

Carson City Community Wildfire Protection Plan

August 2023



INTRODUCTION

Carson City is in a region bordered on the west by the Carson Range. The region has a variety of vegetation ranging from timber to heavy sage brush. In the relatively dry region of east and southeast Carson City, the vegetation is grass and sagebrush that is highly flammable during the dry season. With this type of vegetation, Carson City is considered “at risk.” It has a higher wildfire risk to homes than 85.6 % of counties in the nation.

Source: Wildfire Risk to Communities updated November 25, 2020

With this type of risk, Carson City is eligible to apply for Community Wildfire Defense Grants. Carson City is considered an underserved county and is eligible to apply for cost-share waivers. It is identified as “disadvantaged” in the Climate and Economic Justice Screening Tool.

Source: Council on Environmental Quality, 2022, Climate and Economic Justice Screening Tool

Human life and welfare are values at risk to wildfire because of the buildup of hazardous fuels around communities and structures, poor emergency vehicle ingress and egress, major transportation routes and traffic flow, a large area to cover with the fire authorities, and fire suppression authorities. Economic values at risk include businesses, farmland, ranchland, grazing land, hunting and other recreational land, historic and cultural sites, and critical infrastructure.

The Healthy Forests Restoration Act (HFRA) of 2003 provides the impetus for wildfire risk assessment and planning at the county and community level. HFRA refers to this level of planning as a Community Wildfire Protection Plan (CWPP). The CWPP allows a community to evaluate its current situation with regards to wildfire risk and devise ways to reduce risk for protection of human welfare and other important economic or ecological values. The CWPP may address issues such as community wildfire risk, structure flammability, hazardous fuels mitigation, non-fuels mitigation, community preparedness, and emergency procedures.

The Project Team provided the collection of information used for the development of this CWPP. The specific goals of this CWPP and the Community Risk/Hazard Assessments are to:

- Assess the wildfire hazards present in each community on the Federal Register list of communities at risk in Nevada.
- Conduct fuel hazard mapping for high fuel hazard communities.
- Describe proposed risk and hazard mitigation projects in enough detail to aid communities in applying for future implementation funds.
- Distribute assessment results and proposed mitigation project descriptions in a format that is easy to update and useful for public meetings and other public education activities.
- Use the risk assessment results to identify priorities and recommendations.

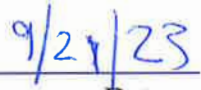
SIGNATURES OF APPROVAL

In accordance with the Healthy Forests Restoration Act of 2003, the following entities mutually agree with and approve the contents of the Carson City Community Wildfire Protection Plan (CWPP) 2023 update. The Carson City CWPP:

- Was collaboratively developed with representatives from local, state, and federal government,
- Identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatments that will protect at-risk communities and essential infrastructure, and
- Recommends measures that homeowners and communities can take to reduce the ignitability of structures.



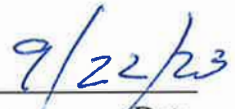
Lori Bagwell, Mayor, Board of Supervisors



Date



Sean Slamon, Fire Chief and Emergency Manager, Carson City Fire Department



Date



Kacey KC, State Forester, Nevada Division of Forestry



Date



Jon Bakkedahl, Deputy Emergency Manager, Carson City Fire Department



Date

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PARTNER AGENCIES AND COLLABORATION

The Project Team updating the Carson City Community Wildfire Protection Plan (CWPP) included a strong cadre of fire management agencies with a long history of cooperation and partnerships in wildfire suppression and prevention. The team was composed of experts in the fields of fire behavior and suppression, geographic information systems (GIS), and natural resource ecology, including the Carson City Fire Department (CCFD), US Forest Service, and Nevada Division of Forestry (NDF). The partner fire agencies in the plan area work cooperatively to provide the most successful response to wildland fire and hazardous fuels reduction. This includes sharing of resources, combined interagency dispatch centers, the utilization of closest forces regardless of jurisdiction, and providing training to all Nevada fire suppression forces.

The CCFD contracted a local consulting firm to update the 2009 Carson City CWPP, including the fire risk assessment in the wildland-urban interface (WUI). During the update process, along with specialists from NDF, the consulting firm collaborated with the Bureau of Land Management (BLM), the US Forest Service (USFS), CCFD, Carson City Building Department, and Carson City Public Works/Geographic Information Systems. This group developed the recommendations brought forward in this CWPP. In addition to specific recommendations that address conditions in each location, this CWPP includes city-wide recommendations to address conditions and needs common to all areas.

Continued public involvement is essential to accomplish the recommendations described in this CWPP and meet the objectives:

- Support and expand the concept of Fire Adapted Communities through the Firewise USA Program.
- Engage all stakeholders in preparing to withstand wildfire without loss of life or property.
- Improve firefighter safety and suppression effectiveness.
- Provide continuing education for homeowners on defensible/survivable space strategies.

Numerous agencies and individuals were involved in the planning and implementation of this effort:

- Nevada Division of Forestry (NDF),
- Bureau of Land Management (BLM),
- US Forest Service (USFS), and
- Carson City Fire Department, Building Department, and Public Works/Geographic Information Systems.

1.0 COMMUNITIES ASSESSED

The Carson City Community Wildfire Protection Plan (CWPP) is a follow-up to the Community Risk Hazard Assessment/Community Wildfire Protection Plan prepared for Carson City in 2009. Inventory and analyses methodology from the 2009 assessment were repeated in 2023 to allow for comparisons.

The Carson City Fire Department conducted inspections of all communities in Carson City to determine the total assessed rating and to provide a detailed analyses of community wildfire hazards; this enabled the Project Team to update recommendations for reducing fuel hazards on public and private property and in surrounding wildland-urban interface (WUI). The total assessed rating is derived by evaluating the suppression rating, the surrounding environment rating, and the structures rating of the community. The suppression rating evaluates features such as ingress and egress, water supply, and geographic features. The surrounding environment assessment includes evaluating vegetation, defensible space, and topography. The structures rating evaluates roofing materials, debris in gutters and siding. Each produces a rating of low, moderate, high, or extreme depending on the scoring of the three elements. Then the community is given an overall score.

Locations in Carson City included in this assessment fall into four quadrants:

- *Appendix A* contains reports for 26 northwest Carson City locations.
- *Appendix B* contains reports for 15 northeast Carson City locations.
- *Appendix C* contains reports for 7 southwest Carson City locations.
- *Appendix D* contains reports for 23 southeast Carson City locations.

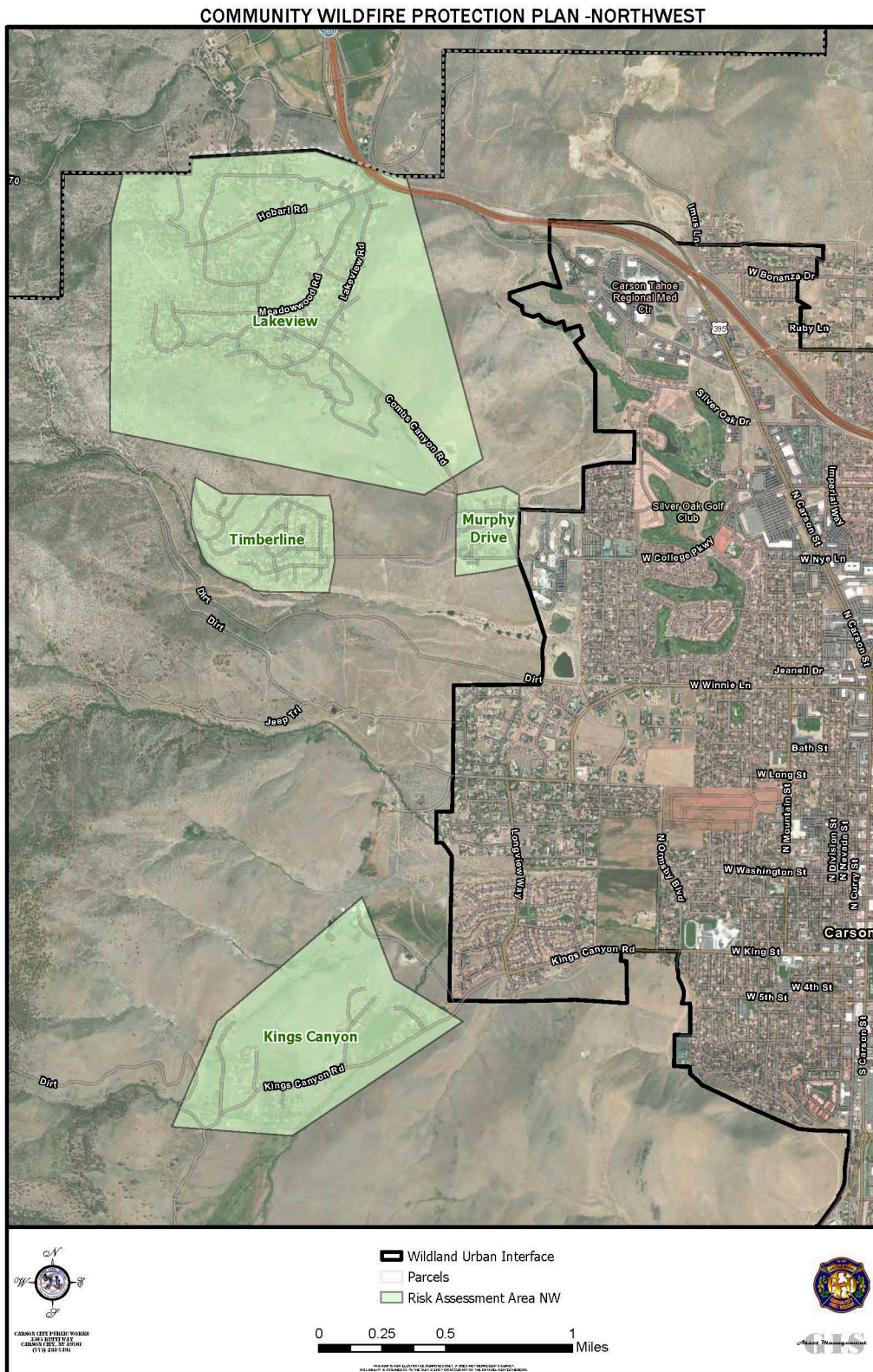
Section 5.0 Community Specific Reports contains tables summarizing the results of the assessments. Following are the 25 high-priority sites with their risk assessment scores:

1. Clear Creek – Southwest	181
2. Timberline – Northwest	153
3. Mexican Dam West – Southeast	152
4. Mexican Dam – Southeast	147
5. Lakeview – Northwest	145
6. Kings Canyon West – Northwest	144
7. Brunswick Canyon – Southeast	143
8. Dry Lake – Southwest	143
9. Murphy Drive – Northwest	132
10. Flint Drive – Southeast	123
11. East Goni – Northeast	120
12. South Deer Run – Southeast	120
13. West Goni – Northeast	119
14. South Snyder – Southeast	119
15. Bonanza – Northeast	115

16. Landfill – Southeast	115
17. Voltaire – Southwest	114
18. East Damon – Southeast	110
19. Cinderlite – Northeast	107
20. Vicky Lane – Southeast	106
21. South Edmonds – Southeast	104
22. East 5 th Street – Southeast	102
23. North Curry Street – Southwest	102
24. Lone Mountain – Northeast	99
25. Carson Colony – Southwest	98

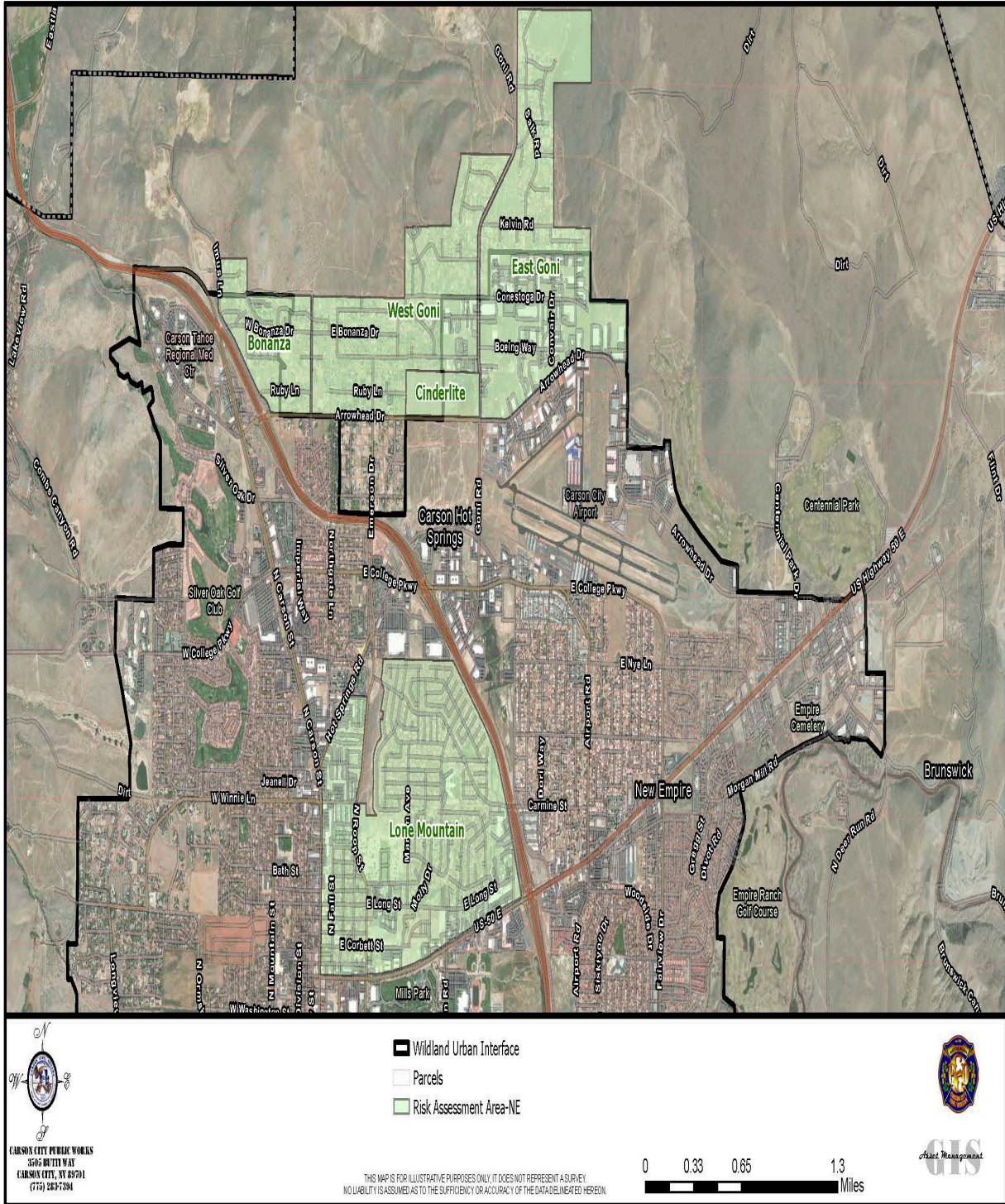
Sections 1.1 through 1.4 contain maps showing the locations of the high-priority sites in each of the four quadrants.

3.3 NORTHWEST QUADRANT



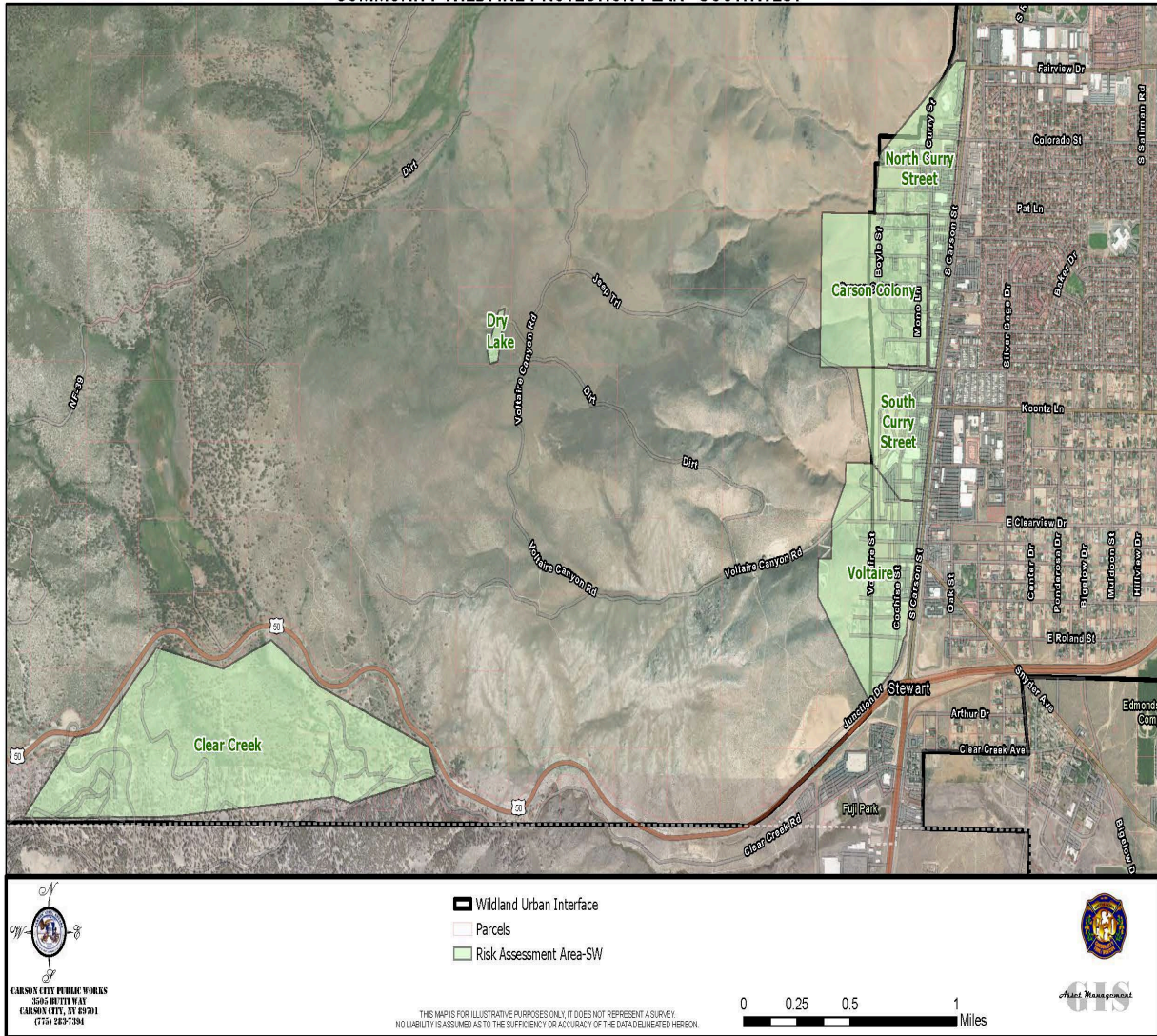
1.2 NORTHEAST QUADRANT

COMMUNITY WILDFIRE PROTECTION PLAN - NORTHEAST

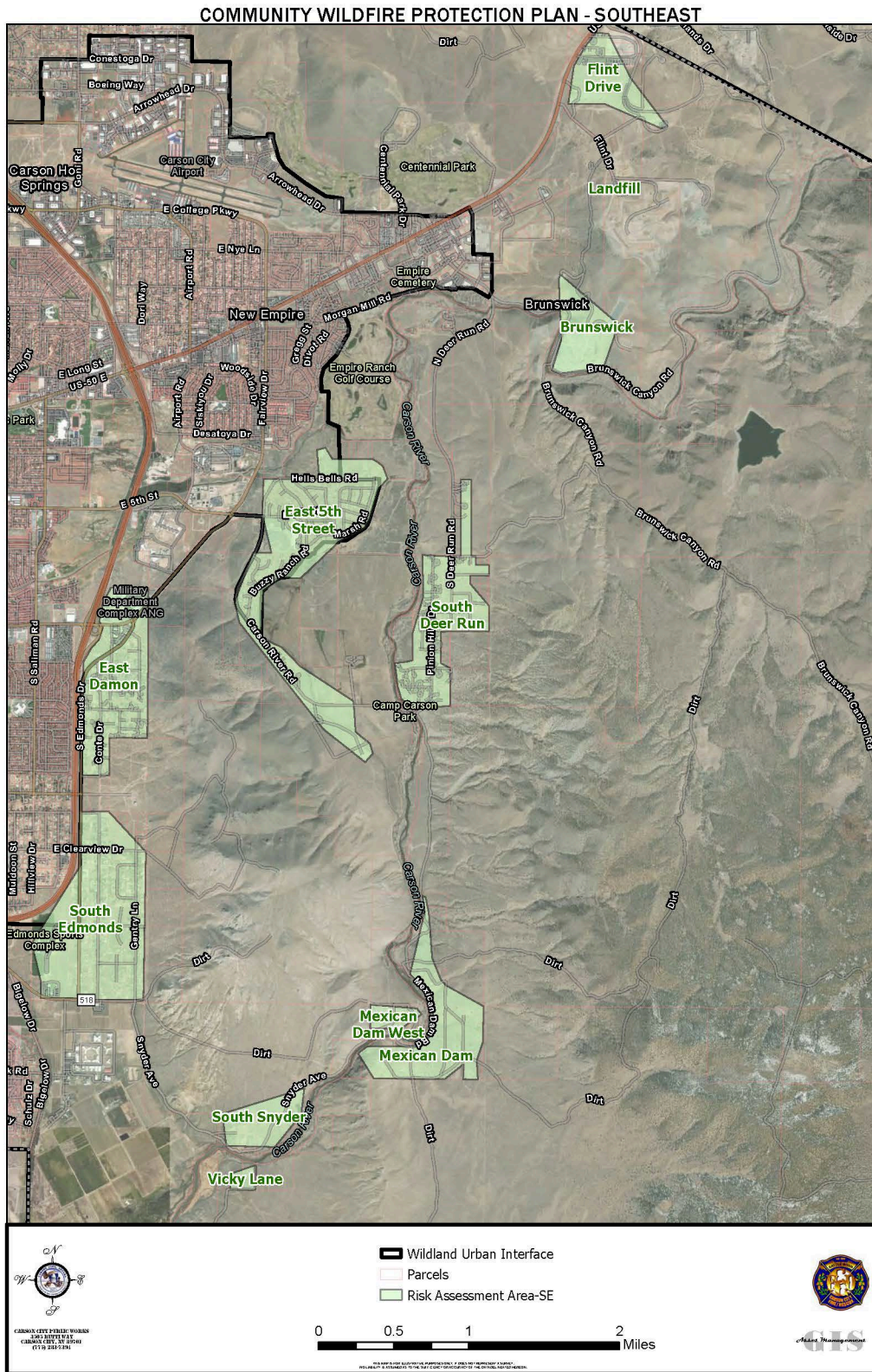


1.3 SOUTHWEST QUADRANT

COMMUNITY WILDFIRE PROTECTION PLAN - SOUTHWEST



1.4 SOUTHEAST QUADRANT



2.0 METHODOLOGY

2.1 BASE MAP DATA COLLECTION

The Project Team compiled and reviewed existing statewide geospatial data to create field maps for recording baseline data and data verification. Data sources for the maps were the Nevada Division of Forestry and the Bureau of Land Management. Datasets and sources utilized included:

- Land ownership,
- Vegetation classes,
- Fuel types,
- Fire history,
- Rangeland fire protection associations,
- Green strip projects,
- Community sites, and
- Drought maps.

2.2 COMMUNITY RISK/HAZARD ASSESSMENT

The wildland-urban interface (WUI) is the place where homes and wildland meet. This project focuses on identifying risks and hazards in the WUI areas in Carson City by assessing each community individually. Site-specific information for each community was collected during field visits conducted between March and June 2023. The predominant conditions recorded during these site visits provided the basis for the Community Risk and Hazard Assessment ratings found in *Appendices A, B, C, and D Community Wildfire Risk Assessments*.

To arrive at a score for the community, five primary factors that affect potential fire hazard were assessed:

1. Community design,
2. Construction materials,
3. Defensible space,
4. Fire suppression capabilities, and
5. Physical conditions that affect fire behavior, such as fuel loading and topography.

Following is a description of each of these factors and their relative importance in developing the overall score for the community. Individual community score sheets presenting the point values assigned to each element in the hazard assessment are provided in each community assessment.

Community Design

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 interface condition classes are used to categorize the wildland-urban interface.
- **Access:** Design aspects of roadways influence the hazard rating assigned to a community. A road gradient of greater than five percent can increase response times for heavy vehicles carrying water. Roads less than 20 feet in width often impede two-way movement of vehicles and fire suppression equipment. Hairpin turns and cul-de-sacs with radii of less than 45 feet can cause problems for equipment mobility. Adequately designed secondary access routes and loop roads in a community can lower a hazard rating. Visible, fire-resistant street and address identification and adequate driveway widths also reduce the overall community wildfire hazard rating.
- **Utilities:** Poorly maintained overhead power lines are a potential ignition source for wildfires. It is important to keep power line corridors clear of flammable vegetation, especially around power poles and beneath transformers. Keeping flammable vegetation cleared from beneath power lines and around power poles reduces potential hazards from damaged power lines. Power failures are especially dangerous to a community without a back-up energy source. Many communities rely on electric pumps to provide water to residents and firefighters for structure protection and fire suppression.

Construction Materials

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 strongly affect structure ignitability in the interface area. 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 ignition. Houses built with stucco exteriors and tile, metal, or composition roofing can withstand much higher temperatures and longer heat durations, thereby presenting a much lower ignition risk from firebrands or the proximity to advancing flames when defensible space conditions are adequate.
- **Architectural Features:** Unenclosed or unscreened balconies, decks, porches, eaves, or attic vents on homes can create drafty areas where firebrands and embers can accumulate, smolder, and ignite, rapidly spreading fire to the house. A high number of houses within a

wildland-urban interface area with these features imply a greater hazard to the community.

Defensible Space

The density and type of fuel around a home determines the potential fire exposure and the potential for damage to the home. A greater volume of trees, shrubs, dry weeds and grass, woodpiles, and other combustible materials near the home will ignite more readily, produce more intense heat during a fire, and increase the threat of losing the home. Defensible space is one of the factors that homeowners can most easily manipulate to improve the chances that a home or other property avoids damage or complete loss from a wildfire.

Fire Suppression Capabilities

Knowledge of the capabilities or limitations of the fire suppression resources in a community can help the 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 firefighters 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. Wildland firefighting requires specialized equipment.
- **Water Resources:** The availability of water resources is critical to fighting a wildland fire. Whether there is a community water system with adequate 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. Additionally, communities served by water systems that are dependent upon electricity for operation may be left defenseless in a power outage if backup power generation is not in place.

Physical Conditions

Physical conditions include slope, aspect, topography, fuel type, and fuel density. Except for changes to the fuel composition, the physical conditions in and around a community cannot be altered to make the community more fire safe. Therefore, 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 topographic features are also used to predict fire behavior. Steep slopes greatly influence fire behavior. Fire usually burns upslope with greater speed and longer flame lengths than on flat areas. Fire usually burns downhill at a slower rate and with shorter flame lengths than in upslope burns. West and south facing aspects are subject to more intense solar exposure, which preheats vegetation and lowers the moisture content of fuels. Canyons, ravines, and saddles are topographical features that are prone to higher wind speeds than adjacent areas. Fires pushed 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 in the event of a wildfire.
- **Fuel Type and Density:** Vegetation type, fuel moisture values, and fuel density around continuous vegetative fuels carry a higher hazard rating than communities situated in areas of irrigated, sparse, or non-continuous fuels. Several consecutive years of above normal precipitation will result in excessive cheatgrass growth and ground litter, ranging as high as two-to-four tons per acre. In Carson City, where a large percentage of BLM-administered lands have converted to cheatgrass following wildfires, these conditions, in combination with steep slopes or high winds, can create a situation in which the worst-case fire severity scenario can occur. Photographs of representative fuel types in the interface area in Carson City County are provided in *Appendices A, B, C, and D*.

2.3 FUEL HAZARD MAPPING

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 Project Team and comments from Carson City Fire Department staff were also used to develop recommendations in areas without recent wildfire activity where a significant buildup of fuels or expansion of urban development into the interface area represents a growing risk.

The Bureau of Land Management Nevada initially generated fuel hazard maps. A total of 65 vegetation types were mapped statewide and reclassified into four wildfire hazard categories (low, moderate, high, and extreme) based on the anticipated fire behavior for each vegetation cover type.

The Project Team visited high and extreme hazard communities and verified the BLM fuel hazard information by comparing the hazard ratings on the existing fuel hazard map to vegetation, slope, and aspect conditions directly observed in the field. Where necessary, changes to the ratings were drawn on the maps and used to update the wildfire hazard potential layer of the project database.

Interviews with Fire Personnel: The Project Team interviewed local fire department personnel and local fire management officers to obtain information on wildfire training, emergency response time, personnel and equipment capability and availability, evacuation plans, pre-attack plans, and estimates of possible worst-case scenarios. Local fire personnel reviewed maps showing the history of wildfires and provided local information.

Recommendation Development: There are a wide variety of treatments and alternative measures 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 of the risk of fires and how to reduce those risks, and coordination among fire suppression agencies to optimize efforts and use of resources.

2.4 DROUGHT HAZARD MAPPING

The State Climate Office created the Nevada Drought Update to provide a statewide drought summary. Updates to this report occur monthly during widespread extreme or exceptional drought in Nevada. Data used to create drought hazard maps is at the US Drought Monitor along with more maps and visualization tools. Updates to the map take place every Thursday to present the most up-to-date information.

For more information, see the US Drought Monitor website at <https://www.drought.gov/data-maps-tools/us-drought-monitor> and see the Living with Drought website at <https://livingwithdrought.com/>

3.0 DESCRIPTION OF CARSON CITY

3.1 DEMOGRAPHICS, LOCATION, TOPOGRAPHY, AND CLIMATE

Carson City is approximately 30 miles south of Reno, Nevada, and has an estimated population of 59,000 (2021). It is on the western side of the state and shares borders with Washoe County on the north, Douglas County on the south, and Lyon County on the east. Carson City is roughly 100,600 acres in size. Most of Carson City’s metropolitan area is in the valley (Eagle Valley) and surrounded by several mountain ranges.

The Carson River runs from the southern end to the eastern end of the city, flowing in a northeast to east direction toward Lyon County and Lahontan Reservoir. The region is classified as High Desert with an average annual precipitation of 11 inches. The largest mountain range is the Carson Range located immediately to the west of Carson City. Sagebrush and Rabbitbush are the main native vegetation, and the mountains are mostly timber vegetation.

3.2 WILDFIRE PROTECTIONS RESOURCES

The following table lists Carson City Fire Department wildfire resources and equipment available for response to a wildland-urban interface fire.

Type of Equipment	Amount	Cooperating Partner (Resource Location)
Type 3/5 Engines	4	Carson City Fire Department
Type 1 Engines	3	
Water Tenders (Includes Public Works)	3	
Chief Officers	7	
Rescue Ambulances	5	

The following table lists Carson City Consolidated Municipality wildfire resources, cooperating partners, and equipment to dispatch for first response to a wildland-urban interface fire on a high hazard day.

Type of Equipment	Amount	Cooperating Partner (Resource Location)
Type III or IV Engine	17	Sierra Front Interagency Dispatch Minden Closest available resources from the following agencies: <ul style="list-style-type: none"> • Sierra Forest First Protection District (NDF) • BLM • USFS
Battalion Chief/Duty Officer	11	
Water Tender	1	
Dozer	0	
Hand Crew	4	
Single Engine Air Tanker (SEAT)	4	
Air Attack	1	
Helicopter	3	

Source: Watson Quiroz, Michael – FS, NV Michael.WatsonQuiroz@usda.gov

3.3 WILDFIRE HISTORY

Significant wildland fires have occurred in and around Carson City. The database *Firehouse* reports that since 2009, Carson City Fire Department has responded to 538 wildland fires. Ignition risks for wildfires fall into three categories: lightning, human-caused, and undetermined. Since the last Carson Wildland Protection Plan (CWPP) update in 2009, there have been a total of 2,735 fires.

Fires located within Carson City Jurisdiction

Number of Fires	Cause	Percentage
1,130	Human	41
1,394	Lightning	51
211	Undetermined	8

Source: BLM Nevada Fire History provided by NDF

Ignition Risk Factors: Wildfire ignition risks fall into two categories: natural and human caused. Human caused ignitions can come from a variety of sources such as burning material thrown out of vehicle windows or ignited during auto accidents, off-road vehicles, railroads, arcing power lines, agricultural fires, unattended campfires, debris burning in piles or burn barrels, target shooting, and fireworks.

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 the amount of dominant vegetation replacement (fire severity). 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 10-to-20 or more years to reestablish on burned areas. During the interim, these areas can provide the conditions for establishment and spread of invasive species and in some cases inhibit sagebrush reestablishment. The most common invasive species that reoccupies burned areas in Nevada is cheatgrass.

3.4 NATURAL RESOURCES AND CRITICAL FEATURES POTENTIALLY AT RISK

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

Historical Registers: The effects of fire on cultural and historical resources depend upon site-specific factors such as fuels, terrain, and cultural or historical buildings or resources present. The Lakeview House, U.S. 395 South of East Lake Blvd. is in the wildland-urban interface and will be negatively affected by wildfire. There are 20 sites in Carson City listed on the Nevada State Register of Historic Places (list updated 12-21-22).

1. Brougher Mansion, 204 West Spear Street
2. Carson Brewing Company
3. Carson City Post Office, 401 North Carson Street
4. Carson Hot Springs, 1500 Hot Springs Road
5. Colcord, Gov. Roswell K. House, 700 West Telegraph Street
6. Foreman-Roberts House, 1217 North Carson Street
7. Governor's Mansion, 606 Mountain Street
- 8. Lakeview House, U.S. 395 South of East Lake Blvd.**
9. McKeen Motor Car #70, Nevada State Railroad Museum
10. Lew M. Meder House, 308 North Nevada Street
11. Nevada State Capitol, 101 North Carson Street
12. Nevada State Printing Office, 1010 South Fall Street
13. Nye, Gov. James W., Mansion, 108 North Minnesota Street
14. Ormsby-Rosser House, 304 South Minnesota Street
15. Rinckel Mansion, 102 North Curry Street

16. Saint Charles-Muller's Hotel, 302-304-310 South Carson Street
17. Sears-Ferris House, 311 West Third Street
18. US Mint at Carson City, 600 North Carson Street
19. V & T Combination Car #21, 2180 South Carson Street
20. V & T Loco (The Dayton & The Inyo), NE corner of Colorado and Carson Streets

Natural Resources and Recreation: Carson City offers a wide range of outdoor recreation opportunities that depend on healthy rangelands and environments. Camping, fishing, touring, hiking, mountain biking, and wildlife viewing are some of the outdoor activities that contribute to the local economy.

Sensitive Plants: While rare plants often inhabit patches of unique habitat types within the larger landscape, in Carson City County, several rare species are associated with mid-elevation pine woodlands (e.g. Washoe tall rockcress, Carson Range buckbrush) and low elevation, rocky, sandy (often granitic) habitats in sagebrush and pinyon-juniper zones (e.g. Carson Valley monkeyflower, Nevada suncup, sagebrush pygmy leaf, etc.) that may not stand out as unique to a resident of this area at first glance. Some are annuals and may not be visible at all times of year. Therefore, consideration of Nevada Division of Natural Heritage (NDNH) data and completion of appropriately timed biological surveys prior to approving ground disturbance, especially in previously undisturbed areas, is crucial to preserving local biodiversity. Habitat that appears common may contain biological treasures.

The 14 known at-risk species currently known in Carson City are subject to change based on new information; therefore, it is recommended that the wildfire management plan considers proactive habitat protection and management measures for any species considered At-Risk by NDNH and that they periodically consult the Carson City - NDNH Track List available on their website under the Explore Species Tool à Species List Search.

At Risk Plant Species in Carson City include:

1. Margaret's Rushy milkvetch,
2. Lavin eggvetch,
3. Washoe tall Rockcress,
4. Carson Range buckbrush,
5. Steamboat monkeyflower,
6. Carson Range draba,
7. Nevada suncup,
8. Slide Mountain buckwheat,
9. Starcup,
10. Sagebrush pygmy leaf,
11. Shevock bristle moss,

12. Whitebark pine,
13. Tahoe Yellow Cress, and
14. Carson Valley monkeyflower.

Source: Nevada Division of Natural Heritage (NDNH)

Sensitive Species: Carson City is home to many species with critical habitats managed by various Federal, State, and local agencies.

Mammals:

- North American Wolverine
- Sierra Nevada Red Fox

Birds:

- California Spotted Owl
- Greater Sage-grouse
- Yellow-billed Cuckoo

Migratory birds:

- American White Pelican
- Bald Eagle
- Black Tern
- California Gull
- Cassin's Finch
- Clark's Grebe
- Evening Grosbeak
- Franklin's Gull
- Golden Eagle
- Lesser Yellow
- Lewis's Woodpecker
- Long-eared Owl
- Marbled Godwit
- Olive-sided Flycatcher
- Pinyon Jay
- Rufous Hummingbirds
- Sage Thrasher
- Western Grebe
- Willet

Amphibians:

- Sierra Nevada Yellow-legged Frog

Fishes:

- Cui-ui
- Lahontan Cutthroat

Insects:

- Carson Wandering Skipper
- Monarch Butterfly

3.5 FIRE HAZARD REDUCTION PROJECTS

Multi-Agency Collaborative Fuel Reduction Treatments

The Carson City Fire Department Wildland Fuels Management Program/Wildland Crews collaborate with the Nevada Division of Forestry (NDF), the BLM Sierra Front Field Office, local fire protection districts, and county fire departments to install and maintain fuel reduction treatments and fuel breaks around Carson City. Primary treatments include hand thinning and mastication along county boundaries on city, private, and federal lands.

The Sheep Program is another multiagency collaborative fuel reduction project started in 2006 following the Waterfall Fire of 2004 which burned the west side of Carson City as well as several homes and structures. To mitigate the flush of fine fuels and invasive annuals such as cheatgrass that grows following a fire, Carson City worked with the US Forest Service, University of Nevada Reno Cooperative Extension, Nevada Division of State Lands, and some private landowners to identify a contiguous project area at the wildland-urban interface (WUI). Recently, the Washoe Tribe of Nevada and California also joined the project for inclusion of tribal lands.

Altogether, the Sheep Program project area spans approximately 2,000 acres, covering the west side of Carson City from Voltaire Canyon to the south and behind the Carson Tahoe Medical Center to the north. Each year, approximately 900 to 1,500 sheep graze the project area from early April to the end of May, grazing on cheatgrass, invasive annuals, and nuisance weeds as well as perennial grasses. The goal of the program is to reduce fuel on the landscape to reduce the risk of catastrophic wildfire at the WUI and give first responders more time to respond to an emergency. The sheep reduce an estimated 137 to 228 tons of fuel from the landscape! (Sheep eat up to five pounds of food per day).

Southern Nevada Public Land Management Act (SNPLMA) of 1998 (Public Law 105 - 263)

The BLM Hazardous Fuels Program Projects reduce hazardous fuels on public lands. SNPLMA funds these fuels management programs to help protect valuable natural resources and create a safer environment for the public and wildland firefighters in a wildfire. As part of SNPLMA 2018, CCFD was awarded \$2,036,493 to implement a Hazardous Fuels Reduction program. CCFD and its residents have learned about the importance of defensible space, methods to

achieve and maintain defensible space, and how to organize and motivate other residents and neighbors to reduce fuels around their homes.

Hazardous Fuels Collection: CCFD collected an estimated 1,000 tons of biomass over six years from the Defense Zone in the wildland-urban interface in Carson City. Funds were used to deliver, pick-up, and dump collection bins used by homeowners to create defensible and survivable space. By reducing the amount of fuel within the communities, ignition sources were reduced, lowering fire intensities and flame lengths while fostering a healthy and resilient ecosystem.

Hazardous Fuels Reduction: CCFD targets to treat 850 acres per project period in the wildland-urban interface surrounding Carson City to reduce hazardous fuels and to protect communities vulnerable to catastrophic loss in a wildfire. Tri-County Fuels Reduction treated 1,900 acres of hazardous fuels within Carson City, Douglas County, and Washoe County to reduce the risk of catastrophic wildfire and move toward a natural fire regime. CCFD has implemented free defensible space inspections and uses a fuels collection (trailer/dumpster) program. The department intends to continue this program through April 2028.

NV Energy Project

In Fall 2019, NV Energy began working with the State of Nevada and local government fire agencies to develop a program to reduce the risk of fires related to NV Energy's electrical infrastructure, such as removal of vegetation around power poles and within their easements as required by NRS 474.580 and the 2018 International Wildland Urban Interface Code. The result is a long-term plan to identify areas of highest fire risk and prioritize elimination of fire hazards in those areas.

In October 2020, NDF awarded CCFD funds for 2.5 years to conduct vegetation management of ground fuels, clearing approximately 110 miles of brush and other debris within NV Energy's transmission and distribution lines throughout Carson City to reduce hazards and create combustible free space. Work took place on a combination of private and public lands and focused on the Voltaire Canyon area, north side of Carson City, Kings Canyon area, and east of the Carson River in the Sierra Vista area. In addition, crews have partnered with many local fire protection districts and county fire departments to build fire breaks between Douglas County and Carson City, Sand Harbor/Bottom Stateline to top of Kingsbury Grade, Virginia City to South Reno, and East Valley to Yerington.

This fuels reduction work is proactive and seeks to protect communities from fire within those same areas. NRS 474.580 with NV Energy has the purpose of continuing the collaborative relationship between NV Energy and CCFD to facilitate hazardous fuels management, stand-by

services, and emergency response. An ancillary benefit to this agreement is that the positions funded by this program can and currently assist existing CCFD resources in responding to wildfires and other emergencies. When those emergencies occur, the fuels management crew performs as wildland firefighters and are deployed to initial attack and to assist in mop-up and rehabilitation functions, releasing Advanced Life Support and “all hazard” resources for Carson City coverage earlier than previously possible. During those times, the crew is charged against other funding mechanisms, including Carson City’s budget, CCFD, and/or billed to responsible outside agencies.

Clear Creek Critical Watershed Project

Nevada Division of Forestry (NDF) has assisted private landowners, the Nature Conservancy, Nevada State Lands, and Nevada State Parks to reduce the risk of wildfire in the Clear Creek drainage along Highway 50 between Carson City and Lake Tahoe. This area is at the intersection between the Sierra Nevada mixed conifer forests and the Great Basin rangelands. Lightning and human caused wildfires are of great concern because of high fuel loading, the local Zephyr winds, the number of homes present, and Clear Creek’s importance as a watershed and drinking source to Carson City.

NDF accomplished mastication on over 50 acres of private property around Clear Creek in 2020. Mastication focused on shrub fields that grew back after previous fires and forested areas that have not burned in over one hundred years. Areas covered with sprouting shrub species such as manzanita and tobacco brush were masticated at 100% as these species grow back quickly from the cut stumps. Areas covered with non-sprouting shrub species such as sagebrush and bitterbrush were masticated at a rate of approximately 50% to create mosaics and space in between shrubs to reduce fuel loading and fire risk while maintaining wildlife habitat, preventing erosion, and preventing cheatgrass infestations. Based on the above information by NDF in 2020 and on available funding, the process of continued mastication of shrub fields and non-sprouting shrub species should continue to keep the Creek Critical Watershed healthy. NDF, USFS, CCFD, and other agencies must work together on future grant funding to support the effort to protect this critical area.

4.0 CARSON CITY ASSESSMENT OVERVIEW

Carson City Fire Department (CCFD) evaluated 71 neighborhoods in spring 2023. Inventory and analyses of community design aspects (roads, signage, utility infrastructure), defensible space conditions, construction materials, architectural features, wildland-urban interface characteristics, fuel types, and fuel hazards resulted in an overall hazard rating for each community. The overall risk and hazard conditions for each community are summarized individually in *Appendices A, B, C, and D*.

Wildfire Protection/Suppression Resources: Carson City manages the wildland-urban interface (WUI) areas, responds to wildland fires, and is responsible for reducing fuel hazards adjacent to communities. Initial attack on wildfires is provided by CCFD. The BLM, USFS, NDF, and local agencies have cooperative agreements (Memorandum of Understanding) with CCFD.

Detection and Communication: Fires are reported in Carson City through 911 calls to the Carson City Dispatch Center. Carson City Emergency Dispatch notifies the CCFD and other state and federal agencies of the fire, if necessary. The radio system used is compatible with neighboring agencies. Fires are communicated to the BLM Nevada District Field Office, US Forest Service, and NDF through the Interagency Dispatch Center. The BLM Nevada Field Office, USFS, and NDF have cooperative agreements and annual operating plans with CCFD that outline how the BLM, USFS, and NDF will conduct fire suppression activities.

Community Preparedness: Carson City has adopted an emergency plan that includes a Hazardous Materials Emergency Response Plan updated in 2022. Carson City also has an Emergency Operations Plan updated in 2019. The plans are routinely updated to reflect the inherent disasters related to wildfire and especially those mentioned in the worst-case wildfire scenario listed for each community. NDF Fire Adapted Nevada partnership has delivered several community and HOA wildfire preparedness presentations. Currently there is one Firewise USA Community in Carson City.

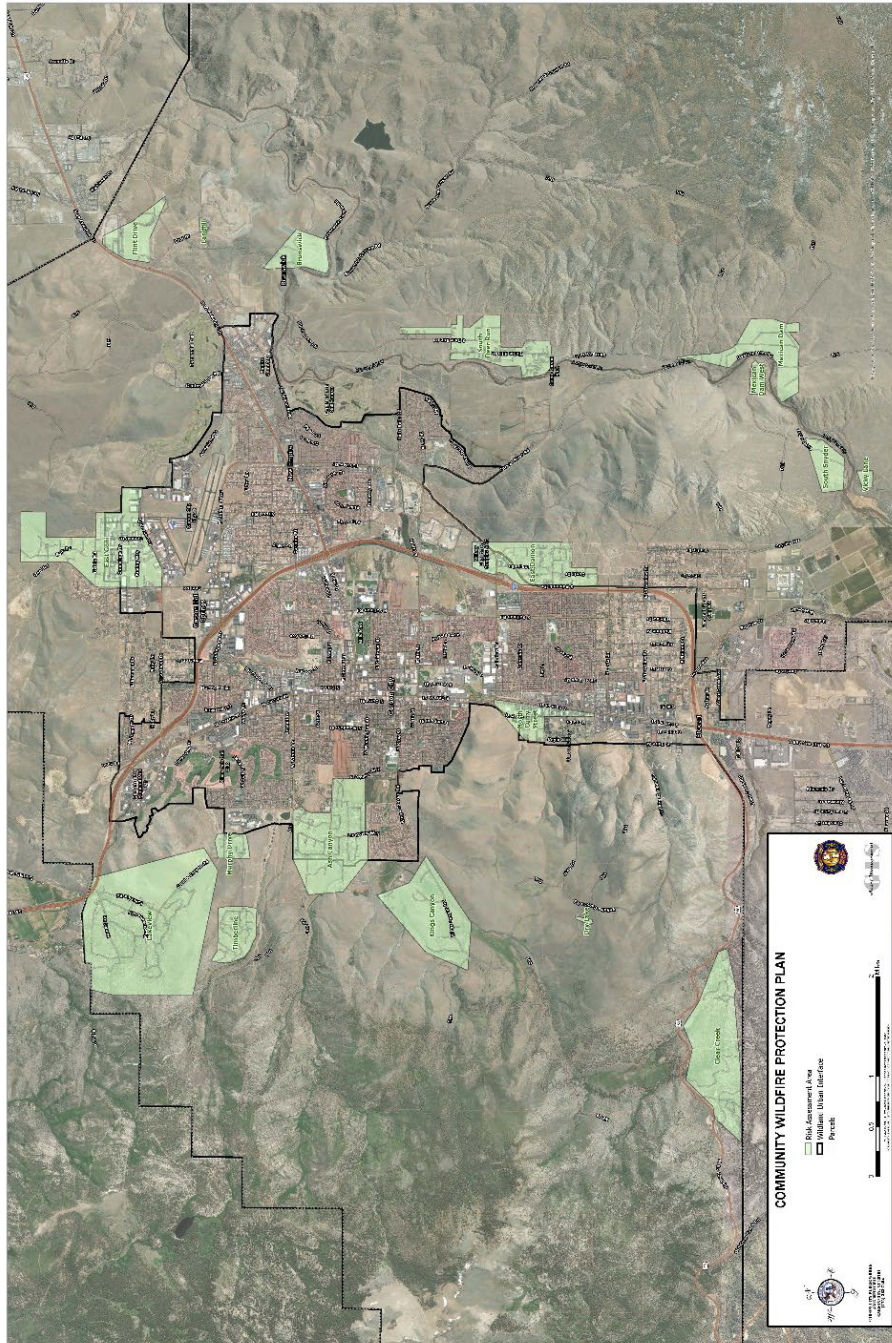
The CCFD conducts wildland preparedness workshops for the community in support of Nevada Wildfire Awareness Campaign from May through October. The workshops are in collaboration with Carson City Sheriff Office, University of Nevada, the Nevada Division of Forestry, and NV Energy. Workshops are open to community members and offered live via internet streaming. Various handouts and audio-visual aids are also used during the presentation. Topics covered addressed wildland fire preparedness and preparation.

- How a wildfire spreads and the threat to the community,
- Defensible Space and Home Hardening – Ready for Wildfire,
- Fuels Reduction and Public Safety Outage Management,

- Emergency Evacuation Preparedness, and
- How to become a Firewise Community in Nevada.

Workshops have resulted in an increased demand from Home Owners Associations and property owners for additional presentations and inspections.

4.1 CURRENT WILDLAND-URBAN INTERFACE



5.0 COMMUNITY SPECIFIC REPORTS

Appendix A contains reports for 27 northwest Carson City locations.

Location	Assessed Rating	Number of Acres	Number of Structures
1. Ash Canyon	75 Moderate	426	150
2. Carriage Square	51 Moderate	130	200
3. Carson-Tahoe	90 Moderate	145	20
4. C Hill	66 Moderate	305	250
5. CTH Center	59 Moderate	22	15
6. Eagle Med	44 Low	10	5
7. Kings Canyon West	144 High	350	40
8. Lakeview	145 High	917	200
9. Long Ranch	82 Moderate	198	200
10. Murphy Drive	132 High	48	25
11. North Division	67 Moderate	103	150
12. North Carson West	38 Low	76	6
13. North Mountain	35 Low	113	250
14. Robb Turner	66 Moderate	42	100
15. Silver Oak Golf Course	44 Low	18	6
16. Silver Oak Interior	57 Moderate	62	110
17. Silver Oak North	56 Moderate	75	90
18. Silver Oak West	59 Moderate	87	150
19. Timberline	153 High	120	100
20. University Heights	77 Moderate	40	100
21. West College	45 Low	13	10
22. 11 West College	49 Low	1	1
23. West-Winnie	58 Moderate	70	25
24. Winnie-N-Carson	83 Moderate	29	150
25. WNC	77 Moderate	20	10
26. W-Washington	53 Moderate	176	200
27. W-William	60 Moderate	85	100

Appendix B contains reports for 15 northeast Carson City locations.

Location	Assessed Rating	Number of Acres	Number of Structures
1. Air Park	32 Low	567	50
2. Bonanza	115 High	142	150
3. Centennial	91 Moderate	329	80
4. Cinderlite	107 High	47	5
5. College	65 Moderate	175	250
6. East Goni	120 High	468	150
7. East Nye	65 Moderate	553	200
8. Hot Springs	64 Moderate	212	100
9. Imperial	67 Moderate	220	150
10. Lone Mountain	99 Moderate	719	500
11. North East	73 Moderate	41	26
12. Northgate	91 Moderate	111	300
13. Retail Drive	60 Moderate	57	20
14. S Northgate	72 Moderate	65	100
15. West Goni	119 High	394	250

Appendix C contains reports for seven southwest Carson City locations.

Location	Assessed Rating	Number of Acres	Number of Structures
1. Carson Colony	98 Moderate	180	100
2. Clear Creek	181 High	405	55
3. Costco	73 Moderate	79	40
4. Dry Lake	143 High	5	4
5. North Curry Street	102 High	107	50
6. South Curry Street	95 Moderate	77	20
7. Voltaire	114 High	132	50

Appendix D contains reports for 22 southeast Carson City locations.

Location	Assessed Rating	Number of Acres	Number of Structures
1. Brunswick Canyon	143 High	114	13
2. Butti	42 Low	36	40
3. Clearview	61 Moderate	646	450
4. East 5th Street	102 High	431	250
5. East Clear Creek	85 Moderate	313	200
6. East Damon	110 High	283	150
7. Empire	81 Moderate	286	350
8. Flint Drive	123 High	117	10
9. Governors Field	53 Moderate	544	200
10. High School	44 Low	530	200
11. Landfill	115 High	2	7
12. Mexican Dam	147 High	176	53
13. Mexican Dam West	152 High	25	10
14. North Deer Run	73 Moderate	284	105
15. NNCC	60 Moderate	316	30
16. Race Track	72 Moderate	284	250
17. South Deer Run	120 High	224	175
18. South Edmonds	104 High	448	100
19. Sonoma	77 Moderate	803	550
20. South Snyder	119 High	89	10
21. Vicky Lane	106 High	12	6
22. Warm Springs	44 Low	66	45

5.1 SUMMARY OF CONDITIONS, RISKS, AND RECOMMENDATIONS

This section contains brief summaries of the characteristics of the four quadrants of Carson City, including vegetation, ingress and egress, water availability, and risk assessment results. Carson City faces the threat of an uncontrolled fire near to or heading toward an area under organized fire protection. Risk is the chance of fire starting as determined by the presence and activity of causative agents. The risk varies depending on the location. The risk assessments result in a number related to the potential of firebrands an area will be exposed to.

Source: Glossary of Wildland Fire Terminology, July 2012.

Quadrant 1 - Northwest Carson City:

The vegetation in the northwest quadrant is heavily forested in the Lakeview and Timberline area along with medium growing sagebrush. Ash Canyon and Murphy Drive vegetation is mainly sagebrush. Timberline and Kings Canyon have only one way in and out. All other locations have multiple ingress and egress. Kings Canyon water sources are located within four miles (including helicopter dip sites). The other locations have fire hydrants within 1,000 feet.

Following are the high and moderate-risk areas in the northwest and risk ratings:

1. Timberline – 153
2. Lakeview - 145
3. Kings Canyon West – 144
4. Murphy Drive – 132
5. Carson Tahoe Hospital – 90
6. West Winnie Ln - 83
7. Long Ranch - 82
8. WNC - 77

See *Appendix A* for Community Wildfire Risk Assessments of each location in Quadrant 1.

Fuel Types and Risks - The Community Wildfire Risk Assessment for each of the areas in Quadrant 1 is moderate to high despite the fuel models. Quadrant 1 interfaces with some agricultural fields to the south and residential along the entire base of the eastern slope of the Sierras. Lakeview, Timberline, and upper Kings Canyon West are predominantly surrounded by Pinyon Trees and Sagebrush. Sagebrush and bitterbrush commonly grow throughout the remainder of Quadrant 1. The woody character of these shrubs consists of both fine and coarse textured branches and accumulated vegetative litter at the base of plants that can be readily ignited during most times of the year and presents an extreme fuel hazard. Under wind-driven wildfire conditions, sparks and firebrands from shrubs can be blown ahead of advancing fire lines, creating spot fires. Fuel types change following fires, but hazardous fuel conditions can

remain high or even extreme with rapid invasion and expansion of cheatgrass. When sagebrush shrublands become converted to cheatgrass and other annual weeds, the more resistant vegetation type is replaced with a highly flammable fuel bed that increases the potential for ignition and rapid spread of larger wildfires.

Mixed coniferous forest consisting of primarily Jeffrey pine with some white fir in the higher elevations occur around the eastern slopes of the Carson Range. These conifer stands are often characterized with a continuous ground layer of flammable pine needles and mixed shrub stands in forest openings that can be readily ignited. Carson City Fire Department and NV Energy have been active in conducting fuel reduction and forest health treatments in the Carson City area. Treatment methods include hand thinning and pile burning, mechanical thinning, mastication, and cheatgrass control. Carson City Fire Department wildland crews have completed several fuels reduction projects in their powerline right-of-way around Carson City.

Numerous wildfire ignitions have occurred in this quadrant but were quickly suppressed and do not appear in the wildfire database. Two wildfires of major significance have occurred in this quadrant since 1988.

1. Kings Canyon Fire in August 1988 burned 1,798 acres.
2. Waterfall Fire in July 2004 burned 8,764 acres and destroyed several structures and vehicles.

Hazardous intermix fuel conditions consisting of undisturbed patches of either sagebrush steppe or mixed coniferous forest with both ground and ladder fuels occur in parts of all communities in Quadrant 1. Not all property owners in this area have created or maintained adequate defensible/survivable space around their homes.

Priority Recommendations for Northwest Carson City

- Collaborate with partner agencies and stakeholders for continued maintenance of fuel reduction treatments in the land surrounding Carson City. Include herbicide with seeding treatments to create a mosaic fuel pattern and to control cheatgrass and sagebrush dominance. Maintain hiking trails and use these alignments to create fuel breaks and access for suppression hand crews, where appropriate, and in a manner to minimize impacts to wildlife.
- Use hand thinning to complete fuel breaks on steep slopes around the community that are inaccessible for mechanical treatment.
- Maintain Type 5 engine and obtain funding to staff full-time hand crew.
- Create more Firewise USA Communities.



Quadrant 2 - Northeast Carson City:

The vegetation in the northeast quadrant consists of medium sagebrush along with grasses. There is sufficient ingress and egress. Fire hydrants are located per regulation.

Following are the high and moderate-risk areas in the northeast and risk rating:

1. East Goni – 120
2. West Goni – 119
3. Bonanza – 115
4. Cinderlite – 107
5. Lone Mountain – 99
6. Centennial - 91

See *Appendix B* for Community Wildfire Risk Assessments of each location in Quadrant 2.

Fuel Types and Risks - The Community Wildfire Risk Assessment for each of the areas in Quadrant 2 is moderate to high despite the fuel models. Quadrant 2 interfaces with residential along the entire base of the southern slope of north Carson City. Goni, Bonanza, and the northeast quadrant of Carson City are predominantly surrounded by sagebrush and bitterbrush with occasional greasewood flats in localized in-flow areas. Shrub cover and density is higher in drainage areas and swales that can act as “wicks” to rapidly carry wildfire into and out of the

communities. Sagebrush and bitterbrush commonly grow throughout the remainder of the Quadrant 2. Much of the Goni and Bonanza areas are on large lots with paved roads and no curb/gutter. Wildfire fuels are predominant throughout these neighborhoods, described as a classic WUI condition. In contrast, the northeast lots are one to five acre parcels or larger with a mosaic pattern of unmanaged sagebrush shrubland and intermixed with formal landscaping and structures. These intermixed patches of hazardous fuels are susceptible to ignitions from spot fires, lightning strikes, and other human-caused fires in and around structures and increase wildfire risks throughout the neighborhoods.

The woody character of these shrubs consists of both fine and coarse textured branches and accumulated vegetative litter at the base of plants that can be readily ignited during most times of the year and presents an extreme fuel hazard. Under wind-driven wildfire conditions, sparks and firebrands from shrubs can be blown ahead of advancing fire lines, creating spot fires. Fuel types change following fires, but hazardous fuel conditions can remain high or even extreme with rapid invasion and expansion of cheatgrass. When sagebrush shrublands become converted to cheatgrass and other annual weeds, the more resistant vegetation type is replaced with a highly flammable fuel bed that increases the potential for ignition and rapid spread of larger wildfires.

Carson City Fire Department wildland crews have completed several fuels reduction projects in their powerline right-of-way around these areas. Treatment methods include hand thinning and pile burning, mechanical thinning, mastication, and cheatgrass control.

Numerous wildfires ignitions have occurred in this quadrant but were quickly suppressed and do not appear in the wildfire database. One wildfire of major significance occurred in this quadrant since 2006 – the Linehan Fire in June 2006 burned 5,863 acres.

Hazardous intermix fuel conditions consisting of undisturbed patches of either sagebrush steppe, bitterbrush, and mixed weeds occur in parts of all communities in Quadrant 2. Not all property owners in this area have created or maintained adequate defensible/survivable space around their homes.

Priority Recommendations for Northeast Carson City

- Collaborate with partner agencies and stakeholders for continued maintenance of fuel reduction treatments in the land adjoining northeast Carson City. Include herbicide with seeding treatments to create a mosaic fuel pattern and to control cheatgrass and sagebrush dominance. Maintain hiking trails and use these alignments to create fuel breaks and access for suppression hand crews, where appropriate, and in a manner to minimize impacts to wildlife.
- Use hand thinning to complete fuel breaks on steep slopes around the community that are inaccessible for mechanical treatment.

- Create more Firewise USA Communities.



Quadrant 3 - Southwest Carson City:

The vegetation in the southwest quadrant ranges from timber and medium brush in the Clear Creek area to low growing sagebrush in the North Curry Street region. Clear Creek and Dry Lake have one road in and out (entrance and exit are the same). Curry Street has multiple routes of ingress and egress. Locations in the southwest have water supply from streams, lakes, or fire hydrants.

Following are the high and moderate-risk areas in the southwest and risk ratings:

1. Clear Creek – 181
2. Dry Lake – 143
3. Voltaire - 114
4. North Curry Street – 102
5. Carson Colony - 98
6. South Curry St - 95

See *Appendix C* for Community Wildfire Risk Assessments of each location in Quadrant 3.

Fuel Types and Risks - The Community Wildfire Risk Assessment for each of the areas in Quadrant 3 is moderate to high despite the fuel models. Quadrant 3 interfaces with residential along the entire base of the eastern slope of Sierras. C-Hill, Voltaire Canyon, Hwy 50/Spooner Summit, and Clear Creek Canyon are predominantly surrounded by pinyon pine trees and sagebrush. Sagebrush and bitterbrush commonly grow throughout the remainder of Quadrant 3. The woody character of these shrubs consists of both fine and coarse textured branches and accumulated vegetative litter at the base of plants that can be readily ignited during most times of the year and presents an extreme fuel hazard. Under wind-driven wildfire conditions, sparks and firebrands from trees and shrubs can be blown ahead of advancing fire lines creating spot fires. Fuel types change following fires, but hazardous fuel conditions can remain high or even extreme with rapid invasion and expansion of cheatgrass. When sagebrush shrublands become converted to cheatgrass and other annual weeds, the more resistant vegetation type is replaced with a highly flammable fuel bed that increases the potential for ignition and rapid spread of larger wildfires.

Mixed coniferous forest consisting of primarily Jeffrey pine with some white fir in the higher elevations occur around the eastern slopes of the Carson Range. These conifer stands are often characterized with a continuous ground layer of flammable pine needles and mixed shrub stands in forest openings that can be readily ignited. Carson City Fire Department and NV Energy have been active in conducting fuel reduction and forest health treatments in the Carson City southwest area. Treatment methods include hand thinning and pile burning, mechanical thinning, mastication, and cheatgrass control. Carson City Fire Department wildland crews have completed several fuels reduction projects in their powerline right-of-way around Carson City.

Numerous wildfires ignitions have occurred in this quadrant but were quickly suppressed and do not appear in the wildfire database. Three wildfires of major significance occurred in this quadrant since 1988 and one fire is 1926.

1. Greenhouse Fire in August 2017 burned 20 acres.
2. Voltaire Canyon Fire in August 2017 burned 134 acres.
3. 2014 Clear Creek Fire in July 2014 burned 187 acres.
4. Clear Creek-Kings Canyon Fire in September 1926 caused five fatalities.

Hazardous intermix fuel conditions consisting of undisturbed patches of either sagebrush steppe or mixed coniferous forest with both ground and ladder fuels occur in parts of the communities in Quadrant 3.

Priority Recommendations for Southwest Carson City

- Collaborate with partner agencies and stakeholders for continued maintenance of fuel reduction treatments in the land surrounding Carson City. Include herbicide with seeding treatments to create a mosaic fuel pattern and to control cheatgrass and sagebrush

dominance. Maintain hiking trails and use these alignments to create fuel breaks and access for suppression hand crews, where appropriate, and in a manner to minimize impacts to wildlife.

- Use hand thinning to complete fuel breaks on steep slopes around the community that are inaccessible for mechanical treatment.
- Improve emergency access connector between gated communities and long dead-end roads.
- Create more Firewise USA Communities.
- Identify areas where a static water source is needed to meet the National Fire Protection Association (NFPA) and International Fire Code requirements and seek funding to install unit to supply water for fire protection where no domestic water service is available.



Quadrant 4 - Southeast Carson City:

This area is the driest region in Carson City. Vegetation is mainly medium sagebrush with scattered pinyon pines. Several areas, such as Brunswick, South Snyder, and Vicky Lane have only one way in and out. Water availability in Brunswick, South Snyder, and Vicky Lane is four miles away, but the other high-risk sites have fire hydrants.

Following are the high-risk areas in the southeast and risk ratings:

1. Mexican Dam West – 152

2. Mexican Dam – 147
3. Brunswick Canyon – 143
4. Flint Drive – 123
5. South Deer Run – 120
6. South Snyder – 119
7. Landfill – 115
8. East Damon 110
9. Vicky Lane – 106
10. South Edmonds – 104
11. East 5th Street - 102

See *Appendix D* for Community Wildfire Risk Assessments of each location in Quadrant 4.

Fuel Types and Risks - The Community Wildfire Risk Assessment for each of the areas in Quadrant 4 is moderate to high. It interfaces with agricultural fields which present low fire hazards. Other vegetative fuel types include sagebrush steppe which transitions into mixed coniferous forest on extremely steep slopes to the east which are difficult to access for fuel treatment. Cheatgrass is a component of both fuel types and brings the risk of vegetation type conversion following fire.

Alluvial fans are vegetated in an intermix pattern consisting of sagebrush, bitterbrush, and other highly flammable shrubs along with pinyon pine trees. The woody character of these shrubs consists of both fine and coarse textured branches and accumulated vegetative litter at the base of plants that can be readily ignited during most times of the year and presents an extreme fuel hazard. Under wind-driven wildfire conditions, sparks and firebrands from shrubs can be blown ahead of advancing fire lines creating spot fires. Fuel types change following fires, but hazardous fuel conditions can remain high or even extreme with rapid invasion and expansion of cheatgrass. When sagebrush shrublands become converted to cheatgrass and other annual weeds, the more resistant vegetation type is replaced with a highly flammable fuel bed that increases the potential for ignition and rapid spread of larger wildfires.

Sagebrush sites transition to pinyon pine forest on steep slopes that characterize the mountains to the east of Carson City. East and west slopes are heavily bisected with steep, narrow canyons running from east to west and north to south with sparse sagebrush stands, and pinyon pine trees. Conifer stands on steep slopes along eastern Carson City roads and have potential for extreme wildfire conditions if a crown fire occurs that could burn into residential areas to the north, south, and east the predominant wind direction. Wildfire risk within communities of this quadrant are high especially as not all property owners have created or maintained adequate defensible/survivable space around their home.

Quadrant 4 has a history of the most wildland fires because of drier conditions, but usually are not large enough to show in the database.

1. Rifle Range in August 2018 burned 218 acres.
2. Prison Hill in July 2021 burned 171 acres.

Carson City Fire Department wildland crews have been working in this corridor and associated neighborhoods performing vegetation removal, pole grubbing, and treating areas along power lines.

Priority Recommendations for Southeast Carson City

- Collaborate with partner agencies and stakeholders for continued maintenance of fuel reduction treatments in the land adjoining southeast Carson City. Include herbicide with seeding treatments to create a mosaic fuel pattern and to control cheatgrass and sagebrush dominance. Maintain hiking trails and use these alignments to create fuel breaks and access for suppression hand crews, where appropriate, and in a manner to minimize impacts to wildlife.
- Agency partnerships with private landowners are needed in all areas to provide support and education for them to construct treatments around structures, in open space, and on undeveloped private parcels.
- Use hand thinning to complete fuel breaks on steep slopes around the community that are inaccessible for mechanical treatment.
- Create more Firewise USA Communities.
- Identify areas where a static water source is needed to meet the National Fire Protection Association (NFPA) and International Fire Code requirements and seek funding to install unit to supply water for fire protection where no domestic water service is available.



5.2 RECOMMENDED ACTIONS

This CWPP promotes community involvement and collaboration by identifying opportunities that strengthen communication and support between agencies and the public that will support and expand the concept of Fire Adapted Communities through the Firewise USA Program so Carson City can withstand an inevitable wildfire and minimize the potential for catastrophic loss of life or property. The following recommendations apply to all Community Wildfire Protection areas in this CWPP and build upon common conditions and needs. The fundamental approach foreseen to foster formation of recommended partnerships is through Fire Adapted Nevada and communities composed of diverse private landowners, federal, state, local fire agency personnel, and other interested parties.

- Expand community outreach and education on the importance of the Living with Fire recommendations through annual events in Fire Adapted Nevada and other community events and through social media. Formally adopt recommendations consistent with the Living with Fire model and the International Wildland Urban Interface Code as the minimum standard for desired conditions for defensible/survivable space on developed parcels in Community Wildfire Protection Zones.
- Coordinate with federal land managers to educate residents and visitors through signage, social media, and public service announcements on the dangers of recreational target shooting during high fire hazard days.
- Collaborate with homeowner associations and neighborhood groups to plan and construct fuels reduction treatments in and around their respective developments. Particular attention should be paid to brush piles, ornamental junipers, wood piles, and overgrown landscaping.
- Conduct education and outreach to residents regarding evacuation plans consistent with the Carson City Emergency Operations Plan. Prioritize fuel reduction treatment locations on nonfederal land to complement treatments on Federal and Tribal lands (USFS, BLM, and BIA) and develop holistic landscape scale fuels management goals.
- Identify areas within Carson City that are subject to a heightened threat of fire or other natural disaster.
- Propose an approach for the mitigation of potential fires or other natural disasters that is cost effective, prudent, and reasonable.

5.3 PRIORITIES

Criteria for treatment prioritization: Projects may be prioritized through a variety of funding mechanism requirements recognizing that, at this time, no one funding source will provide enough resources to fully fund the entire CWPP. Treatment area prioritization meets specific goals and objectives. Prioritization criteria includes:

- Cost effectiveness defined as targeted fuel reduction treatments conducted at a reasonable cost that produces meaningful protection of life, property, and the environment,
- Ease of permitting and treatment,
- Collaboration on multiple ownerships and jurisdictions, and
- Potential to achieve landscape scale risk reduction.

This CWPP promotes community involvement and collaboration by identifying opportunities that strengthen communication and support between agencies and the public that will help support and expand the concept of Fire Adapted Communities through the Firewise USA Program. Create Fire Adapted Communities that can withstand an inevitable wildfire and minimize the potential for catastrophic loss of life or property.

The partners within CCFD have identified and present the following recommendations:

- Seek federal, state and private funding to increase the Wildland Fuels Management Division's resources (staff and equipment) to support a Type 5 Engine Crew and Type 2 IA Hand Crew to further capacity in fuels management and wildland fire programs.
- Expand public involvement to create Fire Adapted Nevada Communities.
- Support the efforts of landowners to reduce fuel on private land by implementing an aggressive fuels management program that includes seasonal crews, a composting trailer program, and fuels consultation with landowners.
- Create and implement 5-year fuel reduction treatment and maintenance plan.
- Expand the biomass program.
- Expand the partnership to establish post-fire rehabilitation program.