Southwest Nebraska Community Wildfire Protection Plan

FOR THE COUNTIES OF CHASE, DUNDY, HAYES, HITCHCOCK, KEITH, PERKINS, RED WILLOW, AND PARTS OF FRONTIER AND LINCOLN

Photo courtesy of Ralph Moul

JULY, 2019

NEBRASKA FOREST SERVICE University of Nebraska–Lincoln

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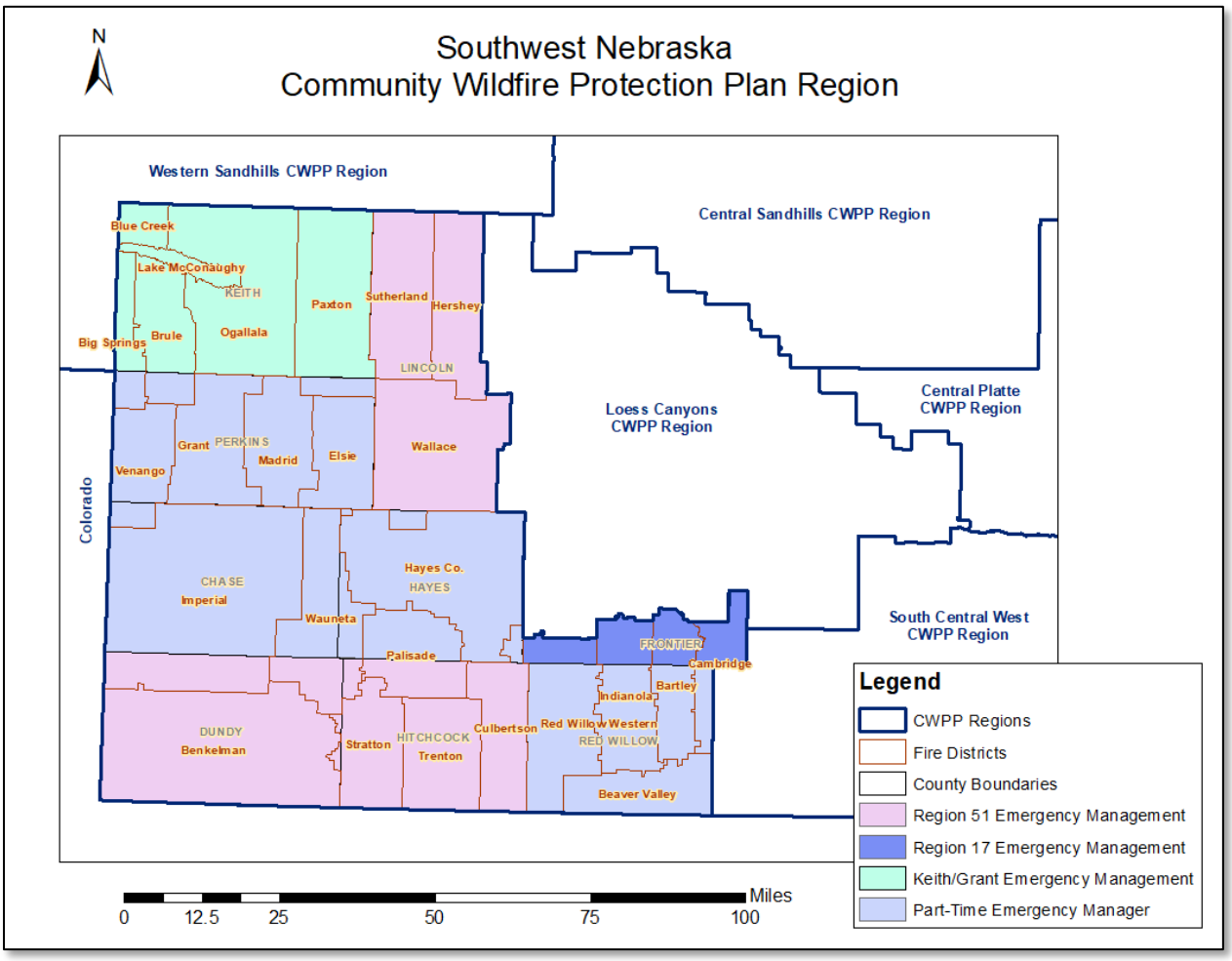
N
Southwest Nebraska
Community Wildfire Protection Plan Region
Western Sandhills CWPP Region
Central Sandhills CWPP Region
Loess Canyons CWPP Region
Central Platte CWPP Region
South Central West CWPP Region
Blue Creek
Lake McConaughy
KEITH
Paxton
Sutherland
Hershey
Big Springs
Brule
Ogallala
LINCOLN
Grant
PERKINS
Madrid
Elsie
Wallace
Venango
Colorado
CHASE
Imperial
Hayes Co.
HAYES
Wauneta
Palisade
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Cambridge
Bartley
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Culbertson
Red Willow Western
RED WILLOW
Beaver Valley
Legend
CWPP Regions
Fire Districts
County Boundaries
Region 51 Emergency Management
Region 17 Emergency Management
Keith/Grant Emergency Management
Part-Time Emergency Manager
Miles
0
12.5
25
50
75
100

Southwest Nebraska Community Wildfire Protection Plan

FACILITATED BY THE

Nebraska Forest Service

IN COLLABORATION AND COOPERATION WITH

CHASE, DUNDY, FRONTIER, HAYES, HITCHCOCK, KEITH, LINCOLN, PERKINS, AND RED WILLOW COUNTIES

LOCAL VOLUNTEER FIRE DISTRICTS

REGION 17, REGION 51, KEITH/GRANT EMERGENCY MANAGEMENT AREAS AND COUNTY EMERGENCY MANAGEMENT DIRECTORS

SOUTHWEST NEBRASKA CWPP STEERING COMMITTEE

LOCAL MUNICIPAL OFFICIALS

LOCAL, STATE, AND FEDERAL NATURAL RESOURCES AGENCIES

AREA LANDOWNERS

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Photo courtesy of Ralph Moul

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Name Earl McNutt **Date:** July 1, 2019

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Southwest Nebraska Community Wildfire Protection Plan Acronyms

Acronym	Meaning
BLM	Bureau of Land Management
BUL	Biologically Unique Landscape
CNPPID	Central Nebraska Public Power and Irrigation District
CWPP; CPCWPP	Community Wildfire Protection Plan; Central Platte Community Wildfire Protection Plan
FAP	Forest Action Plan
FEPP; FFP	Federal Excess Property Program; Firefighter Property
GIS	Geographic Information System
GPS	Global Positioning System
H&RW	Hitchcock & Red Willow
ID	Identification
LEOP	Local Emergency Operations Plan
MA or MAD	Mutual Aid District
MOU	Memorandum of Understanding
NE	Nebraska
NEMA	Nebraska Emergency Management Agency
NFS	Nebraska Forest Service
NGO	Non-Government Organization
NGPC	Nebraska Game and Parks Commission
NNLP	Nebraska Natural Legacy Project
NPPD	Nebraska Public Power District
NRCS	Natural Resources Conservation Service
NRD	Natural Resource District
NWS	National Weather Service
PPID	Public Power and Irrigation District
RA	Risk Assessment
RH	Relative Humidity
RPPD	Rural Public Power District
RPPID	Rural Public Power and Irrigation District
RR	Risk Reduction
SEAT	Single Engine Air Tanker
SHP	State Historical Park
SRA	State Recreation Area
SRIA	Structural Risk & Ignitability Analysis
USFS	US Forest Service
USFWS	US Fish and Wildlife Service
VFD; RFD; FD	Volunteer Fire Department; Rural Fire District/Dept.; Fire District/Dept.
WMA	Wildlife Management Area
WUI	Wildland Urban Interface

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Southwest Nebraska Community Wildfire Protection Plan

Introduction

The purpose of this Community Wildfire Protection Plan (CWPP) is to provide a tool for effectively managing fire and hazardous vegetative fuels and to bolster collaboration and communication between the various agencies and organizations who manage fire in the southwest region of Nebraska. Having a CWPP in place allows the Nebraska Forest Service (NFS) to apply for federal 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.

Legislative Background

To be eligible for federal 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) first 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 Southwest CWPP region lies partially within the Shortgrass Prairie, Mixed Grass Prairie, and Sandhills Ecoregions identified in the NNLP. Parts of the Sandsage Prairie and Platte Confluence Biologically Unique Landscapes are found within the CWPP boundary. (See Appendix B).

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). 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. Parts of the Western Platte River and Republican River priority landscapes are located within the CWPP boundary. (See Appendix C).

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

Plan Integration

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 phase 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 local 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 each local Emergency Management Agency to maintain the LEOP according to the guidance from the State.[1] Wildfire is not discussed in detail in most LEOPs. Each local LEOP contains an "Annex F" that covers fire services. This includes a listing of county fire departments and mutual aid partners, as well as equipment lists. Fire department information is listed in Appendix G. Mutual aid associations are listed in Appendix F.

Nebraska also has a state Hazard Mitigation Plan, which establishes the policies, plans, guidelines, and procedures for the Hazard Mitigation Program in Nebraska. NEMA coordinated with the Nebraska's Natural Resource Districts (NRDs) and counties to promote the creation and updates of multi-jurisdictional plans throughout the state.[2] Frontier/Hayes/Hitchcock Counties and Perkins/Chase/Dundy Counties have prepared

Hazard Mitigation Plans for their areas. Keith and Lincoln Counties are included in the Twin Platte NRD's plan. Red Willow County is part of the Quad Counties plan, which also includes Franklin, Furnas, and Harlan Counties. Appendix E contains links to these plans.

This CWPP strives to coordinate with existing state and local plans and provides specific detail on wildfire hazards, areas at risk from wildfire, emergency operations and capacity, and critical infrastructure. It includes an action plan addressing wildfire-specific issues including a risk assessment procedure, risk reduction measures, preparedness recommendations, training and education, fuels mitigation strategies, and a monitoring and evaluation plan.

Goals and Objectives

State Action Plan Goals and Objectives

This CWPP and the results of its implementation relate directly to all of the FAP goals and objectives:

1 – Actively and sustainably manage forests
2 – Restore fire-adapted lands and reduce risk of wildfire impacts in forests and adjacent communities
3 – Identify, manage and reduce threats to forest and ecosystem health
4 – Protect and enhance water quality and quantity
5 – Improve air quality and conserve energy
6 – Assist communities in planning for and reducing wildfire risks
7 – Maintain and enhance the economic benefits and values of trees and forests
8 – Protect, conserve and enhance fish and wildlife habitat
9 – Connect people to trees and forests and engage them in environmental stewardship activities
10 – Manage and restore trees and forests to mitigate and adapt to global climate change

Sustainable forest management reduces wildfire impacts in the region's riparian forests and adjacent communities, and reduces threats to ecosystem health. Healthy forests and grasslands, in turn, protect air and water resources and fish and wildlife habitat, and these ecosystems are better able to cope with a changing climate. Communities that plan for and reduce wildfire risks and engage in environmental stewardship activities may also reap both the 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 a diversity of 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 steering committee other stakeholders identified the following goals and objectives for this CWPP:

1. Identify hazards and areas at risk
    a. Identify factors associated with wildfire risk
    b. Evaluate areas to determine risk
2. Reduce wildfire risk to identified areas
    a. Partner with landowners, land managers, fire personnel, and natural resources agencies and organizations to incorporate their concerns and objectives in fire management programs
    b. Identify, prioritize, and treat hazardous fuels
    c. Suppress unplanned ignitions to protect private property and natural and cultural resources from unacceptable impacts attributable to fire
    d. Support emergency response through training and acquisition of equipment
3. Promote wildfire prevention and education
    a. Increase public awareness of wildfire and damage from uncharacteristic wildfires

   b. Educate the public in *Firewise®* landscaping and construction techniques
   c. Reduce fire hazards through construction of defensible fuel spaces that protect communities and resources
   d. Encourage communities to develop strategies to reduce wildfire risk; provide communities with tools to address human caused fires
   e. Encourage integration of fire prevention into schools; address accidental ignitions caused by children
4. Restore fire-adapted ecosystems
   a. Provide training to enable rapid assessments of burned lands and the implementation of stabilization techniques
   b. Encourage land managers to control non-native invasive plant species and to actively manage prolific and aggressive native species such as eastern redcedar
5. Enhance communications among fire departments, agencies, and organizations involved with fire management
   a. Train fire departments in the use of the V-TAC and UHF mutual aid radio channels
   b. 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
6. Establish a monitoring and evaluation process
   a. Annually evaluate the CWPP implementation effectiveness and recommend changes as needed
   b. Conduct monitoring of selected collaboratively developed projects and activities to assess progress and effectiveness

Priority Landscapes

At the state level, the FAP identified Priority Landscapes to help focus effort and funding on landscape-scale projects (Map 2 in Appendix A). The area within the CWPP boundary contains a range of landscapes, from farmland and riparian woodlands to mixed grass and short grass prairies. The principal Priority Landscapes in this CWPP region are found in Keith, Lincoln, Chase, Dundy, Hitchcock, and Red Willow Counties, but other parts of the CWPP region also contain mid- to high priority areas in which hazard reduction activities can be targeted. Within each county, local stakeholders have identified "Areas of Concern" – specific local priority areas that are most at risk for wildfire within the larger landscapes. Maps of these Areas of Concern appear in Appendix A.

Some of the CWPP counties have experienced large, catastrophic wildfires. Between 2000 and 2018, CWPP area volunteer fire departments reported 28 fires greater than 499 acres in size that burned over 155,000 acres. In August, 2012, several lightning-caused wildfires in the CWPP region burned 50,000 acres near Lake McConaughy. One firefighter was hospitalized.[3] In March 2018, sparks from a damaged power line caused a fire that prompted the evacuation of the north edge of McCook, destroyed a home, and injured one person.[4]

These incidents demonstrate that intense fire behavior can start in remote areas, move aggressively over large expanses, and threaten population centers. For this reason the CWPP planning team has designated the entire CWPP region as Wildland Urban Interface (WUI). Treatment to reduce fuels will help lessen the risk of wildfire within the WUI. The NFS can utilize federal grant funding to cost-share fuels reduction treatments throughout the CWPP region.

Unnaturally dense and unhealthy woodlands and encroachment of eastern redcedar into grasslands continue to 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.

Process

The first step in the CWPP planning process was to establish a core working group of stakeholders to form a steering committee and planning team. Information about the purpose of the CWPP and an invitation to participate in the process was given to each of the nine county boards within the Region. Counties appointed individuals to the steering committee to help guide the process.

An outreach notice (see Appendix I) was sent to stakeholders and other potentially interested parties, including fire districts and emergency management personnel within the CWPP region, municipal governments, natural resources districts, federal and state agencies, state legislators, and non-government organizations. The steering committee was put together from responses to this outreach. Containing a mix of county board appointments and volunteers, it includes representatives from local fire departments, local and state emergency management, NRDs, the NFS, the NEMA, the Natural Resources Conservation Service (NRCS), the NGPC and the Bureau of Land Management (BLM).

The steering committee defined the region's WUI. For planning purposes, each county within the CWPP boundary is considered a WUI community. County officials, fire department personnel, and steering committee members designated areas of concern within each county that are particularly at-risk from wildfire. The committee established goals and objectives and provided the locally-focused framework for the CWPP.

The NFS sent a questionnaire to all of the fire departments in the CWPP region asking for their current contact information, list of equipment, and issues, concerns, and priorities. Eleven of the 27 fire departments returned the survey. Responses to this 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.

A media release describing the planning process was sent to local newspapers and radio stations providing contact information and encouraging public input. Information was posted on social media pages and a flyer was posted in county and municipal offices and in popular gathering places to extend the outreach. The stakeholder list, outreach letters, and media releases appear in Appendix I.

Feedback from the initial outreach was incorporated into a draft document, along with background information, risk assessment, and an action plan. After review by the steering committee, the draft was released for a 30-day public review period. Comments on the draft CWPP were incorporated into the final document which was then sent to the county boards for signature. Copies of the final document were sent to each county for distribution to local officials. The plan is also available online at https://nfs.unl.edu/documents/CWPP/Southwest.pdf.

Overview

This section contains background information common to all counties within the CWPP region. Information specific to only certain areas is included in the county sections.

Landforms, Climate and Weather

The Southwest Nebraska CWPP region straddles the High Plains and Central Great Plains Ecoregions, and reaches north into the southwest corner of the Sandhills. This semiarid region sits atop the Ogallala Aquifer.

Nebraska has a continental climate with cold winters and hot summers. The National Climatic Data Center reported 2012-2013 as central and western Nebraska's warmest, driest years on record, with some areas receiving less than half of normal rainfall. In recent decades droughts have become more severe, with peaks about every six years. Extreme drought and wildfire years occurred in 1988, 1994, 2000, 2006 and 2012. In 2018, Nebraska did not follow that pattern, and was wetter and cooler than normal, with some areas producing a high amount of fine fuels that created heavier-than-normal fuel loads during the following months. Many parts of the western United States experienced record heat and wildfires during the 2018 fire season.

Weather data was obtained from the University of Nebraska High Plains Regional Climate Center[5] and Iowa State University.[6] Weather factors, including temperature, precipitation, humidity, and wind, define fire season, as well as fire direction and speed. 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 mid- to late July, but there is less growth, and consequently fewer fine fuels to catch sparks from trains, farm equipment, or motorists.

	April			July			October		
County	Max. Temp.	Precip.	Min. RH	Max. Temp.	Precip.	Min. RH	Max. Temp.	Precip.	Min. RH
Chase	62.55	1.95	27	89.22	3.09	37	65.63	1.49	34
Dundy	63.99	1.97	28.5	90.61	3.02	37.7	67.15	1.47	35
Frontier	63.40	2.15	33	88.91	3.13	40	66.15	1.80	38
Hayes	62.89	2.13	28.5	89.28	3.12	37.7	64.63	1.69	35
Hitchcock	64.42	2.15	30	90.79	3.28	38.5	67.28	1.68	36
Keith	61.78	2.10	26	89.05	3.02	34.5	64.58	1.40	33.5
Lincoln	61.74	2.24	31.5	88.11	2.99	41	64.60	1.72	38
Perkins	62.15	2.04	30	89.14	3.10	34	65.02	1.52	31.5
Red Willow	64.39	2.13	33	89.98	3.26	40	66.94	1.72	38

Table 1: Average maximum temperatures (degrees F), precipitation (inches) and median minimum relative humidity (percent) 1982-2018 for April, July, and October for Southwest CWPP counties. RH data interpolated from selected weather stations.[5]

Wind is a prime factor in fire spread, even where fuels are light and/or discontinuous as it is in much of the plan area. Many 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 – Imperial, McCook, North Platte, and Ogallala – are in Appendix D.

Vegetation and Natural Communities

Native vegetation in the Southwest CWPP Region is primarily mixed-grass prairie and short-grass prairie, with mixed deciduous forests in the drainages. North of the North Platte River, the region includes the southwest tip of the Sandhills prairie vegetation type.[7] In some areas eastern redcedar has encroached into the prairies and deciduous forests. Cultivated crops occupy much of the western and southern areas. See Appendix A, Map 3.

Land Use

There are about 4,559,428 acres in the Southwest CWPP region, which includes all of Chase, Dundy, Hayes, Hitchcock, Keith, Perkins, and Red Willow Counties, the southern quarter of Frontier County, and the western third of Lincoln County. Public lands include 42,247 acres in NGPC lands: 17 Wildlife Management Areas (WMAs), eight State Recreation Areas (SRAs), a State Historical Park (SHP), and a fish hatchery; and 237 acres in seven scattered BLM parcels. There are also approximately 191,080 acres in Nebraska School Lands. The balance of the land in the region is privately owned. Agriculture (livestock and crops) is the predominant use on private and school lands.

Residential, commercial, and small manufacturing land uses dominate the region's 26 incorporated cities and villages and their immediate surroundings, as well as 22 unincorporated communities. Rural residential land use exists in conjunction with recreational subdivisions near Lake McConaughy and agricultural operations region wide. According to US census data, there are just over 31,202 permanent residents within the seven counties entirely within the CWPP region. There are an estimated 5,280 residents within the CWPP boundary in Lincoln County and an estimated 264 residents within the CWPP boundary in Frontier County.

All counties in the CWPP region have county zoning plans in place. There are currently no restrictions in any of the counties for new building construction in fire-prone areas such as along canyon rims.

The primary recreational activities in the region are hunting, fishing, camping, and boating on the region's six large reservoirs. Tourism draws over two million annual visitors to the region. In 2017, 1,756,985 people visited the Lake McConaughy and Lake Ogallala SRAs alone. Visitors to other area SRAs included Medicine Creek (95,897), Swanson Reservoir (75,000), Sutherland Reservoir (66,160), Enders Reservoir (66,000), Red Willow (61,100), and Rock Creek (4,000).[8] State WMAs within the region see thousands of visitors yearly. Hundreds of hunters visit private lands throughout the region annually.

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 Southwest 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. These people, systems, and structures 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. Often fairgrounds or parks 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 Department of Homeland Security's website https://www.ready.gov/evacuating-yourself-and-your-family offers some ideas.

Irrigation Districts

Republican River Watershed

The Frenchman-Cambridge Division of the Pick-Sloan Missouri Basin Program, in southwestern Nebraska, extends from Palisade southeastward along the Frenchman River and from Trenton eastward along the Republican River to Orleans and Alma. Storage facilities for the division consist of the Enders Reservoir and Swanson, Hugh Butler, and Harry Strunk Lakes. The four dams, reservoirs, and irrigation systems provide storage to irrigate 66,090 acres of project lands, flood control, fish and wildlife conservation, and recreation along the Republican River and its three tributaries, the Frenchman River, and Red Willow and Medicine Creeks.[9] There are four irrigation districts on the Republican River watershed within the CWPP area (See Map 4 in Appendix A).

The Pioneer Irrigation District is located in Haigler, NE, and serves 11 customers on approximately 2,000 acres in Dundy County. The system has one cement/dirt canal starting in Colorado at a diversion dam about 1 mile west of Laird, stretching 17 miles with a capacity of about 75 cubic feet per second (cfs), and ending close to the

Arikaree River in Dundy County. There is no storage; water for irrigation is diverted from the North Fork of the Republican River.[10]

The Frenchman Cambridge Irrigation District[11] is headquartered in Cambridge. It delivers irrigation water to more than 45,600 acres in southwest Nebraska using four different canal systems. Direct flow permits allow them to divert 531.5 cubic feet per second of natural flow. The district maintains 156 miles of main canal and many more miles of laterals.

The Frenchman Valley Irrigation District, headquartered in Culbertson, irrigates just over 9,295 acres using water from Enders Reservoir. Its main canal, with a 400 cfs capacity, runs 21.5 miles from Palisade to three miles north of Culbertson. The district maintains 27 miles of lateral canals, serving 85 customers.[12]

The Hitchcock & Red Willow Irrigation District (H&RW) shares the Culbertson office with the Frenchman Valley Irrigation District. The H&RW District irrigates just under 11,695 acres and serves 50 customers. The main H&RW canal, with a 230 cfs capacity, starts three miles north of Culbertson and runs 25.8 miles to a Strunk's rest area east of McCook. The district maintains 44 miles of laterals. Due to lack of water, the district has not received water from Enders Reservoir since 2001.[12]

Platte River Watershed

The Central Nebraska Public Power and Irrigation District (CNPPID) [13] operations begin at its main storage reservoir, Lake McConaughy. Formed by Kingsley Dam across the North Platte River, Lake McConaughy is Nebraska's largest reservoir with a storage capacity of almost 2 million acre-feet. The lake is 22 miles long, more than three miles wide and covers 30,500 acres at maximum fill. Water released from Lake McConaughy flows through Lake Ogallala to the Nebraska Public Power District's (NPPD) Keystone Diversion Dam. Here the water can be diverted into NPPD's canal or passed through the dam down the North Platte River. Water which flows through NPPD's system is returned to the South Platte River just above CNPPID's Diversion Dam 50 miles east of Lake McConaughy below the confluence of the North and South Platte Rivers, east of the CWPP region.

The Central Nebraska, Keith-Lincoln, Paxton-Hershey, Platte Valley, Suburban, Birdwood, and Western irrigation districts lie all or partly within the Southwest CWPP Region (see Map 5 in Appendix A).

Prescribed Fire and Prescribed Burn Associations

In recent years, prescribed fire has increased as a method of keeping eastern redcedar encroachment in check, particularly in grasslands. Practitioners include individual landowners, groups of landowners in organized prescribed burn associations, non-profit organizations, and public agencies.

The Southwestern Nebraska Prescribed Burn Association is the only active prescribed burn association in the Southwest CWPP region. It operates in Red Willow, Hitchcock, and Hayes Counties. They have a mobile prescribed burn trailer that can be checked out by association members, and they also have access to a prescribed fire trailer administered Pheasants Forever. The now defunct Upper Medicine Creek PBA once operated in a portion of Frontier County.

Wildland Urban Interface

The WUI is defined as areas where homes and other structures are built near or on 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.

Fire Districts
There are 26 rural fire districts and one municipal fire district all or partially within the CWPP boundary. These are shown on Map 6 in Appendix A.

Wildfire Hazard: History and Impacts

Historic Role of Fire
Prior to European settlement, large fires (started by lightning or indigenous people) were common, and these fires kept the prairies free of most woody vegetation. Table 2 shows the prairies in Southwest Nebraska may have experienced a mean replacement fire interval of 11 to 15 years prior to Euro-American influence. However, since settlement, people have become increasingly adept at suppressing wildfire. Without fire, over time, forests became densely overcrowded and woody vegetation encroached on prairies.

		Fire Regime Characteristics			
Vegetation Community	**Fire Severity**	**% of Fires**	**Mean Interval (years)**	**Min. Interval (years)**	**Maximum Interval (years)**
Nebraska Sandhills Prairie	Replacement	58	11	2	20
	Mixed	32	20	n/a	n/a
	Surface or Low	10	67	n/a	n/a
Mixed Grass Prairie	Replacement	67	15	8	25
	Mixed	33	30	15	35
Short Grass Prairie	Replacement	87	12	2	35
	Mixed	13	80	n/a	n/a

Table 2: Fire intervals for the Nebraska Sandhills Prairie, Mixed Grass Prairie, and Short Grass Prairie types are shown above.[14]

Local Fire History
Nebraska is no stranger to extremely large fires. 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 Kearney. It was visible from Colorado and Kansas, and eventually burned all the way to Texas. One of Nebraska's largest wildfires occurred in 1972, when 100,000 acres burned near Mullen.

More recently, in 1999 about 79,000 acres of Sandhills prairie burned along a 40-mile front from north of Mullen to Thedford, killing one firefighter.[15] In 2006 about 9,600 acres burned near Halsey. An 11,000 acre fire near Thedford in 2011 seriously injured two Valentine firefighters.[16]

Within the Southwest CWPP area, the 2012 Keith County Complex was a series of six wildfires that were started by lightning and burned 50,000 acres in Keith County. Incident Commander Ralph Moul said that it was a 'Type 3' incident that took the five days and the combined efforts of 58 fire departments, 'Nang' helicopters, aerial fire suppression planes, state, county, and private heavy equipment to contain. "During the same type period we also had to deal with a 'Type 4' drowning incident at Lake McConaughy that took the combined efforts of Dive Rescue Teams from Kearney, Scottsbluff, Gering, Imperial, Keystone-Lemoyne, and Sutherland," he said. "We were also answering numerous fire calls that were occurring in the district while the complex was in full swing. It was a long five days but no livestock or buildings were lost." Map 7 in Appendix A shows the locations of some of the larger fires reported in the CWPP area since 2000.

In 2012, many local fire departments in the Southwest CWPP area provided support for other large fires in Nebraska, including the Pine Ridge and the Niobrara Valley wildfire complexes that burned nearly half a million acres. As observed that year, and evidenced in historical research, rivers are not always a barrier to fire spread.[17]

Some fire districts voluntarily report their annual fire response data to the NFS. Table 3 shows the fire data reported by fire departments from 2000 to 2017.[18] Because the fire districts vary in their level of reporting, there is no accurate, comprehensive fire history available for the CWPP area.

Fires Reported 2000-2017							
Department	**# Fires Human**	**# Acres Human**	**# Fires Lightning**	**# Acres Lightning**	**Total # Fires**	**Total # Acres**	**Mutual Aid Responses**
Bartley	12	128	2	1	14	129	0
Benkelman	126	1,455	66	4,230	192	5,685	21
Big Springs	109	1,548	8	112	117	1,660	24
Brule	47	574	6	5,105	53	5,679	16
Cambridge	31	240	1	2	32	242	14
Culbertson	3	202	0	0	3	202	0
Elsie	26	585	2	110	28	695	0
Grant	111	4,140	19	6,329	130	10,469	79
Hayes Center	9	10,095	2	70	11	10,165	0
Hershey	164	4,547	17	2,532	181	7,079	84
Imperial	103	1,486	11	121	114	1,607	7
Indianola	141	617	15	23	156	640	19
Keystone-Lemoyne	98	3,503	14	60,857	112	64,360	70
Lewellen/Blue Creek	13	42	2	80	15	122	1
Madrid	9	107	1	1	10	108	7
Ogallala	88	248	12	86	100	334	16
Palisade	10	59	3	3	13	62	4
Paxton	93	34,724	7	20,851	100	55,575	48
Red Willow Western	25	588	1	1	26	589	9
Stratton	30	2,846	13	713	43	3,559	3
Sutherland	75	894	4	904	79	1,798	23
Trenton	30	215	12	3,346	42	3,561	12
Venango	9	55	0	0	9	55	16
Wallace	50	1,486	7	52	57	1,538	25
Total	**1,412**	**70,384**	**225**	**105,529**	**1,637**	**175,913**	**498**

Table 3: Fires reported by Southwest CWPP fire departments between 2000 and 2017. Only departments that reported are listed. Some listed departments did not report every year.

Fire Hazard

In the years since European settlement, exclusion of low-intensity ground fires, limited forest management, and prolific regeneration of eastern redcedar have increased the fire danger in prairies and woodlands. This, combined with severe drought, created conditions conducive to the catastrophic wildfires of 2006 and 2012.

A statewide map of local mitigation planning areas is included in Appendix A. The Chase-Dundy-Perkins, Frontier-Hayes-Hitchcock, Quad Counties (Red Willow County only), and Twin Platte NRDs are the designated local mitigation planning areas for the Southwest CWPP area. Each of these planning units has its own Multi-

Jurisdictional Hazard Mitigation Plan that includes a discussion of wildfire hazard. Appendix E contains links to these plans. This CWPP builds on these plans to address specific wildfire concerns.

Individual locations of particular concern are identified in each community-specific section of this CWPP. Planning team members and local fire departments identified specific areas of concern for the CWPP area. These locations include residential developments around recreational areas such as reservoirs, the edges of municipalities, and wooded areas along rivers and creeks where there are homes and other structures. Many of these areas have limited access and/or water availability. The team identified area-wide high-risk ignition sources such as dense undergrowth and, depending on time of year, dry weather conditions when fires can start from lightning and hot farm machinery. They also underscored the importance of addressing fuel load reduction in community mitigation plans. See Appendix A for maps of these areas.

Economic Impacts

Excessive fuel loading can affect local economies in many ways. It reduces available forage, and therefore the pasture 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

Volunteer fire departments are the first line of defense against wildfires on private and state lands within each community. During large wildfires, they rely on mutual aid agreements with neighboring jurisdictions. The Big Springs, Blue Creek, Brule, Elsie, Grant, Imperial, Keystone-Lemoyne, Madrid, Ogalalla, Paxton, Sutherland, Venango, and Wallace fire departments are all members of the Southwest Mutual Aid District. The Bartley, Beaver Valley (Danbury & Lebanon), Benkelman, Culbertson, Hayes Center, Imperial, Indianola, McCook, Palisade, Red Willow Western, Stratton, Trenton, Wallace, and Wauneta fire departments are all members of the Frenchman Valley Mutual Aid Association. Hershey, Sutherland, and Wallace are in the Mid-Plains Mutual Aid Association, Keystone-Lemoyne is in the Sandhills Mutual Aid Association, and Bartley and Cambridge are in the Tri-Valley Mutual Aid Association.

Each county has an Emergency Management protocol. Lincoln, Dundy, and Hitchcock Counties are under Region 51 Emergency Management. Keith County is part of the Keith/Grant Emergency Management jurisdiction. Frontier County is in the Region 17 Emergency Management Area. Chase, Hayes, Perkins, and Red Willow Counties have their own part-time emergency managers and are not affiliated with regional emergency management areas.

In addition to notification by Sheriff's Department personnel and/or dispatch, Emergency Management areas have notification from "Code Red" that will allow 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.

A state ID card system for emergency response personnel and equipment was introduced prior to the wildfires of 2012. This identification and credentialing system allows first responders (agencies, personnel, and

equipment) to more efficiently respond to incidents. It streamlines the incident check-in process and tracks time spent on an incident for both personnel and equipment. The ID cards use bar codes that identify equipment, people and their qualifications, and can even track volunteers.
The Mobile Express program is used to track an incident. The Rapid Tag program helps track volunteers. A volunteer's driver's license is swiped and the data used to print an identification card which is then used by Mobile Express to track the volunteer. The program can also be used to generate a printed "Battle Book" that lists equipment (with picture, description, and ID card) and personnel so that first responders can check into an incident via radio without having to physically check in. Training for this system is ongoing statewide.

Staging Areas and Safety Zones
The forested drainages are separated by wide expanses of grasslands and farm ground. There are abundant staging area locations in the uplands away from the drainages. Grazed pastures, green alfalfa fields, and fallow farmland can provide staging areas away from forested areas. Specific staging area information is listed under each county tab for those who provided it. Fairgrounds and city parks are generally good locations, depending on the particular location of a wildfire. Safety zone locations 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. Ranch trails provide additional access for emergency vehicles. Restricted bridges and roads which could limit truck/lowboy passage have not been mapped. Developing such a map has been identified as a need that should be addressed (see *Action Plan* section).

Communications
Gaps in cellular service are widespread across parts of Southwest Nebraska. There were some radio compatibility issues that were addressed after the 2012 wildfire season. Location-specific information about communications is listed in each county section of this CWPP for those entities that responded to requests for information.

Capabilities and Capacity
A listing of apparatus and staffing for each fire district is included in Appendix G. Some districts have agreements with outside agencies or county roads departments for assistance with heavy equipment.

Through the Federal Excess Property Program (FEPP), a cooperative effort with the U.S. Forest Service, the NFS acquires and reconditions fire vehicles which are no longer needed by the federal government. These vehicles are loaned to rural fire districts, which are responsible for maintenance. When no longer needed, the vehicles are returned to the NFS and are either re-assigned or sold, with the proceeds being returned to the US Treasury. In 2018 there were 821 pieces of FEPP equipment in use by 285 rural fire districts across Nebraska. In the counties covered by the Southwest CWPP, there are 52 pieces of FEPP equipment, valued at $4,952,000 and housed at 20 fire stations and substations.

This program allows fire districts to obtain essential fire-fighting equipment at an affordable price. The NFS Fire Shop can also provide 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 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.

The Wildfire Control Act of 2013 enabled the establishment of Single Engine Air Tanker (SEAT) bases in Nebraska. Nebraska has a long history of utilizing aerial applicators for fire suppression, and the addition of

permanent bases further enhances 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. The permanent SEAT bases are located at Valentine, Chadron, Alliance, and Scottsbluff. In addition, a mobile SEAT base to support operations at airports without a permanent base is completed and a second mobile base is planned. The SEAT provides critical observation and access for remote areas. Tanker support is critical for locations away from towns and perennial water supplies such as lakes and rivers.

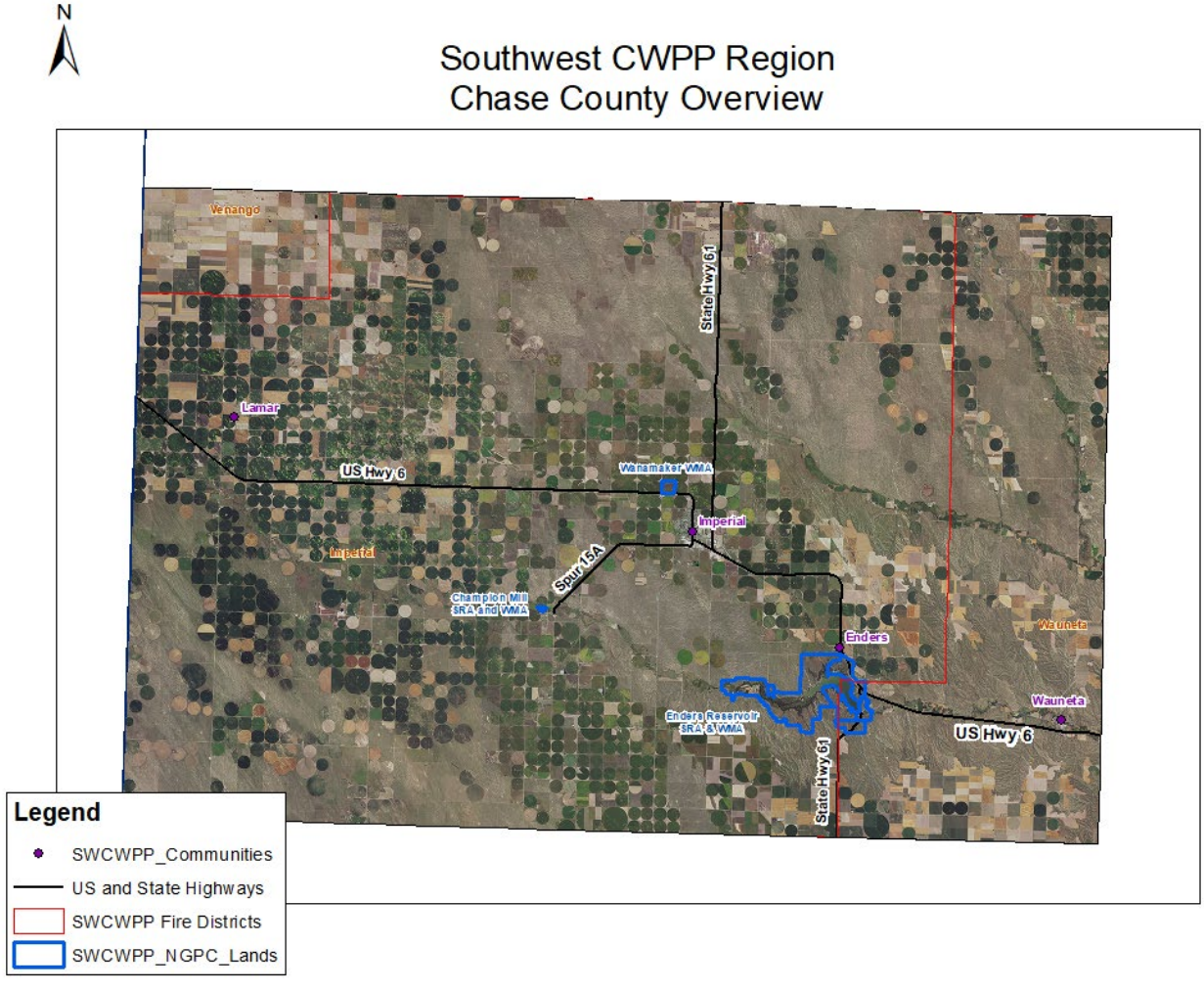
Training

The NFS and NEMA provide wildland fire training through classes in numerous 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 SP. 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 doesn't 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. Classes cover a variety of topics ranging from beginning to advanced firefighting techniques and Firewise® landscaping and construction to leadership and educating others about fire prevention. The classes offer flexibility and can be fine-tuned to meet the needs of local fire departments. NFS delivered and sponsored course hours grew from just 73 in 2007 to 91,421 in 2018. Wildland fire instructors are based in Ainsworth, Chadron, and Lincoln.

The Nebraska State Fire Marshal Training Division works in conjunction with the NFS in providing training to fire departments. For many years they have provided training to thousands of firefighters instructing S130/S190/S131/S290 NWCG classes.

Community-Specific Considerations

CHASE COUNTY
897 sq. miles
2017 population: 3,971



Community Profile

Chase County lies on the west side of the CWPP region. It is bounded on the north by Perkins County, on the east by Hayes County, on the south by Dundy County, and on the west by Colorado. Population centers include the county seat of Imperial (pop. 2,062), the villages of Lamar (pop. 23) and Wauneta (pop. 574), and the unincorporated communities of Champion (2010 pop. 103) and Enders (2010 pop. 42).

US Highway 6 crosses the center and southern parts of the county from west to east. State Highway 61 crosses the central and eastern portions of the county from north to south. State Highway Spur 15A runs from Imperial southwest to Champion Mill State Recreation Area.

Fire districts all or partly in Chase County include Imperial, Wauneta, and Venango. Besides municipal lands, public lands include the NGPC properties of Enders Reservoir SRA and WMA (approx. 5,378 acres) south of Enders, Wanamaker WMA (approx. 158 acres) north of Imperial, and Champion Mill SRA and WMA (approx. 19 acres) southwest of Imperial. There are approximately 24,040 acres in school lands within the county.

Vegetation zones include sandsage-mixed grass prairie and agriculture crop fields and hayland. Woody wetlands surround Enders Reservoir and abut parts of Frenchman Creek and its tributaries.

The areas most at-risk from wildfire are the lands surrounding Enders Reservoir, Imperial, Wauneta, and Champion. These were identified by local fire chiefs and in the statewide Priority Lands analysis; a map of them is included in Appendix A. All of Chase County's population centers, dispersed ranches, and wooded areas along the streams lie within the boundaries of the WUI as defined in the introduction to this CWPP.

Infrastructure and Protection Capabilities

Water Sources

Imperial and Wauneta have municipal water systems. Ranches and smaller population centers are on private wells. Frenchman Creek and Spring Creek and most of their tributaries are reliable water sources. Enders Reservoir with 1,707 water surface acres is located on state land south of Enders. Windmills can provide water when they are operational. Ponds and stock tanks are located on ranches and farms throughout the county. During drought conditions some of the ponds may not be reliable sources of water. Some smaller streams have intermittent flows and are not reliable. The Maranville and Champion Irrigation Canals follow Frenchman Creek.

Utilities/Phone Service

Southwest Public Power District of Palisade provides electric service to the eastern part of the county. Imperial provides NPPD service to its residents. Highline Electric of Holyoke Colorado serves the western part of Chase County. Both cellular and landline telephone services are available in the county. There are gaps in cellular coverage in some areas.

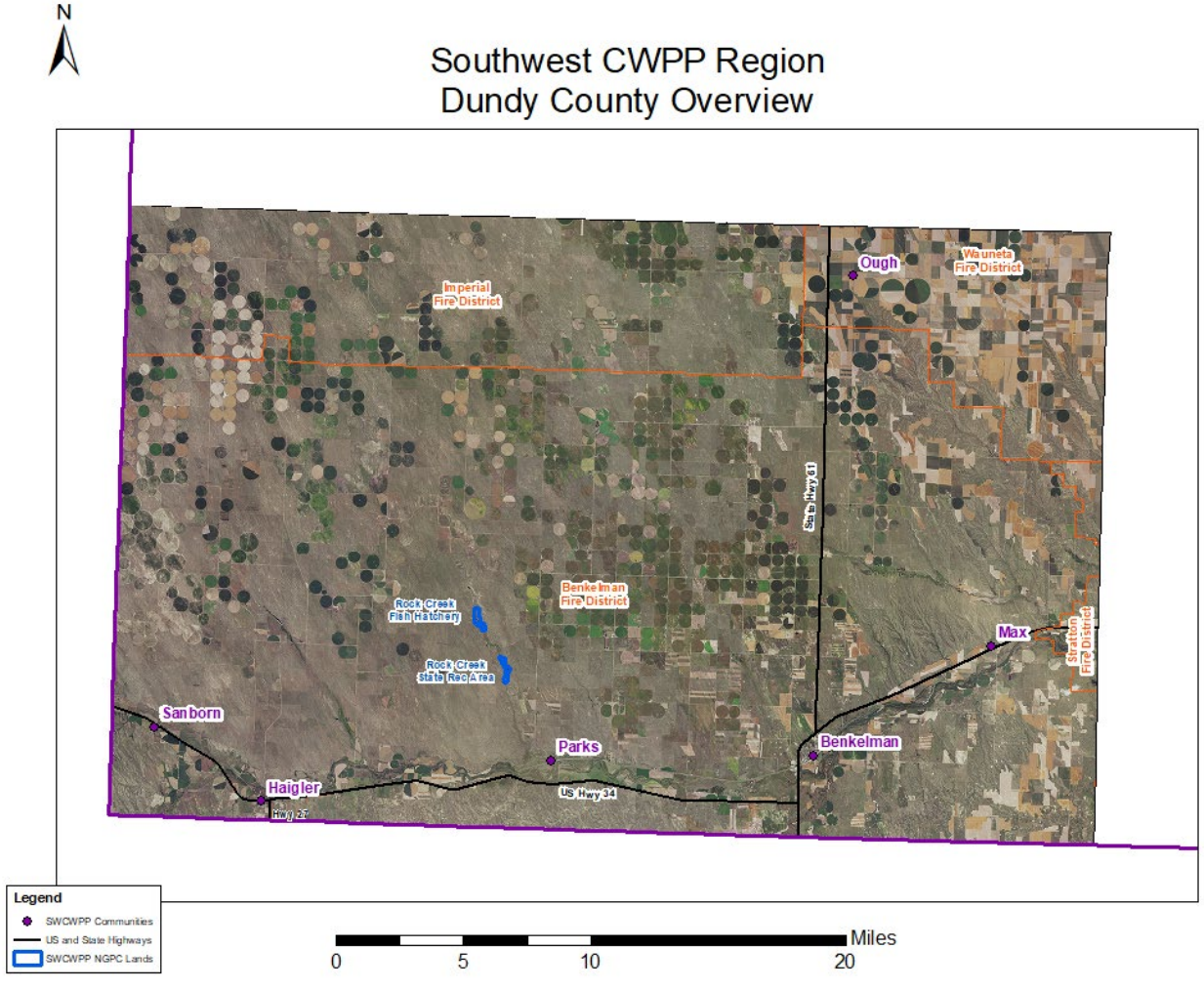
Staging Areas

No specific information on staging areas was provided by Chase County officials.

Roads and Bridges

No specific information on roads or bridges was provided by Chase County officials.

DUNDY COUNTY
921 sq. miles
2017 population: 1,801



Community Profile

Dundy County is located in the southwest corner of the CWPP area. It is bounded on the north by Chase County, on the east by Hitchcock County, on the south by Kansas, and on the west by Colorado. Incorporated communities include the county seat of Benkelman (pop. 840) and Haigler (pop. 147. Unincorporated communities include Max (2010 pop. 57), Ough, Parks (2010 pop. 23), and Sanborn.

US Highway 34 crosses the southern part of the county from west to east. Nebraska Highway 61 crosses the east half of the county from north to south. State Highway 27 runs from Haigler south to Kansas. Volunteer fire departments all or partly in Dundy County include Benkelman, Imperial, Stratton and Wauneta.

Besides municipal lands, public lands include Rock Creek SRA (approx. 103 acres) and Rock Creek State Fish Hatchery (approx. 111 acres), and approximately four acres in two BLM parcels on the Republican River between Haigler and Parks. The county contains 26,325 acres in school lands.

Vegetation zones include mixed grass and sandsage prairies; riparian deciduous forest along the Republican River and some of its tributaries; and agriculture crop fields. In the southwest corner of the county and in a few

areas south of US Highway 34, eastern redcedar has encroached into grasslands to become a distinct and highly flammable vegetation type.

Locations of special concern include population centers adjacent to grasslands and areas where eastern redcedar has encroached into grasslands, creating high fire hazard. The areas most at-risk from wildfire are located near the Republican River. These were identified in the statewide Priority Lands analysis; a map of them is included in Appendix A. All of Dundy County's population centers, dispersed ranches, and wooded areas along the rivers and streams lie within the boundaries of the WUI as defined in the introduction to this CWPP.

Protection Capabilities and Infrastructure

Water Sources

Benkelman and Haigler have municipal water systems. Ranches and smaller population centers are on private wells. The Republican River and its tributaries are generally reliable water sources. Windmills can provide water when they are operational. There are small ponds and stock tanks on ranches and farms throughout the county. During drought conditions many of ponds may not be reliable water sources. Some smaller streams have only intermittent flows and are not reliable. The Haigler, Parks, and Hickman irrigation canals are located near the Republican River.

Utilities/Phone Service

Rural electric service is provided by Southwest Public Power District headquartered in Palisade, Nebraska, and Highline Electric, located in Holyoke, Colorado. Both cellular and landline telephone services are available in the county. There are gaps in cellular coverage in some areas.

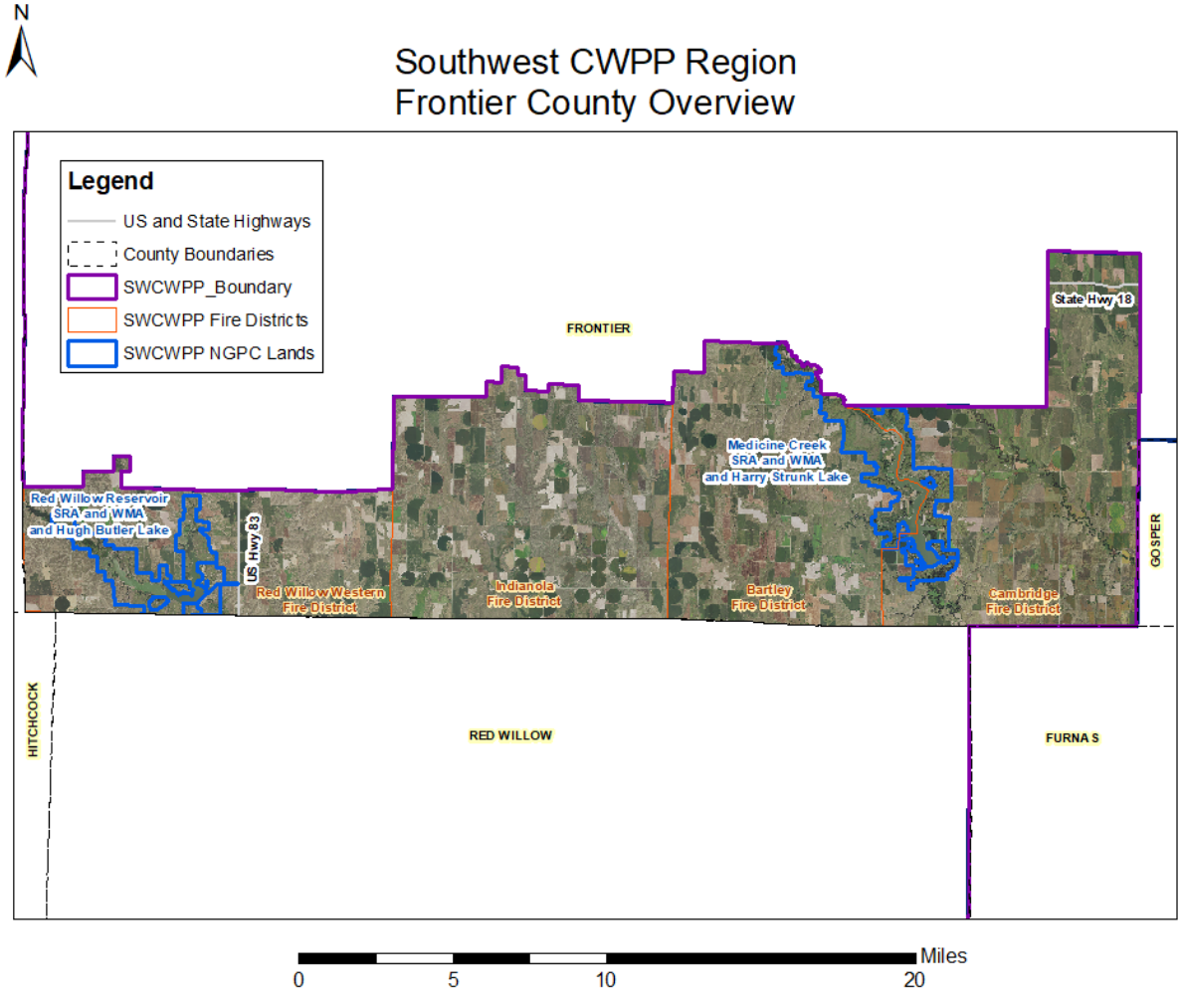
Staging Areas

No specific information on staging areas was provided by Dundy County officials.

Roads and Bridges

No specific information on roads or bridges was provided by Dundy County officials.

FRONTIER COUNTY
244 sq. miles within CWPP boundary
2017 population: Est. 264; no incorporated communities within the CWPP boundary



Community Profile

The southern part of Frontier County forms the northeast corner of the CWPP region. It is bounded on the east by Gosper County, on the south by Furnas and Red Willow Counties, on the west by Hayes County, and on the north by the remainder of Frontier County. There are no incorporated communities in this part of the county.

US Highway 83 crosses the west part of this area from north to south. State Highway 18 runs west to east across the northeast corner of this area. The Bartley, Cambridge, Indianola, and Red Willow Western Fire Districts lie partly within this portion of Frontier County.

State lands include most of the Medicine Creek SRA and WMA on Harry Strunk Lake (approx. 7,982 acres) and Red Willow Reservoir SRA and WMA on Hugh Butler Lake (approx. 5,071 acres are in Frontier County and approx. 684 acres are in Red Willow County). There are approx. 5,360 acres in school lands in this portion of Frontier County.

Vegetation zones include mixed-grass prairie with riparian deciduous forest along the streams, and agriculture crop fields. In some areas, particularly near the reservoirs, eastern redcedar has encroached into grasslands and deciduous woodlands to become a distinct and highly flammable vegetation type. These high-risk areas were

identified in the FAP and maps are included in Appendix A. All of Frontier County's population centers, dispersed ranches, and wooded areas along the streams lie within the boundaries of the WUI as defined in the introduction to this CWPP.

Protection Capabilities and Infrastructure

Water Sources

There are no municipal water systems in this part of Frontier County. Ranches and homes are on private wells. Hugh Butler Lake (Red Willow Reservoir SRA) and Harry Strunk Lake (Medicine Creek SRA) are the largest water bodies in this area and have good access at several boat ramps. The major creeks are generally reliable water sources. Ponds and stock tanks are located on ranches throughout the region. During drought conditions some ponds are not reliable water sources. Some smaller streams have only intermittent flows and are not reliable. Windmills can provide water when they are operational. There are no irrigation canals in this part of Frontier County.

Utilities/Phone Service

Rural electric service is provided by Twin Valleys Public Power in the southeast part of Frontier County and by McCook Public Power District (areas 2 and 5) in the south central and southwest parts of the county. Both cellular and landline telephone services are available in the county. There are gaps in cellular coverage in some areas.

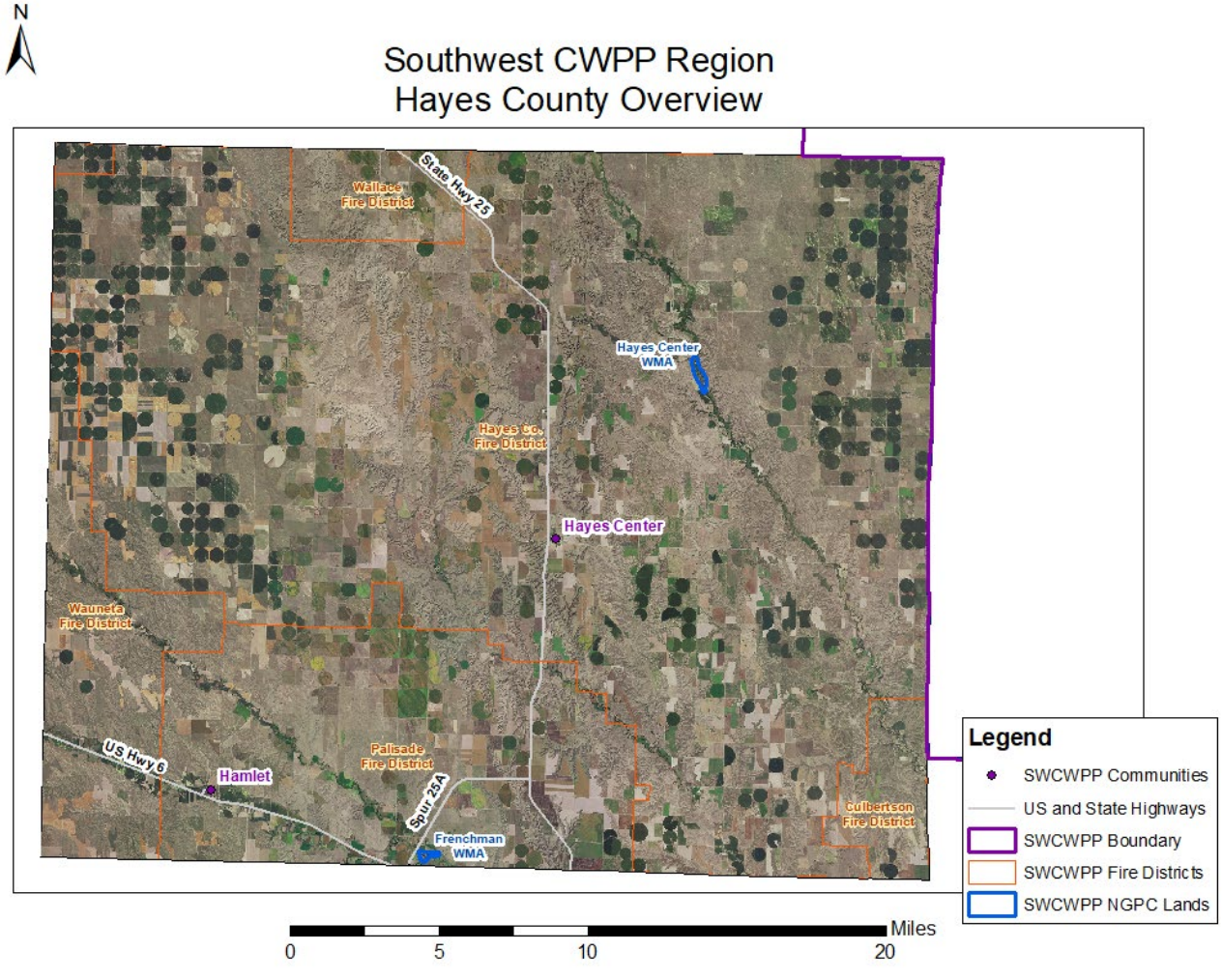
Communications

The Cambridge Fire Chief listed communications as an important issue they encounter in this area. See the Action Plan section of this document.

Staging Areas

Incident Command staging for this area was listed as a concern by the Cambridge Fire Chief. See the Action Plan section of this document.

HAYES COUNTY
713 sq. miles
2017 population: 893



Community Profile

Hayes County lies at the east edge of the central part of the CWPP area. It is bounded on the north by Lincoln and Perkins Counties, on the west by Chase County, on the south by Hitchcock County, and on the east by Frontier County. Incorporated villages include the county seat of Hayes Center (pop. 196) and Hamlet (pop. 27).

State Highway 25 bisects the county from north to south. US Highway 6 cuts across the southwest corner of the county. State Spur 25A connects State Highway 25 to Palisade, on US Highway 6 just south of the Hitchcock County line. Volunteer fire departments all or partly within Hayes County include Hayes County, Culbertson, Palisade, Wallace, and Wauneta.

Besides municipal lands, public lands include 17,765 acres in school lands, Frenchman and Hayes Center state WMAs (total approx. 273 acres), and one 41-acre BLM parcel near the west county line.

Vegetation zones include mixed-grass and Sandhills/mixed-grass prairie and riparian deciduous woodlands along the major creeks. Agricultural fields are located primarily in the west and east. In some areas eastern redcedar has encroached into prairies and woodlands to become a distinct and highly flammable vegetation type.

Locations of special concern include population centers adjacent to grasslands and areas where eastern redcedar has encroached into grasslands and woodlands, creating high fire hazard, such as the area surrounding Hayes Center. The Hayes County fire chief identified Hayes Center as being of particular concern due to farm fields and grasslands immediately adjacent to homes. He said there is a bridge near the Hayes Center WMA that will not support the weight of a tanker. "The topography, size, and lack of roads in certain areas of our district makes for some challenging situations," he said. "We feel that over half our district could be described as 'nightmare' locations." Another high-risk area identified in the FAP is the Frenchman WMA north of Palisade near the Hayes-Hitchcock County line. Maps of these areas are included in Appendix A. All of Hayes County's population centers, dispersed ranches, and wooded areas along the streams lie within the boundaries of the WUI as defined in the introduction to this CWPP.

Protection Capabilities and Infrastructure

Water Sources

Hayes Center has a municipal water system. Ranches and farms are on private wells. The major creeks are generally reliable water sources. There are small water impoundments at both of the state WMAs. Ponds and stock tanks are located throughout the county. During drought conditions some of the ponds may not be reliable water sources. Some smaller streams have only intermittent flows and are not reliable. Windmills can provide water when they are operational. There are some irrigation wells spread out through the county that are set up so they can refill tankers. The only irrigation canal in the county is the Krotter Canal, which starts north of Palisade and runs a short distance southeast before entering Hitchcock County.

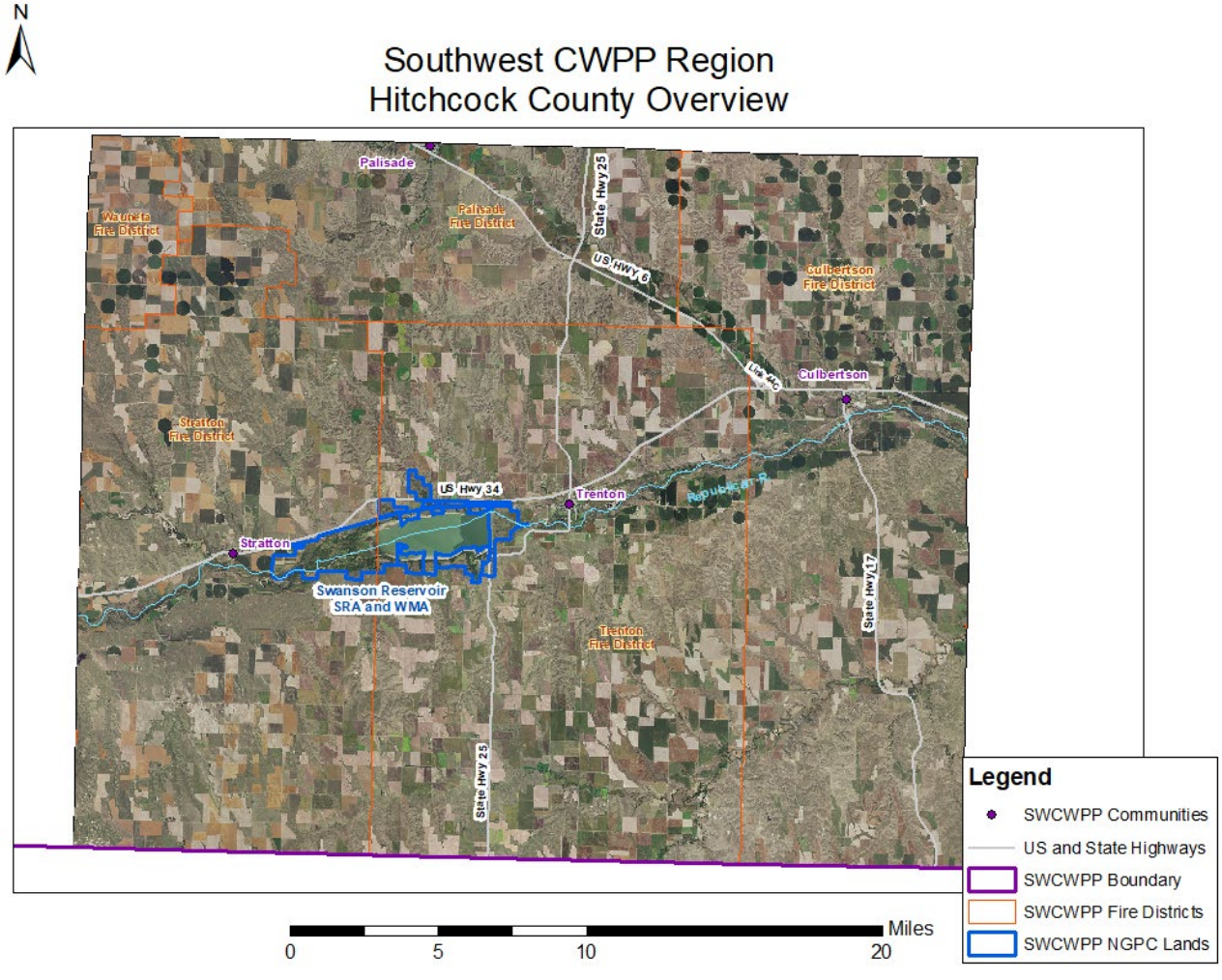
Utilities/Phone Service

Most rural electric service in Hayes County is provided by Southwest Public Power, headquartered in Palisade. Midwest Electric, and McCook Public Power also supply power to some parts of the county. Both cellular and landline telephone services are available in the county. There are gaps in cellular coverage in some areas.

Staging Areas

Staging area locations are determined individually for each incident.

HITCHCOCK COUNTY
718 sq. miles
2017 population: 2,834



Community Profile

Hitchcock County is located in the center of the south tier of CWPP counties. It is bounded on the west by Dundy County, on the north by Hayes County, on the east by Red Willow County, and on the south by Kansas. Incorporated communities include the county seat of Trenton (pop. 550), Culbertson (pop. 577), Palisade (pop. 340), and Stratton (pop. 333).

US Highway 34 crosses the county from west to east. US Highway 6 enters the county from the north at Palisade and joins US Highway 34 west of Culbertson via State Link 44C. State Highway 25 bisects the county from north to south. State Highway 17 enters near the southeast corner Hitchcock County and runs north to US Highway 34 at Culbertson. Fire districts all or partially within Blaine County include Culbertson, Palisade, Stratton, Trenton, and Wauneta.

Besides municipal lands, public lands in Hitchcock County include NGPC's Swanson Reservoir SRA and WMA (approx. 8,532 acres), one 40-acre BLM parcel in the northwest quarter, and 20,971 acres of state school lands.

Vegetation zones include mixed-grass prairie with deciduous woodlands along the rivers and streams, and agricultural fields scattered throughout the county.

According to the FAP, the area most at-risk from wildfire is located along the Republican River from Stratton to Culbertson, including the land surrounding Swanson Reservoir. In this area eastern redcedar has encroached into both woodlands and grasslands, creating high fire hazard. Another high-risk area runs from Palisade north into Hayes County. The Palisade fire chief stated that most of their fire district is isolated from water, with Palisade being the only water source. Maps of high-risk areas are included in Appendix A. All of Hitchcock County's population centers and dispersed farms and ranches lie within the boundaries of the WUI as defined in the introduction to this CWPP.

Protection Capabilities and Infrastructure

Water Sources

Hitchcock County villages have municipal water systems. Ranches and farms are on private wells. The Republican River and its tributaries are generally reliable water sources. Ponds and stock tanks are located throughout the county. During drought conditions some ponds may not be reliable sources of water. Some smaller streams have only intermittent flows and are not reliable. Windmills can provide water when they are operational. Irrigation ditches in the county include the Riverside and Upper Meeker Canals, the Blackwood lateral, and parts of the Driftwood, Krotter, and Meeker Canals.

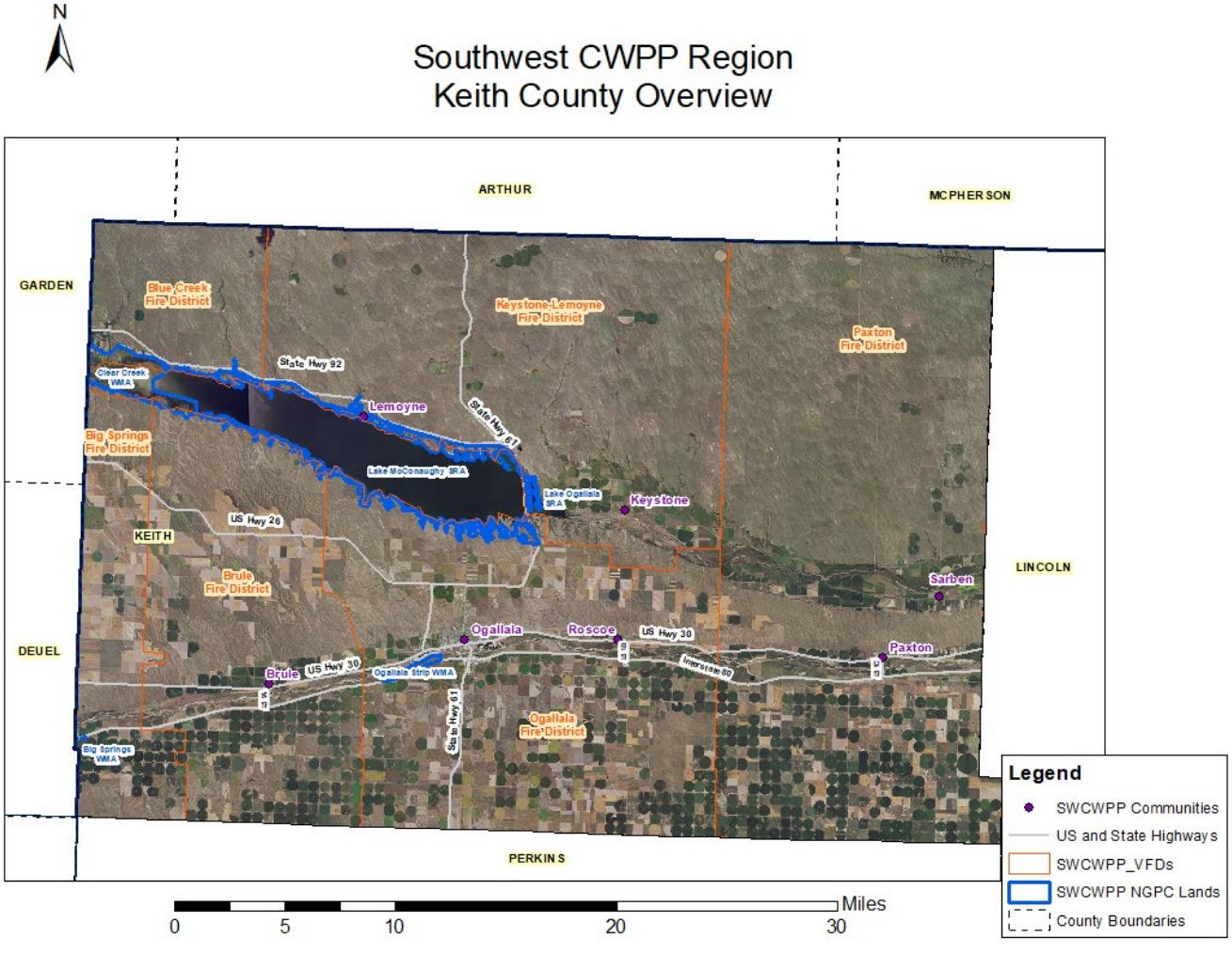
Utilities/Phone Service

Rural electric service in Hitchcock County is provided by Southwest and McCook Public Power Districts and the Municipal Energy Association of Nebraska. Both cellular and landline telephone services are available in the county. There are gaps in cellular coverage in some areas.

Staging Areas

No specific information on staging areas was provided by Hitchcock County officials.

KEITH COUNTY
1,110 sq. miles
2017 population: 8,072



Community Profile

Keith County lies in the northwest corner of the CWPP region. It is bounded on the east by Lincoln County, on the south by Perkins County, on the west by Duel and Garden Counties, and on the north by Arthur and McPherson Counties. Incorporated communities in the county include the county seat Ogallala (pop. 4,538), Brule (pop. 311) and Paxton (pop. 497). Unincorporated communities include Keystone (pop. 169), Lemoyne (pop. 281), Roscoe (pop. 58), Sarben (pop. 29), Belmar and Ruthton (K-2 subdivision, pop. 217), and Martin (K-4 subdivision, pop. 93).

Interstate 80 crosses the south part of the county from west to east on the south side of the South Platte River. US Highway 30 parallels the interstate on the north side of the river. Local connectors L51A, L51B, and L51C link the interstate to US 30 at Brule, Roscoe, and Paxton. State Highway 61 enters from Perkins County into the south central part of the county, runs north through Ogallala, skirts the east end of Lake McConaughy, and exits on the north into Arthur County. State Highway 92 enters from Garden County near the Keith County's northwest corner and follows the north side of Lake McConaughy, ending at State Highway 61. Fire districts all or partly in Keith County include Big Springs, Blue Creek, Brule, Keystone-Lemoyne, Ogallala, and Paxton.

Besides municipal lands, public lands include the NGPC units of Lake McConaughy (approx. 5,183 acres) and Lake Ogallala (approx. 261 acres) SRAs; and Ogallala Strip (approx. 461 acres), Big Springs (approx. 8 acres), and part of Clear Creek (approx. 4,597 acres) WMAs. There are 29,729 acres in school lands in Keith County.

Vegetation zones include Sandhills mixed-grass prairie north of the North Platte River, a mosaic of mixed-and short-grass prairie between the North and South Platte Rivers, and mixed-grass prairies south of the South Platte River, with riparian deciduous woodlands along the rivers and their major tributaries. Agriculture crop fields predominate south of North Platte River. In a few parts of the county eastern redcedar has encroached into grasslands and riparian woodlands to become a distinct and highly flammable vegetation type.

The Keystone-Lemoyne fire chief identified the community of Lemoyne and the recreational-residential developments (known as K-1 through K-4 and Mako Chi Mni) surrounding Lake McConaughy as of particular concern. This area includes subdivisions – most with only one way in and out – with hundreds of homes, narrow roads, flammable conifers, and proximity to heavy fuels and rough terrain. Most areas within the district lack water within an effective distance. Also at high-risk is the University of Nebraska's Cedar Point Biological Station east of the lake, set amidst canyons and rough terrain. The Brule Fire chief identified the areas along the South Platte River and between US Highway 30 and the south shore of Lake McConaughy as being of special concern. These areas contain multiple structures including subdivisions with one way in and out, heavy fuels, difficult access, rough terrain, and lack of water within an effective distance. Maps of the Lake McConaughy developments and other high-risk areas are included in Appendix A.

All of Keith County's population centers, dispersed ranches, and wooded areas along the rivers and streams lie within the boundaries of the WUI as defined in the introduction to this CWPP.

Protection Capabilities and Infrastructure

Water Sources

Ogallala, Brule, and Paxton have municipal water systems. Other developed areas, ranches, and farms are on private wells. Lake McConaughy is the largest water body in the county and has good access at several boat ramps (see Appendix A). The North and South Platte Rivers and their larger tributaries are generally reliable water sources. Ponds and stock tanks are located on farms and ranches throughout the county. During drought conditions some ponds are not reliable water sources. Some smaller streams have only intermittent flows and are not reliable. Windmills can provide water when they are operational. Irrigation ditches all or partly within Keith County include the Western, Keith-Lincoln, Sutherland, Paxton, Sheridan Wilson, and South Platte River Supply Canals.

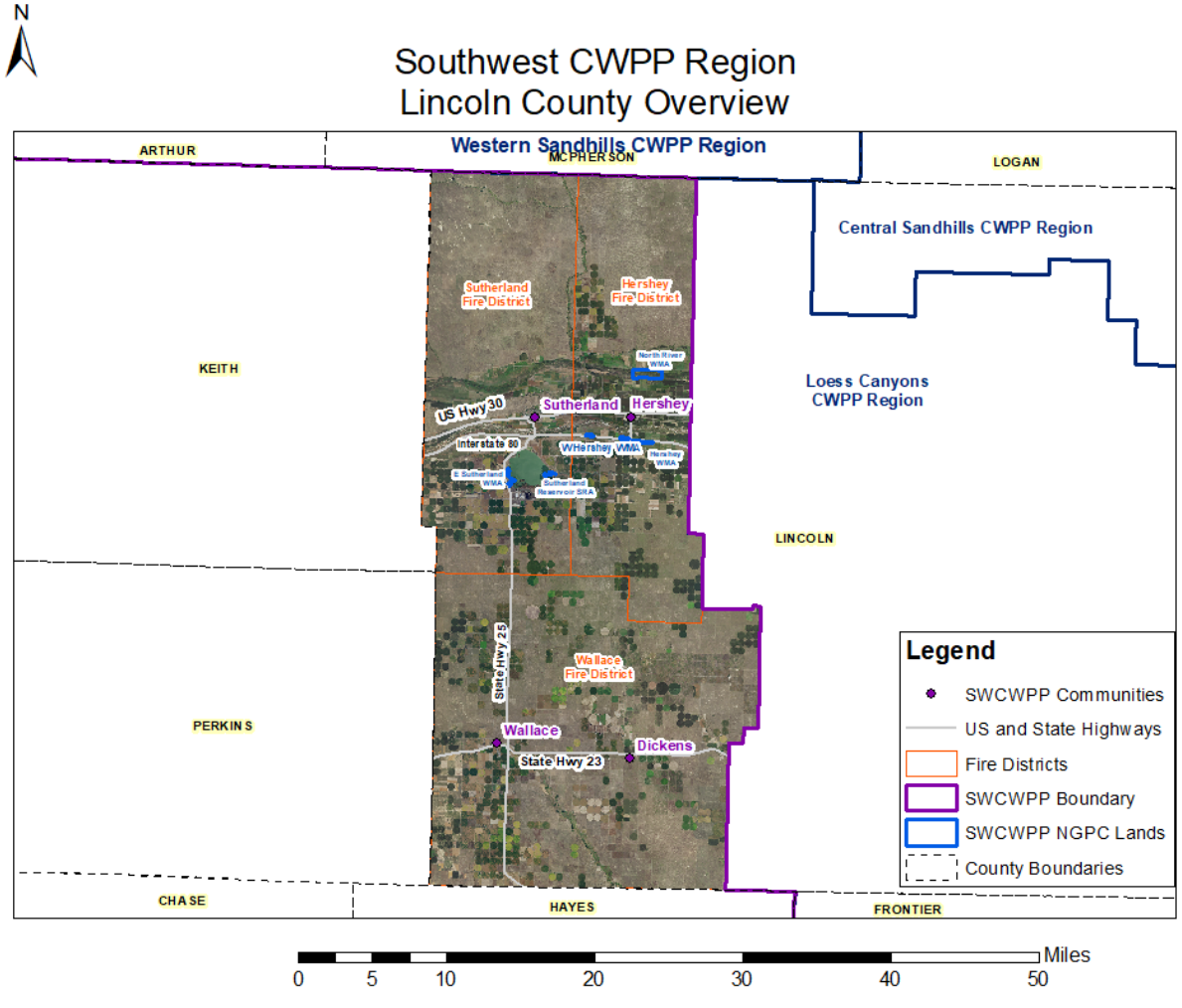
Utilities/Phone Service

Rural electric service in Keith County is provided by the Wheatbelt, Midwest Electric, NPPD, Panhandle Rural Electric, and Tri-State. Both cellular and landline telephone services are available in the county. There are gaps in cellular coverage in some areas.

Staging Areas

No specific information on staging areas was provided by Keith County officials.

LINCOLN COUNTY
2,575 sq. miles (913 sq. miles within the CWPP boundary)
2017 population: 35,280 (Est. 5,280 within the CWPP boundary)



Community Profile

The western third of Lincoln County forms the northeast corner of the CWPP area. The remainder of Lincoln County is in the Loess Canyons and Central Sandhills CWPP regions. The Southwest CWPP portion of the county is bounded on the south by Hayes County, on the west by Perkins and Keith Counties, on the north by McPherson County, and on the east by the rest of Lincoln County. Incorporated communities in this area include Hershey and Sutherland. Wallace and Dickens are unincorporated communities in this area.

US Highway 30 enters Lincoln County from Keith County and follows the north side of the South Platte River and exits the CWPP region about 4 miles east of Hershey. Interstate 80 parallels US 30 on the south side of the South Platte River. State Highway 25 enters the southwest part of the county from Hayes County and runs north through Wallace, ending at Sutherland, where it joins US 30. State Highway 23 enters the southwest part of the county from Perkins County and runs east through Wallace and Dickens before exiting the CWPP region.

The Hershey, Sutherland, and Wallace Fire Districts are in this part of Lincoln County. State lands include Sutherland Reservoir SRA (approx. 3,153 acres), and four WMAs (approx. 862 acres total). There are approximately 26,640 acres of school land in this part of the county.

Vegetation zones include Sandhills prairie and mixed grass prairie with lowland tallgrass prairie between the North and South Platte Rivers and deciduous woodlands in the riparian areas along the rivers. Agricultural fields are concentrated in the center and southwest parts of the area. The area most at-risk from wildfire is located in cedar-encroached woodlands near Sutherland and Hershey. A map of this area is included in Appendix A.

The area has a history of large wildfires. In 2011 a wildfire started in Lincoln County and burned over 20,000 acres. It caused over $4 million dollars in damage, including several homes destroyed.[18] All of this area's population centers and dispersed farms and ranches lie within the boundaries of the WUI as defined in the introduction to this CWPP.

Protection Capabilities and Infrastructure

Water Sources

The incorporated communities have municipal water systems. Smaller population centers, ranches, and farms are on private wells. The North and South Platte Rivers and major streams are generally reliable water sources. Ponds and stock tanks are located on ranches and farms throughout the area. During drought conditions some of the ponds may not be reliable sources of water. Some smaller streams have intermittent flows and are not reliable. Windmills can provide water when they are operational. The Birdwood, Keith-Lincoln, Paxton-Hershey, Platte Valley, Suburban, Bull Ditch, O'Fallon's Lateral, and Sutherland irrigation canals run through this part of Lincoln County.

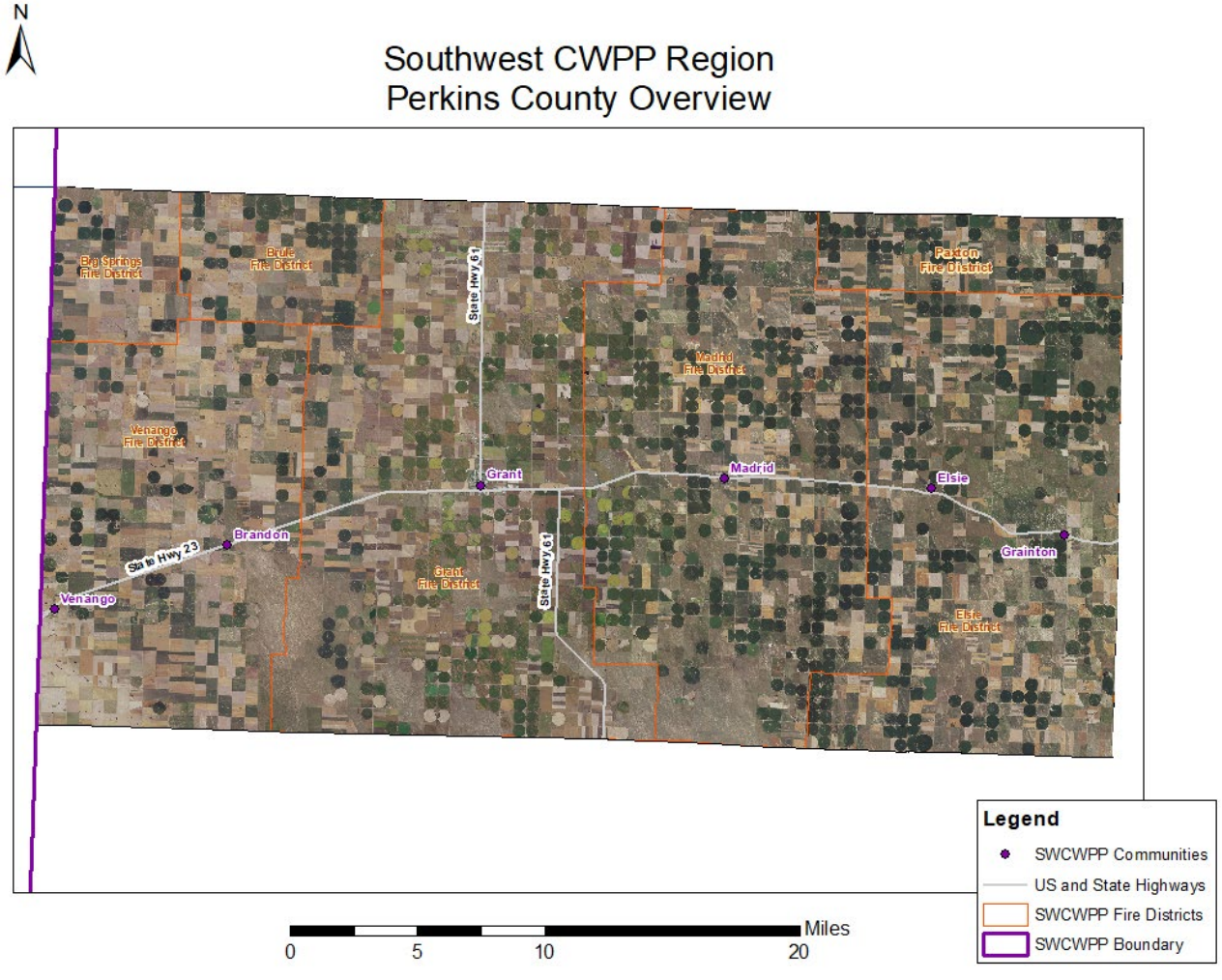
Utilities/Phone Service

Rural electric service in this part of Lincoln County is provided by Consolidated Electric, Dawson Public Power District, McCook Public Power District, and Grant Electric. Both cellular and landline telephone services are available in the county. There are gaps in cellular coverage in some areas.

Staging Areas

No specific information on staging areas was provided by Lincoln County officials.

PERKINS COUNTY
884 sq. miles
2017 population: 2,903



Community Profile

Perkins County lies on the west edge of the CWPP region. It is bounded on the north by Keith County, on the east by Lincoln County, on the south by Chase and Hayes Counties, and on the west by Colorado. Population centers include the county seat of Grant (pop. 1,120), Elsie (pop. 106), Madrid (pop. 232), and Venango (pop. 162). Unincorporated communities include Grainton (1999 pop. 15) and Brandon.

State Highway 61 bisects the county from north to south. State Highway 23 crosses the county from west to east passing through all of the county's communities. Fire districts all or partly within Perkins County include Grant, Madrid, Elsie, Venango, Paxton, Brule, and Big Springs. There are approximately 28,506 acres of school lands in Perkins County.

Vegetation zones include mixed-grass and Sandhills border prairie. Agriculture crop fields are located throughout the county. In a few areas eastern redcedar has encroached into grasslands.

The Grant fire chief reported that the location most at-risk from wildfire in that district is the Kenton Heights area about four miles north of Grant, where there are numerous homes, narrow roads, and water must be

shuttled in. The Madrid fire chief reported that the location most at risk in that district is the area surrounding the village of Madrid, where there is an ethanol plant. Maps of these areas are included in Appendix A. All of Perkins County's population centers and dispersed ranches lie within the boundaries of the WUI as defined in the introduction to this CWPP.

Infrastructure and Protection Capabilities

Water Sources

All of Perkins County's incorporated villages have municipal water systems. Unincorporated population centers, ranches, and homes are on private wells. Larger creeks such as Red Willow, Spring, Stinking Water, Sand, and Blackwood are generally reliable water sources. Some smaller streams have intermittent flows and are not always reliable. Ponds and stock tanks are located on farms and ranches throughout the county. During drought conditions some ponds are not reliable water sources. Windmills can provide water when they are operational.

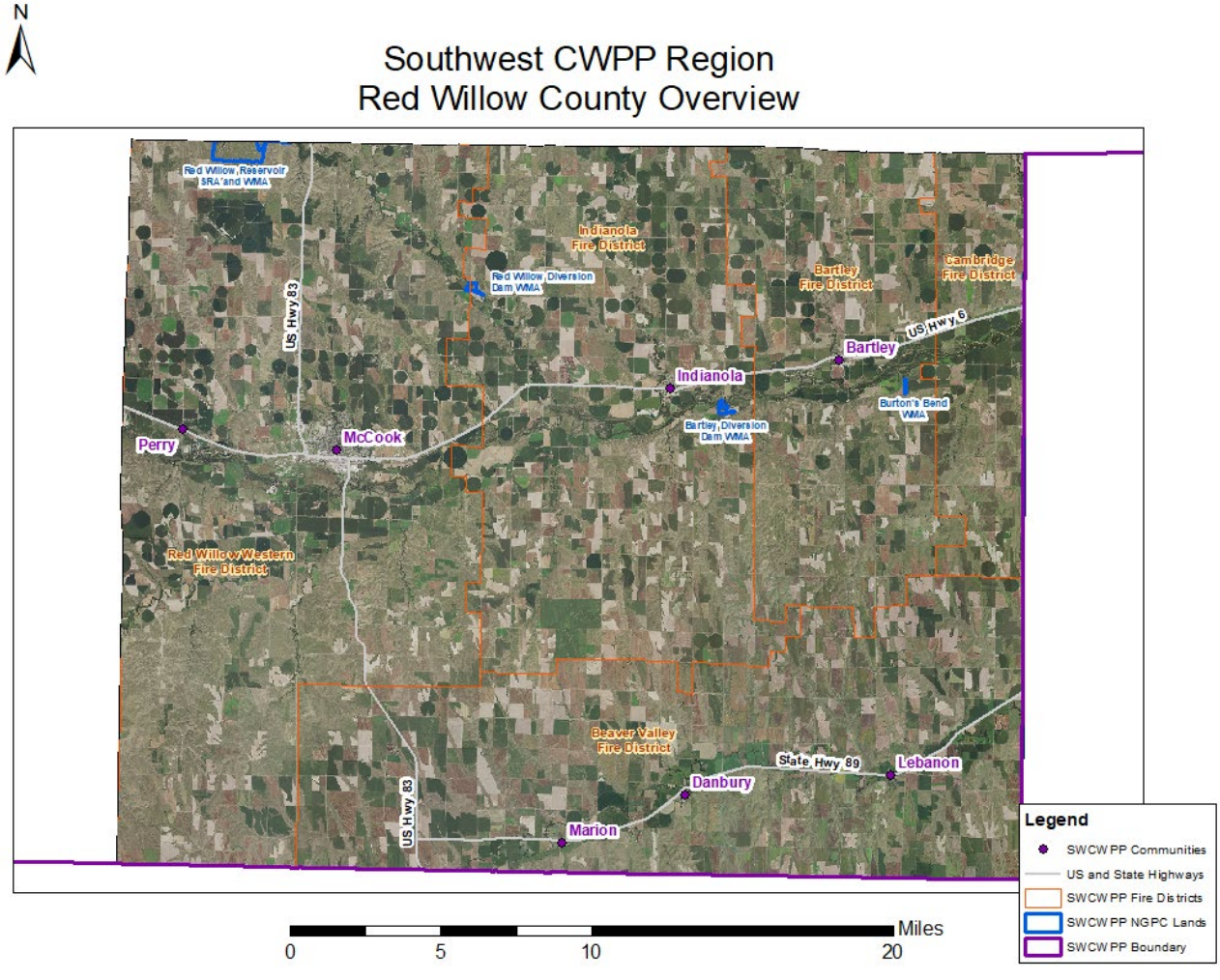
Utilities/Phone Service

Rural electric service is provided by Midwest Electric, NPPD, and Highline Electric in Colorado. Both cellular and landline telephone services are available in the county. There are gaps in cellular coverage in some areas.

Staging Areas

No specific information on staging areas was provided by Perkins County officials.

RED WILLOW COUNTY
718 sq. miles
2017 population: 10,728



Community Profile

Red Willow County is located in the southeast corner of the CWPP region. It is bounded on the west by Hitchcock County, on the north by Frontier County, on the east by Furnas County, and on the south by Kansas. Incorporated communities include the county seat of McCook (pop. 7,540), Bartley (pop. 269), Danbury (pop. 97), Indianola (pop. 552), and Lebanon (pop. 76). Unincorporated communities include Marion (pop. 149) and Perry.

US Highway 83 traverses the west side of the county from north to south, passing through McCook. Nebraska Highway 6 bisects the county from east to west, passing through Perry, McCook, Indianola, and Bartley. State Highway 89 enters Red Willow County from Furnas County, jogging west and south through Lebanon, Danbury, and Marion before ending at US 83. Fire districts all or partly within Red Willow County include Red Willow Western, Beaver Valley, Indianola, Bartley, and Cambridge.

Besides municipal lands, public lands include the NGPC units of Red Willow Reservoir SRA and WMAs (about 684 acres; the greater portions of these units are in Frontier County), three other WMAs (total approx. 183 acres), three BLM parcels (total 152 acres), and 11,749 acres in school lands.

Vegetation zones include mixed grass prairie with riparian deciduous forest along the Republican River and major creeks such as Beaver and Red Willow; and agriculture crop fields throughout the county. In a few areas south of Red Willow Reservoir eastern redcedar has encroached into grasslands and deciduous woodlands to become a distinct and highly flammable vegetation type.

Locations of special concern include population centers adjacent to grasslands, canyons, and areas where eastern redcedar has encroached into grasslands, creating high fire hazard. The Red Willow Western fire chief identified areas surrounding McCook that have numerous structures and heavy fuels. A map of this area is included in Appendix A. All of Red Willow County's population centers, dispersed ranches and farms, and wooded areas along the rivers and streams lie within the boundaries of the WUI as defined in the introduction to this CWPP.

Protection Capabilities and Infrastructure

Water Sources

All of the county's incorporated communities have municipal water systems. Ranches, farms, and unincorporated communities are on private wells. The Republican River, Red Willow Creek, and Beaver Creek and their tributaries are generally reliable water sources. Ponds and stock tanks are located on farms and ranches throughout the county. During drought conditions many of the reservoirs and ponds may not be reliable water sources. Some smaller streams have only intermittent flows and are not reliable. Windmills can provide water when they are operational. Red Willow, Bartley, Meeker, Meeker Extension, and Driftwood irrigation canals all run through Red Willow County.

Infrastructure Mapping

The McCook dispatch center uses a 911 mapping system that displays both municipal and rural addresses, roads, and water features, but not bridge limits. The City of McCook has recently completed mapping of all city hydrants.

Utilities/Phone Service

Rural electric service is provided by the Southwest, Tri-Valley, McCook, and NPPD. Both cellular and landline telephone services are available in the county. There are gaps in cellular coverage in some areas.

Communications

The Cambridge Fire Chief listed communications as an important issue they encounter in this area. See the Action Plan section of this document.

Staging Areas

Incident Command staging for this area was listed as a concern by the Cambridge Fire Chief. See the Action Plan section of this document.

Action Plan

The first section of this CWPP described the legislative background, goals and objectives, and the planning process. It provided an overview of the region, with details pertinent to each county. Building on this information, this section of the plan addresses risk assessment, fire risk rating, treatment of structural ignitability, prioritization, risk reduction, and it recommends a plan of action for increasing emergency preparedness. The action plan includes wildfire risk reduction strategies, recommendations for increasing emergency preparedness, fuels mitigation practices, training, education, and maintenance. The final part of the action plan 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

Wildfire hazards were not evaluated in the Frontier/Hayes/Hitchcock Multi-Jurisdictional Hazard Mitigation Plan. The Quad Counties, Perkins/Chase/Dundy, and the Twin Platte NRD Multi-Jurisdictional Hazard Mitigation Plans all identify their entire planning areas as at risk of wildfire. Some of these fires can be expected to exceed 100 acres in size. The plans included general wildfire risk assessments (but did not map specific at-risk areas) and some general mitigation alternatives. Most of the mitigation strategies identified by the planning teams have not been implemented. Some of the information in these plans is outdated, specifically assumptions that because of the limited forested lands in these counties, that fuels treatment programs do not apply. Wildfires are not restricted to forestland – prairie fires are wildfires. In addition, across much of Nebraska, including parts of the Southwest CWPP region, eastern redcedar is expanding into grasslands, increasing wildfire hazard. Wildfire planning and Firewise® preparations are appropriate for all areas, regardless of fuel type.

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 assessment requires calculations of the two primary components of risk: the magnitude of the potential loss and the probability that the loss will occur. For the WUI, a risk assessment is a step that identifies any feature/element of the landscape and structures that could create potential harm to a homeowner or community.[19]

It is important to understand the meaning of risk and hazard in relation to wildfire. ***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 of fuels, 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.[20]

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 (see page 4) 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.

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. Most of southwest Nebraska is rural/agricultural with widely spaced home locations. The region has not experienced the degree of rural development seen in more populous areas. There is an opportunity to perform structural risk and ignitability analysis and treatment activities in rural residential and recreational home sites at the same time fuels mitigation work is being conducted in these areas.

Prioritization

Appendix A of this plan contains "Areas of Concern" maps. These show the parts of each county considered to be at the highest risk from wildfire. The locations were identified by local fire officials, other stakeholders, and from priority areas designated in the statewide FAP. 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. [21]

This document outlines WUI focus areas within each county. These can be further prioritized based on data gathered during risk assessment for individual neighborhoods. The woodlands along the North Platte, South Platte, and Republican Rivers and their tributaries have high priority for hazardous woody fuels reduction. All of the population centers, unincorporated residential developments, and dispersed recreational developments have high priority for fuels treatment and Firewise® preparation. Further assessments may identify additional priority areas.

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 the community 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 communities can undertake to become more fire-adapted. 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.

Homeowners can 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 structure more resistant to ignition. To reduce the risk for the long term, actions need to be maintained over time. [21]

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 LPG 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.

Locally-Identified Mitigation Practices

The Perkins-Chase-Dundy Hazard Mitigation Plan specifically recommends the following mitigation practices:

- Map and assess vulnerability to wildfire
- Incorporate wildfire mitigation in comprehensive planning
- Reduce risk through land use planning (landscaping ordinances)
- Develop a wildland-urban interface code
- Require or encourage fire-resistant construction (the use of non-combustible materials)
- Retrofit at-risk structures with ignition-resistant materials
- Create defensible space around structures and infrastructure
- Conduct maintenance to reduce risk (tree care and public landscape maintenance programs)
- Implement a fuels management program (where there are woody fuels)
- Participate in the Firewise® program
- Increase wildfire risk awareness (i.e., informing the public about proper evacuation procedures; educational materials and programs)
- Educate property owners about wildfire mitigation techniques
- Wildland fire fighting training for fire departments

In addition to the practices identified above, the Twin Platte NRD and Quad Counties Hazard Mitigation Plans identified the following needs:

- New municipal wells
- Expand water storage capacity
- New fire trucks

Although funding limitations affect any jurisdiction's ability to implement these three 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.

Recommendations for Increasing Emergency Preparedness

Communication

Regularly review local communications plans, revising as needed. 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. After some major communications mishaps during the large wildfires of 2012 many local and state emergency managers worked to resolve the issue by updating protocol and equipment. Having and using a comprehensive communications plan is integral to maintaining smooth operations.

Coordination

Coordination between responders is crucial in any emergency response situation. Local emergency managers need to be able to tie in their responses with neighboring and outside assisting jurisdictions. This framework is already in place and used by local emergency managers. One of the gaps common to many LEOPs is the lack of wildfire-specific information in those documents. In many, fire is lumped in with hazardous materials. The information contained in this CWPP is intended to augment existing information and support these LEOPs and the local Multi-Jurisdictional Hazard Plans.

Aerial Support

It is critical to maintain the Single Engine Air Tanker program authorized through the Wildfire Control Act of 2013. Without this quick-response capacity, the danger of a small fire in difficult terrain growing into a large wildfire escalates rapidly.

Maps and Data

Some county roads and bridges have weight and/or width limitations that may inhibit use by emergency vehicles. If bridges were removed or are in poor condition, detours are needed. Planners can work with counties and fire departments to identify and map all roads and bridges, specifically identifying those with weight or width limits. Distributing this to fire departments and other emergency responders would facilitate route planning. This information could also be used to help prioritize fuel treatment areas.

Incident Command staging areas have been identified as an issue in areas. Planners may be able to pre-identify potential staging locations near areas of wildfire concern such as 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. When a resource is needed, it is deployed from the staging area, with a controlled entry into the hazard zone. Staging areas need to be of sufficient size to accommodate multiple fire crews, engines, tankers, support vehicles, and equipment storage. Sites should have good access, water and power availability, and be able to accommodate communications needs. The information gathered for potential staging areas in the most at-risk locations can be provided to emergency managers, fire chiefs, and others to help them decide where to establish the 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.

Municipal water hydrants could be mapped and made available to emergency responders. The City of McCook currently has such a database. Other map data that would be useful, especially in a format that could be easily accessed by hand-held devices, include 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. GPS locations of stock tanks and other water sources on public lands could be provided to mutual aid responders.

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

Since reporting is voluntary for fire districts, not all fire districts report their wildfire responses to the NFS. Because of this, there is limited information available about the locations and sizes of historic wildfires within the CWPP counties. Increased reporting would provide data to geographically focus grant assistance on those areas most prone to wildfire. The NFS has a database already in place that could easily be used to help with 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.

Comprehensive fire reporting helps volunteer fire districts demonstrate a need for fire equipment such as that provided by the FEPP, Fire Fighter Property/State Fire Assistance, and Volunteer Firefighter Assistance programs described earlier in this document. 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 the program in jeopardy. As an incentive for participation, fire departments that report their responses are eligible to apply for this equipment.

Community Preparedness

Prepared communities reduce hazards, protect homes, and increase firefighter safety. Work with homeowners in WUI areas 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. 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 to address these issues.

County zoning plans could be strengthened to include provisions to limit new construction in areas such as canyon rims that are at high risk from wildfire. Although government regulation is not popular with some local residents, counties might 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.

Training and Education

Firefighter Training

All volunteer fire departments are encouraged to participate fully in wildland training opportunities provided through the NFS and NEMA. Refer to the training overview earlier in this document. Although not all volunteer fire departments have mandatory fitness requirements, local departments can be encouraged to participate, both for safety and lowering 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 could be offered as part of Firewise® events that participating communities hold annually. Involving local communities in these voluntary programs would increase 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 University of Nebraska's Institute of Agriculture and Natural Resources and the Natural Resources Conservation Service have specialists available to help landowners develop a grazing system that will address these concerns.

Prescribed Fire

Several federal and state agencies, prescribed burn associations, and some individual landowners use prescribed fire as a land management tool on federal, state and private lands. On grasslands, prescribed fire can be extremely efficient for keeping eastern redcedar encroachment in check. In forested settings, prescribed fire is more effective and safer when used to maintain woodlands after dense areas 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 live trees. Crown fires are difficult to control, and they kill healthy trees.

Mechanical Fuels Reduction in High-Risk Wooded Settings

High-risk forested settings within the CWPP boundary are found mostly in cedar-encroached riparian bottoms. Wooded residential and recreational areas add the hazards of seasonal congestion, sometimes-limited or difficult access, and structures adjacent to highly-flammable conifers. Mechanical thinning will decrease tree density to healthy levels and reduce eastern redcedar encroachment in deciduous forests.

Slash (unusable limbs and tree tops 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 also can 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 develop markets for wood products.

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 forested areas, it is also important to manage the grass component on both forested areas and grasslands. Well-planned grazing can significantly reduce fire risk. Fuels treatments are only as effective as their weakest link. Unmanaged “islands” within managed areas pose a significant risk to the managed lands. Cost-share programs can encourage landowners to manage their forested and non-forested lands.

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.

Five-Year Action Plan for the Southwest Nebraska CWPP 2019-2024					
Objective	**Task(s)**	**Who**	**When**	**Benchmark(s)**	**Opportunities/Limits**
Risk Assessment (RA)	Identify/analyze elements	Local officials with NFS	Done	Checklist/Report	n/a
Structural Risk & Ignitability Analysis (SRIA)	Individual/ neighborhood analysis for rural areas	Contractors, fire depts., others.	Ongoing	Checklist/Report	Can do during other site visits. Limits: funding and staff availability.
Prioritization	Assess AOCs based on vulnerability	Local Officials & fire departments	2019-2021	Maps, Checklist Report	Opp. to prioritize based on RA & SRIA data
Risk Reduction (RR)	Identify practices	Local Officials with NFS	Done	Checklist/Report	n/a
	Vegetation Management	Homeowners, landowners, local officials (public prop.)	Ongoing	# Acres or Properties Treated	Agency cost share programs available
	Ignition-Resistant buildings	Homeowners, planning officials	Ongoing	# New buildings to code; # bldgs. retrofitted	Retrofits can be costly; opportunity for new construction
	Jurisdictional Cooperation	Local, state, federal officials	Ongoing	# of Mutual Aid Agreements, MOUs, etc.	Explore MOUs with non-traditional partners, NGOs, etc.
Incr. Communications Effectiveness	Review Local Communications Plans	Local and state officials	Annually	Document changes/updates	n/a
Increase Data Availability	Map county roads/ bridges w/ weight or width limits; other data	Local officials, contractors?	2019-2024	Completed maps by jurisdiction	May be able to piggy back data collection with other tasks
	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 Available VFD Equipment	Increase fire response reporting	Fire chiefs	Ongoing	# of Departments reporting	Opportunity for VFDs to acquire additional equipment
Increase Community Preparedness	Implement homeowner and community 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	2019-2021	Report/cost estimates	Explore grant funding to address costs
	Review County Zoning Plans for treatment of high fire risk areas	Local planning staffs	2019-2020	Recommendations to county officials	Consider canyon setbacks, access, building materials
Increase Response Effectiveness	Participate in firefighter training	VFDs	Ongoing	# of departments and firefighters receiving training	Many training options available through NFS & NEMA
Increase Public Awareness	Media releases; Hold workshops, information sessions, etc.	Local officials, planners, VFDs	Ongoing	# of people reached	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

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 treatment, can be costly, so continued maintenance (keeping

regrowth in check) not only prolongs the period of hazard protection, it also protects the monetary investment made by landowners and the cost-share program.

Monitoring and Evaluation

The objective of fuels mitigation treatments in forested settings is to reduce the stand density to levels which will remain effective for 20 to 30 years. The NFS maintains a database that quantifies the time and level of treatment performed under NFS agreements on forested properties statewide. This helps resource managers to evaluate when and where resources for future fuel treatments should be directed.

The extreme fire behavior in Nebraska during 2012 tested many of the fuels reduction treatments that were previously implemented. Wildfires provided an opportunity to observe the effectiveness of various types and intensities of treatments. Lessons learned from the 2012 fire season strengthened resource managers' ability to plan suitable fuels mitigation treatments for Nebraska's landscapes.

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 review the plan on an annual basis to evaluate progress, re-evaluate priorities for action items, and recommend updates as needed.

Review of the strategy 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 and 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 are completed, emergency services in outlying areas may expand, data are updated, and areas of extreme wildfire hazard decline or increase.

Monitoring

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. Agency stakeholders will monitor their efforts according to their internal protocol, documenting accomplishments and redesigning strategies as needed.

Evaluation

Annual assessment of the identified tasks is very important to determine whether or not progress is being made. Units of measure to be considered when updating the plan in the future for the purpose of reporting accomplishments are listed below:

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 equipment obtained
5. Number of firefighters and fire departments receiving training courses; training hours
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 involved
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 the units of measure listed above to determine progress. This plan does not function as a means of bypassing the individual processes and regulations of the participating agencies. Each project must adhere to any pertinent local, state and federal rules. The CWPP is a coordinating document for activities related to education and outreach, information development, fire protection, and fuels treatment.

Endnotes

1 Nebraska Emergency Management Agency. Nebraska State and Local Plans. https://nema.nebraska.gov/preparedness/nebraska-state-local-plans. Accessed 10/4/2018.

2 Nebraska Emergency Management Agency. State of Nebraska Hazard Mitigation Plan. https://nema.nebraska.gov/sites/nema.nebraska.gov/files/doc/hazmitplan.pdf. Accessed 10/4/2018.

3 Associated Press. Wildfires reported near Lake McConaughy. Lincoln Journal-Star. August 3, 2012. https://journalstar.com/news/state-and-regional/nebraska/wildfires-reported-near-lake-mcconaughy/article_fa1ad950-f409-565f-b0f2-17dc92967b8d.html. Accessed 11/5/2018.

4 Nelson, A. and Klecker, M. Grass fire prompts evacuations in McCook. Omaha World-Herald. March 6, 2018. https://www.omaha.com/news/nebraska/grass-fire-prompts-evacuations-in-mccook-nebraska/article_9118a120-263e-5273-875e-3adaa19163ad.html. Accessed 11/6/2018.

5 Temperature, relative humidity, and precipitation data: https://hprcc.unl.edu/datasets.php?set=CountyData. Accessed on November 6, 2018.

6 Wind data: Iowa Environmental Mesonet. Station data and metadata for selected Nebraska stations. 1970-2018. https://mesonet.agron.iastate.edu/sites/windrose.phtml?network=NE_ASOS&station=OGA. Accessed November 7, 2018. Iowa State University.

7 USDI US Geological Survey. 2011. NLCD 2011 Land Cover. https://www.mrlc.gov/nlcd11_data.php. Accessed 11/7/2018.

8 Visitation numbers provided by the Nebraska Game and Parks Commission, December 6, 2018

9 USDI Bureau of Reclamation. Reclamation/Projects & Facilities/Projects/Frenchman Cambridge Division. https://www.usbr.gov/projects/index.php?id=454. Accessed 11/8/2018.

10 Information provided by provided Robert Kuhn, Haigler, Nebraska. 10/15/2018.

11 Frenchman-Cambridge Irrigation District website. https://www.fcidwater.com/about.html. Accessed 11/8/2018.

12 Information provided by General Manager Don Felker. Culbertson, Nebraska. 11/8/2018

13 Central Nebraska Public Power and Irrigation District website. https://www.cnppid.com/about-cnppid/. Accessed 11/8/2018.

14 Fire regimes of the conterminous United States. US Forest Service Fire regime information on 256 vegetation communities. This information is taken from the LANDFIRE Rapid Assessment Vegetation Models [3], which were developed by local experts using available literature, local data, and/or expert opinion. This table summarizes fire regime characteristics for each plant community listed. USDA Forest Service Fire Effects Information System, https://www.fs.fed.us/database/feis/fire_regime_table/fire_regime_table.html and https://www.feis-crs.org/feis/ accessed 10/2/2018.

15 O'Hanlon, Kevin. Prairie fire kills one, evacuates Nebraska Town. Yankton Daily Press and Dakotan. March 18, 1999. https://www.yankton.net/news/article_79ebb606-71cb-581f-bc51-b8ae7ad58da9.html. Accessed 10/1/2018.

16 Gabbert, Bill. Nebraska firefighters entrapped and injured on wildfire. Wildfire Today.April 24, 2011. https://wildfiretoday.com/2011/04/24/nebraska-firefighters-entrapped-and-injured-on-wildfire/. Accessed 10/31/2018.

17 Guyette, R.P., M.C. Stambaugh, and J.M. Marschall. 2011. A quantitative analysis of fire history at national parks in the Great Plains. A report prepared for the Great Plains Cooperative Ecosystem Studies Unit and National Park Service. 78 pp.

18 Nebraska Forest Service. Fire reports database. Accessed 10/3/18.

19 Wildland Urban Interface Wildfire Mitigation Desk Reference Guide. (August, 2014). Retrieved from http://www.nwcg.gov/pms/pubs/pms051.pdf December 3, 2018.

20 Baker County Community Wildfire Protection Plan. (Oregon. February 15, 2006).

21 International Fire Chiefs Association. *Community Wildfire Protection Plan: A Fire Service Leader's Guide.* Definitions retrieved from https://www.iafc.org/topics-and-tools/resources/resource/community-wildfire-protection-plan-leaders-guide

List of Appendices

Appendix A

Maps

1. Nebraska CWPP Regions
2. Priority Landscapes
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5. Irrigation Canals: Platte River Watershed
6. Fire Districts
7. Fire History
8. Nebraska Local Mitigation Planning Areas
9. Southwest CWPP Local Emergency Management Areas
10. Southwest CWPP Areas of Special Concern
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    b. Chase County
    c. Dundy County
    d. Frontier County
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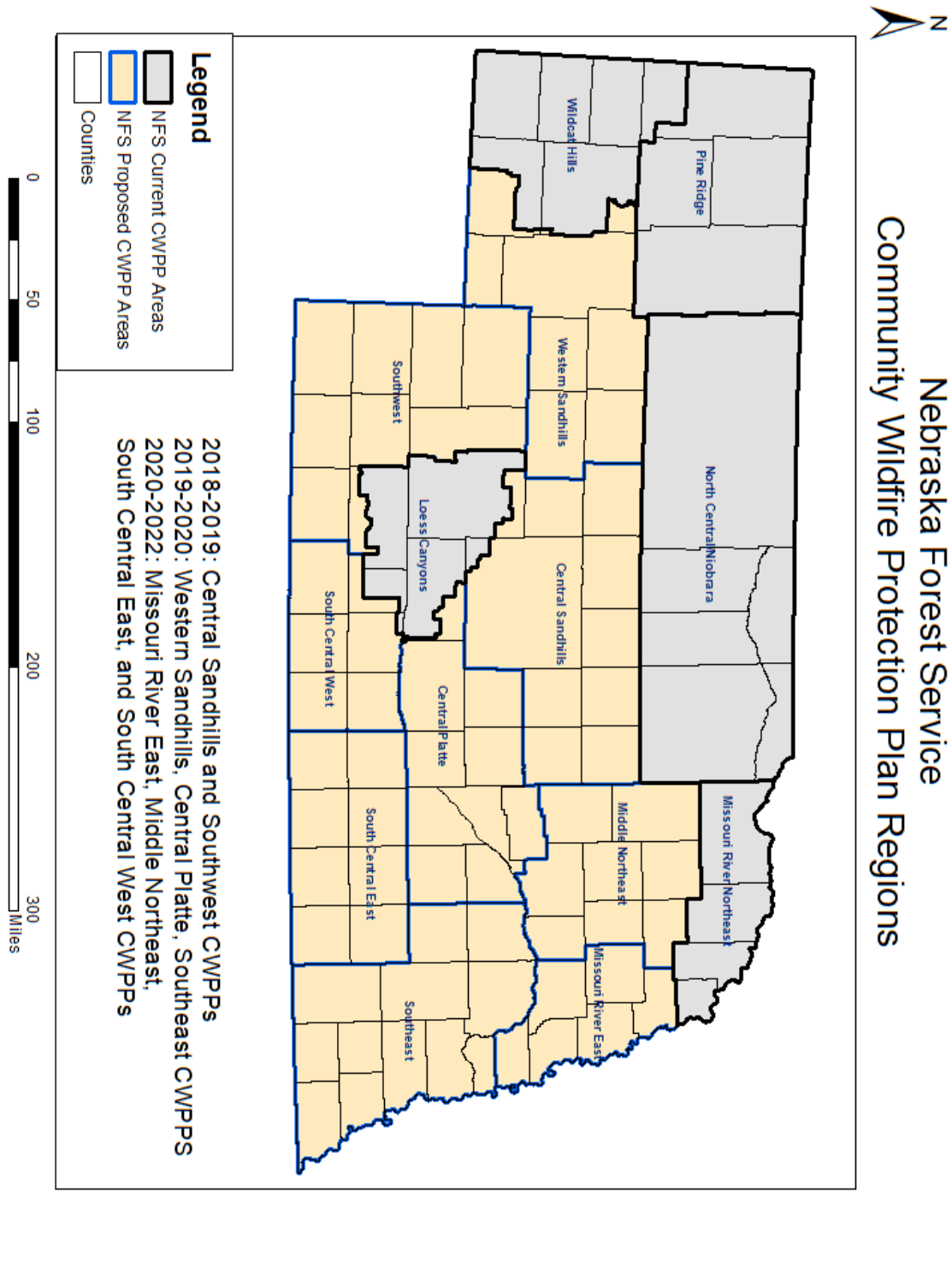
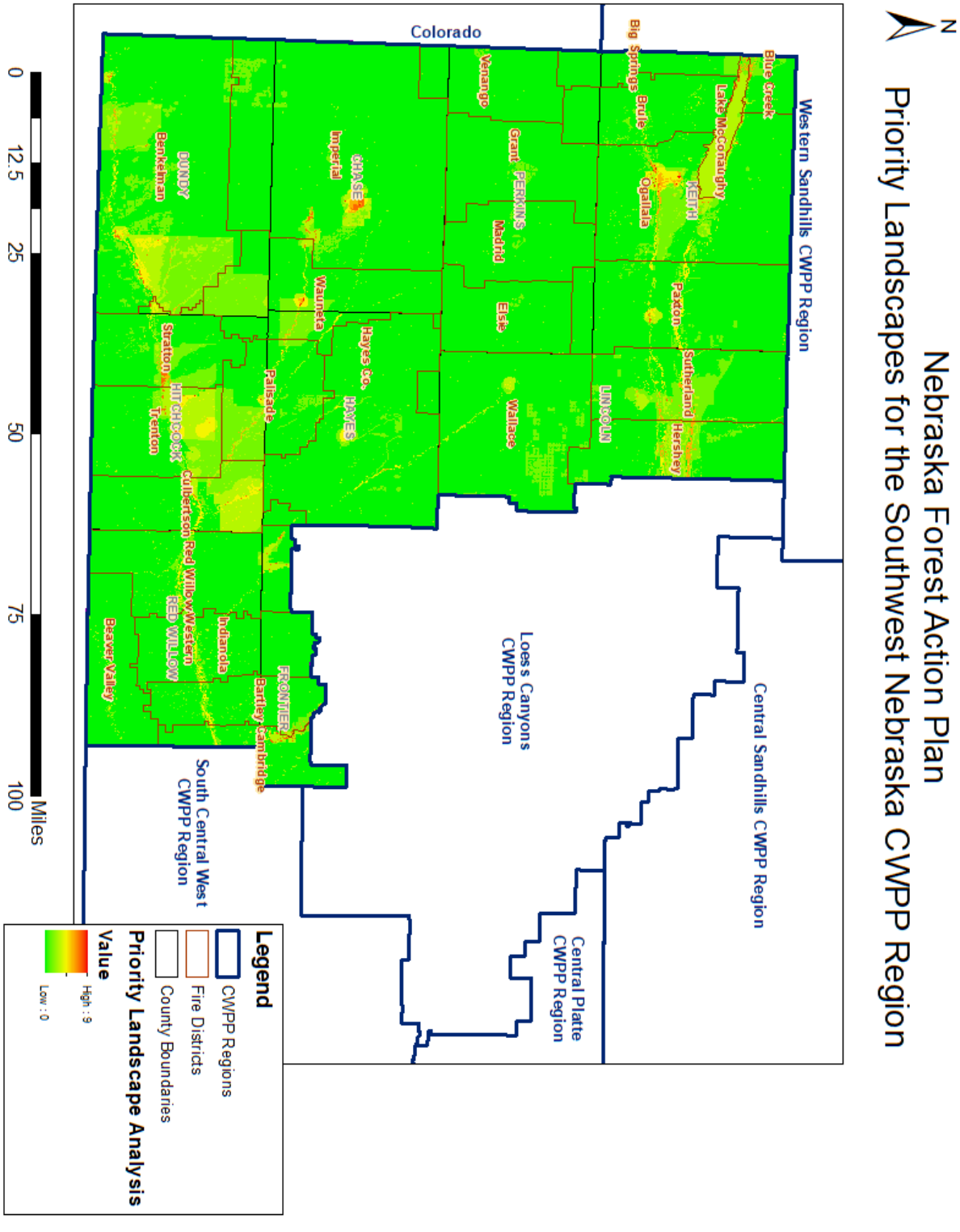
    f. Hitchcock County
    g. Keith County
    h. Lake McConaughy Vicinity
    i. Lincoln County
    j. Perkins County
    k. Red Willow County

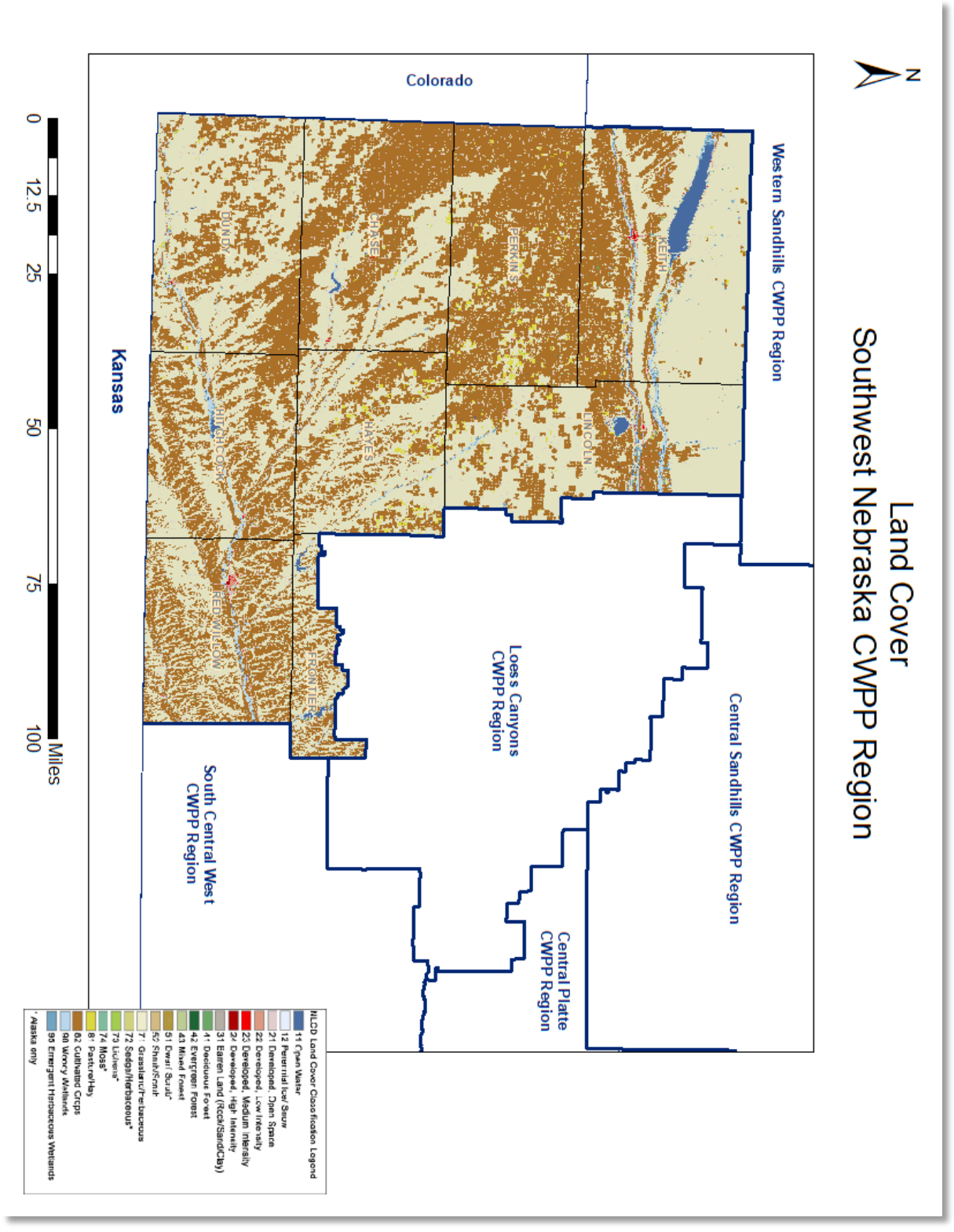
Map 1: Nebraska Community Wildfire Protection Plan Regions



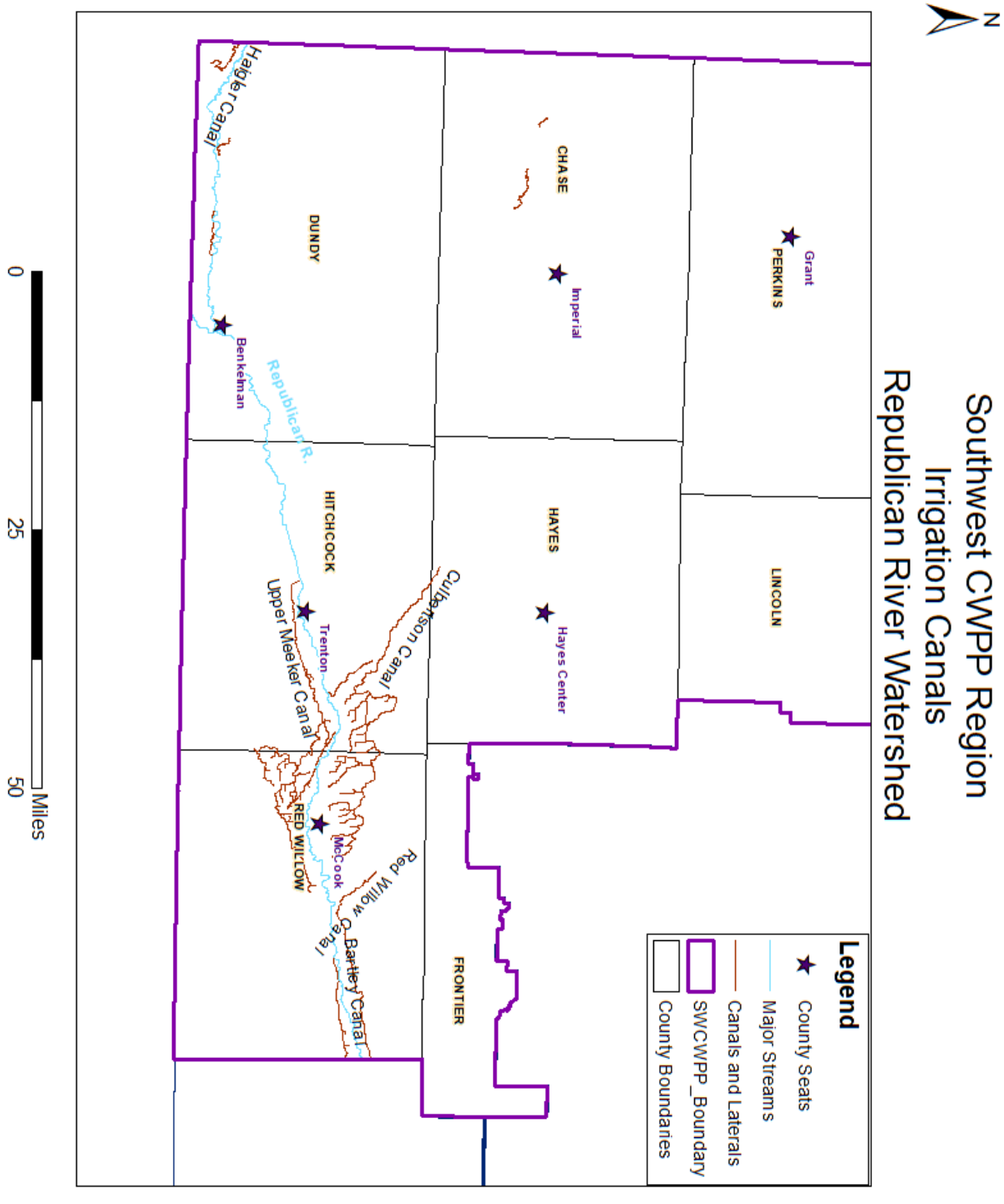
Map 2: Priority Landscapes for Southwest CWPP



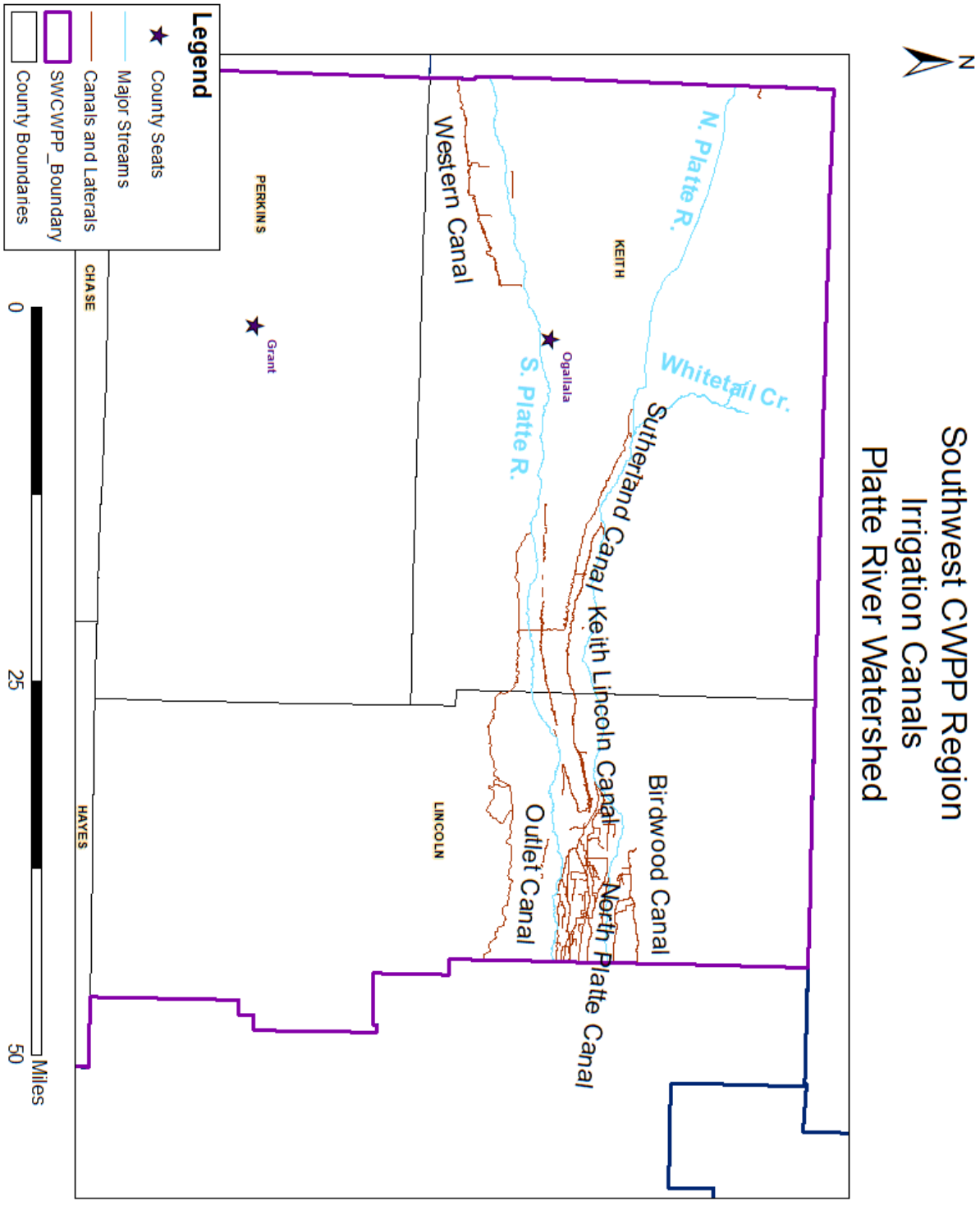
Map 3: Land Cover in Southwest CWPP Region



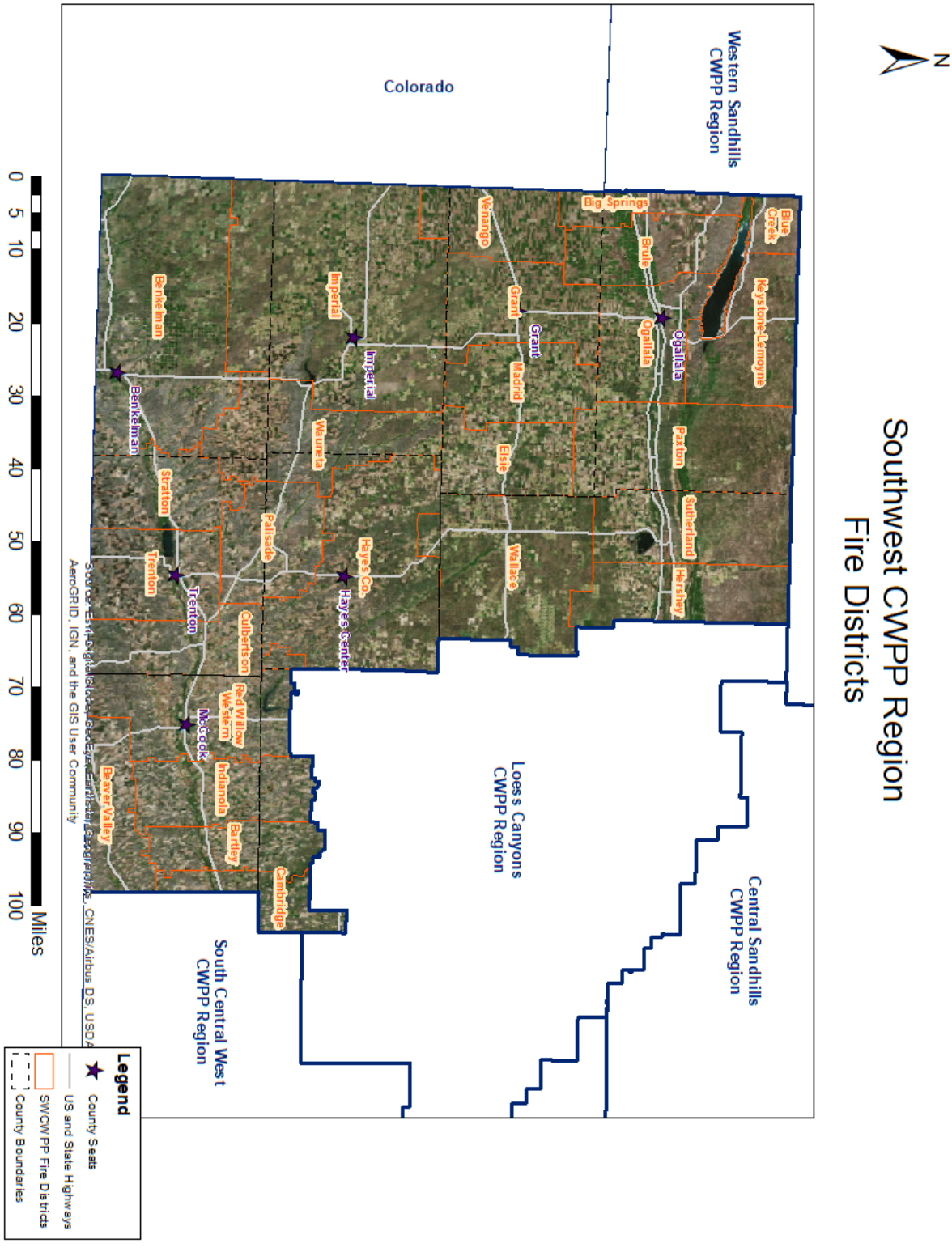
Map 4: Republican River Watershed Irrigation Canals: SWCWPP



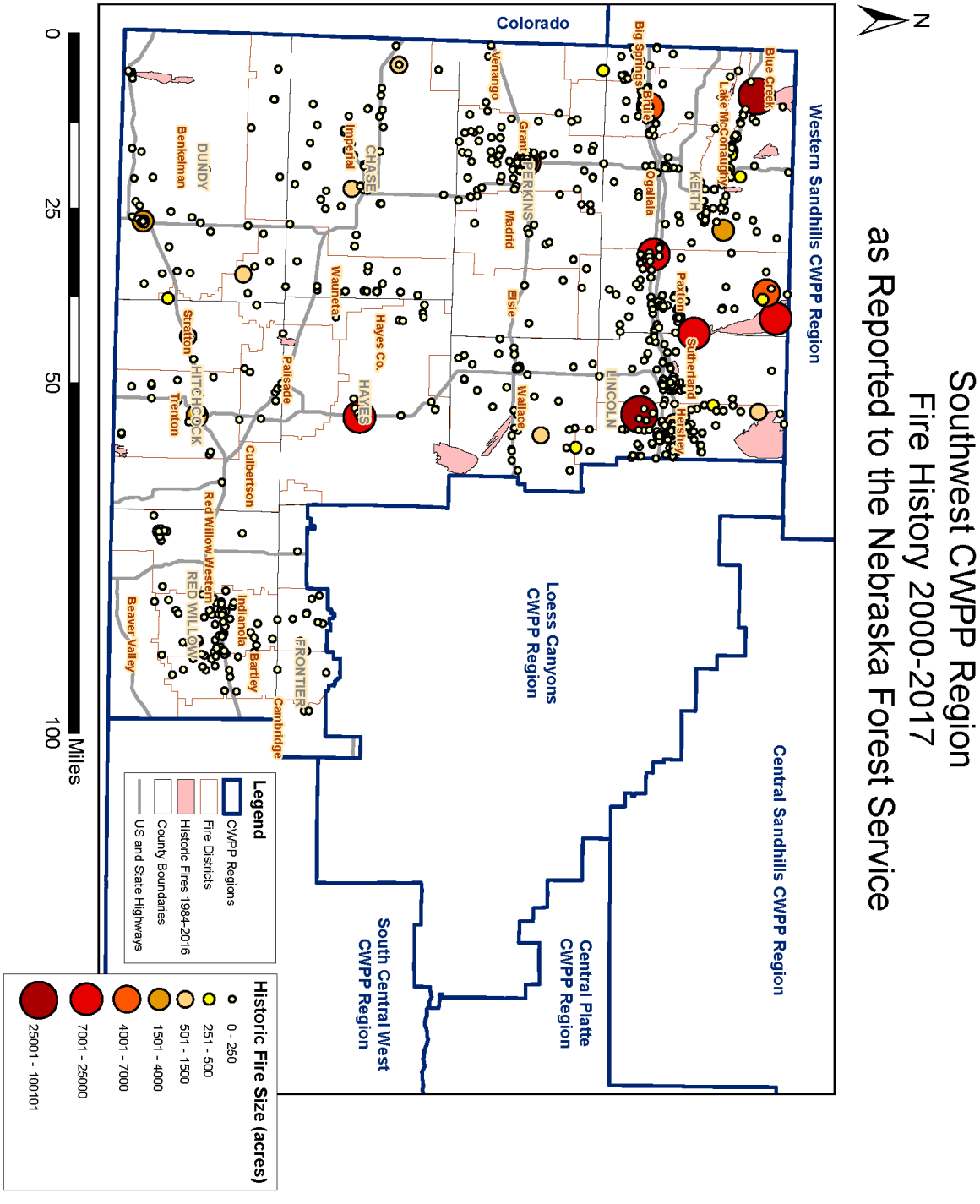
Map 5: Platte River Watershed Irrigation Canals: SWCWPP



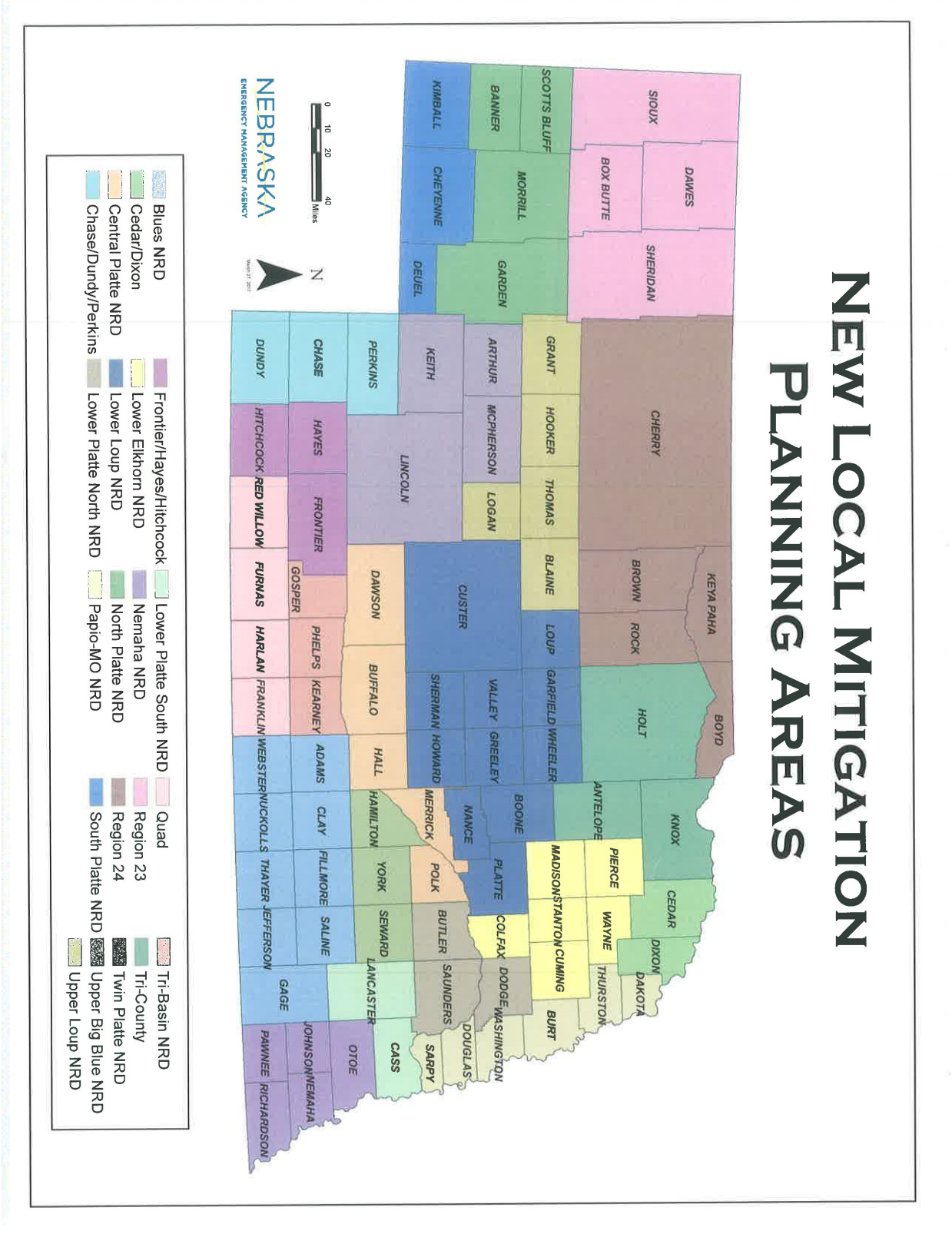
Map 6: Fire Districts All or Partly Within SWCWPP Region



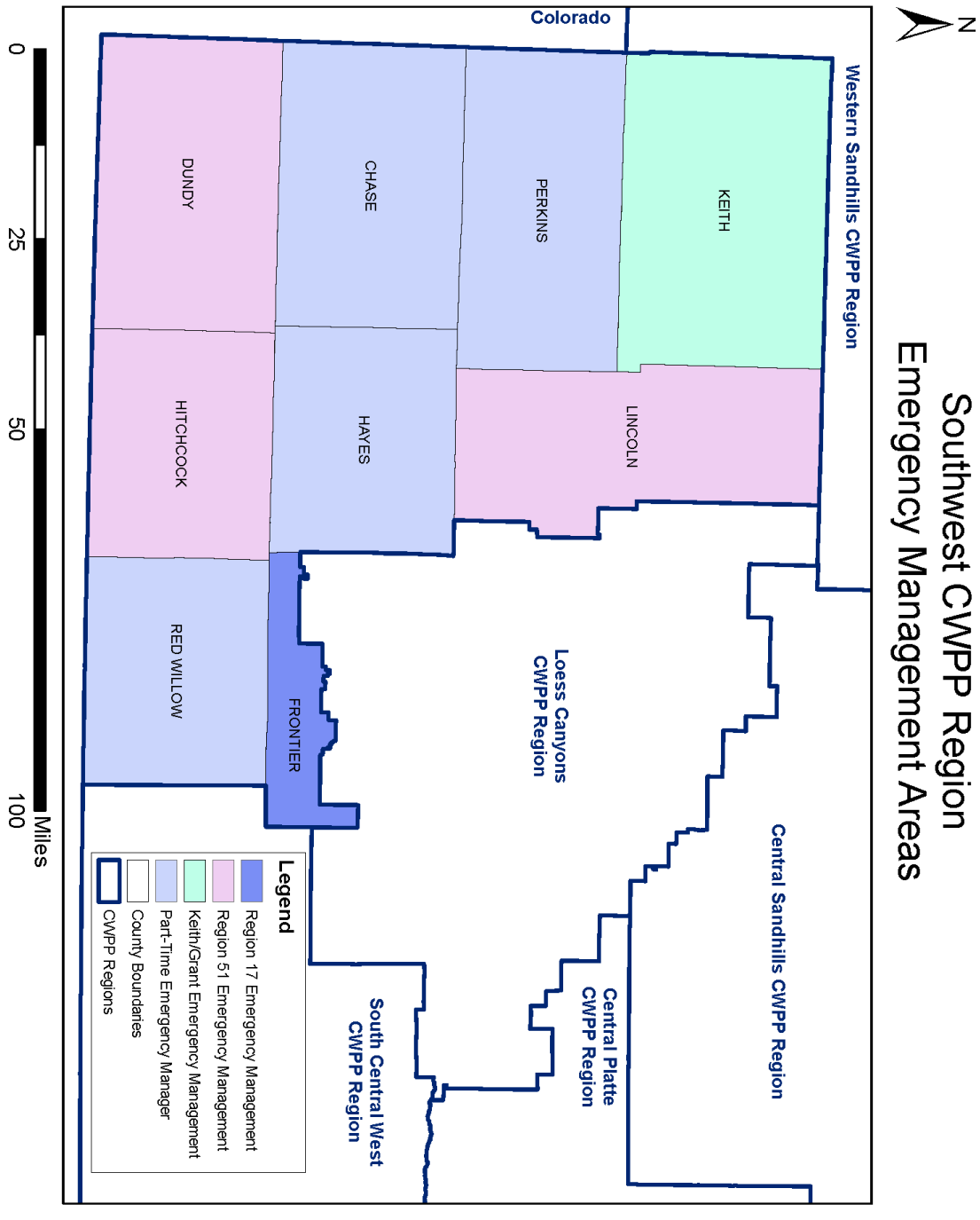
Map 7: Fire History in the SWCWPP Region



Map 8: Nebraska Local Mitigation Planning Areas

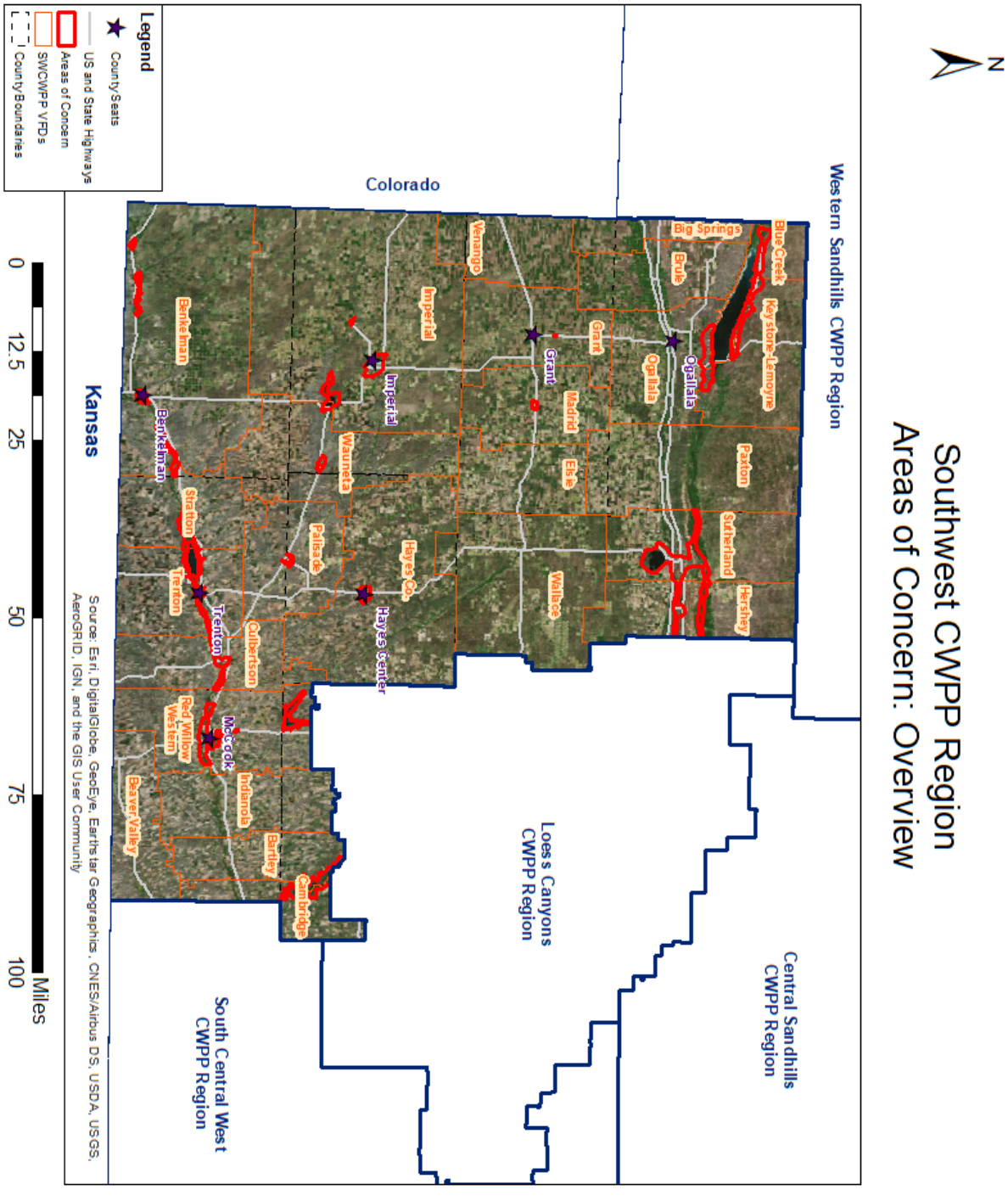


Map 9: Local Emergency Management Areas

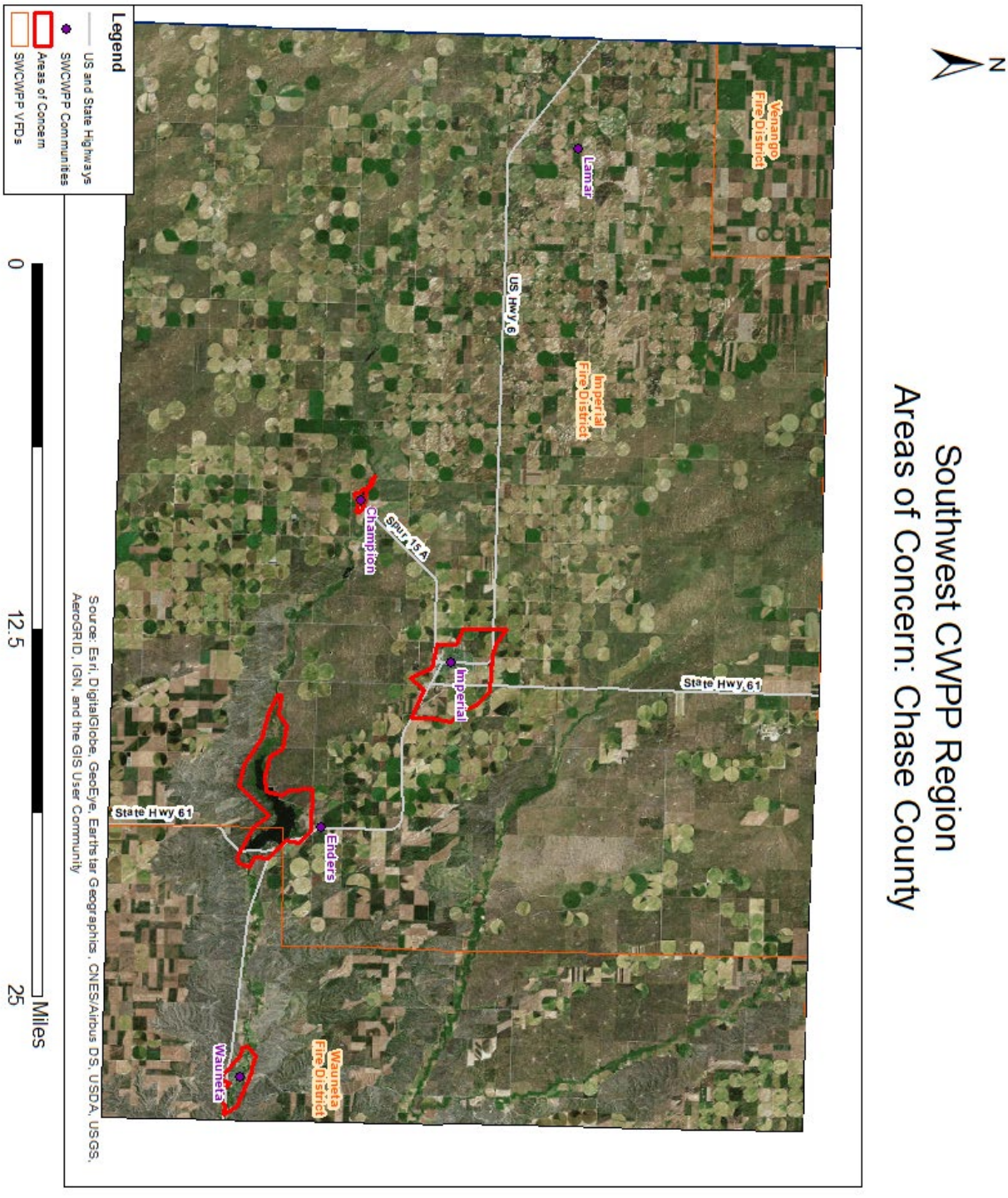


Maps 10a-10k: Southwest CWPP Areas of Concern

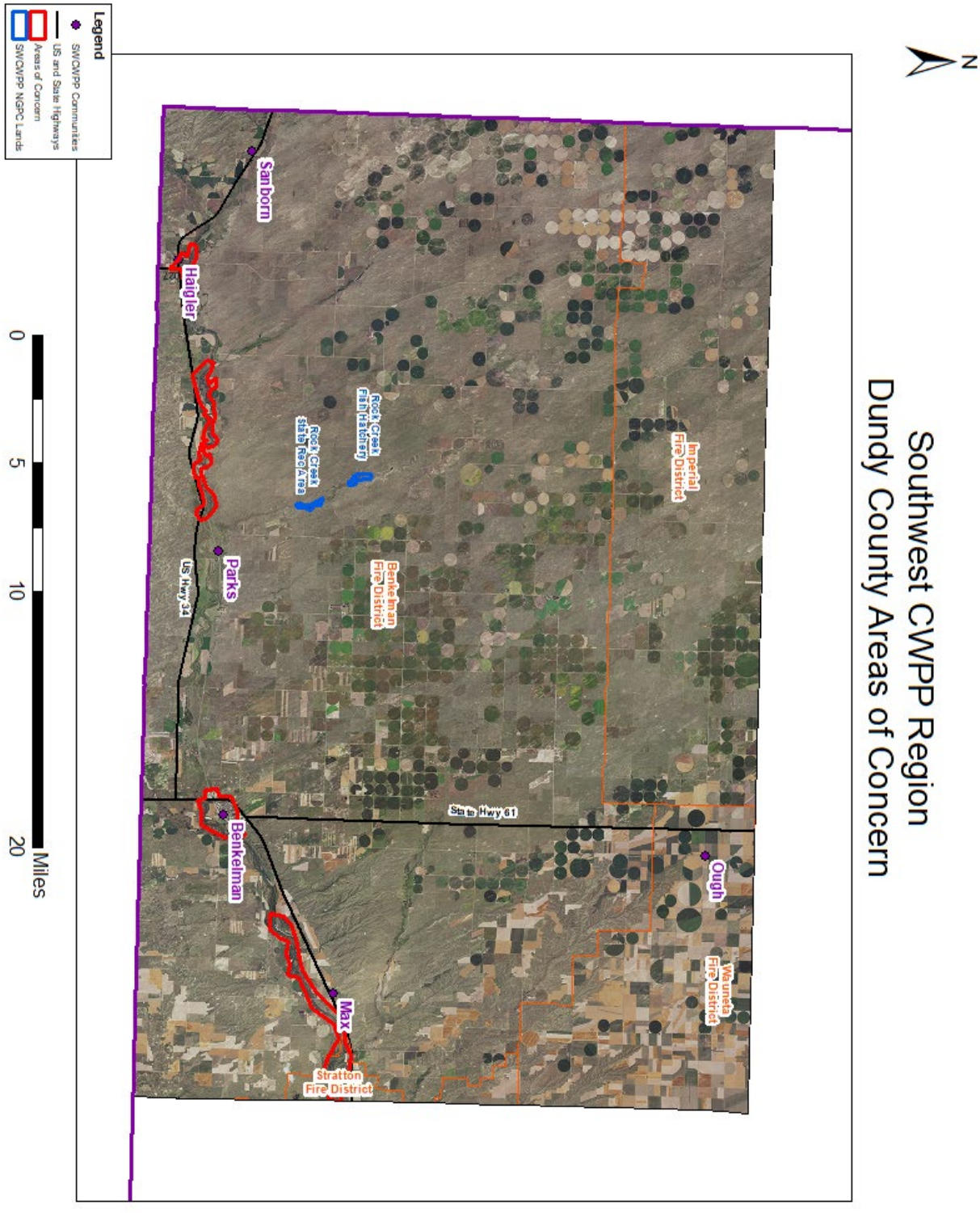
Map 10a: Overview



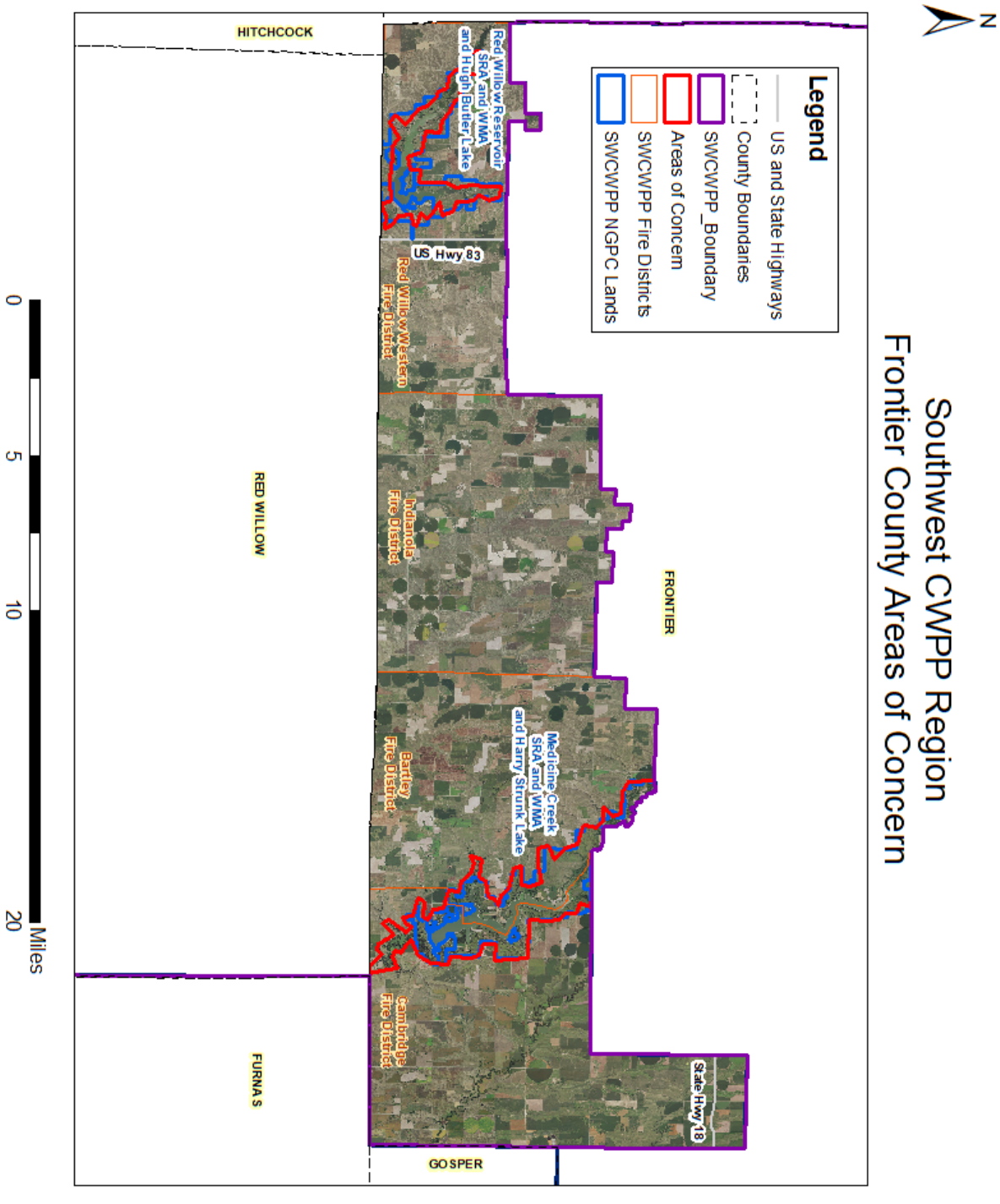
Map 10b: Chase County



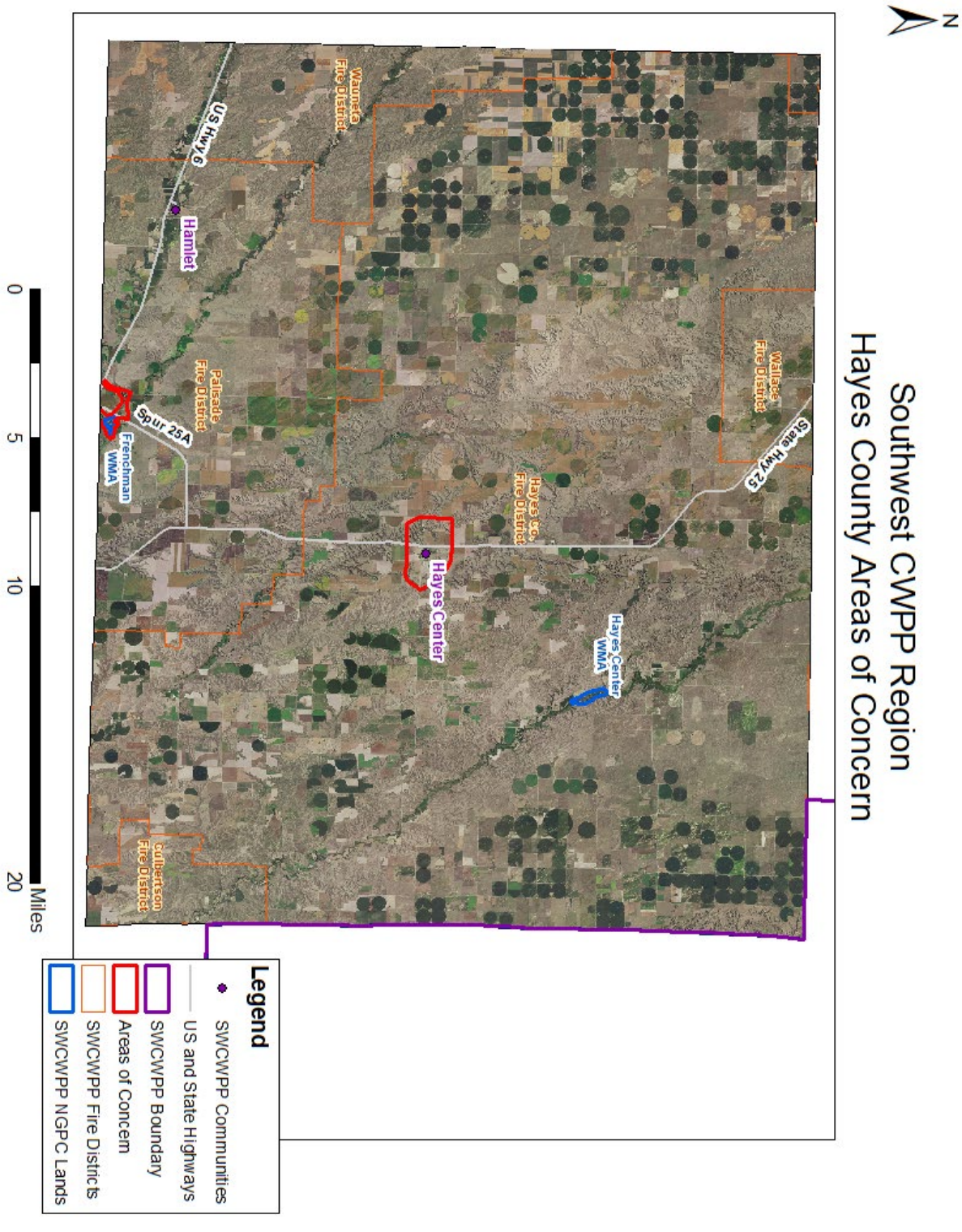
Map 10c: Dundy County



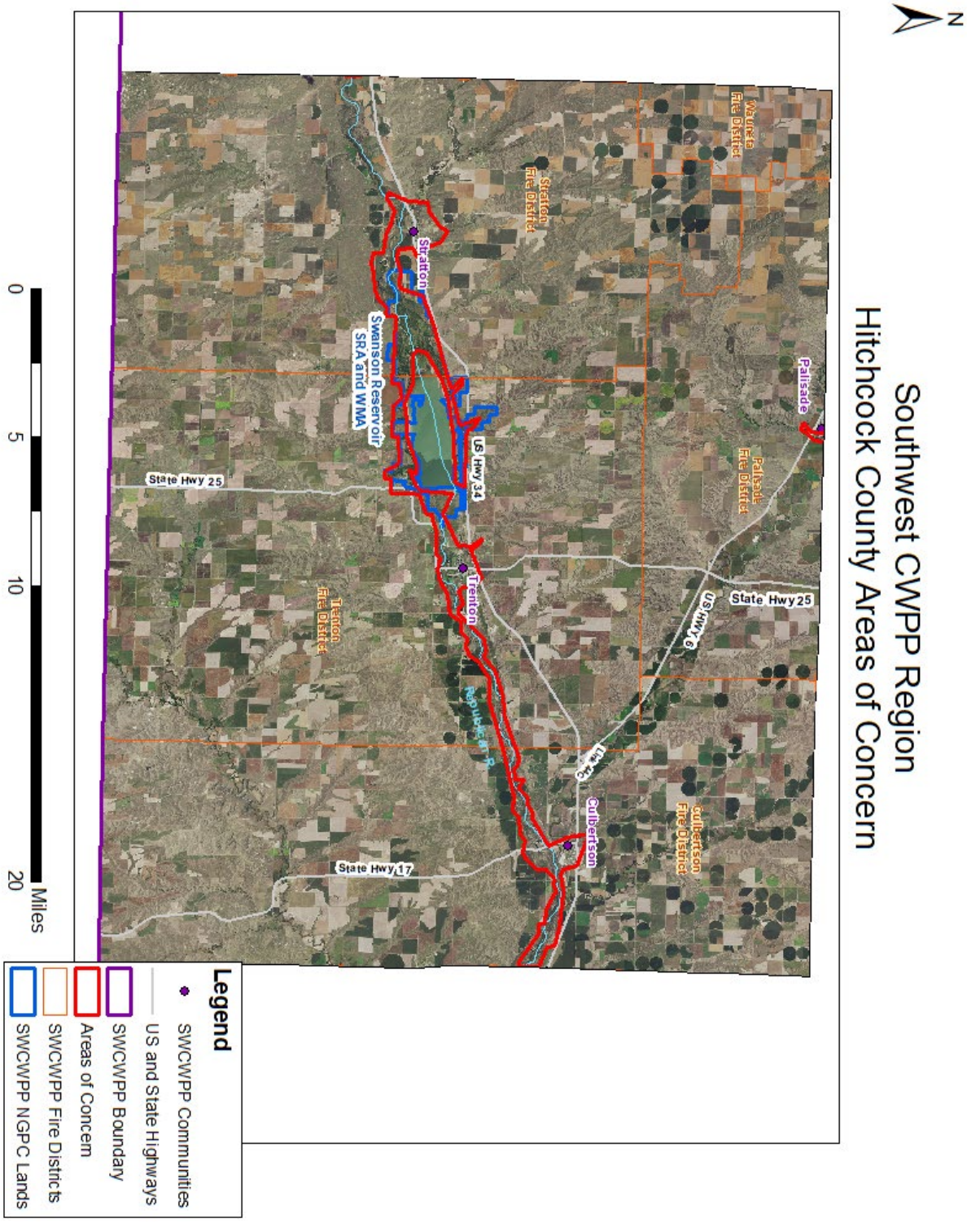
Map 10d: Frontier County (SW CWPP area only)



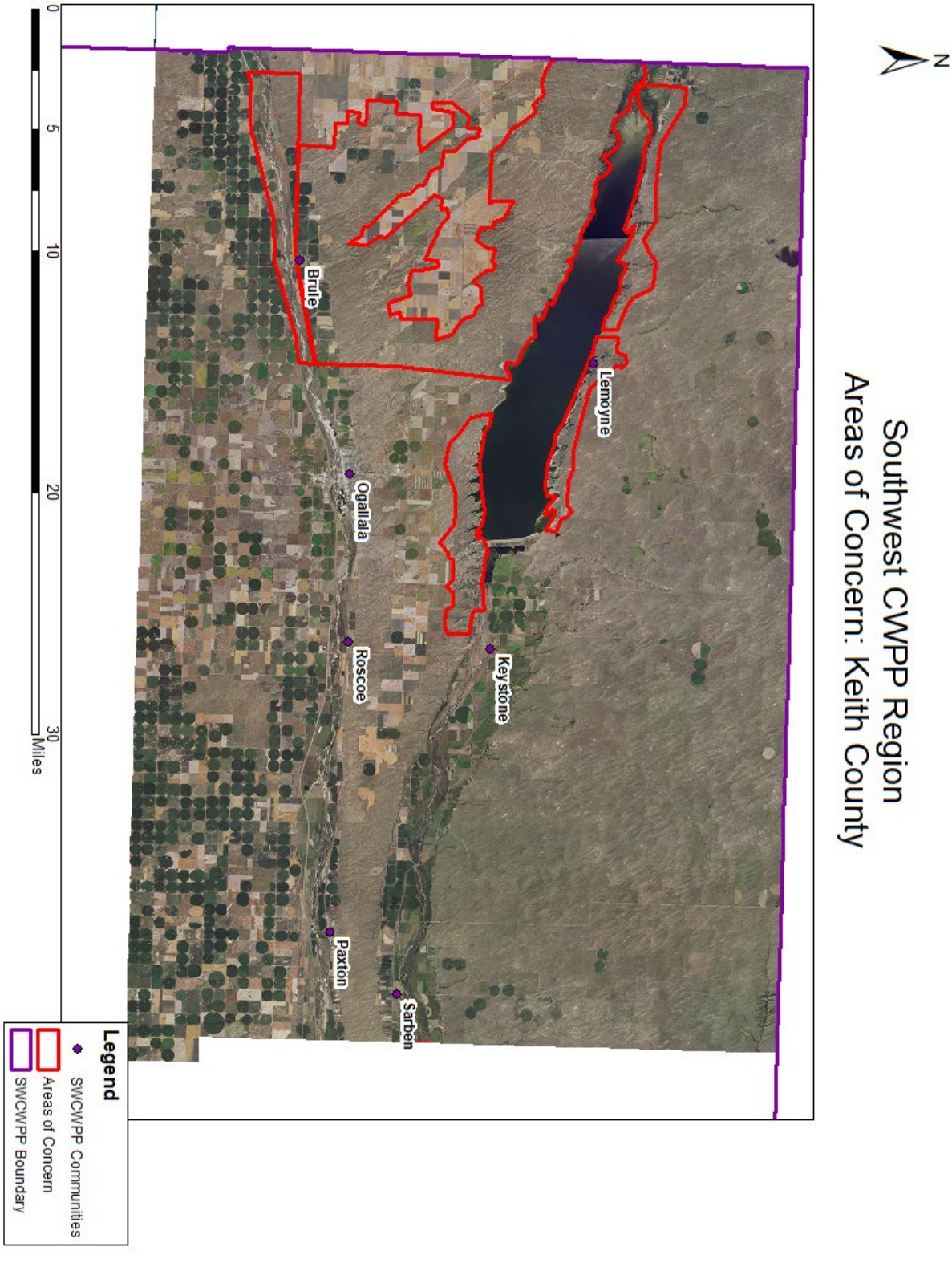
Map 10e: Hayes County



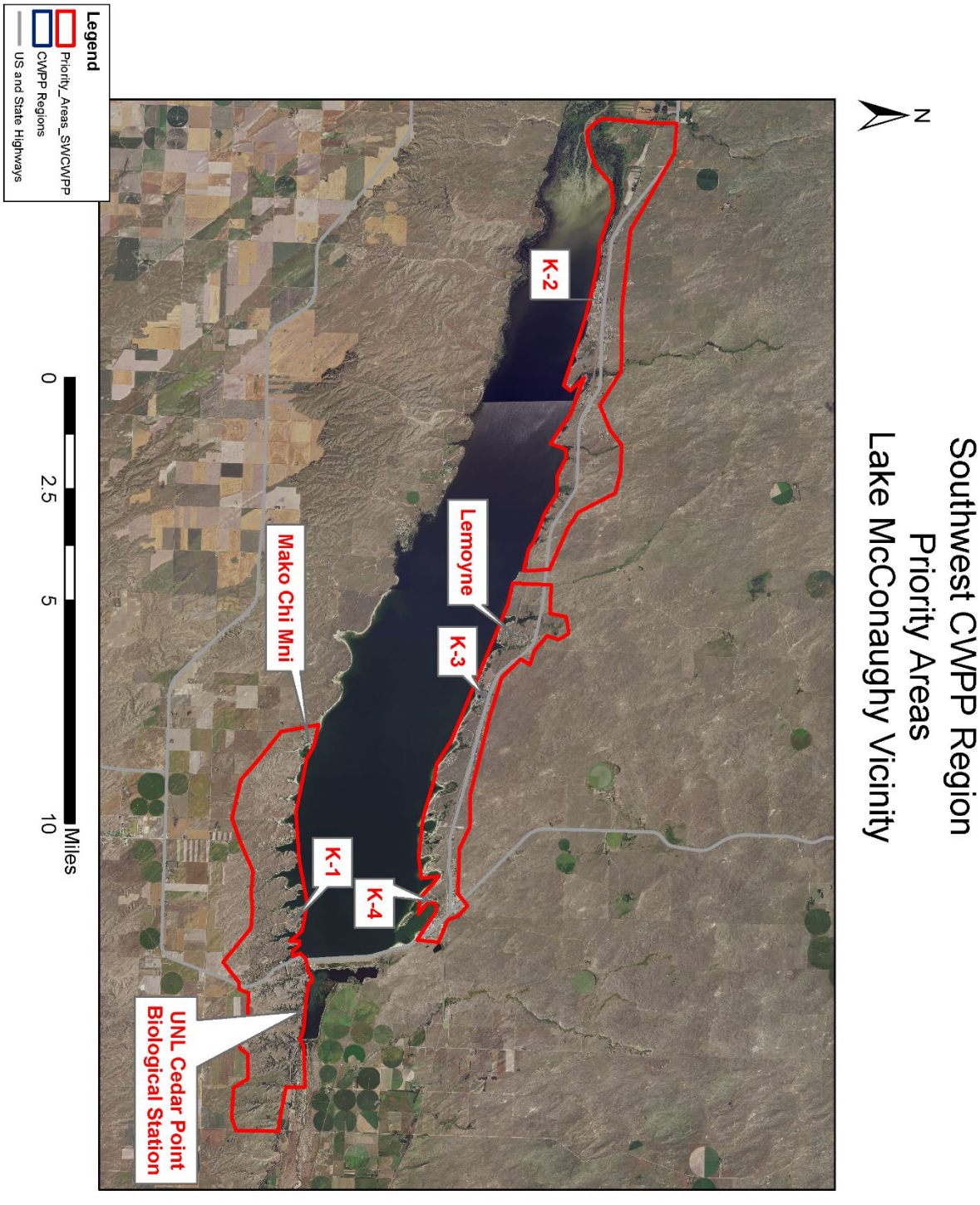
Map 10f: Hitchcock County



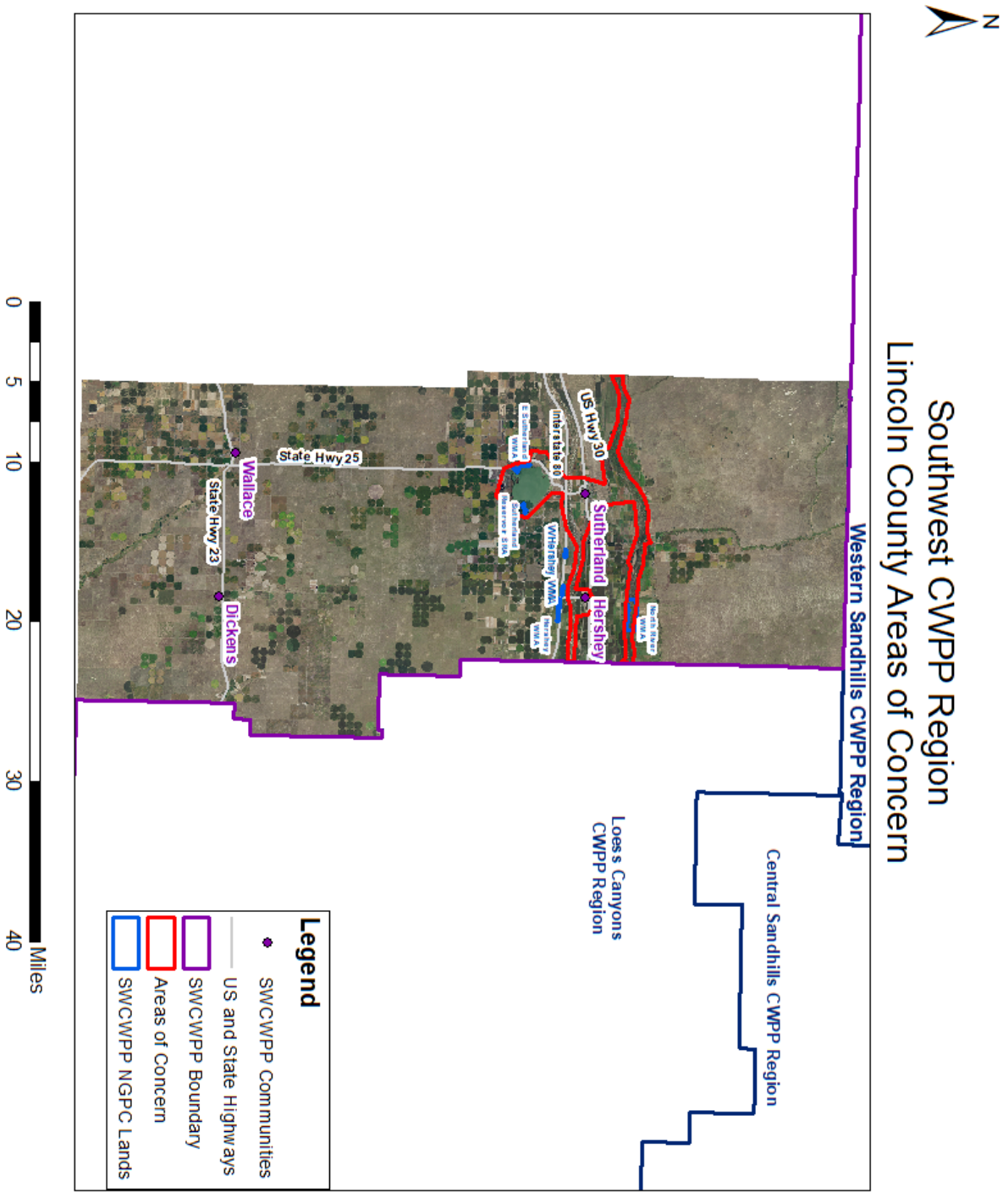
Map 10g: Keith County



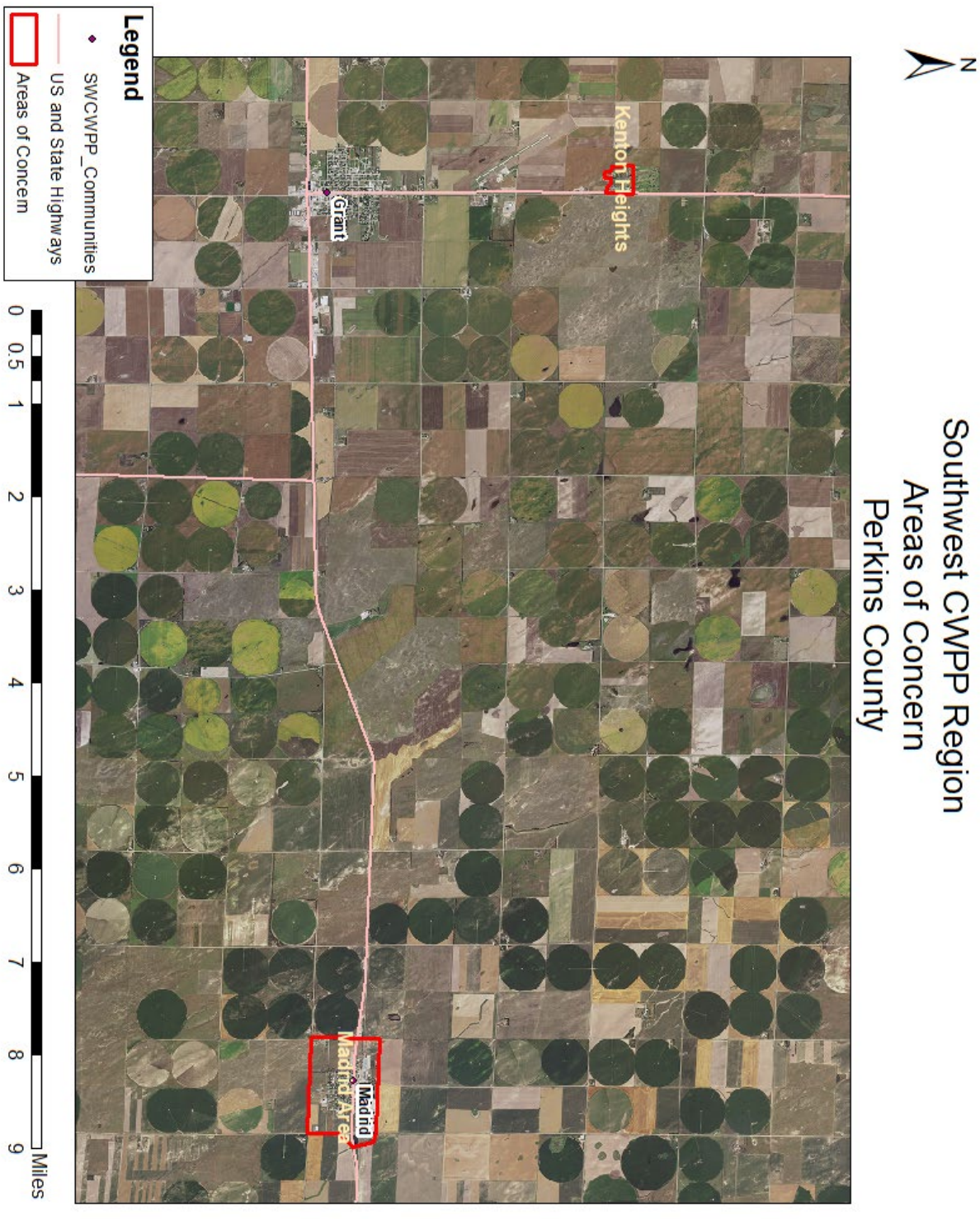
Map 10h: Lake McConaughy Developments (Keystone-Lemoyne Fire District)



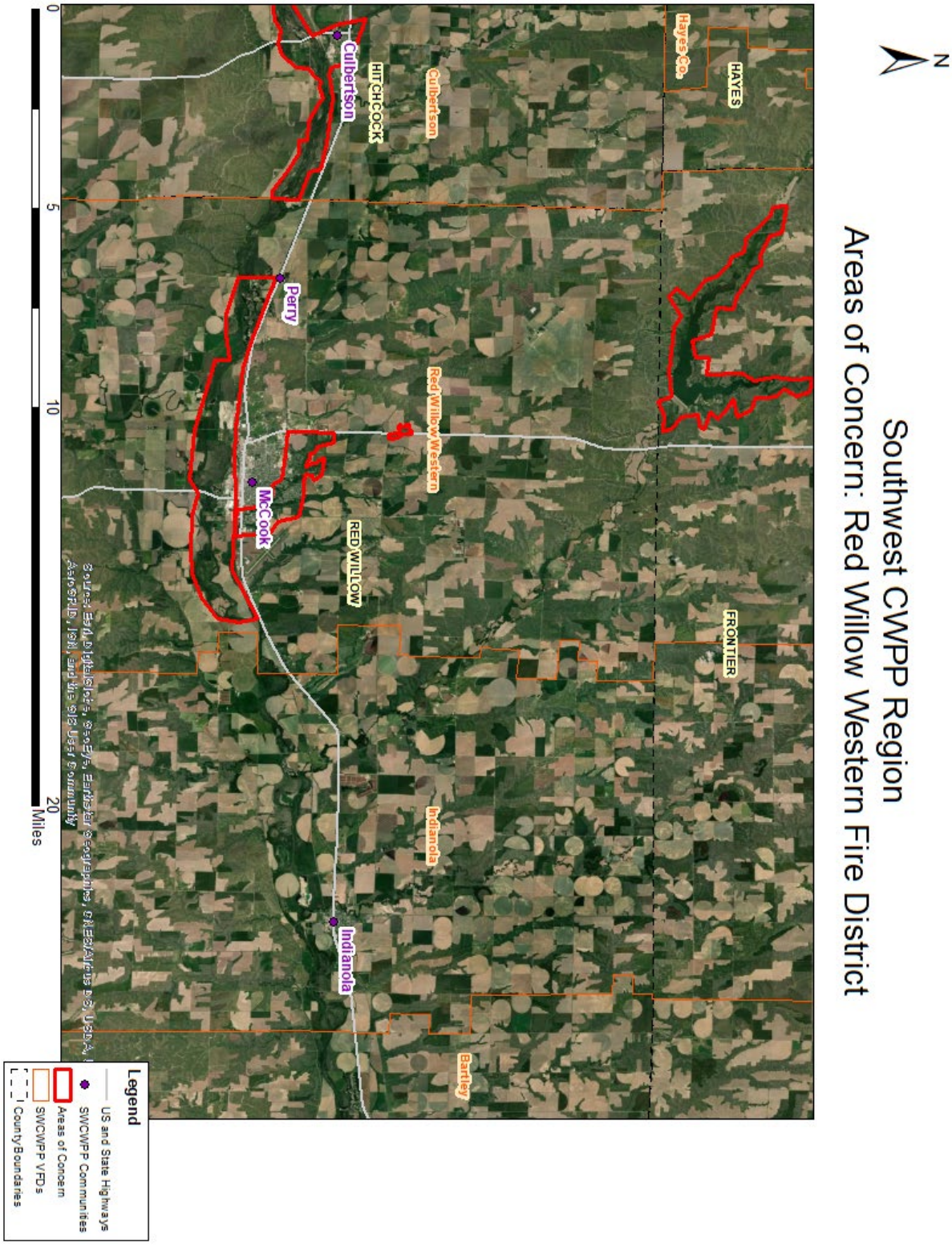
Map 10i: Lincoln County (SW CWPP area only)



Map 10j: Perkins County



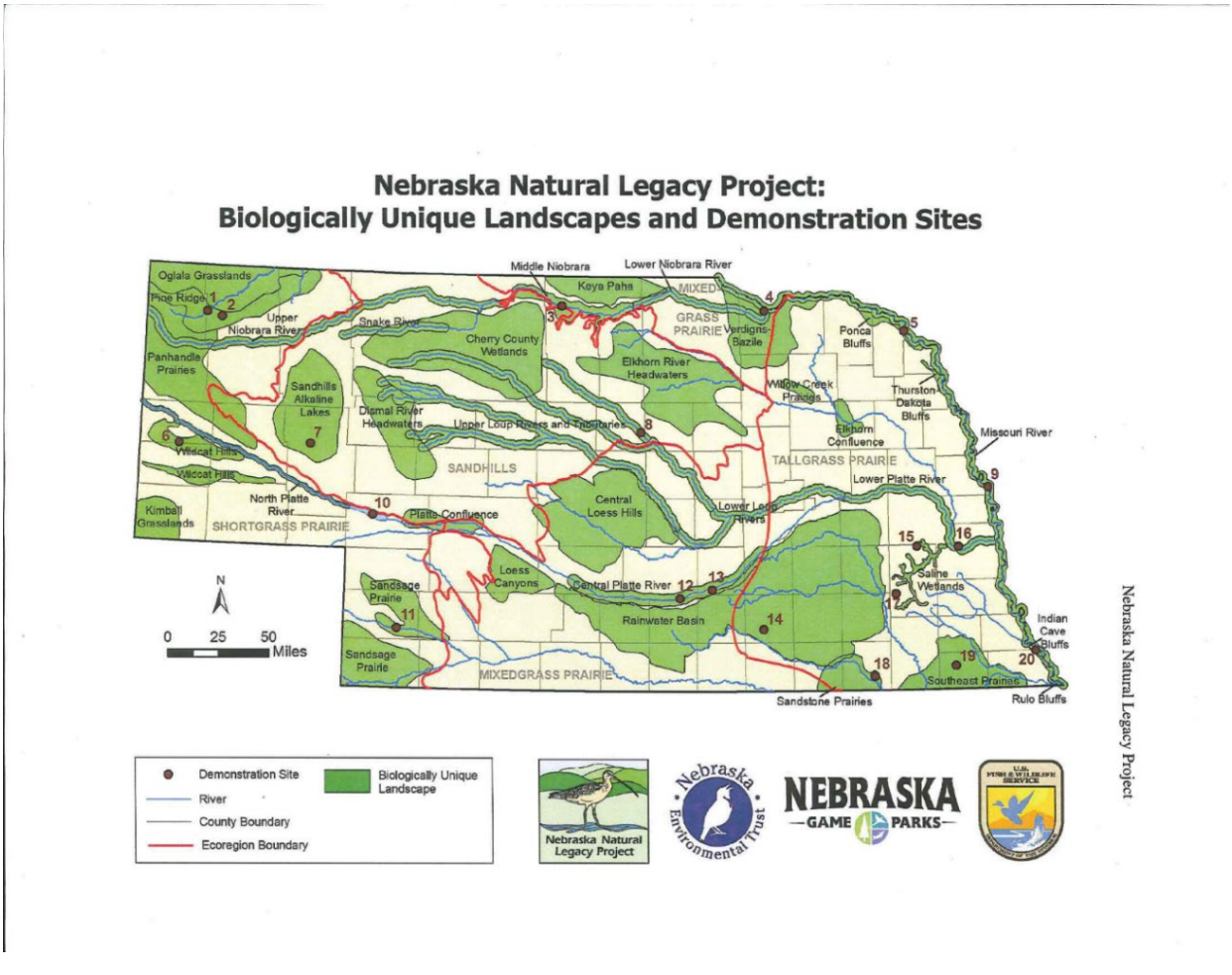
Map 10k: Red Willow County



Appendix B

Map of Biologically Unique Landscapes in Nebraska
Nebraska Natural Legacy Project

The full document is available at:
http://outdoornebraska.gov/wp-content/uploads/2015/09/NebraskaNaturalLegacyProject2ndEdition.pdf



Appendix C

Priority Landscapes in the Southwest CWPP Region include parts of the Western Platte River, Republican River, and Loup River Landscapes

Maps of these areas appear on the following pages

A full description of Nebraska's Priority Landscapes is found on pages 75-98 of the Nebraska Forest Action Plan
https://nfs.unl.edu/statewide-forest-action-plan

Western Platte River Priority Landscape

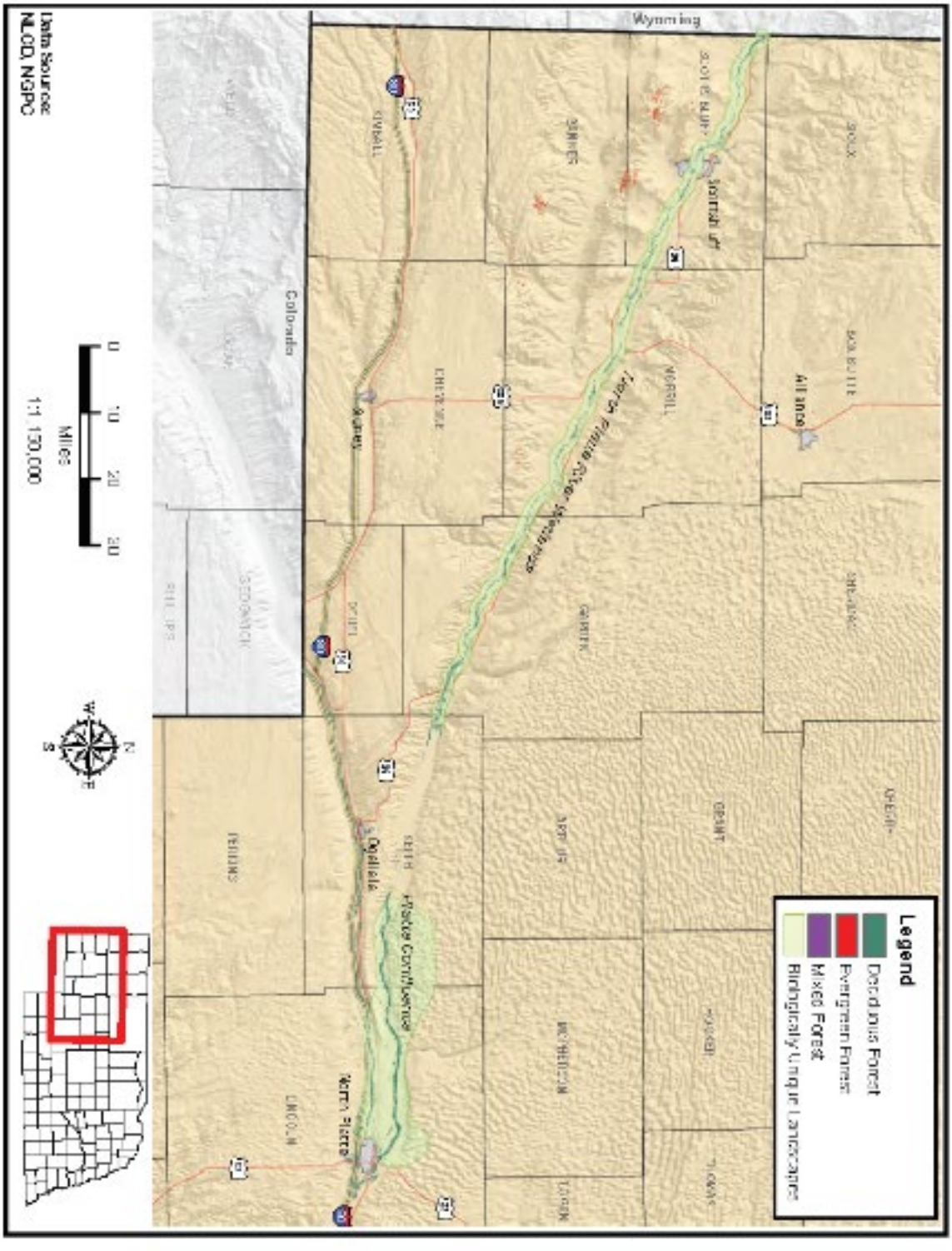


Figure 49 Priority Forest Landscape: Western Platte River

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Republican River Priority Landscape

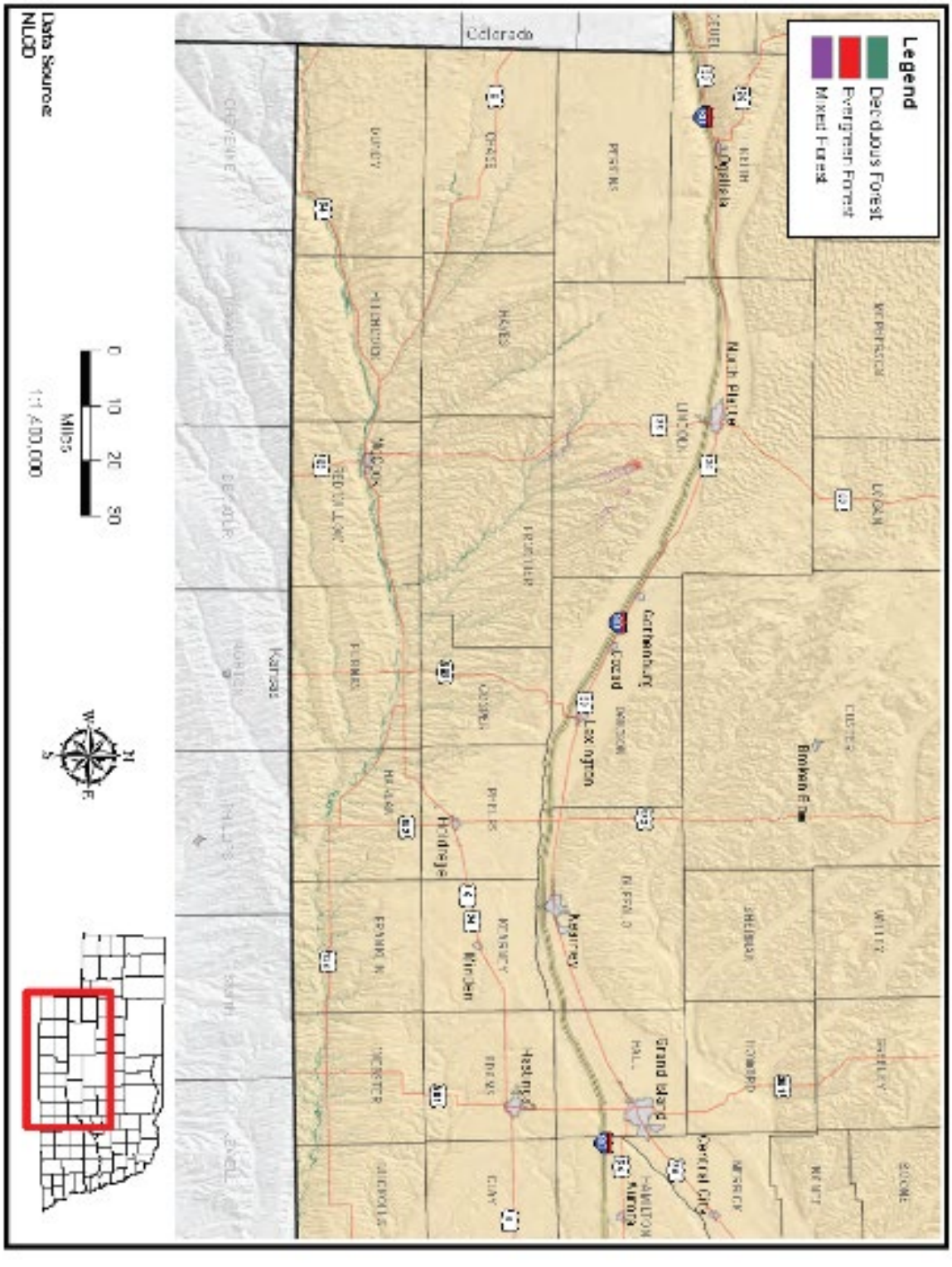


Figure 50. Priority Forest Landscape Republican River

Loup River Priority Landscape

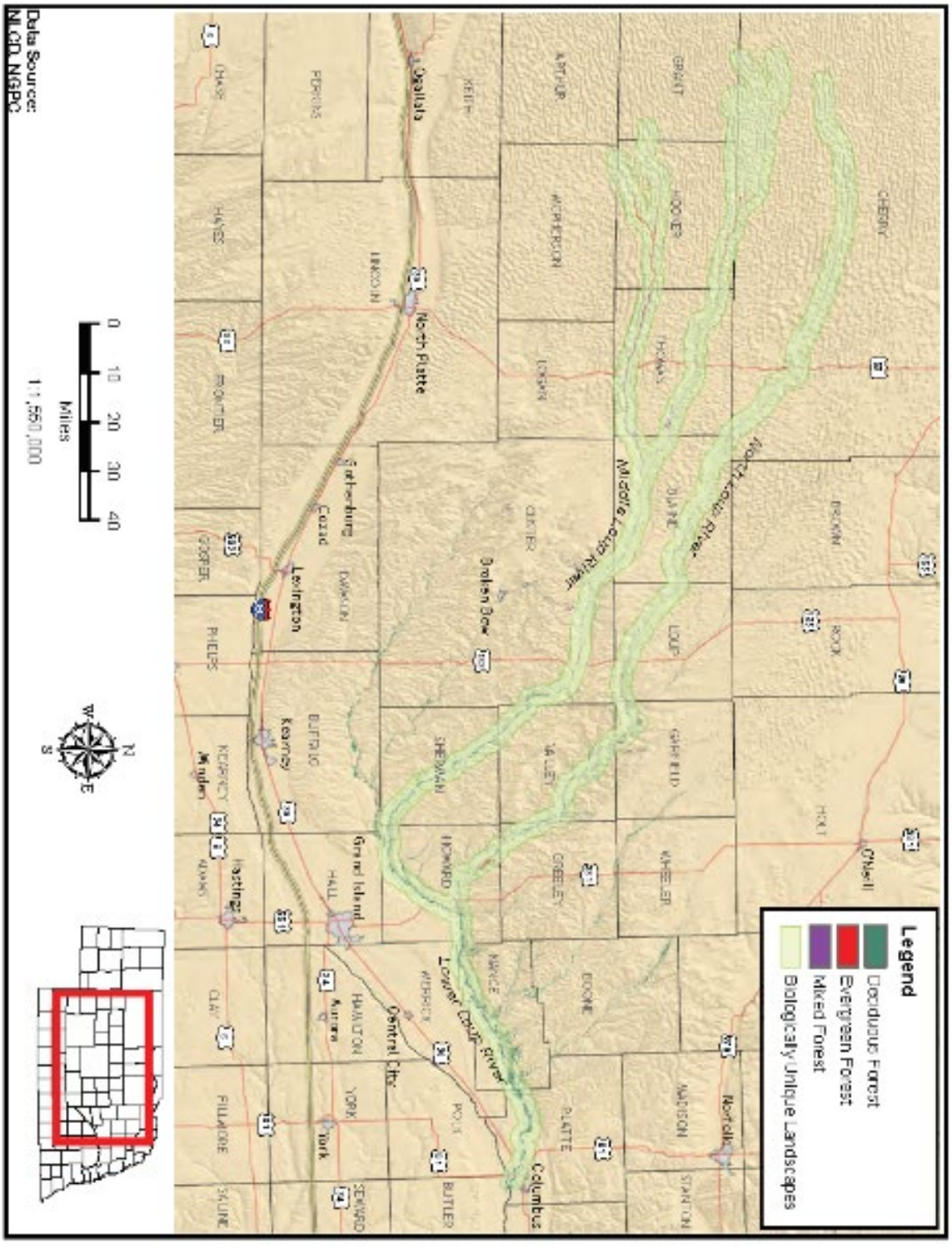


Figure 51. Priority Forest Landscape: Loup River

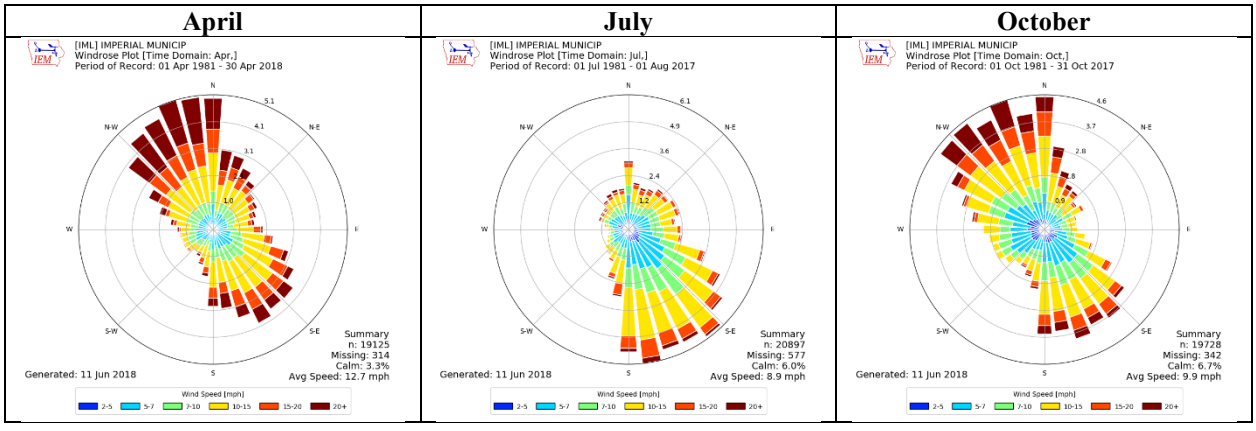
Appendix D

Wind Roses
For Selected Cities
in the Southwest CWPP Region

a. Imperial
b. McCook
c. North Platte
d. Ogallala

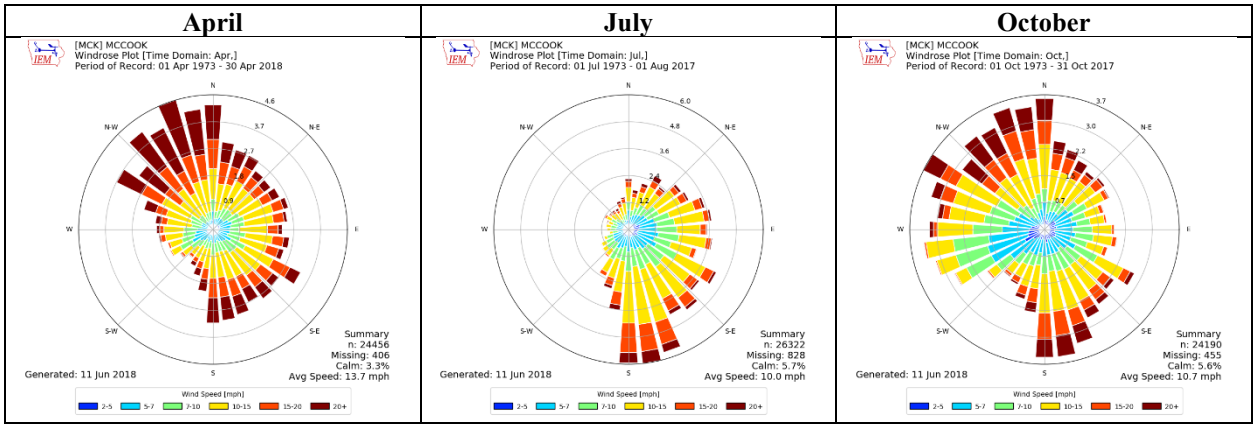
Imperial, Nebraska

Wind Direction and Speed 1973-2018



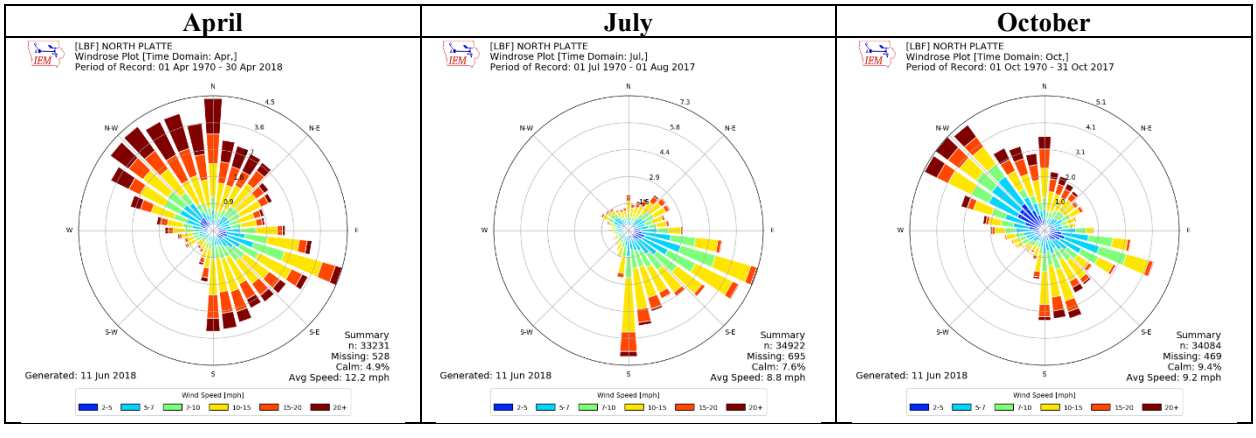
McCook, Nebraska

Wind Direction and Speed 1973-2018



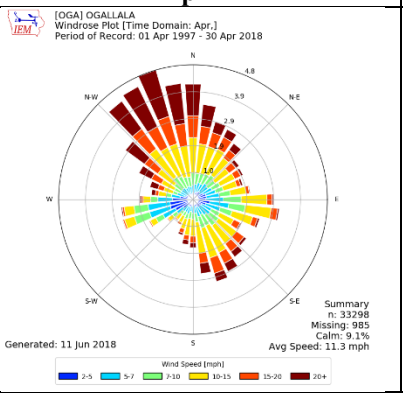
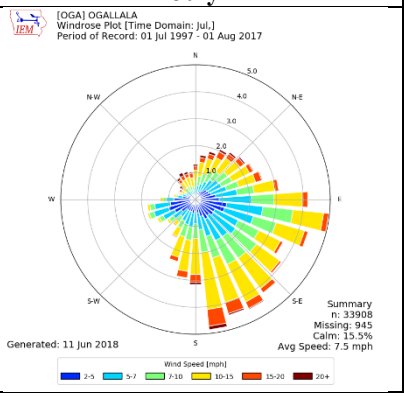
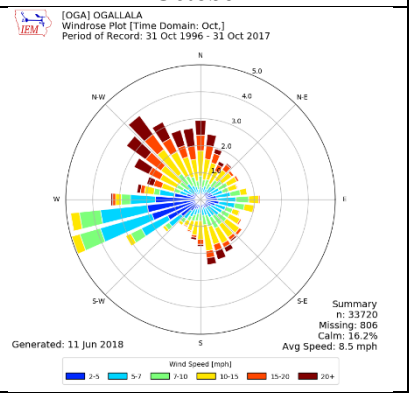
North Platte, Nebraska

Wind Direction and Speed 1973-2018



Ogalalla, Nebraska

Wind Direction and Speed 1973-2018

April	July	October
		

Appendix E

The Multi-Jurisdictional Hazard Mitigation Plans covering the Southwest CWPP counties can be viewed at the following online locations:

a. Frontier-Hayes-Hitchcock (wildfire pages only)
   https://nfs.unl.edu/documents/Fire/hayes-frontier-hitchcock.pdf
b. Perkins-Chase-Dundy (wildfire pages only)
   https://nfs.unl.edu/documents/Fire/perkins-chase-dundy.pdf
c. Quad Counties
   https://jeo.com/sites/default/files/inline-files/Quad-Counties-Final-6.28.compressed.pdf
d. Twin Platte NRD
   http://www.tpnrd.org/wp-content/uploads/1.-Upfront.pdf

Appendix F

Nebraska Mutual Aid Districts

Nebraska Mutual Aid Associations

Updated 1/11/2019

3 & 33 MA	**40 - 12 MA**	**Big 8 MA**	**Big 9 MA**
Adams	Bloomfield	Bellwood	Belden
Barneston	Brunswick	Columbus	Carroll
Beatrice	Creighton	David City	Coleridge
Beatrice RFD	Crofton	Duncan	Concord
Blue Springs	Magnet	Osceola	Crofton
Clatonia	Neligh	Rising City	Dixon
Cortland	Niobrara	Shelby	Fordyce
Dewitt	Orchard	Stromsburg	Hartington
Diller	Osmond		Laurel
Fairbury RFD	Page		Magnet
Filley	Pierce		Newcastle
Jansen	Plainview		Randolph
Odell	Santee		Wynot
Pickrell	Verdigre		Wausa
Plymouth	Wausa		
Swanton			
Wymore			
Boyd/Holt Counties MA	**Buffalo County MA**	**Burt County MA**	**Butler Co. MA**
Atkinson	Amherst	Craig	Abie
Bartlett	Elm Creek	Decatur	Bellwood
Bristow	Gibbon	Lyons	Brainerd
Butte	Kearney	Oakland	Bruno
Chambers	Miller	Tekamah	David City
Ewing	Pleasanton		Dwight
Lynch	Ravenna		Linwood
Naper	Shelton		Rising City
O'Neill	Buffalo Co. Sheriff's Dept.		Ulysses
Page	Kearney Police Dept.		
Spencer	Buffalo County EM		
Stuart	Good Samaritan Hospital EMS		
Cass Co. MA	**Central Nebraska MA**	**Central Neb. VF Assoc. MA**	**Central Panhandle MA**
Alvo	Ansley	Alma	Alliance
Ashland	Eddyville	Amherst	Banner Co.
Avoca	Mason City	Arapahoe	Bayard
Cedar Creek	Miller	Axtell	Bridgeport
Eagle	Oconto	Bertrand	Broadwater
Elmwood	Sumner	Elm Creek	Dalton
Greenwood		Franklin	Gurley
Louisville		Funk	Heart of the Hills
Murdock		Gibbon	Lisco/Garden Co.
Murray		Hildreth	Oshkosh/Garden Co.
Nehawka		Holdrege	Rackett
Plattsmouth		Kearney	USFWS NP Refuge
Union		Loomis	
Weeping Water		Miller	
		Minden	
		Naponee	
		Orleans	
		Overton	
		Oxford	
		Red Cloud	
		Republican City	
		Stamford	
		Upland	
		Wilcox	

Cherry County MA	**Colfax County MA**	**Cuming County MA**	**Custer 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	Clarkson Howells Leigh Schuyler	Bancroft Beemer Pilger West Point Wisner	Anselmo Ansley Arnold Broken Bow Callaway Comstock Mason City Merna Oconto Sargent
Dodge County MA	**Elkhorn Valley MA**	**Fillmore County MA**	**Frenchman Valley MA**
Dodge Fremont Fremont Rural Hooper Nickerson North Bend Scribner Snyder Uehling	Battle Creek Carroll Hadar Hoskins Madison Meadow Grove Norfolk Pierce Stanton Wayne Winside	Bruning Exeter Fairmont Geneva Grafton McCool Junction Milligan Ohiowa Shickley Sutton	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	**Hastings Area MA**	**KBR&C MA**	**Lancaster County MA**
Aurora Giltner Hampton Hordville Marquette Phillips Hamilton County EMS	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	Ainsworth Bassett Calamus Johnstown Long Pine Newport Raven Springview Wood Lake	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	**Loup Platte #2 MA**	**Loup Valley MA**	**Mid-Nebraska MA**
Arcadia	Central City	Arcadia	Albion
Ashton	Chapman	Bartlett	Belgrade
Litchfield	Clarks	Burwell	Cedar Rapids
Loup City	Fullerton	Elba	Columbus
Ravenna	Hordville	Ericson	Columbus RFD
Rockville	Marquette	Greeley	Creston
	Osceola	North Loup	Duncan
	Palmer	Ord	Fullerton
	Polk	Primrose	Genoa
	Shelby	Scotia	Humphrey
	Silver Creek	Spalding	Leigh
	Stromsburg	Wolbach	Lindsay
			Madison
			Monroe
			Newman Grove
			Platte Center
			Silver Creek
			St. Edward
Mid Plains MA	**Nemaha County MA**	**Northeast MA**	**Northeast Fireman's Association**
Arnold	Brock FD	Allen	Antelope Co.
Brady	Brownville FD / Rescue	Bancroft	Burt Co.
Curtis	Johnson FD	Concord	Butler Co.
Hershey	Julian FD	Dakota City	Cedar Co.
Maywood	Nemaha FD / Rescue	Dixon	Colfax Co.
Maxwell	Peru FD / Rescue	Emerson	Cuming Co.
North Platte	Nemaha County Emergency Management	Homer	Dakota Co.
Stapleton	Cooper Nuclear Station	Martinsburg	Dixon Co.
Sutherland	Auburn Police Dept.	Newcastle	Dodge Co.
Tyron	Nemaha County Sheriff's Office	Pender	Douglas Co.
Wallace		Ponca	Knox Co.
Wellfleet		Rosalie	Madison Co.
		South Sioux City	Pierce Co.
		Thurston	Platte Co.
		Wakefield	Stanton Co.
		Walthill	Sarpy Co.
		Wayne	Thurston Co.
		Winnebago	Washington Co.
			Wayne Co.
			Saunders Co.
Otoe County MA	**Phelps County MA**	**Pine Ridge MA**	**Platte Valley MA (was GI Area MA)**
Burr	Bertrand	Alliance	Alda
Cook	Funk	Ardmore, SD 57715	Cairo
Douglas	Holdrege	Chadron	Chapman
Dunbar	Holdrege RFD	Crawford	Doniphan
Nebraska City	Loomis	Gordon	Grand Island
Otoe		Harrison	Grand Island SFD
Palmyra		Hay Springs	Phillips
Syracuse		Hemingford	Wood River
Talmage		Merriman	
Unadilla		Rushville	
		US Forest Service	

Quad Cities MA	**Richardson County MA**	**Saline County MA**	**Sandhills MA**
Alma	Dawson	Crete	Anselmo
Axtell	Falls City	DeWitt	Arnold
Bloomington	Falls City RFD	Dorchester	Arthur
Campbell	Humboldt	Friend	Brewster
Franklin	Rulo	Swanton	Dunning
Hildreth	Salem	Tobias	Halsey
Minden	Shubert	Western	Hyannis
Naponee	Stella	Wilbur	Keystone-Lemoyne
Republican City	Verdon	Saline County Sheriff	McPherson Co.
Riverton		Saline County Emergency Management	Mid-Cherry
Upland			Mullen
Wilcox			Purdum
Kearney County EMA			Stapleton
			Thedford
			US Fish & Wildlife
			US Forest Service
Saunders County MA	**Scottsbluff County MA**	**Seward County MA**	**South Central Nebraska MA**
Ashland	Banner Co.	Beaver Crossing	Brady
Cedar Bluffs	Gering	Bee	Cozad
Ceresco	Henry	Cordova	Curtis
Colon	Lyman	Garland	Elwood
Ithaca	McGrew	Goehner	Eustis
Malmo	Minatare-Melbeta	Milford	Farnam
Mead	Mitchell	Pleasant Dale	Gothenburg
Morse Bluff	Morrill	Seward	Johnson Lake EMS
Prague	Scottsbluff	Staplehurst	Lexington
Valparaiso	Scottsbluff RFD	Tamora	Overton
Wahoo	Scottsbluff Co. Airport	Utica	
Weston	Torrington, WY		
Yutan	US Fish & Wildlife Service		
South Central #2 MA	**Southeast MA**	**Southwest MA**	**Stateline MA**
Clay Center	Adams	Arthur	Bladen
Davenport	Burchard	Big Springs	Blue Hill
Edgar	Cook	Blue Creek	Campbell
Fairfield	Debois	Brule	Guide Rock
Glenvil	Elk Creek	Chappell	Lawrence
Hardy	Johnson	Elsie	Red Cloud
Lawrence	Pawnee City	Grant	Riverton
Nelson	Steinauer	Imperial	Superior
Ong	Sterling	Keystone-Lemoyne	
Ruskin	Table Rock	Lamar	
Shickley	Tecumseh	Lisco	
Superior		Madrid	
Sutton		Ogallala	
Clay County Emergency Management		Oshkosh	
		Paxton	
		Sutherland	
		Venango	
		Wallace	

Thayer County MA	**Tri-Mutual Aid**	**Tri-Valley MA**	**Twin Loups MA**
Alexandria	Arlington	Arapahoe	Ashton
Belvidere	Bellevue	Bartley	Boelus
Bruning	Bennington	Beaver City	Dannebrog
Byron	Blair	Cambridge	Elba
Carlton	Boys Town	Edison	Farwell
Chester	Carter Lake	Holbrook	Rockville
Davenport	Cedar Bluffs	Oxford	St. Libory
Deshler	Elkhorn	Stamford	St. Paul
Eustis	Eppley Airport	Wilsonville	
Gilead	Fremont		
Hebron	Ft. Calhoun		
Hubbell	Gretna		
	Irvington		
	Kennard		
	LaVista		
	Louisville		
	Millard		
	Offutt AFB		
	Omaha FD		
	Papillion		
	Plattsmouth		
	Ponca Hills		
	Ralston		
	Springfield		
	Valley		
	Waterloo		
	Yutan		
Washington County MA	**York County MA**		
Arlington	Benedict		
Blair	Bradshaw		
Ft. Calhoun	Gresham		
Herman	Henderson		
Kennard	McCool Junction		
	Waco		
	York		

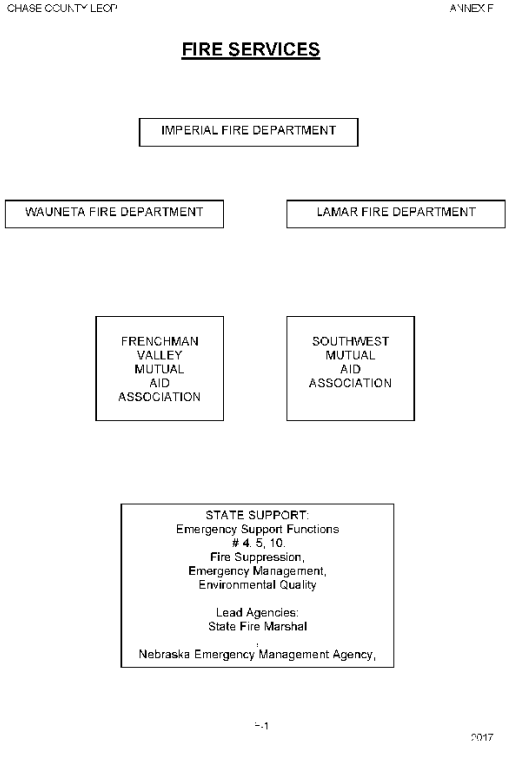
Appendix G

Fire Department Equipment and Contact Information for the Southwest Nebraska 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

Chase County

Information from Chase Co. LEOP, Annex F:



CHASE 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
Imperial	911 or 308-882-4192		2	2		1	1	1			Yes
Wauneta	911 or 308-882-5580		4	2		2	1	1			Yes
Lamar			1	1		1					Yes
Nearest HAZMAT Response Team											
McCook											

CHASE COUNTY LEOP
F-11
2017
ANNEX F ATTACHMENT 1

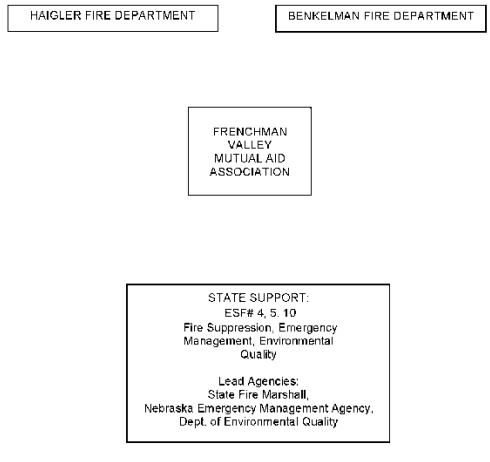
Survey Responses from Chase County Fire Departments:

(None received)

Dundy County

Information from Dundy Co. LEOP, Annex F:

FIRE SERVICES



DUNDY COUNTY FIRE RESOURCES

FIRE DEPARTMENT	PHONE	SPRAY PLANE	PUMPER	TANKER	PUMPER/ TANKER	GRASS WEED TRUCK	UTILITY TRUCK	RESCUE UNITS	OTHER SPECIAL-ITIES
City of Benkelman	911		1						
Village of Haigler	911 or 308-297-3390		1						
Benkelman Rural	911		1	1		4	1	1	Jaws
Haigler Rural	911 or 308-297-3390		1			2			Jaws
Top Hat Applicators	308-423-2941	1							
Nearest HAZMAT Response Team									
Red Willow Western	308-345-3450								

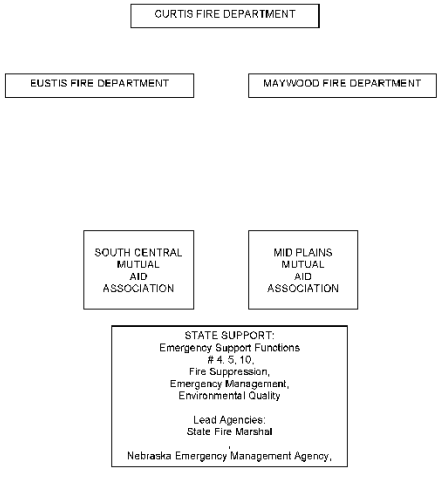
Survey Responses from Dundy County Fire Departments:

(None received)

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:

(None received)

Hayes County

Information from Hayes Co. LEOP, Annex F:

FIRE SERVICES

HAYES CENTER FIRE DEPARTMENT

FRENCHMAN VALLEY MUTUAL AID ASSOCIATION

CULBERTSON FIRE DEPARTMENT
HITCHCOCK COUNTY

WALLACE FIRE DEPARTMENT
LINCOLN COUNTY

PALISADE FIRE DEPARTMENT
HITCHCOCK COUNTY

WAUNETA FIRE DEPARTMENT
CHASE COUNTY

STATE SUPPORT:
Emergency Support Functions
4, 5, 10.
Fire Suppression,
Emergency Management,
Environmental Quality

Lead Agencies:
State Fire Marshal

Nebraska Emergency Management Agency,
Dept. of Environmental Quality

HAYES 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
Hayes Center VFD		No	1	1	0	5	1	2	No	Jaws	No
Palisade VFD (serves Hamlet)	285-3333	0	2	4	0	3	1	2	0	Jaws	No
Nearest HAZMAT Response Team											
Red Willow Western Volunteer Fire Dept.	345-7674										

Survey Responses from Hayes County Fire Departments:

Hayes County Fire District:

County	Hayes			
Station Location			Hayes Center 69037	
Dept. phone & email	308-286-3319		Email	
Chief	Jeffrey Unger	308-362-4579	308-362-4579	Ungerj77@gmail.com
Asst. Chief	Hans Johnson	970-744-9255		
Sec./Treas.	Lindsey Loomis	308-737-0485		jllooms@live.com

Personnel

Number	Type
28	Volunteer

Equipment (housed at fire dept. or county equipment barn)

Number	Type
1	Engine Type 1: minimum 1,000 GPM, 400 gal. cap., 4 crew members
3	Engine Type 7: minimum 20 GPM, 125 gal. cap., 2 crew members
1	Equipment Trucks
2+	Road Dept. Equipment (describe):
2	Other (describe): Stewart & Stevenson Brush Trucks, 1200 gal. water each. #FEPP

Areas of concern: Village of Hayes Center – farms around right next to houses.
Areas of high density homes, infrastructure, other high-risk resources: Hayes Center has farms and grass on three sides.
Bridges that won't support equipment weight: Landing out by the Camp Hayes WMA, there is one that will not support heavy loads.
Other comments/concerns: We have many places we consider to be "nightmare" locations. There are many different reasons and scenarios for this. The topography, size, lack of roads in certain areas of our district makes for some challenging situations. Over half our district we feel fits into some of these "nightmare" locations.
Rank:

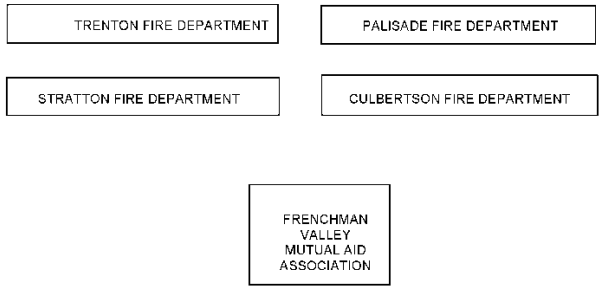
Yes *Housing*
Yes *Infrastructure*
Yes *Bridge limits*
Yes *Other water sources*

Mutual Aid District(s): Frenchman Valley

Hitchcock County

Information from Hitchcock Co. LEOP, Annex F:

FIRE SERVICES



STATE SUPPORT:
ESF# 4, 5, 10
Fire Suppression, Emergency Management, Environmental Quality

Lead Agencies:
State Fire Marshall,
Nebraska Emergency Management Agency,
Dept. of Environmental Quality

HITCHCOCK COUNTY FIRE RESOURCES

FIRE DEPARTMENT	PHONE	SPRAY PLANE	PUMPER	TANKER	PUMPER/ TANKER	GRASS WEED TRUCK	UTILITY TRUCK	RESCUE UNITS	OTHER SPECIAL-ITIES
Trenton Fire	911		2	1		2	1		
Stratton Fire	911		1	1		2			
Palisade Fire	911		1	1	1	2			
Culbertson Fire	911		2	1	1	2			
Top Hat Applicators	308-423-2941	1							
Nearest HAZMAT Response Team									
Red Willow Western	308-345-3450								

Survey Responses from Hitchcock County Fire Departments:

Palisade Rural Fire District:

County	Hitchcock & Hayes			
Station Location	119 S Main		Palisade 69040	
Dept. phone & email				
Chief	Jason D Hicks		308-883-0645	jdhicks75@hotmail.com
Asst. Chief	Shad Wiese	308-340-4316		
Sec./Treas.	Brian Monnahan	308-737-6021	308-285-3292	

Personnel

Number	Type
18	Volunteer

Equipment (housed at fire dept. or county equipment barn)

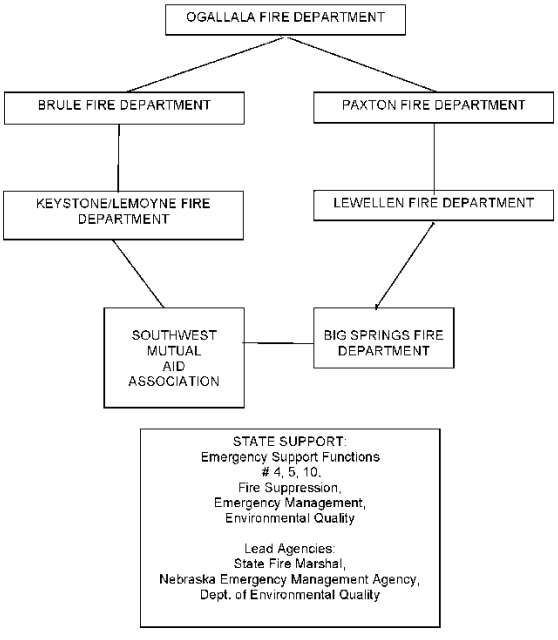
Number	Type
2	Engine Type 2: minimum 500 GPM, 400 gal. cap., 3 crew members-**750 gpm**
1	Equipment Trucks
1	Road Dept. Equipment (describe): **Road grader**
4	Other (describe): **3 pickup grass rigs for quick response; 1 6x6 1,000 gal. grass rig.**

Areas of concern: Yes, but description left blank
Areas isolated from water sources: Entire area is isolated from water. Only water source is in Palisade.
GIS layer available for housing, infrastructure, bridge limits, hydrants/water sources? Hitchcock Co. GIS map – shows landowner names
Mutual Aid District(s): Frenchman Valley

Keith County

Information from Keith Co. LEOP, Annex F:

FIRE SERVICES



KEITH COUNTY FIRE RESOURCES

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
Big Springs	911		1	1		2	1	2		1 Thermal Imaging Camera	No
Brule	911		1	1		2	1	1	Wildland team	High Expansion Foam Generator	No
Blue Creek / Lewellen	911		1	2		5	1	1			No
Keystone/ Lemoyne	911		1	2		3	2		Dive team Rope rescue team Wildland team	2 jet skis, Rescue boat, Dive trailer, 2 Thermal imaging cameras, 2 ATV's	No
Ogallala	911	1	2	1		3	3	2	RIT Team, Rope Rescue Team, DeCon Team, Dive Team Wildland team	DeCon Trailer, Ropes and Extrication Equipment, Carbon Monoxide Monitoring Equipment, 3 Thermal Imaging cameras	No
Paxton	911		1	1		3	1	2	Dive Team Wildland team Rope Rescue team	Carbon Monoxide Monitoring Equipment Cascade Trailer 1 Thermal Imaging Camera 1 Grain Rescue Tube Ropes and Extrication Equipment	No
Nearest Hazmat Response Team-	North Platte										

Survey Responses from Keith County Fire Departments:

Keystone Lemoyne Fire District:

County	Keith			
Station Location	1860 N Hwy 61		Keystone 69144	
Dept. phone & email	308-726-2671/308-726-2672fax		klfire@lakemac.net	
Chief	Ralph Moul	308-726-5439	308-726-2671	klfire@lakemac.net
Asst. Chief	Rodger Rankin	308-289-3681		klfire@lakemac.net
Sec.	Dan Nichols	308-289-2341		klfire@lakemac.net
Treas.	Doug Davis	308-280-2438		klfire@lakemac.net

Personnel

Number	Type
18	Volunteer

Equipment (housed at fire dept. or county equipment barn)

Number	Type
1	Engine Type 1: minimum 1,000 GPM, 400 gal. cap., 4 crew members
1 FEPP	Engine Type 4: minimum 70 GPM, 750 gal. cap., 2 crew members
	Engine Type 5: minimum 50 GPM, 500 gal. cap., 2 crew members
2	Engine Type 6: minimum 50 GPM, 200 gal. cap., 2 crew members
1 FEPP, 1 0wned	Tender Type 2: minimum 2,000 gal. cap.
3	Equipment Trucks
Multiple	Road Dept. Equipment (describe): Cat & maintainers/training in WF indirect attack. NDOR also has cats & maintainers & have received training
4	Other (describe): 1-ATV, 2-UTV, 1 mobile operations center

Areas of concern: All K areas, all subdivisions around Lake Mac.
Nightmares:

1. SE corner of Lake Mac: K-1, Mako Chi Mni on south side of lake. 98 homes at risk, heavy fuels, 1 way in-out, canyons-cedar-pines, lack of water within effective distance.
2. Lemoyne: 45 homes at risk, 1 way in-out, canyons-cedar-pines, lack of water within effective distance.

Areas isolated from water sources: All areas
Areas of high density homes, infrastructure, other high-risk resources: UNL Cedar Point Biological Station
One way in/out: Most subdivisions
GIS layer available for housing, infrastructure, bridge limits, hydrants/water sources? Yes, Keith County Zoning 308-284-3556
Rank:

1 *Housing*
Infrastructure
Bridge limits
Hydrants
Other water sources

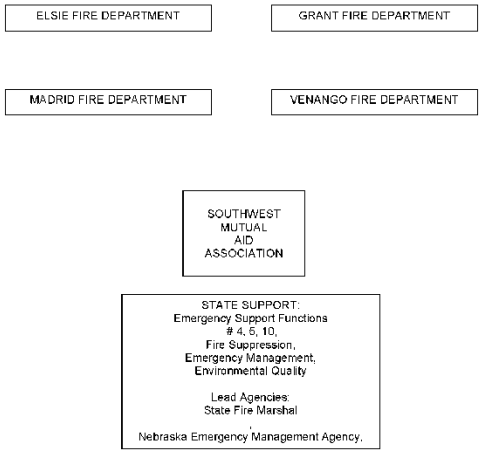
Mutual Aid District(s): Southwest and Sandhills
Areas needing fuels projects:

1. K-1 cabin area: cedars/pines, homes at risk, 150 acres
2. K-3 cabin area: cedars/pines, homes at risk, 25 acres

Perkins County

Information from Perkins Co. LEOP, Annex F:

FIRE SERVICES



PERKINS COUNTY FIRE RESOURCES

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
ELSIE	228-2358		1	2		3			Transport		Yes
GRANT	352-2499		2	2		1	1	2	Command Rehab	Jaws (2) Thermal Imager (2) Rope Rescue Equip. Grain Bin Rescue Tubes Kwik Connect for Aircraft	Yes
MADRID	326-2227		1	3		2	1		First Responder	Jaws	Yes
VENANGO	447-5555		1	2			1	1			Yes
North Platte HAZMAT Response	532-5753										
Red Willow HAZMAT Response	345-7674 345-3450										

Survey Responses from Perkins County Fire Departments:

Grant:

Municipality	Grant			
County	Perkins			
Station Location	342 Central Ave.		Grant 69140-0911	
Dept. phone & email	308-352-4353/352-2499fax		gvfdchief@gpcom.net	
Chief	Donald W. Softley	308-352-8305h, 308-352-4353w	308-352-4181	dwsftley@gmail.com
Asst. Chief	Fred A. Reichert	308-352-8019		Sfm8723@gmail.com
Sec.	Matt Deaver	308-352-8128		
Treas.	Robert Hochstein	308-352-6268		

Personnel

Number	Type
28	Volunteer

Equipment (housed at fire dept. or county equipment barn)

Number	Type
2	Engine Type 1: minimum 1,000 GPM, 400 gal. cap., 4 crew members
1	Tender Type 2: minimum 2,000 gal. cap.
1	Equipment Trucks
1+	Road Dept. Equipment (describe): road graders
1	Other (describe): command vehicle

Areas of concern: "Nightmare" – 4 miles north of Grant, R39W, T11N, Section 26. 8 homes, small width roads, water must be shuttled.
Mutual Aid District(s): Southwest

Madrid Fire Protection District:

County	Perkins			
Station Location	112 S Perkins Ave		Madrid 69150	
Dept. phone & email	308-353-1977		madridsalvage@gmail.com	
Chief	Mike G. Lee	308-353-1977		madridsalvage@gmail.com
Asst. Chief	Trent Harger	308-289-4061		Tharger_06@hotmail.com
Sec.	Josh Harms	308-289-0531		Joshharms81@yahoo.com
Treas.	Tom Anderson	308-326-4323		none

Personnel

Number	Type
12	Volunteer

Equipment (housed at fire dept. or county equipment barn)

Number	Type
1	Engine Type 1: minimum 1,000 GPM, 400 gal. cap., 4 crew members
2	Engine Type 6: minimum 50 GPM, 200 gal. cap., 2 crew members
1 FFP	Tender Type 2: minimum 2,000 gal. cap.
1	Equipment Trucks
1+	Road Dept. Equipment (describe): road graders
2	Other: 1 tender is a support vehicle; 1 first responder unit; personnel transport

Areas of concern: The ethanol plant and areas close to city limits
Areas isolated from water sources: Southern and northern edges [of district] are 5 miles from water
Areas of high density homes, infrastructure, other high-risk resources: Village of Madrid
Rank:

1 *Hydrants*
1 *Other water sources*

Mutual Aid District(s): Southwest MA

Red Willow County

Information from Red Willow Co. LEOP, Annex F:

FIRE SERVICES

McCOOK FIRE DEPARTMENT

INDIANOLA FIRE DEPARTMENT

BARTLEY FIRE DEPARTMENT

BEAVER VALLEY FIRE DEPARTMENT

RED WILLOW WESTERN RURAL FIRE DEPARTMENT

RED WILLOW MUTUAL AID ASSOCIATION

STATE SUPPORT:
Emergency Support Functions
4, 5, 10,
Fire Suppression,
Emergency Management,
Environmental Quality

Lead Agencies:
State Fire Marshal

Nebraska Emergency Management Agency.

RED WILLOW 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
RW Western RFD	345-7674 345-3450	1	1	3	1	4	2	1	Hazmat, Rope, Type II command, rail car	Rope, Hazmat, Smith ID, PIDS	YES
City of McCook Fire	345-5710	1	3	0	0	0	1	3	1	ARFF, ALS, Chempack	NO
Indianola Fire & Rescue	364-2304	0	1	2	0	2	1	2	N/A	N/A	NO
Bartley Fire & Rescue	629-3216	0	2	1	0	3	1	1	0	0	0
Beaver Valley Fire & Rescue	Barn 895-2442 Emergency 895-2400	0	1	1	1	3	0	1	0	Jaws of Life	YES
Lebanon	375-3473	0	1	1	1	2	0	0	0	0	YES

Survey Responses from Red Willow County Fire Departments:

Red Willow Western Rural Fire Department:

County	Western Red Willow & SW Frontier			
Station Location	38483 Dr 715/POB 463		McCook 69001	
Dept. phone & email	308-345-7674		rwwrfiredept@gmail.com	
Chief	Bill Elliott	308-737-0269	308-340-9965	rwwrfiredept@gmail.com
Asst. Chief	Jeff Cole		340-1827	

Personnel

Number	Type
25	Volunteer

Equipment (housed at fire dept. or county equipment barn)

Number	Type
4	Engine Type 3: minimum 120 GPM, 300 gal. cap., 2 crew members
3	Tender Type 2: minimum 2,000 gal. cap.
2	Equipment Trucks: **Rescue truck-no water; haz-mat/command truck-no water**
2	Road Dept. Equipment (describe): **pumper / ladder**
3	Other (describe): UTVs: **50 gal. water and pump**

Areas of concern: Yes: NW Third St., N 11th St., Hugh Butler Lake in Frontier County, Republican River bottom.
Issues: multiple structures, difficult access, rough terrain, one way in/out, heavy fuels.
Areas of high density homes, infrastructure, other high-risk resources: Yes, Pearson Addition NW of McCook, Calabria NE of McCook, Henton Addition S of McCook, Van Diest Chemical N of McCook, West Third.
One way in/out: Yes. *Bridges that won't support equipment weight*: Yes, on low-maintenance roads.
Other comments/concerns: Wind, rough terrain, proximity to the city
GIS layer available for housing, infrastructure, bridge limits, hydrants/water sources? Yes, McCook PD
Rank: 1 *Hydrants;* 2 *Bridge limits;* 3 *Other water sources;* 4 *Infrastructure;* 5 *Housing*
Mutual Aid District(s): Frenchman Valley; *Other Mutual Aid Agreements with*: Oberlin, KS

City of McCook Fire Department:

Municipality	McCook			
County	Red Willow			
Station Location	505 West C St		McCook 69001	
Dept. phone & email	308-345-5710, fax 308-345-5673		firechief@cityofmccook.com	
Chief	Marc A Harpham	308-340-3437	308-345-5710	firechief@cityofmccook.com
Asst. Chief	Rick D. Metcalf	308-340-3499	308-345-5710	rmetcalf@cityofmccook.com
Sec.	Nancy Pick	308-340-2009	308-345-5710	nancy@cityofmccook.com
Treas.	Steve Renner	308-340-3556	308-345-5710	srenner@cityofmccook.com

Personnel

Number	Type
24	Volunteer
1	Part time
9	Full time

Equipment (housed at fire dept. or city equipment barn)

Number	Type
3	Engine Type 1: minimum 1,000 GPM, 400 gal. cap., 4 crew members
2	Engine Type 2: minimum 500 GPM, 400 gal. cap., 3 crew members
1	Equipment Trucks
5	Other (describe): 3 ALS ambulances, 1 command vehicle, 1 ORV

Appendix H

Fire Department Survey and Distribution List

Fire Department Survey

Distributed to all departments in the CWPP Region 9/13/2018

Volunteer Fire Department

Fire Department: _____

Municipality: _____

County: _____

Street Address: _____

City: _____ Zip Code: _____

Email: _____

Phone: _____

Fax: _____

Contact Information

Chief

First: _____ MI: _____ Last: _____

Email: _____

Phone: _____

Cell phone: _____

Assistant Chief

First: _____ MI: _____ Last: _____

Email: _____

Phone: _____

Cell phone: _____

Secretary

First: _____ MI: _____ Last: _____

Email: _____

Phone: _____

Cell phone: _____

Treasurer

First: _____ MI: _____ Last: _____

Email: _____

Phone: _____

Cell phone: _____

Resources

Personnel

How many personnel are available to respond to fires (Full-time): _____

How many personnel are available to respond to fires (Part-time): _____

How many personnel are available to respond to fires (Volunteer): _____

Engines

Type	# FEPP*	# FFP*	# Owned Outright
Type 1			

- 1,000 GPM, 400 gallon Capacity, four crew members (MINIMUM)

Type 2			

- 500 GPM, 400 gallon Capacity, three crew members (MINIMUM)

Type 3			

- 120 GPM, 300 gallon Capacity, two crew members (MINIMUM)

Type 4			

- 70 GPM, 750 gallon Capacity, two crew members (MINIMUM)

Type 5			

- 50 GPM, 500 gallon Capacity, two crew members (MINIMUM)

Type 6			

- 50 GPM, 200 gallon Capacity, two crew members (MINIMUM)

Type 7			

- 20 GPM, 125 gallon Capacity, two crew members (MINIMUM)

Tenders

Type	# FEPP	# FFP	# Owned Outright
Type 1			
Type 1 (tactical)			

- 5,000 gallon Capacity(MINIMUM)

Type 2			
Type 2 (tactical)			

- 2,000 gallon Capacity(MINIMUM)

* FEPP (Federal Excess Personal Property) and FFP (Fire Fighter Property) are NFS Equipment Programs

How many Equipment Trucks do you have? _____

How many types of vehicles (other)? _____

Please describe: _____

Any equipment housed on ranches/not at main fire barn? Yes ☐ No ☐

Please describe: _____

Mutual Aid Agreements

What mutual aid district do you belong to? _____

Risk Assessment

Have you identified one or more 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? _____

Have you identified one or more areas in your District that is your 'nightmare' if a wildfire were to start? Yes ☐ No ☐

If yes, please describe:

Where?_____

Range:_____ Township:_____ Section: _____

Resources at risk? _____

Infrastructure?_____

Homes?_____

Hazard?_____

Ingress/egress issues? _____

Topography?_____

Lack of water within effective distance? _____

Comments: _____

Additional

If yes, please describe:

Where?_____

Range:_____ Township:_____ Section: _____

Resources at risk? _____

Infrastructure?_____

Homes?_____

Hazard?_____

Ingress/egress issues? _____

Topography?_____

Lack of water within effective distance? _____

Comments: _____

Risk Assessment (continued)

Does the local Roads Department have equipment to assist the Fire District in case of emergencies?
Yes ☐ No ☐
If Yes, please describe? _____

Is there an area isolated from water sources that may hinder initial response? Yes ☐ No ☐

If Yes, please describe and distance by road (miles) to nearest water? _____

Do you know of an area(s) with a high density of homes, any infrastructure or other resources at high risk from wildfire? Yes ☐ No ☐

If Yes, please describe? _____

Are there subdivisions/areas with one-way in/out? Yes ☐ No ☐

If Yes, please describe? _____

Are there any bridges that won't support equipment weight? Yes ☐ No ☐

If Yes, please describe? _____

Any other comments or concerns if a wildfire were to start or head into your jurisdiction?

_____

Potential Fuels Reduction Project Areas

Have you identified one or more areas for fuel hazard reduction projects? Yes ☐ No ☐

If yes, please describe

Location?_____

Range:_____ Township:_____ Section: _____

Current fuels? _____

Resources at risk? _____

Acres (ifknown)? _____

Additional

Location?_____

Range:_____ Township:_____ Section: _____

Current fuels? _____

Resources at risk? _____

Acres (ifknown)? _____

Geographic Information System Data

Does your jurisdiction have GIS layer(s) that would show housing, infrastructure, bridge limits, hydrants and other water sources, etc...? Yes ☐ No ☐

If Yes, please describe/who we should contact to acquire the data?

Name:_____

Email:_____

Phone: _____

If no, please rank these data layers according to greatest need in your jurisdiction

_____Housing

_____Infrastructure

_____Bridge limits

_____Hydrants

_____Other water sources

Is there anything else that you think we should know? _____

Thank you for providing this information.
Please return completed form to sbenson4@unl.edu or mail a hard copy to:

Nebraska Forest Service (Sandy Benson)
113 N. Woodward St. Suite A
Ainsworth, NE 69210

Fire Department Survey Distribution List

Bartley
Benkelman
Big Springs (Part of district is in Keith County)
Brule
Cambridge (Part of district is in Red Willow County)
Culbertson
Danbury
Elsie
Grant
Hayes County
Hershey
Imperial
Indianola
Keystone-Lemoyne
Lebanon
Lewellen/Blue Creek (Part of district is in Keith County)
Madrid
Ogallala
Palisade
Paxton
Red Willow
Stratton
Sutherland
Trenton
Venango
Wallace

Appendix I

Public Engagement

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

Outreach Documents

County Boards

(sent via e-mail 7/26/2018 to county boards; they shared it with the emergency managers)
To: County Boards
From: Sandy Benson, Nebraska Forest Service
Subject line: Community Wildfire Protection Plan Info for County Boards - Please respond!

My name is Sandy Benson, and I am a forest fuels management specialist with the Nebraska Forest Service (NFS). I work with communities and landowners in wildfire preparation efforts throughout the state. The NFS is developing Community Wildfire Protection Plans (CWPPs) statewide to help obtain funding for wildfire mitigation, maximize safety, bolster communications between local and state resources, and help communities understand the evolving role fire plays in Nebraska's landscape. Landowners in counties that have a CWPP in place are eligible to apply for a fuels reduction cost-share program that helps defray the costs of protecting structures and emergency access routes from wildfire.

Your county is within the southwest regional planning area, and we invite you to designate one or more individuals to participate on the steering committee to help identify local issues important to your citizens. Some counties have designated emergency management staff. Others have selected fire department personnel or others with expertise in wildfire response. Due to the large size of the planning area and everyone's busy schedules, travel will not be required, and we estimate a maximum of six hours of committee members' time would be needed over the course of the entire planning process, which should take about a year. Committee work is designed to occur via teleconference and email.

The attached document explains the details of this process. County boards will be invited to review and provide feedback on the draft plan. When it is finalized, boards will have an opportunity to adopt it.

It is important that local officials are aware of the planning process and we welcome your county's participation. Most county boards are pleased to find out that there is no cost associated with CWPP preparation. The primary reasons for having a CWPP are:

- Create a wildfire-specific resource that coordinates with the local emergency plan and neighboring plans
- CWPP regions are eligible for cost-share funding

If you have questions, please contact me at 402-684-2290 or sbenson4@unl.edu. If you would like to speak to me by phone during your board meeting, please let me know the date and time so I can be available.

Thank you.
***
Attachment:

Community Wildfire Protection Plans

The Nebraska Forest Service (NFS) is in the early stages of preparing a **Community Wildfire Protection Plan (CWPP)** for the southwest region of Nebraska, which includes your county. This plan is a wildfire-specific resource that coordinates with local emergency plans and allows local landowners and others to apply for federal and state cost-share funds for vegetative fuels reduction and other hazard mitigation efforts within the CWPP region. There is no cost to counties.

What is a CWPP?
It is one of the most successful tools for addressing the challenges and responsibilities that arise from living in a wildfire-prone environment. CWPPs specifically define wildfire risk areas within and adjacent to communities, the measures necessary to mitigate those risks, and a plan of action to implement these measures.

The collaborative CWPP process is effective in maximizing coordination and communication between emergency response agencies and the community. Developing a CWPP helps clarify priorities to protect life, property, infrastructure, and valued resources. Protecting communities and resources from wildfire is a team effort that cannot be accomplished by any one person or entity.

The CWPP works in conjunction with your local emergency operations plan. It specifically addresses wildfire concerns including risk assessment, critical infrastructure, and preparedness. It also recommends an action plan to increase the overall safety and effectiveness of wildfire protection planning within your community. Local officials collaborate with planners to establish a steering committee to guide the process.

Some background
After the large wildfires in 2012, the state legislature passed the Wildfire Control Act of 2013, which provided funding for single-engine air tanker bases, cost share for hazardous fuels reduction, and expansion of programs to provide volunteer fire districts with more fire suppression equipment. As these programs were implemented, the Nebraska Forest Service realized there were very few Community Wildfire Protection Plans in place across the state. CWPPs are needed for an area to qualify for many wildfire-related grants and cost-share programs.

The NFS prepared CWPPs for the Pine Ridge, North Central, Loess Canyons, Wildcat Hills, and Missouri River Northeast. Now we are preparing CWPPs for the Central Sandhills, Southwest, Central Platte, and Southeast areas.

Why should we have a CWPP?

- Past wildfires throughout Nebraska have presented many challenges and issues
- A CWPP is a mitigation and preparedness plan to reduce wildfire risk
- Establishes a collaborative relationship among entities BEFORE a fire occurs
- Develops a pre-attack plan to maximize firefighter readiness and safety
- Increases grant application success by documenting wildfire planning and projects
- Fuels reduction grant funds are only available for areas that have a CWPP

Community benefits

- Define planning boundaries that address local concerns
- Identify and prioritize areas for hazardous fuel reduction treatments
- Recommend treatment methods
- Strengthen local efforts to reduce structural ignitability
- Enhance emergency management and communication
- Foster public education/action to reduce wildfire risk

How much does it cost?
The Nebraska Forest Service is covering the costs associated with preparing the CWPP. Counties will not be asked for monetary contributions.

How does it work?
The first step is to put together a steering committee to guide the process and ensure that local issues are front and center in developing the plan. Because of the geographic distances involved, the steering committee will meet via conference call, and only as needed. It would be helpful if your county would recommend a local representative to serve on the committee. The committee will define the priority areas, specify topics and issues important to local emergency responders, and provide general guidance as the plan is prepared.

Once we have gathered the information, we will prepare a draft plan for review, incorporate edits and changes, then finalize the plan and make it available to all. This process usually takes about a year. Counties are invited to sign the plans, which will be updated as needed.

It is important that local officials participate in this planning effort to ensure it addresses unique local considerations. Please share this memo with your emergency planning staff, sheriff, and others who may wish to participate. We will also invite fire departments to participate.

Please recommend individuals who may be willing to serve on the CWPP steering committee. Participation does not require a hefty time commitment, and it ensures local input and guidance for the planning process.

Please email steering committee recommendations to sbenson4@unl.edu or call Sandy Benson at 402-684-2290.

Fire Departments

(This was sent via e-mail September 13, 2018 along with the survey in Appendix H)
Subject line: Community Wildfire Protection Plan - Please respond!

My name is Sandy Benson, and I am a forest fuels management specialist with the Nebraska Forest Service (NFS). I work with communities and landowners in wildfire preparation efforts throughout the state. The NFS is developing Community Wildfire Protection Plans (CWPPs) statewide to help obtain funding for wildfire mitigation, maximize safety, bolster communications between local and state resources, and help communities understand the evolving role fire plays in Nebraska's landscape. Landowners in counties that have a CWPP in place are eligible to apply for a fuels reduction cost-share program that helps defray the costs of protecting structures and emergency access routes from wildfire.

We are in the early stages of preparing a CWPP for the southwest region of Nebraska, which includes all or part of your fire district. The CWPP works in conjunction with your local emergency operations plan. It specifically addresses wildfire concerns including risk assessment, critical infrastructure, and preparedness, and it recommends an action plan to increase the overall safety and effectiveness of wildfire protection planning within your community. Local officials collaborate with planners to guide the process. The attached background document explains the CWPP process in greater detail. It is important that your fire department participates in this planning effort to ensure it addresses unique local considerations.

The plan includes a description of fire department resources and capabilities, and it lists specific challenges identified by each department.

Please fill out and return the attached questionnaire as soon as possible, to ensure that the CWPP will contain the most current information available. Completed questionnaires can be scanned and sent to me via a reply to this email, or returned by regular mail to the address shown on the last page of the form. Feel free to email or call me with any questions at 402-684-2290.

Thank you,

Cities and Villages

(This was sent via e-mail 9/6/2018)
Subject line: Community Wildfire Protection Plan - Please respond!

The Nebraska Forest Service is in the early stages of preparing a Community Wildfire Protection Plan (CWPP) for the southwest region of Nebraska, which includes your community. This plan enables local landowners to apply for federal and state cost-share funds for vegetative fuels reduction and other hazard mitigation efforts in at-risk areas within the CWPP region.

The CWPP works in conjunction with your local emergency operations plan. It specifically addresses wildfire concerns including risk assessment, critical infrastructure, and preparedness, and it recommends an action plan to increase the overall safety and effectiveness of wildfire protection planning within your community. Local officials collaborate with planners to guide the process.

It is important that local officials participate in this planning effort to ensure it addresses unique local considerations. Please share this memo with your board, emergency planning staff, and others who may wish to participate.

Interested individuals are welcome to serve on the CWPP steering committee. Participation will not involve a huge time commitment, but it will ensure local input and guidance for the planning process. With guidance from the steering committee, I will be gathering information and preparing the plan. Please let me know if you would like further information.

Please send steering committee recommendations to me via reply to this email, or by calling me at 402-684-2290.

Media Releases and General Outreach

Print Media and Radio

An invitation to participate was published in all of the local newspapers and put on the radio stations on October 5, 2018:

Local input needed for community wildfire protection plan

Local counties are collaborating with the Nebraska Forest Service to create a Community Wildfire Protection Plan (CWPP) to effectively prepare for and manage wildfire and to improve communication among agencies that respond to wildfire in southwest Nebraska. It is important that everyone who works with land management, fire, and community preparedness has an opportunity to provide input.

The CWPP area includes all of Chase, Dundy, Hayes, Hitchcock, Keith, Perkins, and Red Willow Counties, the southern quarter of Frontier County, and the western third of Lincoln County. Landowners in counties that adopt the plan will be eligible to apply for federal and state cost-share funds for vegetative fuels reduction and other hazard mitigation efforts in at-risk areas within the CWPP boundaries. The plan may also provide increased opportunities for counties, municipalities, and rural fire districts to seek grant funding for activities related to fire protection.

The plan, part of a statewide network of Community Wildfire Protection Plans, provides readily-accessible information useful to emergency responders from outside the area. The CWPP consolidates and relays critical information needed for responders in unfamiliar terrain. Each county can include details vital to protecting its first responders, residents, and property.

A CWPP is a tool for fire departments, agencies, emergency managers, public officials, and land managers to use when addressing wildfire concerns. It contains a fire mitigation plan for each county that includes:

- Community profile (area description, roads, land use, location of at-risk areas)
- Wildfire risk assessment (fire history, fire hazard, protection capabilities and infrastructure)
- Structure analysis (fire risk rating and ignitability)
- Fuel reduction recommendations
- Emergency operations (responsibilities, capabilities, partners, mutual aid agreements)
- Recommendations for improving community preparedness
- Contact information and equipment lists for rural fire departments

Feedback from county residents may include topics such as identification of ingress / egress routes and safe zones for citizens, structures and critical infrastructure (highways, cell towers, bridges, schools, etc.), areas with homes or developments in high-risk areas, and high-risk ignition sources.

People may have additional concerns or suggestions. All ideas are welcome. For further information or to provide comments, call 402-684-2290 or email sbenson4@unl.edu

* * *

Follow-up News Releases

Media releases for draft review and publication of final plan are scheduled for 2019.

Flyers Posted

On October 10, 2018 these flyers were distributed to county and municipal offices and sent to the steering committee for general distribution:

Land managers, emergency responders, anyone interested in community preparedness: Your input is needed!

Local counties are collaborating to create a . . .

Community Wildfire Protection Plan

. . . to prepare for and manage wildfire and improve communication among agencies that respond to wildfire.

The plan, part of a statewide network of Community Wildfire Protection Plans, provides readily-accessible information to emergency responders from outside the area. It consolidates and relays critical information needed for responders in unfamiliar terrain. It is tailored by each county to include details vital to protecting first responders, residents, and property.

Feedback from county residents may include topics such as:

- Ingress / egress routes and safe zones for citizens
- Structures and critical infrastructure (highways, cell towers, bridges, schools, etc.)
- Wildland urban interface areas such as homes or developments in high-risk areas
- Natural resources
- Identify high-risk ignition sources and safety guidelines

People may have concerns or suggestions in addition to these typical CWPP priorities. All ideas are welcome. For further information or to provide comments, call 402-684-2290 or email sbenson4@unl.edu

NEBRASKA FOREST SERVICE University of Nebraska-Lincoln

Nebraska Forest Service
402-684-2290
sbenson4@unl.edu

IANR

Online Outreach

A CWPP planning page was added to the Nebraska Forest Service website: https://nfs.unl.edu/community-wildfire-protection-plan on November 26, 2018.

A Nebraska CWPP Facebook page was created: https://www.facebook.com/groups/451134565293952/ on November 15, 2018.

Stakeholders List

Fire Districts	County Boards	Municipalities
Bartley	Chase	Bartley
Benkelman	Dundy	Benkelman
Big Springs	Frontier	Brule
Brule	Hayes	Culbertson
Cambridge	Hitchcock	Danbury
Culbertson	Keith	Elsie
Danbury	Lincoln	Grant
Elsie	Perkins	Haigler
Grant	Red Willow	Hamlet
Hayes County		Hayes Center
Hershey		Hershey
Imperial	**Natural Resources Districts**	Imperial
Indianola	Middle Republican NRD	Indianola
Keystone-Lemoyne	Upper Republican NRD	Lamar
Lebanon	Twin Platte NRD	Lebanon
Lewellen/Blue Creek		Madrid
Madrid		McCook
Ogallala	**State Agencies**	Ogallala
Palisade	Nebraska Game and Parks Commission	Palisade
Paxton	Nebraska Forest Service	Paxton
Red Willow Western	Nebraska State Fire Marshal's Office	Stratton
Stratton	Board of Educational Lands and Funds	Sutherland
Sutherland	Nebraska Emergency Management Agency	Trenton
Trenton		Venango
Venango	**Federal Agencies**	Wauneta
Wallace	NRCS - Grand Island, North Platte, Ord, Thedford	
	BLM – Casper, WY Dist. Office handles all Nebraska	
Local Emergency	**501(c)3 Organizations & Other NGOs**	**State Legislators**
Managers	Pheasants Forever	District 42
Region 17	The Nature Conservancy	District 44
Region 51		District 48
Chase County	**Prescribed Fire Associations**	
Hayes County	Southwestern Nebraska Prescribed Fire Association	**Federal Legislators**
Keith/Grant		Sen. Deb Fischer
Perkins County	**Homeowner Associations**	Sen. Ben Sasse
Red Willow County	Lake Mac Lessees Inc. LMLI	Rep. Adrian Smith (Dist. 3)

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/

Fire-Resistant Plants: http://blog.davey.com/2017/08/fireproof-landscapes-with-fire-resistant-plants-trees-and-shrubs/

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

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

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

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

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