidelines*

## Sample County Building Department Requirements for Fire Safe Community Development

1. A complete fire flow water system capable of meeting the residential calculated fire flow requirements as prescribed by the Uniform Fire Code Appendix JII-A shall be installed.
2. All fire hydrant locations shall be reviewed and approved by the county building department.
3. All roadways within the project shall meet requirements of paved all-weather surface, Uniform Fire Code Article 9, Section 901 and 902 conditions, and shall be designated no parking zones where roads are less than 24 feet wide. If steep roads prevent constructing 24-foot wide roads, then turnouts must be installed every ¼ mile. Homes with long private drives must have a turn around (50-foot radius), or a horseshoe drive or a hammerhead drive that allows large engines to turn around. Cul-de-sacs shall have a minimum 50-foot radius.
4. There shall be a minimum of two-ways in and two-ways out of the development. These shall be completed prior to the delivery of any combustible materials to the project site.
5. A fuels management/reduction program around all structures shall be maintained a minimum thirty feet in accordance with Uniform Fire Code Appendix 11-A-16.
6. Clearance of vegetative growth from roadways must be performed in accordance with Uniform Fire Code Appendix JI-A-17.
7. Developers should submit a fuels modification plan for the entire acreage. A property line twenty-foot minimum fuelbreak shall be completed prior to approval of any final map.
8. All new structures shall be constructed with fire retardant roofing materials in compliance with Nevada Revised Statute 472.100.

## SAMPLE BURN PERMIT

(Issued in accordance with the provisions of NRS chapter 473.090)

Name: _____

Address: _____

Land Owner: _____

Location of Authorized Burning: _____

Type of Burning Authorized: _____

***PERMITTEE UPON ACCEPTANCE OF THIS PERMIT AGREES TO THE FOLLOWING CONDITIONS:***

1. The permittee shall notify Fire Dispatch at _____, each and every day of their proposed burn. Dispatch will advise whether it is a Burn Day or a No Burn Day.
2. Burn hours: 9:00 a.m. to 3:00 p.m. with all flames and hot ashes totally extinguished by 3:30 p.m. **No exceptions!** Violation of burn hours results in a $_____ fine.
3. Do no conduct burning during windy conditions. Cease burning should wind conditions at burn site exceed 15 mph. If in doubt, don't burn!
4. Smoke shall not discharge material which has an offensive odor or which may be injurious or detrimental to health and safety of others.
5. Do not burn garbage (waste food products, dead animals, fish or fowl), oil, rubber, plastic, tar paper or asphalt products, including hay-baling twine.
6. Burn in open area, at least 30 feet from structure or combustible surface.
7. Burning of excessive amounts of combustibles is prohibited. Limit stacks to piles of three feet high and five feet in diameter. Piles must be a proper distance from each other. Burn one at a time to maintain control of the burn. Cut, pile, and burn weeds as described above. Burning standing grass and weeds is prohibited.
8. Use of burn barrels is prohibited at any time - $_____ fine for violation.
9. A break to mineral earth of not less than ten feet shall be maintained around all fires.
10. A garden hose attached to a pressurized water supply shall be immediately available and functional for emergency use. In addition, have available a shovel and rake, hoe or Pulaski.
11. A copy of this burn permit must be in the responsible person's possession at the burn site. Failure to call Dispatch the day of your burn or failure to have burn regulations at the burn site or failure to properly extinguish your fire is a citable offense. First citation is $_____. The expenses of fighting fires that result from a violation of this code shall be a charge against the person whose violation of this code caused the fire. Damages caused by such fires shall constitute a debt of such person and are collectible by the chief in the same manner as in the case of an obligation under a contract, expressed or implied.

Period of this permit: From _____, 20____, to _____, 20____, inclusive.

**TO EXTEND THE TIME PERIOD A NEW PERMIT MUST BE OBTAINED**

I understand and agree to comply with the provisions of this permit:

_____

*Permittee Signature*

Permit issued by: _____ Date: _____

Title: _____

Area was inspected by: _____ On: _____

***Persons participating in open burning activities do so at their own risk and may be held responsible for the costs of suppressing escaped or uncontrolled fires.***

These regulations issued in compliance with the Nevada Department of Environmental Protection and the Sierra Front Wildfire Cooperators. Reference: 1997 Uniform Fire Code, Appendix II-A, Section 24, Section 105.1, and Section 1102.3.

## Noxious Species: Russian Knapweed

Russian knapweed (*Acroptilon repens*) is a state listed noxious weed. Together with other state-listed members of the same genera: Diffuse, Spotted and Squarrose knapweed; these weeds fall under the definition of noxious: "any species of plant which is, or is likely to be, detrimental or destructive and difficult to control or eradicate" by the Nevada Revised Statutes (NRS 555.005, Nevada Administrative Code 555.010). The provisions of the NRS and Nevada Administrative Code designate noxious weed control as the responsibility of every landowner or occupant. The law also provides for the establishment of weed districts, which have authority to control noxious weeds.

Within Churchill County, the Mosquito and Weed Abatement District handles weed control for the County. The district has authority to control noxious weeds along roads and right-of-ways. They commonly treat puncturevine (*Tribulus terrestris*), annual kochia, saltcedar (*Tamarix rammosissima*), African rue (*Peganum harmala*), Russian knapweed, and tall whitetop (*Lepidium latifolium*). The Abatement District is currently mapping noxious weeds in the County and participates in weed control programs with NDOT, Truckee-Carson Irrigation District (TCID), the County Road Department, the U.S. Fish and Wildlife Service, and the Lahontan Conservation District. TCID controls weeds along the Carson River, ditches and drain rights-of-ways.

Russian knapweed was noted as growing in the Fallon Outskirts and the Stillwater area. Though knapweed was not found in all communities, it can be prevalent in heavy soils, especially along ditches and formerly irrigated fields. It is an invasive perennial plant that can spread rapidly if control measures are not enforced. Though not typically a high fuel hazard, Russian knapweed's propensity to spread and form high-density patches highlights the responsibility of all landowners to work together to decrease the current rate of spread and density of the species. For more information about how private landowners can get involved in the control effort call Nancy Upham, Mosquito and Weed Abatement District Manager at (775) 423-2828, or the Natural Resources Conservation Service at (775) 423-5124.

Nevada Project WEEDS

Fact Sheet 98-73

# WANTED— Dead, Not Alive!

This outlaw weed is hiding out! Find it. Eradicate it.

# Russian Knapweed

Alias: *Centaurea repens*

Russian knapweed, like other knapweeds, is native to Eurasia. It is a perennial in Nevada and can be found in cultivated fields, orchards, pastures, roadsides, and rangelands. It prefers areas where the water table is within 20 feet of the surface. It can easily dominate cultivated fields and rangelands where its deep roots penetrate to free water. Transporting infested soils and moving contaminated equipment spreads this weed. Russian knapweed is listed as a noxious weed by Nevada Administrative Code.

*This deep-rooted perennial can easily dominate cultivated fields and rangelands.*

## Distinguishing features:

- Grows 18 inches to 3 feet tall.
- Stems are erect and multi-branched.
- Leaves are blue-green, toothed, and covered with fine hair.
- Showy pink flowers bloom from June to September. The pearly bracts at the base of the flower head are rounded with papery margins. Flowers are small, ¼ to ½ inch, cone shaped, and usually pink, but can be white to purple.
- Dense colonies can form from adventitious roots.

## Take action:

- Report its location to the land owner, gardener, manager or park ranger.
- Avoid walking on, driving on, or camping in Russian knapweed-infested areas and remove all weed seeds before moving out of an infested area.
- Dispose of the seeds, shoots, and roots in a sealed garbage bag through the trash. Herbicides may be available to kill this plant.
- Do not purchase, move, or use contaminated soil.

## Your reward:

A cleaner, healthier environment and the satisfaction that you have helped make the difference!

## For more information about controlling this and other invasive weeds, contact:

Nevada Cooperative Extension
775-784-1334;
Nevada Division of Agriculture
Bureau of Plant Industry,
775-688-1180; or
Your local Weed District manager or Conservation District:

University of Nevada, Reno Cooperative Extension
A County-State-Federal Partnership

# Weed Profile: Russian Knapweed

**COMMON NAME:** Russian Knapweed
**BOTANICAL NAME:** *Acroptilon repens*
**FAMILY:** Asteraceae (Sunflower family)
**DESCRIPTION / IDENTIFICATION :** Grows 18 to 36" tall. Deeply lobed leaves are 2 to 4" long with gray pubescence. Flowers are pink, lavender, or white, and are produced from June to September. Rosettes have toothed leaves covered with fine hair.

**NATIVE TO:** Ukraine, S.E. Russia, Iran, and Kazakh to Mongolia.

**CURRENT DISTRIBUTION:** Found in most western states in cultivated fields, pastures, disturbed sites, roadsides, waste areas, and dry rangelands.

**LIFE CYCLE CLASSIFICATION :** Perennial; emerges in early spring.

**MOST COMMONLY REPRODUCES ITSELF BY:** Seed and rhizomes.

**NUMBER OF SEEDS/ PLANT:** 50 to 500 per shoot.

## Control Methods

**MECHANICAL:** Use mowing in combination with herbicide treatments and then tilling to overcome allelopathic effects. Continuous tillage is somewhat effective, especially when combined with an herbicide program. Hand-pull only while wearing gloves.

**CULTURAL:** A good management program is essential. Seed competitive perennial grasses after control measures. Avoid overgrazing pastures and range. Use proper irrigation and fertilization.

**BIOLOGICAL:** Russian knapweed gall nematode.

**CHEMICAL:** Picloram (Tordon®, restricted use) should be applied after the first killing frost. Till the following spring to remove leaves, then treat again as needed with picloram. Control may be achieved in 2 to 4 years. Clopyralid (Stinger®; Transline®; Curtail® (includes 2,4-D)) works well during flowering, but is not yet registered for use in Nevada. Use chlorsulfuron (Telar®), 2,4-D, and/or dicamba (Banvel®) with cultural practices.

**ADDITIONAL COMMENTS:** Exhibits allelopathy. Toxic to horses, with irreversible damage resulting in the inability of the horse to pick up and chew food. Does not appear to affect cattle and sheep.

# SEED MIX AND PLANTING SPECIFICATIONS

**Revegetation Specifications for Fuel Reduction Areas and Greenstrips – Churchill County**

| COMMON NAME | SCIENTIFIC NAME | DRILL SEEDING RATE (PLS LBS./ACRE) | BROADCAST SEEDING RATE (PLS LBS./ACRE) |
|---|---|---|---|
| 'P-27' Siberian wheatgrass* | *Agropyron fragile* spp. *sibericum* | 2.00 | 4.00 |
| 'Nezpar' Indian ricegrass | *Achnatherum hymenoides* | 2.00 | 2.00 |
| 'Ephraim' crested wheatgrass* | *Agropyron cristatum* | 2.00 | 4.00 |
| Bottlebrush squirreltail | *Elymus elymoides* | 1.50 | 2.00 |
| Scarlet globemallow | *Sphaeralcea coccinea* | 0.25 | 0.25 |
| 'Immigrant' forage kochia* | *Kochia prostrata* | 2.00 | 3.00 |
| | **TOTAL PLS pounds per acre** | **9.75** | **15.25** |

**Species marked with an asterisk are nonnative plants, but have been included because of their ability to establish and endure a variety of site conditions. In addition, they are recognized for fire retarding qualities.*

The seed mixture provided is for treating all disturbed areas, and areas cleared for fuel reduction and greenstrip purposes. All seeds should be thoroughly mixed and seeded together at the same time. Drill seeding is recommended where feasible. Drill rows should be spaced twelve inches apart and seeds should be planted at a depth of ½ inch. Broadcast seeding is recommended for rocky, steep, or small treatment areas. The seed can be broadcast using hand held seeders such as a "Whirlybird" type seeder or a seeder mounted on a quad-runner. Continually mix the seed while seeding to equally distribute the small Indian ricegrass and forb seeds throughout the mix. Following the seed application, the seeds should be lightly raked to assure seed placement at an average depth of ½ inch. This can be done with hand held rakes or by pulling a drag or piece of chain link fence behind a truck or quad-runner in areas were less stones are on the surface.

These guidelines are provided as overall recommendations. However, site-specific evaluation of the treatment areas by a specialist from a land management agency, the Natural Resources Conservation Service, or the University of Nevada Cooperative Extension will provide even greater assurance for success.