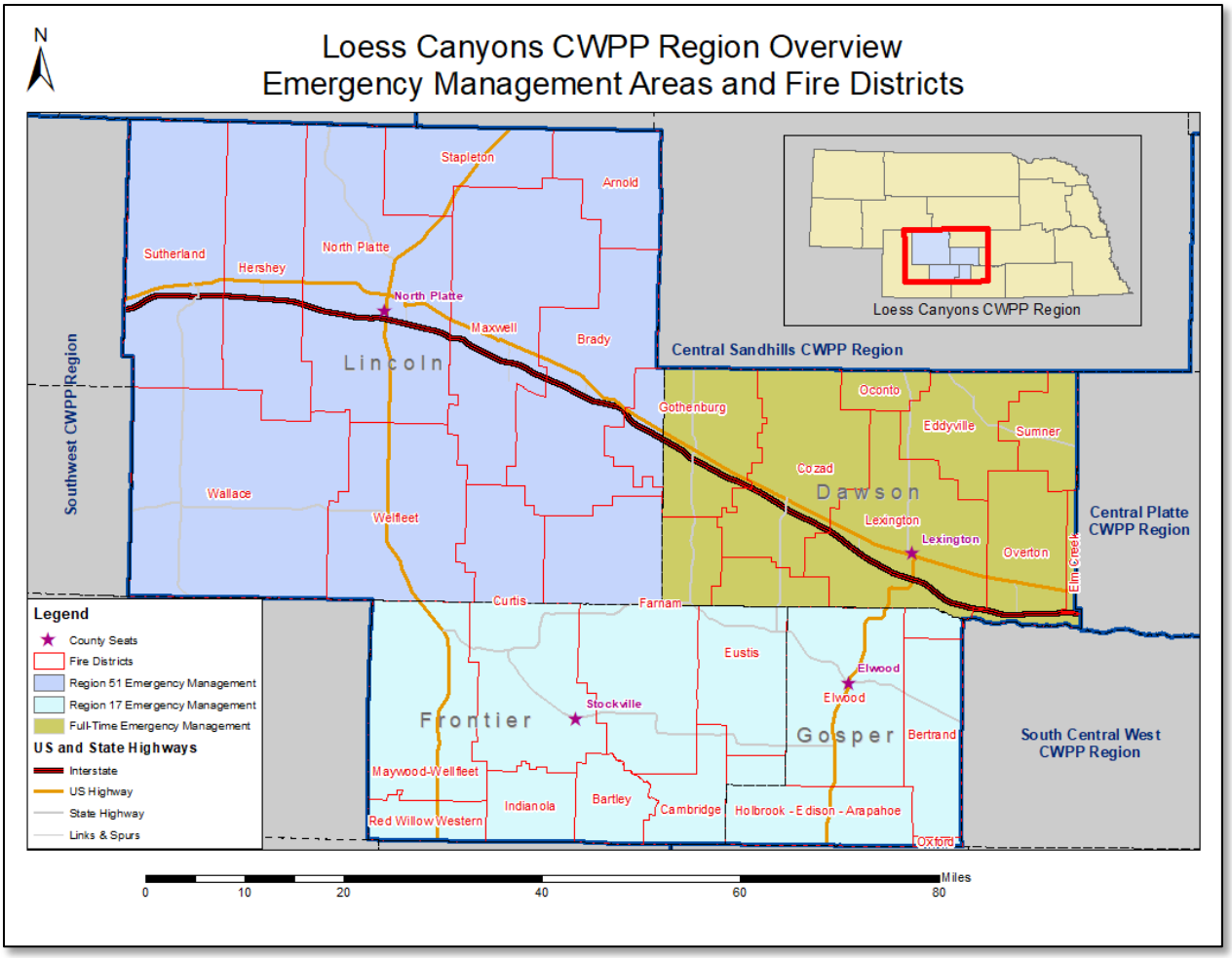
Loess Canyons Region Community Wildfire Protection Plan

FOR THE NEBRASKA COUNTIES OF
DAWSON, FRONTIER, GOSPER, AND LINCOLN

Photo courtesy of Tell Deatrich

November 2021 Update



Map 1: Overview of the Loess Canyons CWPP Region and fire districts located all or partly within it.

FACILITATED BY THE

Nebraska Forest Service

IN COLLABORATION AND COOPERATION WITH

DAWSON, FRONTIER, GOSPER, AND LINCOLN COUNTIES

LOCAL VOLUNTEER FIRE DISTRICTS

EMERGENCY MANAGEMENT REGIONS 17 AND 51

DAWSON COUNTY EMERGENCY MANAGEMENT

LOCAL MUNICIPAL OFFICIALS

LOCAL, STATE, AND FEDERAL NATURAL RESOURCES AGENCIES

AREA LANDOWNERS

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Photo courtesy of Tell Deatrich

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Community Wildfire Protection Plan Acronyms

Acronym	Meaning
ATV	All-Terrain Vehicle
BLM	Bureau of Land Management
BUL	Biologically Unique Landscape
CPRA	Central Platte Rangeland Alliance
CWPP	Community Wildfire Protection Plan
FAP	Forest Action Plan
FD	Fire District, Fire Department
FEMA	Federal Emergency Management Agency
FEPP, FFP	Federal Excess Property Program, Firefighter Property (program)
GIS	Geographic Information System
GPS	Global Positioning System
GR, GS	Grassland fuel models, Grass-Shrub fuel models
HMP	Hazard Mitigation Plan
IC	Incident Commander
LCRA	Loess Canyons Rangeland Alliance
LEOP	Local Emergency Operations Plan
MA, MAA	Mutual Aid, Mutual Aid Association
NEMA	Nebraska Emergency Management Agency
NFS	Nebraska Forest Service
NGPC	Nebraska Game and Parks Commission
NNLP	Nebraska Natural Legacy Project
NRCS	Natural Resources Conservation Service
NRD	Natural Resources District
PL	Priority Landscape
POA	Property Owners Association
PPD	Public Power District
RH	Relative Humidity
SEAT	Single Engine Air Tanker
SRA, SHP	State Recreation Area, State Historical Park
TL, TU	Timber-Litter fuel models, Timber Understory fuel models
USFS	US Forest Service
USFWS	US Fish and Wildlife Service
UHF, VHF	Fire radio channels
VFD	Volunteer Fire Department
WIRAT	Wildfire Incident Response Assistance Team
WMA	Wildlife Management Area
WUI	Wildland-Urban Interface

Introduction

The purpose of the Loess Canyons Region Community Wildfire Protection Plan (CWPP) is to provide a tool for effectively managing fire and hazardous vegetative fuels and to bolster collaboration and communication among the various agencies and organizations who manage fire in the Loess Canyons area of Nebraska. Having a CWPP in place allows the Nebraska Forest Service (NFS) to apply for US Forest Service (USFS) grant dollars to cost-share forest fuels reduction treatments in at-risk areas within the boundaries of the CWPP. It also may increase opportunities for counties, municipalities, and rural fire districts to seek grant funding for activities related to fire protection.

The Loess Canyons Region has experienced many large wildfires. Between 2000 and 2020, volunteer fire departments (VFDs) reported 2,083 fires that burned over 86,000 acres in the area's four counties. A CWPP can help people be proactive in their approach to wildfire.

Extreme wildfires in Nebraska have demonstrated that intense fire behavior can start in rural areas, move aggressively over large expanses, and threaten population centers. For this reason, the CWPP planning team designated the entire region as Wildland Urban Interface (WUI) and, for planning purposes, treats each county as a 'community.' Within each community, local officials and planners have identified specific areas of particular concern for wildfire risk. These areas can be targeted for risk mitigation. Forest and grassland management, as well as woody fuels treatment within forested areas, reduces the risk of wildfire throughout the WUI.

This 2021 revision of the CWPP adjusts the plan's regional boundaries, updates information contained in the 2014 plan, adds new data that has become available since then, and eliminates material that is no longer pertinent. The document format has been changed to match other Nebraska CWPPs.

Legislative Background

To be eligible for federal conservation cost-share funding assistance, the federal government requires states to prepare action plans that lay out a strategy for forest and wildlife conservation. The Nebraska Game and Parks Commission (NGPC) published the Nebraska Natural Legacy Project (NNLP) in 2005 as the state's first Wildlife Action Plan (updated in 2011). It identified 40 Biologically Unique Landscapes (BULs) to help prioritize where conservation work can best be directed. The Loess Canyons CWPP region lies primarily within the Mixedgrass Prairie and Sandhills Ecoregions identified in the NNLP. All or parts of five BULs are found within this CWPP boundary: Loess Canyons, Platte Confluence, Central Loess Hills, Central Platte River, and Rainwater Basin (see map in Appendix A).

In accordance with the 2008 Farm Bill's requirement for states to conduct a comprehensive analysis of their forests, in 2011 the NFS published the Statewide Forest Resource Assessment and Strategy, known as the Forest Action Plan (FAP). This plan was updated in 2015 and 2020. Priority forest areas were identified throughout the state using the National Land Cover Dataset. This dataset represents 15 land cover and land use types including open water, development, crops, shrubs, grasslands, wetlands, and forests. The Loess Canyons Priority Landscape (PL) and parts of the Platte River PL, Republican River PL, and Loup Rivers/Central Loess Hills PL are located within this CWPP boundary (Map 2). Full descriptions of these PLs are in the Nebraska Forest Action Plan: https://nfs.unl.edu/statewide-forest-action-plan.

The Healthy Forest Restoration Act (US Congress, 2003) requires CWPPs to be developed collaboratively; identify and prioritize areas for fuels reduction and methods to reduce fuels on those areas; and recommend strategies to reduce structural ignitability. This CWPP addresses these requirements and other needs identified by stakeholders.

Loess Canyons Community Wildfire Planning History

In 2014, the NFS partnered with fire districts, emergency managers, and local governments to develop the region's first CWPP, the *Loess Canyons Community Wildfire Protection Plan* (see link in Appendix C). It covered the 14 fire districts in the heart of the Loess Canyons region of Dawson, Frontier, Gosper, and Lincoln Counties. The plan discussed vegetation, fuels, weather, historic fire activity, communications, and infrastructure; summarized district capacity; described the WUI areas; and outlined an action plan that discussed risk reduction. It also examined the economic impacts of excessive fuel loading, and it mentioned a potential hazardous fuel reduction project. That CWPP boundary did not encompass other WUI areas in these counties that could benefit from woody fuels treatment cost share programs, which require that funds be used only in areas covered by a CWPP.

In 2018 the NFS began creating a statewide network of CWPPs with boundaries that follow county lines instead of watershed or fire district boundaries. This 2021 update expands the original Loess Canyons CWPP boundary to include the entire four-county area and the 30 fire districts located all or partly within these counties. The portions of Dawson, Frontier, Gosper, and Lincoln Counties that were originally included in the Central Platte, Southwest Nebraska, South Central West, and Central Sandhills CWPP regions are now part of the Loess Canyons CWPP Region, as shown on Map 1. Adjusting the regional boundary streamlines the planning process and is intended to increase the ability of local entities to pursue grant assistance for fire protection. In order to keep this CWPP current, the NFS recommends it be reviewed annually and updated every five years.

Plan Integration

The CWPP planning process strives to coordinate with existing federal, state, and local plans and provides specific detail on wildfire hazards, areas at risk from wildfire, emergency operations and capacity, and critical infrastructure. To help accomplish such coordination, this document includes an action plan addressing wildfire-specific issues including a risk assessment procedure, risk reduction measures, preparedness recommendations, training and education, fuels mitigation strategies, as well as monitoring and evaluation.

The components of the State Emergency Operations Plan are patterned after the National Response Plan. The Nebraska Emergency Management Agency (NEMA) prepared a basic plan that details Nebraska's operational functions approach to the response and recovery phases of emergency management. It defines the roles and responsibilities of the responding and supporting agencies and organizations and defines broad policies, plans, and procedures.[1]

Each county has its own Local Emergency Operations Plan (LEOP). The content of these plans is defined by statute, which stipulates that each county's LEOP consist of specific components, including operations, organization and responsibilities; functional annexes supporting activities critical to emergency response and recovery; technical information on response procedures; protective measures unique to a hazard; and methods for use in emergency operations. It is the responsibility of local emergency management staff to maintain the LEOP according to the guidance from the State.[1]

Each LEOP contains an 'Annex F' that covers fire services and resources. It includes a listing of county fire departments and mutual aid (MA) partners, as well as equipment lists. Fire department information is listed in Appendix G of this CWPP. Mutual aid associations (MAAs) are listed in Appendix F. One of the gaps common to many county-level LEOPs is a lack of wildfire-specific information. In many, fire is lumped in with hazardous materials. The information contained in this CWPP is intended to augment existing material and support these LEOPs.

Nebraska has a state Hazard Mitigation Plan (HMP), which establishes the policies, plans, guidelines, and procedures for the Hazard Mitigation Program in Nebraska. NEMA coordinated with regional emergency

management areas, Natural Resources Districts (NRDs), and counties to prepare, update, and maintain multi-jurisdictional hazard mitigation plans throughout the state.[2] Dawson County is included in the Central Platte NRD HMP. Frontier County shares a HMP with Hitchcock and Hayes Counties. Gosper County is included in the Tri-Basin NRD HMP. Lincoln County is part of the Twin Platte NRD HMP. Appendix C contains links to these plans. As entities across Nebraska update their HMPs, they are increasing efforts to share information and coordinate with other plans.

Fire management activities endorsed in this CWPP comply with the policies identified in federal and state regulations on wilderness, threatened and endangered species, cultural/historic preservation, and air and water quality. Wildfire events consistently provide both positive and negative environmental impacts to the affected areas. Potential impacts will be considered, and negative impacts will be mitigated, as much as is practical, during implementation of this plan.

Goals and Objectives

State Forest Action Plan Goals and Objectives

The 2020 FAP goals and objectives appear below:

1. Enhance and promote the role of Nebraska's forests and trees for mitigation and adaptation to the global change in climate
2. Manage trees and forest landscapes to include rural and community forest settings
3. Manage the function of forest and tree systems in Nebraska for maximum and sustained benefits
4. Improve, protect, and enhance fish and wildlife habitat in Nebraska
5. Restore fire-adapted landscapes to reduce risk of wildfire impacts on Nebraska's trees, forests, and communities
6. Manage for the health and productivity of Nebraska's trees and forests
7. Manage and build the capacity of Nebraska's trees and forests, in conjunction with the forest products industry, agriculture, and communities, which are all vital to Nebraska's economy
8. Maintain the natural environments of Nebraska including trees and forests, waterways, and rangelands
9. Manage Nebraska's forest and trees to enhance the water resources of Nebraska
10. Improve air quality and energy conservation through tree planting
11. Connect people to the state's trees and forest resources
12. Engage Nebraskans in the stewardship of trees and forests

This CWPP and the results of its implementation relate directly or indirectly to all of these. Sustainable forest management maintains natural environments and reduces wildfire impacts in the region's forests and adjacent communities, and it reduces threats to ecosystem health. Healthy forests and grasslands, in turn, protect air and water resources and fish and wildlife habitat, helping these ecosystems better cope with a changing climate. Communities that plan for and reduce wildfire risks and engage in environmental stewardship activities may also reap both direct and indirect economic benefits of healthy forests in fire-adapted landscapes.

Implementation of this CWPP relates directly to the NNLP goals of conserving natural communities, keeping common species common, and protecting at-risk species. Sustainably managed, fire-adapted forests include diverse habitats for both at-risk and common species. Restoring unnaturally dense forests to a more natural mosaic vegetative pattern benefits both wildlife and human communities.

CWPP Goals and Objectives

The CWPP Update steering committee identified the following goals and objectives that are consistent with the state FAP and specific to community wildfire protection planning in the Loess Canyons region. It is important to note that these are goals, not mandates. This begins the process of documenting needs and proposed solutions, which may provide new opportunities to address a variety of issues. Goals such as these can help tie grant

applications directly to specifically-identified needs—a strategy that has been proven to increase the likelihood of funding. Any movement toward these goals can be considered progress. Proposed tactics to achieve these goals are included in the Action Plan section of this document and in Appendix B.

Goal 1: Reduce wildfire risk

Objectives

- Identify wildfire risks, areas of concern that contain these risks, and a range of mitigation measures to address them
- Assess risks in the areas of concern
- Mitigate risks: Implement measures to create defensible space and reduce structural ignitability

Goal 2: Support emergency response

Objectives

- Assess local response capacity
- Enhance local response capacity
- Improve firefighter readiness and safety
- Enhance communication among fire management agencies

Goal 3: Promote an informed and active citizenry for wildfire preparedness

Objectives

- Increase local knowledge of wildfire risk and prevention
- Engage stakeholders in preparedness activities that promote the use of defensible space to protect communities and resources

Goal 4: Restore fire-adapted ecosystems

Objectives

- Encourage land managers to reduce heavy understory fuels in woodlands
- Encourage land managers to control non-native invasive plant species and to actively manage prolific and aggressive native species
- Encourage land managers to use native plant species when restoring ecosystems
- Safely incorporate prescribed fire, using trained personnel and standard operating procedures

Goal 5: Enhance post-fire recovery

Objective

- Enable rapid assessments of burned lands and the implementation of stabilization techniques

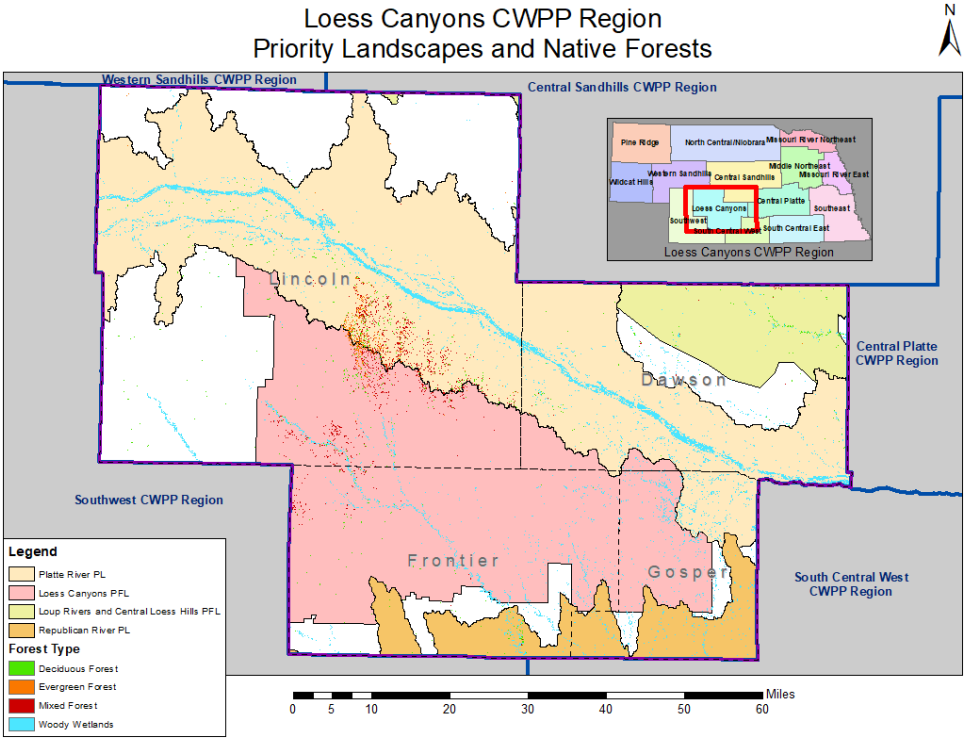
Goal 6: Establish/implement a CWPP monitoring and evaluation process

Objectives

- Annually evaluate progress in implementing the CWPP and recommend changes as needed
- Monitor selected projects and activities to assess progress and effectiveness
- Improve grant eligibility by keeping planning documents up-to-date to reflect current activities and needs

Priority Landscapes

At the state level, the FAP identified PLs to help focus effort and funding on landscape-scale projects. This CWPP region includes the Loess Canyons PL and parts of the Platte River, Republican River, and Loup Rivers/Central Loess Hills PLs (Map 2). These landscapes include many locally identified 'Areas of Concern' where vegetative fuels reduction activities can be targeted (see Areas of Concern map in Appendix A).



Map 2: Woody vegetation within the Loess Canyons CWPP Region's Priority Landscapes include evergreen forests (eastern redcedar), riparian deciduous forests, and mixed forests (evergreen/deciduous).[3]

Unnaturally dense and unhealthy woodlands and encroachment of eastern redcedar into grasslands create extreme wildfire risk. Drought cycles are predicted to occur with increasing frequency. Communities can protect structures by reducing their ignitability, reducing the surrounding woody fuels, and improving access for emergency equipment. Priority Landscapes help focus management activities on areas most at risk.

Vegetation Types and Areas of Concern within Priority Landscapes

The Loess Canyons Region's PLs contain a range of topography and vegetation types, including evergreen forest (eastern redcedar), riparian deciduous forest, salt marsh and flats, and several types of prairie (see Map 4). Within each county, local stakeholders have identified 'Areas of Concern'—specific sites that are at greatest risk for wildfire within the larger landscapes (see map in Appendix A). Most of these lie within the statewide PLs.

In recent decades, eastern redcedar, a native conifer, has increased exponentially in the Loess Canyons Priority Landscape. In 2006, this PL contained 58,675 acres of forestland. By 2018 that number grew to 111,715 acres.[3] Eastern redcedar accounted for the vast majority of that increase, as it encroached aggressively into grasslands.

According to the FAP, "The Loess Canyons PL is at risk from uncharacteristic wildfires due to changes observed in the ecosystem. Eastern redcedar has aggressively expanded in range across the landscape, resulting in a patchwork of cedar forests that occupy grasslands and hardwood forests. Although it is a native species, eastern redcedar threatens this fragile ecosystem as it encroaches into the area, replacing one plant community with another." Management of the woodland component of the PL is necessary to keep eastern redcedar in check.

Eastern red cedar has a thin bark and flammable foliage that easily ignites, making it highly susceptible to fire. It contains cedrol, a volatile terpene, and other oils that ignite and burn easily. The conical growth form brings the flammable foliage close to the ground. In forests and woodlands, cedars can act as a ladder fuel to allow fire to

climb into the crowns of taller trees. When it burns, red cedar can shower thousands of embers (firebrands) downwind, increasing the chance of spot fires and the overall rate of fire spread.[4]

Managing the grass component of the forested areas is also extremely important. Deciduous woodlands can develop a heavy grass and shrub understory which, if not managed appropriately, can create a significant fuels risk. The best management is done on a landscape basis—fuels mitigation treatments are only as effective as their weakest link. Unmanaged 'islands' among managed areas pose a significant risk to the managed lands.

Process

The first step in the CWPP update process was to establish a steering committee, which included many of the same entities that guided the original plan: fire districts, emergency managers, and local governments. State and federal natural resources agencies and fire specialists, prescribed fire organizations, and non-profit conservation organizations were added to the committee for the update. A complete list of steering committee members appears in Appendix I. The planning team (a subset of the steering committee) gathered data, seeking input from county officials, fire departments, and others to review and update CWPP goals and objectives, local wildfire risk factors, areas of concern, and other information. This input provided a locally focused framework for the CWPP update.

The NFS sent a questionnaire to all 30 fire departments in the CWPP region (see Map 1 on page ii) asking for current contact information, lists of equipment, and pertinent issues, concerns, and priorities. Responses from the 18 fire departments that returned the survey appear in Appendix G, along with information obtained from Annex F of each county's LEOP for all fire departments located entirely or partially within the CWPP boundary. The fire department survey and distribution list appear in Appendix H.

News releases sent to local newspapers and radio stations described the update process, encouraged input, and provided contact information for comments. CWPP update information was posted on the NFS website and social media page. The stakeholder list, outreach letters, and media releases appear in Appendix I. Feedback from counties, local municipalities, emergency response agencies, local fire departments, and others was incorporated into the draft.

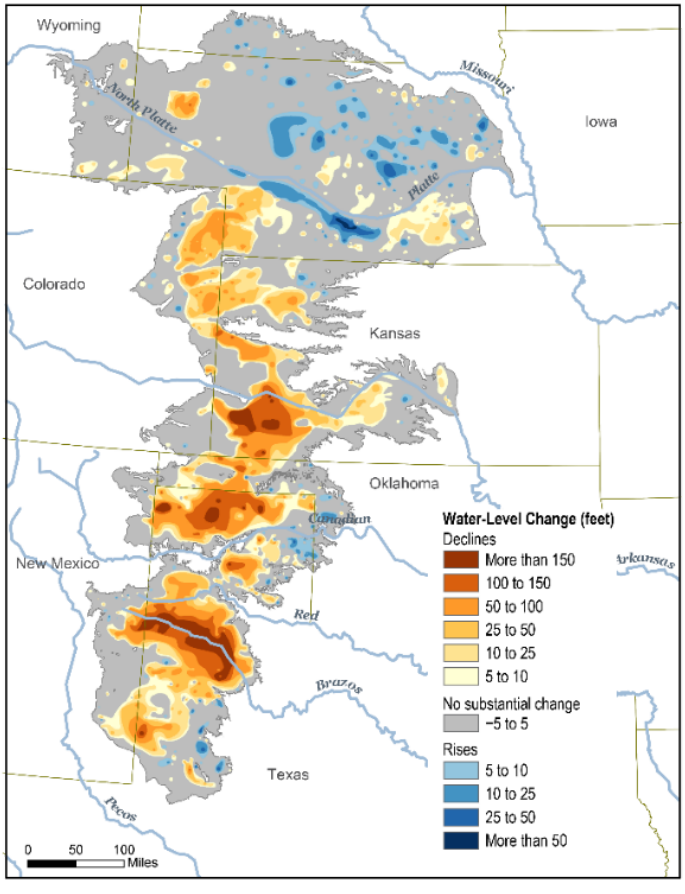
After a 30-day public review of the draft CWPP, the planning team incorporated additional input and comments into the final document before sending it to county boards for adoption. NFS mailed copies of the finalized document to each county and emergency managers. The plan is available online at https://nfs.unl.edu/documents/CWPP/LCCWPP.pdf.

Overview

This section contains background information common to all four counties within the 5,037 sq. mi. region. The 2019 US census data lists a total population of 63,139 for this area. Information that is specific to only certain parts of the region is included in the county (community) sections.

Landforms, Climate and Weather

The Loess Canyons CWPP counties lie mostly within the NNLP Mixedgrass Prairie Ecoregion. The area sits atop the Ogallala Aquifer, which underlies about 175,000 square miles in eight states from Texas to South Dakota (see Map 3).



Map 3: The Ogallala Aquifer underlies much of the Great Plains. This graphic[5] shows the water level change between the early 1900s and 2015.

Nebraska has a continental climate with cold winters and hot summers. The Loess Canyons region is semi-arid, averaging about 20 inches of precipitation annually. July is the warmest month, with maximum temperatures averaging 87-89°F.

Since the beginning of the 20th century, temperatures in Nebraska have risen approximately 1°F. Temperatures in the 2000s have been warmer than the long-term average and comparable to the previous record warmest period of the early 1930s Dust Bowl era, when drought and poor land management likely exacerbated the hot summer temperatures. The recent warming has been concentrated in the winter and spring, while summers have not warmed substantially in the state. This is reflected in a below-average occurrence of extremely hot days and no overall trend in the number of warm nights since the 1960s. The winter warming trend is reflected in a below-average number of very cold nights since 1990.[6] In recent decades droughts have become more severe. Extreme drought and wildfire years occurred in 1988, 1994, 2000, 2006 and 2012.

Weather data was obtained from the University of Nebraska High Plains Regional Climate Center[7] and Iowa State University.[8] Weather factors including temperature, precipitation, humidity, and wind define fire season, as well as the direction and speed of fire spread. There are two fire seasons in this area. The early fire season occurs from snowmelt and the last spring frost (when the previous year's cured vegetation dries) until early May, then eases as vegetation greens up. The late season begins in mid to late summer as fine fuels, such as grasses and forbs, begin to dry. In most years the late season extends to mid-November, coinciding with agriculture crop harvests, leaf drop, and curing of prairie grasses. Wet springs can delay the onset of the early

season, but they produce more fine fuels in ditches and across rangelands that, in late summer and fall, become tinder for sparks that can start wildfires. In drier years fine fuels can start curing by early to mid-July, but there is less growth, and consequently fewer fine fuels to catch sparks from trains, farm equipment, or motorists.

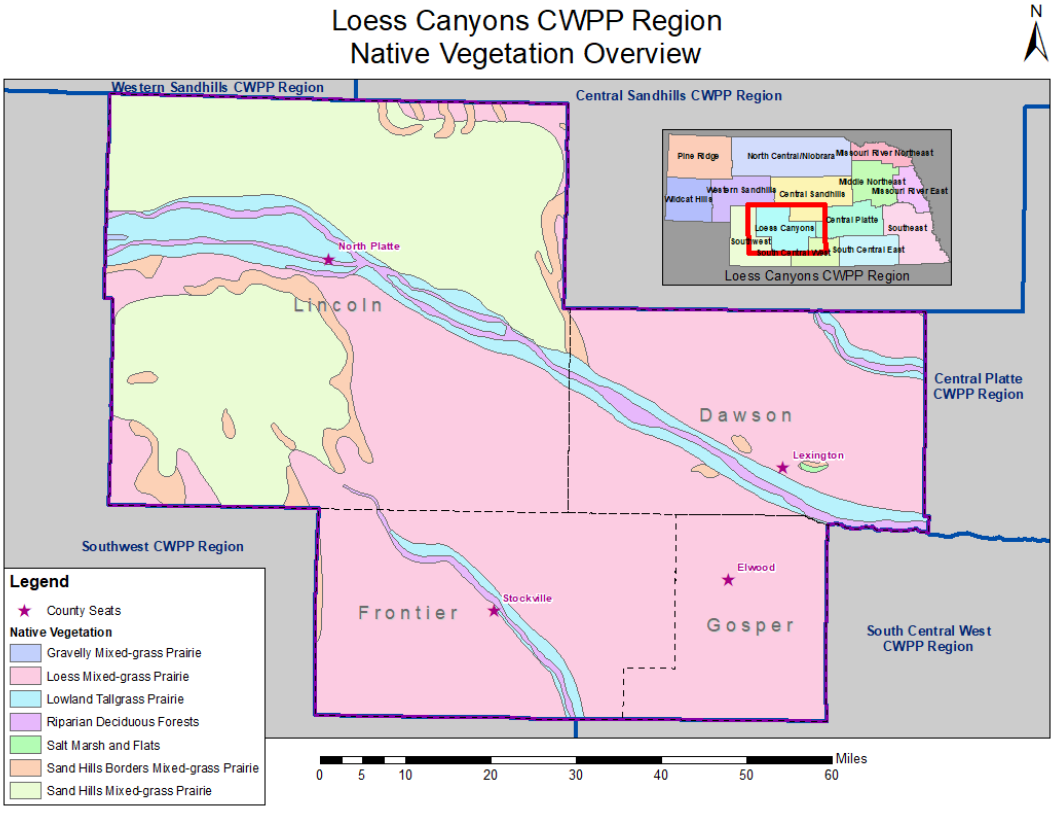
Table 1: Average maximum temperatures (degrees F), precipitation (inches) and median minimum relative humidity (percent) 1982-2020 for April, July, and October for the Loess Canyons Region counties. RH data is interpolated from selected area weather stations.[9]

	April			July			October		
County	Max. Temp.	Precip.	Min. RH	Max. Temp.	Precip.	Min. RH	Max. Temp.	Precip.	Min. RH
Dawson	62.05	2.25	32.75	86.83	3.25	48.5	64.62	1.81	38.5
Frontier	63.40	2.15	32.25	88.91	3.13	40.5	66.15	1.80	38
Gosper	63.19	2.09	34	87.80	3.42	56	65.67	1.88	39
Lincoln	61.74	2.24	31.5	88.11	2.99	41	64.60	1.72	38

Wind is a primary factor in fire spread, even where fuels are light or discontinuous as in much of the plan area. Some areas are more than half agriculture and grass fuels. Wind rosettes for April, July, and October from four stations in or near the plan area—Cozad, Lexington, McCook, and North Platte—are in Appendix D.

Vegetation and Natural Communities

Native vegetation in the Loess Canyons Region is mostly mixed-grass prairie. Wooded areas include eastern redcedar forests and riparian deciduous woodlands.



Map 4: The Loess Canyons Region CWPP counties are dominated by mixed-grass prairie, with lowland tallgrass prairie and riparian deciduous forests along the major streams. A small area of salt marsh and flats is located east of Lexington. See Map 2 for the locations of eastern redcedar, which has encroached into the grasslands.[10]

The primary coniferous tree species in the region is eastern redcedar. The principal deciduous tree species are green ash and hackberry. Foresters expect most of the green ash to die when the emerald ash borer, an invasive pest, moves into the region. Other woody species that can be found locally abundant are American plum, smooth sumac, and chokecherry. Most of the deciduous trees and shrubs are found in stringers and patches along drainages where the environments are cooler and more humid. In general, fuel continuity in the eastern redcedar and grassland areas is high.

Grasslands in Dawson, Frontier, Gosper, and the southeast part of Lincoln Counties are primarily Loess mixed-grass prairie. Sandhills mixed-grass prairie dominates the northern and western portions of Lincoln County, with interspersed areas of Sandhills borders mixed-grass prairie. Strips of lowland tallgrass prairie with riparian deciduous forests can be found along the Platte River, Medicine Creek and Wood River. There are salt marshes and flats east of Lexington.

Other land cover includes agricultural fields, which cover a significant portion of the region. A land cover map appears in Appendix A.

Land Use

There are about 3,223,680 acres (5,037 sq. mi.) in the CWPP region. Public and conservation lands include about 1,454 acres in federal ownership (three US Fish and Wildlife Service (USFWS) Waterfowl Production Areas and a tract owned by the Bureau of Land Management (BLM); 22,786 acres in NGPC wildlife management areas, state recreation areas, and a state historical park; 655 acres in the NFS Cedar Canyon property; 7,612 acres in non-government organization (NGO) conservation lands; 1,489 acres in NRD-managed properties; and 85,899 acres in state school lands.[11] There are also county and municipal properties in the CWPP region. The remainder of the land is privately owned.

Agriculture (livestock and crops) is the predominant use on rural private and school lands. Residential, commercial, manufacturing, and industrial land uses dominate the region's 20 incorporated municipalities and their immediate surroundings. Land use is primarily agricultural in the region's four unincorporated communities. Rural residential land use exists in conjunction with agricultural operations.

All of the counties in the CWPP region have county zoning plans in place. There are currently no restrictions in any of these counties specifically pertaining to wildfire preparedness and risk or for building construction in fire-prone areas such as canyon rims.

Popular outdoor recreational activities include hunting, fishing, hiking, boating, biking, and camping. State sites open to the public include the Medicine Creek, Red Willow, Johnson Lake, Maloney Reservoir, and Sutherland Reservoir State Recreation Areas (SRAs), Buffalo Bill SRA and State Historical Park (SHP), and 41 wildlife management areas (WMAs). The Central Platte NRD manages B-1 Reservoir in Dawson County, but it is a closed site.

*Table 2: The NGPC provided the following visitation data**

County	Unit Name	2020 Visitation
Dawson	Gallagher Canyon SRA	15,729
Frontier	Medicine Creek SRA	90,667
	Red Willow SRA	78,000
Gosper	Johnson Lake SRA	128,153
Lincoln	Buffalo Bill SRA/SHP	SRA 21,963 / SHP 18,924
	Maloney Res. SRA	124,650
	Sutherland Res. SRA	46,500

* No visitation data available for NGPC WMAs

Wildland Urban Interface

The WUI is defined as areas where homes and other structures are built on or near lands prone to wildfire. According to the "Ready, Set, Go!" program, managed by the International Association of Fire Chiefs, the WUI is not necessarily a place, but a set of conditions that can exist in nearly every community. It can be a major subdivision, or it can be four homes on an open range. National Fire Protection Association literature states that conditions include, but are not limited to, the amount, type, and distribution of vegetation; the flammability of the structures in the area and their proximity to fire-prone vegetation and to other combustible structures; weather patterns and general climate conditions; topography; hydrology; average lot size; and road construction. The WUI exists in every state in the country, and in every county/community within the CWPP boundary. Site-specific WUI issues are listed in each county section of this CWPP.

Property Owners Associations

Some rural and WUI subdivisions have property owners associations (POAs) that provide services and could potentially provide wildfire risk and preparedness information to members. The Lake Maloney POA has over 300 members. There may be other such associations in the region.

Infrastructure

Webster defines infrastructure as: "…the system of public works of a country, state, or region; also: the resources (such as personnel, buildings, or equipment) required for an activity." In the Loess Canyons CWPP region, infrastructure includes county, state, and federal roads and bridges, communications systems, the power grid, water systems, hospitals, schools, parks and fairgrounds, public administration buildings, fire halls, public officials, law enforcement officers, and fire personnel. For the purpose of this plan infrastructure does not include privately owned properties or residences, although these structures also benefit from the same wildfire risk reduction projects. These systems, structures and people are critical to regional functionality. One of the goals of community planning is to protect the basic physical and organizational structure of communities. This infrastructure, in turn, protects citizens.

Regional infrastructure expedites access to a fire by emergency responders, allows them to communicate with one another and the public, facilitates evacuations and support functions, and assists recovery efforts after the event. It is important for both local and out-of-area responders to know what facilities and resources are available and where they are located.

Emergency evacuations depend on infrastructure. Immediate evacuation destinations are likely to be in areas away from the fire that have water, power, and room for gathering. Fairgrounds or parks often make good short-term destinations, as they have large parking areas, restrooms, and electricity. In a wildfire evacuation scenario, local officials will designate immediate evacuation destinations. During prolonged evacuation periods or when homes or access routes have been destroyed, longer range planning is needed.

The Participant Profiles sections of regional HMPs identify specific sheltering locations, which include the mass care facilities identified in the county LEOPs. The Department of Homeland Security's website https://www.ready.gov/evacuating-yourself-and-your-family also offers some ideas.

The CWPP region is crossed by several high-tension power lines. Rural electric service in the counties is provided by Custer Public Power District (PPD), Dawson PPD, McCook PPD, Midwest Elec. Cooperative Corp., and Twin Valleys PPD.

Both cellular and landline telephone services are available region wide. Cellular reception is spotty in some locations, particularly in canyons.

Hazardous Fuels Reduction

Hazardous fuels reduction is key to decreasing risks to human life and damage to property. In terms of wildfire, hazardous fuels include any kind of living or dead vegetation that is flammable. Implementation of hazardous fuels reduction projects reduces fuels that feed wildfires, resulting is less extreme fire behavior and intensity. Fire behavior reductions include reduced rates of spread and shorter flame lengths. Fuels treatment in the Loess Canyons CWPP region is being accomplished via several approaches, including forest thinning, fuelbreak and firebreak establishment, prescribed fire, prescribed grazing, and implementing Firewise® practices around structures. Table 3 shows acres of vegetation treatments implemented over the past five years in the CWPP region by several agencies and organizations.

Table 3: Estimated acres of vegetation treatment (prescribed fire, mechanical, chemical) in the Loess Canyons CWPP Region counties during the past five years. Some acres may be duplicated due to agencies partnering on projects to assist landowners. Other treatments may have occurred, but only entities that reported treated acres are included in this table.

Acres of Vegetation Treated During the Last Five Years in the Loess Canyons CWPP Region											
	NRCS/ North Platte		NGPC		Tri-Basin NRD		NFS	LCRA	CPRA	Platte Valley Weed Mgmt. Area	
County	**Mech.**	**RxB**	**Mech.**	**RxB**	**Mech.**	**RxB**	**Mech.**	**RxB**	**RxB**	**Chem.**	**Total Acres**
Dawson	4,135	6,550	475	250			219				**11,629**
Frontier	1,581	1,982	6,400	2,685			48				**12,696**
Gosper	899	199	240	160	960	420	0				**2,878**
Lincoln	7,253	38,379	200	1,015			863	5,150			**52,860**
Not tracked by County									50,000	3,000	**53,000**
Total Acres	**13,868**	**47,109**	**7,315**	**4,110**	**960**	**420**	**1,130**	**5,150***	**50,000**	**3,000**	**133,063**

* The total shown for the Loess Canyons Rangeland Alliance is for the spring of 2021 only. Most LCRA acres are included in NRCS and NGPC numbers.

Mechanical Treatment

Mechanical fuels reduction of eastern redcedar can be expensive, depending on access, terrain, and tree size and density. It is often accomplished by using equipment ranging from chainsaws and hand-held weed trimmers with saw blades to ATV-mounted cutters and hydraulic shears mounted on skid-steers or tractors. As tree size, tree density, and slope increase, so do the costs. The NFS, NGPC, and Natural Resources Conservation Service (NRCS) offer cost share programs to help private landowners mechanically treat woody vegetation on their properties.

The NFS administers several federal and state grants that provide cost share to defray the expense of woody fuels reduction. Property owners in counties that have a CWPP in place are eligible for these programs. More information is available at https://nfs.unl.edu/fuels-assistance.

Fuels reduction can also be achieved as a result of vegetative manipulation for other purposes, including wildlife habitat enhancement, range management, noxious weed control, and public safety. Even haying activities can provide fire risk reduction benefits.

Chemical Treatment

Some entities use chemical treatments to manage vegetation for habitat improvement, noxious weed control, agricultural production, or other purposes. During the past five years, the Platte Valley Weed Management Area has used herbicides to control invasive phragmites on 3,000 acres in Dawson and Lincoln Counties.

Prescribed Fire and Prescribed Burn Associations

In recent years, prescribed fire has increased as a method of keeping woody encroachment in check, particularly in grasslands, where it can be extremely efficient for managing eastern redcedar. In forested settings, prescribed fire is more effective and safer when used to maintain woodlands after they have been mechanically thinned. When tree densities are reduced prior to burning, it is easier to keep the fire on the ground, where it cleans up downed woody fuels. Crown fires are difficult to control, and they kill healthy trees.

Fuels reduction can also be achieved as a result of using prescribed fire for other purposes, such as wildlife habitat enhancement and promoting grassland health. Prescribed fire practitioners include individual landowners, prescribed fire associations, non-profit conservation organizations, and public agencies. Prescribed fire associations in the CWPP region include the Loess Canyons Rangeland Alliance (LCRA) and the Central Platte Rangeland Alliance (CPRA). NFS staff in North Platte said they are hoping within the next couple of years to do a prescribed burn at their Cedar Canyon property in Lincoln County in cooperation with a neighboring landowner. Fuels reduction is discussed in detail in the Action Plan section of this document.

Fire Districts and Emergency Management

There are 30 VFDs all or partially within the CWPP boundary (see Map 1). Table 5 summarizes reported fires for each district.

The planning team sent each fire department a survey that asked for contact information, equipment lists, and a summary of their wildfire issues and concerns. Their responses appear in Appendix G.

Dawson County has its own full-time emergency manager. Frontier and Gosper Counties are part of the Region 17 Emergency Management jurisdiction. Lincoln County is in the Region 51 Emergency Management area. A map of statewide Local Emergency Management Areas appears in Appendix A.

Wildfire Hazard: History and Impacts

Historic Role of Fire

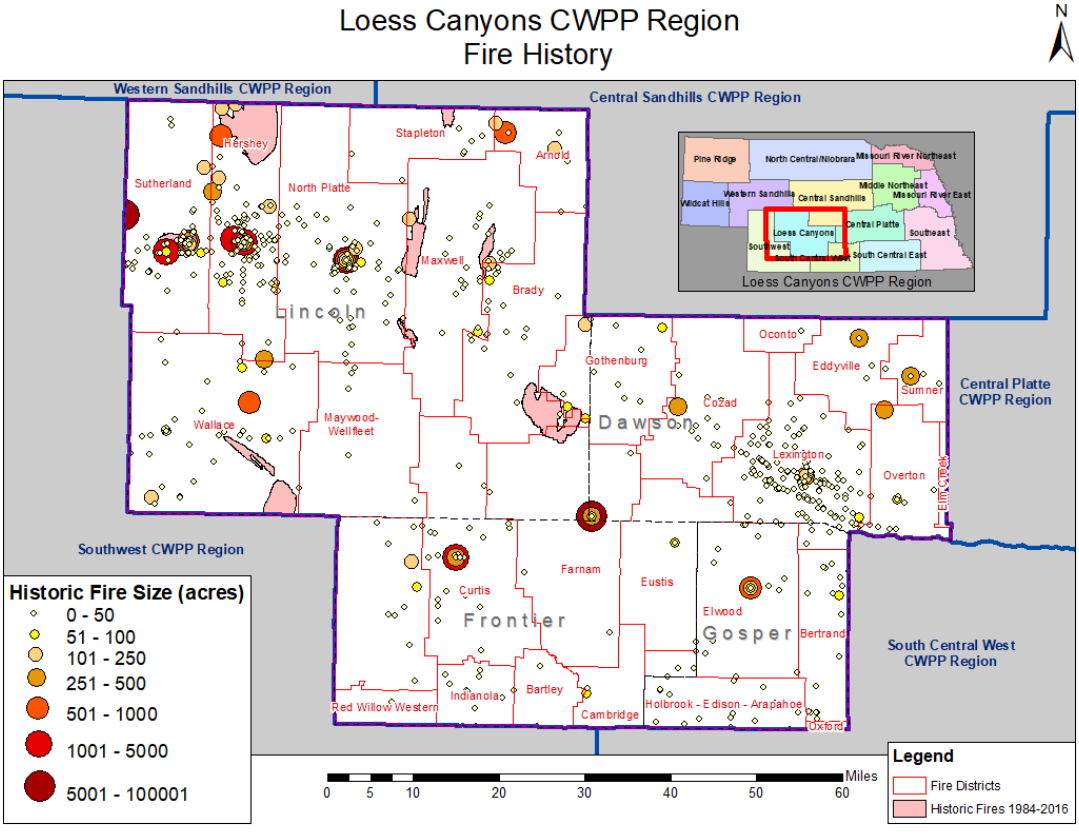
Prior to European settlement, large fires (started by lightning or intentionally as management activities by indigenous people) were common, and these fires kept the prairies free of most woody vegetation. However, since settlement, people have become increasingly adept at suppressing wildfire. Over time, the forests became densely overcrowded and woody vegetation encroached on prairies. Table 4 shows a mean replacement fire interval of 45 years for wooded ravines and 11 to 15 years for the prairies.

Table 4: Fire intervals for the wooded draws/ravines, northern mixed-grass prairie and Nebraska Sandhills prairie vegetation types are shown above.[12]

		Fire Regime Characteristics			
Vegetation Community	**Fire Severity**	**% of Fires**	**Mean Interval (years)**	**Min. Interval (years)**	**Maximum Interval (years)**
Northern Great Plains Wooded Draws & Ravines	Replacement	38	45	30	100
	Mixed	18	94	n/a	n/a
	Surface or Low	43	40	10	n/a
Northern Mixed-Grass Prairie	Replacement	67	15	8	25
	Mixed	33	30	15	35
Nebraska Sandhills Prairie	Replacement	58	11	2	20
	Mixed	32	20	n/a	n/a
	Surface or Low	10	67	n/a	n/a

Local Fire History

Nebraska is no stranger to extremely large wildfires. In 1865 the US Army and ranchers intentionally set a 300-mile-wide prairie fire during a dispute with Native Americans. The fire blackened the entire section of Nebraska south of the Platte River and west of Fort Kearny. It was visible from Colorado and Kansas, and eventually burned all the way to Texas. On a smaller scale, a major wildfire near Wallace in 1907 killed a rancher, along with his horse and numerous cattle. In 1915, another Lincoln County wildfire charred thousands of acres and destroyed multiple structures. Many cattle, horses, hogs, and family pets died. Eyewitnesses reported that burning jackrabbits ignited countless spot fires as they fled across the landscape.[13]



Map 5: Some of the larger fires reported in the CWPP area since 1984 are shown in the map above. Since 2000, CWPP area fire departments reported 2,083 fires that burned over 86,000 acres.

According to NFS records, since 2000 local fire departments have reported 20 fires over 500 acres in size. The two largest were lightning fires: 22,000 acres in the Farnam, Brady, and Gothenburg Fire Districts in August 2002 and 10,000 acres in Lincoln and Logan Counties in October 2000. Other large fires reported included a 2,000-acre equipment fire in the Curtis Fire District in April 2000, a 2,000-acre blaze near North Platte in September 2012, and a 1,500-acre equipment fire in the Hershey Fire District in March 2015.

More recently, the North Platte Fire District responded to 1,100-acre fire in March 2017 and the Sutherland Fire District reported a 1,030-acre fire in July 2018. In April 2021, six fire departments and two aerial support planes responded to a wildfire that charred over 400 acres and threatened several structures in a WUI subdivision north of North Platte.[14]

Other historic fires in the CWPP region include a 27,237-acre fire in the Hershey Fire District in September 1995, an 11,102-acre fire in the Wallace Fire District in March 2002, a 3,149-acre fire in the Maxwell Fire District in August 1995, and the 6,526-acre 'Harvestca' fire that burned in Lincoln and Logan Counties in April 2011.

Today the CWPP region regularly experiences wildfires, some quite large. From 2000 through 2020, CWPP area VFDs reported 2,083 wildfires that burned a total of 86,333 acres and caused $1,256,559 in property and crop losses. Although reporting has improved in recent years, not all fire departments report every year, so the actual numbers are likely much higher.

Some fire districts voluntarily report their annual fire response data to the NFS. Table 5 shows the fire data reported by fire departments from 2000 to 2020.[15] Because the fire districts vary in their level of reporting, there is no accurate, comprehensive fire history available for the CWPP area.

Table 5: Fires reported by Loess Canyons CWPP Region fire departments between 2000 and 2020. Departments reported a total of 98,211 volunteer hours for this period. Only departments that reported are listed. Some departments did not report every year. Actual numbers are higher. Fire districts report the total number of fires and acres for their district. These figures were not adjusted for districts that include land outside of the CWPP region.

Fires Reported 2000-2020							
Department	**# Fires Human**	**# Acres Human**	**# Fires Lightning**	**# Acres Lightning**	**Total # Fires**	**Total # Acres**	**# Mutual Aid Responses**
Arapaho	102	1,439	8	56	110	1,495	60
Arnold	86	10,950	35	2,443	121	13,393	27
Bartley	12	127	2	1	14	128	0
Bertrand	32	247	5	43	37	290	8
Brady	12	183	5	19	17	202	11
Cambridge	31	240	1	2	32	242	14
Cozad	21	534	0	0	21	534	9
Curtis	61	2,601	11	135	72	2,736	40
Eddyville	8	876	0	0	8	876	2
Edison	26	218	2	12	28	230	60
Elm Creek	14	46	0	0	14	46	3
Elwood	34	945	5	136	39	1,081	4
Eustis	12	176	2	23	14	199	1
Farnam	21	557	9	22,176	30	22,733	6
Gothenburg	21	328	3	60	24	388	12
Hershey	187	4,763	18	2,532	205	7,295	117
Holbrook	13	64	1	1	14	65	44
Indianola	145	624	16	26	161	650	30
Lexington	325	1,286	10	522	335	1,808	28
Maxwell	5	1	0	0	5	1	0
Maywood-Wellfleet	13	417	2	90	15	507	11
North Platte	387	8,755	21	235	408	8,990	72
Oconto	26	2,642	4	127	30	2,769	14
Overton	26	597	1	1	27	598	4
Oxford	63	282	1	1	64	283	18
Red Willow Western	44	951	2	1	46	952	19
Stapleton	31	1,581	6	10,870	37	12,451	2
Sumner	9	583	1	45	10	628	1
Sutherland	83	2,320	4	904	87	3,224	24
Wallace	51	1,487	7	52	58	1,539	25
Total	**1,901**	**45,820**	**182**	**40,513**	**2,083**	**86,333**	**666**

Fire Hazard

In the years since European settlement, exclusion of wildfires, limited forest management, and prolific regeneration of eastern redcedar have increased the fire danger in forested areas and eastern redcedar-encroached prairies. This, combined with severe drought, created conditions conducive to the catastrophic wildfires of 2006 and 2012 in western and central Nebraska. Drought conditions also increase the wildfire risk in grasslands. Flash flooding often occurs in areas where vegetative cover has burned, increasing runoff and leaving soils more susceptible to erosion.

Although over 91% of reported fires between 2000 and 2020 were human caused, those acres accounted for just over half of the total acres burned. Nearly 47% of all acres burned were attributed to lightning (see Table 4). During most years the majority of wildfires are small and do not burn with high intensity because of rain or quick suppression. However, every few years medium-sized and large fires occur and burn with high intensity and extreme fire behavior, posing a threat to rural homes and damage to major watersheds. Often the fires are wind driven from the southwest or northwest and can burn across drainages at a rapid rate. This situation challenges fire suppression personnel and agency managers to remain vigilant while monitoring the fire danger ratings and indices, particularly the heavy fuel moisture (1,000-hour time lag) fuels, during the fire season. Fuel continuity throughout the forested areas and in some of the open grasslands in this planning region is high. Fires in these areas can have a high rate of spread and a high resistance to control during very high and extreme fire danger.

Dead fuels are classified according to how fast they gain and lose moisture. They are categorized into 1, 10, 100, and 1,000-hour fuel size classes.[16] The larger the fuel, the longer it takes for the weather to affect it. Large branches (100-hour fuels) will take much longer to dry out than dead fine fuels such as grass (1-hour fuels). Once 100- and 1,000-hour fuels become dry, it also takes a long time for them to regain moisture from wetter weather.

The planning team asked fire department personnel, emergency managers, and other stakeholders to identify specific areas of concern for wildfire response. These are described in each community-specific section of the CWPP and shown on a map in Appendix A. The locations include rural subdivisions, wooded areas along drainages with homes and other structures, as well as recreational sites that experience heavy seasonal visitor use, have limited access, and are high-risk ignition sources due to dense undergrowth. Many agricultural lands often experience dry weather conditions conducive to fire ignition from lightning and hot farm machinery.

Wildfire Hazard is described in further detail in the Wildfire sections of the Multi-Jurisdictional HMPs (see links in Appendix C).

Fuel Models

According to the Nebraska Wildfire Risk Explorer, the following fuel models[17] are the most prevalent within the CWPP region:

Grassland Models (GR): In the prairie portions of the CWPP region, the primary carrier of fire is grass. Grass fuels can vary from heavily grazed grass stubble or sparse natural grass to dense grass more than 6 feet tall. Fire behavior varies from moderate spread rate and low flame length in the sparse grass to extreme spread rate and flame length in the tall grass models. All GR fuel models are dynamic, meaning that their live herbaceous fuel load shifts from live to dead as a function of live herbaceous moisture content. The effect of live herbaceous moisture content on spread rate and intensity is strong. The following fuel models best represent the grasslands throughout the region.

- GR1 Short Sparse Dry Climate Grass: The primary carrier of fire in GR2 is grass, though small amounts of fine dead fuel may be present. The grass is generally short, either naturally or by grazing, and may be sparse or discontinuous.

- GR2 Low Load Dry Climate Grass: The primary carrier of fire in GR2 is grass, though small amounts of fine dead fuel may be present. Load is greater than GR1, and fuelbed may be more continuous. Shrubs, if present, do not affect fire behavior.
- GR4 Moderate Load Dry Climate Grass: The primary carrier of fire in GR4 is continuous, dry-climate grass. Load and depth are greater than GR2; fuelbed depth is about 2 feet.
- GR6 Moderate Load, Humid Climate Grass: The primary carrier of fire in GR6 is continuous humid-climate grass. (*Note: the region contains both humid and dry climate grasses, based on moisture of extinction. This is shown as a major fuel model in SE Lincoln County and SW Dawson County.*)
- GR7 High Load, Dry Climate Grass: The primary carrier of fire in GR7 is continuous dry-climate grass. Load and depth are greater than GR4. Grass is about 3 feet tall.

Grass-Shrub Models (GS): The primary carrier of fire in the GS fuel models is grass and shrubs combined. Both components are important in determining fire behavior. GS fuel models are dynamic, meaning that their live herbaceous fuel load shifts from live to dead as a function of live herbaceous moisture content. The effect of live herbaceous moisture content on spread rate and intensity is strong and depends on the relative amount of grass and shrub load in the fuel model. GS2 is located in northern Frontier and southeast Lincoln Counties.

- GS2 Moderate Load Dry Climate Grass-Shrub: Shrubs are 1 to 3 feet high; grass load is moderate. Spread rate is high; flame length moderate.

Shrub Models (SH): The primary carrier of fire in the SH fuel models is live and dead shrub twigs and foliage in combination with dead and down shrub litter. SH7 is primarily located in southeast Lincoln County and southwest Dawson County.

- SH7 Very High Load, Dry Climate Shrub: The primary carrier of fire in SH7 is woody shrubs and shrub litter. Very heavy shrub load, depth 4 to 6 feet. Spread rate is high; flame length very high.

Timber Understory Models (TU): The primary carrier of fire in the TU fuel models is forest litter in combination with herbaceous or shrub fuels. TU1 contains live herbaceous load and is dynamic, meaning that the live herbaceous fuel load is allocated between live and dead as a function of live herbaceous moisture content. The effect of live herbaceous moisture content on spread rate and intensity is strong and depends on the relative amount of grass and shrub load in the fuel model. In the CWPP region, TU1 is located along rivers and major streams.

- TU1 Low Load Dry Climate Timber-Grass-Shrub: The primary carrier of fire in TU1 is low load of grass and/or shrub with litter. Spread rate is low; flame length low.

Timber Litter Models (TL): The primary carrier of fire in the TL fuel models is dead and down woody fuel. Live fuel, if present, has little effect on fire behavior. In the CWPP region, TL2 is located along rivers and major streams. TL3 is located mostly in southeast Lincoln County and southwest Dawson County.

- TL2 Low Load Broadleaf Litter: The primary carrier of fire in TL2 is broadleaf (hardwood) litter. Low load, compact broadleaf litter. Spread rate is very low; flame length very low.
- TL3 Moderate Load Conifer Litter: The primary carrier of fire in TL3 is moderate load conifer litter, light load of coarse fuels. Spread rate is very low; flame length low.

Full descriptions of these fuel models appear in Appendix E.

Economic Impacts

Excessive fuel loading can affect local economies in many ways. It reduces available forage, and therefore the grazing carrying capacity, for livestock and wildlife. If woody fuels are removed by uncontrolled, high intensity wildfire, other resources are affected. Intense fires may induce hydrophobic soils, which significantly increase runoff and erosion in steep terrain. Loss of grazing capacity and decreased water quality can be long-lasting problems for landowners whose livelihoods depend on livestock and hunting income.

A proactive approach to reducing hazardous fuels can provide jobs and generate valuable wood products such as lumber, posts, and biomass. Mechanically thinning forests reduces the hazard and risk of intense wildfire, can improve grazing capacity and wildlife habitat, and can increase the amount of precipitation that reaches streams, lakes, and the water table. Adherence to the *Forestry Best Management Practices for Nebraska* (https://nfs.unl.edu/documents/ruralforestry/NebraskaBMP.pdf) by those conducting mechanical thinning operations can reduce the potential for soil erosion from equipment use.

Emergency Operations

Responsibilities and Mutual Aid Agreements

VFDs are the first line of defense against wildfires on private and state lands in this planning area and statewide. During large wildfires, they rely on MA agreements with neighboring jurisdictions. Each of the 30 fire departments in the CWPP counties belong to one or more of the 12 Nebraska MAAs that overlap fire districts in the region: Buffalo County MA, Central Nebraska MA, Central Nebraska Volunteer Fire Association MA, Custer Co. MA, Frenchman Valley MA, Mid Plains MA, Phelps Co. MA, Sandhills MA, South Central Nebraska MA, Southwest MA, Thayer Co. MA, and Tri-Valley MA. See Appendix F for a complete list of MAAs and member fire departments.

The USFWS has a fire division that responds to wildfires on the federal lands that agency manages. The NGPC responds to wildfires within the state if they receive a mutual aid request but does not have specific mutual aid agreements with individual fire districts.

In addition to notification by Sheriff's Department personnel and/or dispatch, some Emergency Management areas have notification from "Code Red" that allows them to develop groups that can be called in an emergency situation for notification of evacuations, hazardous material incidents, and any emergency notification, including wildfire. This allows notification of a large geographical area or a group of people. This is an 'opt-in' program which can be used to notify residents in the area of wildfire events but would likely not reach all members.

The state introduced the Salamander identification card check-in system for emergency response personnel and equipment prior to the 2012 wildfires. This identification and credentialing system allows first responders (agencies, personnel, and equipment) to respond to incidents more efficiently. It streamlines the incident check-in process and tracks time spent on an incident for both personnel and equipment. The cards use bar codes that identify equipment, people and their qualifications, and can track volunteers. Today the Salamander Command program and the Salamander Track App are used to track an incident.

Staging Areas and Safety Zones

The wooded portions of the CWPP region are separated by expanses of grasslands and farm ground, where there are abundant potential staging area locations. Grazed pastures, green alfalfa fields, and fallow farmland can provide staging areas away from forests. Fairgrounds and city parks are generally good staging areas, depending on the particular location of a wildfire. Safety zone sites are designated by fire officials and will depend upon the wildfire location and characteristics.

Roads/Bridges

In addition to the federal and state highways, the region is served by a network of county-maintained roads. Farm and ranch trails provide additional access for emergency vehicles. Restricted bridges and roads which could restrict truck/lowboy passage have not been mapped. Developing such a map has been identified as a need that should be addressed (see Action Plan). Road and bridge information specific to each county appears in the county detail sections.

Communications

Most of the VFDs in the region operate on UHF radio. VHF radio is required to communicate with the Single Engine Air Tanker (SEAT), which is described in the *Aerial Resources* section. Until recently, the North Platte fire department operated solely on VHF, which allowed it to communicate with the SEAT plane, but interagency communication with other VFDs was difficult during mutual aid scenarios. In 2021, a joint project between the City of North Platte and North Platte Rural Fire District upgraded their entire inventory of portable (hand-held) and mobile (vehicle-mounted) radios. This upgrade includes Dual Band (UHF-VHF) radios.

Location-specific data about communications is listed in each county section of this CWPP for those entities that provided such information. Gaps in cellular service exist across some parts of the CWPP region, particularly in steeper drainages. Cell service in the area varies, depending on the service provider.

Capabilities and Capacity

Resources to support emergency responder safety and help fire departments prepare for and respond to fire, natural disasters and non-fire emergencies can include vehicles, equipment, air support, and personnel. This section describes resources maintained by or available to VFDs in the CWPP region, as well as resources maintained by other organizations.

Vehicles and Equipment

A listing of apparatus and staffing for each fire district is included in Appendix G. Some districts may have agreements with outside agencies or county departments (such as Roads) for assistance with heavy equipment.

Through the Federal Excess Property Program (FEPP) and Fire Fighter Property (FFP) program, a cooperative effort with the USFS, the NFS acquires and reconditions excess equipment which is no longer needed by the federal government. This equipment is then loaned to rural fire districts, which are responsible for maintenance. When no longer needed, the equipment is returned to the NFS and either re-assigned or sold, with the proceeds being returned to the US Treasury or state program. NFS reports show that in 2020 there were 894 pieces of FEPP equipment in use by 299 rural fire districts and emergency management agencies across Nebraska, valued at $96,049,400. In the Loess Canyons CWPP Region there were 38 pieces of FEPP equipment, valued at $3,610,800 and housed at 11 fire districts.

These programs allow fire districts to obtain essential fire-fighting equipment at an affordable price. The NFS Fire Shop also offers cooperating fire districts resources to reduce vehicle maintenance costs. This includes securing parts for vehicles and providing complimentary maintenance checks. Mechanics can also provide routine vehicle maintenance at the NFS Fire Shop in Mead or fire districts may use a trusted local mechanic. Two NFS mobile repair units are available to respond to the maintenance needs of cooperating fire districts. These units can provide routine repairs, as well as on-site support for cooperating districts in the event of catastrophic fires.

Some public agencies also maintain fire equipment. The NGPC Parks Division has fire resources located at Medicine Creek SRA (truck and slide-in pumper), at Red Willow SRA (truck and slide-in pumper and an ATV with slide-in pumper), and Johnson Lake SRA (truck and slide-in pumper). The NGPC Wildlife Division has firefighting equipment located at the North Platte District Office and the Medicine Creek WMA headquarters. This includes trucks with slide-in pumper units and a nurse tank at each location, plus 3-4 ATVs with water tanks and pumps. They also have hand tools, drip torches, and personal protective equipment.

Aerial Resources

The Wildfire Control Act of 2013 enabled the establishment of Single Engine Air Tanker (SEAT) bases in Nebraska. The SEAT provides critical observation and access for remote areas. Air tanker support is vital for locations away from towns and for wildfires located in difficult terrain or spreading quickly. Having a SEAT

dedicated strictly to wildfire suppression provides nearby resources for quick initial attack on small fires, keeping them from growing into large, catastrophic wildfires.

Permanent SEAT bases enhance fire aviation and initial attack capabilities. SEAT bases are staffed by NFS personnel during the fire season, working with a SEAT on contract to Nebraska through its partners at NEMA. During peak wildfire season (generally July 15-September 15) the state of Nebraska hires a SEAT for at least a 60-day contract period. NEMA pays for the aircraft's daily rate, and flight time is paid out of the Governor's Emergency fund. NFS provides the SEAT Manager who directs the entire operation. It is an interagency effort managed by NFS and paid for by NEMA.

Of the five permanent (Type 1) SEAT bases in Nebraska, McCook is the primary one that serves this CWPP Region. The other bases are located in Valentine, Scottsbluff, Chadron, and Alliance. In addition, NFS has a mobile SEAT base to support operations at airports without a permanent base. Each base houses LC 95 retardant.

Prior to the onset of fire season, the Wildfire Advisory Group assesses wildfire risk throughout the state. This committee consists of representatives from the NFS, State Fire Marshal's Office, NEMA, USFS, and Great Plains Dispatch. They have two in-person meetings per year plus weekly conference calls to discuss wildfire operations, fuel conditions, and resources. The group recommends to NEMA which SEAT base is the best location to station the SEAT plane, and when and for how long the SEAT will be contracted.

The state has a long history of utilizing agricultural aerial applicators for fire suppression. These are an important resource because they are available year around, not just during the peak fire season. Aerial applicators sign up yearly to be part of this program but are not 'on call' for wildfire response. Any fire chief who decides one is needed can simply call directly to see if the applicator is available. These aircraft can only carry loads of water or foam, not the preferred and more effective retardant product. Their availability may be limited due to the pilot not being present or out spraying fields. These pilots and the aircraft are not federally 'carded' to fly missions on federal land, so they cannot be utilized on USFWS fires.

The NFS *Yellow Book* (link in Appendix K) contains detailed information about aerial resources, including:

- Contact information for state, federal and private agencies that have emergency suppression resources or can provide technical expertise in the suppression of wildfires
- Aerial Applicator and Foam Retardant Directory
- Deployment procedures and forms needed to order a SEAT
- Map of cooperating aerial applicators and SEAT base locations

Overhead Teams

In major wildfire situations, overhead teams can be called in to help VFDs. State assistance starts with the Wildfire Incident Response Assistance Team (WIRAT). This team is comprised of State Fire Marshals and the NFS. When an Incident Commander (IC) orders the team, the four closest members will respond and assist. This could include scouting the fire, ordering additional resources, establishing a communication plan, operations, communicating with aircraft, or reloading aircraft.

The WIRAT does not take over responsibility for the fire. Once a state disaster is declared by NEMA and the governor, a state-level All Hazard Type 3 Team can respond. At this point the fire is beyond the capabilities of the local IC. The team either takes control of the fire or shares the responsibility with the local IC. If the fire grows beyond their capabilities, then the Federal Emergency Management Agency (FEMA) and a Type 1 or 2 team become involved.

Training

The NFS, Nebraska State Fire Marshal's Office, and NEMA provide wildland fire training through classes in communities across the state as well as mutual aid schools and State Fire School attended by thousands of people each year.

In addition, the NFS sponsors the Nebraska Wildland Fire Academy, held annually in April at Fort Robinson State Park. Launched as an interagency effort by the NFS and the USFS, the Academy provides opportunities for Nebraska volunteer firefighters to attend nationally recognized wildland fire and incident management training at little or no cost, on a schedule that does not require them to be away from home more than what is already required by their volunteer efforts. It utilizes the expertise of local, state, and federal firefighters to ensure the fire training needs of Nebraska and the surrounding region are met. It also enables local volunteers to enter the national red card system and develop certifications that are recognized across the nation. In 2018, NFS expanded this effort and created the Eastern Nebraska Wildland Fire Academy. This weekend event is hosted at Ponca State Park and provides valuable wildland fire classes each November.

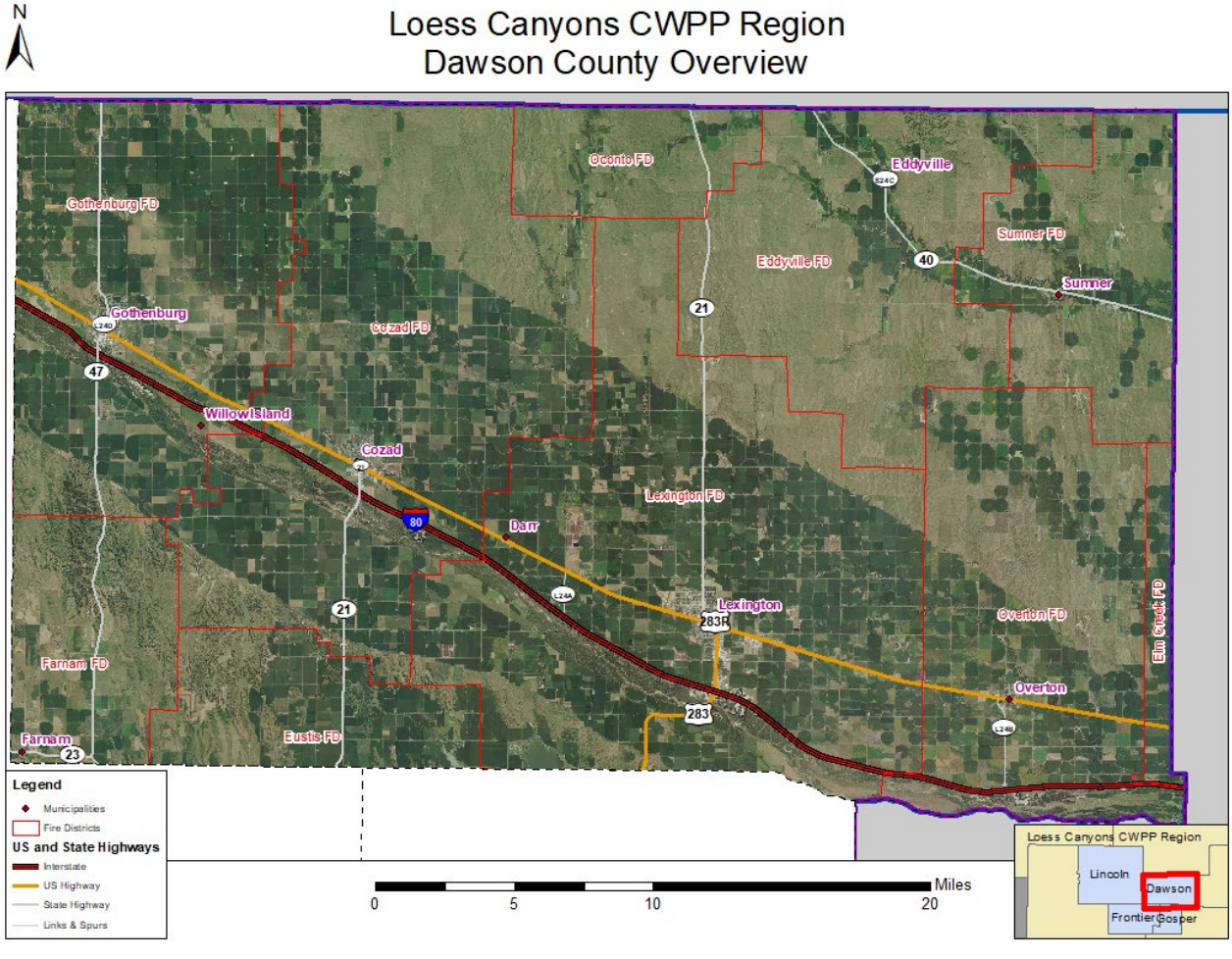
Classes cover a variety of topics ranging from beginning to advanced firefighting techniques, Firewise® landscaping and construction, leadership, and fire prevention education. The classes offer flexibility and can be fine-tuned to meet the needs of local fire departments. NFS delivered and sponsored 2,133 course hours in 2020, and 8,500 hours in the spring of 2021. Wildland fire instructors are based in Ainsworth, Chadron, and Lincoln.

Community-Specific Considerations

Topics pertinent to the entire CWPP region appear in the previous pages. For planning purposes, each county is considered a 'community.' This part of the document contains elements specific to each county/community. Each of these sections consists of a 'Community Profile' (description, fire history, and fire hazard/risk) and 'Infrastructure and Protection Capabilities' (fire districts, emergency operations, greatest concerns listed by fire departments, and infrastructure such as water sources, roads and bridges). The HMPs contain complete critical infrastructure lists; therefore, these community sections include only a reference to the HMPs (links in Appendix C). Critical facilities are determined based on the discretion of the jurisdiction.

Dawson County

1,019 sq. miles
2019 population: 23,595



Community Profile

Dawson County occupies the northeast corner of the CWPP region. It is bounded on the north by Custer County, on the east by Buffalo County, on the south by Frontier, Gosper, and Phelps Counties, and on the west by Lincoln County. Incorporated municipalities include the county seat of Lexington (pop. 10,097), Cozad (pop. 3,787), Eddyville (pop. 93), Farnam (pop. 216), Gothenburg (pop. 3,489), Overton (pop. 586), and Sumner (pop. 225). Darr (no pop. data) and Willow Island (pop. 9) are listed as unincorporated communities.

There are no federal lands in Dawson County. Besides municipal property, public lands include 2,116 acres managed by the NGPC in 16 Wildlife Management Areas, and 7,311 acres in school lands. The Central Platte NRD manages one 544-acre tract. The balance of the land within the county is privately owned. Agriculture and livestock operations constitute the primary land use.

Vegetation zones include strips of lowland tallgrass prairie with riparian deciduous woodlands and woody wetlands along the Platte and Wood Rivers and some of their tributaries. Mixed-grass prairie occupies most of the rest of the landscape, with a few pockets of salt marsh and flats east of Lexington. Eastern redcedar has become established over much of the county's southwest corner and, to a lesser extent, in the rougher terrain north of Eddyville and Sumner. Irrigated cropland is concentrated in a wide swath of the Platte River valley, along both sides of the Wood River and Elm Creek and scattered elsewhere throughout the county. Dryland agricultural fields are located northeast of Farnam and in the northwest part of the county.

Fire History

Although large prairie fires were common prehistorically, from the time this area was settled by Europeans until the 1970s, wildfire activity was mostly limited (with some notable exceptions) to small fires which residents rapidly and effectively controlled. This allowed woody vegetation to become denser and more widespread, particularly in rugged terrain. Beginning in the last quarter of the 20th century, wildfire occurrence and intensity increased sharply in much of western and central Nebraska.

Dawson County fire departments reported 513 fires between 2000 and 2020, which burned a total of over 30,000 acres. The largest of these was a lightning fire reported by the Farnam VFD in August 2002, which burned about 22,000 acres in Dawson, Frontier, and Lincoln Counties.

Some of the other large fires reported by Dawson County fire districts (FDs) include:

- October 2018: 450-acre equipment fire in the Farnam FD
- During the busy 2012 wildfire season, large fires were reported by the Eddyville VFD (480 acres) and Oconto VFD (800 acres and 650 acres).
- March 2015: 150-acre debris burning fire in the Gothenburg FD
- December 2009: 440-acre equipment fire in the Overton FD
- December 2009: 500-acre equipment fire in the Sumner FD
- January 2009: 320-acre equipment fire in the Cozad FD
- September 2002: 400-acre equipment fire in the Lexington FD
- July 2001: 500-acre lightning fire in the Lexington FD

Fire Hazard and Risk

The areas most at-risk from wildfire are in the WUI surrounding municipalities and in the canyons in the southwest corner of the county where there are heavy fuels, rough terrain, and limited access; along the Platte River and Wood River corridors where it is often difficult to access the cedar-encroached riparian woodlands; and north and east of Eddyville where terrain is rough and fuels are heavy. Homes and other structures in these locations are at increased risk due to these factors.

Locations of special concern identified by local fire districts include rural recreational and residential developments along the Platte River and adjacent to NGPC WMAs, where the Elm Creek VFD and others noted there is difficult access, rough terrain, one way in/out, and heavy fuels; the northwest part of the Farnam district, where the fire chief said that terrain is very rough and hard to get around in—grass hills and trees; the southwest corner of the Gothenburg district where the VFD stated there is difficult access, rough terrain, heavy fuels, and lack of water within effective distance; and Camp Comeca and Midway Lake, where the Cozad VFD

reported multiple structures, difficult access, rough terrain, one way in/out, and heavy fuels. Areas of Concern are mapped in Appendix A.

Agricultural lands in those portions of the county which lie outside mapped Areas of Concern do have their own fire risk variables; however, irrigated croplands are not as fire prone as forests and grasslands. All of Dawson County lies within the boundaries of the WUI as defined by the NFS in the introduction to this CWPP.

Infrastructure and Protection Capabilities

The Central Platte NRD HMP includes a full geo-located critical infrastructure list (see link in Appendix C).

Fire Districts, Mutual Aid, and Emergency Operations

Dawson County has a full time Emergency Manager. Ten fire districts are located within or partly within the county. The Sumner Fire District is located entirely within the county. The Cozad, Eddyville, Elm Creek, Eustis, Farnam, Gothenburg, Lexington, Oconto, and Overton Fire Districts lie partly within Dawson County and partly in neighboring counties. See Appendix G for their contact information, equipment lists, and responses to the VFD questionnaire. The fire departments are responsible for fire protection and assist with other emergencies in their districts. The Dawson County Sheriff's department provides assistance as needed.

All of the fire departments belong to one or more of the six MAAs that overlap the county. The Cozad, Elwood, Farnam, Gothenburg, and Lexington fire departments all belong to the South Central Nebraska MAA. The Eddyville and Sumner VFDs are with the Central Nebraska MAA. Elm Creek is part of the Buffalo County MAA and the Central Nebraska Volunteer Fire Association MAA. The Eustis VFD belongs to the South Central Nebraska MAA and the Thayer Co. MAA. Oconto is with the Central Nebraska MAA and the Custer Co. MAA. Overton belongs to the Central Nebraska Volunteer Fire Association MAA and the South Central Nebraska MAA. See Appendix F for a statewide list of MAAs.

Water Sources

The only developed non-agricultural water systems (other than private wells) are in the municipalities. The Platte and Wood Rivers are generally reliable water sources. Ponds and stock tanks are located throughout the county. During drought conditions many ponds are not dependable. Many smaller streams have only intermittent flows and are not reliable. Windmills are abundant in the county and can provide water when they are operational. The Elm Creek, Farnam, and Gothenburg fire departments identified water sources and availability as a concern.

There are numerous irrigation canals along the Platte River. The main canal systems on the north side of the river are the Gothenburg, Cozad, Berquist, and Dawson County Canals and the Beatty Ditch. The Sixmile, Thirtymile, Orchard Alfalfa, and Tri County Supply canals are located south of the river. These canals and an extensive network of laterals facilitate irrigation of much of the Platte River Valley in Dawson County.

Utilities/Phone Service

Dawson County is crossed by several high tension power lines. Rural electric service is provided by the Dawson PPD. There is both cellular and landline telephone service available in the county. There are gaps in cell coverage in some areas, particularly in the county's southwest corner.

Roads and Bridges

Interstate 80 and US Highway 30 follow the Platte River from northwest to southeast. US Highway 283 enters the county from Frontier County and runs north to Lexington, where it joins US 30. Several short links connect I-80 with US 30. State Highway 47 enters the county north of Gothenburg and runs south to join State Highway 23 east of Farnam. State Highway 21 runs south from Cozad to the Frontier County line. State Highway 21 runs from Lexington north to the Custer County line. State Highway 40 cuts diagonally across the county's northeast

corner, connecting Eddyville and Sumner with Custer and Buffalo Counties. These routes are augmented by a network of county-maintained roads.

The Farnam VFD reported one bridge that may not support equipment weight. The Cozad FVD stated that older wood bridges over canals may not support equipment. The Elm Creek VFD named three such bridges and provided their locations (see Appendix G).

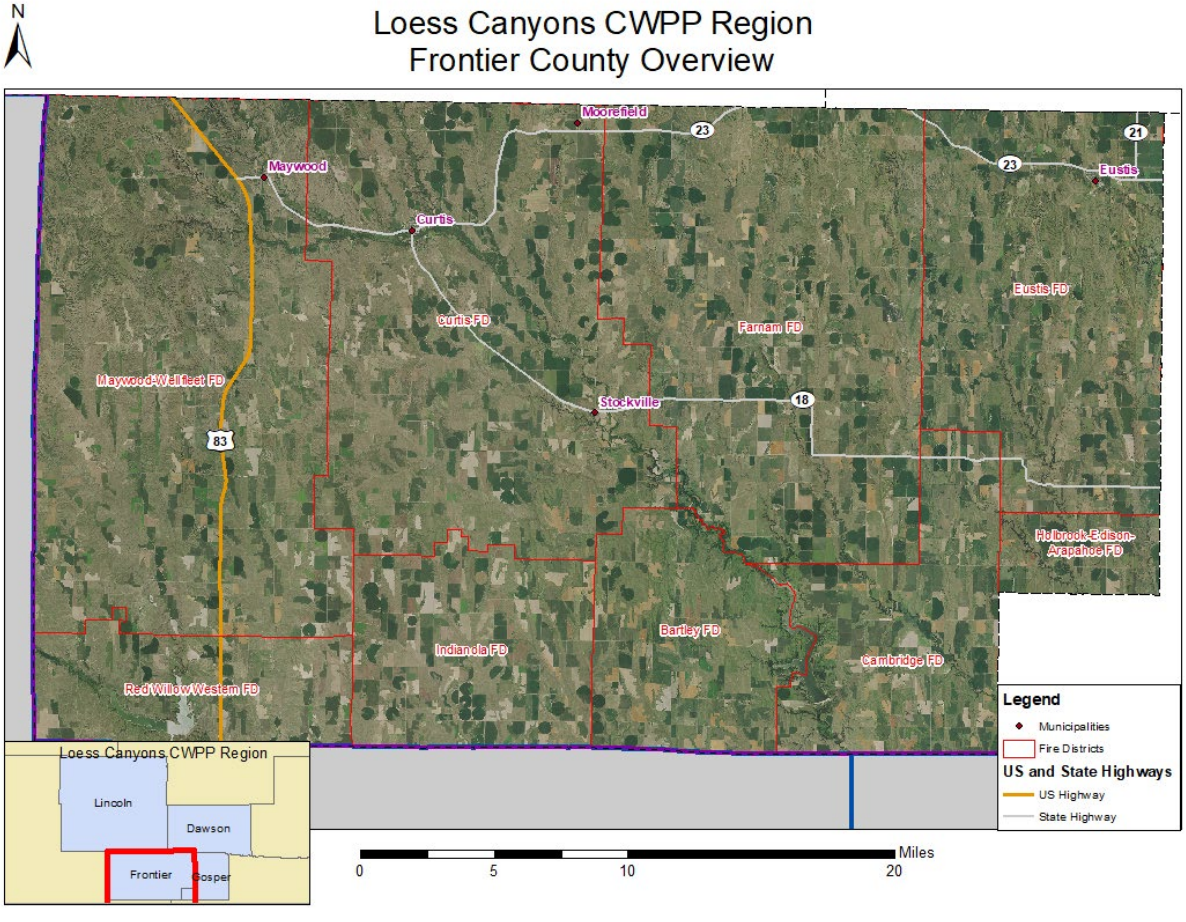
Greatest Concerns

The fire departments were asked to list their greatest concerns for their districts, shown in the table below:

Department	**Greatest Concerns**
Cozad	Access
Eddyville	(Survey not returned)
Elm Creek	Location, terrain, access, housing, mutual aid, water supply, weather conditions
Eustis	(Survey not returned)
Farnam	Rough terrain to deal with in some areas
Gothenburg	Being able to get to some areas due to terrain
Lexington	(Survey not returned)
Oconto	(Survey not returned)
Overton	(Survey not returned)
Sumner	(Survey not returned)

Frontier County

980 sq. miles
2019 population: 2,640



Community Profile

Frontier County forms the southwest corner of the CWPP region. It is bounded on the north by Lincoln and Dawson Counties, on the east by Gosper County, on the south by Red Willow and Furnas Counties, and on the west by Hayes County. Incorporated municipalities include the county seat of Stockville (pop. 13), Curtis (pop. 811), Eustis (pop. 520), Maywood (pop. 350), and Moorefield (pop. 13). There are no unincorporated communities listed in the county.

There are no federal lands in Frontier County. Besides municipal lands, public lands in include 14,477 acres managed by the NGPC in two SRAs and two WMAs, and 17,561 acres in state school lands. The balance of the land within the county is privately owned. The primary land use is agriculture and livestock operations.

Vegetation zones are primarily Loess mixed-grass prairie, with strips of lowland tallgrass prairie, riparian deciduous woodlands, and woody wetlands along Medicine, Spring, and Plum Creeks and several other streams. Eastern redcedar has become established over much of the county's north and western areas and, to a lesser extent, in the Medicine and Muddy Creek watersheds. Most of the county contains rough terrain, but both dryland and irrigated cropland are scattered countywide in the less rugged areas.

Fire History

Although large prairie fires were common prehistorically, from the time this area was settled by Europeans until the 1970s, wildfire activity was mostly limited (with some notable exceptions) to small fires which residents rapidly and effectively controlled. This allowed woody vegetation to become denser and more widespread, particularly in rugged terrain. Beginning in the last quarter of the 20th century, wildfire occurrence and intensity increased sharply in much of western and central Nebraska.

Frontier County Fire Departments reported 398 fires between 2000 and 2020, which burned a total of over 28,000 acres. The largest of these was a lightning fire reported by the Farnam VFD in August 2002, which burned about 22,000 acres in Dawson, Frontier, and Lincoln Counties.

Other large fires reported by Frontier County fire departments include:

- April 2000: 2,000-acre equipment fire in the Curtis FD
- October 2018: 450-acre equipment fire in the Farnam FD
- February 2002: 400-acre equipment fire in the Curtis FD
- October 2016: 265-acre spontaneous combustion fire in the Red Willow Western FD
- November 2010: 200-acre debris burning fire in the Maywood-Wellfleet FD

Fire Hazard and Risk

The areas most at-risk from wildfire are in the WUI surrounding municipalities and in the rugged terrain of the Loess Canyons, where there are heavy fuels and difficult access. Other at-risk locations include the area along Medicine Creek, where there are dense fuels and heavy recreational use, and in the rough terrain of the northeast part of the county. Homes and other structures in these locations are at increased risk due to these factors.

Locations of special concern identified by local fire districts include Medicine Creek Lake and valleys and hills that aren't accessible by trucks, lots of brush, and lack of water within effective distance (Bartley VFD); Harry Strunk Lake Area – housing areas – trails 1, 3, 5 (Cambridge VFD); northwest sections of the Holbrook fire district: grassland, trees, rough with few access points, water refill points are few and a distance away (Holbrook VFD); the Village of Maywood with high home density (Maywood-Wellfleet VFD); and Hugh Butler Lake (Red Willow Western VFD). The Farnam VFD reported that the northwest part of their district is very rough and hard to get around in—grass hills & trees, with multiple structures, one way in/out, heavy fuels, and lack of water within effective distance. The Edison VFD noted that all areas in their district with difficult access, rough terrain, and heavy fuels are problematic. Areas of Concern are mapped in Appendix A.

Agricultural lands in those portions of the county which lie outside mapped Areas of Concern do have their own fire risk variables; however, irrigated croplands are not as fire prone as forests and grasslands. All of Frontier County lies within the boundaries of the WUI as defined by the NFS in the introduction to this CWPP.

Protection Capabilities and Infrastructure

The 2018 Hayes-Frontier-Hitchcock HMP includes a critical infrastructure list on page 6-65 (see link, Appendix C).

Fire Districts, Mutual Aid, and Emergency Operations

Frontier County is part of the Region 17 Emergency Management jurisdiction. Nine fire districts are partially located in the county and extend into neighboring counties: Bartley, Cambridge, Curtis, Eustis, Farnam, Holbrook (part of Holbrook-Edison-Arapaho FD), Indianola, Maywood-Wellfleet, and Red Willow Western. See Appendix G for their contact information, equipment lists, and responses to the VFD questionnaire. The fire departments are responsible for fire protection and assist with other emergencies in their fire district. The Frontier County Sheriff's department provides assistance as needed.

All of the fire departments belong to one or more of the five MAAs that overlap the county. The Bartley VFD belongs to the Frenchman Valley and Tri-Valley MAA. The Cambridge and Holbrook VFDs are part of the Tri-Valley MAA. The Curtis VFD is with the Frenchman Valley, Mid Plains, and South Central Nebraska MAAs. The Eustis VFD belongs to the South Central Nebraska and Thayer Co. MAAs. The Farnam VFD is with the South Central Nebraska MAA. The Indianola and Red Willow Western VFDs belong to the Frenchman Valley MAA. The Maywood-Wellfleet VFD is part of the Frenchman Valley and Mid Plains MAAs. See Appendix F for a statewide list of MAAs.

Water Sources

The only developed non-agricultural water systems (other than private wells) are in the municipalities. There are no rivers in the county. Medicine Creek and Red Willow Creek are reliable water sources—both have reservoirs on them, Harry Strunk Lake and Hugh Butler Lake, respectively. Ponds and stock tanks are located throughout the county. During drought conditions many ponds are not dependable. Many smaller streams have only intermittent flows and are not reliable. Windmills are abundant in the county and can provide water when they are operational. The Bartley, Farnam, and Holbrook VFDs identified water sources/supplies as a concern.

Utilities/Phone Service

The county is crossed by several high-tension power lines. Rural electric service is provided by the McCook PPD, Twin Valleys PPD, and Dawson PPD. There is both cellular and landline telephone service available in the county. Cell service is spotty in some locations.

Roads and Bridges

US Highway 83 crosses the west side of the county from north to south. State Highway 18 enters the east side of the county from Gosper County, runs west and northwest through Stockville, Curtis, and Maywood before joining US 83. State Highway 23 enters the northeast corner of the county from Gosper County and runs through Eustis and Moorefield before joining State Highway 18 at Curtis. The federal, and state highways are augmented by a network of county-maintained roads.

The Bartley fire department reported that several rural bridges in their district will not support equipment weight. The Cambridge fire chief named Road 411 & 728 vicinity and Road 731 crossing Deer Creek as unable to support equipment. The Farnam chief said there is one such bridge in their district. The Red Willow Western VFD noted that bridges on low maintenance roads in their district may not support equipment weight.

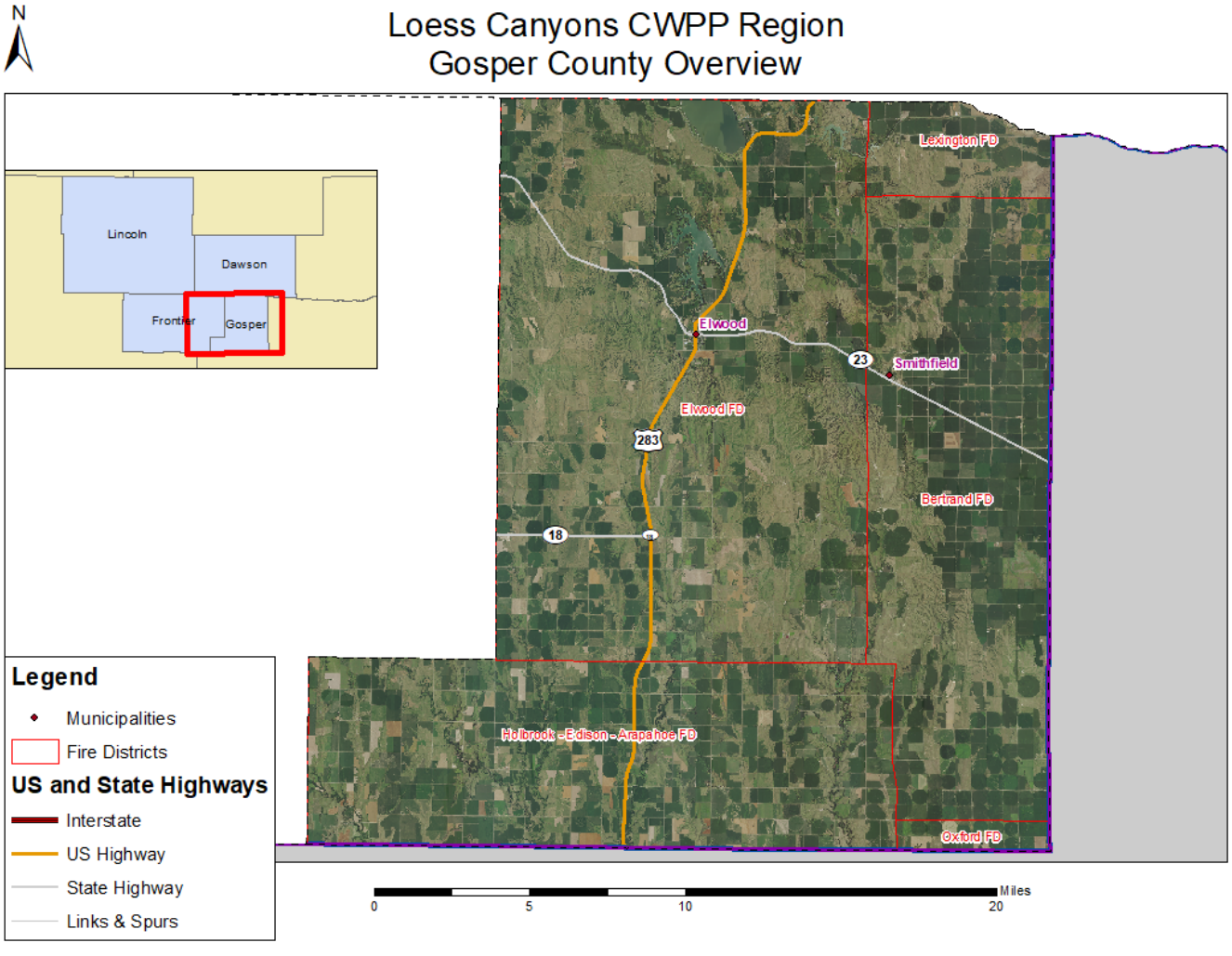
Greatest Concerns

The fire departments were asked to list their greatest concerns for their district, responses appear in the table below:

Department	**Greatest Concerns**
Bartley	Rural areas can be over 20 miles from water supplies
Cambridge	Communication; incident command staging
Curtis	(None indicated)
Eustis	(Survey not returned)
Edison	Manpower
Farnam	Rough terrain to deal with in some areas
Holbrook	Personnel and water
Indianola	(Survey not returned)
Maywood-Wellfleet	Losing a family home
Red Willow Western	Wind, rough terrain

Gosper County

463 sq. miles
2019 population: 1,990



Community Profile

Gosper County occupies the southeast corner of the CWPP region. It is bounded on the north by Dawson County, on the west by Frontier County, on the south by Furnas County, and on the east by Phelps County. Incorporated municipalities include the county seat of Elwood (pop. 829) and Smithfield (pop. 65). There are no unincorporated communities in the county.

In addition to municipal lands, public lands include 1,449 acres in three USFWS Waterfowl production areas, 957 NGPC-managed acres in two WMAs and one SRA, and 2,826 acres in school lands. The balance of the land within the county is privately owned. The primary land use is agriculture and livestock operations.

The vegetation is primarily Loess mixed-grass prairie, with woody wetlands along many of the creeks. Eastern redcedar has become established over much of the county's rougher terrain, particularly south of the municipalities. Dryland agricultural fields are widespread throughout the county. Irrigated cropland is concentrated in the northeast quadrant, which is served by the Phelps County irrigation canal and a network of laterals.

Fire History

Although large prairie fires were common prehistorically, from the time this area was settled by Europeans until the 1970s, wildfire activity was generally limited to small fires which residents rapidly and effectively controlled. The increased fire suppression allowed woody vegetation to become denser and more widespread, particularly in rugged terrain. Beginning in the last quarter of the 20th century, wildfire occurrence and intensity increased sharply in much of western and central Nebraska.

Gosper County fire departments reported 700 fires between 2000 and 2020, which burned a total of over 6,400 acres. Some of the larger fires reported by these departments include:

- July 2005: 700-acre equipment fire in the Elwood FD
- July 2001: 500-acre lightning fire in the Lexington FD
- September 2002: 400-acre equipment fire in the Lexington FD
- March 2016: 155-acre equipment fire in the Oxford FD

Fire Hazard and Risk

The areas most at-risk from wildfire are in the WUI surrounding municipalities and along drainages with heavy fuels. Locations of special concern include the rough terrain south of Elwood and Smithfield, where there are heavy fuels and difficult access; and in the Elwood Reservoir, Johnson Lake, and East Phillips Canyon areas which receive a great deal of recreational use. Homes and other structures in these locations are at increased risk due to these factors.

Locations of special concern identified by local fire districts include the northwest sections of the Holbrook-Edison-Arapaho Fire District due to grassland, trees, rough with few access points, water refill points are few and a distance away (Holbrook VFD). The Edison VFD noted that all areas in their district with difficult access, rough terrain, and heavy fuels are problematic. The Elwood fire chief said that they have specific concerns about Elwood Reservoir and Johnson Lake due to multiple structures, difficult access, rough terrain, and heavy fuels. Areas of Concern are mapped in Appendix A.

Agricultural lands in those portions of the county which lie outside mapped Areas of Concern do have their own fire risk variables; however, irrigated croplands are not as fire-prone as forests and grasslands. All of Gosper County lies within the boundaries of the WUI as defined by the NFS in the introduction to this CWPP.

Protection Capabilities and Infrastructure

The Tri-Basin NRD HMP includes a full geo-located critical infrastructure list (see link in Appendix C).

Fire Districts, Mutual Aid, and Emergency Operations

Gosper County is part of the Region 17 Emergency Management jurisdiction. The Elwood fire district is located completely within the county. The Bertrand, Holbrook-Edison-Arapaho, Lexington, and Oxford fire districts lie partially within Gosper County and extend into adjacent counties. See Appendix G for their contact information, equipment lists, and responses to the VFD questionnaire. The fire departments are responsible for fire protection and other emergencies in their fire districts. The Gosper County Sheriff's department provides assistance as needed.

All of the fire departments belong to one or more of the four MAAs that overlap the county. The Bertrand VFD belongs to the Central Nebraska Volunteer Fire Association and the Phelps Co. MAAs. The Elwood and Lexington fire departments belong to the South Central Nebraska MAA. The Arapaho VFD is part of the Central Nebraska Volunteer Fire Association and Tri-Valley MAAs. The Edison and Holbrook VFDs are with the Tri-Valley MAA. The Oxford VFD belongs to the Central Nebraska Volunteer Fire Association and Tri-Valley MAAs. See Appendix F for a statewide list of MAAs.

Water Sources

The only developed non-agricultural water systems (other than private wells) are in the municipalities. The Phelps County Canal, the Tri County Supply Canal, and a network of laterals provide irrigation water to the northeast part of Gosper County. There are no rivers in the county. Elwood Reservoir and Johnson Lake are reliable water sources, as are some of the larger creeks. Ponds and stock tanks are located throughout the region. During drought conditions many ponds are not dependable. Many smaller streams have only intermittent flows and are not reliable. Windmills are abundant in the county and can provide water when they are operational. The Edison, Elwood, Holbrook, and Oxford VFDs identified hydrants, other water sources, and rural water supply as concerns.

Utilities/Phone service

Rural electric service in Gosper County is provided by the Twin Valleys and Dawson PPDs. There are both cellular and landline telephone services available in the county. Cell service is spotty in some locations.

Roads and Bridges

Gosper County is served by US Highway 283, which runs north to south through the central part of the county; Nebraska Highway 23, which enters the central part of the county from Phelps County and runs northwest through Smithfield and Elwood, exiting into Frontier County east of Eustis; and Nebraska Highway 18, which enters the central part of the county from Frontier County and joins US 283. These are augmented by a network of county-maintained roads. The Elwood VFD reported that their distract has many 3-10 ton bridge limits which can cause issues for heavy fire vehicles.

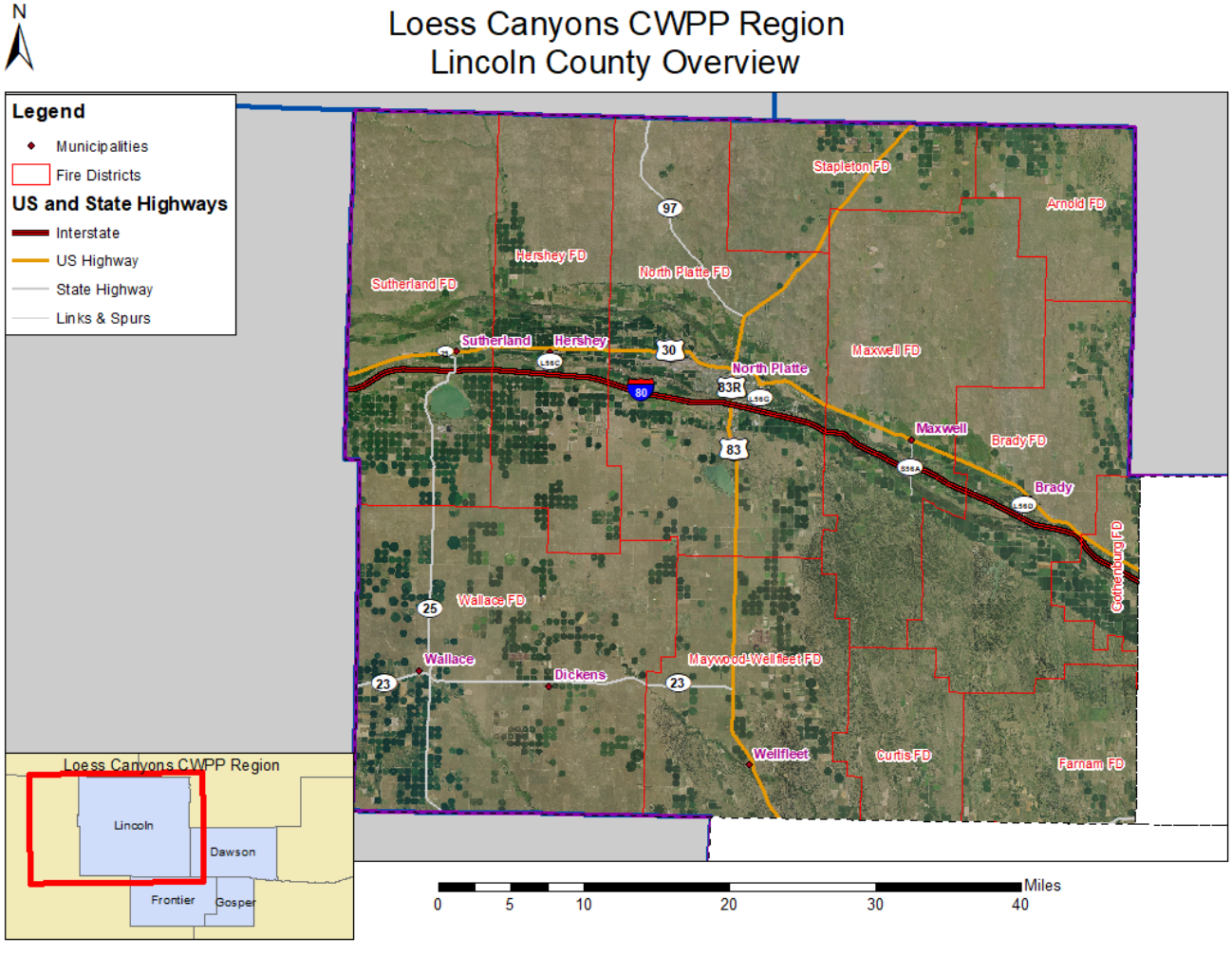
Greatest Concerns

The fire departments were asked to list their greatest concerns for their district; responses appear in the table below:

Department	**Greatest Concerns**
Arapaho	(Survey not returned)
Bertrand	Having enough manpower
Edison	Manpower
Elwood	Access, manpower, equipment, water supply
Holbrook	Personnel and water
Lexington	(Survey not returned)
Oxford	Rural water supply

Lincoln County

2,575 sq. miles
2019 population: 34,914



Community Profile

Lincoln County occupies the northwest corner of the CWPP region. It is bounded on the south by Frontier and Hayes Counties, on the west by Keith and Perkins Counties, on the north by McPherson and Logan Counties, and on the east by Custer and Dawson Counties. Incorporated municipalities include the county seat of North Platte (pop. 23,892), Brady (pop. 405), Hershey (pop. 606), Maxwell (pop. 230), Sutherland (pop. 1,607), Wallace (pop. 274), and Wellfleet (pop. 52). Dickens (no pop. data) is an unincorporated community.

Besides municipal lands, public lands in Lincoln County include 58,201 acres in school lands, 26 NGPC properties (5,236 acres total in 21 WMAs, three SRAs, a SHP, and a fish hatchery), the 655-acre Cedar Canyon State Demonstration Forest (NFS), and one 5-acre BLM tract. The balance of the land within the county is privately owned. NGO-managed and fee lands include 2,441 acres (The Nature Conservancy) and 4,376 acres (Ducks Unlimited). The primary land use in the county is agriculture and livestock operations.

Vegetation consists primarily of a mosaic of mixed-grass prairie types, with strips of lowland tallgrass prairie and riparian deciduous forests and woody wetlands along the Platte Rivers. Eastern redcedar has become

established over much of the county's rougher terrain, particularly in the Loess Canyons and in the Medicine Creek watershed. Irrigated cropland is concentrated along the Platte River, served by an extensive network of irrigation canals and laterals, and in the southeast quadrant of the county. Dryland agricultural fields are scattered throughout the region.

Fire History

Although large prairie fires were common prehistorically, from the time this area was settled by Europeans until the 1970s, wildfire activity was mostly (with a few notable exceptions) limited to small fires which residents rapidly and effectively controlled. This allowed woody vegetation to become denser and more widespread, particularly in rugged terrain. Beginning in the last quarter of the 20th century, wildfire occurrence and intensity increased sharply in much of western and central Nebraska.

Lincoln County fire departments reported 1,079 fires between 2000 and 2020, which burned a total of over 73,000 acres. The largest of these was a lightning fire reported by the Farnam VFD in August 2002, which burned about 22,000 acres in Dawson, Frontier, and Lincoln Counties. The NFS has a map layer that includes the footprints of large fires that occurred prior to the establishment of the NFS fire reporting database. Some of these are mentioned in the following list.

Since 1989, Lincoln County fire departments have reported more than 20 fires over 1,000 acres in size, including:

- September 1995: 27,237-acre fire in the Hershey FD, Lincoln and McPherson Counties
- August 2002: 22,000-acre lightning fire in the Farnam, Brady, and Gothenburg FDs
- March 2002: 11,012-acre fire in the Wallace FD
- October 2000: 10,000-acre lightning fire in the Stapleton FD, Lincoln and Logan Counties
- February 1999: 7,793-acre fire in the Maxwell and North Platte FDs
- April 2011: The 6,526-acre 'Harvestca' fire in the Stapleton FD, Lincoln and Logan Counties
- November 1999: 3,473-acre fire in the Wallace FD
- August 1995: 3,149-acre fire in the Maxwell and Brady FDs
- March 1989: 2,706-acre fire in the Maxwell FD
- Feb. 2000 & Jan. 2014: 2,500 and 2,000-acre fires in the Arnold FD (Lincoln, Custer, Logan Counties)
- April 2000: 2,000-acre equipment fire in the Curtis FD (Lincoln, Frontier Counties)
- September 2012: 2,000-acre fire in the North Platte FD

Fire Hazard and Risk

The locations most at-risk from wildfire are in the WUI surrounding municipalities; along the Platte Rivers where there are heavy fuels and significant recreational activity; and in the rugged Loess Canyons terrain in the southeast quadrant of the county. Areas of special concern include the heavily used state recreation areas (Sutherland Reservoir, Maloney Reservoir, and Buffalo Bill Ranch SRAs), and the many WMAs along the Platte Rivers where there is considerable recreational use, heavy fuels, and difficult access. Homes and other structures in and near these sites are at increased risk due to these factors.

Fire departments listed specific areas of concern, including Brady-Moorefield Rd and Jeffrey Reservoir—homes with heavy cedar tree cover (Brady VFD); the northwest part of the Farnam district is very rough and hard to get around in—grass hills & trees, with multiple structures, one way in/out, heavy fuels, and lack of water within effective distance (Farnam VFD); the Village of Wellfleet has high home density (Maywood-Wellfleet VFD); and Hillcrest Estates, Indian Hills, and Weaver Heights subdivisions (North Platte Fire Department). The Hershey VFD noted that there areas in the jurisdiction with high home density, infrastructure/ resources at risk, or populated areas with one way in/out, but did not list specific locations. Areas of Concern are mapped in Appendix A.

Agricultural lands in those portions of the county which lie outside mapped Areas of Concern do have their own fire risk variables; however, irrigated croplands are not as fire prone as forests and grasslands. All of Lincoln County lies within the boundaries of the WUI as defined by the NFS in the introduction to this CWPP.

Protection Capabilities and Infrastructure

The Twin Platte NRD HMP includes a complete critical infrastructure list for Lincoln County (see Appendix C).

Fire Districts, Mutual Aid, and Emergency Operations

Lincoln County is part of the Region 51 Emergency Management jurisdiction. A dozen fire departments are located completely or partially within the county: Arnold, Brady, Curtis, Farnam, Gothenburg, Hershey, Maxwell, Maywood-Wellfleet, North Platte, Stapleton, Sutherland, and Wallace. See Appendix G for their contact information, equipment lists, and responses to the VFD questionnaire. The fire departments are responsible for fire protection and other emergencies in their fire districts. The Lincoln County Sheriff's department provides assistance as needed.

All of the fire departments belong to one or more of the six MAAs that overlap the county. The Arnold Fire Department is part of the Custer Co., Mid Plains, and Sandhills MAAs. The Brady VFD is in the Mid Plains and South Central Nebraska MAAs. Curtis belongs to the Frenchman Valley, Mid Plains, and South Central Nebraska MAAs. Farnam and Gothenburg are in the South Central Nebraska MAA. Hershey, Maxwell, and North Platte are part of the Mid Plains MAA. Maywood-Wellfleet belongs to the Frenchman Valley and Mid Plains MAAs. Stapleton is with the Mid Plains and Sandhills MAAs. Sutherland is part of the Mid Plains and Southwest MAAs. Wallace belongs to the Frenchman Valley, Mid Plains, and Southwest MAAs. See Appendix F for a statewide list of MAAs.

Water Sources

The only developed non-agricultural water systems (other than private wells) are in the municipalities. The Platte Rivers and the major creeks are generally reliable water sources, as are Sutherland and Maloney Reservoirs. Ponds and stock tanks are located throughout the county. During drought conditions many ponds are not dependable. Many smaller streams have only intermittent flows and are not reliable. Windmills are abundant in the county and can provide water when they are operational. The Farnam, Gothenburg, and Sutherland VFDs identified water sources and availability as a concern. The Curtis Rural Fire Protection District credited the LCRA for conducting prescribed burns in their district to reduce the eastern redcedar fuel load and said the group provides additional water sources and a wildland grass rig.

There are numerous irrigation canals along the Platte Rivers. The main canal systems are the Birdwood, Keith-Lincoln, Paxton-Hershey, Sutherland, Outlet, Cody-Dillon, North Platte, Suburban, Tri-County Supply, Gothenburg, Sixmile, and Thirtymile. The canals include an extensive network of laterals.

Utilities/Phone Service

Lincoln County is crossed by several high-tension power lines. Rural electric service is provided by the Dawson PPD, Custer PPD, McCook PPD, and the Midwest Elec. Cooperative Corp. Both cellular and landline telephone services are available in the county. Cell service is spotty in some locations.

Roads and Bridges

Interstate 80 and US Highway 30 follow the Platte River through Lincoln County. Several short links connect I-80 with US 30. US Highway 83 enters the central part of the county from Frontier County and runs north and northeast, exiting into Logan County. Nebraska Highway 23 enters from Perkins County west of Wallace and continues east through Dickens before ending at US 83. State Highway 25 runs from Sutherland south to Hayes County. Nebraska 97 enters from McPherson County and runs south and southeast before joining US 83 north of North Platte. These routes are augmented by a network of county-maintained roads.

The Sutherland VFD reported that the Sutherland North River Bridge has a weight limit, but they are exempt. The Farnam fire chief said there is one bridge in their district that may not support equipment weight.

Greatest Concerns

The fire departments were asked to list their greatest concerns for their district, shown in the table below:

Department	**Greatest Concerns**
Arnold	(Survey not returned)
Brady	(None indicated)
Curtis	(None indicated)
Farnam	Rough terrain to deal with in some areas
Gothenburg	Being able to get to some areas due to terrain
Hershey	We call for Mutual Aid right away because of manpower/resources
Maxwell	(Survey not returned)
Maywood-Wellfleet	Losing a family home
North Platte	Wide open spaces with very limited breaks, heavy fuel loads, surface fuels, and increase in housing developments in rural areas
Stapleton	(Survey not returned)
Sutherland	Manpower; we usually call for mutual aid from other departments early
Wallace	(Survey not returned)

Action Plan

This section of the CWPP addresses risk assessment, fire risk rating, treatment of structural ignitability, prioritization, and risk reduction, and it recommends a plan of action for increasing emergency preparedness. The action plan offers specific preparedness recommendations and describes wildfire risk reduction strategies, fuels mitigation practices, training, education, and maintenance. The final part of this section outlines a monitoring and evaluation process that can be used to track progress and periodically update the plan.

Establish and Implement a Risk Assessment Procedure

Risk assessment is a systematic process for identifying and assessing the range of elements that could lead to undesirable outcomes for a specific situation. Quantitative risk assessments provide a method by which we can calculate risk based on measurements or estimates of various risk components such as likelihood of fire occurrence, intensity of fire should it occur, and susceptibility to fire of the various values being evaluated. Qualitative risk assessment is the application of judgment based in knowledge and experience when assessing wildfire risk, the potential for ignitions and recommendations regarding possible ways to mitigate the risk.[18]

It is important to understand the meaning of risk and hazard in relation to wildfire as it pertains to this CWPP. ***Risk*** is the chance or probability of occurrence of fire. ***Hazard*** is the exposure to risk; in a wildfire situation, those hazards can be related to either the natural or the human-made environment. Natural hazards include fuel type and amount, topography, and weather. Human-made hazards include the limited availability of water, limited access to structures, limited green space around structures, and the ignitability of structures. The capability of firefighting resources will be compromised by the severity of both natural and human-made hazards.[19]

An assessment includes a review of the area's fire history, fuels/vegetation rating, topographic hazard analysis, weather hazard potential, access, water availability, defensible space, and structural ignitability. The Overview section of this plan contains information about the area's fire history, climate, weather, fuels/vegetation, and topography. Individual county sections provide details on water sources and access issues. Local fire department equipment lists appear in Appendix G. Defensible space and structural ignitability are addressed in this section of the plan.

Several risk assessment tools are available to help communities and individuals understand, explore, and reduce wildfire risk. The USFS's Wildfire Risk to Communities website is designed to help community leaders, such as elected officials, community planners, and fire managers. This is the first time that wildfire risk to communities has been mapped nationwide. Headwaters Economics provides another national-scale tool that allows users to run a custom Wildfire Risk Report. On a more local level, the NFS has developed the Nebraska Wildfire Risk Explorer website to provide wildfire-related resources to Nebraskans. The site includes risk assessment tools, property owner resources, and weather data for homeowners, landowners, natural resources and fire professionals, and community planners.

Further information on risk assessment is available in a USFS Rocky Mountain Research Station technical report, which describes a specific risk assessment process premised on three modeling approaches to characterize wildfire likelihood and intensity, fire effects, and the relative importance of highly valued resources and assets that could be impacted by wildfire.[20]

Wildfire-Related Concerns Identified in HMPs by Local Participants

The first step in the assessment process is to identify risks that need to be examined. Looking at wildfire-related concerns identified by local HMP participants is a good place to begin. The Central Platte NRD, Hayes-Frontier-Hitchcock, Tri-Basin NRD, and Twin Platte NRD HMPs cover the counties in the CWPP region.

The 2017 Central Platte NRD HMP, the 2018 Tri-Basin NRD HMP, and the 2021 Twin Platte NRD HMP all identify their entire planning areas as being at 100% risk of wildfire; some fires can be expected to exceed 100 acres in size.

The Twin Platte NRD HMP specifically identifies wildfire as a hazard and it was prioritized by the NRD, Lincoln County, and the villages of Sutherland and Wallace. The HMP includes a regional risk/general vulnerability assessment. It lists specific mitigation alternatives and selected mitigation actions. The Lincoln County participant section names wildfire as a hazard that occurs frequently in the county. The City of North Platte identified a mitigation action to reduce fire damage by identifying vulnerable areas/combustion sources, evaluating fire resistant roofing, developing a plan to reduce wildfire impact/combustion materials, and enacting building codes for fire-resistant roofing. Recently, the Village of Sutherland built a new fire hall with a backup generator. The village lists an evacuation plan as a medium-priority mitigation for wildfire.

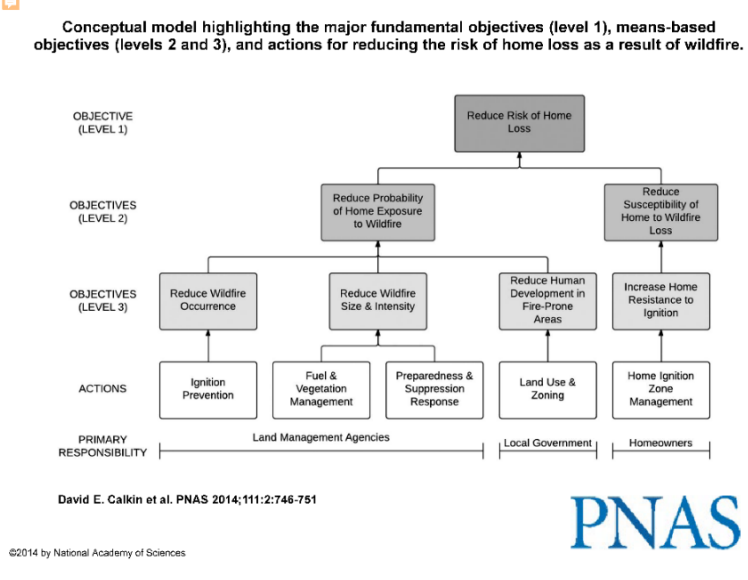
In the Central Platte NRD HMP, wildfire is a specifically identified hazard. The plan includes a regional risk/general vulnerability assessment. The Village of Farnam listed 'Reduce Wildfire Damage' as an objective. The Tri-Basin NRD HMP discusses regional vulnerabilities but lists no mitigations.

The 2018 Hayes-Frontier-Hitchcock HMP identified but did not evaluate wildfire risk because the planning area contains 'minimal forested areas.' This CWPP addresses wildfire risk in both forested and grassland areas, and it is hoped that wildfire will be addressed or cross-referenced with this CWPP in future HMP updates.

Fire Risk Rating and Ignitability

Homes in both forested and non-forested settings can be at risk from wildfires. Quantitative structure risk ratings can be handled under location-specific plans for incorporated communities. Major components of structural ignitability include roofing materials, walls, windows, and wooden attachments. Most of the CWPP region is rural/agricultural with widely spaced home locations. There is an opportunity to perform structural risk and ignitability analysis and treatment activities at rural residential and recreational home sites at the same time fuels mitigation work is being conducted in these areas.

Overcoming perceptions of WUI fire disasters as a wildfire control problem rather than a home ignition problem, determined by ignition conditions, will reduce home loss. The following graphic illustrates the dual-pronged objectives of reducing the risk of home loss by both reducing the probability of exposure to wildfire AND reducing susceptibility to wildfire loss.[21]



Prioritization
The community sections in this document describe the WUI focus areas within each county. These can be further prioritized based on data gathered during risk assessment for individual neighborhoods. The proliferation of eastern redcedar in the Loess Canyons and its encroachment into riparian woodlands along major streams creates high priority for hazardous woody fuels reduction in these areas, especially in locations with recreational and rural residential subdivisions, such as those surrounding the large reservoirs. All of the WUI edges of population centers, unincorporated residential developments, and dispersed recreational developments in the CWPP region have high priority for fuels treatment and Firewise® preparation. Further assessments may identify additional priority areas.

Appendix A contains an 'Areas of Concern' map depicting the parts of each county considered to be at the highest risk from wildfire. The locations were identified by local fire officials, the steering committee, and the planning team. These include interface areas with neighborhoods directly adjacent to open spaces, intermix areas where homes are interspersed with natural fuels, and occluded interface areas where neighborhoods are isolated or surrounded by areas of natural fuels.[22] These areas can be prioritized according to locally identified criteria such as hazardous vegetation, structure density, access, and water availability.

The Assessment Process
Many actions can be taken to reduce the fire potential in both existing housing developments and planned new subdivisions. People can assess the potential of a structure located in a wildland environment to withstand an approaching wildfire without the intervention of firefighting personnel and equipment. Assessments focus on proactive, pre-fire preventative actions rather than reactive fire suppression plans. Several excellent fire hazard assessment methodologies are widely available. Below are excerpts from the National Wildland/Urban Interface Fire Protection Program's methodology[23] publication:

First, it is important to understand how three ignition sources (radiation, convection, and firebrands) can impact a structure located in a wildland environment and how they affect certain building components—roofs, eaves/overhangs, walls, windows, vents, and attachments. Fire potential can be reduced when building a structure or altering an existing structure by conducting mitigation measures on the structure itself and in the surrounding wildland area. The following is a five-step method for assessing the hazards of a WUI area:

Step 1: Select the area to be evaluated.

Step 2: Select the hazard components to be considered. These can include but are not limited to:
- Vegetative fuel hazards both in and beyond the immediate vicinity of the structure
- Structure density (lot size, structures per lot)
- Slope (steeper slopes are more hazardous)
- Weather patterns (temperature, humidity, winds, drought)
- Fire occurrence (increased fire probability where fires have occurred in the past)

Step 3: Rank the hazard components. Develop or use an existing system to define the significance of each component. The system, though subjective in nature, should be specific and consistent.
- Define a system to rank the hazard level of the components (e.g., low-medium-high or numeric)
- Evaluate and rank each individual component that is included in the assessment
- Develop an overall hazard rating system
- Calculate the overall hazard rating

Step 4: Compile the hazard rankings in a usable format that reveals the relationships between the individual hazards and categories of hazards. Three methods are often used to analyze the data collected:

- A geographic information system can define the hazards components and display each hazard on clear overlays, rather than on a single map, allowing analysis of various combinations of data
- A grid index system references specific points of interest on a map. The coordinates of the grid define the hazard rating of a specific property or area
- A matrix system describes the severity of each hazard for each area within the assessment

Step 5: Develop future actions—use the information developed to reduce fire loss potential in the WUI:

- Develop mitigation strategies to improve firefighter and public safety
- Develop fire response/evacuation plans
- Provide reference tools for planners, insurers, bankers, and local code adoption
- Develop region-wide cooperative fire protection agreements
- Perform cost/benefit analyses
- Implement or evaluate existing programs
- Strategically focus fuel reduction projects
- Distribute this information along with public fire safety education materials to educate property owners, local and state governments, and fire-service agencies

Wildfire Risk Reduction

The goal of risk reduction is to reduce the potential loss to life and property. Understanding that wildfire is inevitable can help communities prepare for wildfires. Fire-adapted communities are knowledgeable, engaged communities where actions of residents and agencies in relation to infrastructure, buildings, landscaping, and the surrounding ecosystem lessen the need for extensive protection actions. This enables people to safely accept fire as part of the surrounding landscape. A successful fire-adapted community approach has the potential to save lives, homes and communities, and millions of dollars in suppression costs annually.

There is a range of actions property owners and managers can undertake to become more adapted to wildfire. In general, the more elements that a community has addressed, the more fire-adapted the community will become. Major elements of a fire-adapted community include vegetation management, ignition-resistant homes, increasing local responders' understanding of wildfire, cooperation between jurisdictional authorities, and fuels treatments on both private and public lands to reduce hazardous fuels and create fuels buffers.

The requirements and procedures to become recognized as a Firewise® Community require coordination among homeowners. When landowners implement fuels reduction treatments using NFS cost share programs, or if a landowner asks for suggestions, the NFS adheres to established Firewise® standards. Many homeowners who do not reside within an officially designated Firewise® Community have utilized those standards independently. NFS staff is available to help homeowners in areas at-risk from wildfire to establish formal Firewise® Communities.

Homeowners may undertake mitigation measures that can decrease the potential destructive effects a wildfire might have on their property. Some measures are designed to modify the vegetative environment surrounding a structure to decrease potential ignition sources. Others focus on modifying a structure (or changing its location) to make the building more resistant to ignition. To reduce the risk for the long term, actions need to be maintained over time. [24]

Common Practices

- Actively managing vegetation near the home by reducing density, conducting landscaping maintenance, and replacing flammable vegetation with ignition-resistant components. Greater efforts are needed within close proximity of the structure and gradually decreasing efforts beyond that.
- Maintaining structures free of needles, leaves, and other organic debris from decks, roofs, and near the base of exterior walls.

- Increasing ignition resistance of structures by actions such as using ignition-resistant roofing and covering exterior openings of structures, such as attic vents, eaves, soffits, and crawl spaces, with non-flammable wire mesh screening.
- Removing flammable materials from beneath structures and decks.
- Locating firewood, fuel tanks, and propane tanks at a safe distance from structures.

Refer to Appendix J for an expanded list of common practices and a listing of several programs, such as "Firewise®" and "Ready Set Go," available to help homeowners and communities reduce wildfire risks.

Other Wildfire Mitigation Practices

Additional wildfire-related mitigation practices are listed below. Some entities have already implemented one or more of these. Planners may want to periodically review and implement or expand on them, as appropriate.

- Acquire training and equipment for local fire departments
- Implement woody fuels reduction and defensible space projects
- Establish or expand wildfire prevention and education programs
- Participate in the Firewise® program
- Adopt a wildfire hazard identification and mitigation system (see Appendix J)
- Conduct maintenance to reduce risk (tree care and public landscape maintenance programs)
- Reduce risk through land use planning (landscaping and building ordinances)
- Require or encourage fire-resistant construction (the use of non-combustible materials)
- Incorporate wildfire mitigation into comprehensive planning
- Develop a wildland-urban interface code
- Expand water storage capacity/emergency water supplies/dry hydrants
- Upgrade rural water systems; improve well and water systems

Although funding limitations affect any jurisdiction's ability to implement some of these practices, identifying them as critical needs helps prioritize them for funding assistance opportunities such as the NFS fire equipment program described earlier in this plan.

Wildfire-Related Mitigation Practices Identified in local HMPs by Area Participants

The regional HMPs include lists of current and completed mitigation projects for participating communities. Some TPNRD HMP participants specifically identified the following mitigation practices:

- Public education (Sutherland)
- Evacuation plan (Sutherland)
- Identifying vulnerable areas/combustion sources (North Platte)
- Evaluate fire resistant roofing (North Platte)
- Developing a plan to reduce wildfire impact and reduce combustion materials (North Platte)
- Enact building codes for fire-resistant roofing (North Platte)

Recommendations for Increasing Emergency Preparedness

Communication

Having and using a comprehensive communications plan is integral to maintaining smooth operations. Many jurisdictions in Nebraska have identified communications as a major issue when working under a mutual aid scenario. Various responders have different communications hardware, and often these are incompatible with one another. This is more than just a nuisance. Communication is vital to responder safety and to coordinating an effective response to wildfire. It is recommended that all entities in the region establish or review, and regularly update their local communications plans.

Coordination

Coordination among responders is crucial in any emergency response situation. Local emergency managers must be able to tie in their responses with neighboring and outside assisting jurisdictions. The following opportunities have been identified to address common issues and concerns:

1) To protect firefighters, property owners, and structures, consider developing county-level standards for buildings in WUI areas.
2) Encourage communities to utilize the national Firewise® Communities program to decrease risk.
3) Engage partners such as the NRCS, NGPC, and conservation organizations to implement or expand WUI fuels reduction and thinning on a landscape basis through the use of NFS and other cost share programs.
4) Work with the NFS and other partners to implement a CWPP region-wide public education and awareness program to improve wildfire hazard conditions within the WUI.
5) Encourage VFDs in the CWPP region to continue to participate with the other agencies to facilitate interagency wildland fire training.
6) Cooperate with other agencies and property owners to develop long-term multi-unit, multi-year fuel hazard reduction projects, including prescribed burning.
7) Facilitate VFD monitoring of the federal wildland fire weather system indices.
8) Create a statewide "Mutual Aid Guide" that can be carried in each engine, including the engines operated by the federal and state agencies. This document would show what equipment each department, county, or agency has. A fire chief could then consult the guide to see what each department has and could order it for their fire, if needed.
9) Ensure quick notification and involvement process for assessment and assistance on fires, when needed (i.e., WIRAT, Type 3, FEMA, and Type 1 or 2 teams).

Aerial Support

It is critical to maintain the SEAT program authorized through the Wildfire Control Act of 2013. Having a SEAT dedicated strictly to wildfire suppression during peak fire season provides quick initial attack on small fires, particularly those in difficult terrain, keeping them from growing into large catastrophic wildfires. The NFS Seat Managers have made the following recommendations:

1) Having additional SEAT Managers throughout the state would increase response times. Currently there are four qualified managers; more would increase program capabilities.
2) Increase the number of aerial applicators within the CWPP region who cooperate with NFS and NEMA to provide aerial fire suppression to requesting fire departments. Having fewer applicators limits available options during wildfires.
3) Sustain or increase the current level of cooperation with adjacent states and their aviation resources. Maintain clear paths of communication to ensure that neighboring jurisdictions are aware of available resources, times of planned contracted aviation availability, and enable the sharing of resources across state borders, when needed. Facilitate sharing managers and help trainees become qualified. Cooperation in sharing information, personnel, and resources will benefit all in creating effective operations.

Maps and Data

Restricted Roads and Bridges: Some county roads and bridges have weight or width limitations, or both, that may inhibit use by emergency vehicles. Planners are urged to work with counties and fire departments to identify and map all roads and bridges, specifically identifying those that are restricted. Making this data available to fire departments and other emergency responders would facilitate route planning. This could also be used to help prioritize fuel treatment areas. Since road conditions constantly change, this information should be monitored locally and updated as needed.

Incident Command Staging Areas: Local planners can pre-identify potential staging locations near recreation areas and rural subdivisions. Staging areas must be far enough away from a fire to reduce congestion and confusion for incident managers, yet close enough to efficiently provide resources. Resources are deployed from the staging area, with controlled entry into the hazard zone. Areas must be big enough to handle multiple fire crews, engines, tankers, support vehicles, and equipment storage. They need good access, water and power, and be able to accommodate communications. Potential staging area information can be provided to emergency managers, fire chiefs, and others to help them choose a staging area for a particular incident.

Equipment: Non-fire equipment has proven useful in many wildfire situations. Counties may want to consider adding an inventory of non-fire department resources (such as county road graders) to a centralized document.

Geographic Information Systems (GIS): A Global Positioning System (GPS) can be used to provide locations of tanks, water supplies, and other information in each fire district and made available for hand-held devices. Counties that do not already have this information may want to look into acquiring GIS layers for hydrants, well points, water mains, sewer, housing, infrastructure, and bridge limits. Water hydrant systems at golf courses could be mapped and added to this database. GPS locations of stock tanks and other water sources on public lands could also be provided to emergency responders. Other map data that would be useful includes types and locations of pipelines and pumping stations, power substations, power lines, towers and antennas for air resources to avoid, flammable material storage areas, and overhead water refill access points.

There have been issues with sharing map layers between different programs and applications. Many agencies, including the NFS, now use Avenza™, a mobile map app that allows users to download geospatial-enabled pdf maps for offline use on a smart phone or tablet, using the device's built-in GPS to track their location, plot and record location information, measure distance and area, and more. Some VFDs may also use this app, but there currently is no standardized protocol. Creating such standardization over time would likely prove useful.

Other: Counties can use technology to provide early detection systems and real-time fire weather information by retrofitting units and establishing new ones to complete the existing network.

Increase Fire Response Reporting for Increased Equipment Availability

Comprehensive fire reporting helps VFDs demonstrate a need for fire equipment such as provided by the FEPP, FFP/State Fire Assistance, and Volunteer Firefighter Assistance programs described earlier in this document. Since reporting is voluntary for fire districts, not all fire districts consistently report their wildfire responses to the NFS. Because of this, limited information is available about the locations and sizes of historic wildfires within the CWPP counties. There is a risk that incomplete reporting could imply that there is no pressing need for this type of equipment. This could potentially put the status of these programs in jeopardy. In response to this, NFS offers an incentive to VFDs for participation: Only fire departments that report their responses are eligible to apply for this equipment.

Although reporting has increased recently, VFDs are urged to continue stepping up this effort. The information provides data to geographically focus grant assistance on those areas most prone to wildfire. The NFS has a database already in place to facilitate this. Planners and fire departments are urged to work together to gather and report wildfire data to assist fuels mitigation efforts and increase funding opportunities for fire equipment. Departments can report their wildfire responses online. From the NFS home page, www.nfs.unl.edu, go to Programs, Wildland Fire, and navigate to the fire reporting tab. Follow the login instructions the NFS provided to your department (or email trees@unl.edu), then follow the prompts to create the report.

WUI Protection

Prepared communities reduce hazards, protect homes, and increase firefighter safety. Homeowners in WUI areas should be encouraged to establish and expand Firewise® Communities, Fire-Adapted Communities, and

'Ready, Set, Go!' programs across the region. In a wildfire situation, responders often must quickly decide which homes have the best chance of being saved so they can focus their efforts on them. Some Nebraska fire departments have developed "triage" documents to help firefighters quickly assess these homes and neighborhoods. Consider implementing this practice in the CWPP Areas of Concern. Preparation by property owners prior to a wildfire can contribute to firefighter safety and help them protect structures. See Appendix J.

Work with counties and municipalities to evaluate one-way-in/one-way-out subdivisions for potential addition of alternate ingress/egress routes. Estimate costs and identify potential grants or other financial assistance.

County zoning plans can be strengthened to include provisions to limit new construction in areas such as canyon rims that are at high risk from wildfire. Counties may want to consider both the monetary costs to taxpayers and the danger to fire department personnel responding to wildfires in these areas. At the very least, setbacks from the canyon rims, adequate emergency access, and specific Firewise® practices should be considered for implementation in the areas at highest risk. Communities across the planning area can adopt more stringent building codes which may include regulations and requirements to reduce wildfire risk for residents and structures.

Firebreaks and Fuelbreaks

Strategically placed fuelbreaks and firebreaks in the areas most at-risk from wildfire can give firefighters an edge when protecting WUI areas. These two terms are often confused, but it is important to understand the difference.

A fuelbreak (or shaded fuelbreak) is an easily accessible strip of land of varying width (depending on fuel type and terrain), in which fuel density is reduced, thus improving fire control opportunities. The forest is thinned, and remaining trees are pruned to remove ladder fuels. Brush, heavy ground fuels, snags, and dead trees are disposed of, leaving an open, park-like appearance.[24] Fuelbreaks are commonly used to surround a community and slow the spread of a wildfire. Decreasing the fuel load significantly reduces the risk of extreme fire behavior.[25]

Fuelbreaks provide quick access for wildfire suppression. Control activities can be conducted more safely due to low fuel volumes. Strategically located, they break up large, continuous tracts of dense timber, thus limiting uncontrolled spread of wildfire. This can aid firefighters greatly by slowing fire spread under normal burning conditions. However, under extreme conditions, even the best fuelbreaks stand little chance of arresting a large fire, regardless of firefighting efforts. Such fires, in a phenomenon called "spotting," can drop firebrands ⅛ mile or more ahead of the main fire, causing very rapid fire spread. These types of large fires may continue until there is a major change in weather conditions, topography, or fuel type.[24]

Generally narrower than a fuelbreak, a firebreak is a strip of land, 20 to 30 feet wide (or more), in which all vegetation is removed down to bare, mineral soil each year prior to fire season.[24] A firebreak is a discontinuity in vegetation. It may be a gravel road, a river, or a dozer line. A 'green firebreak' uses grasses with high moisture content, such as winter rye or winter wheat to provide a break in the continuity of the fuel. A firebreak, if it is wide enough, will stop the spread of direct flame. However, embers can still be lofted into the air and travel across the line.[25]

It is critical to understand that both fuelbreaks and firebreaks are lines of defense. Homes and developments between the break and the fire may remain vulnerable.[24]

Communities are encouraged to identify the best locations for vegetation breaks to protect the WUI. Fuelbreaks are most effective when placed along an existing firebreak such as a road. Choosing a site along a road also allows easy access for equipment.

There are multiple methods of creating breaks, including mechanical, mulching, herbicide, grazing, prescribed fire, and dozer lines. Each treatment has pros and cons, and some may be better suited to a particular site than others. When choosing a method, consider topography, potential for erosion and other environmental effects, access, aesthetics, and costs.

Fuelbreaks and firebreaks are most effective when they are regularly maintained. Dead vegetation and re-sprouting trees should be removed during maintenance.

During the Loess Canyons CWPP update process, the steering committee discussed the potential for creating a grid of breaks within the identified Areas of Concern. One member suggested that having an established grid in the rougher hills on the north and west portions of the canyons would be a way to substantially increase firefighter survivability and ability to respond in a timely manner. Identifying and organizing a firebreak grid would provide a way to catch a wildfire on two roads or other intersecting pre-existing burn lines. In the event of a wildfire, responding VFDs would already have an action plan in place. People familiar with the local terrain could identify defensible spaces where funds could be spent building larger firebreaks. Existing firebreaks could be connected to other firebreaks. There are several places that could be identified as currently indefensible spaces and ranked for potential to be turned into defensible spaces. This would allow fire departments, landowners, and the NFS to direct funds to the sites most beneficial to the community.

This CWPP update encompasses four counties and 30 fire departments, so it is necessarily broad in scope. The document is intended to provide a solid base for specific mitigation actions by providing the framework to make it easier and more efficient for on-the-ground implementation personnel to focus on projects that can be further developed and implemented locally. Adding the establishment of a firebreak grid as an action plan item sets the stage for identifying specific areas suitable for detailed planning, determining funding options, working with interested landowners to design firebreaks, and creating an implementation schedule.

Training and Education

Firefighter Training

All VFDs are encouraged to participate fully in wildland training opportunities provided through the NFS, the State Fire Marshal's office, and NEMA. Many of the fire departments in the CWPP region are annual participants in the Nebraska Wildland Fire Academies held at Fort Robinson State Park near Crawford and Ponca State Park in Dixon County. A complete description of these is in the training overview earlier in this document. Those departments that do not currently participate can be encouraged to do so.

Although not all VFDs have mandatory fitness requirements, local departments can be encouraged to participate, both for safety and to lower insurance costs.

Educational Opportunities for Property Owners and the Public

The Firewise® and Ready Set Go! programs offer excellent guidelines for reducing the loss from wildfire for both in-town and rural structures. The NFS 'Living with Fire' publications, for both prairie and woodland areas, are also valuable educational tools for property owners. Fire extinguisher inspections and operation training can be offered as part of Firewise® events that participating communities hold annually. Involving local communities in these voluntary programs increases public awareness regarding structure risk mitigation (see Appendix J).

When issuing building permits, county and municipal offices can distribute literature that includes recommended or required setbacks from canyon rims, lists of fire-resistant building materials, and fire-savvy landscaping suggestions. Service groups such as Rotary and Lions, and youth groups such as FFA, also may present opportunities for getting out wildfire planning information.

Fuels Mitigation Strategies

There are several approaches to reducing wildfire hazard through fuels management. In addition to active participation by property owners in the structural protection programs described above, practices such as prescribed grazing, prescribed fire, and mechanical fuels reduction can work together to provide protection over large areas containing a diversity of terrain and vegetative cover.

Prescribed Grazing

Grazing keeps fine fuels such as grasses in check. But overgrazed pastures are problematic for range and livestock health, as well as for wildlife. Landowners can work with range and wildlife management professionals to develop grazing plans that will benefit livestock while protecting grasslands and wildlife and managing fine fuels to reduce wildfire hazard. The NRCS and the University of Nebraska's Institute of Agriculture and Natural Resources have specialists available to help landowners develop grazing systems to address these concerns.

Prescribed Fire

Several federal and state agencies, non-profit organizations, and private landowners use prescribed fire as a land management tool. Prescribed fire can be extremely efficient for keeping eastern redcedar encroachment in check on grasslands. In forested settings, prescribed fire is more effective and safer when used to maintain dense woodlands after they have been mechanically thinned. When tree densities are reduced prior to burning, it is easier to keep the fire on the ground, where it cleans up downed woody fuels without killing many live trees. Crown fires are difficult to control, and they kill healthy trees.

One objective for many of these burns is to reduce heavy fuel loads. Land managers in the CWPP region plan multiple prescribed fires of varying size each year, but weather and resources to conduct the burns impact how many they can complete. Some VFDs assist with these efforts by sharing people and equipment to help with the burns when agency or organizational regulations permit. It is recommended that VFDs continue with these cooperative efforts, as well as continuing participation in training to help them do this safely and effectively.

Mechanical Fuels Reduction in High-Risk Wooded Settings

Many high-risk forested settings within the CWPP boundary are found in wooded recreation sites, rural residential neighborhoods, forested and shrubby lands adjacent to population centers, and in cedar-encroached riparian bottoms. Wooded recreational and 'second home' residential areas add the hazards of seasonal congestion, limited or difficult access, and structures adjacent to highly flammable vegetation. Mechanical thinning will decrease tree density to healthy levels while reducing wildfire hazard.

Slash (unusable limbs and treetops left after thinning) can be chipped, mulched, or piled. Slash piles can present a fire hazard. Disposing of them by either burning during appropriate winter conditions or chipping on-site are acceptable means to mitigate this threat. Chips can help reduce soil erosion in disturbed areas. The chips should be spread, not piled, to allow vegetation to become established in these areas. Piles of chips not only prevent or delay revegetation; they can also be sources of spontaneous combustion.

The cost of mechanical fuels reduction depends on access, terrain, and tree density. Utilization of wood products generated by these treatments has the potential to offset the costs of doing the work. However, presently there is little local commercial market for this material. Researchers are currently working with the NFS to expand markets for wood products.

Because mechanical fuels reduction can be expensive, several agencies and organizations offer cost-share assistance to landowners. These programs are described in the overview section of this plan. It is recommended that private and state forest landowners continue to utilize these resources to maximize the acreage they treat for hazardous woody fuels.

The NFS administers several federal and state grants that provide cost share to landowners to defray the cost of fuels reduction. Information about these programs can be found online at https://nfs.unl.edu/fuels-assistance. Landowners in counties that have a CWPP in place are eligible for these cost share programs.

Fuels Reduction in High-Risk Non-Forested Settings
Fuels management works best when it is conducted on a landscape basis. In addition to reducing woody fuels in forests, it is also important to manage the grass component on both wooded areas and grasslands. Well-planned grazing and prescribed fire can significantly reduce wildfire risk. Fuels treatments are only as effective as their weakest link. Unmanaged 'islands' of grass within managed areas pose a significant risk to the managed lands. Cost-share programs can encourage landowners to manage their non-forested lands. Property managers can check with their local NRCS office for cost share program information.

Another threat in grassland environments is the presence of unmanaged windbreaks intended to protect nearby structures. If those shelterbelts lie within the structures' Firewise® zones, they are a direct threat to the buildings and they must be managed. NFS foresters can provide windbreak management recommendations.

Some communities have expressed concerns about fires jumping over highways that are not properly mowed or managed, and locations along railroad rights-of-way. Regular maintenance of these areas, especially during dry conditions, could help address these concerns.

Much of the fuels reduction activity outside forested areas will involve creating defensible space around rural homes and other structures. The same Firewise® guidelines that apply in forested settings also apply in non-forested settings.

Maintenance

Reducing hazardous fuels is not a one-time event. Areas that have been treated by any method to reduce fuels must be maintained on a regular basis because the vegetation continues to grow. NFS fuels treatment agreements include a requirement that the work be maintained for a minimum of ten years after the project is completed. Treatment, particularly mechanical fuels reduction, can be costly, so continued maintenance by keeping regrowth in check prolongs the period of hazard protection and protects the monetary investment made by landowners and the cost-share program.

Monitoring and Evaluation

Monitoring and evaluation are important components of any planning document because they provide information on how well the plan is performing and whether it is achieving its stated goals and objectives. This provides guidance for planning future activities and is an important part of accountability to stakeholders and funding organizations. This section of the CWPP provides a proposed plan maintenance schedule; discussion of monitoring considerations; review of evaluation elements including suggested units of measure for assessing activities and projects; and a table summarizing the five-year action plan.

Schedule
The maintenance for this plan will be directed by the county boards in the CWPP region and coordinated with local fire officials and resource managers. Counties or their representatives will annually review the plan to evaluate progress, re-evaluate priorities for action items, and recommend updates as needed.

Review of the recommendations will be necessary as various projects or tasks are accomplished and the at-risk areas decline in hazard rating. Review will also be needed as infrastructure needs change or are met. The review team should include representation of stakeholders who participated in the development of this plan.

A complete update of the plan every five years is recommended because infrastructure needs, population, and land use can change, fuels reduction projects may be completed, emergency services in outlying areas may change, data are updated, and areas of extreme wildfire hazard decline or increase. Counties are urged, when possible, to coordinate this process with their regional HMP updates. By aligning the update schedules of various planning mechanisms, the goals, priorities, and actions identified can more easily be integrated into other plans.

Monitoring and Evaluation Process

Continued public involvement is needed to accomplish many of these recommendations. It is important that the process allows for continued collaboration with stakeholders on how best to meet their needs, while at the same time achieving the objectives of this plan. Counties and fire departments can formally or informally monitor progress and coordinate with agency stakeholders who monitor their efforts according to their internal protocol, documenting accomplishments and redesigning strategies as needed.

Annual assessment of the identified tasks is very important to determine the degree of progress being made. Each agency is encouraged to prepare an after-action report, either per event or annually, to assist in plan maintenance and updates. Units of measure to be considered when updating the plan for the purpose of reporting accomplishments can include, but are not limited to:

1. Number of projects or activities accomplished which aid fire agency/emergency service response time
2. Number of transportation issues resolved that improve road systems for access, ingress/egress
3. Number of water sources added or upgraded to improve firefighting response
4. Number of pieces/types of fire equipment obtained; number of departments that received them
5. Number of firefighters and fire departments receiving training courses; course hours completed
6. Number of properties/acres treated for fuels reduction and type(s) of treatment used
7. Number of new or retrofitted ignition-resistant structures
8. Number of events with prevention message delivery, number of prevention courses attended/ conducted, number of news releases or prevention campaigns conducted, and number of prevention team meetings held
9. Number of partners/agencies/groups cooperating on projects and activities
10. Number of people contacted (meetings, courses, etc.) and number of educational items distributed (brochures, etc.)

Each participating agency/organization can assess their activities and projects using units of measure such as those listed above and in Appendix B to determine progress. This plan is not intended to function as a means of bypassing the individual processes and regulations of the participating entities. Each project must adhere to any pertinent local, state, and federal rules. The CWPP is a coordinating document for activities related to fire protection, fuels treatment, information development, and wildfire outreach and education.

Implementing and Updating the Action Plan

Appendix B contains a detailed description of this CWPP's goals, strategies, objectives, and tactics that can be used to implement this plan. It is highly recommended that planners review the appendix in its entirety when developing specific activities to implement this plan. The comprehensive information is intended to assist participants when they initiate action, evaluate progress, and update the CWPP. It may also aid grant writers in accurately describing CWPP targets and organizing funding assistance requests.

The following table briefly summarizes the objectives and the associated tasks needed to achieve each, suggests who might perform the tasks and when, provides benchmarks for evaluation, and identifies opportunities and limitations. When the CWPP is updated at the end of five years, a new action plan can be developed to accommodate new or expand current objectives for the following five years.

Five-Year Action Plan for the Loess Canyons CWPP 2022-2026				
Task(s)	**Who**	**When**	**Benchmark(s)**	**Opportunities/Limits**
Risk Assessment, Prioritization, and Analysis				
Identify/analyze Risk Assessment elements	Local officials, NFS	Done: reviewed/edited during CWPP update	Updated CWPP	n/a
Review county zoning plans for treatment of high fire risk areas	Local planning staffs	2022-2023	# of recommendations to county officials; # implemented	Consider access, building materials, building setbacks from canyon rims
Assess/prioritize areas based on vulnerability	Local officials & fire departments	2022-2023	Maps, checklist, report	Opportunity to further prioritize based on risk assessment
Perform individual structure or neighborhood analyses	Fire depts., agencies, contractors, others	Ongoing	Checklist/report	Opportunity: do during fuel reduction or other site visits. Limits: funding and staff availability.
Risk Reduction/Mitigation				
Identify mitigation practices	Local officials, NFS	Done: reviewed/edited during CWPP update	Updated CWPP	n/a
Expand WUI fuels reduction, including mechanical & RxB	Agencies, landowners; local officials (for public property)	Ongoing	# projects; # acres	Utilize existing & seek new cost share grants
Implement Firewise® & other community protection programs	Local officials, homeowner groups	Ongoing	# of programs established or expanded	NFS has staff available to help communities with this
Evaluate subdivision in/out access	Local officials, VFDs, developers	Ongoing	Report, cost estimates	Explore grant funding to address costs
Increase # of ignition-resistant buildings	Homeowners, planning officials	Ongoing	# New buildings to code; # bldgs. retrofitted	Retrofits can be costly; best opportunity is for new construction
Plan and implement fire & fuel breaks; consider firebreak grid	Land managers, planning officials	Ongoing	# of vegetative breaks sited/established; % continuity gain	Utilize federal, state, and local cost share programs
Assess and Enhance Local Response Capacity, Effectiveness, and Safety				
Review regional HMPs, VFD info, and county data	Local officials, VFDs	2022-2023	Checklist/report	Opportunity to identify gaps and needs
Increase fire response reporting	Fire chiefs	Ongoing	# of departments reporting	Opportunity for VFDs to acquire additional equipment
Increase/update fire equipment	VFDs, NFS	Ongoing	# of departments assist-ed, # of pieces/types of fire equipment obtained	VFDs can utilize NFS FEPP & FFP programs
Increase participation in firefighter training	VFDs, agencies	Ongoing	# of departments and firefighters receiving training; # hours	Many training options available through NFS & NEMA
Facilitate VFD monitoring of fire weather system indices	VFDs, NFS	Ongoing	# of departments able to monitor indices	Limit: # of weather stations. Opportunity: Weather apps and spot weather forecasts can be used on the fireline.
Develop 'triage' guidelines	VFDs, agencies	2022-2023	# documents created, # of VFDs using them	Increases firefighter safety by enabling quick property assessments during wildfires
Increase Communications Effectiveness				
Review local communications plans	Local and state officials	Annually	Document changes/ updates	n/a
Ensure VFDs can communicate on the same radio band during mutual aid	Local and state officials	Ongoing	# VFD's using a common radio band during mutual aid operations	Limited by funding availability. Explore grant funding to address costs.

Task(s)	Who	When	Benchmark(s)	Opportunities/Limits
Ensure prompt notification & involvement process for assessment and assistance on fires	Local and state officials	Ongoing	Checklist/report	Opportunity to expedite response
Increase Aerial Support Effectiveness				
Train additional SEAT Base Managers	NFS, NEMA	Ongoing	# of new certified managers	Limitation: available personnel
Facilitate sharing managers with other states	NFS, NEMA	Ongoing	# of shared SEAT base managers	Helps trainees become qualified
Increase # of aerial applicators in region	NFS, NEMA	Ongoing	# of new applicators	Increases options for fires on non-federal lands
Sustain/increase cooperation & communication with adjacent states' aviation resources	NFS, NEMA, neighboring state officials	Ongoing	# of new & renewed agreements; # of interstate assists	Helps make neighboring jurisdictions aware of available resources, times of planned contracted aviation availability, & enable resource sharing across state borders
Increase Data Availability				
Identify and map restricted roads/ bridges	Local officials, contractors, others?	Ongoing	# of jurisdictions with restricted road/bridge maps	May be able to piggyback data collection with other tasks
Pre-identify potential staging locations	Local officials, VFDs, emergency managers	2022-2024	# of locations identified	Will expedite staging area placement decisions
Standardize map apps for use by VFDs	VFDs, emergency managers	Ongoing	# of VFDs using a standard map app	Cost depends on software and version.
Establish lists of non-fire equipment such as road graders	Local officials, VFDs	Ongoing	# of jurisdictions with equipment lists created	Can be included in regional mutual aid guide
Acquire GIS layers for locating critical infrastructure, water sources, etc.	Local officials and planners	Ongoing	# of new layers created or acquired	Opportunity: Provide in a format that can be easily accessed by hand-held devices
Realtime fire weather information	State, Local	Ongoing	# of units	Retrofit units and establish new to complete network
Provide early detection systems using technology	State, Local	Ongoing	# of units	May retrofit some units and establish new units
Increase Coordination Among Partners				
Develop & adopt regional WUI standards	Local officials, VFDs; NFS can assist with WUI info	2023-2025	Creation of regional standards document; # of counties adopting it	Opportunity: HOAs can also adopt standards
Expand inter-jurisdictional cooperation	Local, state, federal officials	Ongoing	# of mutual aid agreements and # MOUs in place & current	Explore MOUs with non-traditional partners, NGOs
Create a statewide Mutual Aid Guide	NFS, emergency managers, VFDs	2023-2025	Creation of document, # distributed	Having a guide in each engine enhances access to resources
Establish a region-wide public awareness program	Agencies, VFDs	2022-2025	# of participating entities; # of outreach activities	NFS can provide assistance
Engage partners to expand WUI fuels reduction and thinning	NFS, other agencies	Ongoing	# of participating entities, # of projects, # of acres treated	Leverage program effectiveness with multiple agencies, adjacent projects
Develop long-term multi-unit, multi-year fuel hazard reduction projects, including RxB	Agencies, NGOs	Ongoing	# of participating entities, # of projects, # of acres treated	Partners can co-locate projects to expand treated area on a landscape scale
Increase Public Awareness				
News releases, workshops, seminars, etc.	Local officials, planners, VFDs	Ongoing	# of people reached, # of events	NFS has info & materials, can help with planning
Provide literature to homeowners, developers, others	Local officials, planners, VFDs	Ongoing	# of people reached	NFS has brochures & handouts for general use

Endnotes

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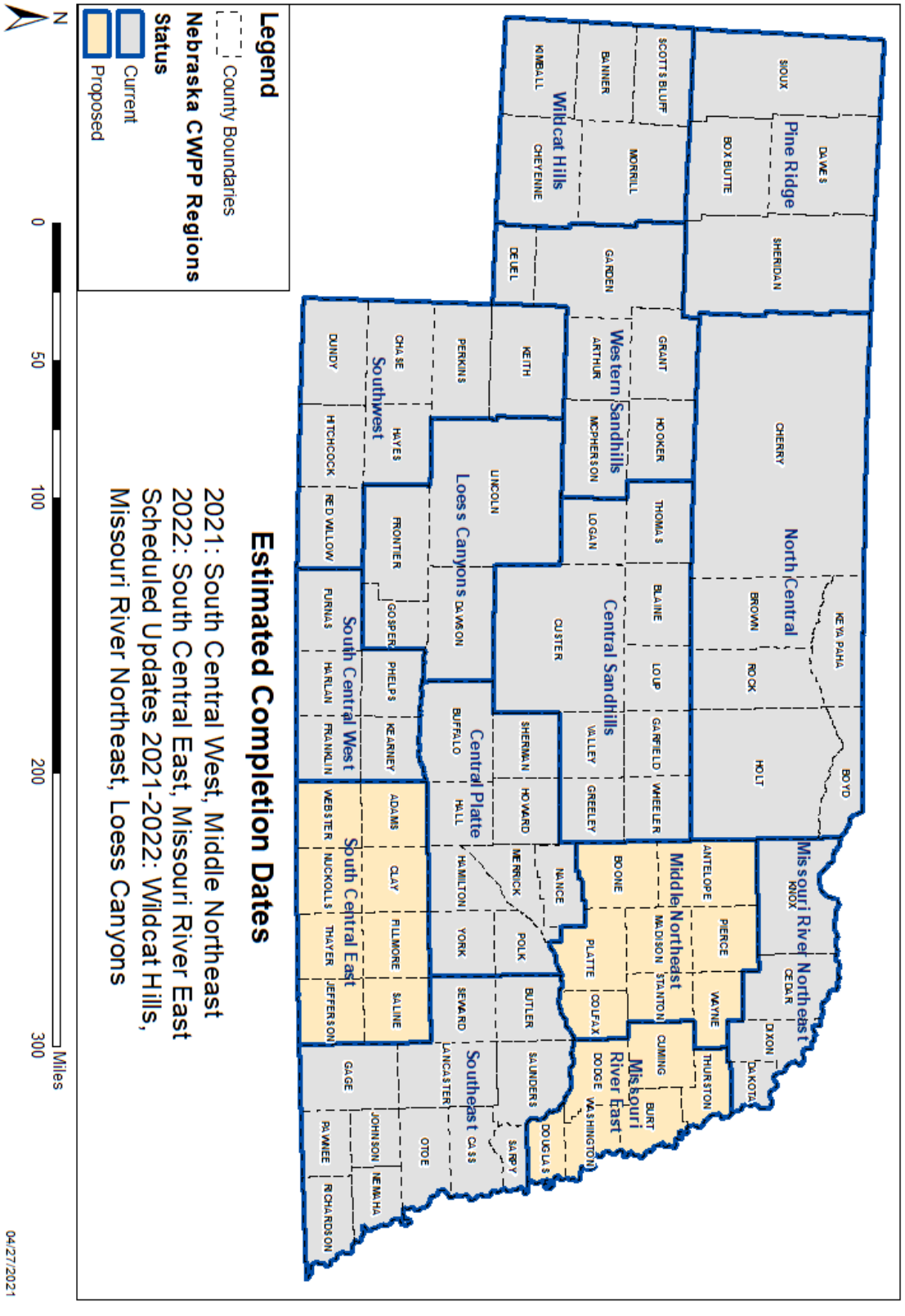
List of Appendices

Appendix A

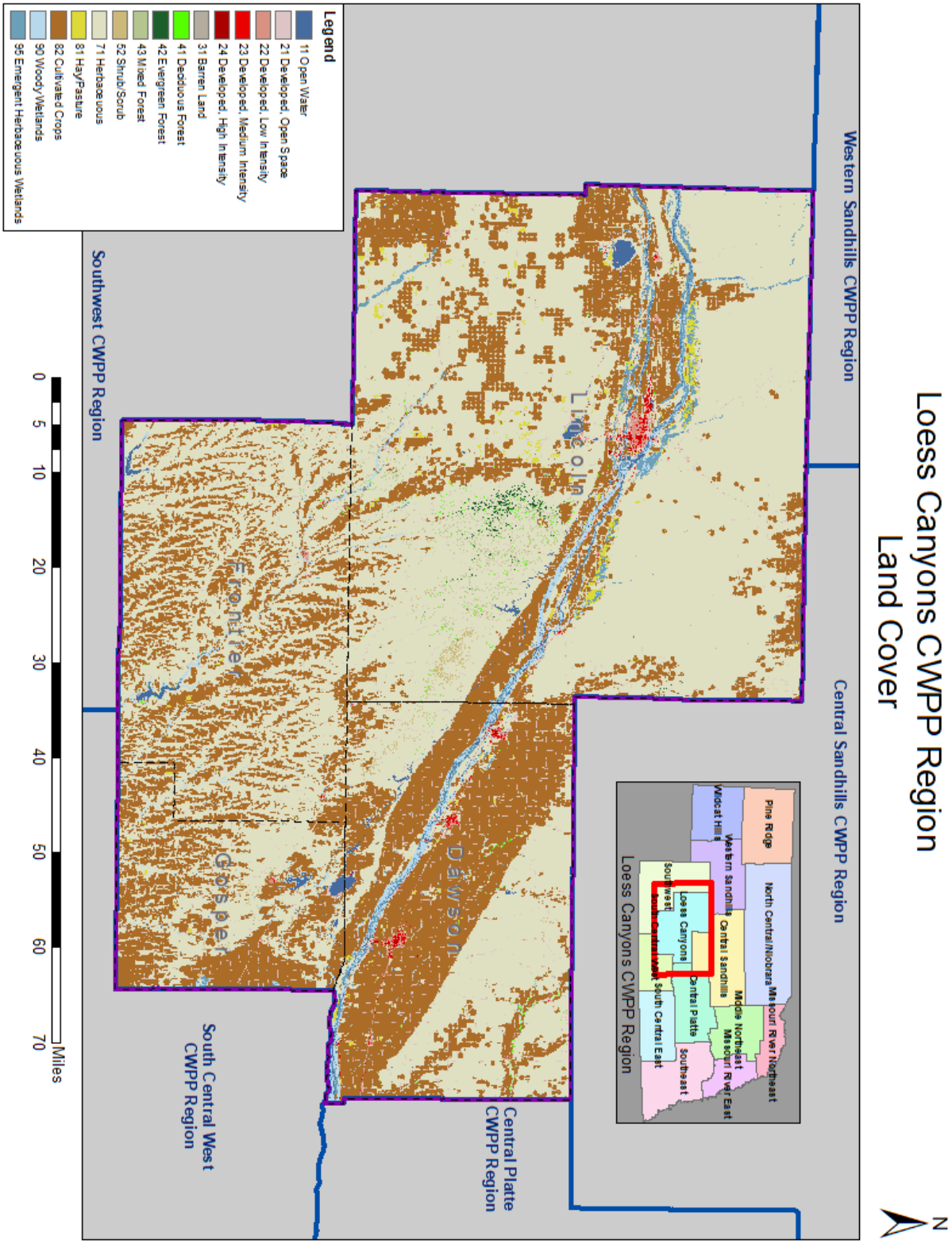
Maps

1. Nebraska CWPP Regions
2. a) Loess Canyons Land Cover; b) Native Vegetation
3. Nebraska Natural Legacy Project: Biologically Unique Landscapes
4. Nebraska Local Emergency Management Areas
5. Nebraska Local Mitigation Planning Areas
6. Loess Canyons CWPP Areas of Concern

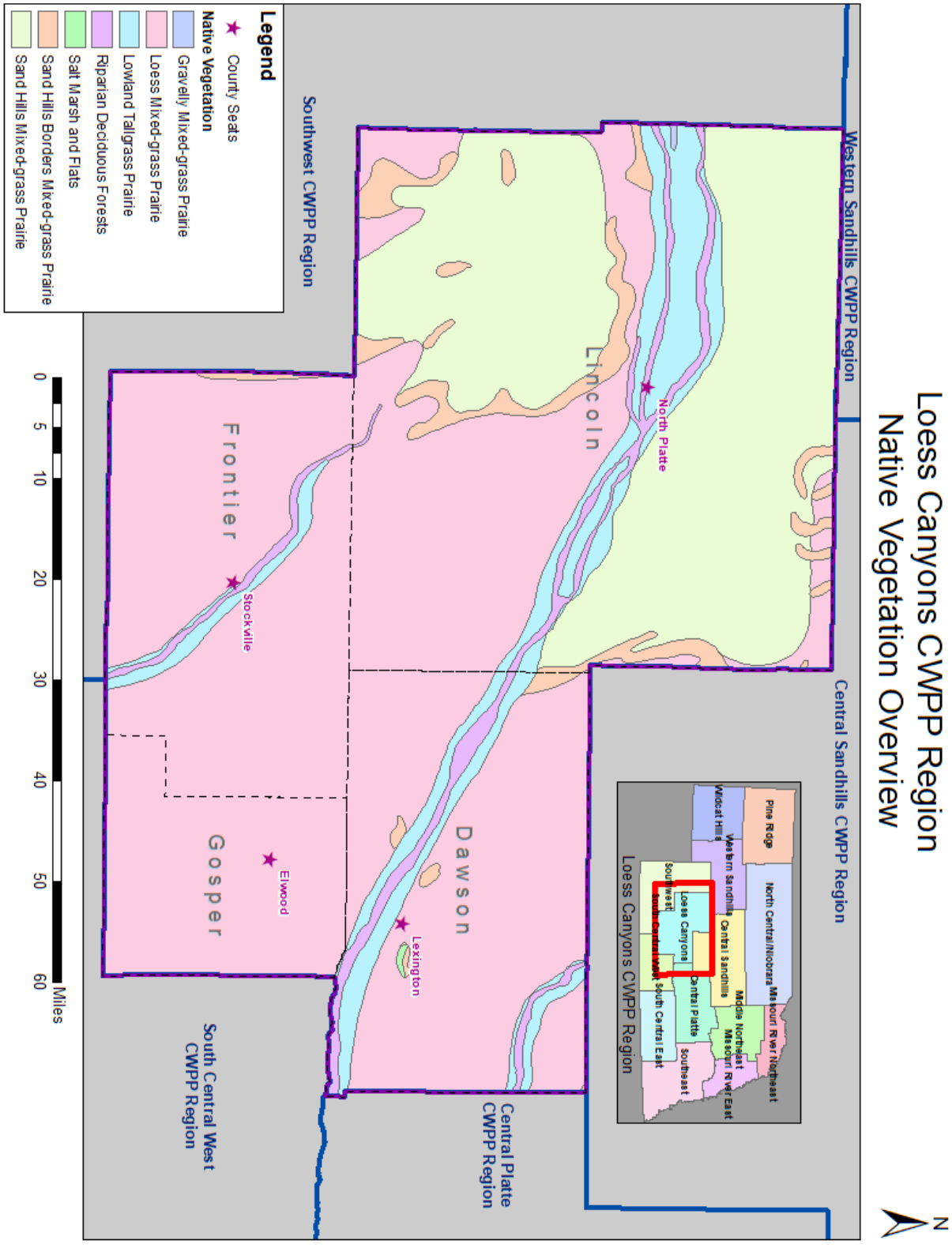
Map 1: Nebraska Community Wildfire Protection Plan Regions



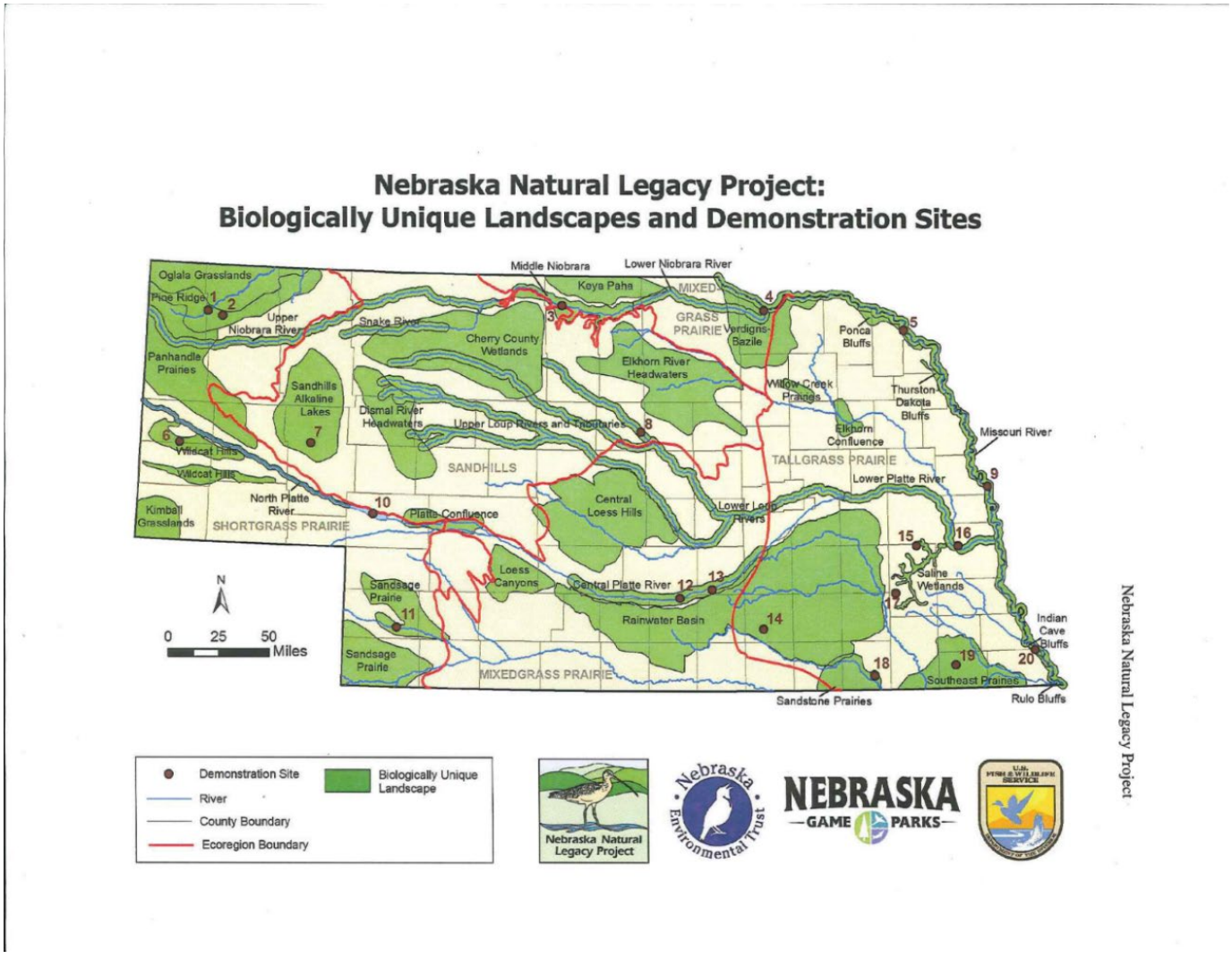
Map 2a: Loess Canyons CWPP Region Land Cover



Map 2b: Loess Canyons CWPP Region Native Vegetation



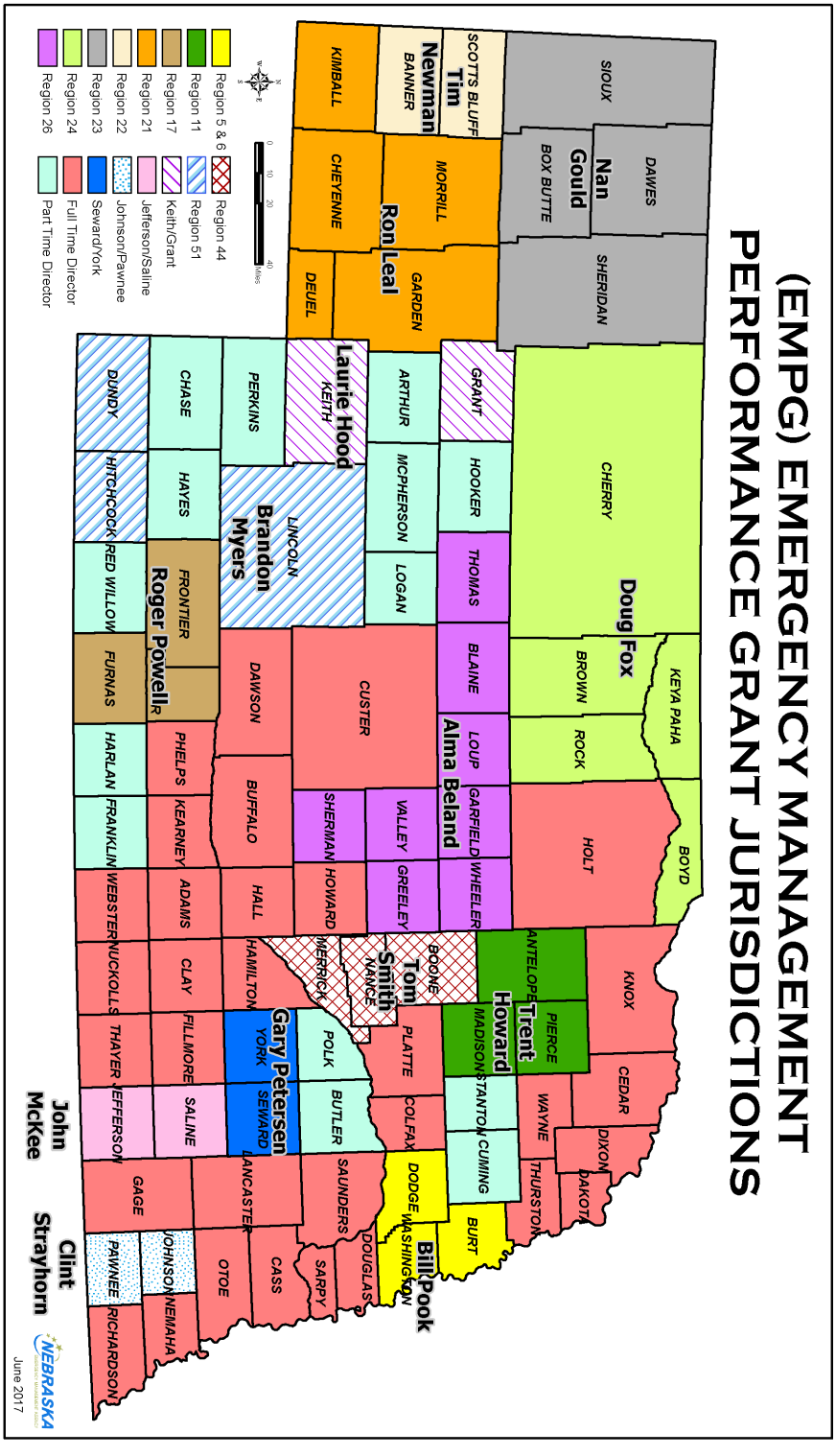
Map 3: Nebraska Natural Legacy Project: Biologically Unique Landscapes



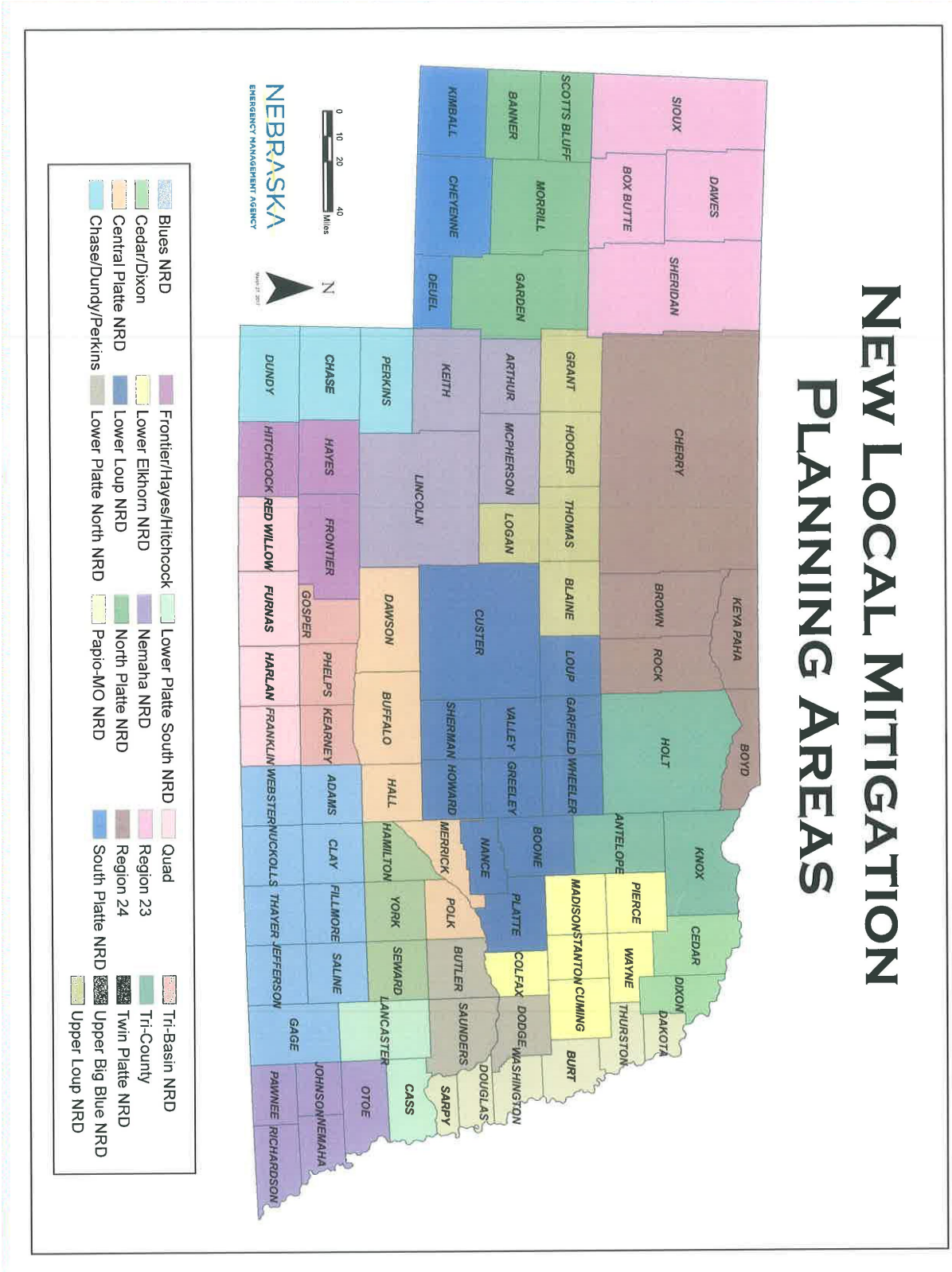
The full document is available at:

http://outdoornebraska.gov/wp-content/uploads/2015/09/NebraskaNaturalLegacyProject2ndEdition.pdf

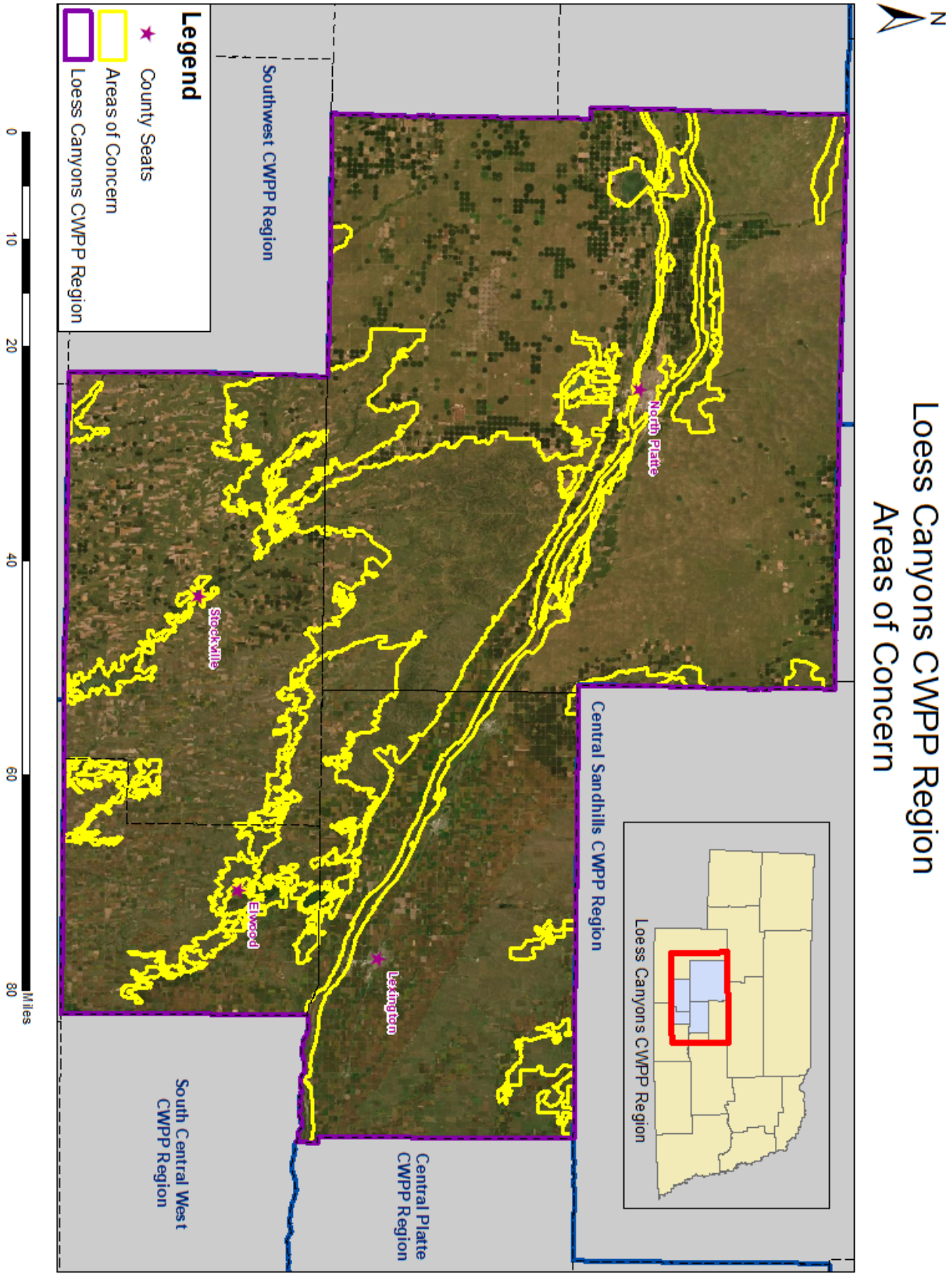
Map 4: Nebraska Local Emergency Management Areas



Map 5: Nebraska Local Mitigation Planning Areas



Map 6: Loess Canyons CWPP Areas of Concern



Appendix B

Goals, Strategies, Objectives, and Tactics

This appendix is intended to assist planners and grant writers in accurately describing overall CWPP goals, understanding strategies to accomplish them, defining measurable objectives needed to achieve the goals, and provide examples of tactics that could be used to achieve the objectives. Each objective includes suggested metrics, or performance-gauging tools that can be used to measure success.

Overall CWPP Purpose: Strengthen Community Wildfire Preparedness

Definitions

1. A **goal** is a broad primary outcome.
2. A **strategy** is the approach you take to achieve a **goal**.
3. An **objective** is a measurable step you take to achieve a **strategy**.
4. A **tactic** is a tool you use in pursuing an **objective** associated with a **strategy**.

Goal 1: Reduce wildfire risk
Strategy: Reduce the likelihood of fire entering communities; physical impacts and losses; the negative economic/social impacts by collaborating with stakeholders to define, understand, and address wildfire risks. Suppress unplanned ignitions to protect private property and natural and cultural resources from unacceptable impacts attributable to fire.
Objectives

- Identify wildfire risks (hazards/vulnerability), areas of concern that contain these risks, and a range of mitigation measures (*Metrics*: # risks, # locations, and # measures identified). *Tactics:*
  - Identify a baseline by considering historic data such as causes, frequency, and probability of wildfire
  - Use input from local responders and agency personnel to map specific areas at risk from wildfire
  - Utilize data from multiple sources to help identify appropriate fuels reduction practices for local at-risk areas
- Assess risks in the mapped areas (*Metrics*: Rating system implemented; prioritized list created). *Tactic:*
  - Devise a rating system to assess the degree of risk (i.e., High-Medium-Low) and establish hazard reduction priorities
- Mitigate risks: Implement mitigation measures to create defensible space and reduce structural ignitability (*Metrics*: # practices implemented, # projects implemented, # acres/structures protected). *Tactics:*
  - Use cost share programs and coordinate with partners to assist WUI landowners implementing mitigation activities such as mechanical fuels treatment, thinning, prescribed fire and grazing
  - Coordinate among adjacent large ownerships and/or public lands to protect communities on a landscape scale

Goal 2: Support emergency response
Strategy: Collaborate to assess local preparedness and capabilities, identify gaps and needs, and develop ways to enhance preparedness and response capability and improve firefighter readiness and safety.
Objectives

- Assess local response capacity (*Metrics*: # of VFD survey responses; list of items from HMP review, # of needs/gaps identified). *Tactics:*
  - VFD survey; review HMP data; consult with local officials
- Enhance local response capacity (*Metrics*: # pieces of equipment added or updated, # of VFDs able to monitor indices, # aerial applicators participating, # restricted roads/bridges mapped, # evacuation routes/staging locations identified, # of treatments conducted to improve access, # of water resources improved or added, # of WUI guidelines added). *Tactics:*
  - Increase and update equipment via VFD assistance programs
  - Facilitate VFD monitoring of the federal wildland fire weather system indices
  - Aerial support: Recruit and train additional aerial applicators and SEAT Managers
  - Roads/transportation:
    - Obtain critical infrastructure GIS layers
    - Map restricted roads/bridges
    - Identify evacuation routes, potential staging locations
    - Evacuation route treatments to improve access, including roads, development ingress/egress

    - Community planning:
        - Expand/improve water resources
        - To protect firefighters, property owners, and structures, consider developing county-level standards for buildings in WUI areas
            - WUI guidelines or regulations for new construction
            - Guidelines for retrofitting existing structures
- Increase firefighter readiness and safety (*Metrics*: # of trainings offered, # VFDs participating, # of firefighter training hours completed). *Tactic:*
    - Provide wildland fire training to VFDs
- Enhance communication among fire management agencies (*Metrics*: # of agreements in place and current, # of VFDs trained in radio channel use, # of partners coordinating fire management programs, statewide mutual aid guide created/updated, quick notification process implemented). *Tactics:*
    - Ensure all relevant Memorandums of Understanding (MOUs) and Mutual Aid Agreements (MAAs) are in place and current
    - Train fire departments in the use of the V-TAC and UHF mutual aid radio channels; educate fire departments and 911 dispatchers about notifying assisting mutual aid departments which V-TAC or UHF channel will be used when arriving at an event
    - Partner with landowners, land managers, fire personnel, natural resources agencies, and other organizations to incorporate local concerns and objectives into fire management programs
    - Create a statewide Mutual Aid Guide
    - Ensure quick notification and involvement process for assessment and assistance on fires, when needed (i.e., Wildfire Incident Response Assistance Team, Type 3 Team, FEMA and Type 1 or 2 teams)

Goal 3: Promote an informed and active citizenry for wildfire preparedness

Strategy: Partner with natural resources agencies, schools, prescribed fire organizations, and other groups to implement a CWPP region-wide public awareness and engagement program to improve wildfire hazard conditions within the WUI. Educate homeowners, neighborhoods, schools, municipalities, and others about wildfire risks and engage them in community preparedness actions. Ensure that outreach targets a broad audience, including the agricultural community, schools, landowners, home and business owners, recreationists, and the general public; identify specific ways to address this.

Objectives

- Increase local knowledge of wildfire risk and prevention (*Metrics*: # handouts or news releases distributed, # of events or activities held, # of people reached) *Tactics:*
    - Work with partners to establish a region-wide public awareness program
    - Use brochures/handouts and news releases to increase wildfire awareness and publicize mitigation activities
    - Offer mitigation/prevention-focused workshops, seminars, school presentations/activities
- Engage stakeholders in preparedness activities that promote the use of defensible space to reduce fuel loads to protect communities and resources (*Metrics*: # landowners creating defensible space, # community programs established/expanded). *Tactic:*
    - Introduce and encourage participation in programs such as Firewise, Fire-Adapted Communities, and Ready-Set-Go, as well as WUI fuels treatment programs

Goal 4: Restore fire-adapted ecosystems

Strategy: Work with partners to restore native fire-adapted ecosystems to increase community protection, enhance firefighter safety, and improve habitat health.

Objectives

- Encourage land managers to reduce heavy understory fuels in woodlands (*Metrics*: # land managers reached, # of landowners implementing fuels reduction practices). *Tactics:*
    - (See tactics listed under Goal 1, Objective 3)
- Encourage land managers to control non-native invasive plant species and to actively manage prolific and aggressive native species (*Metrics*: # land managers reached, # of landowners implementing control/management practices). *Tactics:*
    - Educate land managers in plant identification and control measures
    - Use cost share programs to defray landowner costs
- Encourage land managers to use native plant species when restoring ecosystems (*Metrics*: # land managers reached, # land managers using native species). *Tactics:*
    - Educate land managers about the benefits of using native plant species
    - Help land managers locate and obtain appropriate native plant species

- Safely incorporate prescribed fire into historically fire-adapted ecosystems, using trained personnel and standard operating procedures (*Metrics*: # acres treated safely). *Tactic:*
    - Offer fire training

Goal 5: Enhance post-fire recovery
Strategy: Work with partners to quickly assess and stabilize burned lands to reduce erosion and protect property.
Objective

- Enable rapid assessments of burned lands and the implementation of stabilization techniques. (*Metrics*: # trainings offered, # acres stabilized). *Tactics:*
    - Provide training on burned area assessment
    - Provide financial assistance

Goal 6: Establish and implement a CWPP monitoring and evaluation process
Strategy: Strengthen CWPP effectiveness by working with stakeholders to evaluate progress and update regularly.
Objectives

- Annually evaluate progress in implementing the CWPP and recommend changes as needed. (*Metrics*: Checklist and framework created, # projects/activities implemented). *Tactic:*
    - Create a review checklist and framework for providing recommendations
- Conduct monitoring of selected projects and activities to assess progress and effectiveness (*Metrics*: Process established, # of projects/activities/acres monitored). *Tactic:*
    - Determine number of assessments needed and establish a process for choosing and evaluating them
- Improve grant eligibility (*Metric*: # of successful grant applications). *Tactic:*
    - Regularly review and update CWPP and other planning documents to ensure they reflect current activities and needs

Appendix C

Links to Other Planning Documents

Due to their large file sizes, these documents are available only online

2014 Loess Canyons Community Wildfire Protection Plan

https://nfs.unl.edu/documents/CWPP/LoessCanyonsCWPP_final.pdf

Central Platte NRD Multi-Jurisdictional HMP (Includes Dawson County)

https://jeo.com/central-platte-nrd-hazard-mitigation-plan-update

Hayes-Frontier-Hitchcock HMP (Includes Frontier County)

https://nfs.unl.edu/documents/Fire/hayes-frontier-hitchcock.pdf

(Frontier County Participant Section begins on page 6-55, Section 6; or pdf page 211)

Tri-Basin NRD HMP (Includes Gosper County)

https://jeo.com/tri-basin-hmp

Twin Platte NRD HMP (Includes Lincoln County)

https://jeo.com/twin-platte-nrd-multi-jurisdictional-hazard-mitigation-plan-update

Nebraska Forest Action Plan

https://nfs.unl.edu/statewide-forest-action-plan

Nebraska Natural Legacy Project

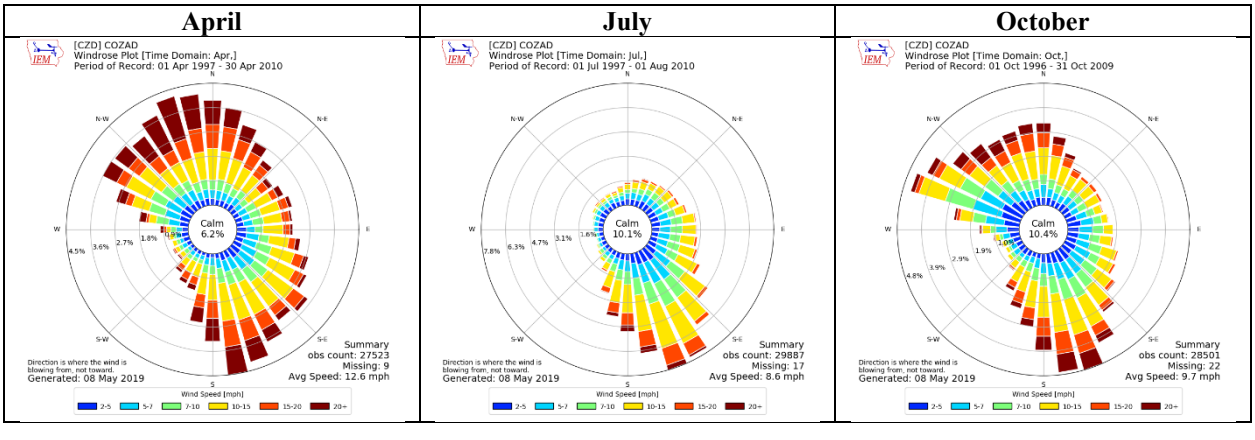
http://outdoornebraska.gov/wp-content/uploads/2015/09/NebraskaNaturalLegacyProject2ndEdition.pdf

Appendix D

Wind Rosettes
For Selected Stations
in or near the Loess Canyons CWPP Region

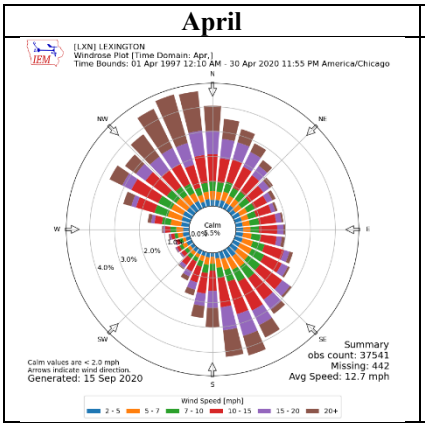
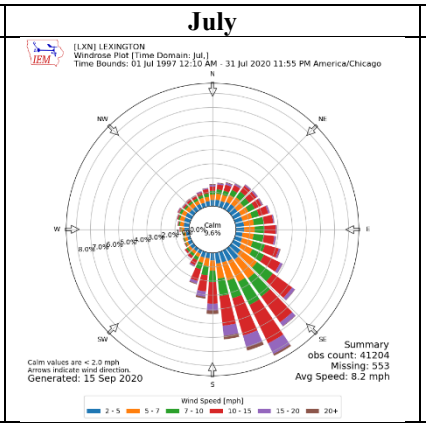
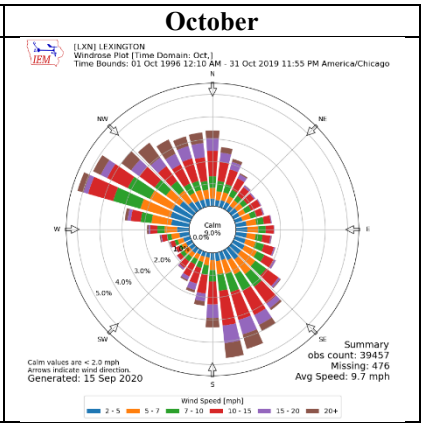
a. Cozad
b. Lexington
c. McCook
d. North Platte

Cozad, Nebraska
Wind Direction and Speed 1997-2010



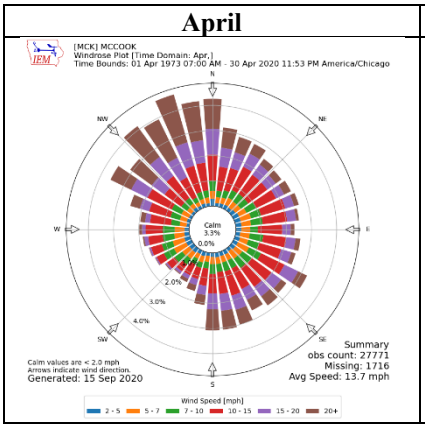
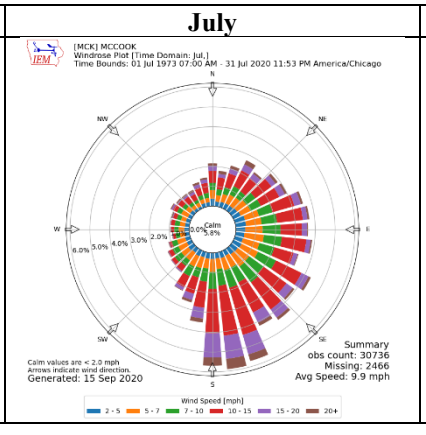
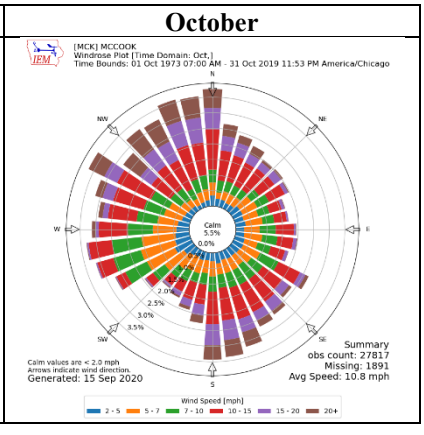
Lexington, Nebraska

Wind Direction and Speed 1997-2020

April	July	October
		

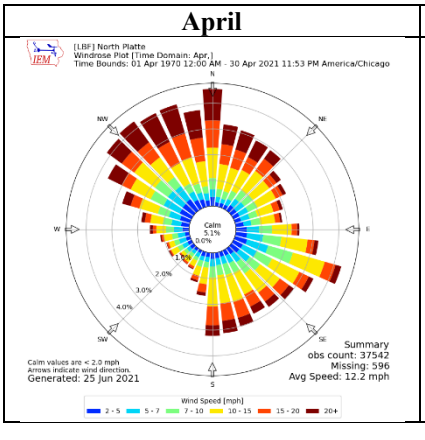
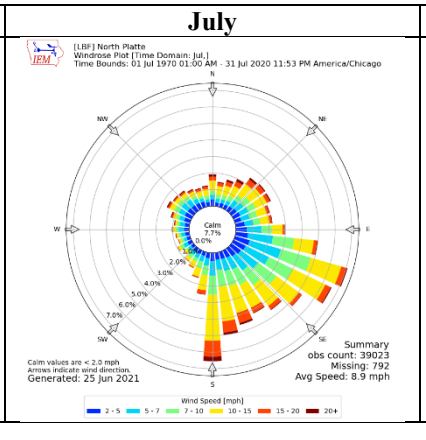
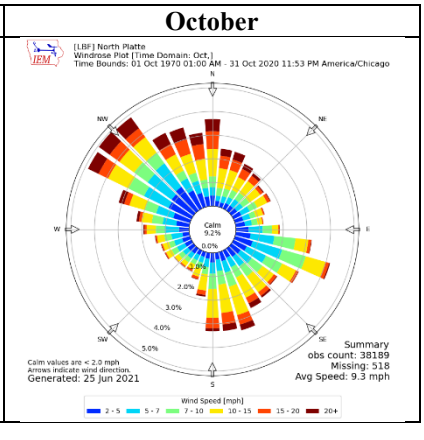
McCook, Nebraska

Wind Direction and Speed 1973-2019

April	July	October
		

North Platte, Nebraska

Wind Direction and Speed 1970-2021

April	July	October
		

Appendix E

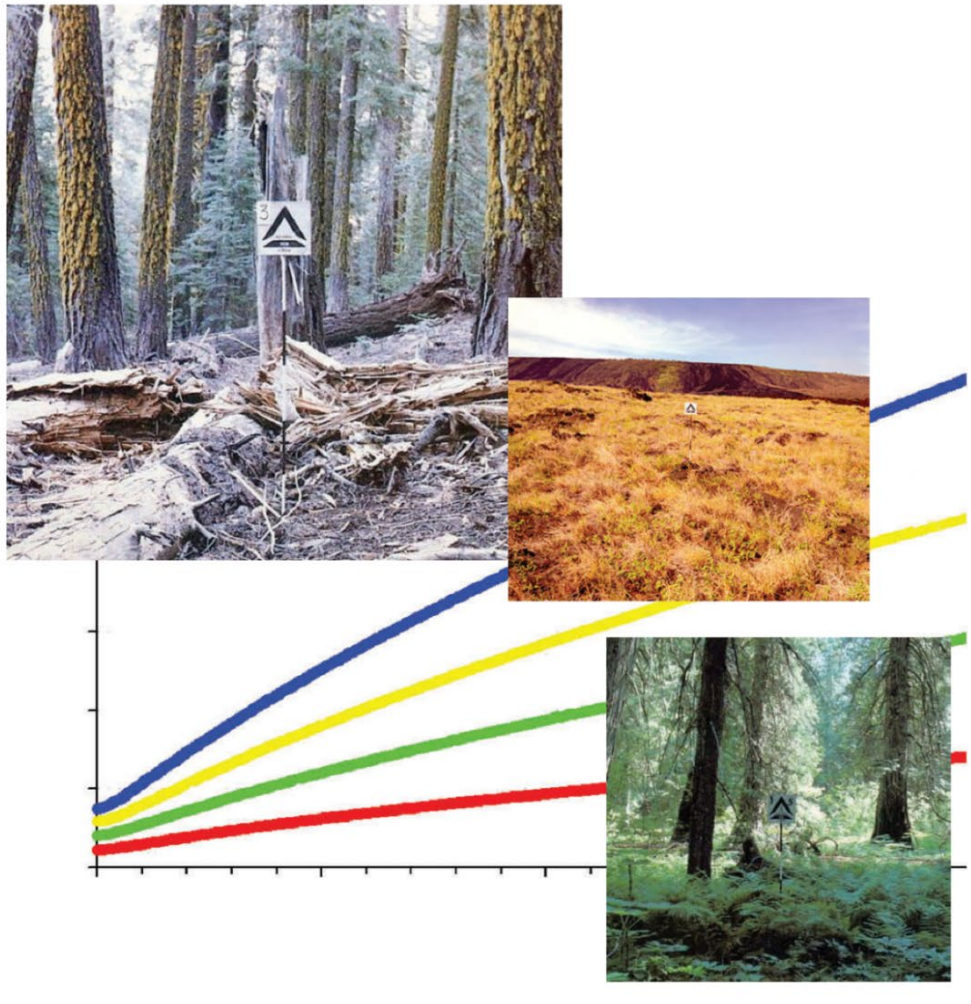
Fuel Models for the Loess Canyons CWPP Region

Due to its length, the full Appendix E appears only in the online version of this document:
https://nfs.unl.edu/documents/CWPP/LCCWPP.pdf

USDA United States Department of Agriculture
Forest Service
Rocky Mountain Research Station
General Technical Report RMRS-GTR-153
June 2005

Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model

Joe H. Scott
Robert E. Burgan



Fuel Models

In this section we list the fuel model parameters and describe each fuel model and fuel type.

Fuel Model Parameters

Parameters of the new fuel models include load by class and component, surface-area-to-volume (SAV) ratio by class and component, fuel model type (static or dynamic), fuelbed depth, extinction moisture content, and fuel particle heat content (table 7). Fuel inputs not listed are constant for the entire set: 10-hr dead fuel SAV ratio is 109 1/ft, and 100-hr SAV ratio is 30 1/ft. Total fuel particle mineral content is 5.55 percent; effective (silica-free) mineral content is 1.00 percent. Ovendry fuel particle density is 32 lb/ft^3.

Fuel Type Page

A fuel type page consists of a brief description of the fuel type followed by a pair of charts depicting predicted fire behavior over a range of midflame wind speeds, one for headfire spread rate and one for headfire flame length. These charts are for moisture scenario D2L2 (low dead fuel moisture, two-thirds cured live herbaceous, low live woody fuel moisture). The moisture contents by class and category are:

Dead 1-hr	6 percent
Dead 10-hr	7
Dead 100-hr	8
Live herbaceous	60 (2/3 cured)
Live woody	90

Use the charts to compare the relative behavior of the various models within a fuel type, but be aware that the relative behavior may be different at other moisture contents.

Fuel models with herbaceous load are sensitive to live herbaceous moisture content. The herbaceous fuel in moisture scenario D2L2 is two-thirds cured, which means that 67 percent of the herbaceous load is actually at the dead 1-hr moisture content, while the remaining 33 percent retains the 60 percent moisture content.

Table 7—Fuel model parameters.

Fuel model code	Fuel load (t/ac)					Fuel model type[a]	SAV ratio (1/ft)[b]			Fuel bed depth (ft)	Dead fuel extinction moisture (percent)	Heat content BTU/lb)[c]
	1-hr	10-hr	100-hr	Live herb	Live woody		Dead 1-hr	Live herb	Live woody			
GR1	0.10	0.00	0.00	0.30	0.00	dynamic	2200	2000	9999	0.4	15	8000
GR2	0.10	0.00	0.00	1.00	0.00	dynamic	2000	1800	9999	1.0	15	8000
GR3	0.10	0.40	0.00	1.50	0.00	dynamic	1500	1300	9999	2.0	30	8000
GR4	0.25	0.00	0.00	1.90	0.00	dynamic	2000	1800	9999	2.0	15	8000
GR5	0.40	0.00	0.00	2.50	0.00	dynamic	1800	1600	9999	1.5	40	8000
GR6	0.10	0.00	0.00	3.40	0.00	dynamic	2200	2000	9999	1.5	40	9000
GR7	1.00	0.00	0.00	5.40	0.00	dynamic	2000	1800	9999	3.0	15	8000
GR8	0.50	1.00	0.00	7.30	0.00	dynamic	1500	1300	9999	4.0	30	8000
GR9	1.00	1.00	0.00	9.00	0.00	dynamic	1800	1600	9999	5.0	40	8000
GS1	0.20	0.00	0.00	0.50	0.65	dynamic	2000	1800	1800	0.9	15	8000
GS2	0.50	0.50	0.00	0.60	1.00	dynamic	2000	1800	1800	1.5	15	8000
GS3	0.30	0.25	0.00	1.45	1.25	dynamic	1800	1600	1600	1.8	40	8000
GS4	1.90	0.30	0.10	3.40	7.10	dynamic	1800	1600	1600	2.1	40	8000
SH1	0.25	0.25	0.00	0.15	1.30	dynamic	2000	1800	1600	1.0	15	8000
SH2	1.35	2.40	0.75	0.00	3.85	N/A	2000	9999	1600	1.0	15	8000
SH3	0.45	3.00	0.00	0.00	6.20	N/A	1600	9999	1400	2.4	40	8000
SH4	0.85	1.15	0.20	0.00	2.55	N/A	2000	1800	1600	3.0	30	8000
SH5	3.60	2.10	0.00	0.00	2.90	N/A	750	9999	1600	6.0	15	8000
SH6	2.90	1.45	0.00	0.00	1.40	N/A	750	9999	1600	2.0	30	8000
SH7	3.50	5.30	2.20	0.00	3.40	N/A	750	9999	1600	6.0	15	8000
SH8	2.05	3.40	0.85	0.00	4.35	N/A	750	9999	1600	3.0	40	8000
SH9	4.50	2.45	0.00	1.55	7.00	dynamic	750	1800	1500	4.4	40	8000
TU1	0.20	0.90	1.50	0.20	0.90	dynamic	2000	1800	1600	0.6	20	8000
TU2	0.95	1.80	1.25	0.00	0.20	N/A	2000	9999	1600	1.0	30	8000
TU3	1.10	0.15	0.25	0.65	1.10	dynamic	1800	1600	1400	1.3	30	8000
TU4	4.50	0.00	0.00	0.00	2.00	N/A	2300	9999	2000	0.5	12	8000
TU5	4.00	4.00	3.00	0.00	3.00	N/A	1500	9999	750	1.0	25	8000
TL1	1.00	2.20	3.60	0.00	0.00	N/A	2000	9999	9999	0.2	30	8000
TL2	1.40	2.30	2.20	0.00	0.00	N/A	2000	9999	9999	0.2	25	8000
TL3	0.50	2.20	2.80	0.00	0.00	N/A	2000	9999	9999	0.3	20	8000
TL4	0.50	1.50	4.20	0.00	0.00	N/A	2000	9999	9999	0.4	25	8000
TL5	1.15	2.50	4.40	0.00	0.00	N/A	2000	9999	1600	0.6	25	8000
TL6	2.40	1.20	1.20	0.00	0.00	N/A	2000	9999	9999	0.3	25	8000
TL7	0.30	1.40	8.10	0.00	0.00	N/A	2000	9999	9999	0.4	25	8000
TL8	5.80	1.40	1.10	0.00	0.00	N/A	1800	9999	9999	0.3	35	8000
TL9	6.65	3.30	4.15	0.00	0.00	N/A	1800	9999	1600	0.6	35	8000
SB1	1.50	3.00	11.00	0.00	0.00	N/A	2000	9999	9999	1.0	25	8000
SB2	4.50	4.25	4.00	0.00	0.00	N/A	2000	9999	9999	1.0	25	8000
SB3	5.50	2.75	3.00	0.00	0.00	N/A	2000	9999	9999	1.2	25	8000
SB4	5.25	3.50	5.25	0.00	0.00	N/A	2000	9999	9999	2.7	25	8000

[a] Fuel model type does not apply to fuel models without live herbaceous load.
[b] The value 9999 was assigned in cases where there is no load in a particular fuel class or category
[c] The same heat content value was applied to both live and dead fuel categories.

Fuel Model Page

A fuel model page consists of:

- The three-part fuel model naming
- A set of three photos
- A brief description of the fuel model
- A summary of computed fuel model characteristics
- A pair of charts depicting fire behavior over a range of midflame wind speeds

Further details follow.

Naming—The fuel model code and number (in parentheses) are displayed on the first line, followed on the next line by the full fuel model name. The fuel model code is used for oral and written communication and for input to fire behavior models. The fuel model number is used internally by some fire behavior models and for mapping applications. The fuel model name is a brief description of the fuel model.

Photos—Up to three representative photos were selected to illustrate each fuel model. Conditions other than those illustrated may still be appropriate for the fuel model; use the photos as a general guide only.

Description—Main characteristics of each fuel model are briefly described.

Summary characteristics—Summary characteristics of each fuel model include fine fuel load, characteristic surface-area-to-volume ratio (SAV), packing ratio, and extinction moisture content.

Fine fuel load is defined as the dead 1-hr load plus the live herbaceous and live woody loads. Across the new set of 40 fuel models, fine fuel load ranges from 0.30 to 13.05 tons/acre.

Characteristic SAV is the average SAV across all fuel classes and categories, weighted by the surface area within each class and category. Characteristic SAV ranges from 1,144 to 2,216 1/ft in this new set of fuel models.

Packing ratio is the fraction of fuelbed volume that is occupied by fuel particles, a function of fuel load, fuelbed depth, and fuel particle density. In this fuel model set, packing ratio varies from 0.00143 to 0.04878 (dimensionless).

Extinction moisture content is the weighted average dead fuel moisture content at which the fire spread model predicts spread will not take place. More important, the amount by which the extinction moisture content exceeds the actual determines (in part) fire behavior. Thus, for a given dead fuel moisture content, predicted fire spread increases with increasing extinction moisture content.

Fire behavior charts—A pair of charts depicts predicted fire behavior (spread rate and flame length) for each fuel model over a range of midflame wind speeds. All predictions use live moisture scenario L2 (60 percent live herbaceous moisture content, 90 percent live woody), which corresponds to a two-thirds cured herbaceous fuelbed. The four lines on each chart refer to dead fuel moisture scenarios (table 3).

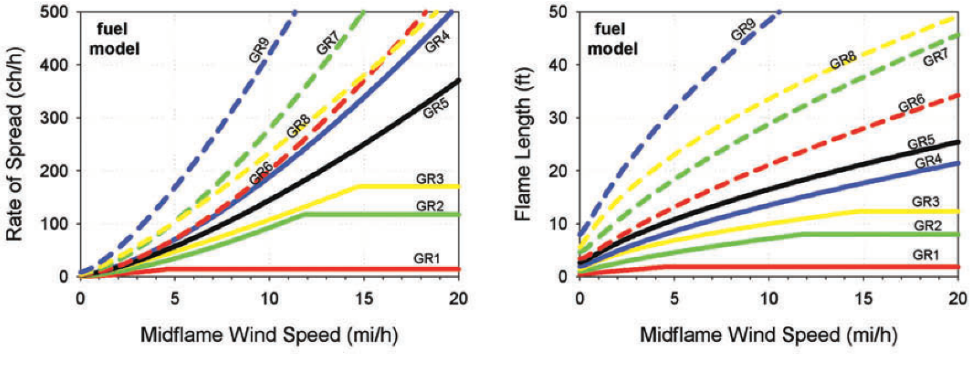
Nonburnable Fuel Type Models (NB)

The nonburnable "fuel models" are included on the next five pages to provide consistency in how the nonburnable portions of the landscape are displayed on a fuel model map. In all NB fuel models there is no fuel load—wildland fire will not spread.

Grass Fuel Type Models (GR)

The primary carrier of fire in the GR fuel models is grass. Grass fuels can vary from heavily grazed grass stubble or sparse natural grass to dense grass more than 6 feet tall. Fire behavior varies from moderate spread rate and low flame length in the sparse grass to extreme spread rate and flame length in the tall grass models.

All GR fuel models are dynamic, meaning that their live herbaceous fuel load shifts from live to dead as a function of live herbaceous moisture content. The effect of live herbaceous moisture content on spread rate and intensity is strong.

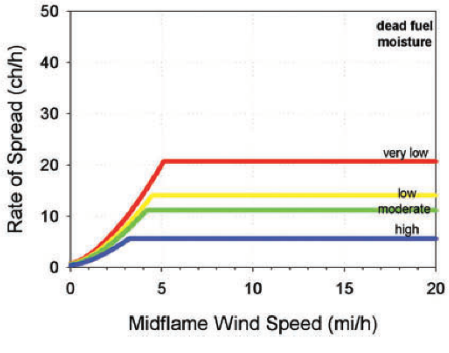


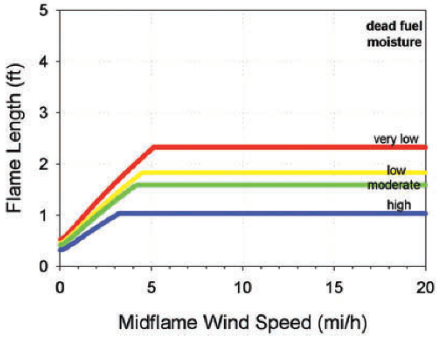
GR1 (101)

Short, Sparse Dry Climate Grass (Dynamic)

Description: The primary carrier of fire in GR1 is sparse grass, though small amounts of fine dead fuel may be present. The grass in GR1 is generally short, either naturally or by grazing, and may be sparse or discontinuous. The moisture of extinction of GR1 is indicative of a dry climate fuelbed, but GR1 may also be applied in high-extinction moisture fuelbeds because in both cases predicted spread rate and flame length are low compared to other GR models.

Fine fuel load (t/ac)	0.40
Characteristic SAV (ft-1)	2054
Packing ratio (dimensionless)	0.00143
Extinction moisture content (percent)	15





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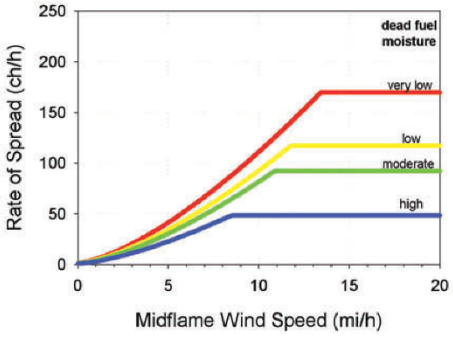
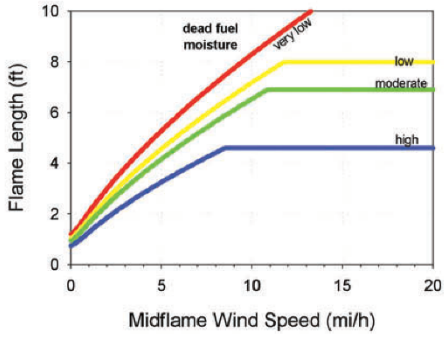
GR2 (102)

Low Load, Dry Climate Grass (Dynamic)

Description: The primary carrier of fire in GR2 is grass, though small amounts of fine dead fuel may be present. Load is greater than GR1, and fuelbed may be more continuous. Shrubs, if present, do not affect fire behavior.

Fine fuel load (t/ac)	1.10
Characteristic SAV (ft-1)	1820
Packing ratio (dimensionless)	0.00158
Extinction moisture content (percent)	15





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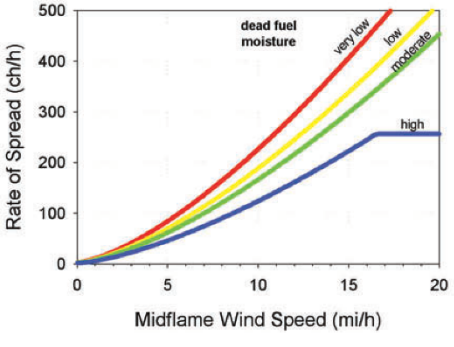
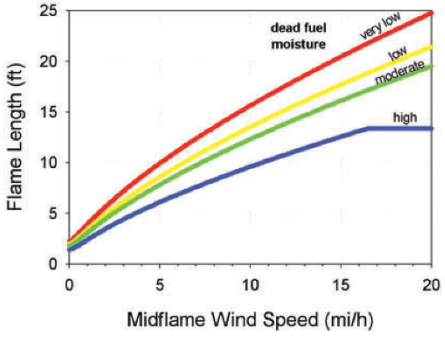
GR4 (104)

Moderate Load, Dry Climate Grass (Dynamic)

Description: The primary carrier of fire in GR4 is continuous, dry-climate grass. Load and depth are greater than GR2; fuelbed depth is about 2 feet.

Fine fuel load (t/ac)	2.15
Characteristic SAV (ft-1)	1826
Packing ratio (dimensionless)	0.00154
Extinction moisture content (percent)	15





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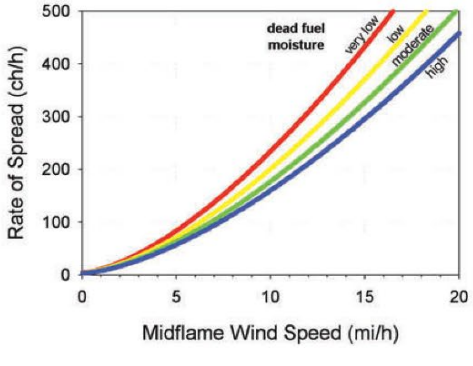
GR6 (106)

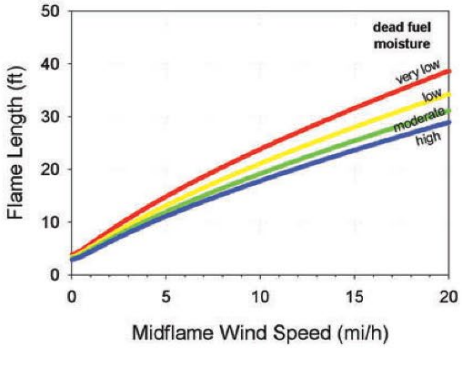
Moderate Load, Humid Climate Grass (Dynamic)

Description: The primary carrier of fire in GR6 is continuous humid-climate grass.

Load is greater than GR5 but depth is about the same. Grass is less coarse than GR5.

Fine fuel load (t/ac)	3.5
Characteristic SAV (ft-1)	2006
Packing ratio (dimensionless)	0.00335
Extinction moisture content (percent)	40





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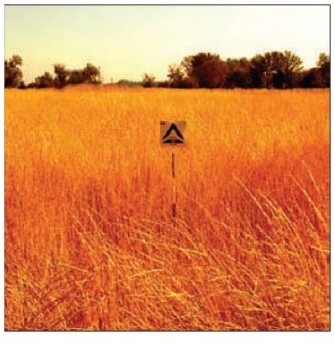
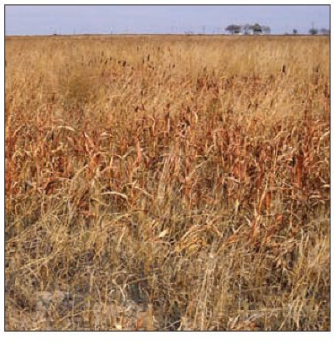
GR7 (107)

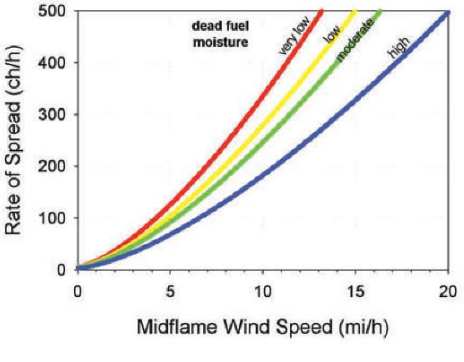
High Load, Dry Climate Grass (Dynamic)

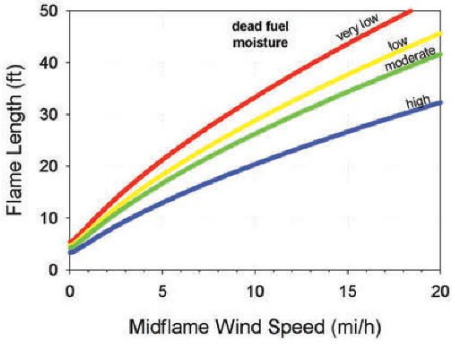




Description: The primary carrier of fire in GR7 is continuous dry-climate grass. Load and depth are greater than GR4. Grass is about 3 feet tall.

Fine fuel load (t/ac)	6.4
Characteristic SAV (ft-1)	1834
Packing ratio (dimensionless)	0.00306
Extinction moisture content (percent)	15





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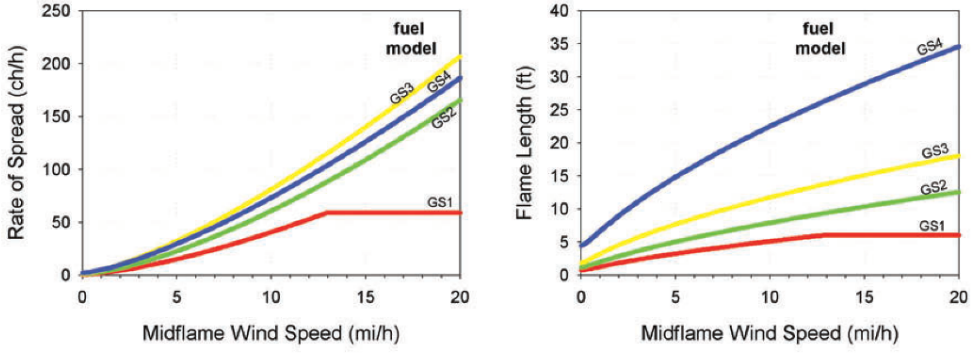
Grass-Shrub Fuel Type Models (GS)

The primary carrier of fire in the GS fuel models is grass and shrubs combined; both components are important in determining fire behavior.

All GS fuel models are dynamic, meaning that their live herbaceous fuel load shifts from live to dead as a function of live herbaceous moisture content. The effect of live herbaceous moisture content on spread rate and intensity is strong and depends on the relative amount of grass and shrub load in the fuel model.



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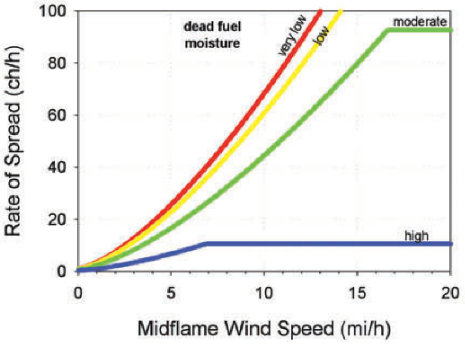
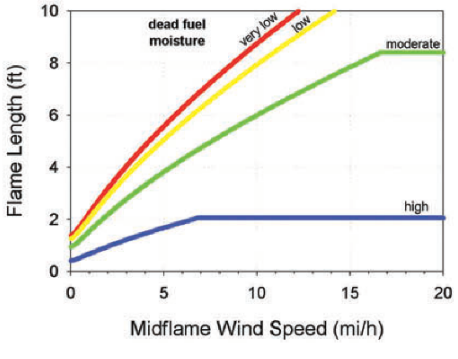
GS2 (122)

Moderate Load, Dry Climate Grass-Shrub (Dynamic)

Description: The primary carrier of fire in GS2 is grass and shrubs combined. Shrubs are 1 to 3 feet high, grass load is moderate. Spread rate is high; flame length moderate. Moisture of extinction is low.

Fine fuel load (t/ac)	2.1
Characteristic SAV (ft-1)	1827
Packing ratio (dimensionless)	0.00249
Extinction moisture content (percent)	15





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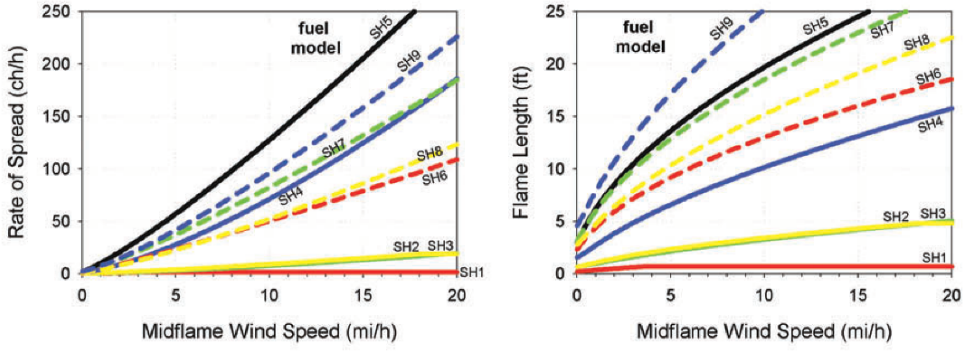
Shrub Fuel Type Models (SH)

The primary carrier of fire in the SH fuel models is live and dead shrub twigs and foliage in combination with dead and down shrub litter. A small amount of herbaceous fuel may be present, especially in SH1 and SH9, which are dynamic models (their live herbaceous fuel load shifts from live to dead as a function of live herbaceous moisture content). The effect of live herbaceous moisture content on spread rate and flame length can be strong in those dynamic SH models.

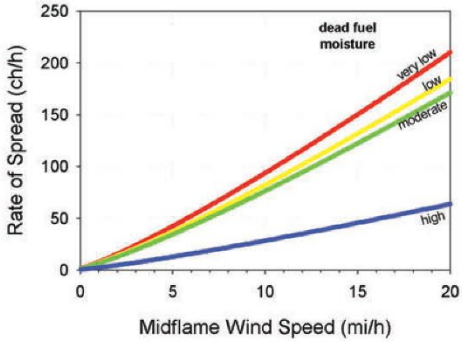


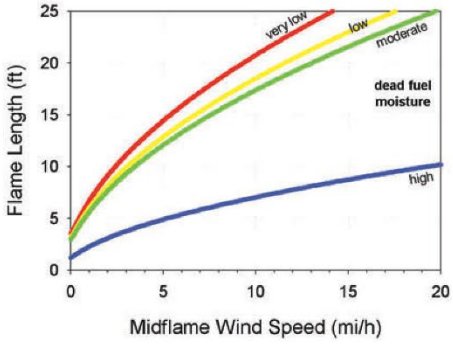
SH7 (147)

Very High Load, Dry Climate Shrub

Description: The primary carrier of fire in SH7 is woody shrubs and shrub litter. Very heavy shrub load, depth 4 to 6 feet. Spread rate lower than SH7, but flame length similar. Spread rate is high; flame length very high.

Fine fuel load (t/ac)	6.9
Characteristic SAV (ft-1)	1233
Packing ratio (dimensionless)	0.00344
Extinction moisture content (percent)	15

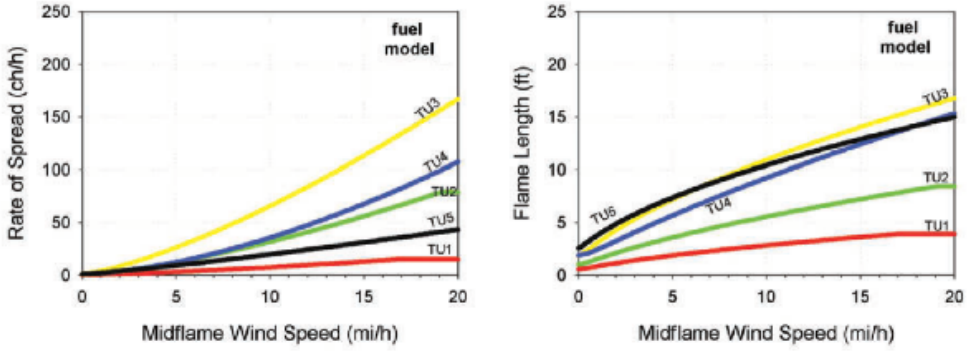




USDA Forest Service Gen. Tech. Rep. RMRS-GTR-153. 2005 47

Timber-Understory Fuel Type Models (TU)

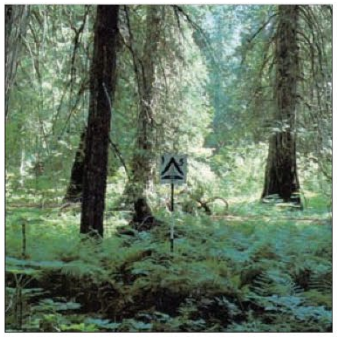
The primary carrier of fire in the TU fuel models is forest litter in combination with herbaceous or shrub fuels. TU1 and TU3 contain live herbaceous load and are dynamic, meaning that their live herbaceous fuel load is allocated between live and dead as a function of live herbaceous moisture content. The effect of live herbaceous moisture content on spread rate and intensity is strong and depends on the relative amount of grass and shrub load in the fuel model.



50 USDA Forest Service Gen. Tech. Rep. RMRS-GTR-153. 2005

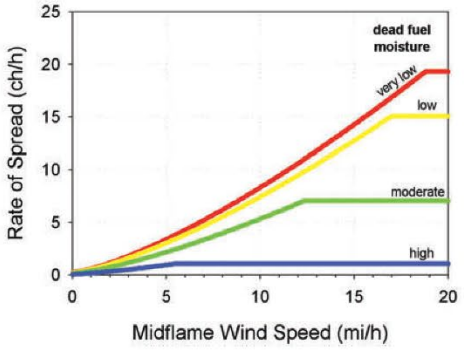
TU1 (161)

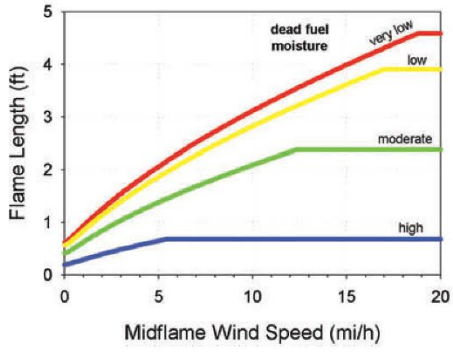
Low Load Dry Climate Timber-Grass-Shrub (Dynamic)



Description: The primary carrier of fire in TU1 is low load of grass and/or shrub with litter. Spread rate is low; flame length low.

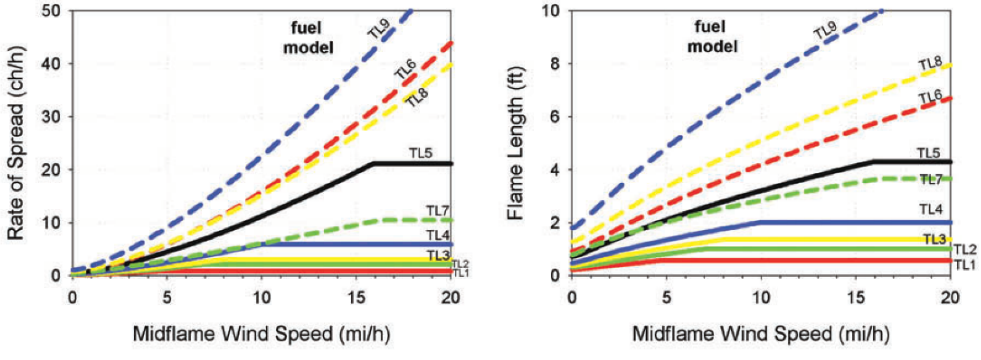
Fine fuel load (t/ac)	1.3
Characteristic SAV (ft-1)	1606
Packing ratio (dimensionless)	0.00885
Extinction moisture content (percent)	20





Timber Litter Fuel Type Models (TL)

The primary carrier of fire in the TL fuel models is dead and down woody fuel. Live fuel, if present, has little effect on fire behavior.

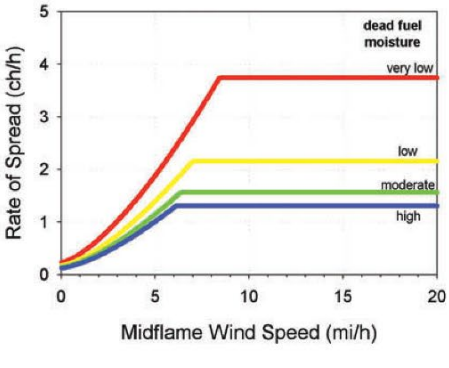


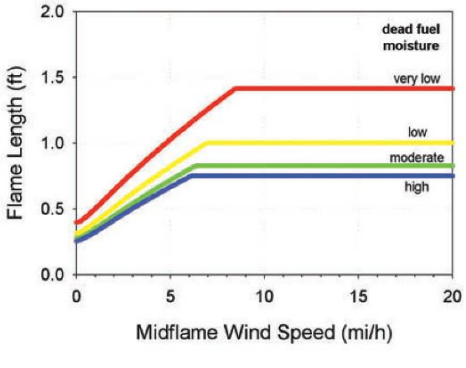
TL2 (182)

Low Load Broadleaf Litter

Description: The primary carrier of fire in TL2 is broadleaf (hardwood) litter. Low load, compact broadleaf litter. Spread rate is very low; flame length very low.

Fine fuel load (t/ac)	1.4
Characteristic SAV (ft-1)	1806
Packing ratio (dimensionless)	0.04232
Extinction moisture content (percent)	25





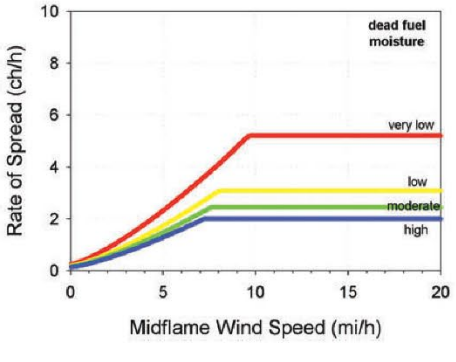
58 USDA Forest Service Gen. Tech. Rep. RMRS-GTR-153. 2005

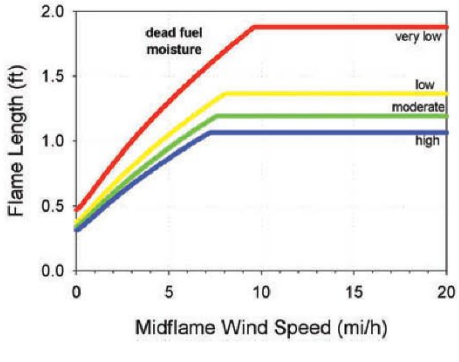
TL3 (183)

Moderate Load Conifer Litter

Description: The primary carrier of fire in TL3 is moderate load conifer litter, light load of coarse fuels. Spread rate is very low; flame length low.

Fine fuel load (t/ac)	0.50
Characteristic SAV (ft-1)	1532
Packing ratio (dimensionless)	0.02630
Extinction moisture content (percent)	20





Appendix F

Nebraska Mutual Aid Associations

Updated 6/3/2021

3 & 33 MA
Adams, Barneston, Beatrice, Beatrice RFD, Blue Springs, Clatonia, Cortland, Dewitt, Diller, Fairbury RFD, Filley, Jansen, Odell, Pickrell, Plymouth, Swanton, Wymore

40 - 12 MA
Bloomfield, Brunswick, Creighton, Crofton, Magnet, Neligh, Niobrara, Orchard, Osmond, Page, Pierce, Plainview, Santee, Verdigre, Wausa

Big 8 MA
Bellwood, Columbus, David City, Duncan, Osceola, Rising City, Shelby, Stromsburg

Big 9 MA
Belden, Carroll, Coleridge, Concord, Crofton, Dixon, Fordyce, Hartington, Laurel, Magnet, Newcastle, Randolph, Wynot, Wausa

Boyd/Holt Counties MA
Atkinson, Bartlett, Bristow, Butte, Chambers, Ewing, Lynch, Naper, O'Neill, Page, Spencer, Stuart

Buffalo County MA
Amherst, Elm Creek, Gibbon, Kearney, Miller, Pleasanton, Ravenna, Shelton, Buffalo Co. Sheriff's Dept., Kearney Police Dept., Buffalo County EM, Good Samaritan Hospital EMS

Burt County MA
Craig, Decatur, Lyons, Oakland, Tekamah

Butler Co. MA
Abie, Bellwood, Brainerd, Bruno, David City, Dwight, Linwood, Rising City, Ulysses

Cass Co. MA
Alvo, Ashland, Avoca, Cedar Creek, Eagle, Elmwood, Greenwood, Louisville, Murdock, Murray, Nehawka, Plattsmouth, Union, Weeping Water

Central Nebraska MA
Ansley, Eddyville, Mason City, Miller, Oconto, Sumner

Central Nebraska Volunteer Fire Association MA
Alma, Amherst, Arapahoe, Axtell, Bertrand, Elm Creek, Franklin, Funk, Gibbon, Hildreth, Holdrege, Kearney, Loomis, Miller, Minden, Naponee, Orleans, Overton, Oxford, Red Cloud, Republican City, Stamford, Upland, Wilcox

Central Panhandle MA
Alliance, Banner Co., Bayard, Bridgeport, Broadwater, Dalton, Gurley, Heart of the Hills, Lisco/Garden Co., Oshkosh/Garden Co., Rackett, USFWS NP Refuge

Cherry County MA
Ainsworth, Barley RFD, Cody, Colome SD, Kilgore, Merriman, Mid-Cherry RFD, Mission SD, Mullen, St. Francis SD, Thedford, US Fish and Wildlife, US Forest Service, Valentine, White River SD, Wood Lake

Colfax County MA
Clarkson, Howells, Leigh, Schuyler

Cuming County MA
Bancroft, Beemer, Pilger, West Point, Wisner

Custer County MA
Anselmo, Ansley, Arnold, Broken Bow, Callaway, Comstock, Mason City, Merna, Oconto, Sargent

Dodge County MA
Dodge, Fremont, Fremont Rural, Hooper, Nickerson, North Bend, Scribner, Snyder, Uehling

Elkhorn Valley MA
Battle Creek, Carroll, Hadar, Hoskins, Madison, Meadow Grove, Norfolk, Pierce, Stanton, Wayne, Winside

Fillmore County MA
Bruning, Exeter, Fairmont, Geneva, Grafton, McCool Junction, Milligan, Ohiowa, Shickley, Sutton

Frenchman Valley MA
Bartley, Beaver Valley (Danbury & Lebanon), Benkelman, Culbertson, Curtis, Haigler, Hayes Center, Imperial, Indianola, Lamar, Maywood/Wellfleet, McCook, Palisade, Red Willow Western, Stratton, Trenton, Wallace, Wauneta

Hamilton County MA
Aurora, Giltner, Hampton, Hordville, Marquette, Phillips, Hamilton County EMS

Hastings Area MA
Ayr (Hastings RFD), Bladen, Blue Hill, Campbell, Central Community College, Edgar, Fairfield, Glenville, Harvard, Hastings, Hastings CD, Holstein, Juniata, Kenesaw, Lawrence, Hruska MARC, Roseland, Trumbull

KBR&C MA
Ainsworth, Bassett, Calamus, Johnstown, Long Pine, Newport, Raven, Springview, Wood Lake

Lancaster County MA
Alvo, Ashland, Bennet, Ceresco, Clatonia, Cortland, Crete, Douglas, Eagle, Firth, Greenwood, Hallam, Hickman, Lincoln, Malcolm, NE Air Guard, Palmyra, Pleasant Dale, Raymond, Rural Metro, Southeast RFD, Southwest RFD, Valparaiso, Waverly

Loup Platte MA
Arcadia, Ashton, Litchfield, Loup City, Ravenna, Rockville

Loup Platte #2 MA
Central City, Chapman, Clarks, Fullerton, Hordville, Marquette, Osceola, Palmer, Polk, Shelby, Silver Creek, Stromsburg

Loup Valley MA
Arcadia, Bartlett, Burwell, Elba, Ericson, Greeley, North Loup, Ord, Primrose, Scotia, Spalding, Wolbach

Mid-Nebraska MA
Albion, Belgrade, Cedar Rapids, Columbus, Columbus RFD, Creston, Duncan, Fullerton, Genoa, Humphrey, Leigh, Lindsay, Madison, Monroe, Newman Grove, Platte Center, Silver Creek, St. Edward

Mid Plains MA
Arnold, Brady, Curtis, Hershey, Maywood, Maxwell, North Platte, Stapleton, Sutherland, Tyron, Wallace, Wellfleet

Nemaha County MA
Brock FD, Brownville FD / Rescue, Johnson FD, Julian FD, Nemaha FD / Rescue, Peru FD / Rescue, Nemaha County Emergency Management, Cooper Nuclear Station, Auburn Police Dept., Nemaha County Sheriff's Office

Northeast MA
Allen, Bancroft, Concord, Dakota City, Dixon, Emerson, Homer, Martinsburg, Newcastle, Pender, Ponca, Rosalie, South Sioux City, Thurston, Wakefield, Walthill, Wayne, Winnebago

Northeast Fireman's Association
Antelope Co., Burt Co., Butler Co., Cedar Co., Colfax Co., Cuming Co., Dakota Co., Dixon Co., Dodge Co., Douglas Co., Knox Co., Madison Co., Pierce Co., Platte Co., Stanton Co., Sarpy Co., Thurston Co., Washington Co., Wayne Co., Saunders Co.

Otoe County MA
Burr, Cook, Douglas, Dunbar, Nebraska City, Otoe, Palmyra, Syracuse, Talmage, Unadilla

Phelps County MA: Bertrand, Funk, Holdrege, Holdrege RFD, Loomis

Pine Ridge MA
Alliance, Ardmore SD, Chadron, Crawford, Gordon, Harrison, Hay Springs, Hemingford, Merriman, Rushville, US Forest Service

Platte Valley MA (was GI Area MA)
Alda, Cairo, Chapman, Doniphan, Grand Island, Grand Island SFD, Phillips, Wood River

Quad Cities MA (includes former Franklin Co. MA)
Alma, Axtell, Bloomington, Campbell, Franklin, Hildreth, Minden, Naponee, Republican City, Riverton, Upland, Wilcox, Kearney County EMA

Richardson County MA
Dawson, Falls City, Falls City RFD, Humboldt, Rulo, Salem, Shubert, Stella, Verdon

Saline County MA
Crete, DeWitt, Dorchester, Friend, Swanton, Tobias, Western, Wilbur, Saline County Sheriff, Saline County Emergency Management

Sandhills MA
Anselmo, Arnold, Arthur, Brewster, Dunning, Halsey, Hyannis, Keystone-Lemoyne, McPherson Co., Mid-Cherry, Mullen, Purdum, Stapleton, Thedford, US Fish & Wildlife, US Forest Service

Saunders County MA
Ashland, Cedar Bluffs, Ceresco, Colon, Ithaca, Malmo, Mead, Morse Bluff, Prague, Valparaiso, Wahoo, Weston, Yutan

Scotts Bluff County MA
Banner Co., Gering/Gering Rural, Lyman/Kiowa, McGrew, Minatare-Melbeta, Mitchell, Morrill (includes former Henry VFD), Scottsbluff, Scottsbluff RFD, Western Nebraska Regional Airport Fire Dept., Torrington WY, US Fish & Wildlife Service, Scotts Bluff County Communications Center, Region 22 Emergency Management, Hemingford VFD (Box Butte Co.), Bayard VFD (Morrill Co.)

Seward County MA
Beaver Crossing, Bee, Cordova, Garland, Goehner, Milford, Pleasant Dale, Seward, Staplehurst, Tamora, Utica

South Central Nebraska MA
Brady, Cozad, Curtis, Elwood, Eustis, Farnam, Gothenburg, Johnson Lake EMS, Lexington, Overton

South Central #2 MA
Clay Center, Davenport, Edgar, Fairfield, Glenvil, Hardy, Lawrence, Nelson, Ong, Ruskin, Shickley, Superior, Sutton, Clay County EM

Southeast MA
Adams, Burchard, Cook, Du Bois, Elk Creek, Johnson, Pawnee City, Steinauer, Sterling, Summerfield (KS), Table Rock, Tecumseh

Southwest MA
Arthur, Big Springs, Blue Creek, Brule, Chappell, Elsie, Grant, Imperial, Keystone-Lemoyne, Lamar, Lisco, Madrid, Ogallala, Oshkosh, Paxton, Sutherland, Venango, Wallace

Stateline MA
Bladen, Blue Hill, Campbell, Guide Rock, Lawrence, Red Cloud, Riverton, Superior

Thayer County MA
Alexandria, Belvidere, Bruning, Byron, Carlton, Chester, Davenport, Deshler, Eustis, Gilead, Hebron, Hubbell

Tri-Mutual Aid
Arlington, Bellevue, Bennington, Blair, Boys Town, Carter Lake, Cedar Bluffs, Elkhorn, Eppley Airport, Fremont, Ft. Calhoun, Gretna, Irvington, Kennard, LaVista, Louisville, Millard, Offutt AFB, Omaha FD, Papillion, Plattsmouth, Ponca Hills, Ralston, Springfield, Valley, Waterloo, Yutan

Tri-Valley MA
Arapahoe, Bartley, Beaver City, Cambridge, Edison, Holbrook, Oxford, Stamford, Wilsonville

Twin Loups MA
Ashton, Boelus, Dannebrog, Elba, Farwell, Rockville, St. Libory, St. Paul

Washington County MA
Arlington, Blair, Ft. Calhoun, Herman, Kennard

York County MA
Benedict, Bradshaw, Gresham, Henderson, McCool Junction, Waco, York

Appendix G

Fire Department Equipment and Contact Information for the Loess Canyons CWPP Region

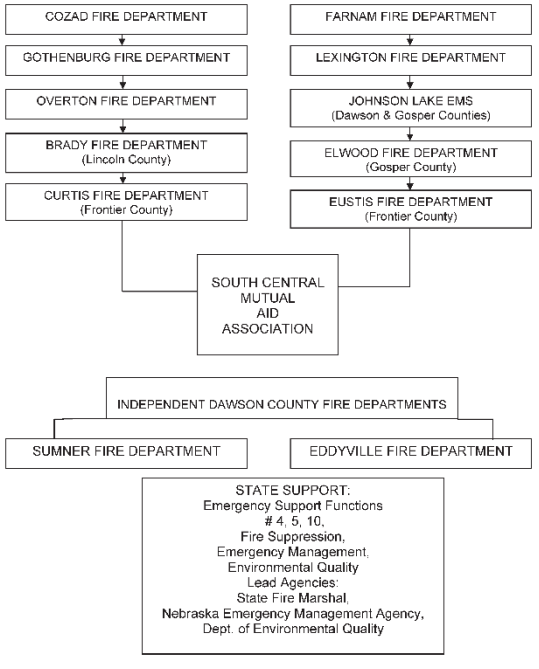
This section includes Annex F from county Local Emergency Operations Plans plus additional information from the departments that responded to the CWPP questionnaire.
Due to its length, the full Appendix G appears only in the online version of this document, which may be accessed at:

https://nfs.unl.edu/documents/CWPP/LCCWPP.pdf

Dawson County

Information from Dawson Co. LEOP, Annex F:

FIRE SERVICES



DAWSON COUNTY FIRE RESOURCES
(List numbers of equipment)

FIRE DEPARTMENT	PHONE	AERIAL	PUMPER	TANKER	PUMPER/ TANKER	GRASS-WEED TRUCK	UTILITY TRUCK	JAWS of LIFE	KINDS/TYPES/ SPECIAL-TEAMS	KINDS/TYPES SPECIAL EQUIPMENT	RADIO-LOGICAL EQUIPMENT Yes / No
Cozad	784-2366	0	2	1	1	2	1	2	0	Light tower, cascade system	Yes
Eddyville	858-4602	0	1	1	0	2	0	2	0		Yes
Farnam	569-2525	0	2	0	2	0	1	2	0	Light tower	Yes
Gothenburg	537-3608	0	4	2	0	2	1	2	Rope rescue		Yes
Lexington	324-2317	0	3	2	0	2	1	2		Hazmat trailer	Yes
Overton	987-2371	0	1	1	0	1	0	1	0		Yes
Sumner	752-2345	0	1	1	0	1	0	1			Yes
*Johnson Lake EMS								1			No
Nearest HAZMAT Response Team	535-6762	1									

Survey Responses from Dawson County Fire Departments

Cozad Fire and Rescue
Counties: Dawson, Custer
Street Address: 229 E 8th **Mailing Address**: PO Box 154, Cozad, NE 69130
Chief: Jason Schneider; 308-529-3020; jason.schneider@nutrien.com
Ass't. Chief: Trevor Munster; 308-325-2057; tmunster09@gmail.com
Sec/Treas.: Brenna Earl

Personnel
27 **Vol.**:

MAD(s): South Central

Equipment
Engines

3	Type 1	Structural: 1,000 GPM, 300 gal. capacity, four crew members
3	Type 6:	Wildland: 50 GPM, 150 gal. capacity, two crew members
1	Type 7:	Wildland: 10 GPM, 50 gal. capacity, two crew members
Tenders		*(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*
1	T-1 (tactical):	250 GPM pump, 2,000 gallon capacity, 2 crew members

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? Yes
Location1: T9N R24W Sec 4; Camp Comeca & Midway Lake
Issues:
x Multiple structures
x Difficult access
x Rough terrain
x 1 way in/out
x Heavy fuels

Location2: Johnson Lake (in the Elwood & Lexington FDs)
Issues:
x Multiple structures
x Difficult access
x Rough terrain
x Heavy fuels

Bridges that won't support equipment weight: Older wood bridges over canals

Greatest concerns: Access

Rank:
3 **Housing**
5 **Infrastructure**
3 **Bridge limits**
4 **Hydrants**
4 **Other water sources**

Eddyville VFD: (*Survey not returned*)

Elm Creek Volunteer Fire and Rescue Dept.
Counties: Buffalo, Dawson, Phelps
Street Address: 535 W. Boyd Ave. **Mailing Address**: PO Box 121, Elm Creek 68836
Chief: Tyler Hillmer; 785-821-4275; tylerhillmer@gmail.com
Ass't. Chief: Jesse Leeling; 308-760-0549; leeling45@hotmail.com
Sec/Treas.: Adam Pickel; 308-233-4627; apickel4627@gmail.com

Personnel
27 **Vol.**:

MAD(s): Buffalo Co. MA
Other MA agreements: Overton Fire Dept., Holdrege Fire Department

Equipment

Engines

2	Type 1	Structural: 1,000 GPM, 300 gal. capacity, four crew members
2	Type 6:	Wildland: 50 GPM, 150 gal. capacity, two crew members

Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*

1	S-3 (support):	200 GPM pump, 1,000 gallon capacity, 1 crew member

Other

3	Other (Describe): 1-Rescue truck: 350 gal. capacity, 150 gpm pump, tools; 2-BLS Ambulance; 3-Gator: 40 gal. tank, small pump

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? Yes
Location1: Platte River, river ground
Issues:

x	Difficult access
x	Rough terrain
x	1 way in/out
x	Heavy fuels

Location2: T8N R18W Sec. 20/21 Rusty's Fertilizer, Inc.
Issues:

x	Multiple structures
x	Heavy fuels
x	Other: Chemical storage

Location3: T8N R18W Sec. 16 Sandy Channel SRA
Issues:

x	Difficult access
x	Rough terrain
x	1 way in/out
x	Heavy fuels

Location4: Several small, rural subdivisions
Issues:

x	Multiple structures
x	1 way in/out
x	Heavy fuels
x	Lack of water within effective distance

Bridges that won't support equipment weight: Yes

Limit	Long.	Lat.
16T	-99.44	40.76
14T	-99.40	40.74
16T	-99.32	40.67

GIS layer & contact info: No

Greatest concerns: Location, terrain, access, housing, mutual aid, water supply, weather conditions

Rank:

1	**Housing**
2	**Infrastructure**
3	**Bridge limits**
4	**Hydrants**
5	**Other water sources**

Comments: We have established 5 rural water supply locations around our district. We have installed fittings on existing irrigation wells to have the ability to fill from the wells year around. Location map available.

Eustis VFD: (*Survey not returned*)

Farnam Rural Volunteer Fire Department
Counties: Dawson/Frontier/Lincoln
Mailing Address: PO Box 43, Farnam, NE 69029-0043
Chief: Rod Klein; 308-530-7800, 308-569-2367
Ass't. Chief: Randy Edson; 308-537-6154; bedson1955@hotmail.com
Sec/Treas.: Steven Fisher; 308-537-6076; frontierman@gmail.com

Personnel
25 **Vol.**

MAD(s): South Central Nebraska MA

Equipment
Engines
1 Type 1 Structural: 1,000 GPM, 300 gal. capacity, four crew members
1 Type 2 Structural: 500 GPM, 300 gal. capacity, three crew members
4 Type 6: Wildland: 50 GPM, 150 gal. capacity, two crew members
1 Type 7: Wildland: 10 GPM, 50 gal. capacity, two crew members
Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*
2 T-1 (tactical): 250 GPM pump, ~~2,000~~ 1,600 & 3,000 gallon capacity, 2 crew members
1 S-1 (support): 300 GPM pump, 4,000 gallon capacity, 1 crew member
Other
Other (Describe): Generator & light tower; equipment trailer 8'x20'

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? Yes
Location: The northwest part of our district is very rough and hard to get around in—grass hills & trees.
Issues:
x Multiple structures
x Difficult access
x Rough terrain
x 1 way in/out
x Heavy fuels
x Lack of water within effective distance

Bridges that won't support equipment weight: Yes; there is only one, but we crossed it.

GIS layer & contact info: No

Greatest concerns: Rough terrain to deal with in some areas.

Rank:
2 **Housing**
2 **Infrastructure**
2 **Bridge limits**
3 **Hydrants**
5 **Other water sources**

Gothenburg VFD
Counties: Dawson, Lincoln, Custer
Street Address: 610 10th St., Gothenburg, NE 69138
Chief: Mark Ballmer; 308-529-2972; mark.ballmer@gmail.com
Ass't. Chief: Mark Ostergard; 308-529-0156; mjostergard@hotmail.com
Secretary: Shane Max; 308-529-0216; max@cpnrd.org
Treasurer: Trevor Anderson; 308-529-2634; andy44s@hotmail.com

Personnel
44 **Vol.**:

MAD(s): Central

Equipment

Engines

3 Type 1 Structural: 1,000 GPM, 300 gal. capacity, four crew members
2 Type 3 Wildland: 150 GPM, 500 gal. capacity, three crew members
1 Type 4: Wildland: 50 GPM, 750 gal. capacity, two crew members
1 Type 5: Wildland: 50 GPM, 400 gal. capacity, two crew members

Other

1 Equipment trucks

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? No, however the following issues were checked:

Issues:

Difficult access
Rough terrain
Heavy fuels
Lack of water within effective distance

Bridges that won't support equipment weight: No

Greatest concerns: Being able to get to some areas due to terrain

Rank:

x **Housing**

Lexington VFD: (*Survey not returned*)

Oconto VFD: (*Survey not returned*)

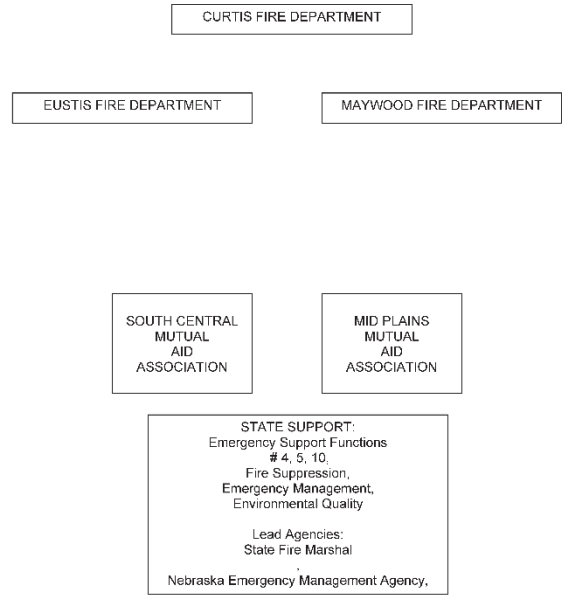
Overton VFD: (*Survey not returned*)

Sumner VFD: (*Survey not returned*)

Frontier County

Information from Frontier Co. LEOP, Annex F:

FIRE SERVICES



FRONTIER COUNTY FIRE RESOURCES
(List numbers of equipment)

FIRE DEPARTMENT	PHONE	AERIAL	PUMPER	TANKER	PUMPER/ TANKER	GRASS-WEED TRUCK	UTILITY TRUCK	RESCUE UNITS	KINDS/TYPES/ SPECIAL-TEAMS	KINDS/TYPES SPECIAL EQUIPMENT	RADIO-LOGICAL EQUIPMENT Yes / No
Curtis VFD	367-5408		2	2		2	2	2			No
Eustis VFD	486-4951		2	1		3	1	2			No
Maywood VFD	362-4299		2	3		7	1	1			No
Nearest HAZMAT Response Team	308-345-3450										
Red Willow Western Rural Fire Department											

Survey Responses from Frontier County Fire Departments:

Bartley Fire Department
Counties: Frontier and Red Willow
Street Address: 105 W Walnut St. **Mailing Address**: PO Box 188, Bartley, NE 69020
Dept. Phone: 308-737-6148
Dept. Email: bartleyfiredepartment@gmail.com
Chief: Dustin Morris; 308-737-6148; dmorris_10@live.com
Ass't. Chief: David Day; 308-737-7221
Sec/Treas.: Mick Minnick; 308-737-1345

Personnel
19 **Vol.**:

MAD(s): Tri-Valley MA & Frenchman Valley MA
Other MA agreements: Furnas, Red Willow, Frontier, Hitchcock, Dundy, and Chase Counties

Equipment
Engines
2 Type 1 Structural: 1,000 GPM, 300 gal. capacity, four crew members
3 Type 3 Wildland: 150 GPM, 500 gal. capacity, three crew members
Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*
1 T-2 (tactical): 250 GPM pump, 1,000 gallon capacity, 2 crew members
Other
2 Equipment trucks
2 Other (Describe): Command unit; rescue unit
Yes Road Dept. Equip. (describe): Road sweeps; no firefighting equipment

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? Yes
Location: Medicine Creek Lake; valleys and hills that aren't accessible by trucks; lots of brush
Issues:
x Difficult access
x Rough terrain
x Heavy fuels
x Lack of water within effective distance

Bridges that won't support equipment weight: Yes, several rural bridges

GIS layer & contact info: No

Greatest concerns: Rural areas can be over 20 miles from water supplies

Rank:
2 **Housing**
3 **Infrastructure**
4 **Bridge limits**
1 **Hydrants**
5 **Other water sources**

Cambridge VFD
Counties: Furnas, Red Willow, Frontier
Street Address: 209 Nelson St. **Mailing Address**: PO Box Q, Cambridge, NE 69022
Dept. Phone: 308-697-3328
Chief: Delaine Soucie; 308-340-3848; delaine_soucie@live.com
Ass't. Chief: Darren Wulf; 308-737-1110; dwulf1@swnebr.net
Sec/Treas.: Chris Rich; 3402-690-1101; chrisr@sandryfire.com

Personnel
25 **Vol.**:

MAD(s): Tri-Valley MA

Equipment

Engines

3 Type 1 Structural: 1,000 GPM, 300 gal. capacity, four crew members
3 Type 5: Wildland: 50 GPM, ~~400~~ 300 gal. capacity, two crew members
Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*
1 T-1 (tactical): 250 GPM pump, ~~2,000~~ 3,000 gallon capacity, 2 crew members
Other
1 Other (Describe): Incident command Suburban, air trailer with scene lights

Equipment housed away from main barn? Yes. 80' aerial truck (Cambridge airport); equipment trailer—Ropel grain bin rescue equipment

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? Yes
Location1: Ethanol plant, SE edge of Cambridge
Issues:
x Multiple structures
x Heavy fuels

Location2: SW corner of T4N R25W
Issues:
x Multiple structures
x Difficult access
x Rough terrain
x 1 way in/out
x Heavy fuels

Location3: Harry Strunk Lake Area – housing areas – trails 1, 3, 5
Issues:
x Multiple structures
x Difficult access
x Rough terrain
x 1 way in/out
x Heavy fuels

Location4: New housing development east side of Cambridge. New hotel, truck stop, and fueling station.
Issues:
x Multiple structures

Bridges that won't support equipment weight: Yes. Road 411 & 728 vicinity; Road 731 crossing Deer Creek.

GIS layer & contact info: No

Greatest concerns: Communication; incident command staging

Rank:
1 **Housing**
2 **Infrastructure**
3 **Bridge limits**
4 **Hydrants**
5 **Other water sources**

Curtis Rural Fire Protection District
Counties: Frontier & Lincoln
Street Address:106 Custer Ave. **Mailing Address**: PO Box 174, Curtis, NE 69025
Dept. Phone: 308-367-5408 **Dept. Email**: cvfd@curtis-ne.com
Chief: Tim Nicholson; 308-367-7358, 308-367-7211; tim.nicholson@nebnet.com
Ass't. Chief: Tony Fink; 308-737-6646, 308-963-4232; tony.fink@tallgrassenergylp.com
Secretary: Nick Brown; 308-367-6859, 308-367-2111; nick.brown@nebnet.com
Treasurer: Troy Einspahr; 308-367-7454, 308-367-4336; tdeinspahr@gmail.com

Personnel
23 **Vol.**:

MAD(s): Mid Plains MA & South Central MA
Other MA agreements: None

Equipment
Engines
1 Type 1 Structural: 1,000 GPM, 300 gal. capacity, four crew members
1 Type 2 Structural: 500 GPM, 300 gal. capacity, three crew members
3 Type 5: Wildland: 50 GPM, 400 gal. capacity, two crew members
1 Type 7: Wildland: 10 GPM, 50 gal. capacity, two crew members
Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*
1 T-1 (tactical): 250 GPM pump, 2,000 gallon capacity, 2 crew members
1 S-2 (support): 200 GPM pump, 2,500 gallon capacity, 1 crew member
Other
1 Equipment trucks
1 Other (Describe): Personnel carrier 2005 Suburban

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? No

Bridges that won't support equipment weight: No

GIS layer & contact info: Yes. City of Curtis ONLY; Tanner McCall; 720-224-2634; tanner.mccall@icloud.com

Greatest concerns: NONE

Rank:
3 **Housing**
3 **Infrastructure**
3 **Bridge limits**
3 **Hydrants**
3 **Other water sources**

Comments: Curtis Rural Fire Protection District has LCRA burn group that does prescribed burns in our district that reduce the fuel load of eastern redcedar and rangeland. Every acre they burn is one less we have to be concerned with. They provided additional water sources & 1 wildland grass rig.

Edison Volunteer Fire Department: (*See listing under Gosper County*)

Eustis VFD: (*Survey not returned*)

Farnam Rural Volunteer Fire Department: (*See listing under Dawson County*)

Holbrook Volunteer Fire Department: (*See listing under Gosper County*)

Indianola VFD: (*Survey not returned*)

Maywood/Wellfleet Rural Fire Protection District
Counties: Lincoln, Frontier
Mailing Address: PO Box 171, Maywood, NE 69038
Chief: Greg Blank; 308-737-1688; g.blank1688@gmail.com
Ass't. Chief: Randy Bollish; 308-362-4595; rc927med@gmail.com
Sec/Treas.: Steve Benzel; 308-650-0658; skbenzel@gmail.com

Personnel
24 **Vol.**:

MAD(s): Mid Plains MA; Frenchman Valley MA

Equipment

Engines

2	Type 1	Structural: 1,000 GPM, 300 gal. capacity, four crew members
3	Type 3	Wildland: 150 GPM, 500 gal. capacity, three crew members
4	Type 5:	Wildland: 50 GPM, 400 gal. capacity, two crew members
1	Type 7:	Wildland: 10 GPM, 50 gal. capacity, two crew members

Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*

1	S-1 (support):	300 GPM pump, 4,000 gallon capacity, 1 crew member
1	S-3 (support):	200 GPM pump, 1,000 gallon capacity, 1 crew member

Other

1	Equipment trucks
1	Other (Describe): JD Gator UTV

Equipment housed away from main barn? Yes, 1 grass rig

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? No
Location: The villages of Wellfleet and Maywood have high home density.
Issues:

x	Multiple structures

Bridges that won't support equipment weight: No

GIS layer & contact info: No

Greatest concerns: Losing a family home

Rank:

1	**Housing**

Red Willow Western Rural Fire Department
Counties: Western Red Willow and southwest Frontier
Street Address: 38483 Dr 715 **Mailing Address**: PO Box 463, McCook, NE 69001
Dept. Phone: 308-345-7674 **Dept. Email**: rwwrfiredept@gmail.com
Chief: Jeffrey Cole; 308-340-1824, 308-345-4026; rwwrfiredept@gmail.com
Ass't. Chief: Doug Wasia; 308-737-1484

Personnel

25	**Vol.**:

MAD(s): Frenchman Valley MA
Other MA agreements: Oberlin, Kansas

Equipment

Engines

4	Type 3	Wildland: 150 GPM, 500 gal. capacity, three crew members

Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*

3	T-2 (tactical):	2,000 gallon capacity

Other

2	Equipment trucks: Rescue truck-no water / haz-mat/command truck-no water
2	Other (Describe): Pumper / ladder
2	Other (Describe): UTVs, 50 gal. water and pump

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? Yes
Locations 1-4: Northwest Third St., McCook; North 11th St., McCook; Hugh Butler Lake in Frontier County; Republican River bottom
Issues:

x	Multiple structures
x	Difficult access
x	Rough terrain

x 1 way in/out
x Heavy fuels

Locations 5-9: Pearson Edition northwest of McCook; Calabria northeast of McCook; Henton Edition south of McCook; Van Diest Chemical north of McCook; West Third St., McCook.
Issues:
x Multiple structures, high home density
x Populated areas with 1 way in/out

Bridges that won't support equipment weight: Yes, low maintenance roads

GIS layer & contact info: Yes, McCook Police Department, 308-345-3450

Greatest concerns: Wind, rough terrain, proximity to the city

Rank:
5 **Housing**
4 **Infrastructure**
2 **Bridge limits**
1 **Hydrants**
3 **Other water sources**

Gosper County

Information from Gosper Co. LEOP, Annex F:

FIRE SERVICES

ELWOOD FIRE DEPARTMENT

SOUTH CENTRAL & TRI-VALLEY MUTUAL AID ASSOCIATION

GOSPER COUNTY FIRE RESOURCES

FIRE DEPARTMENT	PHONE	AERIAL	PUMPER	TANKER	PUMPER/ TANKER	GRASS WEED TRUCK	UTILITY TRUCK	RESCUE UNITS	OTHER SPECIAL-ITIES
Elwood Fire Dept.	308-785-2311	0	1	3		2		2	
Hastings Fire Dept.	402-461-2350								Haz-Mat
Red Willow Western	308-345-3450								Haz-Mat

Survey Responses from Gosper County Fire Departments:

Arapaho VFD: (*Survey not returned*)

Bertrand VFD
Counties: Phelps-Gosper
Street Address: 516 Minor Ave. **Mailing Address**: 317 Minor Ave., Bertrand, NE 68927
Dept. Phone: 308-991-4574 **Dept. Email**: bertrandfireman@gmail.com
Chief: Kevin Stehl; 308-991-4574; bertrandfireman@gmail.com
Ass't. Chief: Brian Schroeder; 308-325-5229; schroederheating@gmail.com
Sec/Treas.: Tom Wilcox; 308-999-2004; tjwilcox@charter.net

Personnel
26 **Vol.**:

MAD(s): Phelps County Mutual Aid Association
Other MA agreements: Verbal agreements with Overton, Lexington, Elwood, and Arapahoe

Equipment
Engines
1 Type 1 Structural: 1,000 GPM, 300 gal. capacity, four crew members
1 Type 2 Structural: 500 GPM, 300 gal. capacity, three crew members
1 Type 3 Wildland: 150 GPM, 500 gal. capacity, three crew members
2 Type 6: Wildland: 50 GPM, 150 gal. capacity, two crew members
Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*
1 T-1 (tactical): 250 GPM pump, 2,000 gallon capacity, 2 crew members
Other
2 Other (Describe): 1 portable SCBA cascade; 1 portable light tower-generator

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? Yes
Location: Village of Bertrand
Issues:
Multiple structures
Other: Completely surrounded by cropland

Bridges that won't support equipment weight: No

GIS layer & contact info: No

Greatest concerns: Having enough manpower

Rank:
1 **Housing**
2 **Infrastructure**
5 **Bridge limits**
3 **Hydrants**
4 **Other water sources**

Edison Vol. Fire Dept.
Counties: Furnas, Gosper, Frontier
Street Address: 208 2nd St. **Mailing Address**: 42974 Road 721, Edison, NE 68936
Chief: Tim Chapman; 308-962-7009; tim.chapman2335@icloud.com
Ass't. Chief: Mike Sieja, Jr.; 308-962-4258; msiejajr@agvalley.com
Sec/Treas.: Arlan Leising; 308-962-4258; fivelfarms@frontiernet.net

Personnel
6 **Vol.**:

MAD(s): Tri-Valley MA

Other MA agreements: Elwood, Bertrand

Equipment

Engines

1	Type 2	Structural: 500 GPM, 300 gal. capacity, three crew members
1	Type 6:	Wildland: 50 GPM, 150 gal. capacity, two crew members
Tenders		*(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*
1	T-2 (tactical):	250 GPM pump, 1,000 gallon capacity, 2 crew members

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? No but the following issues were checked:

Issues:

x Difficult access
x Rough terrain
x Heavy fuels

Bridges that won't support equipment weight: No

GIS layer & contact info: No

Greatest concerns: Manpower

Rank:

5 **Housing**
4 **Infrastructure**
3 **Bridge limits**
1 **Hydrants**
2 **Other water sources**

Elwood (Gosper Co. Rural Fire Protection Dist. #1)
Counties: Gosper
Street Address: 507 Smith Ave. **Mailing Address**: PO Box 306, Elwood, NE 68937
Dept. Email: laswadump@yahoo.com
Chief: Darren D. Krull; 308-440-3471; laswadump@yahoo.com
Ass't. Chief: Dustin Clouse; 308-325-9484
Secretary: Steve Rath; 308-325-2457
Treasurer: Keith Withers; 308-785-2695

Personnel

20 **Vol.**:

MAD(s): South Central

Equipment

Engines

1	Type 1	Structural: 1,000 GPM, 300 gal. capacity, four crew members
1	Type 2	Structural: 500 GPM, 300 gal. capacity, three crew members
1	Type 3	Wildland: 150 GPM, 500 gal. capacity, three crew members
2	Type 6:	Wildland: 50 GPM, 150 gal. capacity, two crew members
Tenders		*(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*
1	S-3 (support):	200 GPM pump, 1,000 gallon capacity, 1 crew member
Other		
1	Equipment trucks	

Equipment housed away from main barn? (left blank)

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? Yes
Location1: Elwood Reservoir, T8N R22W Sec. 30
Issues:

x Multiple structures

x Difficult access
x Rough terrain
x 1 way in/out
x Heavy fuels
x Other: Rugged terrain, water, trees

Location2: Johnson Lake, T8N R22W Sections 5, 6, 8; lake front
Issues:
x Multiple structures
x Difficult access
x Rough terrain

Bridges that won't support equipment weight: Yes, a lot of 3-10 ton bridge limits

GIS layer & contact info: No

Greatest concerns: Access, manpower, equipment, water supply

Rank:
1 **Housing**
3 **Infrastructure**
4 **Bridge limits**
2 **Hydrants**
5 **Other water sources**

Holbrook Volunteer Fire Department
Counties: Furnas, Gosper, Frontier
Street Address: 304 Center Ave. **Mailing Address**: PO Box 123, Holbrook, NE 68948
Dept. Email: holbrookfiredept@gmail.com
Chief: Wesley Hock; 308-279-1777, 308-697-8624; Wesley.hock2@gmail.com
Ass't. Chief: Jesse Hamel; 308-962-4581; crazyallis@hotmail.com
Treasurer: Dale Long; 308-962-6728

Personnel
13 **Vol.**:

MAD(s): Tri-Valley MA

Equipment
Engines
1 Type 1 Structural: 1,000 GPM, 300 gal. capacity, four crew members
1 Type 2 Structural: 500 GPM, 300 gal. capacity, three crew members
1 Type 6: Wildland: 50 GPM, 150 gal. capacity, two crew members
Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*
1 T-2 (tactical): 250 GPM pump, ~~1,000~~ 1,200 gallon capacity, 6x6, 2 crew members
Other
1 Other (Describe): Suburban; support or incident command

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? Yes
Location: Northwest sections of fire district: grassland, trees, rough with few access points. Water refill points are few and a distance away.
Issues:
x Difficult access
x Rough terrain
x Heavy fuels
x Lack of water within effective distance

Bridges that won't support equipment weight: No

GIS layer & contact info: No

Greatest concerns: Personnel and water

Rank:

4	**Housing**
3	**Infrastructure**
5	**Bridge limits**
2	**Hydrants**
1	**Other water sources**

Lexington Fire Dept.: (*Survey not returned*)

Oxford Vol. Fire & Rescue
Counties: Furnas, Harlan, Gosper
Street & Mailing Address: 310 Odell, Oxford, NE 68967
Dept. Email: oxfordfire1@gmail.com
Chief: Bill Grossnicklaus; 308-962-4266; billg@fyr-tek.com
Ass't. Chief: Taylor Lueking; 308-991-0695
Secretary: Nichole Bose; 308-991-1800
Treasurer: Michelle Haag; 308-991-6850; mhaag@agvalley.com

Personnel

30	**Vol.**:

MAD(s): Tri-Valley MA
Other MA agreements: South Central Rope Rescue, Alma, Minden, Wilcox, Franklin

Equipment

Engines		
2	Type 1	Structural: 1,000 GPM, 300 gal. capacity, four crew members
2	Type 3	Wildland: 150 GPM, 500 gal. capacity, three crew members
1	Type 5:	Wildland: 50 GPM, 400 gal. capacity, two crew members
Tenders		*(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*
1	S-1 (support):	300 GPM pump, 4,000 gallon capacity, 1 crew member
Other		
1	Equipment trucks	
1	Other: Swift Water/Ice/Urban Flood/Dive Command trailer; High angle rope rescue trailer	
	Road Dept. Equip. (describe): Emergency highway signs	

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? No
Location: Limited access to southern half of our district due to lack of bridges
Issues:

x	1 way in/out

Bridges that won't support equipment weight: No

GIS layer & contact info: No

Greatest concerns: Rural water supply

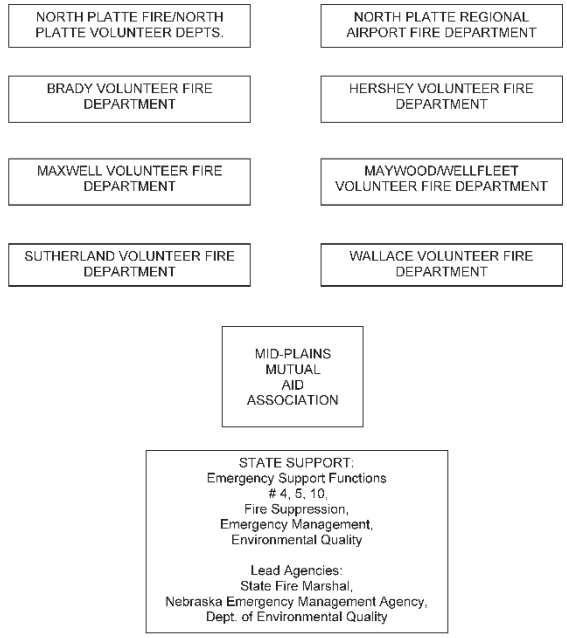
Rank:

1	**Housing**
3	**Infrastructure**
5	**Bridge limits**
4	**Hydrants**
2	**Other water sources**

Lincoln County

Information from Lincoln Co. LEOP, Annex F:

FIRE SERVICES



LINCOLN COUNTY FIRE RESOURCES
(List numbers of equipment)

FIRE DEPARTMENT	PHONE	AERIAL	PUMPER	TANKER	PUMPER/ TANKER	GRASS-WEED TRUCK	UTILITY TRUCK	JAWS OF LIFE	KINDS/TYPES/ SPECIAL-TEAMS	KINDS/TYPES SPECIAL EQUIPMENT	RADIO-LOGICAL EQUIPMENT Yes / No
Brady VFD	308-584-3315 E911	0	1	1		3	0	1		Grain bin equip; Floating pump	Yes
Hershey VFD	308-368-5561 E911	0	1	2	0	3	1		0	Grain bin extrication equip	Yes
Maxwell VFD	308-520-1354 E911	0	1	1	0	3	1	2	0	Grain bin extrication equip	Yes
Maywood/Wellfleet VFD	E911	0	1	2		4	0	0	0		
North Platte FD	308-535-6761 E911	2	1	1	2	4	2	2	SERT-Hazmat	All Hazmat/Most Special Res	Yes
NP Regional Airport Fire Dept	308-530-6948 E911	0	0	0	1	0	2		Airport Fire Suppression	ARFF Trucks (Utility)	No
Sutherland VFD	308-539-0778 E911	0	1	1	0	3	1	1	1 Dive		Yes
Wallace VFD	308-387-4534 E911	0	1	2	0	4	2	1	Airport Crash/Rescue	5000 gal NE tender; Water Buffalo; Generator; Light Trailer	Yes
Lincoln Co Dive Team									Dive Team		
Nearest HAZMAT Response Team NSP NHIT	535-6762 North Platte E911										
Haz-Mat Response Inc	532-5753										

Survey Responses from Lincoln County Fire Departments

Arnold VFD: (*Survey not returned*)

Brady VFD
Counties: Lincoln
Street Address: E. Commercial St., Brady
Dept. Email: bradyfiredept@hotmail.com
Chief: Mike Gruber; 308-529-2434, 308-584-3260, 911
Ass't. Chief1: Tyler Motsinger; 308-520-5453, 308-584-3456
Ass't. Chief2: Ryan Sanger; 308-537-6114, 308-584-3296
Sec/Treas.: Kortni Pierson; 308-520-8530

Personnel
20 **Vol.**:

MAD(s): South Central MA; Mid Plains MA
Other MA agreements: Maxwell-Automatic aid for structure fires for both departments. Gothenburg-3rd page for rescue unit.

Equipment
Engines
1 Type 1 Structural: 1,000 GPM, 300 gal. capacity, four crew members
1 Type 4: Wildland: 50 GPM, 750 gal. capacity, two crew members
3 Type 5: Wildland: 50 GPM, 400 gal. capacity, two crew members
Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*
1 T-2 (tactical): 250 GPM pump, 1,000 gallon capacity, 2 crew members
S-1 (support): 300 GPM pump, 4,000 gallon capacity, 1 crew member
S-2 (support): 200 GPM pump, 2,500 gallon capacity, 1 crew member
S-3 (support): 200 GPM pump, 1,000 gallon capacity, 1 crew member

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? Yes
Location: Brady-Moorefield Rd and Jeffrey Reservoir-121 listed house with heavy cedar tree cover.
Issues:
x Multiple structures
x Difficult access
x Rough terrain
x 1 way in/out
x Heavy fuels

Bridges that won't support equipment weight: No

GIS layer & contact info: (left blank)

Greatest concerns: (left blank)

Rank:
1 **Housing**
3 **Infrastructure**
5 **Bridge limits**
2 **Hydrants**
4 **Other water sources**

Curtis Rural Fire Protection District: (*See listing under Frontier County*)

Farnam Rural Volunteer Fire Department: (*See listing under Dawson County*)

Gothenburg VFD: (*See listing under Dawson County*)

Hershey VFD
Department Name: Hershey VFD
Counties: Lincoln
Street Address: 119 Railroad St. **Mailing Address**: PO Box 333, Hershey, NE 69143
Dept. Phone: 308-368-5500 **Dept. Email**: hersheyfire@hersheytel.net
Chief: Mark "Toby" Tobiasson; 308-530-5507; alltobias@hersheytel.net
Ass't. Chief: Shaun Weekly; 308-530-1329; shauntheplumber@live.com
Sec/Treas.: Dennis Brown; 308-530-3892

Personnel
22 **Vol.**:

MAD(s): Mid Plains MA Dist.

Equipment
Engines
1 Type 1 Structural: 1,000 GPM, 300 gal. capacity, four crew members
2 Type 3 Wildland: 150 GPM, 500 gal. capacity, three crew members
1 Type 6: Wildland: 50 GPM, 150 gal. capacity, two crew members
Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*
1 T-1 (tactical): 250 GPM pump, 2,000 gallon capacity, 2 crew members
1 S-2 (support): 200 GPM pump, 2,500 gallon capacity, 1 crew member
Other
1 Other (Describe): Command pickup

Equipment housed away from main barn? Yes: Command pickup, mobile light tower/gen, Type 6

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? No
Location: Location not noted but they said there areas in jurisdiction with high home density, infrastructure/ resources at risk, or populated areas with one way in/out.

Bridges that won't support equipment weight: No

GIS layer & contact info: No

Greatest concerns: We call for Mutual Aid right away because of manpower/resources.

Rank:
2 **Housing**
1 **Infrastructure**
3 **Bridge limits**
4 **Hydrants**
5 **Other water sources**

Maxwell VFD: (*Survey not returned*)

Maywood/Wellfleet VFD: (*See listing under Frontier County*)

North Platte Fire Department
Counties: Lincoln
Street/Mailing Address: 715 S. Jeffers, North Platte, NE 69101
Dept. Phone: 308-535-6762 **Dept. Email**: thompsondr@ci.north-platte.ne.us
Chief: Dennis Thompson; 308-535-6761, 308-530-4459; thompsondr@ci.north-platte.ne.us
Ass't. Chief: Trent Kleinow; 308-535-6762, 308-539-1046; kleinowtd@ci.north-platte.ne.us
Secretary: Alice Wipplinger; 308-535-6761; wipplingeraa@ci.north-platte.ne.us

Personnel
26 **Vol.**:
43 **FT**:

MAD(s): Mid Plains MA

Equipment

Engines

3	Type 1	Structural: 1,000 GPM, 300 gal. capacity, four crew members
1	Type 2	Structural: 500 GPM, 300 gal. capacity, three crew members
2	Type 3	Wildland: 150 GPM, 500 gal. capacity, three crew members
2	Type 6:	Wildland: 50 GPM, 150 gal. capacity, two crew members

Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*

1	S-2 (support):	200 GPM pump, 2,500 gallon capacity, 1 crew member

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? Yes
Location1: Hillcrest Estates, north of North Platte
Issues:
x Multiple structures
x Heavy fuels
Location2: Indian Hills, south of North Platte
Issues:
x Multiple structures
x Heavy fuels
Location3: Weaver Heights, northeast of North Platte
Issues:
x Multiple structures
x Heavy fuels

Bridges that won't support equipment weight: No

GIS layer & contact info: Yes. GEOCOMM—Stacen Gross, 1-888-436-2666; sgross@geocomm.com

Greatest concerns: Wide open spaces with very limited breaks, heavy fuel loads, surface fuels, and increase in housing developments in rural areas.

Rank:

1	**Housing**
2	**Infrastructure**
5	**Bridge limits**
3	**Hydrants**
4	**Other water sources**

Stapleton VFD: (*Survey not returned*)

Sutherland Fire and Rescue
Counties: Lincoln
Street Address: 150 Maple St. **Mailing Address**: PO Box 537, Sutherland, NE 69165
Dept. Email: svfd@gpcom.net
Chief: Todd Hanneman; 308-386-8661; todd.hanneman@simplot.com
Ass't. Chief: Roger Lathrop; 308-386-8440; jtlawncare2000@yahoo.com
Sec/Treas.: Nickie Redden; 308-386-6467; fleecslivelifetotheplus14@gmail.com

Personnel
22 **Vol.**:

MAD(s): Southwest; Mid Plains

Equipment

Engines

2	Type 5:	Wildland: 50 GPM, 400 gal. capacity, two crew members
1	Type 7:	Wildland: 10 GPM, 50 gal. capacity, two crew members

Tenders *(Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive)*

1	T-2 (tactical):	250 GPM pump, 1,000 gallon capacity, 2 crew members

Other

1 Equipment trucks: Command vehicle, 4 crew members

Equipment housed away from main barn? No

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? No

Bridges that won't support equipment weight: Sutherland North River Bridge has weight limit, but we are exempt.

GIS layer & contact info: No

Greatest concerns: Manpower; we usually call for mutual aid from other departments early.

Rank:

3	**Housing**
4	**Infrastructure**
5	**Bridge limits**
2	**Hydrants**
1	**Other water sources**

Wallace VFD: (*Survey not returned*)

Other:
The Nebraska Game and Parks Commission provided the following information:

The NGPC Parks Division has firefighting equipment located at the following State Recreation Areas in the Loess Canyons CWPP Region: Medicine Creek (1 truck and slide in pumper), Red Willow (1 truck and slide in pumper, 1 ATV w/slide in pumper) , and Johnson Lake (1 truck and slide in pumper).

The NGPC Wildlife Division also has much firefighting equipment located at the North Platte District Office and the Medicine Creek WMA office headquarters.

Appendix H: Fire Department Survey and Distribution List

Fire Department Survey

Distributed 4/27/2021 to all departments all or partly in the CWPP Region

Nebraska Fire Department Survey

Contact Information:

Department Name	County(s)
Street Address	Mailing Address
Dept. Phone	Dept. Email

Chief Name:	Best Phone
Email:	Alt. Phone
Assistant Chief Name:	Best Phone
Email:	Alt. Phone
Secretary Name:	Best Phone
Email:	Alt. Phone
Treasurer Name:	Best Phone
Email:	Alt. Phone

Personnel:

Number	Type
	Volunteer
	Part-time
	Full-time

What Mutual Aid District(s) is your department in? _____

_____

If you have mutual aid agreements outside of formal MA districts please name the departments:

_____

_____

_____

1

Equipment:

Engines		(Fill in number of each type of equipment below)
Number	Type	Description
	Type 1	Structural: 1,000 GPM, 300 gal. capacity, four crew members
	Type 2	Structural: 500 GPM, 300 gal. capacity, three crew members
	Type 3	Wildland: 150 GPM, 500 gal. capacity, three crew members
	Type 4	Wildland: 50 GPM, 750 gal. capacity, two crew members
	Type 5	Wildland: 50 GPM, 400 gal. capacity, two crew members
	Type 6	Wildland: 50 GPM, 150 gal. capacity, two crew members
	Type 7	Wildland: 10 GPM, 50 gal. capacity, two crew members
Tenders	(see below)	Definition: Tactical Tenders: 4x4, 6x6, 8x8 all-wheel drive
Number	Type	Description
	T-1 (tactical)	250 GPM pump, 2,000 gallon capacity, 2 crew members
	T-2 (tactical)	250 GPM pump, 1,000 gallon capacity, 2 crew members
	S-1 (support)	300 GPM pump, 4,000 gallon capacity, 1 crew member
	S-2 (support)	200 GPM pump, 2,500 gallon capacity, 1 crew member
	S-3 (support)	200 GPM pump, 1,000 gallon capacity, 1 crew member
Other		
Number	Type	
	Equipment trucks	
	Other (Describe):	
	Road Dept. Equipment (describe)	
Yes/No (Circle)	Is any equipment housed away from the main fire barn?	Describe:

2

Have you identified any areas in your district that you are more concerned about than others if a wildfire starts nearby? ☐ Yes ☐ No

If yes, please describe where and why:

Township _____ Range _____ Section _____ Local Name: _____

Location Description:

Issues (check all that apply):

☐ Multiple Structures
☐ Difficult Access
☐ Rough Terrain
☐ One way in and out
☐ Heavy fuels
☐ Lack of water within effective distance
☐ Other (specify): _____

_____

_____

Additional areas:

Township _____ Range _____ Section _____ Local Name: _____

Location Description:

Issues (check all that apply):

☐ Multiple Structures
☐ Difficult Access
☐ Rough Terrain
☐ One way in and out
☐ Heavy fuels
☐ Lack of water within effective distance
☐ Other (specify): _____

_____

_____

3

Are there bridges in your jurisdiction that won't support equipment weight? ☐ Yes ☐ No

If yes, please describe:

Are there other areas in your jurisdiction with high home density, infrastructure or other resources at high risk, or populated areas with one way in/out? ☐ Yes ☐ No

If yes, please describe:

What are your greatest concerns if a wildfire were to start in or enter your jurisdiction?

Does your jurisdiction have GIS layer(s) that show housing, infrastructure, bridge limits, hydrants and other water sources (other than the county assessor's GIS information)? ☐ Yes ☐ No

If yes, please provide contact information:

Name: _____

Phone: _____ Email: _____

Which of these is of greatest concern in your jurisdiction?
(Please rank 1 to 5 with 1 being most important)

_____ Housing

_____ Infrastructure

_____ Bridge limits

_____ Hydrants

_____ Other water sources

Is there anything else you think we should know? _____

_____

_____

_____

_____

Thank you for providing this information.

Please email a scan of the completed form to sbenson4@unl.edu or mail a hard copy to:

Nebraska Forest Service (Attn: Sandy Benson)
PO Box 830815
Lincoln, NE 68583-0815

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Fire Department Survey Distribution List

Fire Departments
Arapaho
Arnold
Bartley
Bertrand
Brady
Cambridge
Cozad
Curtis
Eddyville
Edison
Elm Creek
Elwood
Eustis
Farnam
Gothenburg
Hershey
Holbrook
Indianola
Lexington
Maxwell
Maywood/Wellfleet
North Platte
Oconto
Overton
Oxford
Red Willow Western
Stapleton
Sumner
Sutherland
Wallace

Information also provided by:
The Nebraska Game & Parks Commission, North Platte & McCook offices

Appendix I

Public Engagement

This section includes outreach documents, media releases, and stakeholders list

Steering Committee

Name	Title/Affiliation
Carhart, Bill	Grasslands Stewardship Coordinator/Twin Platte NRD
Carr, David	Range Management Specialist/Central Platte NRD
Cerenil, Gio	Resource Conservationist/NRCS-Curtis Field Office
Deatrich, Tell	Loess Canyons Rangeland Alliance
Feaster, Sonya	RxB Specialist/USFWS Great Plains Region
Frickell, Mark	WUI Forester/Nebraska Forest Service-North Platte
Gibbens, Jack	Rangeland Management Specialist/NRCS-Elwood
Hastings, Lance	SW District Mgr. (Wildlife)/NGPC-North Platte
Houser, Andy	Senior Coordinating Wildlife Biologist/Pheasants Forever; QF
King, Kristy	Range Mgmt. Specialist/NRCS-North Platte
Krolikowski, Joe	District Conservationist/NRCS-Grand Island
Munter, Nate	Land Resources Manager/Tri-Basin NRD
Myers, Brandon	Director/Region 51 Emergency Mgmt.-North Platte
Powell, Roger	Emergency Manager/Region 17-Beaver City
Reisen, Dave	State Training/Exercise Officer/NEMA
Riggins, Aric	SW District Mgr. (Parks)/ NGPC-McCook
Thompson, Dennis	Fire Chief, North Platte Fire Department
Walters, Rich	Director of Conservation/The Nature Conservancy Nebraska
Woldt, Brian	Emergency Manager/Dawson County
Benson, Sandy	CWPP Coordinator/Nebraska Forest Service

Outreach Documents

This document was shared with county boards and emergency managers March 30, 2021

Updating Your Community Wildfire Protection Plan

The Nebraska Forest Service (NFS) is beginning the process of updating the 2014 Loess Canyons Community Wildfire Protection Plan (CWPP) for Dawson, Frontier, Gosper, and Lincoln Counties. This plan is a wildfire-specific resource that coordinates with your county emergency and hazard mitigation plans, allowing local landowners to apply for federal and state cost-share funds for woody fuels reduction and other hazard mitigation efforts. **There is no cost to counties**.

The Loess Canyons CWPP, part of a statewide network of CWPPs, assists communities in gathering resources, evaluating wildfire risk, and identifying strategies and mitigation actions to reduce overall vulnerability to wildfire events.

Over the next several months, planners will review the 2014 plan, update outdated information, add any new topics that have emerged, and delete material that is no longer pertinent.

Community participation is welcome throughout the update process. Everyone who works with land management, fire, and community preparedness—particularly counties, local fire districts, natural resources agencies, as well as the general public—is encouraged to provide input on wildfire concerns.

Once we have gathered the information, we will prepare a draft update for your review, incorporate edits and changes, then finalize the plan for your signature.

Please address questions to Sandy Benson at sbenson4@unl.edu, 402-684-2290.

Media Releases

Print Media and Radio

A public invitation to participate was sent via news release to local newspapers and radio stations April 27, 2021:

Community Wildfire Protection Plan update underway

Local counties, emergency managers, fire departments, and others who deal with wildfire are working with the Nebraska Forest Service to update the Community Wildfire Protection Plan (CWPP) adopted in 2014 for the Loess Canyons region of Nebraska. This document is a wildfire-specific resource that coordinates with area emergency and hazard mitigation plans.

Landowners and others in counties with a CWPP in place can apply for federal and state cost-share funds for local woody fuels reduction and other hazard mitigation efforts within the CWPP region. There is no cost to counties.

The plan, which also includes areas adjacent to the Loess Canyons, is part of a statewide CWPP network. It assists communities in gathering resources, evaluating wildfire risk, and identifying strategies and mitigation actions to reduce overall vulnerability to wildfire events. This CWPP encompasses the entirety of Dawson, Frontier, Gosper, and Lincoln Counties and the fire districts located within them.

Over the next several months, planners will review the 2014 plan, update outdated information, add any new topics that have emerged, and delete material that is no longer pertinent.

Community participation is welcome throughout the update process. Everyone who works with land management, fire, and community preparedness—particularly counties, local fire districts, natural resources agencies, as well as the general public—is encouraged to provide input on wildfire concerns.

The 2014 CWPP can be viewed or downloaded at https://nfs.unl.edu/documents/CWPP/LoessCanyonsCWPP_final.pdf. For further information or to provide comments, email sbenson4@unl.edu or call 402-684-2290.

* * *

Public Meetings

Steering Committee members participated in the North Platte NRD and South Platte NRD Hazard Mitigation Plan updates stakeholder meetings July 14, 15, 28, and 29, 2021 to provide information on the CWPP update, solicit input, and answer questions.

Follow-up News Releases

Media releases for draft review and publication of final plan were distributed in the fall of 2021.

Online Outreach

Information about the Loess Canyons CWPP update process was placed on the Nebraska Forest Service website's CWPP page: https://nfs.unl.edu/community-wildfire-protection-plan and the Nebraska CWPP Facebook page: https://www.facebook.com/groups/451134565293952/ on April 27, 2021. During the planning process, links to periodic updates and the draft and final documents were also posted to these locations.

Stakeholders List

County boards, emergency management, and municipalities in: Dawson, Frontier, Gosper, and Lincoln Counties

Fire Departments: See Appendix H

Natural Resources Districts: Central Platte, Middle Republican, Tri-Basin, Twin Platte

State Agencies: Nebraska Forest Service, Nebraska Game and Parks Commission, Nebraska State Fire Marshal's Office, Board of Educational Lands and Funds, Nebraska Emergency Management Agency

Federal Agencies: Natural Resources Conservation Service, US Fish and Wildlife Service

Non-Government Conservation Organizations: The Nature Conservancy, Pheasants/Quail Forever

Prescribed Fire Associations: Loess Canyons Rangeland Alliance, Central Platte Rangeland Alliance

Twin Valley Weed Management Area

Interested Individuals

Appendix J

- Wildland Urban Interface Mitigation Strategies
- Structural Ignitability Reduction Practices
- Firewise® Landscaping
- Nebraska Fire-Resistant Plant List

Wildland Urban Interface Mitigation Strategies and Structural Ignitability Reduction Practices

1) Develop a program to increase awareness of Firewise® standards for community defensibility and designate, for firefighter safety, which homes and/or parts of communities are not defensible
2) Introduce and expand the understanding of the "Home Ignition Zone" and emphasize how survivability depends on maintenance necessary to reduce and manage home ignition potential
3) Create guidelines for developers and property owners who intend to construct roads, driveways and dwellings to provide the following:
    a. Name, address, and GPS location for each road, driveway, and building site
    b. Fuel treatment standards for the areas between building sites
    c. Evidence that Firewise® building standards and defensible space information has been provided to every lot and homebuyer or develop Firewise® based requirements for new building construction standards
    d. Road construction and maintenance standards that accommodate emergency equipment
    e. Require at least two access routes for developed areas and subdivisions
    f. Designate locations for maintained safety zones and water facilities
4) Subdivision residents can work together to improve defensibility of their whole subdivision; this could include connecting home site defensible space areas and/or fuel hazard reduction and thinning 150 to 200 feet from buildings
5) Develop accurate maps for subdivisions and access roads
6) Treat fuels along strategic roads
7) Long driveways in wooded areas should be graveled and provided with terminus turnaround that has at least a 45-foot radius or a pull-in and pull-out facility
8) Mark driveways without turnaround or with steep slopes with a sign indicating limitations
9) Mark safety zones and helispots where fuel continuity is dense and zones are not obvious
10) Develop and implement a standard for signing roads and addressing and marking homes for more efficient emergency access

Web Sources: Wildfire Preparedness

FEMA: Local Mitigation Planning: https://www.fema.gov/local-mitigation-planning-resources

Fire-Adapted Communities®: http://www.fireadapted.org/

Firewise® Communities: http://www.firewise.org/

Firewise Guide to Landscaping and Construction: https://www.nfpa.org/-/media/Files/Firewise/Brochures-and-Guides/FirewiseGuideToLandscapeandConstruction.ashx

I Am Responding (Emergency responder supplemental dispatch notification system): https://iamresponding.com/v3/Pages/Default.aspx

Nebraska Forest Service Wildland Fire Protection Program: https://nfs.unl.edu/fires-nebraska

Ready, Set, Go! http://www.wildlandfirersg.org/

USFS Wildfire Risk to Communities interactive website: https://wildfirerisk.org/

Firewise® Landscaping and Nebraska Fire-Resistant Plant List

Firewise® Landscapes

Homeowners value landscapes for the natural beauty, privacy, shade and recreation they offer and frequently select properties that include or are near woodlands or other natural areas to visually expand the landscape. One of the risks of properties adjoined to natural areas, however, is that they can be more vulnerable to wildfires.

Creating Defensible Space

In fire-prone areas, property owners can take measures to minimize the risk of wildfire damage by creating a "defensible space" around the home or other buildings. Some of the ways to create more Firewise® landscapes include:

- Planting lower-growing plants or groundcovers near the home to form low, dense mats with strong root systems
- Avoiding the use of tall grasses close to buildings since they can ignite easily and burn rapidly
- Mulching with rocks, gravel or other hardscaping around the foundation instead of bark, pine needles or other flammable mulches
- Paving patio areas and creating raised beds to create firebreaks
- Planting low-growing succulent shrubs rather than taller, resinous evergreen shrubs
- Spacing trees so that tree crowns are 10 feet from each other
- Pruning dead limbs
- Removing dried annuals or perennials
- Raking leaves and litter as they build up
- Placing screens beneath decks to keep leaves or woody debris from collecting underneath
- Keeping wood piles at least 30 feet away from the house
- Providing open access for firefighting equipment that is not limited by fences, trees, or other obstructions
- Keeping propane tanks a good distance from buildings, and taking care when refueling garden equipment
- Using non-flammable outdoor furniture

Selecting Firewise Plant Materials

No plant species is entirely fireproof. Virtually any vegetation can fuel a fire, but some species are more resistant than others. The following information can help property owners select more fire-resistant plant materials, but where they are planted and how they are cared for can be just as important as the plants themselves.

- Planting a variety of sizes and species of plants in small, irregular clusters creates a better barrier than large masses of a single species
- Groundcovers or other plants that grow close to the ground offer less fuel
- Conifers or other plants are high in very flammable resin, so it's best to keep them thinned and pruned—especially close to the ground
- Conifers with thick bark and long needles are more able to withstand fire
- Salt-tolerant plants tend to be somewhat more fire-resistant
- Deciduous plants have higher moisture content, are less flammable and, when dormant, offer less fuel
- Drought-tolerant plants tend to be more fire-resistant as they are likely to contain lots of moisture (succulents) or to shed leaves or needles during extreme drought
- Plants with open, loose branches and minimal vegetation (such as currant and mountain mahogany) are less of a hazard, as are plants that grow slowly and need little pruning
- Plants, like aspen, that can resprout following a fire will more quickly rejuvenate a landscape

Using Native Prairie Plants

In Nebraska it is often the case that a "Firewise" landscape should also be a "waterwise" landscape where drought-tolerant plants are an important part of the mix. Obviously our native plants have evolved to grow under natural moisture conditions and many of them are suitable for both a "waterwise" and a "Firewise" landscape. Just a little water here and there can go a long way to keeping such plants green and viable. Another important aspect of using native plants is that they play a vitally important role in supporting biodiversity and all the benefits derived from it. We strongly recommend that native plants be utilized within any landscape, including the Firewise landscape. The trick is to use them appropriately, especially near the home.

Although native prairie grasses and forbs make a lot of sense in a "waterwise" landscape, they can also be highly combustible when they are brown and dry. For a Firewise landscape, prairie plants, especially taller grasses, should be used sparingly and judiciously within the 30 foot "Lean, Clean and Green Zone" nearest the home. A few scattered here and there for ornamental affect are fine, but they should not be massed tightly close to the home. A prairie meadow or thick border planting should be reserved for those areas farther away from important structures.

Lawn and Groundcover

One of the best ways to defend a structure against wildfire is to maintain a closely-cropped green zone near the home. This typically means the maintenance of a green lawn, but turf grass is not the only choice. Cool-season lawn grasses such as Kentucky bluegrass and tall fescue are good choices, although they can require significant amounts of supplemental irrigation to keep green in dry weather. For sunny areas, a good alternative is buffalo grass, which requires much less moisture than other lawn grasses. Our native blue grama can also be used as a turf alternative, however it will need to be mowed higher – at 8-10" while green and then mowed short when dormant. Recent years has brought the advent of many sedge species as lawn alternatives especially for more shady zones.

Groundcovers don't need to be grasses or grass-like plants requiring mowing. There are several species of "Firewise" groundcover perennials that make sense including such things as vinca, bergenia, hosta, bugleweed, geranium, sedum, primrose, pussytoes, snow in summer, Virginia creeper, wild strawberry and yarrow.

Introduced Perennials and Ornamental Grasses

As with native plants, there are many great non-native species that can be used in a "Firewise" landscape that is also "waterwise." The trick is to place them appropriately and cut them back (clean them up) when they die back late in the season. Some of our favorites include sedum, geranium, coral bells, daylily, lambs ear, feather reed grass, Korean reed grass, and fountain grass.

Trees and Shrubs

Although nearly any tree or shrub could burn in a severe fire, it is the highly volatile evergreen species including pine, spruce, fir, juniper, and cedar that pose the most risk when growing near homes or other structures. Within the area nearest the home (30-foot interior zone) it is advisable to exclude volatile evergreens entirely. However, because deciduous trees are so important at casting shade and cooling the home and its surroundings, and because they are not nearly as prone to burning, they can be utilized relatively close to the home. Keep in mind that any branches directly overhanging the roof should be removed. Some of the best deciduous trees for planting near homes include our tough native species including hackberry, bur oak, coffeetree, and honeylocust.

Most deciduous shrubs are acceptable for use in a Firewise landscape. Nearest the home, the shrubs should be kept lower than 30 inches and they should not be massed in tight groupings. Beyond the 30-foot interior zone, the shrubs can be taller and more tightly spaced, however grouping should still be kept relatively small until at least 50 feet from the home. Native species will do the most for biodiversity. Species to consider include mountain mahogany, rabbit brush, sumac, serviceberry, currant, snowberry, gooseberry, plum, and chokecherry.

Firewise Plants for Nebraska

Perennials & Groundcovers
Artemisia
Bergenia
Blanket flower, *Gaillardia*
Bugleweed, *Ajuga*
Candytuft, *Iberis*
Catmint, *Nepeta*
*C*oneflowers, *Rudbeckia*
Columbine, *Aquilegia*
Coral bells, *Heuchera*
Coreopsis
Daylily, *Hemerocallis*
Flax*, Linum*
Geranium
Hens and chicks, *Sempervivum*
Iris
Lambs ear*, Stachys*
Penstemon
Pinks*, Dianthus*
Primrose, *Oenothera*
Pussytoes, *Antennaria*
Sage, *Salvia*
Sedum
Snow-in-summer, *Cerastium*
Violets, *Viola*
Virginia creeper, *Parthenocissus*
Wild ginger, Asarum
Wild strawberry, *Fragraria*
Yarrow, *Achillea*

Shrubs
Buffaloberry, *Shepherdia*
Cherry and plum, *Prunus*
Cinquefoil*, Potentilla*
*C*oralberry, snowberry*, Symphoricarpos*
Cotoneaster
Currant and gooseberry, *Ribes*
Dogwood*, Cornus*
Lilac*, Syringa*
Mahonia
Mock orange, *Philadelphus*
Mountain mahogany, *Cercocarpus*
Ninebark*, Physocarpus*
Rose*, Rosa*
Sumac*, Rhus*

Trees
Aspen, cottonwood and poplar, *Populus*
Birch, *Betula*
Black cherry, *Prunus*
Boxelder, *Acer*
Bur, Gambel, Chinkapin oak, *Quercus*
Hackberry, *Celtis*
Maple and boxelder, *Acer*
Ohio buckeye, *Aesculus*
Willow, *Salix*

Appendix K: Emergency Assistance for Wildfire Control

Link to the Nebraska Forest Service "Yellow Book" Emergency Assistance for Wildfire Control

https://nfs.unl.edu/documents/Yellowbook.pdf

This reference is a 'must have' for Nebraska's emergency responders. It contains:

- Contact information for state, federal and private agencies that have emergency suppression resources or can provide technical expertise in the suppression of wildfires
- Aerial Applicator and Foam Retardant Directory
- Deployment procedures and forms you will need to follow to order a Single Engine Air Tanker (SEAT)
- Map of cooperating aerial applicators and SEAT base locations