

Blue Hole



Santa Rosa Lake State Park



Route 66

PREPARED BY:
WILDLAND FIRE CONSULTANT

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GUADALUPE COUNTY COMMISSION

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JAMES "BOZO" CORDOVA
CHAIRMAN

GLENN G. GONZALES
VICE CHAIRMAN

RICHARD L. CHAVEZ
MEMBER

Resolution 05-2008-24

A RESOLUTION ADOPTING THE "GUADALUPE COUNTY COMMUNITY WILDFIRE PROTECTION PLAN" (CWPP), A COLLABORATIVE EFFORT BY THE GUADALUPE COUNTY CORE TEAM MEMBERS IN COMPLIANCE WITH THE REQUIREMENTS SET FORTH IN THE HEALTHY FOREST RESTORATION ACT OF 2003 AND THE 2007 COMMUNITY WILDFIRE PROTECTION PLAN GRANT PROGRAM FOR THE PURPOSE OF FUNDING, PLANNING AND IMPLEMENTING COMMUNITY PROTECTION AND WILDFIRE HAZARD MITIGATION ACTIVITIES.

WHEREAS, the Healthy Forest Restoration Act of 2003 makes funds available through programs to conduct community protection and wildfire hazard mitigation activities on federal and non-federal lands to qualifying agencies and entities; and

WHEREAS, a mandatory qualification defined in the Healthy Forest Restoration Act of 2003 to access funding programs is to develop a plan called a "Community Wildfire Protection Plan" (CWPP) through local collaboration that prioritizes fuels reduction and addresses treatment of structural ignitability; and

WHEREAS, Guadalupe County has solicited public input and formed a CWPP Core Team of interested parties to address the fire prevention, protection, and suppression needs of Guadalupe County as well as collaboratively working with other agencies, entities and citizens within Guadalupe County; and

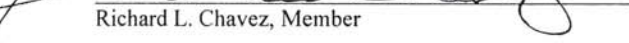
WHEREAS, this collaboratively developed CWPP meets the requirements and is supported by the New Mexico Energy Minerals and Natural Resources Department, the State Forestry Division, Bureau of Land Management, United States Forest Service and fire chiefs in the Guadalupe County;

Now THEREFORE be it resolved by the Guadalupe County Board of Commissioners that the attached Community Wildfire Protection Plan be and hereby adopted.


PASSED, APPROVED AND ADOPTED this day of May 21, 2008.


James "Bozo" Cordova, Chair


Glenn G. Gonzales, Vice-Chair


Richard L. Chavez, Member

ATTEST:


Adam Gallegos, County Clerk

Guadalupe County CWPP – May 2008

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COMMUNITY WILDFIRE PROTECTION PLAN

PURPOSE

TO ADDRESS THE WILDFIRE NEEDS OF GUADALUPE COUNTY

Wildfires are a part of the natural process of life. Ecosystems are equipped for, and in fact thrive when fires are allowed to take their natural course. However, when human habitation and/or development mix with wildland fuels, the wildland urban interface is created. The wildland urban interface or WUI, creates an environment where structures and infrastructure become “fuels” for wildland fires. Developments in the WUI means both communities and individuals need to learn to identify wildfire hazards, prepare for wildfire events and learn what can be done before the fire to reduce the negative impacts. This Community Wildfire Protection Plan attempts to do just that. This plan should be used as a guideline to property owners and fire departments interested in addressing the wildfire hazards in their communities. The recommendations made are very general and the focus is on the privately-owned WUI areas identified by the Core Team.

INTRODUCTION TO COMMUNITY WILDFIRE PROTECTION PLANS

The idea for community-based forest planning and prioritization is neither novel nor new. However, the incentive for communities to engage in comprehensive forest planning and prioritization was given new and unprecedented impetus with the enactment of the Healthy Forests Restoration Act (HFRA) in 2003. This landmark legislation includes the first meaningful statutory incentives for the US Forest Service (USFS) and the Bureau of Land Management (BLM) to give consideration to the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects. In order for a community to take full advantage of this new opportunity, it must first prepare a Community Wildfire Protection Plan (CWPP).

Based on the needs of Guadalupe County, this Wildfire Protection Plan addresses the following issues;

- wildfire hazards to the WUI and critical infrastructure,
- Public education and outreach,
- hazard mitigation
- fuels reduction projects
- treatment of structural ignitability
- improving firefighting capacity

The process of developing a CWPP can help a community clarify and refine its priorities for the protection of life, property, and critical infrastructure in the

wildland–urban interface. It also can lead community members through valuable discussions regarding management options and implications for the surrounding watershed. The language in the HFRA provides maximum flexibility for communities to determine the substance and detail of their plans and the procedures they use to develop them.

COMMUNITIES AND THE WILDLAND–URBAN INTERFACE

The wildland–urban interface (WUI) is commonly described as the zone where structures and other human development meet and intermingle with undeveloped wildland or vegetative fuels. This WUI zone poses tremendous risks to life, property, and infrastructure in associated communities and is one of the most dangerous and complicated situations firefighters face. Both the National Fire Plan and the Ten-Year Comprehensive Strategy for Reducing Wildland Fire Risks to Communities and the Environment place a priority on working collaboratively within communities in the WUI to reduce their risk from large-scale wildfire. The HFRA builds on existing efforts to restore healthy forest conditions near communities and essential community infrastructure by authorizing expedited environmental assessment, administrative appeals, and legal review for hazardous fuels projects on federal land. The Act emphasizes the need for federal agencies to work collaboratively with communities in developing hazardous fuel reduction projects, and it places priority on treatment areas identified by communities themselves in a CWPP.

BENEFITS TO COMMUNITIES

In the context of the HFRA, a CWPP offers a variety of benefits to communities at risk from wildland fire. Among those benefits is the opportunity to establish a localized definition and boundary for the wildland–urban interface. In the absence of a CWPP, the HFRA limits the WUI to within ½ mile of a community's boundary or within 1 ½ miles when mitigating circumstances exist, such as sustained steep slopes or geographic features aiding in creating a fire break. Fuels treatments can occur along evacuation routes regardless of their distance from the community. At least 50 percent of all funds appropriated for projects under the HFRA must be used within the WUI as defined by either a CWPP or by the limited definition provided in the HFRA when no CWPP exists. In addition to giving communities the flexibility to define their own WUI, the HFRA also gives priority to projects and treatment areas identified in a CWPP by directing federal agencies to give specific consideration to fuel reduction projects that implement those plans. If a federal agency proposes a fuel treatment project in an area addressed by a community plan but identifies a different treatment method, the agency must also evaluate the community's recommendation as part of the project's environmental assessment process.

GUADALUPE COUNTY COMPLIANCE TO HFRA

This Guadalupe County Wildfire Protection Plan has been prepared in accordance with the requirements and guidelines set forth by Congress in the Healthy Forest Restoration Act of 2003, the County of Guadalupe Department of Public Safety, land management agencies and entities represented below, have agreed to address the challenges of wildfire hazard risk reduction within Guadalupe County. This Community Wildfire Protection Plan (CWPP) represents a collaborative effort to address; responder safety, hazard mitigation, structure protection, and community preparedness. The following steps were followed in the preparation of this CWPP:

Step One: Convene Decision makers

- Form a core team made up of representatives from the appropriate local governments, local fire authority, and state agency responsible for forest management.

Step Two: Involve Federal Agencies

- Identify and engage local representatives of the USFS and BLM.
- Contact and involve other land management agencies as appropriate.

Step Three: Engage Interested Parties

- Contact and encourage active involvement in plan development from a broad range of interested organizations and stakeholders.

Step Four: Establish a Community Base Map

- Work with partners to establish a baseline map of the community that defines the community's WUI and displays inhabited areas at risk, forested areas that contain critical human infrastructure, and forest areas at risk for large-scale fire disturbance.

Step Five: Develop a Community Risk Assessment

- Work with partners to develop a community risk assessment that considers fuel hazards; risk of wildfire occurrence; homes, businesses, and essential infrastructure at risk; other community values at risk; and local preparedness capability.
- Rate the level of risk for each factor and incorporate into the base map as appropriate.

Step Six: Establish Community Priorities and Recommendations

- Use the base map and community risk assessment to facilitate a collaborative community discussion that leads to the identification of local priorities for fuel treatment, reducing structural ignitability, and other issues of interest, such as improving fire response capability.
- Clearly indicate whether priority projects are directly related to protection of communities and essential infrastructure or to reducing wildfire risks to other community values.

Step Seven: Develop an Action Plan and Assessment Strategy

- Consider developing a detailed implementation strategy to accompany the CWPP, as well as a monitoring plan that will ensure its long-term success.

Step Eight: Finalize Community Wildfire Protection Plan

- Finalize the CWPP and communicate the results to community and key partners.

Preparing a Community Wildfire Protection Plan, A Handbook for Wildland-Urban Interface Communities, March 2004 edition

COLLABORATION

Guadalupe County's Department of Public Safety began to earnestly solicit public input in July 2007 by hosting periodic public meetings throughout the county. Members of the fire service, County government, State Forestry, Forest Service, Bureau of Land Management and interested property owners came together to form a Core Team. The Core Team would meet to identify and define the Guadalupe County Wildland Urban Interface, improve community preparedness, propose prescriptions for hazardous fuels treatments to reduce fire danger and improve responder safety. Other topics considered by the Core Team members were fire training requirements and the reassessment of the fire district boundaries.

The team also identified numerous values at risk including emergency responder safety, community infrastructure, property, recreational opportunities, wildlife habitat, and eco-system health, preservation of natural water sources, livestock pastures, aesthetics and historical sites. These recommendations were used to develop the Guadalupe County Wildland Urban Interface Map and the Action Plan.

The following agencies were invited to attend the core team meeting:

- Guadalupe County Public Safety, Commission and Road Department
- Bureau of Land Management
- US Fish and Wildlife Service
- Soil and Water Conservation District
- NRCS
- EMNRD State Forestry Division, Las Vegas District
- EMNRD State Parks
- Santa Rosa Lake State Park
- NM-DOT
- NM Game and Fish
- Town of Vaughn
- City of Santa Rosa
- Santa Rosa VFD
- Vaughn VFD
- Puerto de Luna VFD
- Anton Chico VFD
- NM Department of Public Safety
- NMSU Extension Office
- Union Pacific Railroad
- Burlington No. SF Railroad
- Private land owners via newspaper, county fair, and public postings

Table 1. Core Team meetings

June 28, 2007	Santa Rosa, NM
July 9, 2007	Santa Rosa, NM
September, 10, 2007	Vaughn, NM
February 18, 2007	Santa Rosa, NM
March 13, 2008	Vaughn, NM
March 13, 2008	Santa Rosa, NM

CWPP CORE TEAM MEMBERS

Table 2. Core Team Members

Representative	Agency
Juan Gomez	Santa Rosa VFD
Gilbert Romero	Santa Rosa VFD
Thomas Owens	Vaughn VFD
Teri Apodaca	Vaughn VFD
Robert Apodaca	Vaughn VFD
Christopher Metsen	Vaughn VFD
Adam Arguello	Vaughn VFD
Richard Gallegos	Vaughn VFD
Norman Madrid	Vaughn VFD
Alex Gazolas	Vaughn VFD
Robert Chavez	Puerto de Luna Substation
Ernie Chavez	Puerto de Luna Substation
Michael Chavez	Puerto de Luna Substation
Donna Hummel	BLM/WUI Community Asst.
Claudia Standish	BLM/Air Quality Bureau
Allen Wyngaert	BLM
Charles Schmidt	BLM
Rudy Tenorio	Guadalupe County Road Dept.
Levi Chavez	Guadalupe Co. Public Safety
Ernesto Hurtado	EMNRD State Forestry LV
Eugene Pino	EMNRD State Forestry LV
Terrell Treat	NM State Forestry
Paul Madrid	Town of Vaughn
Sean Lewis	NRCS, USDA
Tim Dodge	Santa Rosa City Manager
The Davis'	Private citizens

INTRODUCTION:

GUADALUPE COUNTY

NATURAL CONDITIONS

Guadalupe County is located in the mid-eastern part of New Mexico, it consists of 3,031 mi². The elevation varies from 4,330 feet to 6,339 feet above sea level. The majority of the land is relatively flat grasslands, but there are higher elevation woodlands, bosque and the canyons of the Pecos River. There is also pinon and juniper covered hills. Guadalupe County is characterized as being rural and is largely undeveloped. The climate, like most of New Mexico is dry, receiving an average annual rainfall of 15.5 inches, with warm summers and mild winters.

POPULATION

Guadalupe County's population was highest during the first part of the twentieth century and has generally declined since that time. By 1940, the county peaked at 8,646 residents, after which its population decreased to 4,969 persons by 1970. The population has been relatively stable, remaining under 5,000 persons. The county ranks as New Mexico's fifth least populous county. The city of Santa Rosa constituted 59% of the county's total population in 2000. The town of Vaughn had 13% of the population in 2000.¹

WATER RESOURCES

Guadalupe County is relatively rich in the number and diversity of its riparian areas. The Pecos River has the largest stretch of riparian vegetation in the area. South of Santa Rosa on the road to Puerto de Luna, the river still maintains a bosque of cottonwoods and willows along its banks. To a lesser extent cottonwoods and willows line the Pecos River in Anton Chico and El Rito Creek near Santa Rosa.

In the Santa Rosa area, there are eleven natural springs and lakes, including two artesian springs. Many of these areas support riparian vegetation such as native sedges and willows, as well as non-native Russian olives and salt cedars. Though the salt cedar have largely been killed using Herbicides, most of the trees have been left standing all along the bosque creating an abundance of standing dry fuels that increase the wildfire risk to the communities along the Pecos River. This is especially important to mitigate in light of the fact that the Pecos River Valley groundwater is located in the vicinity of the Pecos River. Virtually all residents of the county rely on the groundwater for domestic uses.²

VEGETATION

For the purposes of this CWPP vegetation will be referred to a fuel types. There are several fuel types typically found in New Mexico and Guadalupe County, they include:

- Coniferous and Mixed Woodland-consists of pinon-juniper and mixed woodland. Colorado pinon and one-seed juniper are the major species of this vegetation

type. In some areas, Gambel oak may be a co-dominant with the pinon-juniper in woodland, creating mixed woodland.

- Juniper Savanna-a transitional vegetation type between grassland and woodland. It is characterized by grasses punctuated by occasional trees, in this case, one-seed juniper. In the upland area surrounding the Pecos River, along with the juniper, a number of other plants occur that are normally associated with the Chihuahuan desert to the south. These include little leaf sumac, cat-claw mimosa, beargrass and desert Christmas cactus.
- Plains-Mesa Grassland-the most extensive grassland in New Mexico, and the most widespread vegetation type in Guadalupe County. In Guadalupe County, unaltered grassland is short-grass prairie type. It merges with juniper savanna or woodland at the boundary of its upper elevation between 4,500' and 5,000'. In eastern New Mexico, farming and ranching have reduced this vegetation type, resulting in a subsequent encroachment by juniper and converting the area to a juniper savanna vegetation type. The dominant grasses are blue grama and buffalograss. Large stands of soapweed yucca punctuate the grasslands.

THREATENED AND ENDANGERED SPECIES

Guadalupe County has a number of threatened and endangered species of plants and animals. Several species, including the bigscale logperch, the southwestern willow flycatcher, Wright's march thistle, and the Pecos sunflower are primarily found in or along riparian areas, especially the Pecos River. Several species are presumed extirpated from the county, including the silvery minnow, the American bison, and possibly the lesser prairie chicken.³ A complete listing of Rare threatened, endangered or sensitive species within Guadalupe County is included in Table 3.

1. GUADALUPE COUNTY COMPREHENSIVE PLAN – County Assessment/Existing Conditions, A. Demographic Trends and Projections, pages II-1-2
2. GUADALUPE COUNTY COMPREHENSIVE PLAN –County Assessment/Existing Conditions, B. Natural Conditions and Environmental Concerns, pages II-7, II-8
3. GUADALUPE COUNTY COMPREHENSIVE PLAN –County Assessment/Existing Conditions, B. Natural Conditions and Environmental Concerns, page II-13

Table 3. Rare threatened, endangered or sensitive species within Guadalupe County

Species Name	Common Name	Federal Status	State Status
FISH			
<i>Percina macrolepida</i>	Bigscale logperch	None	Threatened
BIRDS			
<i>Charadrius montanus</i>	Mountain plover	Threatened	Protected
<i>Empidonax traillii extimus</i>	Southwestern willow flycatcher	Endangered	Protected
<i>Falco Peregrinus</i>	Peregrine falcon	Delisted	Threatened
<i>Haliaeetus leucocephalus</i>	Bald eagle	Threatened	Threatened
<i>Typanuchus pallidicinctus</i>	Lesser prairie chicken	Candidate	Protected, possibly extirpated from county
MAMMALS			
<i>Cynomys ludovicianus</i>	Black-tailed prairie dog	Candidate	Limited protection, sensitive species
<i>Mustela nigripes</i>	Black-footed ferret	Endangered	Protected, sensitive species
PLANTS			
<i>Astragalus siliceus</i>	Flint mountains milkvetch	None	Species of concern
<i>Cirsium wrightii</i>	Wright's march thistle	Species of concern	Species of concern
<i>Helianthus paradoxus</i>	Pecos sunflower	Threatened	Endangered

Source: US Fish and Wildlife Service, New Mexico Rare Plant Technical Council. 1999. New Mexico Rare Plants. Albuquerque, NM: New Mexico Rare Plants homepage. <http://nmrareplants.unm.edu>

LAND STATUS

Of Guadalupe County's total 1,949,636 acres, publicly managed lands consist of:

State Land Office:	311,050 acres
Bureau of Land Management	50,108 acres
Bureau of Reclamation	604 acres
Federal Aviation Administration	33 acres

TOTAL PUBLIC LANDS **361,795 acres**

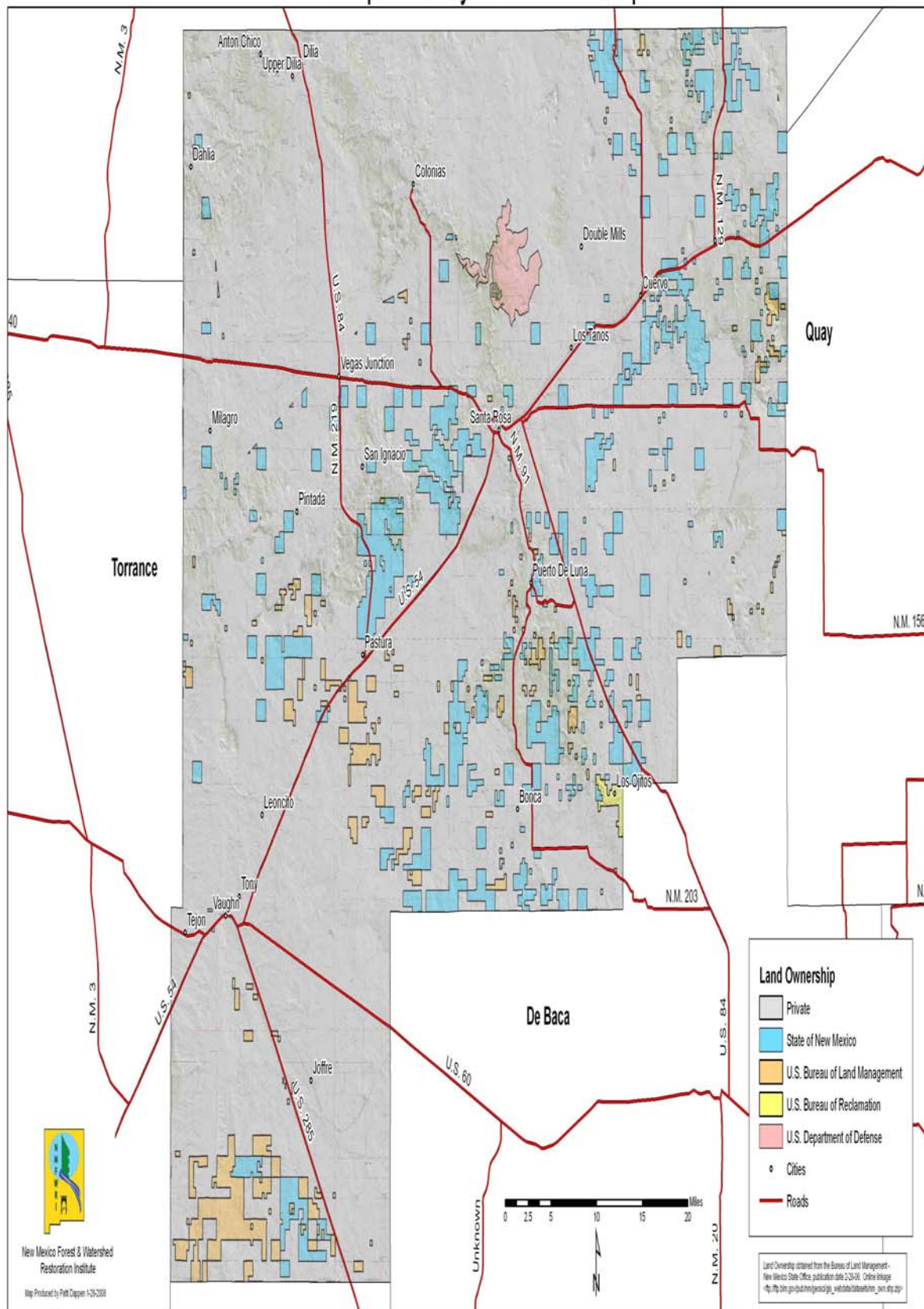
(Source: Bureau of Land Management Roswell District Office, 1993 data, reported in 2003)

Publicly managed lands occupy 18.5% of the county. The remaining 1,621,497 acres of private land constitute 81.5% of the total county area. Both Bureau of Land Management (BLM) and state lands are scattered throughout all areas of the county except within the Anton Chico Land Grant.² The patches of BLM lands in Guadalupe County are relatively small and sparse. They are surrounded by private land outside the Wildland Urban Interface. The BLM office has no fuels reduction projects planned at the time of this printing. The wildfire risk on these lands is low.

Most of the State Parks also have low wildfire risks. These parks lie within the Wildland Urban Interface boundaries and are therefore not given their own designation on the WUI Map.

2. GUADALUPE COUNTY COMPREHENSIVE PLAN –Land Use Element, B. Existing Conditions, Land Status, page III-1.

Guadalupe County Land Ownership



FIRE HISTORY

It is the policy of the NM State Forestry to reimburse volunteer fire department for responding to wildland fires that go beyond initial attack. When a reimbursable wildfire is reported the NM State Forestry requires a wildfire report be submitted. Very rarely do non-reimbursable fires get reported. From 1996 to 2007, 179 reimbursable fires were reported to New Mexico State Forestry in Guadalupe County. Lightning was the reported cause of most of the fires, 36%. Human caused ignitions, including smoking, debris burning, equipment use, campfires, incendiary and children accounted for 27% of the fires. The following tables break down the fire statistics by cause, fuel type and size.

Table 4. Guadalupe County 10 year Wildland Fire History

Cause of Fire	# of fires	percent
Lightning	65	36%
Miscellaneous	45	25%
Smoking	25	14%
Railroad	18	10%
Debris Burning	10	6%
Equipment Use	9	5%
Unknown	3	2%
Campfire	2	1%
Incendiary	1	.5%
Children	1	.5%
TOTAL	179	100 %

As reported to NMSF – Las Vegas District Source: FMS Fire Report
September 19, 1996 through June 6, 2007

Table 5. Guadalupe County Wildland Fires by Fuel Type

Fuel Type	# of fires	percent
Grass	143	80%
Pinyon/Juniper	16	9%
Brush	11	6%
Bosque	3	2%
Ponderosa Pine	2	1%
Ponderosa Pine / Fir	2	1%
Other	2	1%
TOTAL	179	100 %

As reported to NMSF – Las Vegas District Source: FMS Fire Report
September 19, 1996 through June 6, 2007

Table 6. Guadalupe County fires by size

Size Class	# of Fires	Percent
0.5 acres or less	21	12%
.6 – 9 acres	66	37%
10 – 99 acres	34	19%
100 – 299 acres	18	10%
300 – 999 acres	17	9%
1000 – 4999 acres	16	9%
5000 acres or more	7	4%
TOTAL	179	100%

As reported to NMSF – Las Vegas District Source: FMS Fire Report
September 19, 1996 through June 6, 2007

There were 23 fires over 1000 acres reported from 1996 to 2007. Nine of these large fires were caused by lightning occurring in the months of May through August. Guadalupe County is frequently subject to high wind events during these months. Seven were reported as miscellaneous ignitions. The railroad caused three, and smoking, campfires and debris burning were accorded one each. Nineteen of the 23 fires over 1000 acres burned in grass (83%). Three burned in pinyon/juniper and one in brush. Forty nine percent of the reported fires in Guadalupe County were less than nine acres in size.

FIRE WEATHER

Weather plays a key role in wildfire. Weather is often responsible for ignitions and for the size the wildfire becomes is dependent upon a number of factors such as relative humidity, moisture content of fuels, wind and temperature. The following charts illustrate the climate trends in Humidity, Precipitation, temperature and wind speeds experienced in Santa Rosa, NM as compared to the national average.

Table 7. Annual Humidity Trends in Santa Rosa

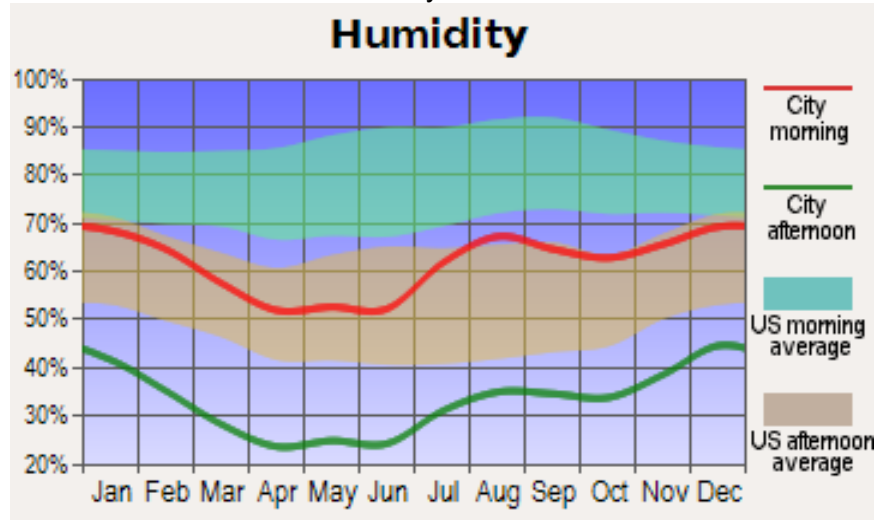


Table 8. Annual Average Precipitation in Santa Rosa

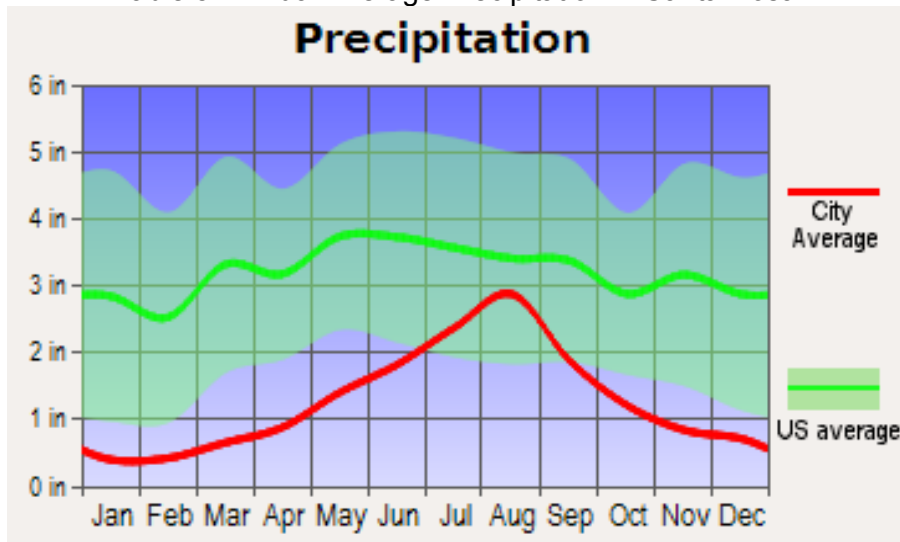


Table 9. Annual Average Temperature in Santa Rosa

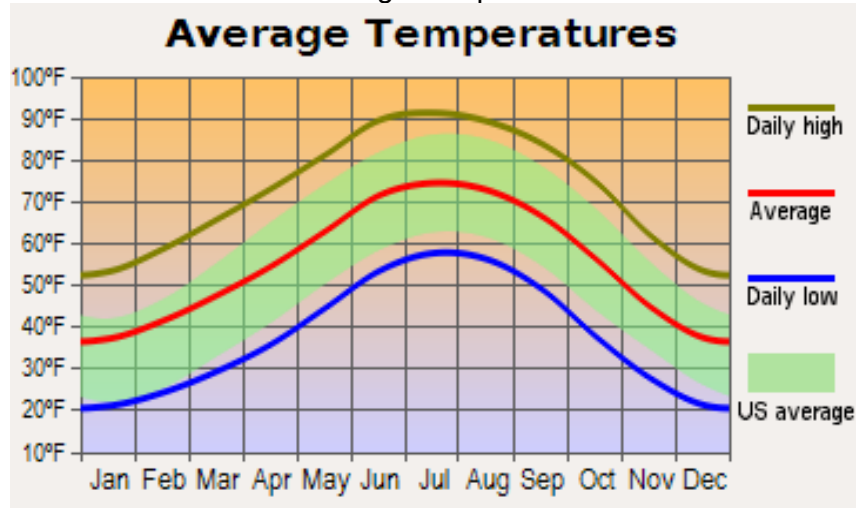
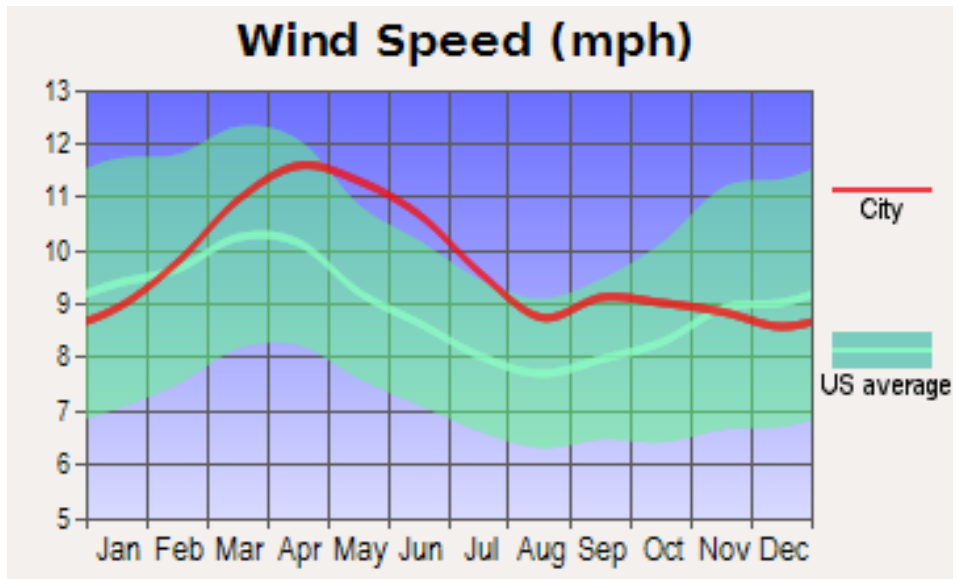


Table 10. Annual Average Wind Speeds in Santa Rosa



FIRE REGIME CONDITION CLASS RATINGS

While it is impossible to predict exactly what a wildfire will do, Hazard Ratings, FRCCs, topography, weather, fuel loads and fuel moisture levels all give a good estimate of the potential risk posed by a wildfire in a given area. These rating attempts to warn fire personnel and property owners of potential wildfire risk within the Guadalupe County Wildland Urban Interface so that appropriate preplanning can be made.

Fire Regime Condition Classes (FRCC) delineates a standardized, interagency index to measure the departure of current conditions from reference conditions. FRCC is defined as a relative measure describing the degree of departure from the reference or historical fire regime (Hann and Bunnell 2001). This departure results in changes to one (or more) of the following ecological components; Vegetation characteristics, Fuel composition, Fire frequency, Severity, Pattern, Insect and disease mortality, Grazing and Drought (Schmidt and others 2001)

FRCC is composed of three classes:

FRCC 1 – Within the natural (historical) range of variability (“reference fire regime”) of vegetation characteristics, fuel composition, fire frequency, severity and pattern and other associated disturbances

FRCC 2 – Moderate departure from the reference fire regime of vegetation characteristics, fuel composition, fire frequency, severity and pattern and other associated disturbances

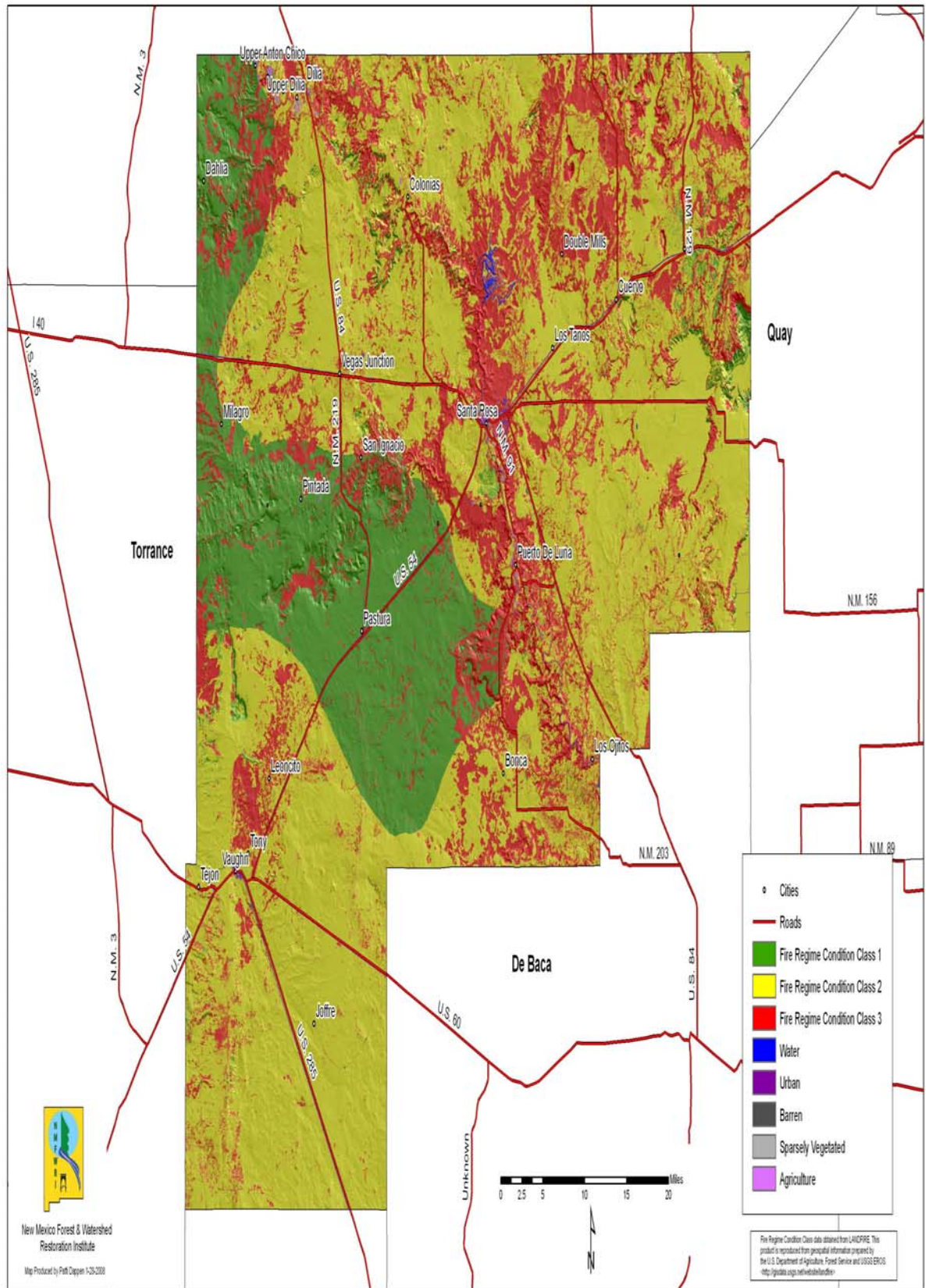
FRCC 3 – High departure from the reference fire regime of vegetation characteristics, fuel composition, fire frequency, severity and pattern and other associated disturbances

Table 11. FRCC rating of WUI Communities

WUI Community	Fire Hazard Rating Low, moderate, high or extreme	Fire Regime Condition Class
Santa Rosa	Low	FRCC 2 and FRCC 3
Vaughn	Low	FRCC 2 and FRCC 3
Newkirk/Cuervo	Low	FRCC 2 and FRCC 3
Puerto de Luna	Moderate	FRCC 2 and FRCC 3
Anton Chico	Moderate	FRCC 1, FRCC 2 and FRCC 3
Pintada	Moderate	FRCC 1 and FRCC 3
Pastura	Moderate	FRCC 1
Colonias	Moderate	FRCC 2 and FRCC 3
Milagro	High	FRCC 1, FRCC 2 and FRCC 3

The Milagro, Pintada and Pastura WUIs are mostly within the FRCC 1, which is within the historical range of variability. Guadalupe County has areas that measured in the FRCC 2 range throughout the largest portion of the county mostly within grasslands, which is a moderate departure from the historical fire regime. There are also areas that show a high departure from the historical fire regime. FRCC 3 areas are spread throughout the County, mostly along the rivers and bosque where the heavier fuel loads, such as the salt cedar, are located. The Santa Rosa, Puerto de Luna and portions of the Vaughn, Anton Chico and Cuervo/Newkirk WUIs are located within the FRCC 3 areas. See FRCC map.

Guadalupe County Fire Regime Condition Class



*Map date 01/2008 for updated FRCCs reference <http://landfire.cr.usgs.gov/viewer/viewer.htm>

WILDFIRE SCIENCE

TYPES OF WILDFIRE

In order to change potential wildfire conditions and impact the associated fuels, it is necessary to understand the various types of wildfire and the conditions in which they exist.

Fire scientists and managers recognize three general types of wildland fire, depending on the fuel stratum in which the fire is burning. The three wildland fire types are, ground fires, surface fires and crown fires.

- A ground fire is one that burns in the ground fuels such as duff, organic soils, roots, rotten buried logs, and so forth. Ground fuels are characterized by higher bulk density than surface and canopy fuels. Ground fires burn with very low spread rates, but are sustainable at relatively high moisture contents. Fuel consumption through ground fire can be great, causing significant injury to trees and shrubs. Although ground fuels can be ignited directly, they are most commonly ignited by a passing surface fire.
- A surface fire is one that burns in the surface fuel layer, which lies immediately above the ground fuels but below the canopy, or aerial fuels. Surface fuels consist of needles, leaves, grass, dead and down branch wood and logs, shrubs, low brush, and short trees. Surface fire behavior varies widely depending on the nature of the surface fuel complex.
- A crown fire is one that burns in the elevated canopy fuels. Canopy fuels normally consumed in crown fires consists of the live and dead foliage, lichen, and fine live and dead branch wood found in a forest canopy. They have higher moisture content and lower bulk density than surface fuels.¹

Three types of crown fire are generally recognized, passive, active, and independent.

1. A passive crown fire, also called torching or candling is one in which individual or small groups of trees torch out, but solid flame is not consistently maintained in the canopy. Passive crowning encompasses a wide range of fire behavior, from the occasional tree torching out to a nearly active crown fire. The increased radiation to surface fuels from passive crowning increases flame front spread rate, especially at the upper end of the passive crown fire range. Embers lofted during passive crowning can start new fires downwind, which make containment more difficult and increase the overall rate of fire growth. Passive crowning is common in many forest types, especially those with an under story of shade-tolerant conifers.
2. An active crown fire, also called a running or continuous crown fire, is one in which the entire surface/canopy fuel complex becomes involved, but the crowning phase remains dependent on heat from the surface fuels for continued spread. Active crown fires are characterized by a solid wall of flame extending from the fuel bed surface through the top of the canopy. Greatly increased radiation and short-range spotting of active crown fires lead to spread rates much higher than would occur if the fire remained on the surface. Medium and long-range spotting associated with active crowning leads to even greater rates of fire growth.
3. An independent crown fire is one that burns in canopy fuels without aid of a supporting surface fire. Independent crown fires occur rarely and are short lived, requiring a combination of steep slope, high wind speed, and low moisture content. Many apparently independent crown fires may actually be active crown fires in which the canopy phase is momentarily pushed ahead of the surface phase under the influence of steep slope or strong wind²

FUELBEDS

Fire behavior and severity depend on the properties of the various fuels (live and dead vegetation and detritus) strata and the continuity of those fuel strata horizontally and vertically. The fire hazard for any particular forest stand or landscape can be characterized by the potential for the fuels to cause specific types of fire behavior and effects. Understanding the structure of fuelbeds and their role in the initiation and propagation of fire is the key to developing effective fuel management strategies.³

Fuelbeds are classified in six strata:

- tree canopy
- shrubs/small tree
- low vegetation
- woody fuels
- moss, lichens, and litter
- ground fuels (duff).

Each of these strata can be divided into separate categories based on physiognomic characteristics and relative abundance. Modification of any fuel stratum has implications for fire behavior, fire suppression, and fire severity.

SURFACE FUELS

Surface fuels consist of grasses, shrubs, litter, and woody material lying on, or in contact with the ground surface, crown fuels as those suspended above the ground in trees or vegetation (vines, mosses, needles, branches, and so forth). High surface fire intensity usually increases the likelihood for igniting overstory canopy fuels, but surface fuel types with longer residence times can contribute to drying aerial fuels in a forest canopy, which also leads to torching (when a tree's or group of trees' foliage ignites carrying the fire into the canopy).

CROWN FUELS

Crown fuels are the biomass available for crown fire, which can be ignited from a surface fire via the understory shrubs and trees, or from crown to crown. The shrub/small tree stratum is also involved in crown fires by increasing surface fireline intensity and serving as "ladder fuels" that provide continuity from the surface fuels to canopy fuels, thereby facilitating crown fires. These essentially bridge the vertical gap between surface and crown strata. The size of this gap is critical to ignition of crown fire from a surface fire below.

Aerial fuels separated from surface fuels by large gaps are more difficult to ignite because of the distance above the surface fire, thus requiring higher intensity surface fires, surface fires of longer duration that dry the canopy before ignition, or mass ignition from spotting over a wide area. Once ignited, high density canopy fuels are more likely to result in a spreading crown fire (active crown fire) than low density canopies.³ The nature of crown fires--- intense, fast moving, and

destructive---suggests that potential for damage is great whenever a crown fire occurs. Assessing the hazard posed by crown fires is therefore a matter of assessing the potential for their occurrence—of identifying the physical situations that lead to crown fire occurrence.²

The most effective strategy for reducing crown fire occurrence and severity is to:

- reduce surface fuels
- increase height to live crown
- reduce canopy bulk density
- reduce continuity of the forest canopy³

GUADALUPE COUNTY WILDLAND URBAN INTERFACE

The wildland–urban interface (WUI) is commonly described as the zone where structures and other human development meet and intermingle with undeveloped wildland or vegetative fuels. This WUI zone poses tremendous risks to life, property, and infrastructure in associated communities and is one of the most dangerous and complicated situations firefighters face. Both the National Fire Plan and the Ten-Year Comprehensive Strategy for Reducing Wildland Fire Risks to Communities and the Environment place a priority on working collaboratively within communities in the WUI to reduce their risk from large-scale wildfire. A Community Wildfire Protection Plan offers a variety of benefits to communities at risk from wildland fire. Among those benefits is the opportunity to establish a localized definition and boundary for the wildland–urban interface. The Guadalupe County Core Team defined the Guadalupe County Wildland Urban Interface (WUI) by placing a WUI boundary around each of the communities in Guadalupe County as listed in Table 12.

Table 12. Community Fire Hazard Assessments

WUI Community	WUI boundary	Points	Fire Hazard Rating Low, moderate, high or extreme
Santa Rosa	1 mi. East and West, 3 mi. North & South from town center	38	Low
Vaughn	3 miles N/S/E and W from VFD	47	Low
Newkirk/Cuervo	1 mile N/S from I-40, 1 mile E & W from town centers	42	Low
Puerto de Luna	1 mi. E/W from Pecos river, 1 mi. N of town, S to Saiz Rd.	49	Moderate
Anton Chico	R 15E to R 18E x countyline to T11N	52	Moderate
Pintada	2 mi. N/S x 10 mi West from St. Rd. 219	60	Moderate
Pastura	1 mi. N/S/E/W from church	50	Moderate
Colonias	1mi. N/S/E/W from center	56	Moderate
Milagro	4 mi N/S/E/W from T	74	High

Each community was assessed using a nationally recognized Wildfire Hazard Subdivision Assessment Form to rate the Wildfire Hazard of a subdivision. The form was presented in the Firewise Communities Workshop Handbook (1997). Points are given for categories including:

- Ingress and Egress, road width and accessibility
- Lot size, driveway design, street signs
- Fuels types
- Defensible space treatments
- Topography
- Fire history
- Weather
- Building materials, roof and siding
- Available fire protection
- Distance to available Water sources
- Placement of utilities

The points correspond to a fire hazard rating of, low, moderate, high or extreme. Assessments for individual properties can be done using the same assessment form included in Appendix 1 of this CWPP to determine an individual home's or property's Fire Hazard.

Table 13. Wildfire Hazard Ratings

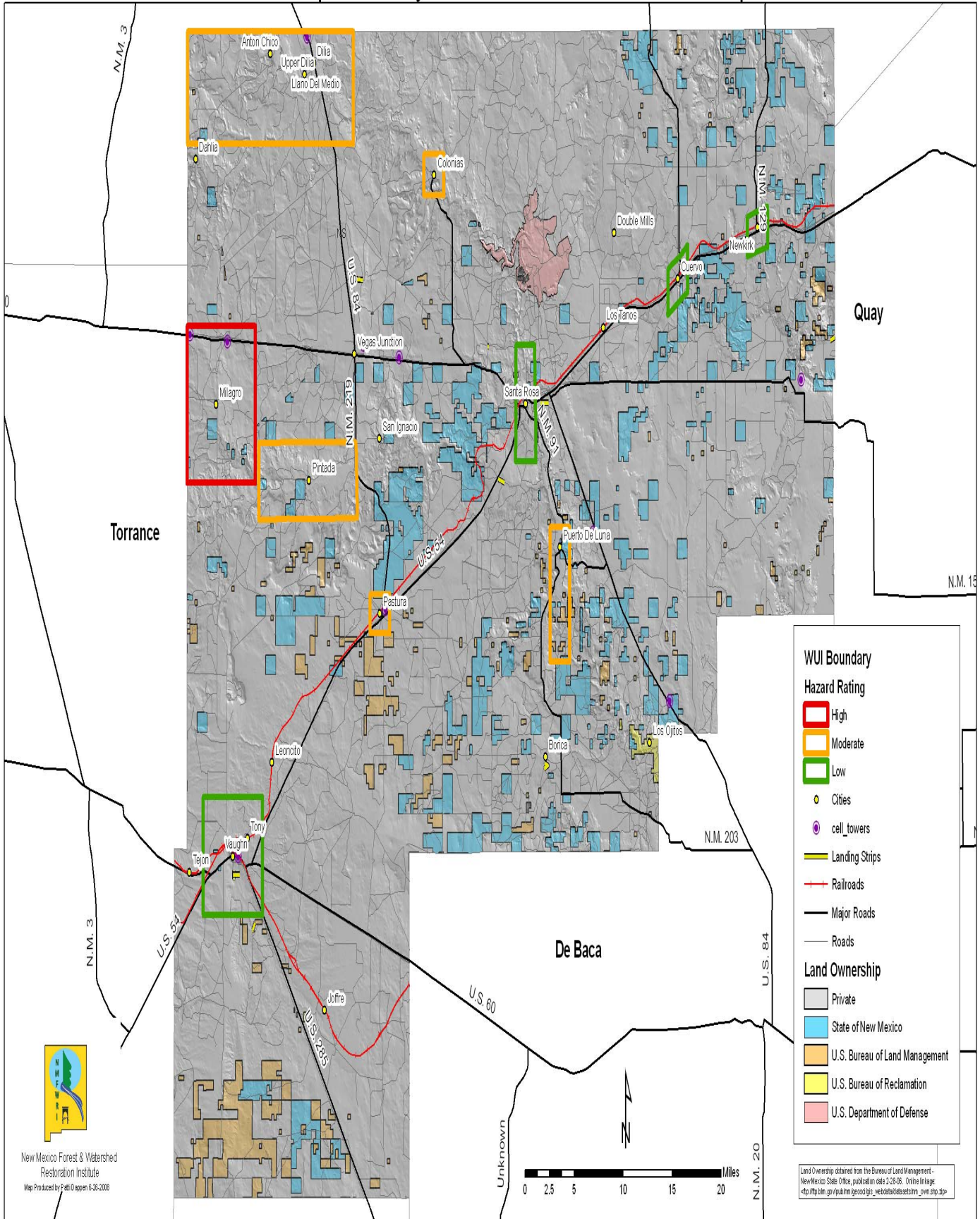
Hazard Rating	Points
Low Hazard	<49 points
Moderate Hazard	49-68 points
High Hazard	69-83 points
Extreme Hazard	84+ points

GUADALUPE COUNTY WUI S

- Santa Rosa has three fire departments within the community and readily available draft sites and hydrants. There are scattered houses along the Pecos River where an abundance of cottonwoods, willows and treated salt cedars are found. The Core Team recommended the reduction of fuels along the Pecos River within the community.
- Vaughn has good road access, a fire station within the community and draft sites or hydrants. The hazard is found in the large tracts of un-grazed pasture land around Ranch homes on the outer edges of the community. The Core Team recommended creating fuel breaks around the outer edges of the community.
- Newkirk/Cuervo has good road access, light fuels, hydrants or draft sites and flat topography. There is no fire station within the community; fire response times are therefore higher.
- Puerto de Luna (PDL), has the advantage of hydrants throughout the community, the Pecos River as an available draft site, flat terrain and a fire station in the community. However, Puerto de Luna has the bosque of cottonwoods and willows and the abundance of dead standing salt cedars found all along the Pecos River, which runs through the entire community. This increases the wildfire risk to the community. The community values at risk in the PDL area are the primary residences scattered all along the river's bank. Much of what increases the hazard rating in PDL are unchangeable

- such as; the road access into the community is narrow and rough in some places, the homes are close with dead end driveways and the lots predominantly less than 1 acre in size, emphasis should be placed on what can be changed. The Core Team recommended building with noncombustible materials, creating defensible space and reducing fuel loads throughout the community.
- Anton Chico has good road access, a fire station in the midst of the communities, and draft sites. The topography is steeper and the fuels are medium to heavy with virtually no defensible space around the structures. The largest acreage of irrigated agricultural land in the county is found in the Anton Chico area. The Anton Chico WUI area is known as the Antón Chico Land Grant, which includes, Dilia, Upper Dilia, Los Sisneros, La Loma, El Llano, Los Ranchitos, as well as Anton Chico and Upper Anton Chico. The Core Team recommended building with noncombustible materials, creating defensible space and reducing fuel loads throughout the community.
 - Pintada has lots that are generally larger than one acre, street signs throughout the community and a very moderate slope. There is one primary road through the community that is narrow, there are medium fuels, no defensible space treatments around structures, no fire department within the community, no hydrants, the water source is more than 46 min. away, round trip. The Core Team recommended that the property owners of Pintada create defensible space and increase water storage capacities.
 - Pastura has more than one primary road into and out of the community that are wide and smooth with street signs. The fuels in the community are light to medium and the topography generally mild. There are very little defensible space treatments around homes, no fire station in the community and the water source is more than 46 min. away, round trip. The Core Team recommended that Pastura create defensible space and increase water storage capacities.
 - Colonias has draft sites within the community or very close by. The topography is moderate. There is only one way in and out of Colonias. The fuels are medium with no defensible space treatments around residences. There is no fire station in the community. Colonias is far from any fire station. The Core Team recommended that Colonias build with noncombustible materials and incorporate defensible space around structures.
 - Milagro has its own set of challenges. Milagro is a community of homes scattered among the “pinon and juniper covered hills. The single primary access road into Milagro is a rough , narrow, dirt road. The nearest Fire protection service is the Vaughn Fire Department which is at best a 30 minute drive in a fire truck . There are no hydrants or draft sites within the community. None of the homes appear to have any defensible space treatment. Because access and distance are less likely to be corrected, the Core Team recommended that residents in the Milagro area incorporate defensible space, fuel breaks and water storage sites into their community to address their wildfire risk. The new PDL Substation will supplement wildfire response throughout the County.

Guadalupe County Wildland Urban Interface Map



CRITICAL INFRASTRUCTURE AT RISK

The Guadalupe County Core Team worked with partners to establish a baseline map of the community that defines the community's WUI and displays inhabited areas at risk, the Guadalupe County WUI map. The Team also created the Guadalupe County Infrastructure Map which identifies areas that contain critical human infrastructure at risk of wildfire, which include:

- Cell towers
- Repeater sites
- Electrical transmission sites
- Wind towers
- Gas plant lines
- CO₂ pipeline
- Large propane storage tanks
- Rock Lake fish hatchery

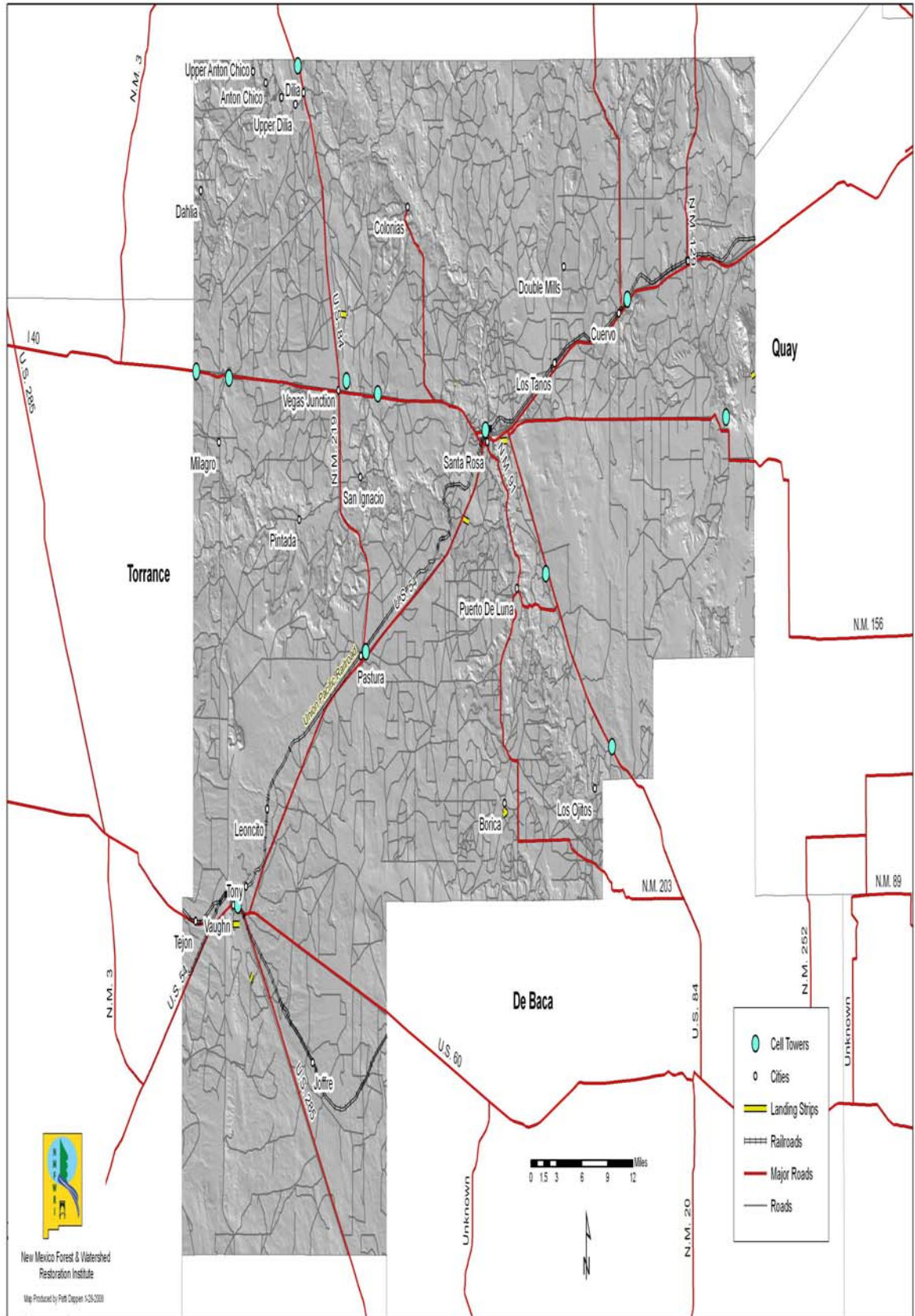
CROSS-COUNTRY PIPELINES

Three major pipelines pass through Guadalupe County. Two carry petroleum products and one is a CO₂ pipeline. There is a right-of-way of 30 ft. on either side of the pipelines. If there is to be construction where large numbers of people will be concentrated (housing, for example), the minimum distance away from the pipeline for safety reasons should be 200 to 300 ft. on either side from the center of the pipeline. A standard often used is 220 ft, according to a spokesman for the state of New Mexico. With petroleum pipelines, a firebreak in the form of a berm or wall should be constructed for protection in case of fire.

- Valero Energy Corporation Refined Petroleum Products Pipeline: this pipeline crosses the northern half of the county. It transports refined petroleum products, such as gasoline, diesel fuel, and jet fuel from Dumas, TX to an Albuquerque Distribution Center.
- Shell Pipeline Company LP Refined Petroleum Products Pipeline: this pipeline crossed the southwest corner of the county in the same area as the CO₂ pipeline. An Environmental Impact Statement was released in April 2003 for a proposal by Shell Pipeline Company LP to reverse the flow direction of its existing pipeline. With the addition of two new 16" diameter pipeline extensions, this pipeline will transport refined products from Odessa, TX to Bloomfield, NM. An intermediate distribution terminal is planned in Moriarity in neighboring Torrance County.
- Kinder Morgan CO₂ pipeline: A high-pressure carbon dioxide pipeline runs through the southwest corner of Guadalupe County. The pipeline is owned and operated by Kinder-Morgan Company and supplies carbon dioxide to the oil fields of west Texas. If the line ruptures, it does not burn, nor is it poisonous; however, if people are caught in the vapor cloud, it could smother them to death. The pipe has never ruptured. While a firebreak is unnecessary, due to potential force of an explosion, buildings should be located 200 to 300 ft. away from the pipeline.³

3. GUADALUPE COUNTY COMPREHENSIVE PLAN –County Assessment/Existing Conditions, B. Natural Conditions and Environmental Concerns page II-21

Guadalupe County Infrastructure Map



FIRE RESPONSE PROCEDURES

Within Guadalupe County there are four fire districts:

1. The Anton Chico Fire District in the Northwest portion of the county,
2. The Vaughn Fire District which covers the western and southwestern parts of the county, and within the Town of Vaughn.
3. Puerto de Luna Fire District which is responsible for the south central area of Guadalupe County,
4. the Santa Rosa Fire District which is responsible for the entire I-40 corridor which runs east to west across the entire county and the within the Santa Rosa City Limits

The Puerto de Luna VFD is in the process of establishing a substation, the Puerto de Luna Station #2 Volunteer Fire Department. The substation will increase wildland fire suppression capabilities throughout the unincorporated areas in the County.

To report a fire residents may call 911 from any phone within Guadalupe County. When a 911 call is placed from a land line in Guadalupe County, it is directed to the Regional Dispatch Center in the Santa Rosa Police Department. (The Dispatch Center is currently working on Phase II for cell phones. If you call from a cell phone you will be directed to the nearest 911 center.)

Dispatch will page out the appropriate fire district via pagers. Each Fire member has a pager. Departments are paged out on their appropriate frequencies. There is the Guadalupe County Fire Channel which after all mobile radios are installed will be the command channel for fire within the county, when other agencies such as NM State Forestry respond the State Forestry frequencies will be used.

Table 14. Guadalupe County Fire Frequencies

Name	Tx	Tone	Rx	Tone
Guadalupe Fire	153.920	156.7	153.920	156.7
State Fire	154.310		154.310	
State Fire Tac	154.130		154.130	
SR Fire/EMS	155.820	127.3	155.820	
Vaughn Fire	155.115		155.115	
Guad DHSEM	155.290	127.3	155.290	
State SAR	155.160		155.160	

- An incident command trailer will be available for set up during fires to relay and control radio traffic and requests.
- Automatic Aid Agreements should be formalized between all Guadalupe County Fire Departments.
- Mutual Aid with Santa Rosa and Vaughn is being formalized by written agreement. Currently the departments are working off a verbal commitment.
- Agreements with Torrance, Quay and De Baca Counties are also being formalized with written agreements.
- San Miguel and Guadalupe have a Mutual Aid Agreement in place.

- When the responding Fire Department feels the fire is beyond their scope, the adjoining fire districts are requested to assist.
- Resources from the city of Santa Rosa, town of Vaughn and locally owned private resources may also be called upon.
- If the fire gets beyond the scope of local resources the NM State Forestry, Las Vegas District Office is then requested to assist. Based on current conditions, NM State Forestry may respond or request assistance from the Bureau of Land Management, Roswell Field Office.
- After hours the Las Vegas Duty Pager number can be called 1-888-414-7059, or the emergency radio number in Santa Fe 505-827-8080.

ACTION PLAN

The process of developing this CWPP helped Guadalupe County clarify and refine its priorities for the protection of life, property, and critical infrastructure in the wildland–urban interface. It also led community members through valuable discussions regarding management options and implications for the surrounding human infrastructure.

Table 15. Proposed Wildfire Hazard Mitigation for Guadalupe County WUIs

Wildland-Urban Interface and Infrastructure at Risk	Proposed Fuel Treatment, reduction of wildfire danger and improved FF response	Responsible Party
Santa Rosa	<ul style="list-style-type: none"> • Public Outreach and Education • Defensible Space around homes • Mechanical removal of treated salt cedar along river • Fuel break along WUI Boundary • Maintain road along Railways • Increased water storage capacity • Increased Training for firefighters 	<ul style="list-style-type: none"> • Santa Rosa VFD • Property Owners • Property Owners • Property Owners • Union Pacific Railroad • Santa Rosa VFD • Santa Rosa VFD/NMSF
Puerto de Luna	<ul style="list-style-type: none"> • Public Outreach and Education • Defensible Space around homes • Mechanical removal of treated salt cedar along river • Fuel break along WUI Boundary • Increased water storage capacity • Increased Training for firefighters 	<ul style="list-style-type: none"> • County Public Safety • Property Owners • Property Owners • Property Owners • PDL VFD • PDL VFD/NMSF
Vaughn	<ul style="list-style-type: none"> • Public Outreach and Education • Defensible Space around homes • Fuel Breaks between pasture and ranches • Fuel break along WUI Boundary • Fuels reduction by mowing, grazing, fire use, prescribed burn • Increased water storage capacity • Maintain road along railways • Improved Radio Communications • Increased Training for firefighters 	<ul style="list-style-type: none"> • Vaughn VFD • Property Owners • Property Owners • Property Owners/Town • Property Owners/Vaughn FD • Vaughn VFD • Union Pacific & BNSF Railroad • Vaughn VFD/County • Vaughn VFD/NMSF
Milagro	<ul style="list-style-type: none"> • Public Outreach and Education • Defensible Space around homes • Fuel break along WUI Boundary • Fuels reduction by mechanical thinning, fire use, prescribed burn • Increased water storage capacity 	<ul style="list-style-type: none"> • County Public Safety • Property Owners • Property Owners/County • Property Owners/County • County
Pintada	<ul style="list-style-type: none"> • Public Outreach and Education • Defensible Space around homes • Fuel break along WUI Boundary • Fuels reduction by mowing, grazing, fire use, prescribed burn, mechanical thinning • Increased water storage capacity 	<ul style="list-style-type: none"> • County Public Safety • Property Owners • Property Owners/County • Property Owners/County • County

Wildland-Urban Interface and Infrastructure at Risk	Proposed Fuel Treatment, reduction of wildfire danger and improved FF response	Responsible Party
Newkirk/Cuervo	<ul style="list-style-type: none"> • Public Outreach and Education • Defensible Space around homes • Fuel break along WUI Boundary • Fuels reduction by mowing, grazing, fire use, prescribed burn, mechanical thinning • Increased water storage capacity • Mow along highways 	<ul style="list-style-type: none"> • County Public Safety • Property Owners • Property Owners • Property Owners • County Public Safety • NM-DOT
Anton Chico	<ul style="list-style-type: none"> • Public Outreach and Education • Defensible Space around homes • Fuel break along WUI Boundary • Fuels reduction by mowing, grazing, fire use, prescribed burn, mechanical thinning • Increased water storage capacity 	<ul style="list-style-type: none"> • County Public Safety • Property Owners • Property Owners • Property Owners • Anton Chico VFD
Colonias	<ul style="list-style-type: none"> • Public Outreach and Education • Defensible Space around homes • Fuel break along WUI Boundary • Fuels reduction by mowing, grazing, fire use, prescribed burn, mechanical thinning • Increased water storage capacity 	<ul style="list-style-type: none"> • County Public Safety • Property Owners • Property Owners • Property Owners • County Public Safety
Pastura	<ul style="list-style-type: none"> • Public Outreach and Education • Defensible Space around homes • Fuel break along WUI Boundary • Fuels reduction by mowing, grazing, fire use, prescribed burn, mechanical thinning • Increased water storage capacity 	<ul style="list-style-type: none"> • County Public Safety • Property Owners • Property Owners • Property Owners • County Public Safety
Cell Towers & Repeater Sites	<ul style="list-style-type: none"> • Fuels reduction by mowing, grazing 	<ul style="list-style-type: none"> • Property Owners
Electrical transmission sites	<ul style="list-style-type: none"> • Fuels reduction by mowing, grazing 	<ul style="list-style-type: none"> • Property Owners
Wind Towers	<ul style="list-style-type: none"> • Fuels reduction by mowing, grazing 	<ul style="list-style-type: none"> • Property Owners
Gas Plant Line	<ul style="list-style-type: none"> • Fuels reduction by mowing, grazing 	<ul style="list-style-type: none"> • Property Owners
Propane Storage Tanks	<ul style="list-style-type: none"> • Fuels reduction by mowing, grazing 	<ul style="list-style-type: none"> • Property Owners; Advanced Energy, Conway Gas, Pendleton Oil and Gas
Rock Lake Fish Hatchery	<ul style="list-style-type: none"> • Fuels reduction by mowing, grazing, fire use, prescribed burn, mechanical thinning 	<ul style="list-style-type: none"> • New Mexico Game and Fish
Highways	<ul style="list-style-type: none"> • Regular Fuels reduction by mowing 	<ul style="list-style-type: none"> • NM-DOT

TREATMENTS

Fire behavior responds to fuels, weather, and topography. Changes to fuels, for example from prescribed fire burning or thinning, are related to potential fire behavior at that site and have resulted in reduced severity of wildfires where fuel treatments have occurred.

For many fuel management objectives, the goal is to limit surface fires from becoming crown fires. Crown fires are the main contributor to a wildfire being considered severe, fuel conditions that are conducive to crown fires must be modified in order to eliminate severe wildfire.

The three basic categories of tools available to forest managers for altering vegetative conditions are prescribed fire, mastication or mowing, and thinning. The effectiveness of each of these methods in altering the structure of or reducing the amount of ground and ladder fuels, and reducing crown bulk density is different. Consequently, each of these leaves residual stands with different vegetative characteristics and environmental effects.

Each type of treatment also has a different set of financial costs, and in times of tight budgets the choice of which method to use is important in achieving the best combination of risk reduction and environmental effects within the available budget⁴

PRESCRIBED FIRE

Prescribed fire is generally used to remove ground fuels, understory vegetation, and small trees, and sometimes to kill larger trees. It is not a precise way of reducing stand density, and several prescribed fires spread over many years are often necessary to accomplish management objectives. Prescribed fire is, however, often seen as more environmentally benign than other methods for modifying vegetation.

MECHANICAL THINNING

One Mechanical Thinning option is, Mastication or grinding. Mastication is a special case of thinning without removal of the thinned materials. In the case of mastication, the thinned materials are ground and left on the site. This does not remove the biomass, but cuts it into smaller pieces leaving the material distributed on the ground, adding to the surface fuel load. If the masticated material exceeds 2 or 3 inches, there is a potential to alter the moisture regime adversely affecting tree growth and survival.

THINNING

Thinning, like prescribed fire, can include removal of biomass from the site, some of which may be in the form of merchantable trees. Thinning is not particularly useful at reducing understory plants or ground fuels, and it typically adds to the surface fuel load in the form of tops and limbs if not removed. In the Southwest it is generally recommended to pile and burn thinned trees, chip or remove from the site.

Like mastication, the precision of thinning makes it useful for accomplishing large changes in vegetative structure and composition in one entry.⁴

There is no one-size-fits-all recommendation for how mechanical thinning or prescribed fire should be used at a given location in order to reduce wildfire risk,

but thinning of both canopy and ladder fuels is generally needed to reduce crown fire potential.⁵

1 USDA Forest Service Research Paper RMRS-RP-29. 2001.

2. (Scott, Joe H, Reinhardt, Elizabeth D. 2001. Assessing crown fire potential by linking models of surface and crown fire behavior.

USDA Forest, Service, Rocky Mountain Research Station, research paper RMRS-RP-29. 3-6).

3. Graham, Russell T, McCaffrey, Sarah, Jain, Theresa B. 2004. Science basis for changing forest structure to modify wildfire behavior and severity. USDA Forest Service, Rocky Mountain Research Station, General Technical Report RMRS-GTR-120. 8-12

4. (Fight, Roger D, Barbour, James R. 2005. Financial analysis of fuel treatments. USDA Forest Service, Pacific Northwest research Station, General Technical Report PNW-GTR-662. 1-2).

5. (Lowe, Kimberly. 2006. Northern Arizona University, Ecological Restoration Institute, Working papers in southwestern ponderosa pine forest restoration, number 15).

OPEN BURNING REQUIREMENTS

When determining which fuels treatment to utilize on your land consider what will be done with the resulting materials. When doing a prescribed burn or burning slash piles, be aware that the NM Environment Department, Air Quality Bureau, Environmental Improvement Board has a statewide Open Burning Policy in place. Title 20 Environmental Protection, Chapter 2 Part 60 Open Burning states that effective December 31, 2003, Open burning of vegetative material under this section shall meet the following requirements:

- for purposes of disposal of such material, burning of areas with non-piled vegetative material does not exceed ten acres per day, or burning of piled, vegetative material, including material gathered in a pit or open container, does not exceed one thousand cubic feet of pile volume per day. In determining daily burn area and daily burn pile volume, areas or piles that are within three hundred feet of each other shall be considered to constitute a single burn if the burning occurs on the same day and on property under ownership or possessory control of the same person.
- burning shall be conducted at least 300' from any occupied dwelling, workplace or place where people congregate, which is on property owned by or under possessory control of, another person;
- burning shall begin no earlier than one hour after sunrise, and shall be extinguished no later than one hour before sunset
- burning shall be attended at all times
- the appropriate local fire department or dispatch or firefighting authority shall be notified prior to burning
- for burns exceeding one acre per day or 100 cubic feet of pile volume per day, the burner shall provide prior notice of the date and location of the burn to all households within one quarter of a mile of the burn
- If the burn will be within one mile of other people, you must visually monitor the smoke from the burn. Watch

the smoke and note the color of the smoke and the direction it goes.

- the burner shall consider alternatives to burning prior to igniting a burn
- material to be burned shall be as dry as practicable
- effective June 1, 2004, open burning of household waste, other than vegetative material is prohibited.

For more information please contact New Mexico Environment Department, Air Quality Bureau, Smoke Management Program, 2044 Galisteo Street, Santa Fe, NM 87505 1-800-224-7009.

PUBLIC OUTREACH AND EDUCATION

Community fire education is critical to help enhance fire prevention. Most residents lack an understanding of the fire environment they live in, or even realize when potential hazards exist. Other residents are aware of the fire threat but don't know how to minimize fire hazards. Many of the WUI Communities in Guadalupe County are isolated and located large distances from the limited firefighting resources located in the County, which makes it impossible to respond to all fires in a timely manner.

The goal of any fire education program should be to create an awareness that the fire problem is real and then to gain community support to implement fire hazard reduction programs. It is important to consider that residents have their own motives and values. These values influence one's willingness to participate in a program. It is imperative to adequately communicate the advantages of any fire hazard reduction program and to explain all the alternatives available. It is also helpful to explore possible funding sources to aid in the implementation of any programs.

FUELS REDUCTION PROJECTS

FUELS REDUCTION ALONG BOSQUE WITHIN WUIS

1. The priority area for fuels reduction in Guadalupe County is the bosque along the Pecos River in the Puerto de Luna and Santa Rosa areas and around the homes in Milagro. The goal would be the removal of the treated, dead Salt Cedars along the river within the Puerto de Luna WUI and the Santa Rosa WUI. The consensus is to remove the dead, standing fuels by mechanical means and then each of the land owners could choose what to do with the materials.

DEFENSIBLE SPACE

2. The second priority for fuels reduction is to create effective defensible space zones around homes that are at risk of being affected by wildfires. Defensible space is an area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure. It also reduces the chance of a structure fire moving from the building to the surrounding forest. Defensible space provides room for the firefighters to do their jobs. Your house is more likely to withstand a wildfire if grasses, brush, trees and other common forest fuels are managed to reduce a fire's intensity. Creating an

effective defensible space involves developing a series of management zones in which different treatment techniques are used. Develop defensible space around each building on your property. Include detached garages, storage buildings, barns and other structures in your plan. The actual design and development of your defensible space depends on several factors:

- ◆ size and shape of buildings
- ◆ materials used in their construction
- ◆ slope of the ground on which structures are built
- ◆ surrounding topography
- ◆ sizes and types of vegetation on your property

These factors all affect your design.

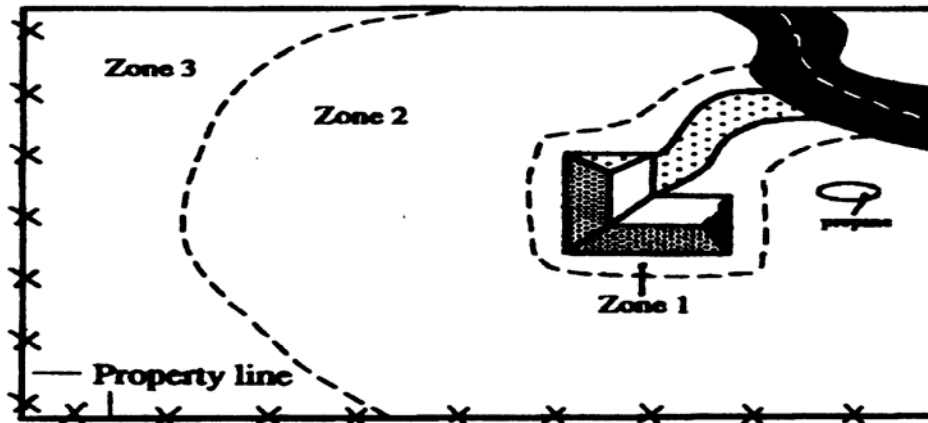


Figure 1: Forested property showing the three fire-defensible zones around a home or other structure.

Zone 1

The size of Zone 1 is 15 feet, measured from the edges of the structure. Within this zone, several specific treatments are recommended.

- Plant nothing within 3 to 5 feet of the structure, particularly if the siding is a flammable material.
- Decorative rock creates an attractive, easily maintained nonflammable ground cover.
- If the house has noncombustible siding, widely spaced foundation plantings of low growing shrubs or other “fire wise” plants are acceptable.
- Do not plant directly beneath windows or next to foundation vents. Be sure there are no areas of continuous grass adjacent to plantings in this area.
- Frequently prune and maintain plants in this zone to ensure vigorous growth and low growth habit.
- Remove dead branches, stems and leaves.
- Do not store firewood or other combustible materials in this area.
- Enclose or screen decks with metal screening.
- Extend the gravel coverage under the decks.
- Do not use areas under decks for storage.
- Remove all trees from Zone 1 to reduce fire hazards. If you do keep one tree, consider it part of the structure and extend the distance of the entire defensible space accordingly. Isolate the tree crown from any other

surrounding forest by at least 15 feet. Prune it to at least 15 feet above the ground. Remove any branches that overhang the roof or are within 10 feet of the chimney. Remove all “ladder fuels” from beneath the tree. Ladder fuels are small shrubs, trees, tree limbs and other materials that allow fire to climb into the tree crown –the branches and foliage.

Zone 2

- Selectively remove (thin) trees and large shrubs so there is at least 10 feet between crowns. Crown separation is measured from the furthest branch of one tree to the nearest branch on the next tree, not from tree trunk to tree trunk. On steep slopes, allow more space between tree crowns.
- Remove all ladder fuels (undergrowth) from these remaining trees.
- Carefully prune trees to a height of 10 feet.
- Thin the inner portion of Zone 2 more heavily than the outer portions. Gradually increase tree density as you approach Zone 3. As a rule of thumb, the recommended width of defensible space from the structure to the outer edge of Zone 2 will increase as slope percent increases.
- Isolated shrubs may remain, provided they are not under tree crowns.
- Prune and maintain these plants periodically to maintain vigorous growth.
- Remove dead stems from trees and shrubs annually.
- Limit the number of dead trees (snags) retained in this area. Wildlife needs only one or two snags per acre. Be sure any snags left for wildlife cannot fall onto the house or block access roads or driveways.
- Mow grasses (or remove them with a weed trimmer) as needed through the growing season to keep them low, a maximum of 6 or 8 inches. This is extremely critical in the fall when grasses dry out and cure or in the spring after the snow is gone but before plants green up.
- Stack firewood and woodpiles uphill or on the same elevation as the structure at least 30 feet away.
- Clear and keep away flammable vegetation within 10 feet of these woodpiles.
- Do not stack wood against your house or on or under your deck, even in winter. Many homes have burned from a woodpile that ignited as the fire passed. Wildfires can burn at any time of year in the southwest.
- Locate propane tanks at least 30 feet from any structures, preferably on the same elevation as the house. Clear and keep away flammable vegetation within 10 feet of these tanks.
- Do not screen propane tanks with shrubs or vegetation.
- Dispose of slash (limbs, branches and other woody debris) removed from your trees and shrubs by chipping, lop and scattering or by piling and burning.

Zone 3

Zone 3 is an area of management for landowner objectives and is of no particular size. It extends from the edge of Zone 2 to your property boundaries. In this area you are encouraged to manage your forests in a more traditional manner.

Typical management objectives for areas surrounding homesites or subdivisions are:

- provide optimal recreational opportunities
- enhance aesthetics

- maintain tree health and vigor
- provide barriers from wind, noise, dust and visual intrusions
- support limited production of firewood, fence posts and other forest commodities; or grow Christmas trees or trees for transplanting.
- prune trees along trails and fire access roads.
- Any approved method of slash treatment is acceptable for this zone, including piling and burning, chipping or lop and scatter..

FUEL BREAKS AROUND WUI BOUNDARIES

3. Fuel Breaks

The third priority for fuels reduction work is to create fuelbreaks adjacent to a community's outer perimeter of homes. A fuelbreak is a strategically located block or strip of land in which a cover of dense, heavy or flammable vegetation has been permanently changed to one of lower fuel volume and reduced flammability. A well designed fuelbreak may provide an area in which firefighters can attempt to stop an oncoming fire.

In the past the Vaughn Fire Department would use a dozer to scrape "fuelbreaks" around developments in areas of overgrown grazelands. After a concern about violating the "anti-donation" clause the practice was terminated. Clarification needs to be made and if allowable, the practice should be continued.

Fuel Breaks may also prove effective around State Parks to provide protection from oncoming wildfires.

When planning for fuelbreak locations, the following factors should be considered:

- Fuel types and loading
- Topographical features
- Prevailing winds
- Access
- Proximity to homes
- Archaeological sites should be avoided
- Presence of threatened and endangered species

Large fuel breaks may be beyond the scope of the County. In that case, the NM State Forestry may be consulted.

Hazardous fuels monies are available from state and federal agencies For more information visit the New Mexico State Forestry website, www.nmforestry.com or the local NRCS Office, or the funding sources list in Appendix two of this CWPP.

FIRE CHIEF'S ASSOCIATION

4. The County Fire Departments in conjunction with Guadalupe County Public Safety are in the process a forming the Guadalupe County Fire Chief's Association. The Association will meet once a month and work on County wide projects together. One of the responsibilities of the Fire Chief's Association will be to monitor the projects identified in this plan and identify future projects. The Association will also be responsible for public outreach and education and updating this CWPP.

TREATMENT OF STRUCTURAL IGNITABILITY

There is an increased interest to build subdivisions in undeveloped areas throughout Guadalupe County. As such, the Guadalupe County Public Safety recognizes the need to provide guidelines to homeowners and communities to reduce the potential of structural ignitability. The recommendations include;

- the placement of underground water storage tanks anywhere those homes are going to be built.
- Public education and outreach
- Implementing the guidelines made by the NM State Forestry Publication, Living with Fire.

<p>The primary determinants of a home's ability to survive wildfire are its roofing material and the quality of the "defensible space" surrounding it.</p>
--

For homes and communities that are already established the suggestions made in the Action Plan, Proposed Wildfire Hazard Mitigation for Guadalupe County WUIs, address reducing structural ignitability.

DEFENSIBLE SPACE AND FIREWISE ANNUAL CHECKLIST

- Trees and shrubs are properly thinned and pruned within the defensible space.
- Slash from thinning is disposed of.
- Roof and gutters are clear of debris.
- Branches overhanging the roof and chimney are removed.
- Chimney screens are in place and in good condition
- Grass and weeds are mowed to a low height.
- An outdoor water supply is available, complete with a hose and nozzle that can reach all parts of the house.
- Fire extinguishers are checked and in working order.
- The driveway is wide enough. Clearance of trees and branches is adequate for fire and emergency equipment. (Check with your local fire department.)
- Road signs and your name and house number are posted and easily visible.
- There is an easily accessible tool storage area with rakes, hoes, axes and shovels for use in case of fire.
- You have practiced family fire drills and your fire evacuation plan.
- Your escape routes, meeting points and other details are known and understood by all family members.
- Attic, roof, eaves, and foundation vents are screened and in good condition.
- Stilt foundations and decks are enclosed, screened or walled up.
- Trash and debris accumulations are removed from the defensible space.

IMPROVING FIREFIGHTING CAPACITY

WILDLAND COORDINATOR

The first recommendation for improving fire response and capabilities is for the county to hire an experienced Wildland Coordinator. The position could be funded directly by Guadalupe County or through a grant. A Wildland Coordinator could coordinate efforts to address many of the recommendations made in this CWPP. For example, a Wildland Coordinator could:

- work with the County Commission to improve firefighter safety,
- create unification among the volunteer fire departments,
- write grants to bring additional fire program money into Guadalupe County,
- work toward improving fire department ISO ratings,
- initiate fire education and public outreach programs,
- coordinate efforts to bring about fuel breaks and encourage landowners to incorporate defensible space.

This recommendation should be a priority for Guadalupe County. A professional, experienced Wildland Coordinator could be a tremendous asset to Guadalupe County and the Fire Service within the County.

TRAINING

Every volunteer firefighter in Guadalupe County should have at least the introductory wildland firefighter training courses. These courses provide training in the proper use of firefighting tools and apparatus, basic fire behavior, and weather. The minimum training recommendations include;

- S-130 Firefighting Training
- S-190 Introduction to Wildland Fire Behavior
- I-100 Introduction to Incident Command System
- L-180 Human Factors on the Fireline
- S-211 Portable Pumps and Water Use
- S-212 Wildland Fire Chain Saws
- S-201 Supervisory Concepts
- S-290 Intermediate Wildland Fire Behavior
- RT-130 The annual fireline safety refresher

More training is available and would be beneficial to anyone interested. For more information in the current year's training schedule contact the NM State Forestry Office in Las Vegas, NM.

For more information on qualifications and required trainings go to NWCG.gov and select NWCG publications, then Qualifications, or call the Fire Management Officer at the NM State Forestry.

EQUIPMENT

Equipment needs include personnel protective equipment, (PPE), tools and apparatus. Wildland fire clothing, PPE, is very different from the bunker gear

used in structural firefighting. Every firefighter needs a full set of PPE that fits well and meets the minimum standards established by the National Fire Protection Association. PPE includes Nomex wildland fire pants and shirt, leather gloves, an appropriate helmet, and a pair of high-topped leather boots with a vibram sole, no steel toe. Each firefighter also needs a fire shelter, which is to be carried on them at all times. The next generation fire shelters are an improvement from the "Old" fire Shelters and provide improved fire protection. The next generation fire Shelters are larger than the old shelters and will not fit in the old red packs. When purchasing the new fire shelters remember to also order new red packs. The new red packs have an area to carry the next generation fire shelters where they are readily accessible in case they are needed. Training in the proper deployment of the fire shelter is critical, and should be practiced periodically as a training exercise. Training shelters are available for purchase, these training shelters are reusable and provide a cost effective way to provide periodic shelter deployment training. Other equipment needs include; a headlamp, goggles, water bottles, MREs, water, first aid kits, maps, compasses, Global Positioning Systems, sleeping bags, hand held radios for every firefighter, chainsaws, hand tools and bladder bags. Bladder bags are five gallon water bags, similar to a back pack with an attached hose and nozzle apparatus. They are used for hot spots that a hose lay or engine cannot get to. There should be one chainsaw per engine and one experienced sawyer assigned to that saw. The sawyer should be provided with earplugs, eye protection and chaps. Recommended hand tools include Pulaski, McLeods, shovels, and flappers. Because of the shortage of draft sites in the County each Volunteer Fire Department needs a Type II or III Water Tender . Each department should have at least one, preferably two Type VI wildland fire engines. The engine should be four wheel drive and be equipped with a mobile radio, water tank and pump with draft capabilities, hose, hose adapters and valves, nozzles, spanner wrench, drafting equipment and Foam capabilities. Each engine should also carry a bolt cutter. Training, PPE, Equipment and Apparatus requirements are outlined in the New Mexico Resource Mobilization Plan and at the National Wildfire Coordinating Group website, NWCG.gov.

FIRE DEPARTMENT FUNDING GUIDELINES

There is a need to change the way funding is allocated by the New Mexico State Fire Marshall's Office. Currently fire funds are based on ISO rating which are based strictly on structural firefighting capabilities. Fire Departments in rural areas, like Guadalupe County, receive more wildfire calls than structure fire calls annually. However, funding from the State Fire Fund cannot be used to purchase wildland fire apparatus. Each department needs to be able to assess the needs of their department and purchase equipment according to their individual needs.

FIRE DEPARTMENT NEEDS

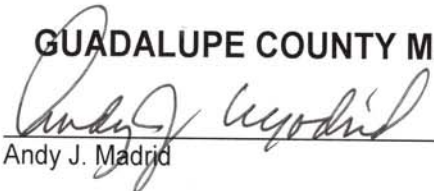
Table 16. Fire Department Wildland Equipment Needs Assessment

Fire Dept.	Current Equipment	Additional Wildland Equipment Needs	Training Needs
Anton Chico VFD	<ul style="list-style-type: none"> • (1) Type I Engine 1000 GPM pump • (1) Type VI Engine 250 gal • (1) Type III Water Tender, 1000 gal • (1) Med. Rescue Van 	<ul style="list-style-type: none"> • (10) sets wildland PPE & boots • new Type VI Engine replacement • new Type III Water Tender replacement • (6) SCBAs • (12) spare SCBA bottles • 10 Next Generation Fire Shelter and red packs 	<ul style="list-style-type: none"> • S-130/190, I-100, L-180 • S-211 • S-212 • S-201 • S-290 • Annual Fire Safety Refresher
Puerto de Luna VFD	<ul style="list-style-type: none"> • (1) Type I Engine 1000 GPM pump • (1) old Type VII Engine 150 gal • (1) Type III Water Tender 2100 gal 	<ul style="list-style-type: none"> • (10) sets wildland PPE & boots • new Type VI Engine to replace old Type VII • (4) SCBAs • (8) spare SCBA bottles • 10 Next Generation Fire Shelter and red packs 	<ul style="list-style-type: none"> • S-130/190, I-100, L-180 • S-211 • S-212 • S-201 • S-290 • Annual Fire Safety Refresher
Puerto de Luna # 2 VFD	<ul style="list-style-type: none"> • (1) Type II Engine 500 GPM pump • (2) Type VI Engines 200 gal • (1) Type V Water Tender 500 gal • (3) ATVs w/ CAFS units • (1) Med Rescue Van 	<ul style="list-style-type: none"> • new Type I Engine replacement • (21) sets wildland PPE & boots • Mobile Cascade System & trailer • 1 Ton command truck • new Type II Water Tender replacement • (6) SCBAs • (12) spare SCBA bottles • (21) Next Generation Fire Shelter and red packs • (3) chainsaws 	<ul style="list-style-type: none"> • S-130/190, I-100, L-180 • S-211 • S-212 • S-201 • S-290 • Annual Fire Safety Refresher
Vaughn VFD	<ul style="list-style-type: none"> • (1) Type I Engine 1000 GPM pump • (2) Type VI Engines • (2) Type III Water Tender 1000 gal • (1) Med Rescue Van • (1) Command Vehicle • (1) SCBA Cascade System 	<ul style="list-style-type: none"> • (14) sets wildland PPE & Boots • (10) SCBAs • (20) spare SCBA bottles • (1) Type III Water Tender to replace old unit • (14) Next Generation Fire Shelter and red packs 	<ul style="list-style-type: none"> • S-130/190, I-100, L-180 • S-211 • S-212 • S-201 • S-290 • Annual Fire Safety Refresher
Santa Rosa VFD (Moise Central)	<ul style="list-style-type: none"> • (1) Type I Engine 1000 gal • (1) Type V Engine 500 gal • (1) Type IV Engine/Rescue Unit 750 gal • (1) Type V Engine 500 gal 	<ul style="list-style-type: none"> • (2) Type VI wildland Engines • 2000 gal Type III Water Tender • (2) John Deere Mules with Intelgard FOAM units • (30) sets wildland PPE & Boots • (30) next generation fire shelters & red packs 	<ul style="list-style-type: none"> • S-130/190, I-100, L-180 • S-211 • S-212 • S-201 • S-290 • Annual Fire Safety Refresher
Lorenzo "Tudy" Sanchez Substation	<ul style="list-style-type: none"> • 2000 gal WT • 500 gal brush 		<ul style="list-style-type: none"> • S-130/190, I-100, L-180 • S-211 • S-212 • S-201 • S-290 • Annual Fire Safety Refresher

We do hereby endorse and support the Guadalupe County Wildfire Protection Plan:

GUADALUPE COUNTY MANAGER

Manager

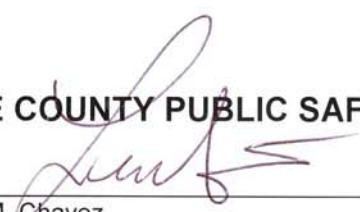

Andy J. Madrid


date

We do hereby endorse and support the Guadalupe County Wildfire Protection Plan:

GUADALUPE COUNTY PUBLIC SAFETY/FIRE SERVICE

Public Safety


Levi M. Chavez

07/07/08
date

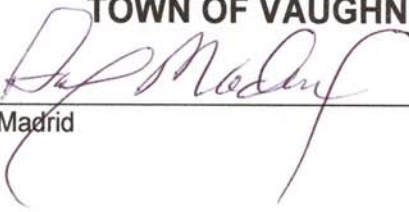
Guadalupe County CWPP – May 2008

We do hereby endorse and support the Guadalupe County Wildfire Protection Plan:

TOWN OF VAUGHN

Mayor

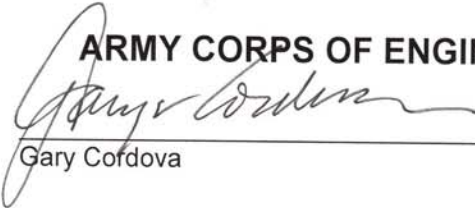
Paul Madrid

A handwritten signature in black ink, appearing to read "Paul Madrid", written over a horizontal line.

6/25/08

date

We do hereby endorse and support the Guadalupe County Wildfire Protection Plan:

Manager  **ARMY CORPS OF ENGINEERS**
Gary Cordova 7-18-2008
date

We do hereby endorse and support the Guadalupe County Wildfire Protection Plan:

NEW MEXICO STATE FORESTRY DIVISION

Las Vegas District Forester Ernesto Hurtado 6/10/08
Ernesto Hurtado date

We do hereby endorse and support the Guadalupe County Wildfire Protection Plan:

SANTA ROSA LAKE STATE PARK

Park Manager Mario Andrada Bay Project 7-18-08
Mario Andrada date

We do hereby endorse and support the Guadalupe County Wildfire Protection Plan:

BUREAU OF LAND MANAGEMENT

Roswell Field Office



Chuck Schmidt

7/23/08

date

Fire Management Officer

APPENDIX

- 1. COMMUNITY WILDFIRE ASSESSMENT FORM**
- 2. FUNDING SOURCES**
- 3. SANTA ROSA LAKE STATE PARK EVACUATION PLAN**
- 4. A GUIDE FOR THE HOMEOWNER**

APPENDIX 1

Wildfire Hazard Home Assessment Form

A. Community Name:	Points	My Points here (choose the best one)
My fire protection provided by:		
1. The Main road to my house is best described as:		
Two or more primary roads	1	
One road, primary route	3	
One way in and out	5	
2. The main road to my house is:		
20 feet wide or more	1	
Less than 20 feet	3	
3. The main road to my house is:		
Smooth road, grade <5%	1	
Rough road, grade >5%	3	
Other		
4. My Driveway is best described as:		
Loop Road, cul de sacs with Outside radius > 50 ft		
Loop Road, cul de sacs with Outside radius <50 ft	1	
OR		
Dead end driveway less than 200 ft to my house	3	
Dead end driveway longer than 200ft to my house	5	
5. My Lot Size is:		
More than 10 acres	1	
Between 1-10 acres	3	
Less than 1 acre	5	
6. Street signs in my community are:		
Present (4" in size & reflective)	1	
Not Present	5	
VEGETATION		
7.The vegetation or "fuels" around my home are:		
Light Fuels, grasses	1	
Medium Fuels, light brush, small trees	5	
Heavy Fuels, dense brush, timber	10	
Slash, down & dead fuels	10	
8. I have cleared the "fuels" around my house:		
More that 100ft of treatment around my house	1	
30-70 ft treatment from my home & bldgs	5	
No defensible space treatment, the fuels are right up to my house	10	
TOPOGRAPHY		

9. Slope around my house is best described as:	
Less than 9%	1
Between 10-20%	4
Between 21-30%	7
Between 31-40%	8
Greater than 41%	10
ADDITIONAL RATING FACTORS	
10. Rough topography that contains steep canyons around or on the way to my house	2
11. Areas with a history of higher fire occurrence than surrounding areas due to special situations such as heavy lightning, railroads, escaped debris burning, arson, etc around or near my home	3
12. I live in an Area that is periodically exposed to unusually severe fire weather and strong winds	4
E. ROOFING MATERIALS	
13. Construction Material of my roof	
Class A roof: example non combustible tile or metal	1
Class B roof	3
Class C roof: ex.	5
Non- rated: ex. Wood shingles	10
F. MY HOUSE IS MADE MOSTLY OF:	
14. Materials	
Noncombustible siding & non combustible deck	1
Noncombustible siding with a wood deck	3
combustible siding and deck	10
G. AVAILABLE FIRE PROTECTION	
15. Water Source Available (on site)	
500 gpm hydrants <1000 ft apart	1
Hydrants above or draft site	2
No hydrants or draft site	3
16. Water source Available (off-site)	
Source within 20 min. round trip	1
Source within 21-45 min. round trip	5
Source > 46 min. round trip	10
H. UTILITIES (GAS, ELECTRIC)	
17. Placement	
All underground utilities	1
One underground, one above	3
All aboveground	5

L. ADD UP YOUR POINTS

1. Low Hazard	<49 points
2. Moderate Hazard	49-68 points
3. High Hazard	69-83 points
4. Extreme Hazard	84+ points

APPENDIX 2 FUNDING SOURCES

The following section provides information on federal, state, and private funding opportunities for conducting wildfire mitigation projects.

FEDERAL FUNDING

Source: Predisaster Mitigation Grant Program

Agency: Department of Homeland Security Federal Emergency Management Agency (DHS FEMA)

Website: <http://www.fema.gov/government/grant/pdm/index.shtm>

Description: The DHS includes FEMA and the U.S. Fire Administration. FEMA's Federal Mitigation and Insurance Administration is responsible for promoting predisaster activities that can reduce the likelihood or magnitude of loss of life and property from multiple hazards, including wildfire. The Disaster Mitigation Act of 2000 created a requirement for states and communities to develop predisaster mitigation plans and established funding to support the development of the plans and to implement actions identified in the plans. This competitive grant program, known as PDM, has funds available to state entities, tribes, and local governments to help develop multihazard mitigation plans and to implement projects identified in those plans.

Source: Funding for Fire Departments and First Responders

Agency: DHS, U.S. Fire Administration

Website: <http://www.usfa.dhs.gov/fireservice/grants/>

Description: Includes grants and general information on financial assistance for fire departments and first responders. Programs include the Assistance to Firefighters Grant Program (AFGP), Reimbursement for Firefighting on Federal Property, State Fire Training Systems Grants, and National Fire Academy Training Assistance.

Source: Conservation Innovation Grants (CIG)

Agency: National Resource Conservation Service

Website: <http://www.nm.nrcs.usda.gov/programs/cig/cig.html>

Description: CIG State Component. CIG is a voluntary program intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging federal investment in environmental enhancement and protection, in conjunction with agricultural production. Under CIG, Environmental Quality Incentives Program (EQIP) funds are used to award competitive grants to non-federal governmental or nongovernmental organizations, tribes, or individuals. CIG enables the Natural Resources Conservation Service (NRCS) to work with other public and private entities to accelerate technology transfer and adoption of promising technologies and approaches to address some of the nation's most pressing natural resource concerns. CIG will benefit agricultural producers by providing more options for environmental enhancement and compliance with federal, state, and local regulations. The NRCS administers the CIG program. The CIG requires a 50/50 match between the agency and the applicant. The CIG has two funding components: national and state. Funding sources are available for water resources, soil resources, atmospheric resources, and grazing land and forest health.

Source: Rural Fire Assistance

Agency: Department of the Interior

Description: DOI program focused on rural fire department training, and the purchase protective fire clothing and firefighting equipment and public education. Departments that serve a community of less than 10,000 people located near federal (BLM) land are eligible. The maximum award is \$20,000 and requires a 10% cost share which may include in-kind services. For more information contact the DOI at 202-606-3211

Source: Volunteer Fire Assistance

Agency: USDA Forest Service

Website: <http://www.fs.fed.us/fire/partners/vfa/>

Description: USDA Forest Service funding will provide assistance, through the states, to volunteer fire departments to improve communication capabilities, increase wildland fire management training, and purchase protective fire clothing and firefighting equipment. This grant may also be used to fund a Wildland Coordinator Position in the County. The maximum grant amount is \$25,000 and is a 90%, 10 % cost share. For more information and an application, go to NMForestry.com

Source: State Fire Assistance

Agency: USDA Forest Service

Description: USDA Forest Service program providing financial and technical support directly to state wildland fire agencies to enhance firefighting capacity of state, local and rural organizations. The program also supports community based hazard mitigation and an expanded public service fire prevention program. Funds have been awarded for private lands defensible space thinning. For more info contact the USFS Regional Office at 505-842-3344

Source: Firewise

Agency: Multiple

Website: <http://www.firewise.org>

Description: The Wildland/Urban Interface Working Team (WUIWT) of the National Wildfire Coordinating Group, is a consortium of wildland fire organizations and federal agencies responsible for wildland fire management in the United States. The WUIWT includes the USDA Forest Service, USDI Bureau of Indian Affairs, USDI BLM, USDI Fish and Wildlife Service, USDI National Park Service, FEMA, U.S. Fire Administration, International Association of Fire Chiefs, National Association of State Fire Marshals, National Association of State Foresters, National Emergency Management Association, and National Fire Protection Association. There are many different Firewise Communities activities that can help homes and whole neighborhoods become safer from wildfire without significant expense. Community cleanup days, awareness events, and other cooperative activities can often be successfully accomplished through partnerships among neighbors, local businesses, and local fire departments, at little or no cost. The Firewise Communities recognition program page (<http://www.firewise.org/usa>) provides a number of excellent examples of these kinds of projects and programs.

The kind of help you need will depend on who you are, where you are, and what you want to do. Among the different activities individuals and neighborhoods can undertake, the following actions often benefit from some kind of seed funding or additional assistance from an outside source:

- Thinning/pruning/tree removal/clearing on private property—particularly on very large, densely wooded properties
- Retrofit of home roofing or siding to noncombustible materials
- Managing private forest
- Community slash pickup or chipping
- Creation or improvement of access/egress roads
- Improvement of water supply for firefighting
- Public education activities throughout the community or region

Some additional examples of what communities, counties, and states have done can be found in the National Database of State and Local Wildfire Hazard Mitigation Programs at <http://www.wildfireprograms.usda.gov>. You can search this database by keyword, state, jurisdiction, or program type to find information about wildfire mitigation education programs, grant programs, ordinances, and more. The database includes links to local websites and e-mail contacts.

Source: The National Fire Plan

Website: <http://www.forestsandrangelands.gov/>

Description: Many states are using funds from the NFP to provide funds through a cost-share with residents to help them reduce the wildfire risk to their private property. These actions are usually in the form of thinning or pruning trees, shrubs, and other vegetation and/or clearing the

slash and debris from this kind of work. Opportunities are available for rural, state, and volunteer fire assistance.

Source: Staffing for Adequate Fire and Emergency Response (SAFER)

Agency: DHS

Website: <http://www.firegrantsupport.com/safer/>

Description: The purpose of SAFER grants is to help fire departments increase the number of frontline firefighters. The goal is for fire departments to increase their staffing and deployment capabilities and ultimately attain 24-hour staffing, thus ensuring that their communities have adequate protection from fire and fire-related hazards. The SAFER grants support two specific activities: (1) hiring of firefighters and (2) recruitment and retention of volunteer firefighters. The hiring of firefighters activity provides grants to pay for part of the salaries of newly hired firefighters over the five-year program. SAFER is part of the Assistance to Firefighters Grants and is under the purview of the Office of Grants and Training of the DHS.

Source: The Fire Prevention and Safety Grants (FP&S)

Agency: DHS

Website: <http://www.firegrantsupport.com/fps/>

Description: The FP&S are part of the Assistance to Firefighters Grants and are under the purview of the Office of Grants and Training in the DHS. FP&S grants support to projects that enhance the safety of the public and firefighters who may be exposed to fire and related hazards. The primary goal is to target high-risk populations and mitigate high incidences of death and injury. Examples of the types of projects supported by FP&S include fire-prevention and public-safety education campaigns, juvenile fire-setter interventions, media campaigns, and arson prevention and awareness programs. In fiscal year 2005, Congress reauthorized funding for FP&S and expanded the eligible uses of funds to include firefighter safety research and development.

STATE FUNDING

Source: State and Private Forestry Programs

Agency: National Association of State Foresters

Website: http://www.stateforesters.org/S&PF/coop_fire.html

Description : The National Association of State Foresters recommends that funds become available through a competitive grant process on Wildland-Urban Interface hazard mitigation projects. State fire managers see opportunities to use both the State Fire Assistance Program and the Volunteer Fire Assistance Program to improve the safety and effectiveness of firefighters in the interface, as well as in other wildland fire situations. To ensure firefighter safety, minimize property and resource loss, and reduce suppression costs, land management agencies, property owners, local leaders, and fire protection agencies must work cooperatively to mitigate interface fire risks, as well as to ensure that wildland firefighters receive the training, information, and equipment necessary to safely carry out their responsibilities.

The 2007 Western WUI Grant Program is a specific grant available under the State Fire Assistance Program. It includes opportunities for hazardous-fuels reduction, education, and community and homeowner actions. An application and instructions can be found at: [http://www.firesafecouncil.org/news/ attachments/2007_CDF_application-process_final168.pdf](http://www.firesafecouncil.org/news/attachments/2007_CDF_application-process_final168.pdf)

Source: New Mexico Association of Counties 2007–2008 Wildfire Risk Reduction Program

Agency: New Mexico Association of Counties

Website: <http://www.nmcounties.org/wildfire.html>

Description: This program targets at-risk communities by offering seed money to help defray the costs of community wildfire protection projects. During the past two years, the Wildfire Risk Reduction Grant Program has primarily funded projects for the development of Community Wildfire Protection Plans (CWPP), a prerequisite to all other activities. In 2007, priority was given to projects that requested funding for hazardous fuel reduction, wildfire prevention, and community outreach activities that were identified in completed CWPPs.

PRIVATE FUNDING

Source: The Urban Land Institute (ULI)

Website: <http://www.uli.org>

Description: ULI is a 501(c)(3) nonprofit research and education organization supported by its members. The institute has more than 22,000 members worldwide, representing the entire spectrum of land-use and real estate development disciplines, working in private enterprise and public service. The mission of the ULI is to provide responsible leadership in the use of land to enhance the total environment. ULI and the ULI Foundation have instituted Community Action Grants

(http://www.uli.org/Content/NavigationMenu/MyCommunity/CommunityActionGrants/Community_Action_Gr.htm) that could be used for Firewise Communities activities. Applicants must be ULI members or part of a ULI District Council. Contact actiongrants@uli.org or review the web page to find your District Council and the application information.

Source: Environmental Systems Research Institute (ESRI)

Website: <http://www.esri.com/grants>

Description: ESRI is a privately held firm and the world's largest research and development organization dedicated to geographic information systems. ESRI provides free software, hardware, and training bundles under ESRI-sponsored Grants that include such activities as conservation, education, and sustainable development, and posts related non-ESRI grant opportunities under such categories as agriculture, education, environment, fire, public safety, and more. You can register on the website to receive updates on grant opportunities.

APPENDIX 3
SANTA ROSA LAKE STATE PARK
FIRE EVACUATION PROCEDURES

- ◆ In the event of a fire at Rocky Point Campground or the Park office, all park visitors would be evacuated to the east side of the dam to Juniper Park or the Boat Ramp. It would be difficult for the fire to spread to this portion of the park due to the lake and river separating these two locations.

- ◆ In the event of fire on the east side of the lake, Juniper Park, Boat Ramp, Los Tanos Campground, all park visitors would be evacuated out of the park via New Mexico 91 which leads in to Santa Rosa, New Mexico.

- ◆ New Mexico Highway 91 is the main evacuation route out of the park, this road leads to Santa Rosa, New Mexico. In the event this route is inaccessible for any reason, we will utilize the alternative evacuation route, this road is a private road and leads to Interstate 40 about 5 miles to the west of Santa Rosa.

APPENDIX 4

A HOMEOWNER'S GUIDE

This reference guide is included to provide tips and recommendations to homeowner's on how to reduce structural ignitability and improve preparedness when it comes to wildland urban interface fires.

BEFORE THE FIRE - Reducing Structural Ignitability

Building Materials

- Roofs – the most vulnerable part of a home to ignition by falling embers. Metal roofs provide the best resistance to ignition. Slate, tile, Class A Asphalt shingles also provide fire resistance. Avoid wood and other combustible materials for roofs. Keep gutters clear of debris such as leaves.
- Siding, decks and fences – noncombustible materials are recommended, adobe, stucco, block, brick, noncombustible siding. Keep the area below the deck clear of leaves and debris, screen off the area leaving openings no larger than one-half inch. Do not stack firewood on or below deck or right up against the home. Keep other flammable materials, paint, oil, gasoline in approved containers away from the home and any ignition source.

Potential Ignition Sources

- Chimneys and Fireplaces – Inspect your chimney and damper at least twice a year. Clean the chimney before first use and periodically thereafter, depending on frequency of use. Have the spark arrestor inspected and confirm that it meets the latest safety code. Keep chimneys and stovepipes clear of leaves, limbs and debris.
- Ashes – Never place hot ashes in a nonmetal container or dump them on the ground. Place in a metal container and either soak with water or cover and allow to cool for several days before disposing.
- Propane Tanks – should be at least 30 ft. from any structure. Keep flammable at least 10 ft. from tank. Learn how to turn the tank off and on. In case of fire, turn off the gas before evacuating *if* time and safety allow.
- Fireworks – never allow children to play with or ignite fireworks or other incendiaries unattended.
- Smoking – Never throw lit cigarettes, cigars, etc. into a fuel source such as dead leaves, dry grass, debris, etc. Always use an ashtray and make sure to fully extinguish.

Defensible Space

- Zone 1 – this is the area closest to the structure. This well-irrigated area encircles the structure for at least 30 ft. on all sides, providing space for fire suppression equipment in the event of an emergency. Plantings should be limited to carefully spaced low flammability species. If possible maintain a mowed green lawn. Remove dead vegetation and leaves, exposing mineral soil is recommended in a 2 ft. wide perimeter along the foundation of the structure. Focus on fuel breaks such as concrete patios, walkways, rock gardens, and irrigated grass or garden within this zone. Gravel is recommended over wood chips or pine needles.
- Zone 2 – Low flammability plant materials should be used here. Plants should be low-growing, and the irrigation system should extend into this section.
- Zone 3 – Place low-growing plants and well-spaced trees in this area, remembering to keep the volume of vegetation low.
- Trees – all trees within the safety zones should have lower limbs removed to a height of 6-10 ft. remove all branches within 15 ft. of your chimney or overhanging part of your roof.

- Ladder fuels – are short shrubs or trees growing under eaves of the house or into the tree canopy that can “carry” fire up. The removal of ladder fuels within about 100 ft. of the structure will help limit the risk of crown fire around the structure.

More information can be obtained at www.firewise.org, or by visiting your local NM State Forestry Office in Las Vegas located in the Storrie Lake State Park.

Access

Limited access may prevent firefighters from reaching homes in the event of a WUI fire.

- In the event of a WUI fire, leave your gate open
- Keep driveway uncluttered and at least 12 ft. wide
- Slope of driveway should be less than 10 percent
- Trim overhanging branches to allow at least 13.5 ft. of overhead clearance
- Ensure overhead line are at least 14 ft. above ground
- Consider a turn around within your property at least 45 ft. wide especially if you driveway is more than 300 ft. in length.
- Bridges must be designed to hold the weight of a fire engine

DURING THE FIRE

When Fire Threatens – Before an evacuation is called

- Do not jeopardize your life
- Park your car facing the direction of escape with windows rolled up
- Place all valuable you want to take with you in the vehicle
- Open your Gate
- Close all windows, doors, vents in house
- Disconnect automatic garage openers
- Leave exterior doors unlocked
- Close all interior doors
- Move furniture away from windows and glass doors
- Remove lightweight curtains
- Close heavy curtains, drapes, and blinds
- Leave a light on in each room
- Turn off propane tank
- Move firewood and flammable patio furniture away from house
- Connect garden hoses to outdoor faucets
- Place a ladder against the side of home opposite the direction of the approaching

fire

When Evacuation is Ordered

- Leave immediately
- Check out at designated location, if one is set up
- Do not try to enter an area that is being evacuated

AFTER THE FIRE

- Do not attempt to return until it has been deemed safe to do so
- Check for hazards, such as gas or water leaks and electrical shorts
- Turn off damaged utilities