SABINE COUNTY TEXAS

Community Wildfire Protection Plan (CWPP)

A collaborative approach to help protect life, property and natural resources through community-based planning

Sabine County, City of Hemphill, City of Pineland,
Pineland VFD, Hemphill VFD, Six Mile VFD,
Bronson VFD, Pendleton VFD, Shamrock Shores VFD,
Rosevine VFD, Fairmount VFD,
Texas A&M Forest Service, Sabine National Forest

September 2019

Developed by the Sabine County Community Wildfire Protection Plan Committee with assistance from MPTX Associates, Inc., in accordance with Title I of the Healthy Forest Restoration Act (HFRA) and Title III Secure Rural Schools and Community Self-Determination Act (SRS Act).

Vol 3-T Pages 241

ACKNOWLEDGEMENTS

Foremost, this document is developed in recognition of the risks, work, and sacrifices made by our volunteer firefighters, and represents the whole community's supportive effort to reduce the demands that are placed on these local heroes, and to assist the firefighter's mission.

Preparation of the Sabine County Community Wildfire Protection Plan (CWPP) involved collaboration among public, private and non-profit organizations including the Sabine County Office of Emergency Management, County Judge, incorporated cities Pineland and Hemphill, and volunteer fire departments: Pineland VFD, Hemphill VFD, Six Mile VFD, Bronson VFD, Pendleton VFD, Shamrock Shores VFD, Rosevine VFD, Fairmount VFD.

Equally important are the remarkable contributions from regional partner agencies the Texas A&M Forest Service and the Sabine National Forest. Through these agencies' ongoing operations and support for wildfire response, prevention and mitigation – the residents, assets and future of Sabine County are safer and stronger. Furthermore, this document is created with extensive use, reference, and citation of information provided by those agencies such as TxWRAP and Sabine National Forest, Geographic Information System (GIS) data. Sincere thanks and acknowledgement for production and availability of the valuable tools.

Key recognition and thanks are due to the elected and appointed local officials who comprise the leadership of Sabine County. Through the vision and guidance of the County Judge, Office of Emergency Management, fire chiefs and numerous other officials the overall wildfire protection effort has taken shape and produced both tangible and intangible results.

Additional recognition is paid to the many commercial and industrial operations of Sabine County whose integral partnership and cooperation make fire prevention and mitigation efforts most effective.

Thanks go out to all participants for their efforts to provide accurate and timely information and project ideas in the preparation of this plan. A complete listing of all CWPP Planning Team members is provided in Chapter 1. Many others not listed contributed greatly to the project, and all deserve thanks.

Finally, thanks to the staff of MPTX for their work to facilitate the process and prepare this planning document:

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

The following is an outline of key subject matter collected during the planning and research process which relates to wildfire risk, and opportunities for mitigation.

Leadership of Sabine County is excellent at all levels of government and emergency response. The skill and dedication of these professionals have, up to this point in time, succeeded in preventing any widespread and damaging wildfire from afflicting the community.

The firefighters of Sabine County are primarily volunteers representing 8 fire departments with key support from the Texas A&M Forest Service and Sabine National Forest. New recruits are always welcome for these excellent, dedicated and knowledgeable teams.

Sabine County is a located in one of the most densely forested regions of Texas, bounded by Toledo Bend Reservoir to the east and Sam Rayburn Reservoir to the west. Terrain and slopes are varied and relatively hilly compared to other regions of the state. This combination of dense forest and sloped terrain provides the factors for wildfires which can spread quickly and be difficult to access.

A high proportion of Sabine County's residential building stock is situated in close proximity to Toledo Bend Reservoir. Vehicular access to these communities, also referred to as 'ingress, egress' is commonly only available along a single route. These circumstances create a unique challenge for firefighters and homeowners, and highlight the importance of preventing wildfires in these areas.

It is a picturesque county with excellent recreation and communities. County-wide initiative to "Keep Sabine County Clean" is excellent and working. However, abandoned structures are a significant wildfire concern. Uninhabited structures create a potential source for illicit fires which can migrate through dense overgrowth with a direct fuel path to surrounding forest. Besides fire danger, abandoned structures also create various other health and safety issues for the community.

Firefighting equipment: Generally good and in some cases excellent, with certain upgrades needed. A detailed list of equipment needs is found in Section 5.2 of this document.

Radio Communications: Newly installed / upgraded radio towers are an improvement but more improvement is needed. Goal is countywide clear radio contact on simple, easy to use system with modern, durable radios.

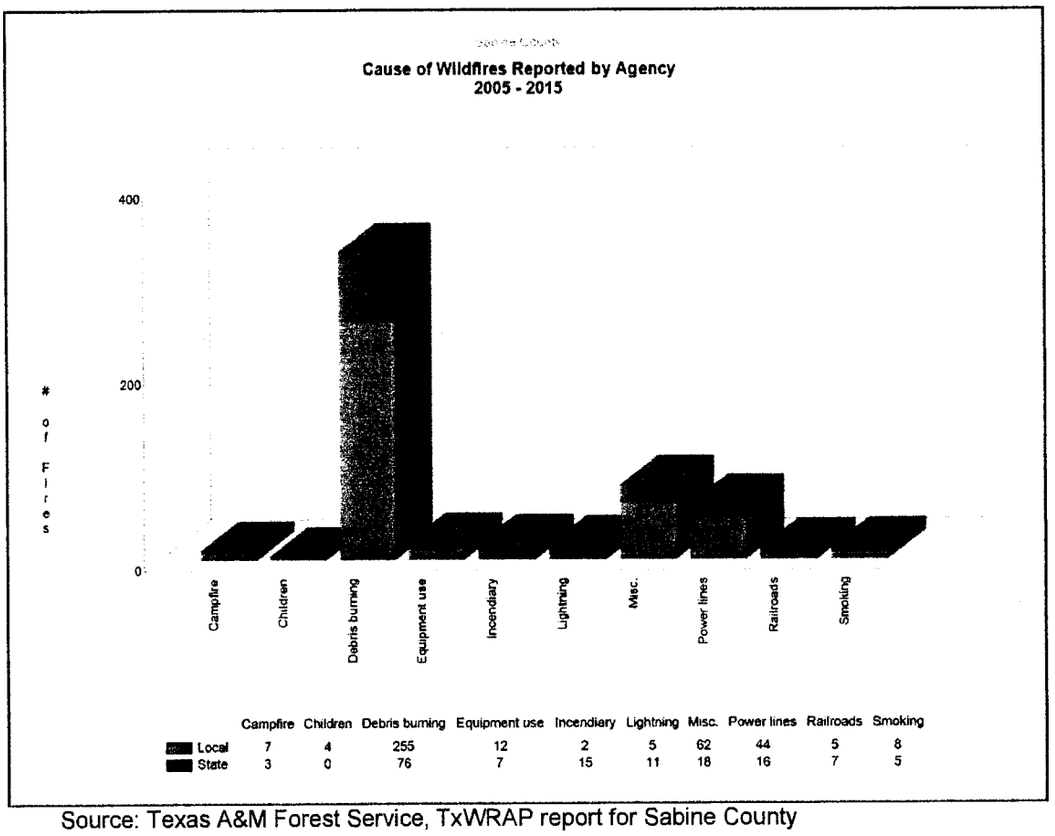
Cellular Communications: Overall cellular system upgrades are an important need. Current system is AT&T with spotty service area. Customers with other major carriers such as Verizon, T-Mobile, etc have no service in Sabine County. This is important because when available, cellular communications are a vital communications back-up for radio in emergency response scenarios. Also, cellular phone networks are even more important for community reports of wildfire or other danger.

From a forest management perspective, promoting hardwood forests and mix of timber types may be encouraged on case by case basis. Also, encouraging the forestry harvesting practices including buffers for Streamside Management Zones may be a future focus for mitigation and other benefits.

The Texas A&M Forest Service (TFS) is an active regional partner and supporter of wildfire suppression, wildland urban interface (WUI) mitigation, and community education.

Sabine National Forest (Sabine NF): This agency is a federal land manager utilizing active programs for controlled burns to mitigate fuels growth and fire-adapted ecosystems for healthy, multi-purpose forests. The latest Sabine NF management principles relate to stewardship programs which evolve alongside changing forest conditions and priorities. The county maintains 109 miles of Sabine NF road, which exemplifies the importance of coordinated and cooperative efforts.

Burn Ban Orders are highly coordinated through the National Weather Service and TFS. Burn Bans typically involve a customized statement specific to the fire-risk circumstances, and are governed and enforced by county rules. The importance of this is shown in the following graphic, which shows a high proportion of wildfires are caused by debris burning, many of which occur when Burn Bans are in place and are preventable.



Source: Texas A&M Forest Service, TxWRAP report for Sabine County

As indicated by the chart above, for the period 2005-2015, there were 599 wildfire response reports for Sabine County submitted as recorded by the Texas A&M Forest Service. 3,597 acres were burned in these occurrences ranging from 0.1 acres to 523 acres. Human activity caused the vast majority of these fires, attributed for 580 of the 599 total reports, or 96.8 percent.

Table 3-20b Sabine County Wildfires by Cause: 2005-2015

Fire Cause	Number	Percent of Total (Number)	Acres	Percent of Total (Acres)
Debris Burning	347	57.9%	1,414.2	39.3%
Miscellaneous	81	13.5%	938.1	26.1%
Power Lines	70	11.7%	154.4	4.3%
Equipment Use	19	3.2%	187.3	5.2%
Lightning	19	3.2%	326.3	9.1%
Incendiary	17	2.8%	265.5	7.4%
Campfire	11	1.8%	16.9	0.5%
Railroads	11	1.8%	254.0	7.1%
Smoking	11	1.8%	29.9	0.8%
Children	4	0.7%	2.4	0.1%
Fireworks	3	0.5%	3.0	0.1%
TOTAL	599	100.0%	3,597.3	100.0%

Source: Texas A&M Forest Service Compiled Wildfire Reports, various responding fire departments; Sabine County
Note: Complete set of fire occurrences 2005-2015 is shown on wildfire ignitions and density maps.

CHAPTER 1. INTRODUCTION

A Community Wildfire Protection Plan (CWPP) is a written document, mutually agreed upon by local, state and federal representatives and stakeholders, that identifies how a community will reduce its risks from wildland fire. CWPPs are authorized and defined in Title I of the Healthy Forest Restoration Act (HFRA). This Act was approved by Congress on November 21, 2003, and signed into law on December 3, 2003. The HFRA established unprecedented incentives for communities to take the lead role in community wildfire protection planning. The Healthy Forests Restoration Act creates an opportunity for Sabine County to:

- Develop a plan to prevent or reduce the local impacts of wildfire
- Reduce potentially flammable fuels in general proximity of neighborhoods and communities
- Create defensible spaces around homes at risk

This document represents the first of these opportunities; the development of a plan to guide local wildfire prevention efforts. The Healthy Forests Restoration Act has three minimum requirements of a Community Wildfire Protection Plan.

- Collaboration – Local, State and Federal officials confer with other interested parties including but not limited to property owners and business owners
- Prioritize areas where fuel reduction is essential as well as methods and types
- Treatment of structure ignition potential – Recommend measures for homeowners and communities to reduce ignitability of structures must be addressed by the plan

Thus the overall purpose of the Sabine County Community Wildfire Protection Plan is to develop and present a set of goals and actions that protect life, property and natural resources through both local planning and actions on the ground on a short-term and long-term basis. Implementation of this plan involves direct and sustained commitment of citizens and local officials working to reduce wildfire occurrence and losses, while improving safety and preparedness, and addressing the primary causes of wildfire in Sabine County.

1.1 COLLABORATION

The Sabine County Community Wildfire Protection Plan is a collaborative effort between federal, state, county, and fire department jurisdictions, as well as individual members of the community and commercial and industrial interests. The core planning committee is comprised of representatives from the local volunteer fire departments, emergency services districts, local governing bodies, the Texas A&M Forest Service and the Sabine National Forest. The representatives listed on the following page make up the core decision-making committee responsible for this report and are in general agreement on the plan's contents.

In addition to the work of the core committee, input from volunteer firefighters was also vital to this planning effort, as well as input from local community members. A number of themes emerged from the input of this diverse set of stakeholders, which are reported in the Executive Summary.

The Texas A&M Forest Service (TFS) was chartered by the 34th Texas Legislature in 1915 to manage the interests of Texas' forests. Created as an integral part of The Texas A&M University System (TAMUS), it is mandated by law to "assume direction of all forest interests and all matters pertaining to forestry within the jurisdiction of the state" and was instructed to "Take any action deemed necessary...to prevent and extinguish forest fires. Tasked with conserving and protecting the natural resources, property and lives, The Texas A&M Forest Service's primary functions include providing technical assistance and program delivery; providing accurate, science-based information; building and engaging cooperative working relationships; promoting statewide economic development; and providing protection against all-hazard emergencies and wildland fires

The Texas A&M Forest Service delivers fully integrated programs to local governments and agencies that ensure continuity, implement certified training practices and provide benefits to emergency responders as well as equipment. Without TFS's participation and support, Texas lives and properties would be at increased risk.

The Sabine National Forest is another key collaborator for this Community Wildfire Protection Plan for Sabine County. The Sabine National Forest maintains a local ranger district office south of State Highway 21 near west shore of Toledo Bend Reservoir. The Sabine National Forest covers a total of 160,873 acres across 5 counties in east Texas, including 95,410 acres in Sabine County.

Capacity Building

Wildfire suppression in Texas is a cooperative effort requiring effective preparation before a fire begins. In 1993, the 73rd Legislature increased TFS responsibility to include "Coordination of the response to each major or potentially major fire in the state." This has since been accomplished introducing wildfire mitigation, training and prevention programs at the county, city, community and individual levels, thereby raising their ability to respond and protect their communities.

Incident Response

To limit property losses and provide for the safety of fire fighters and citizens, expedited reaction times are essential once a wildfire is reported. To address this concern, Texas uses a tiered approach that begins with local Volunteer Fire Departments being the first line of defense and TFS involvement beginning only once a wildfire exceeds the local ability to control. TFS has strong working relationships with local fire departments and works diligently to build the firefighting capacity of those departments as well as ascertain the volunteers are trained and have access to the equipment needed to suppress a forest fire. Below is the response order for reported wildfires requiring TFS and/or national forest support:

1) Wildfire is spotted then reported to the County Sheriff's Office
2) Local Volunteer Fire Department dispatched by County Sheriff's Office
3) Fire assessed on the scene and County SO radioed to dispatch additional resources
4) Texas A&M Forest Service called to respond
5) Sabine National Forest called if federal resources are needed

Additional discussion of collaboration is located in Section 1.5.2 (CWPP Planning Team).

1.2 STATEMENT OF INTENT

The primary goal of the Sabine County CWPP is to protect human life and reduce property loss due to wildland fire in communities located within Sabine County and to explore project ideas focusing on the prevention and suppression of such fires. Although reducing the threat of wildland fire is the leading motivation behind this plan, ideas to manage the forests and rangelands for hazardous fuel reduction is only a small portion of the primary goal.

Residents and visitors alike want healthy, fire resilient forests that provide economic value, habitat for wildlife, recreation opportunities and scenic beauty. The natural forest and scenic spots in Sabine County are a critical part of the economy and contribute greatly to the quality of life for all residents. While it is understood that wildfire is part of the natural cycle for a healthy forest, its destructive capabilities is equally acknowledged and therefore wildfire prevention and mitigation is at the core of the intent of this plan. More specifically, the intent of this document is to:

1) Create a plan addressing the diverse needs of Sabine County
2) Suggest mitigation actions for the protection of life, property, critical infrastructure and wildlands in the County based on:
   - Optimum treatment efficiency
   - Lowest treatment cost
   - Highest benefit to local economy
3) Identify wildland fuel hazards throughout the county;
4) Identify the areas and values most at risk from catastrophic wildland fires in the County;
5) Prioritize countywide fuel hazard and structure ignitability reduction needs;
6) Outline a strategy for long term success;
7) Develop measures for implementing hazardous fuel; and structure ignitability reductions on both public and private lands within Sabine County;
8) Assist property owners with defensible space issues;
9) Educate the public concerning wildfire mitigation and fuel treatment opportunities.

1.3 PARTICIPATING JURISDICTIONS

The planning area is defined by the boundaries of Sabine County, and all volunteer fire departments in Sabine County are participants in this plan. A signed Declaration of Agreement and Concurrence is included as Section 1.6 of this document with each of the following jurisdictional entities represented.

- Sabine County
- Shamrock Shores VFD
- Pendleton Harbor VFD
- Six Mile VFD
- City of Pineland
- Rosevine VFD
- Hemphill VFD
- Fairmount VFD
- Pinewood VFD
- City of Hemphill
- Bronson VFD

1.4 RELEVANT FIRE POLICIES

This outline of relevant fire policies is provided to educate the leaders and residents of Sabine County. Copies of these policies should be maintained by the county for reference material.

1.4.1 Local Fire and Development Policies

Sabine County Burn Ban

Sabine County Officials have the authority to implement court adopted burn bans and to impose fines for violating this Court Order. Adoption of a "burn ban" Commissioner's Court Order is defined in Texas Local Government Code, Section 352.081, Subchapter D. "Regulation of Outdoor Burning" includes the definition and method used to measure "drought conditions". It also names governmental entities authorized to initiate a "burn ban", along with decision-making procedures. It further specifies the maximum period of time a "burn ban" may exist, regulates the use of fireworks, and indicates penalties for violations.

"Drought conditions" are a long-term moisture deficit causing severe conditions with increased wildfire occurrence. To measure the existence of drought, the Texas A&M Forest Service (TFS) uses the Keetch-Byram Drought Index (KBDI) or another comparable measurement taking into consideration the burning index, spread component or ignition component for the county.

Identifying circumstances warranting implementation of a "burn ban" can only be made when either TFS declares the existence of a drought within the county or Commissioners Court finds a public safety hazard exists. Once a decision has been made, restrictions may be general or limited to specific types of burning such as brush, trash or camp fires.

Once notified by the Texas A&M Forest Service, The County Judge has the authority to initiate a 7 day "burn ban" without Court approval. However, an order intended to exceed 7 days must be approved by the Commissioners Court. By law, the Court's order will expire at the earliest of:

- 90 days from the date of adoption
- Date of determination by the Texas A&M Forest Service that drought conditions no longer exist
- Date of finding by Commissioner's Court that a public safety hazard no longer exists

The adoption of a "burn ban" may prohibit or restrict the sale or use of certain fireworks. "Restricted fireworks" are defined as "skyrockets with sticks" and "missiles with fins". However, the county may also designate one or more "safe" areas where the use of "restricted fireworks" is not prohibited. Additional provisions may also be enacted that relate to other types of outdoor burning, depending on the nature and degree of fire risk determined by the Court Order.

A person commits an offense if the person knowingly or intentionally violates the prohibition or restriction of an order adopted by the court. By law, the violation of a "Burn Ban Order" is a Class C misdemeanor and punishable by a fine not to exceed $500.00.

1.4.2 State of Texas Policies: State Fire Marshal

The following is a description of the enabling legislation for the State Fire Marshal to oversee and regulate construction projects in the interest of general safety and fire considerations.

Life Safety Code

Texas Local Government Code and certain State Agencies also provide limited authority to address health and sanitation issues as well as roadway and bridge concerns, which may provide an avenue for addressing wildfire protection issues. Additionally, the following materials relating to this subject are excerpted from the Texas Administrative Code:

Note: Excerpted from **Texas Administrative Code
TITLE 28 : INSURANCE
PART 1 TEXAS DEPARTMENT OF INSURANCE
CHAPTER 34 STATE FIRE MARSHAL
SUBCHAPTER C STANDARDS FOR STATE FIRE MARSHAL INSPECTIONS
RULE §34.303 Adopted Standards

"The Commissioner adopts by reference: NFPA Life Safety Code 101-2009. These copyrighted standards and recommendations are adopted, except to the extent they are in conflict with sections of this chapter or any Texas statutes or federal law. The standards are published by and are available from the National Fire Protection Association, Quincy, Massachusetts."

Source Note:

The provisions of this §34.303 adopted to be effective February 27, 1996, 21 TexReg 1286; transferred effective September 1, 1997, as published in the Texas Register November 14, 1997, 22 TexReg 11091; amended to be effective July 19, 2000, 25 TexReg 6724; amended to be effective September 17, 2003, 28 TexReg 7994; amended to be effective October 5, 2006, 31 TexReg 8238; amended to be effective October 22, 2009, 34 TexReg 7204

Scope of NFPA Life Safety Code 101-2009:

1.1* Scope. 1.1.1 Title. NFPA 101, Life Safety Code, shall be known as the Life Safety Code®, is cited as such, and shall be referred to herein as "this Code" or "the Code."

1.1.2 Danger to Life from Fire. The Code addresses those construction, protection, and occupancy features necessary to minimize danger to life from the effects of fire, including smoke, heat, and toxic gases created during a fire.

1.1.3 Egress Facilities. The Code establishes minimum criteria for the design of egress facilities so as to allow prompt escape of occupants from buildings or, where desirable, into safe areas within buildings.

1.1.4 Other Fire-Related Considerations. The Code addresses other considerations that are essential to life safety in recognition of the fact that life safety is more than a matter of egress. The Code also addresses protective features and systems, building services, operating features, maintenance activities, and other provisions in recognition of the fact that achieving an acceptable degree of life safety depends on additional safeguards to provide adequate egress time or protection for people exposed to fire.

1.1.5* Considerations Not Related to Fire. The Code also addresses other considerations that, while important in fire conditions, provide an ongoing benefit in other conditions of use, including non-fire emergencies.

1.1.6 Areas Not Addressed. The Code does not address the following: (1)*General fire prevention or building construction features that are normally a function of fire prevention codes and building codes.

1.4.3 Federal Policies "Fire Safety is Homeland Security"

Policies which are relevant at the national level but will affect fire planning at the county level are listed below. The information may be utilized as a reference to understanding the background of fire management policies and issues as they affect Sabine County.

Healthy Forests Restoration Act (HFRA) 2003

This landmark legislation includes the first meaningful statutory incentives for the US Forest Service and the Texas A&M Forest Service to give consideration to the priorities of local communities and initiate forest management and hazardous fuel reduction projects. In order for a Texas County to take full advantage of this act, a Community Wildfire Protection Plan must first be prepared.

National Fire Plan
The National Fire Plan (NFP) is a long-term investment that will help protect communities along with its natural resources, but most importantly, the lives of firefighters and county residents. It is a long-term commitment based on cooperation and communication between interest publics, federal agencies as well as state and local governments. The NFP also requires community participation for implementation, mandates local governments develop and adopt local land use plans and ordinances that provide for the maintenance of defensible space and fuel management on municipal and private property.

Disaster Mitigation Act 2000
Disaster Mitigation Act 2000 (DMA 2000) sets policies for "disaster mitigation plans"—plans designed to prevent or reduce impacts of future disasters. Plans developed according to DMA 2000 requirements include 5 main elements:

- A planning process
- An assessment of risks
- A mitigation strategy
- A maintenance plan and updating process
- Local adoption by the governing authorities of participating jurisdictions

A range of grant programs are in place to assist funding of mitigation activities and are identified in the local hazard mitigation plan.

1.5 PLANNING PROCESS-COLLABORATION

1.5.1 Proclamation

The following proclamation pertaining to development and endorsement of the Community Wildfire Protection Plan as adopted by Commissioners' Court in August 2015.

AUG 10/2015 MON 09:54 AM Sabine Cty Judge FAX No 409 787 3044 P 002

County of Sabine

Proclamation

Community Wildfire Protection Plan

WHEREAS, the State of Texas is experiencing unprecedented growth and development in areas that were once rural coupled with an increase in the occurrence of wildfires,
WHEREAS, it is in these areas where developments meet vegetation or the Wildland Urban Interface that the greatest risk to public safety and property from wildfire exists,
WHEREAS, the best defense is preparedness and public education concerning the dangers that wildfire poses to the residents and natural resources of Sabine County,
WHEREAS, a Community Wildfire Protection Plan (CWPP) is authorized under the provisions outlined in Title I of the Healthy Forest Restoration Act of 2003,
WHEREAS, a CWPP is a written document, mutually agreed upon by local, state and federal representatives and stakeholders that identifies how a community will reduce its risks from wildland fire,
WHEREAS, a CWPP addresses structural ignitability, prioritizes hazardous fuel reduction efforts on public and private lands and is developed collaboratively,
WHEREAS, the development of a CWPP gives a community an opportunity to influence the manner in which hazardous fuels are reduced on Federal lands in proximity to communities,
WHEREAS, communities with a CWPP offer the best solution for communities at risk from wildfire to mitigate said risks.

NOW, THEREFORE BE IT RESOLVED, that the Sabine County Commissioners' Court urges all citizens of this county and this community to participate in the development of a countywide community Wildfire Protection Plan in accordance with the Healthy Forest Restoration Act

IN OFFICIAL RECOGNITION WHEREOF, we the undersigned hereby affix our signatures this 10th day of August, 2015

Daryl Melton, County Judge

Tommy Clark, Pct. 1

Jimmy McDaniel, Pct. 2

Doyle Dickerson, Pct. 3

Fayne Warner, Pct.4

Janice McDaniel, County Clerk

1.5.2 CWPP Planning Team and Meetings

Table 2-1 Community Wildfire Protection Planning Team

Representative	Agency
The Honorable Daryl Melton (Chair)	Sabine County Judge
Lonnie Johnston (Co-Chair)	Six File VFD Fire Chief
Kerwin "2-K" Lloyd	Emergency Management Coordinator
Christine Johnston	Fire Chief Association Secretary
Joseph Lane	Pineland VFD Fire Chief
Glen Chance	Hemphill VFD Fire Chief
Robert Byley	Bronson VFD Fire Chief
Sammy McClelland	Pendleton VFD Fire Chief
Mike Pennington	Shamrock Shores VFD Fire Chief
Penny Ridley	Rosevine VFD Fire Chief
David Clineman	Fairmount VFD Fire Chief
Weldon Dent	Texas A&M Forest Service WUI Specialist
Jamie Sowell	Forest Fire Management Officer, USFS
Joey Silva	AFMO, Angelina/Sabine National Forest
Greg Wobbe	Principal, MPTX Associates
Josh Pulley	Project Manager, MPTX Associates
Mitchell Osburn	Mitigation Director, MPTX Associates
Rachel Phipps	GIS Director, MPTX Associates

Note: Additional acknowledgements to the many others who contributed to this plan's creation.

Executive/Agency Collaboration/Commissioners Court Meetings

The CWPP project was steered by periodic meetings with the County Judge to set goals and obtain executive guidance. These meetings included the project manager, Judge Melton, and on occasion Six Mile VFD Fire Chief Lonnie Johnston, EMC Kerwin 2K Lloyd, and representatives of the Texas A&M Forest Service and Sabine National Forest as identified in the preceding table. The planning process officially started and ended with proclamations from Commissioners' Court.

Fire Chief Association Meetings

Meetings of the Sabine County Fire Chiefs Association discussed project objectives and results of risk assessment. These meetings were held at 7:00pm on the 3rd Monday of every other month, located and the Hemphill Fire Station. Attendees included fire chiefs and deputies from each of the county's VFDs, the project manager, EMC, and occasional representatives from the Texas A&M Forest Service, Sabine National Forest, County Sheriff and County Judge.

Field Observation Tours and Data Collection

Yet another key element of collaboration occurred during the field observation and data collection tours. These tours and pre-coordination meetings were guided by fire chiefs and deputies from each VFD. Tours began with a discussion at the fire station to preview maps and plan route, typically identifying key points of emphasis and primary wildfire concerns and mitigation ideas for each response area. During the tour Subdivision Wildfire Risk Rating forms were completed for each neighborhood, photos taken of notable wildfire concerns or positive defensible space examples.

Planning Team Meetings Overview

Meeting	Purpose	Date
Commissioners' Court	Proclamation	August 10, 2015
Executive Meeting	Outline Project Strategy	October 1, 2015
Fire Chiefs	Review Risk Assessment Results (1)	January 10, 2016
Fire Chiefs	Review Risk Assessment Results (2)	May 1, 2016
TX A&M Forest Service/Sabine Nat'l Forest	Collaboration	May 1, 2018
Fire Chiefs	Mitigation Strategy	June 20, 2018

CHAPTER 2. COUNTY PROFILE

2.1 GENERAL INFORMATION AND GEOGRAPHY

General

Sabine County is located in the forests of East Texas and situated roughly 100 air miles inland from the Gulf of Mexico. The county covers an area approximately 30 miles north/south and 20 miles east/west, and 491 square miles of land. Topography is relatively hilly as compared to most Texas counties, and predominantly forested with areas of open pasture.

Sabine County covers 941 square miles, or 314,240 acres. Of this total, 97,049 acres are owned by the Sabine National Forest (30.8 percent of total county area). Another 1/3 is private forest.

Sabine County was established in 1837 and the City of Hemphill is the county seat. The 2010 Census population estimate of 10,834 represents a 3.5 percent increase since 2000. The County is governed by a County Judge and 4 commissioners elected by precinct. The incorporated cities of Pineland and Hemphill are governed by a mayor and city council.

With the best largemouth bass fishing in the United States and the biggest lake in Texas, recreation and tourism is an important element of the local economy. Toledo Bend Reservoir comprises the eastern boundary of Sabine County with a large number of lakefront homes and subdivisions.

The Sabine National Forest comprises 30.8% of Sabine County and manages its lands for multiple benefits including wildlife, recreation, and forestry production.

Climate

The study area is located in a humid subtropical climate zone, which is characterized by moderate winters and warm summers. Average annual temperature is 68 degrees Fahrenheit. Wind speeds are typically moderate to strong depending on the time of year. During days with little to no wind, topographic conditions will determine how a fire will spread. During days with strong winds, fire spreads are controlled by the wind direction resulting in the wind direction overriding the effects of topographic conditions.

Wildlife

White tail deer, rabbits, squirrel, beaver, coyote, otter, wild hogs, opossum and armadillo are just a few of the animal species that make their homes in natural areas of Sabine County.

The county also is included in the historic range of rare species such as mountain lions, wild turkeys, American Swallowed Tail Kite, and the Red Cockaded Woodpecker. A complete listing of rare, endangered, and threatened species in Sabine County can be located by accessing the Texas Parks and Wildlife webpage at: http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/

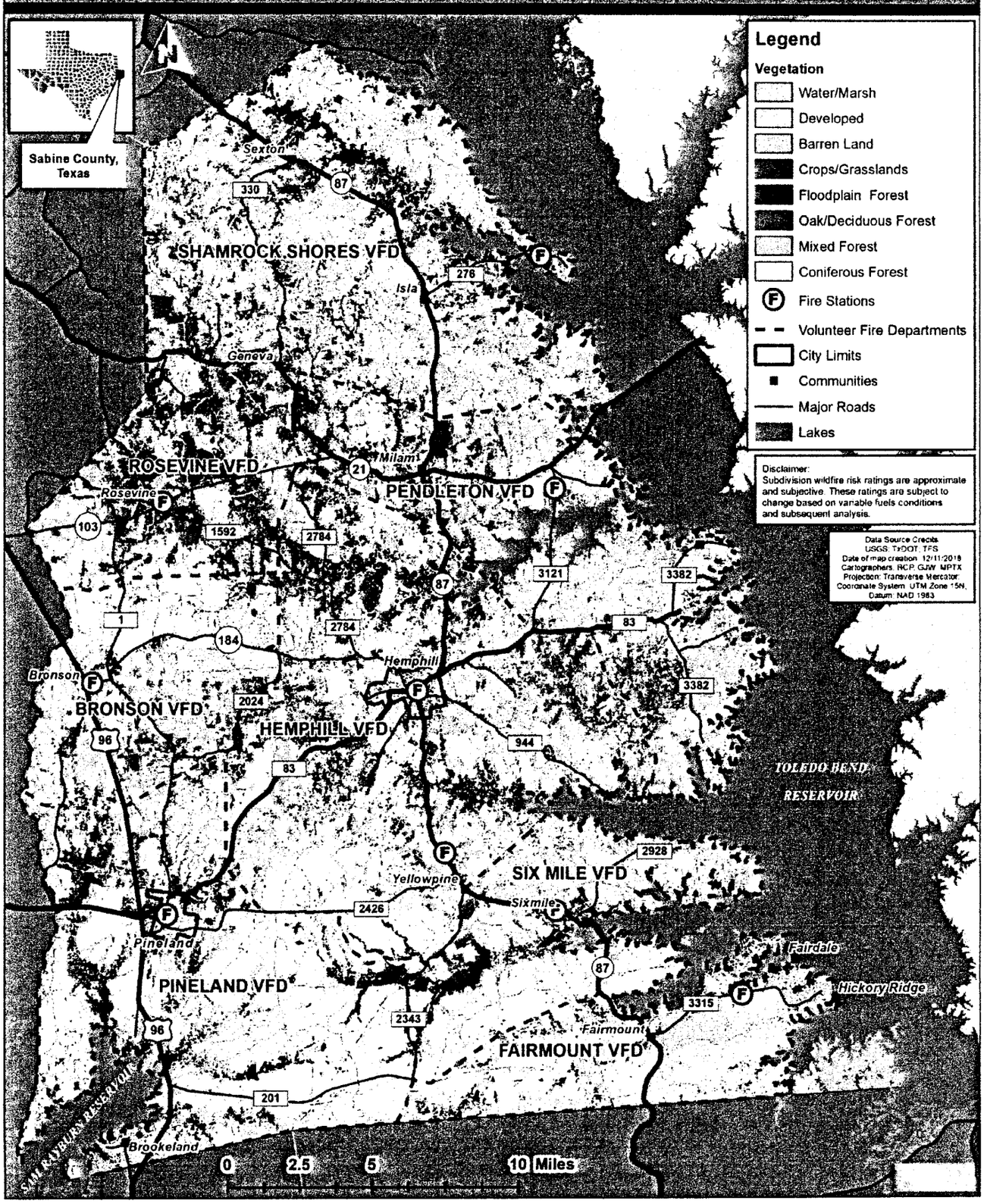
Trees and Vegetation

Upland areas are largely covered by pine forest, largely pine plantation and small patches of native forest. Lowlands and riparian areas have higher concentrations of hardwoods. Wet creek bottoms and swampy areas will contain Bald Cypress.

Maps on the following pages show land cover by type and major land holdings.

FUEL TYPES & LAND COVER

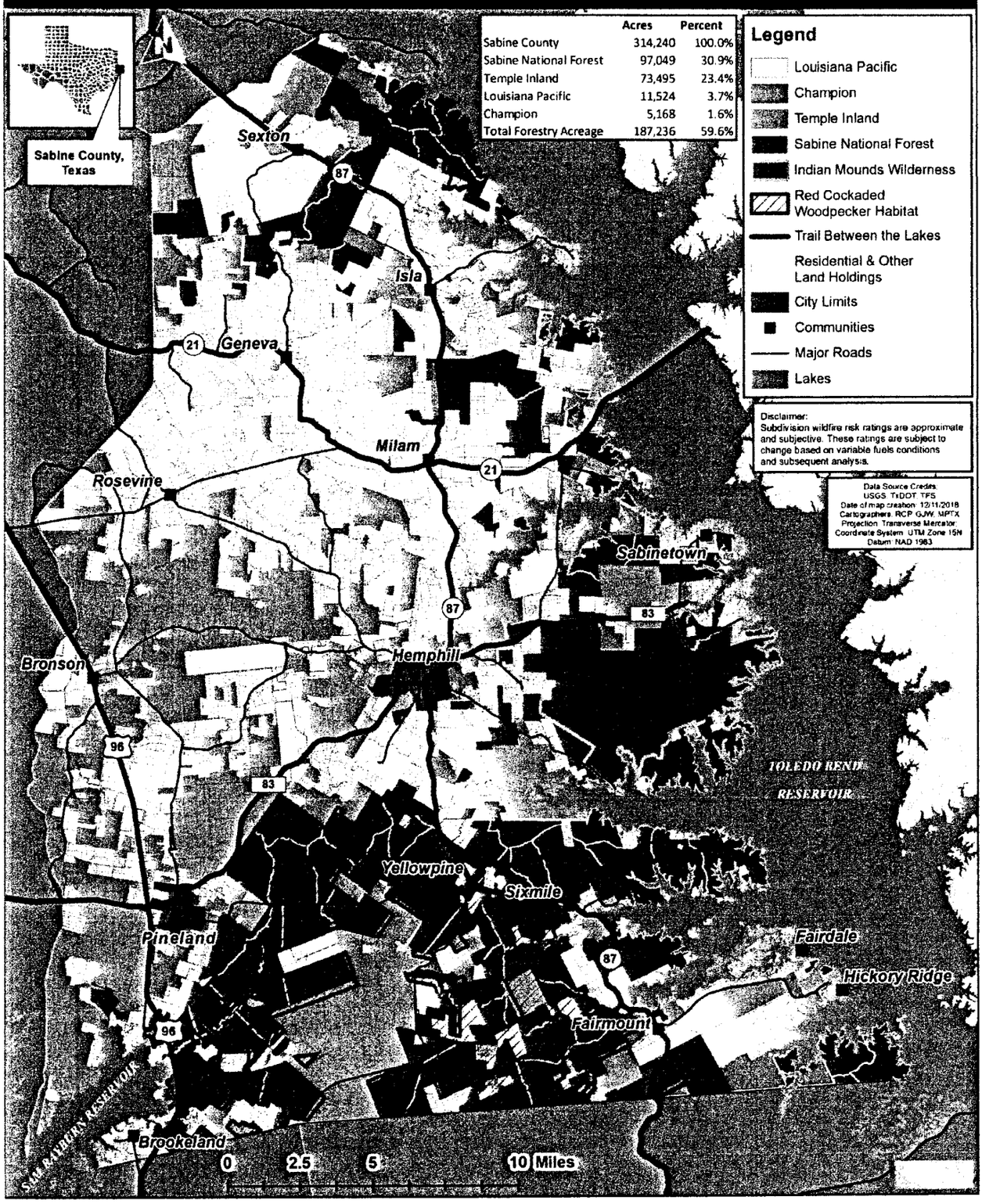
SABINE COUNTY TEXAS COMMUNITY WILDFIRE PROTECTION PLAN



Vol 3·T Page 256

MAJOR LAND HOLDINGS

SABINE COUNTY TEXAS COMMUNITY WILDFIRE PROTECTION PLAN



	Acres	Percent
Sabine County	314,240	100.0%
Sabine National Forest	97,049	30.9%
Temple Inland	73,495	23.4%
Louisiana Pacific	11,524	3.7%
Champion	5,168	1.6%
Total Forestry Acreage	187,236	59.6%

Legend

- Louisiana Pacific
- Champion
- Temple Inland
- Sabine National Forest
- Indian Mounds Wilderness
- Red Cockaded Woodpecker Habitat
- Trail Between the Lakes
- Residential & Other Land Holdings
- City Limits
- Communities
- Major Roads
- Lakes

Disclaimer:
Subdivision wildfire risk ratings are approximate and subjective. These ratings are subject to change based on variable fuels conditions and subsequent analysis.

Data Source Credits:
USGS, TxDOT, TFS
Date of map creation: 12/11/2018
Cartographers: RCP, GJW, MPTX
Projection: Transverse Mercator
Coordinate System: UTM Zone 15N
Datum: NAD 1983

2.3 POPULATION & STRUCTURE CHARACTERISTICS

2017 Census population estimate for Sabine County is 10,641, with 8,257 housing units. Estimated housing unit density is roughly 17 homes per square mile. From 2010 to 2017 approximately 260 housing units were built, indicating roughly a 0.5 percent annual growth rate. An estimated 16.8 percent of homes were built since 2000, and 286 homes were built prior to 1939.

Median value of housing units is $92,100. 68 homes representing 2.0 percent of total building stock The Census provides following is a value breakdown of the 3,353 owner occupied housing units.

Value of Owner-Occupied Housing Units	#	%
Less than $50,000	993	29.6%
$50,000 to $99,999	777	23.2%
$100,000 to $149,999	494	14.7%
$150,000 to $199,999	459	13.7%
$200,000 to $299,999	292	8.7%
$300,000 to $499,999	257	7.7%
$500,000 to $999,999	68	2.0%
$1,000,000 or more	13	0.4%
Total	3,353	100.0%

Source: U.S. Census

According to the U.S. Census, as of 2017 approximately 81.5 percent of households have a computer and 68.1 percent of households have a broadband internet subscription. A total of 219 housing units (5.7 percent) lack landline telephone service. Census data reports 171 households with no vehicle available. 133 households report wood burning stoves as their primary heating source.

The Census reports there are 3,054 mobile homes in Sabine County, representing 37.4 percent of the total building stock. Notably, the Census reports 53.4 percent of housing units are vacant (4,360 total). This statistic is subject for further investigation and should not be considered fully accurate.

A relatively high percentage of Sabine County's population are military veterans (1,278 total, or 14.9 percent). Of this group, 93.5 percent are male and 6.5 percent female.

Military Veterans, Period Of Service	#	%
Gulf War (9/2001 or later) veterans	166	13.0%
Gulf War (8/1990 to 8/2001) veterans	167	13.1%
Vietnam era veterans	552	43.2%
Korean War veterans	119	9.3%
World War II veterans	29	2.3%

Source: U.S. Census

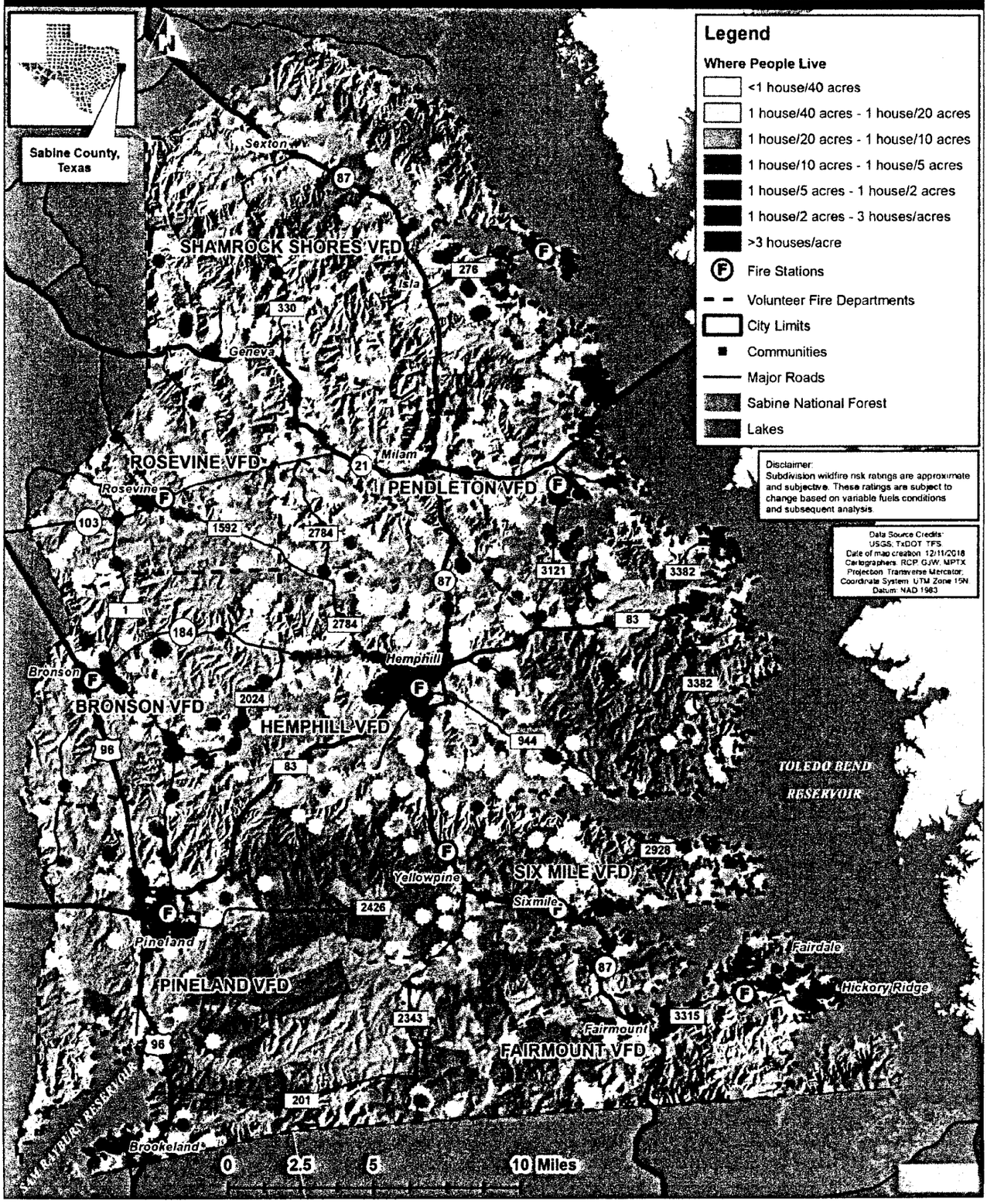
Regarding age demographics, 4.8 percent are under the age of 5, and 30.7 percent are over age 65. According to 2017 Census data 20.0 percent of the population is below the federal poverty level.

As of 2016 employment patterns indicate the two largest employment categories are retail trade followed by health care and social assistance. For the overall population aged 16 and over, labor force participation rate is 41,3 percent. Notably, Census reports 26.4 percent unemployment rate for age group 30-34. Median household income in Sabine County is $33,561.

The following map shows population distribution. Concentrations of population are notable within city limits of Hemphill and Pineland, and in subdivisions along western shore of Toledo Bend Reservoir.

WHERE PEOPLE LIVE IN SABINE COUNTY

SABINE COUNTY TEXAS COMMUNITY WILDFIRE PROTECTION PLAN



2.3 LOCAL VOLUNTEER FIRE DEPARTMENTS

The following table is a general description of volunteer fire department response capabilities. Detailed information for each fire department is provided in the subsections that follow (Volunteer Fire Department Profiles).

Table 2-1 Volunteer Fire Department Summary Profiles

Volunteer Fire Department Name	Emergency Services District Number	Number of Active Volunteers	Coverage Size (square miles)
Pineland	100	39	84.59
Hemphill	300	28	105.12
Six Mile	400	25	36.52
Bronson	500	17	38.23
Pendleton	600	21	65.15
Shamrock Shores	700	8	89.91
Rosevine	800	15	37.62
Fairmount	900	15	33.25

Pineland VFD

Chief Joseph Lane - 409-584-9022 - JLane143@yahoo.com

- 39 Personnel
- 2 Type I Fire Engines (both with foam capabilities)
- 1 Tanker (3000 gallons)
- 2 Brush Trucks (one with foam capabilities)
- 1 Heavy Rescue truck

Hemphill VFD

Chief Glen Chance - 936-201-8517 - hemphillvfd@hotmail.com

- 28 Personnel
- 2 Type I Fire Engines
- 1 Tanker (3000 gallons)
- 3 Brush Trucks
- 300 gallon Skid Load Foam Unit
- 1 Rescue Truck

Six Mile VFD

Chief Lonnie Johnston - 409-579-2857 - sixmilevfd@yahoo.com

- 25 Personnel
- 2 Brush Trucks
    - 1 Large (1800 gallons)
    - 1 Small (400 gallons) with a Compressed Air Foam System (CAFS) unit
- 1 Tanker (2000 gallons)
- 1 EMS Van
- 1 RTV for Search and Rescue Operations

Bronson VFD

Chief Robert Byley - 936-652-2490 - byledl@SFASU.edu

- 17 Personnel
- 2 Type I Fire Engines
- 2 Water Bladders (800-1000 gallons)
- 1 Brush Truck
- 1 Skid Load Foam Unit

Pendleton VFD

Chief Sammy McClelland - 409-625-3336 - devinc1210@hotmail.com

- 21 Personnel
- 1 Type 1 Fire Engine
- 2 Tanker/Pumper Combo's
- 2 Brush Trucks
- 1 Rescue Truck

Shamrock Shores VFD

Chief Mike Pennington - 409-625-0453 - smp49@windstream.net

- 8 Personnel
- 1 Tanker (1200 gallons)
- 1 Medical Sprint Unit

Rosevine VFD

Chief Penny Ridley - 936-275-6590 - pridley2000@yahoo.com

- 15 personnel
- 1 Tanker (1800 gallons)
- 2 Brush Trucks

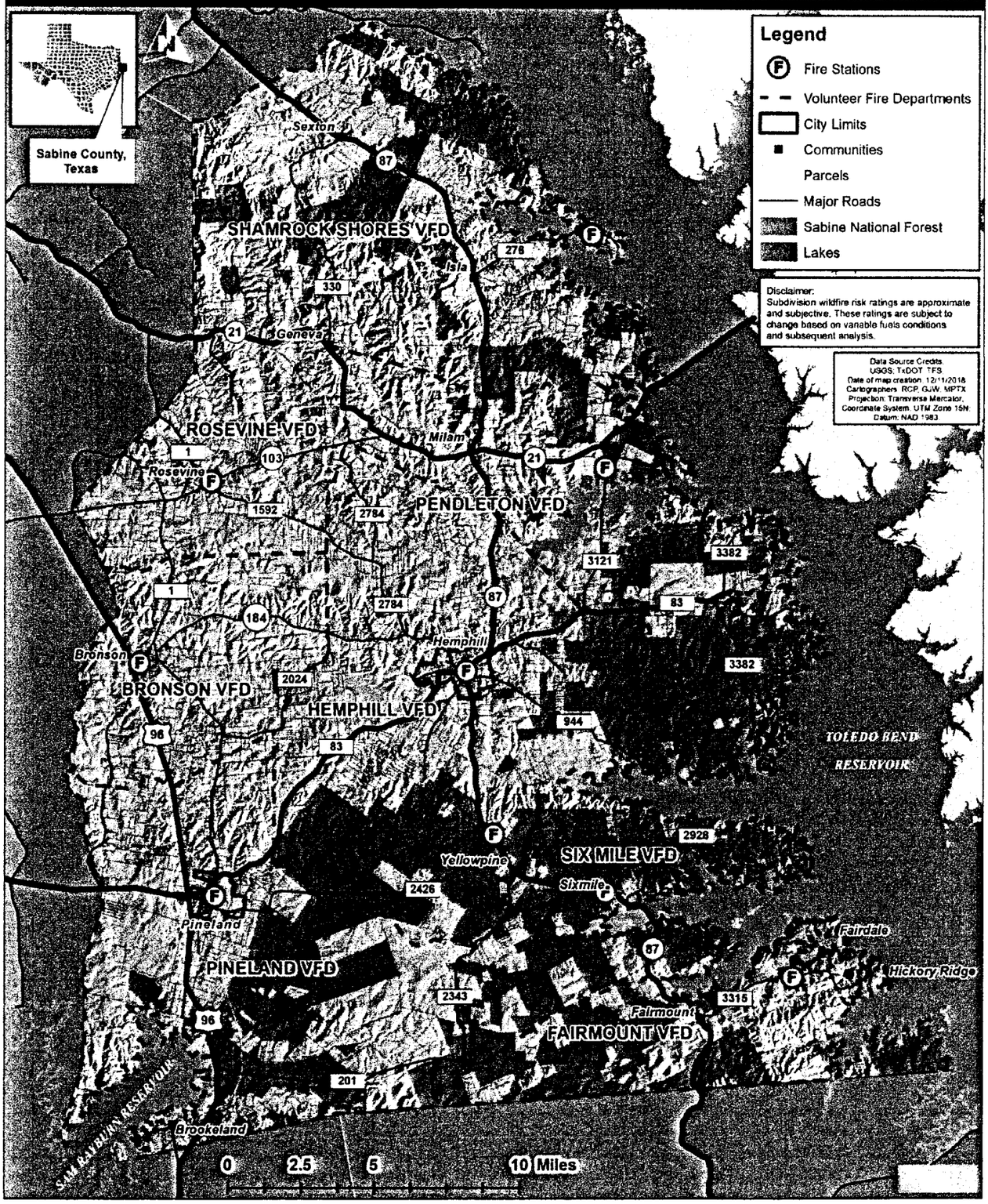
Fairmount VFD

Chief David Clineman - 409-579-2351 - daveclineman@gmail.com

- 15 Personnel
- 2 Type I Fire Engines (both with foam capabilities)
- 1 Tanker (3000 gallons)
- 1 Brush Truck (with foam capabilities)

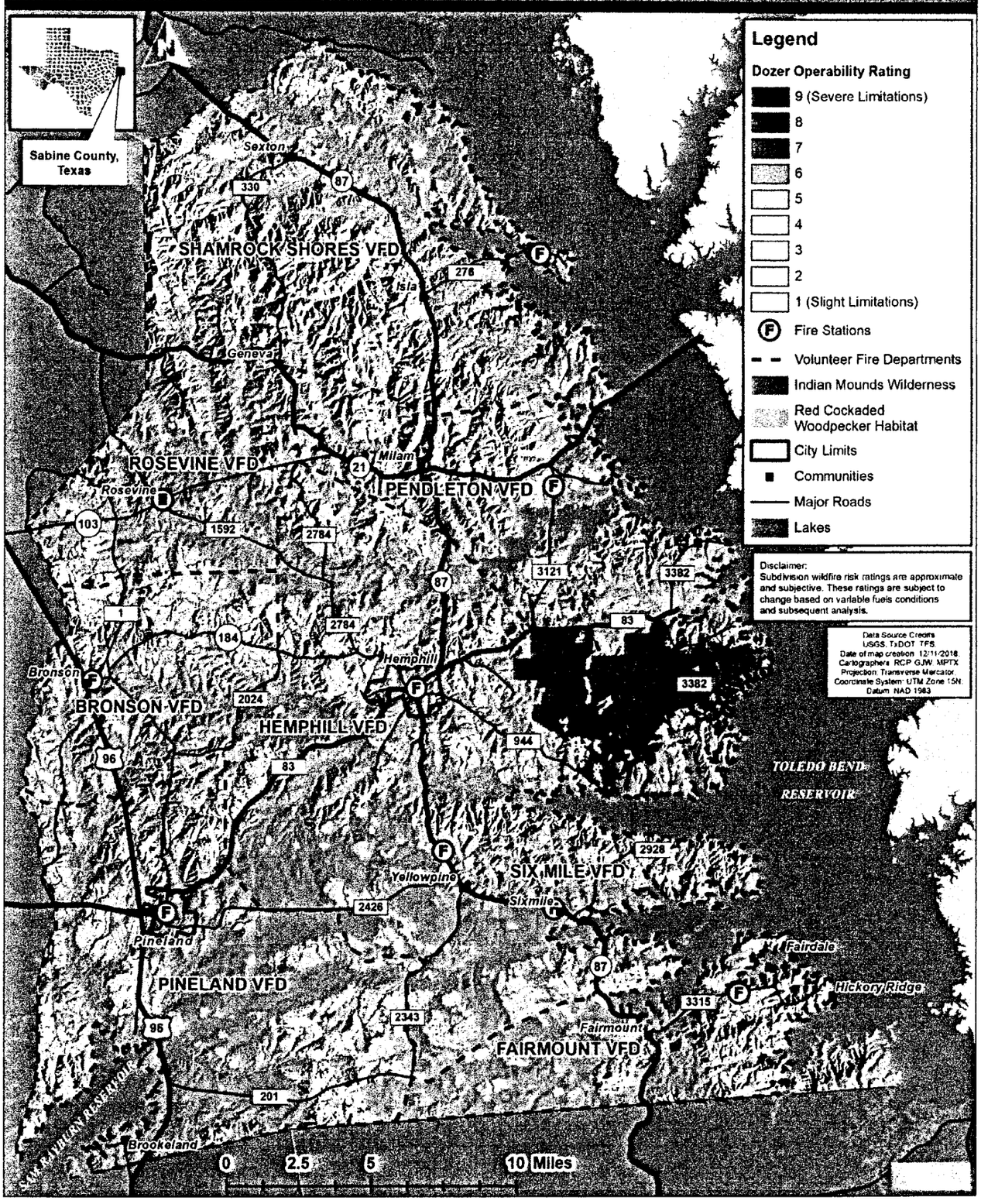
VOLUNTEER FIRE DEPARTMENT STATIONS AND SERVICE AREAS

SABINE COUNTY TEXAS COMMUNITY WILDFIRE PROTECTION PLAN



DOZER OPERABILITY

SABINE COUNTY TEXAS COMMUNITY WILDFIRE PROTECTION PLAN



2.4 SABINE NATIONAL FOREST

The 160,656-acre Sabine National Forest is the easternmost of the four national forests in Texas and forms part of the boundary between Texas and Louisiana. The forest is situated on the western slopes of the Sabine River watershed within Sabine, San Augustine, Shelby, Jasper, and Newton counties.

SABINE NATIONAL FOREST HISTORY

This ecologically diverse and rich forest environment has been inhabited for at least 10,000 years. The earliest inhabitants were nomadic hunters, traveling in small tribes. When the first Europeans ventured into this area in the late 16th century, they encountered an agriculturally dependent people (whom the Spanish called "Tejas") inhabiting large villages, with complex religious and social orders governing their way of life. Spanish efforts to establish missions among the Tejas (known today as the Caddo) and settle east Texas in the 17th and 18th centuries were largely unsuccessful, as there were few conversions and frequent conflicts between the native inhabitants and the European immigrants.

In the late 19th century, commercial timber operations moved into the pineywoods seeking to replenish their profits by tapping the unharvested stands of virgin pine found here. Little concern for forestland conservation was shown during these early days, as only prime logs at least 24 inches in diameter at the butt with 75 percent heartwood were utilized. By the second decade of the 20th century, highly efficient railroad logging was at full-scale operation in the forests of east Texas. Soon, the lack of conservation practices and the increasing effectiveness of railroad-based logging led to virtually complete exhaustion of the timber resource in east Texas, and the industrial timber operations moved to new areas. Today, the numerous relics of old railroad tramways are found in the Sabine National Forest, lasting evidence of this boom period of the early logging industry in Texas.

In 1934, the Texas Legislature approved a resolution to urge the purchase of depleted timberlands to create national forests in Texas. In 1935, land acquisition began in areas of what are now part of the Davy Crockett, Sam Houston, Angelina, and Sabine National Forests. Within a few years, a majority of the land comprising the Sabine National Forest had been purchased. First management efforts centered on fire protection, timber inventory, erosion control, and planting trees. Much of the land had already begun to seed-in naturally, due mostly to the Texas A&M Forest Service's fire protection efforts that had begun years earlier. The two agencies, the Texas A&M Forest Service and the USDA Forest Service, began a harmonious working relationship at the inception of the national forests in Texas.

Today, the forests you see are second-growth or third-growth forests and are a result of Federal forest management under the multiple-use and ecosystem management concepts. Since 1905, the policy for management in the National Forest System has been "the greatest good for the greatest number in the long run." In 1960, Congress passed the Multiple-Use-Sustained-Yield Act that provided additional authority to the Forest Service, directing it to continue what it had been doing since 1905 – to give consideration to range, timber, wildlife and fish, soil and water, and outdoor recreation.

WILDFIRE

Wildfire Control - Wildfire occurrence in the Sabine National Forest varies considerably year by year, being influenced by rainfall and incendiary (arson) activities. In a recent 10-year period, there was an average of 12 wildfires per year. These wildfires were 93 percent man-caused, and slightly more than half of them (51 percent) were incendiary in origin.

The Texas A&M Forest Service and USDA Forest Service work cooperatively to coordinate the prevention, law enforcement, aerial detection, and suppression of wildfire.

PRESCRIBED FIRE

Fire has a proven ecological role in the development and management of the forests and rangelands. It is used as a tool to maintain or restore fire-adapted ecosystems. It reduces heavy accumulations of forest fuels and minimizes damage in the event of wildfires.

Carefully developed and applied prescriptions, based on such factors as weather and fuel conditions, seasonal timing of burning projects, and specific techniques of fire application, guide trained personnel in prescribed burning.

ECOSYSTEM MANAGEMENT

The Sabine National Forest is managed under the ecosystem management concept, which follows standards and guidelines found in the forest management plan. Ecosystem management is a means to achieve sustainable conditions and provide wildlife habitat, outdoor recreation, wilderness, water, wood, and minerals while retaining the aesthetic, historic, and spiritual qualities of the land. The objective is to consider all resources and, using public involvement, create a plan for management that will provide an optimum level of multi-resource goods and services with a focus on forest health and biological diversity.

In the mid-1930's, when the land that makes up the Sabine National Forest was purchased, most of the acreage was severely cut over, and few trees were left standing. Due to early reforestation efforts, most of the trees in the Sabine National Forest are 60 years or older today and a testimony to the success of these early efforts. Most of the land, except for some deep, sandy ridges, is very productive for growing trees and is managed on a sustained-yield basis. Our objectives, by law, must be multi-resource, and no single resource can be emphasized to the detriment of the other resources. The general objective is to strike a balance so that all resources can be managed in a compatible fashion.

Our objective for the timber resource is two-fold: to provide a continuous supply of multiple products for timber management as well as other resource objectives such as threatened and endangered species and wildlife habitat improvement. The goal is to maintain the productivity and sustainability of natural resources without long-term detriment to other resources. An ecological classification system is used to identify the ecological potential and limitations of a given piece of land. Both uneven-age and even-age management systems are available to meet site-specific objectives and desired future conditions. For example, within RCW management areas, the two-age system is emphasized because it provides foraging and nesting habitat for RCW. Even-age management is emphasized where the forest types are primarily species intolerant to shade. Uneven-age management is emphasized in visually sensitive areas and forest stands that are tolerant to shade. In areas subject to vegetation management, periodic thinnings are made to maintain and improve growth conditions and the health of the forest.

WATERSHED

Our objective for watershed management is to produce good water quality and to maintain soil productivity. The majority of the forest has hydrologic conditions that will not create adverse effects on water quality and soil productivity. The health and protection of all other resources can be directly associated with good watershed management. The key to good watershed condition is to maintain soil infiltration and percolation rates and to mitigate soil erosion and compaction. Implementation of Best Management Practices and Forest Standards and Guidelines as described in the Land and Resource Management Plan for the National Forests and Grasslands in Texas allows managers to achieve the forest objective for watershed management.

WILDERNESS

The 12,369-acre Indian Mounds Wilderness Area has been designated by the U.S. Congress as an area set aside to allow the Earth's natural processes to shape and influence the area. Hunting, horseback riding, and hiking are allowed. Bicycles or other wheeled vehicles and mechanized and motorized equipment are not allowed.

RESTRICTIONS

The Forest Service attempts to impose as few regulations as possible, but some are necessary to protect the recreation visitor and to prevent damage to resources, sites, and facilities. Regulations are posted on the bulletin boards at developed recreation sites. Visitors need to read and follow the rules. The district ranger can furnish regulations for use of the general forest areas. Call your local district ranger or visit the National Forests and Grasslands in Texas website at www.southernregion.fs.fed.us/texas for a copy of the forest-wide rules.

WILDLIFE

Management of the wildlife resource in the Sabine National Forest is a joint responsibility of the Forest Service and the Texas Parks and Wildlife Department. The Texas Parks and Wildlife Department or the county government establishes the regulations for harvesting both game and fish, while the Forest Service manages the habitat.

The Forest Service has a priority to work steadily to improve the habitat for certain game species. Sam Rayburn Reservoir, located at the southwestern corner of the Sabine National Forest, and Toledo Bend Reservoir inundated thousands of acres of hardwood bottoms. This, of course, had significant impact upon wildlife species and recreation dependent on bottomland hardwoods. These losses were replaced by fishing and waterfowl hunting.

Toledo Bend and Sam Rayburn Reservoirs provide over 296,100 acres of prime sport fishing, and access to these lakes is good. There are approximately 18 miles of perennial streams in the Sabine National Forest that support populations of warm-water fish. However, the prime fisheries are the reservoirs, ranked nationally as some of the best year-round bass fishing lakes in the United States. A striped bass fishery has been developed on Toledo Bend Reservoir and is now producing fish in the 30-pound class.

The Texas Parks and Wildlife Department has a cooperative agreement with Louisiana Wildlife and Fisheries that allows a valid license holder from either State to fish on Toledo Bend Reservoir.

The wildlife habitats created by Toledo Bend and Sam Rayburn Reservoirs have an impact on migratory waterfowl. These lakes offer feeding and resting grounds for migratory birds before they proceed south toward the Gulf Coast. There is also a resident population of wood ducks that remains on the forest year-round.

East Texas is also part of the central flyway for multiple species of neotropical migratory birds including songbirds, hawks, and shorebirds. This central location is where the birds of the East and West meet. Many people come to this unique location to observe otherwise hard-to-find western or eastern bird species.

The Forest Service gives special management consideration to the red-cockaded woodpecker (RCW), a federally endangered species found in open, mature, and old-growth pine ecosystems of the national forests in Texas. Designated RCW habitat is signed and habitat boundary trees are painted with white or blue bands to alert the forest user of these unique sites. Camping and use of motorized vehicles is prohibited within the boundaries of these RCW areas.

RECREATION

The eastern part of the Sabine National Forest outlines Toledo Bend Reservoir, the fifth largest man-made reservoir in the United States and a nationally known recreation attraction. Recreation developments adjacent to Toledo Bend Reservoir are extensive. Private facilities range from fish camps, with marinas and primitive camping, to highly developed lodge and motel type facilities.

Outdoor recreation opportunities in the Sabine National Forest include fishing, hunting, camping, hiking, horseback riding, and mountain biking. There are approximately 51 private facilities on the Texas side of Toledo Bend Reservoir and 40 or more private developments on the Louisiana side.

CAMPING

Family camping areas in the Sabine National Forest are designed for those wanting "elbow room" in a natural forest setting. Facilities at each designated camping unit include a parking space, tent pad (space to pitch a tent), grill or fireplace, picnic table, and lantern pole. Several units share a water tap, trash receptacle, and toilet facilities. Most parking spaces are suitable for camping trailers. A sewage dump and electrical hookups at each individual site are provided only at Red Hills Lake and Boles Field. Camping is limited to designated sites that are available on a "first-come, first-served" basis.

Developed campgrounds require a fee, but there are many opportunities for dispersed or primitive camping throughout the forest. When camping outside the developed camping sites, be extremely careful with campfires and always carry out all trash.

HUNTING AND FISHING

The Forest Service and the Texas Parks and Wildlife Department work together to offer prime habitat for game and fish populations in national forests. Moore Plantation is a 26,500-acre wildlife management area in Sabine County cooperatively managed by these two agencies. It is known for excellent deer hunting. Toledo Bend Reservoir is a nationally known bass fishing lake, and numerous tournaments are held here each year.

TRAILS
The 28-mile Trail Between the Lakes hiking trail extends from Lakeview Recreation Area on Toledo Bend Reservoir to Highway 96 near Sam Rayburn Reservoir. In addition, many miles of roads that go through the woods are open to bicycles and horseback riders. Hiking is at its best in the early spring and fall when the forest is filled with blossoms and colorful leaves.

MINERALS
Oil and gas wells are a common sight throughout the Sabine National Forest. The United States does not own all of the mineral rights for these lands, as many of the sellers retained mineral ownership either for a fixed period of time or in perpetuity.

Where the United States owns the mineral rights (oil and gas in particular), receipts from oil and gas exploration and production are paid to the U.S. Treasury. A portion of these dollars is returned to the counties in which the Sabine National Forest is located, to be used for schools and roads.

HOW TO RECOGNIZE NATIONAL FOREST LAND
Maps commonly show proclaimed national forest boundaries. However, all land within these boundaries is not national forest land; some is privately owned. The user is cautioned to comply with State law and owner's rules when entering onto private land.

The boundaries between national forest land and private property are marked with signs and red paint. Recognition of these markings and the meaning of boundary signs will help the user be certain to stay on national forest land.

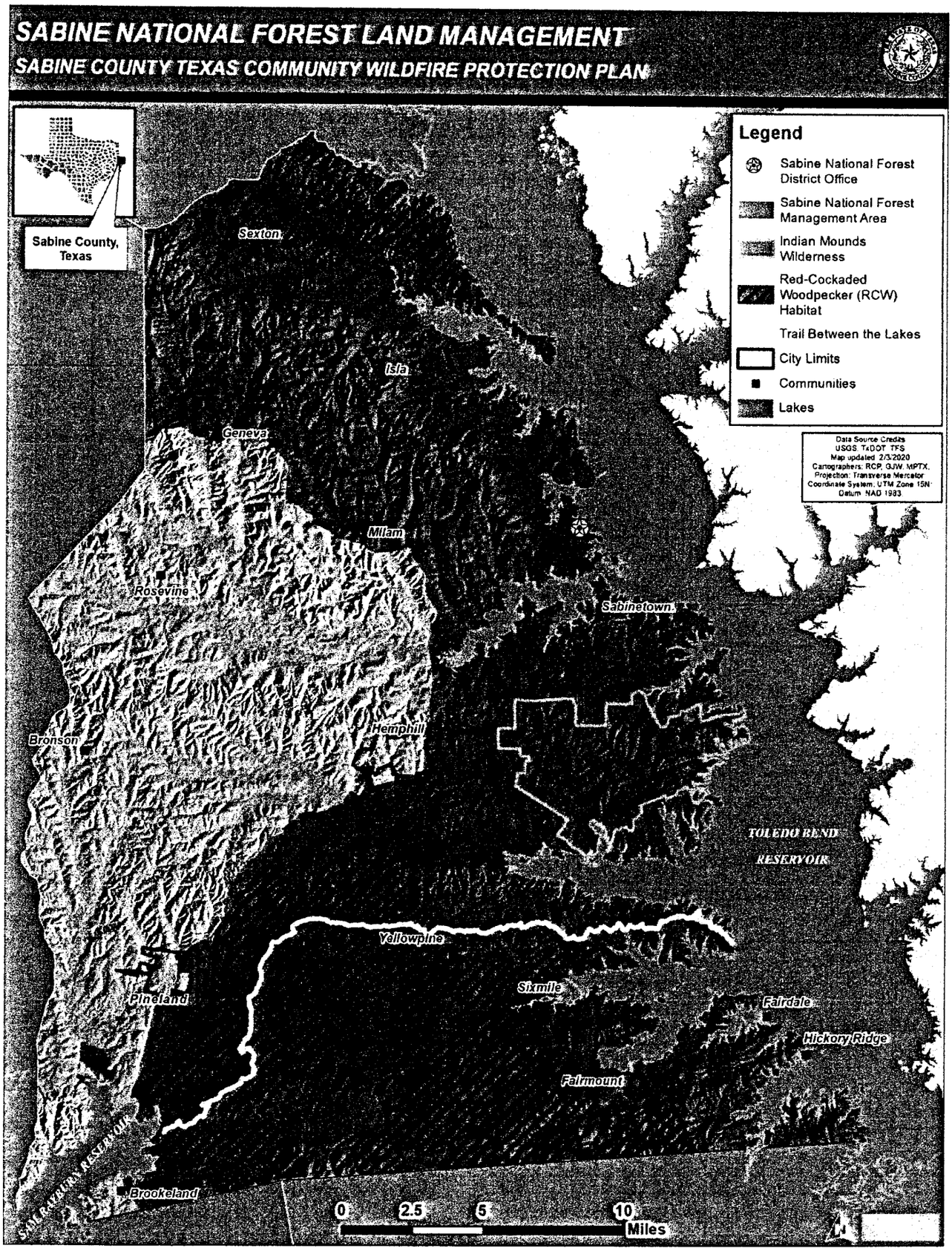
Entrance (portal) signs-These signs are placed along major roads entering the national forests, usually on the first tract of Forest Service land encountered. Generally, they are not used on low-traffic volume roads.

Welcome signs-These signs are located on or just inside the boundaries of individual tracts of national forest land where the road enters. The sign will be oriented so that the land behind the sign is public land. Generally, they are not used on dead-end or woods roads or on small blocks of public land. Upon entering public land in the woods, these signs will not be present, and the user should then rely on the following method of boundary identification.

Property line markings and boundary signs-These pictures show the methods used to mark the boundaries of individual national forest tracts adjacent to other ownerships. The small metal boundary sign may be fastened either to trees or to posts located on the boundary line and at road crossings, and the sign will be placed so that public land is behind the sign. Red paint spots on trees define the boundary line through the woods.

There are nearly 754 miles of boundary lines in the Sabine National Forest. While the majority are identified and posted, occasionally one may encounter an area where signs have been vandalized or lines are not yet marked. In these cases, one should be alert to avoid accidentally trespassing on private land.

The map on the following page shows lands within Sabine County under management by the Sabine National Forest.


SABINE NATIONAL FOREST LAND MANAGEMENT
SABINE COUNTY TEXAS COMMUNITY WILDFIRE PROTECTION PLAN
Sabine County, Texas
Legend
Sabine National Forest District Office
Sabine National Forest Management Area
Indian Mounds Wilderness
Red-Cockaded Woodpecker (RCW) Habitat
Trail Between the Lakes
City Limits
Communities
Lakes
Data Source Credits
USGS, TxDOT, TFS
Map updated: 2/3/2020
Cartographers: RCP, GJW, MPTX,
Projection: Transverse Mercator
Coordinate System: UTM Zone 15N
Datum: NAD 1983
Sexton
Isla
Geneva
Milam
Rosevine
Sabinetown
Bronson
Hemphill
TOLEDO BEND RESERVOIR
Yellowpine
Sixmile
Fairdale
Hickory Ridge
Pineland
Fairmount
Brookeland
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CHAPTER 3. WILDFIRE RISK ASSESSMENT

3.1 COUNTY-WIDE WILDFIRE RISK ASSESSMENT

The following general wildfire risk assessment was developed in the county's all-hazards mitigation plan. It includes a general description of wildfire, geographic areas affected at the countywide scale, description of previous occurrences, assessment of future probability, potential magnitude and severity, and overall vulnerability assessment. More detailed analysis of wildfire risk and vulnerability at the fire department district and neighborhood scale is developed in Section 3.5.

3.1.1 General Wildfire Description

A wildfire is defined as an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. Wildfires often begin unnoticed, spread quickly, and are usually signaled by dense smoke that fills the area for miles around. Wildfires are caused through human acts such as arson or careless accidents, or through natural occurrences such as lightning. Wildfire danger is exacerbated by dry weather conditions and excessive heat. The majority of forest fires in Texas are caused by arson and other careless acts by people.

The wildland-urban interface is an area in which development meets wildland vegetation. Both vegetation and the built environment provide fuel for fires. Figure 3-1 below lists fire danger rating classifications as defined by the U.S. Forest Service.

U.S. Forest Service, Fire Danger Adjective Class Rating

Danger Rating	Basic Description	Detailed Description
	fires not easily started	Fuels do not ignite readily from small firebrands. Fires in open grassland may burn freely a few hours after rain, but wood fires spread slowly by smoldering and burn in irregular fingers. Low danger of spotting.
Moderate	fires start easily and spread at a moderate rate	Fires can start from most accidental causes. Fires in open cured grassland will burn briskly and spread rapidly on windy days. Woods fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel may burn hot. Short-distance spotting may occur. Fires are not likely to become serious and control is relatively easy.
High	fires start easily and spread at a rapid rate	All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High intensity burning may develop on slopes or in concentrations of fuel. Fires may become serious and their control difficult, unless they are hit hard and fast while small.
	fires start very easily and spread at a very fast rate	Fires start easily from all causes and immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high-intensity characteristics - such as long-distance spotting - and fire whirlwinds, when they burn into heavier fuels. Direct attack at the head of such fires is rarely possible after they have been burning more than a few minutes.
	fire situation is explosive and can result in extensive property damage	Fires start quickly, spread furiously and burn intensely. All fires are potentially serious. Development into high-intensity burning will usually be faster and occur from smaller fires than in the Very High Danger class (4). Direct attack is rarely possible and may be dangerous, except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions, the only effective and safe control action is on the flanks, until the weather changes or the fuel supply lessens.

Source: U.S. Forest Service, Wildland Fire Assessment System

3.1.2 Disaster Declaration History

Presidential (Major) Disaster Declarations

Among many natural disaster occurrences in the region's history, since 2005 there have been 7 major disaster declarations that included Sabine County. Two (2) of the 7 disaster declarations resulted from wildfires. Two (2) of the 7 declarations were related to severe storms and flooding, and 3 disaster declarations were due to hurricanes. Adjusted for inflation to 2009 dollars, the total damage estimate that includes all affected Texas counties is over $5.9 billion. In 2006 and again in 2011 major disaster declarations for severe wildfire threat included Sabine County, as indicated in red in the table below.

Table 3-1 Federal Disaster Declarations, Sabine County (2005-2017)

Declaration Number	Date	Disaster Description	*Regional IA + PA Total ($)
4332	8/25/2017	Hurricane Harvey	TBD
4266	3/19/2016	Severe Flooding	$40,567,007
4223	5/29/2015	Severe Storms and Flooding	$213,575,994
1999	**7/1/2011**	**Texas Wildfires**	**$52,851,740**
1791	9/13/2008	Hurricane Ike	$3,479,373,023
1624	**1/11/2006**	**Severe Wildfire Threat**	**$46,966,613**
1606	9/24/2005	Hurricane Rita	$2,120,536,475
		Total (Not Including Harvey)	***$5,953,870,852***

Source: FEMA
Note 1: Damage estimates include regional impacts across multiple counties/states
Note 2: Other FEMA Disaster Declarations listed below.

Emergency Declarations

Table 3-2 lists federal emergency declarations for disasters that either did not create impacts that rise to level of a major disaster declaration, or that were subsequently declared major disasters (such as Hurricane Ike). Four (4) of the emergency declarations related to wildfires (indicated in red text below), three (3) were related to hurricanes, and one (1) pertained to the retrieval effort of the Space Shuttle Columbia. The total damage estimate that includes all affected Texas counties for emergency declarations is over $947 million.

Table 3-2 Federal Emergency Declarations, Sabine County

Declaration Number	Date	Disaster Description	*Regional Damage Estimate (2009 $)
3117	2/23/1996	Extreme Fire Hazard	$6,300,785
3127	6/23/1998	Fire	$44,215,366
3142	9/1/1999	Extreme Fire Hazards	$7,964,415
3171	2/1/2003	Loss of Space Shuttle Columbia	$215,912,019
3284	3/14/2008	Wildfires	$41,758,528
Total			**$947,172,782**

Source: FEMA, Public Entity Research Institute (PERI),
Note: Damage estimates include regional impacts across multiple counties/states.

Notably, on June 20, 2011, Sabine County Commissioner's Court, Texas Division of Emergency Management, and the Office of the Governor concurred and approved a local disaster condition related to long term drought and wildfire risk and activity. This action extended a prohibition on the use and sale of all fireworks throughout the upcoming fireworks season.

3.1.3 Previous Wildfire Occurrences

For the period 2005-2015, there were 599 wildfire response reports for Sabine County submitted as recorded by the Texas A&M Forest Service. 3,597 acres were burned in these occurrences ranging from 0.1 acres to 523 acres. Human activity caused the vast majority of these fires, attributed for 580 of the 599 total reports, or 96.8 percent.

Table 3-3 Sabine County Wildfires by Cause: 2005-2015

Fire Cause	Number	Percent of Total (Number)	Acres	Percent of Total (Acres)
Debris Burning	347	57.9%	1,414.2	39.3%
Miscellaneous	81	13.5%	938.1	26.1%
Power Lines	70	11.7%	154.4	4.3%
Equipment Use	19	3.2%	187.3	5.2%
Lightning	19	3.2%	326.3	9.1%
Incendiary	17	2.8%	265.5	7.4%
Campfire	11	1.8%	16.9	0.5%
Railroads	11	1.8%	254.0	7.1%
Smoking	11	1.8%	29.9	0.8%
Children	4	0.7%	2.4	0.1%
Fireworks	3	0.5%	3.0	0.1%
TOTAL	599	100.0%	3,597.3	100.0%

Source: Texas A&M Forest Service Compiled Wildfire Reports, various responding fire departments; Sabine County
Note: Complete set of fire occurrences 2005-2015 is shown on wildfire ignitions and density maps.

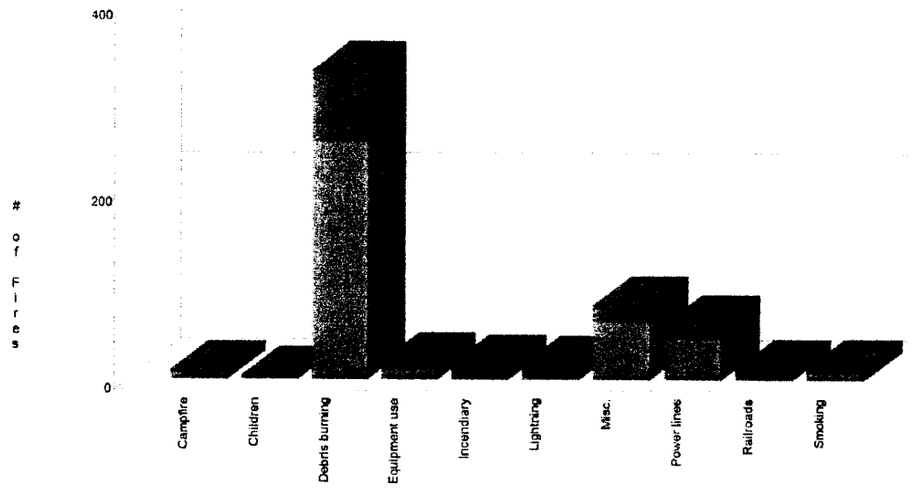
Table 3-4Sabine County Wildfires Larger than 35 acres: 2005-2015

Start Date	Acres	Cause	Description
5/27/2011	523.0	Miscellaneous	Other
3/15/2013	132.0	Equipment use	Vehicles (faulty mufflers, dragging metal)
8/31/2010	111.0	Lightning	Origin traceable to lightning
3/28/2012	100.0	Miscellaneous	Other
4/30/2008	95.0	Incendiary	Spite
2/8/2006	86.0	Railroads	Origin traceable to trains
10/3/2007	80.0	Debris burning	Brush pile burning
10/6/2007	80.0	Debris burning	Brush pile burning
11/2/2008	75.0	Debris burning	Brush pile burning
10/7/2010	74.0	Incendiary	Amusement
2/7/2008	60.0	Debris burning	Logging, site prep for planting
8/3/2010	55.0	Debris burning	Logging, site prep for planting
2/8/2006	52.0	Railroads	Origin traceable to trains
7/31/2008	50.0	Miscellaneous	Other
10/29/2010	50.0	Lightning	Origin traceable to lightning
4/12/2008	50.0	Debris burning	Logging, site prep for planting
3/22/2011	50.0	Debris burning	Brush pile burning
2/8/2009	50.0	Debris burning	Prescribed burning
12/13/2010	36.0	Power Lines	Origin traceable to Power Lines
4/23/2009	35.0	Debris burning	Prescribed burning

Source: Texas A&M Forest Service Compiled Wildfire Reports, various responding fire departments; Sabine County

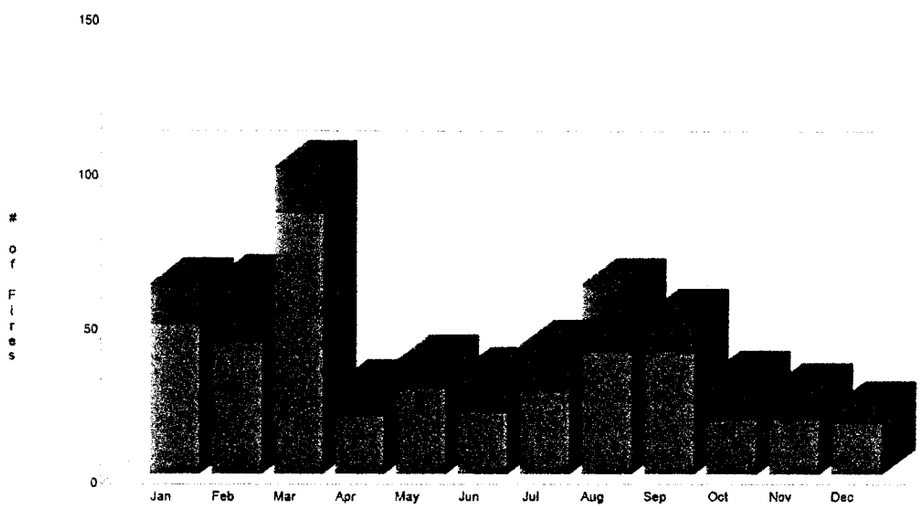
Based on information provided by the Texas A&M Forest Service, the following charts show statistical distribution of wildfire occurrences.

Cause of Wildfires Reported by Agency
2005 - 2015



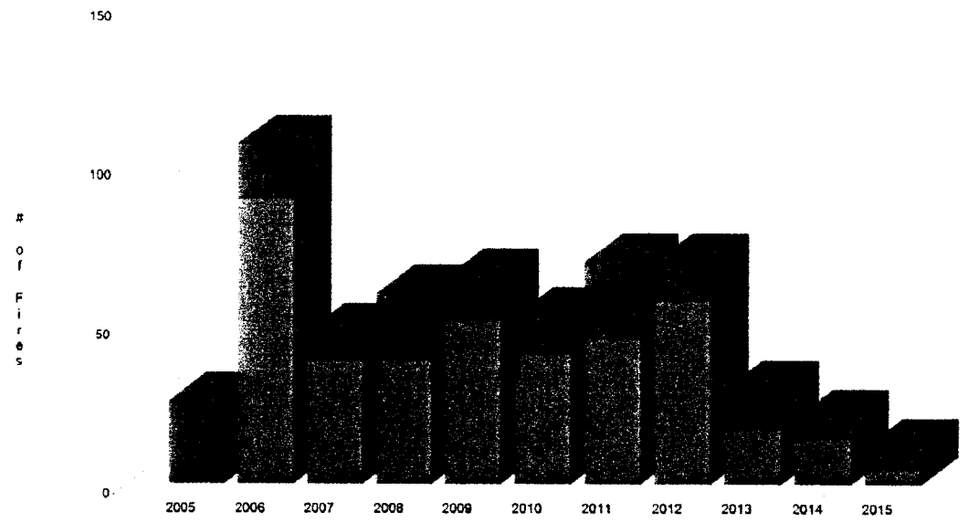
	Campfire	Children	Debris burning	Equipment use	Incendiary	Lightning	Misc.	Power lines	Railroads	Smoking
Local	7	4	255	12	2	5	62	44	5	8
State	3	0	76	7	15	11	18	16	7	5

Number of Wildfires Reported per Month by Agency
2005 - 2015



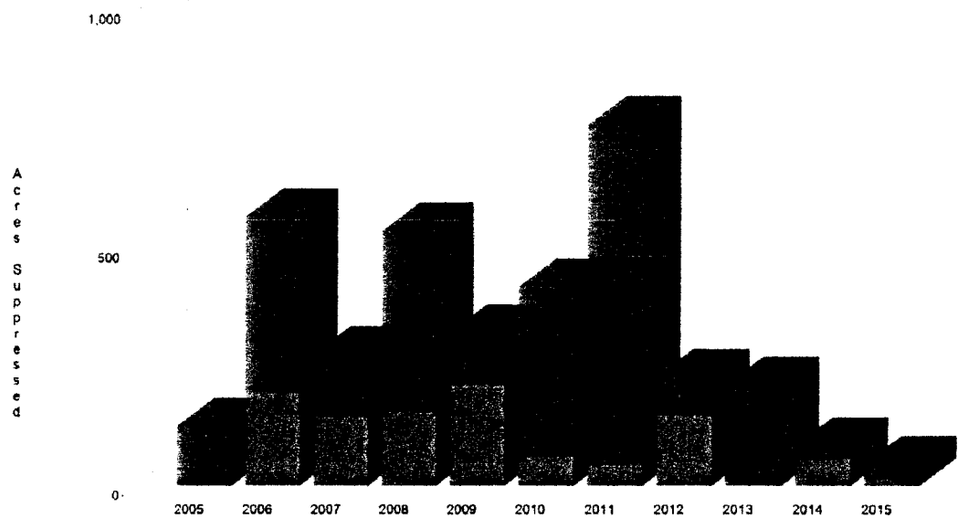
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Local	49	43	85	19	28	20	27	40	40	18	18	17
State	13	20	15	10	9	13	15	22	12	14	10	5

Number of Wildfires Reported by Agency
2005 - 2015



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Local	1	90	39	39	52	41	46	58	18	15	6
State	25	17	9	21	13	12	24	12	12	6	7

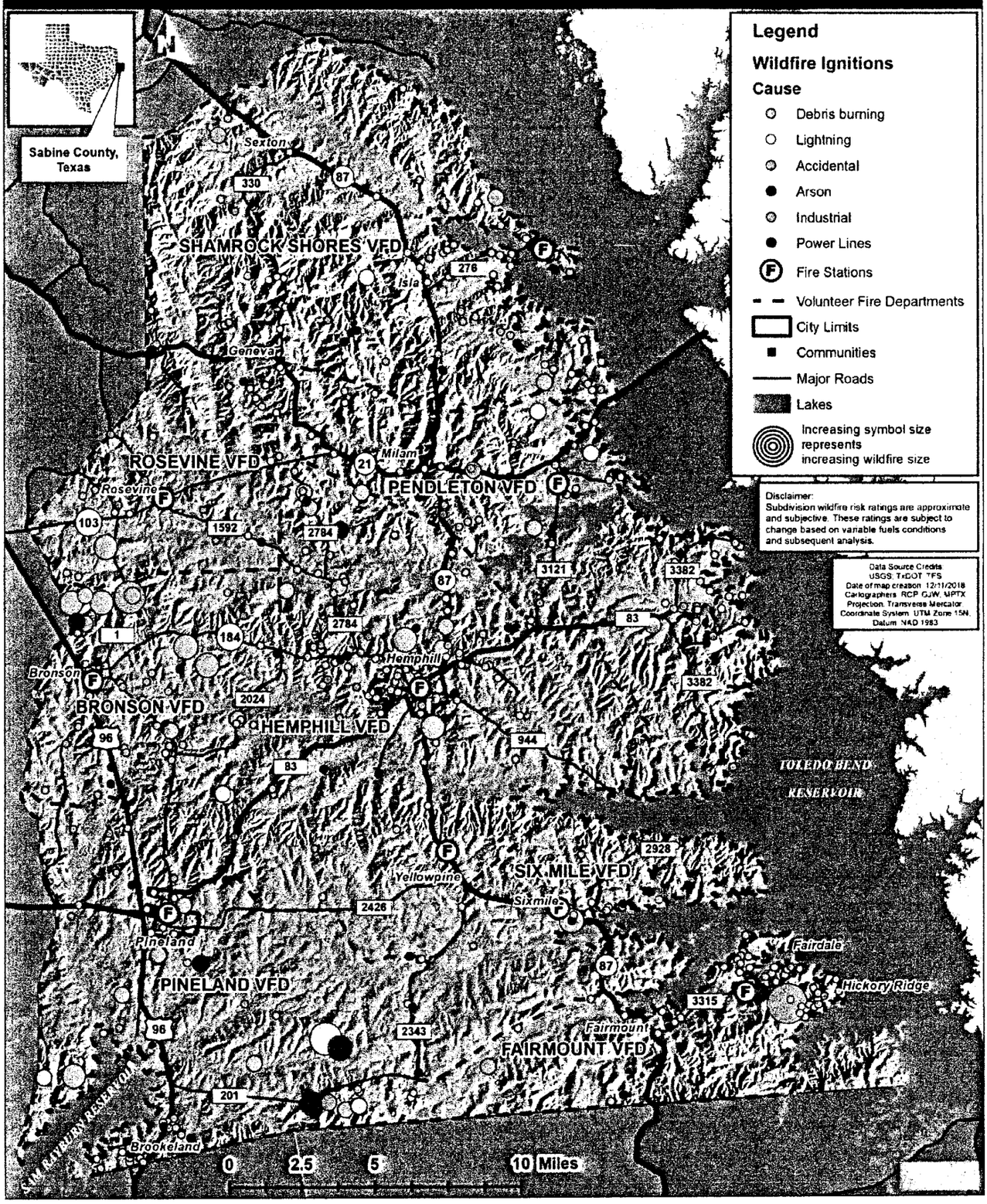
Wildfire Acres Reported by Agency
2005 - 2015



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Local	1	197	148	159	216	64	47	152	11	58	16
State	124	369	130	378	107	355	715	78	202	28	30

WILDFIRE IGNITIONS 2005 - 2015

SABINE COUNTY TEXAS COMMUNITY WILDFIRE PROTECTION PLAN



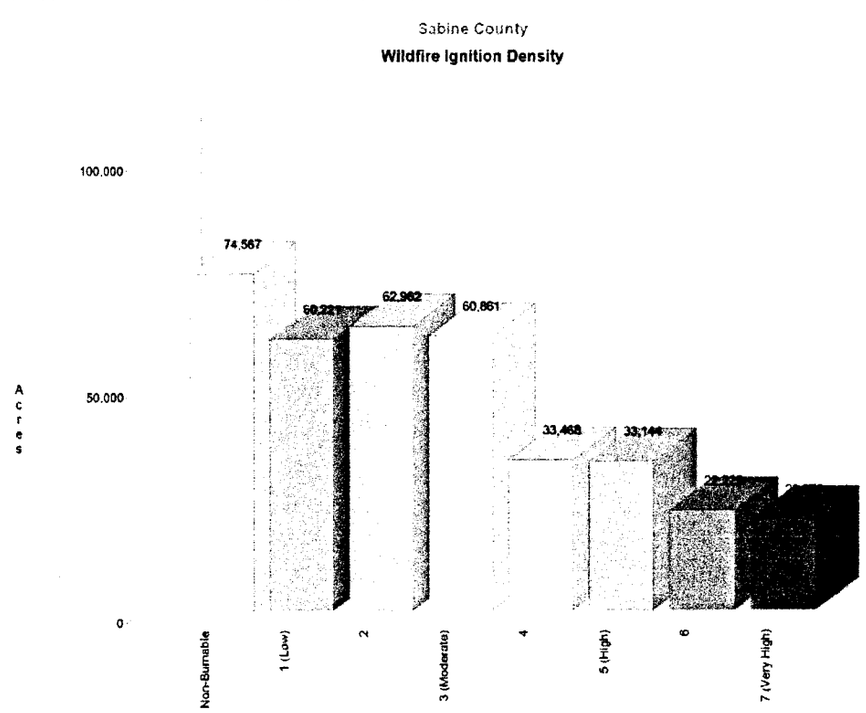
Wildfire Ignition Density

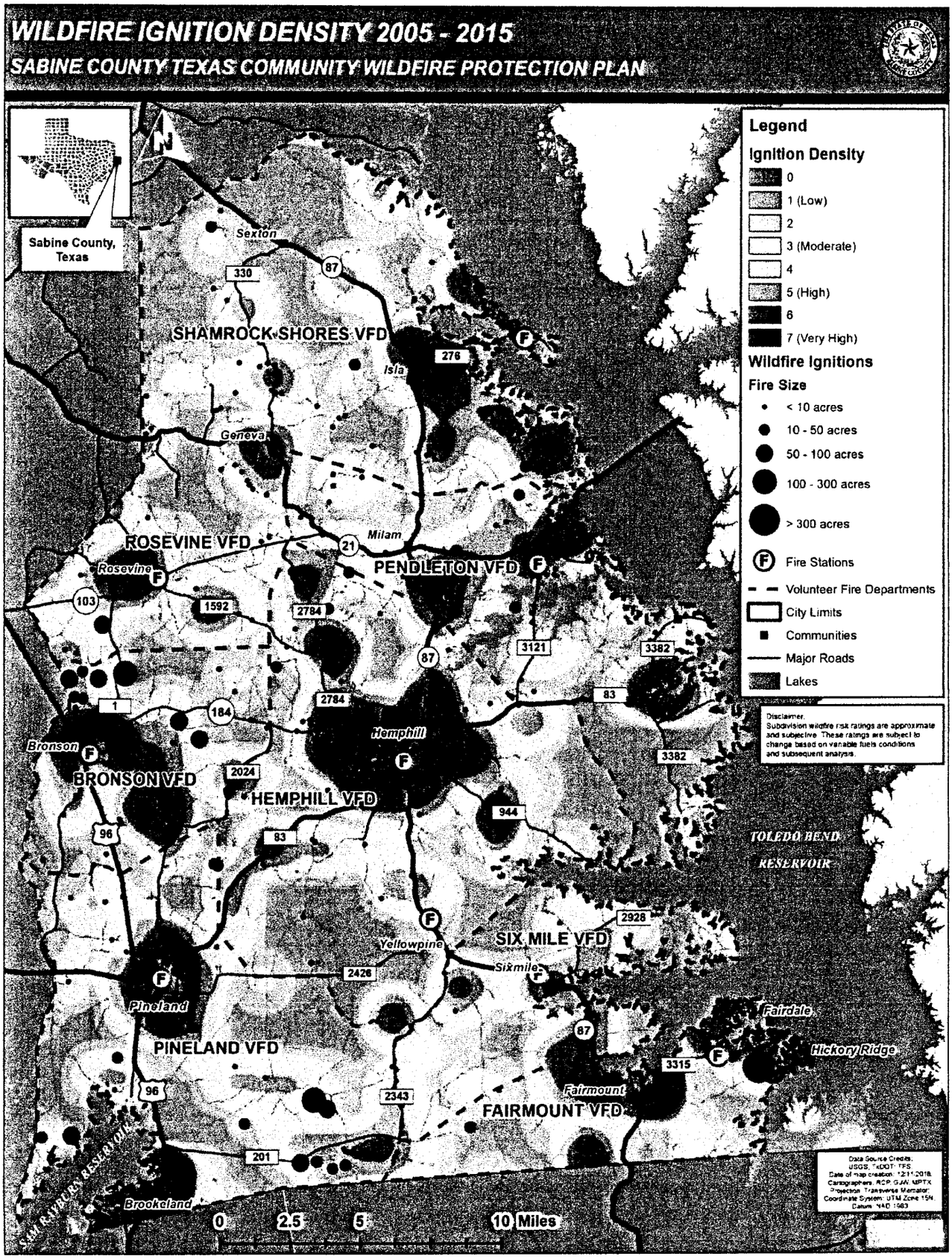
To aid in the use of Wildfire Ignition Density for planning activities, the output values are categorized into seven (7) classes reflecting average ignition rates. These are given general descriptions from Low to Very High. Seven classes are used to present finer detail for mapping purposes so that transitional areas can be easily identified.
The class breaks are determined by analyzing the Wildfire Ignition Density output values to reflect for the entire state.

The Wildfire Ignition Density map is derived at a 30-meter resolution. This scale of data was chosen to be consistent with the accuracy of the primary surface fuels dataset used in the assessment. While not appropriate for site specific analysis, it is appropriate for regional, county or local protection mitigation or prevention planning.

A more detailed description of the risk assessment algorithms is provided in the TWRA Final Report, which can be downloaded from www.texaswildfirerisk.com.

Class	Acres	Percent
Non-Burnable	74,567	20.3 %
1 (Low)	60,221	16.4 %
2	62,962	17.1 %
3 (Moderate)	60,861	16.6 %
4	33,468	9.1 %
5 (High)	33,144	9.0 %
6	22,229	6.0 %
7 (Very High)	20,270	5.5 %
Total	**367,722**	**100.0 %**





Vol 3T Page 276

As shown in Table 3-4 below, in years dating back to 2002, the southern region of the U.S. has had by far the highest occurrence of human caused fires in terms of number of fires and acreage burned. Both probability of future occurrence and magnitude and severity can largely be determined by the success of mitigation measures and cooperation of the general public. Given the environmental and economic importance of forests, the potential impacts of wildfire are significant. Based on assessments of probability, magnitude and potential severity; overall vulnerability to wildfire is considered **Very High.**

Table 3-5 Human Caused Fires: Number and Acreage by U.S. Region (2002-2008)

Human Caused Fires (Number)

Year	Alaska	Northwest	Northern California	Southern California	Northern Rockies	Eastern Great Basin	Western Great Basin	Southwest	Rocky Mountains	Eastern Area	Southern Area	Total
2008	265	1,365	3,407	5,208	1,971	826	224	2,013	1,616	11,152	**42,043**	70,093
2007	247	2,346	3,093	5,140	2,005	1,048	425	1,730	1,876	12,453	**43,083**	73,446
2006	254	2,666	3,676	3,166	2,303	943	331	2,511	2,968	14,227	**47,175**	80,220
2005	296	1,924	3,010	3,781	1,183	813	262	3,287	1,940	13,014	**28,920**	58,430
2004	426	1,901	3,613	3,845	1,883	526	173	1,491	704	11,781	**27,758**	54,101
2003	379	2,370	3,795	3,929	1,970	944	227	1,657	4,214	14,851	**16,479**	50,815
2002	378	2,148	3,789	4,060	1,665	730	215	2,668	2,118	12,857	**31,394**	62,022

Human Caused Fires (Acreage Burned)

Year	Alaska	Northwest	Northern California	Southern California	Northern Rockies	Eastern Great Basin	Western Great Basin	Southwest	Rocky Mountains	Eastern Area	Southern Area	Total
2008	1,857	99,706	91,022	454,249	105,634	120,391	17,769	339,201	117,554	69,396	**2,013,212**	3,429,991
2007	59,007	244,335	153,154	855,978	237,835	288,627	46,057	90,660	85,442	230,750	**1,157,515**	3,449,360
2006	147,292	112,098	146,999	342,864	126,078	278,288	46,947	392,892	209,693	115,171	**2,486,522**	4,404,844
2005	8,184	219,012	37,658	61,728	53,616	187,248	43,811	267,043	48,356	85,589	**509,082**	1,521,327
2004	17,789	58,178	146,720	84,075	23,585	13,636	13,864	63,062	35,346	101,089	**407,456**	964,800
2003	22,093	126,381	96,415	653,016	137,309	182,916	5,161	127,332	87,823	235,391	**248,412**	1,922,249
2002	427,321	105,544	39,560	412,447	65,891	101,986	29,288	772,299	661,679	104,900	**356,204**	3,077,119

Source: National Interagency Coordination Center

3.1.4 Expected Fire Behavior

Sabine County Volunteer Fire Departments answer an estimated 600 wildland fires per decade. The majority are caused by human activities, most prominently outdoor burning and arson. Wildland fires generally have three possible outcomes on grass and forested areas. These outcomes can be lethal, non-lethal or mixed. Definitions of these are listed below:

- Lethal –The intensity of a fire is high enough and the duration is long enough to cause mortality in the majority of the trees within the area. A lethal fire is most likely to occur in a pine plantation.
- Non-lethal –The intensity of a fire is not high enough and the duration is not long enough to cause tree mortality in the area. Evidence of a non-lethal burn usually disappears within 2 years.
- Mixed – Fires create both lethal and non-lethal effects within the burned area.

The transition of a fire that burns from the base of a tree to the crown of a tree is determined by the amount of fuel on the ground, ladder fuels that carry the fire throughout the tree, the intensity of the fire, length of the flames and the wind. Once a fire reaches the tree crowns, the wind will usually carry the fire in the crowns creating fire intensities that cannot be dealt with by fire suppression. Crown fires are normally driven by wind and typically occur due to dry, explosive conditions. The dryness of the fuels and tree crowns causes what is known as a plume dominated crown fire and does not necessarily need wind to keep it sustained.

Regarding spot fires, during a wildland fire, embers are picked up and carried by the wind and dropped ahead of the main fire front. Needing a dry fuel bed to ignite, it is not uncommon for the embers to land ¼ to ¾ of a mile from fire front. Spot fires create serious problems for fire suppression forces trying to protect lives and property well ahead of an advancing fire. As spot fires start and gain intensity, they can become as active as the main fire front. Some fires travel so quickly through a combination of crowning and spotting that there is absolutely no way for fire suppression forces to gain control.

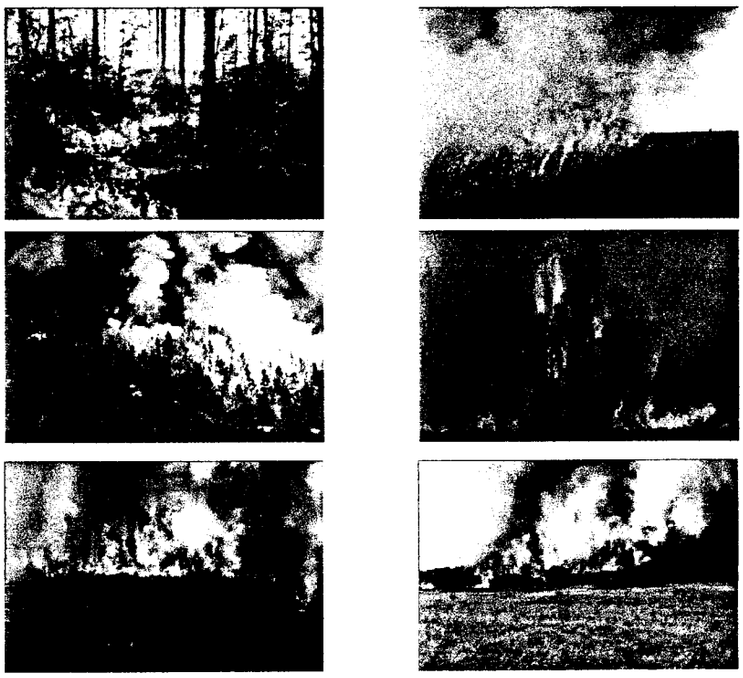
Fire Type – Extreme

There are two primary fire types – surface fire and canopy fire. Canopy fire can be further subdivided into passive canopy fire and active canopy fire. A short description of each of these is provided below.

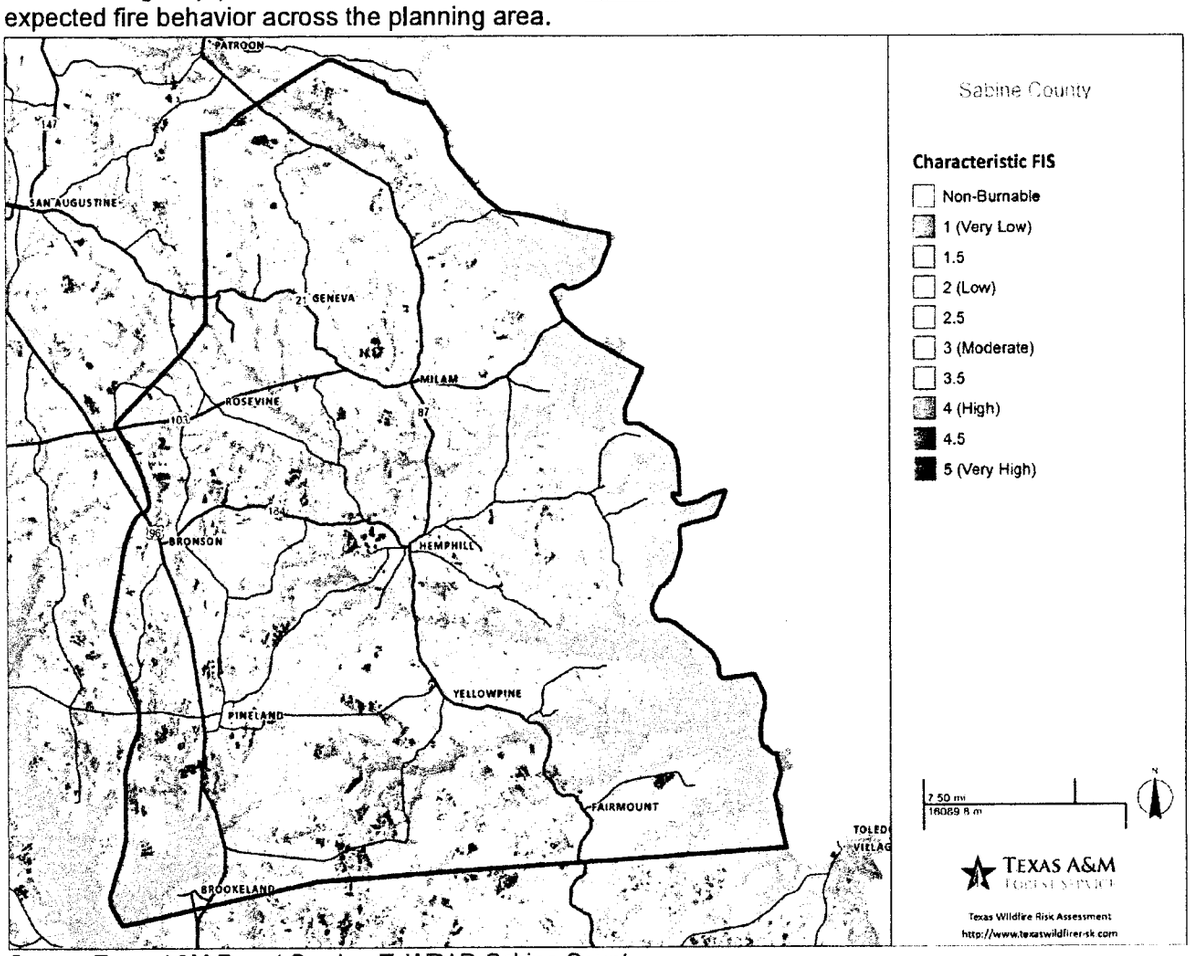
Surface Fire
A fire that spreads through surface fuel without consuming any overlying canopy fuel. Surface fuels include grass, timber litter, shrub/brush, slash and other dead or live vegetation within about 6 feet of the ground.

Passive Canopy Fire
A type of crown fire in which the crowns of individual trees or small groups of trees burn, but solid flaming in the canopy cannot be maintained except for short periods (S&R, 2001).

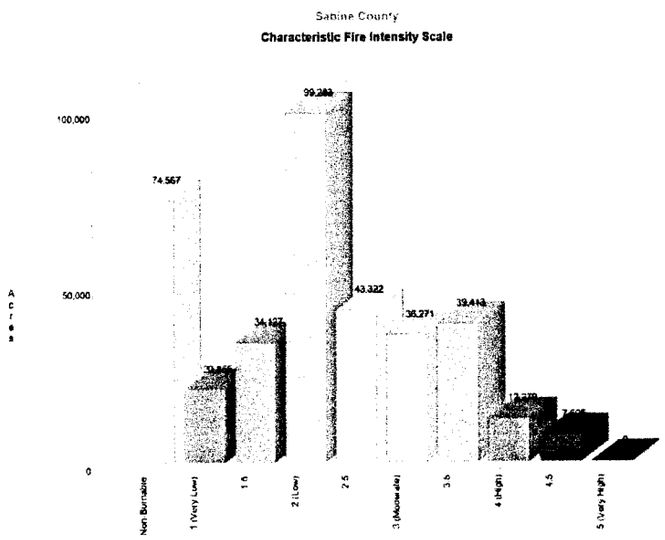
Active Canopy Fire
A crown fire in which the entire fuel complex (canopy) is involved in flame, but the crowning phase remains dependent on heat released from surface fuel for continued spread (S&R, 2001).



The following map produced from TFS data shows Characteristic Fire Intensity Scale as an indicator of expected fire behavior across the planning area.



Source: Texas A&M Forest Service, TxWRAP, Sabine County



Source: Texas A&M Forest Service, TxWRAP, Sabine County

3.1.5 Surface Fuels

Weather, fuel conditions and topography all have a direct influence on fire behavior. Of these, fuel is the only factor we have the ability to manage. The following factors are contributing elements to fuel load conditions:

- Successful fire suppression activities over previous decades
- Older pine plantations with maturing fuel complexes
- Young pine plantations with high tree density
- Insect and disease outbreaks
- Climatic changes

Mapping of vegetation type and wildfire risk as it relates to surface fuels and location of development is shown in Section 3.1.6 (Probability of Wildfire Occurrence).

Vegetation

The Vegetation map describes the general vegetation and landcover types across the state of Texas. In the Texas Wildfire Risk Assessment (TWRA), the Vegetation dataset is used to support the development of the Surface Fuels, Canopy Cover, Canopy Stand Height, Canopy Base Height, and Canopy Bulk Density datasets. The vegetation classes with descriptions are shown in the following table.

For the purposes of the TWRA, special consideration was given to mapping of evergreen forest types (i.e. pine, redcedar, juniper, live oak, and pinyon) due to their potential to support passive and active crowning.

Creation of the 30-meter statewide vegetation dataset was created from a compilation of three datasets:

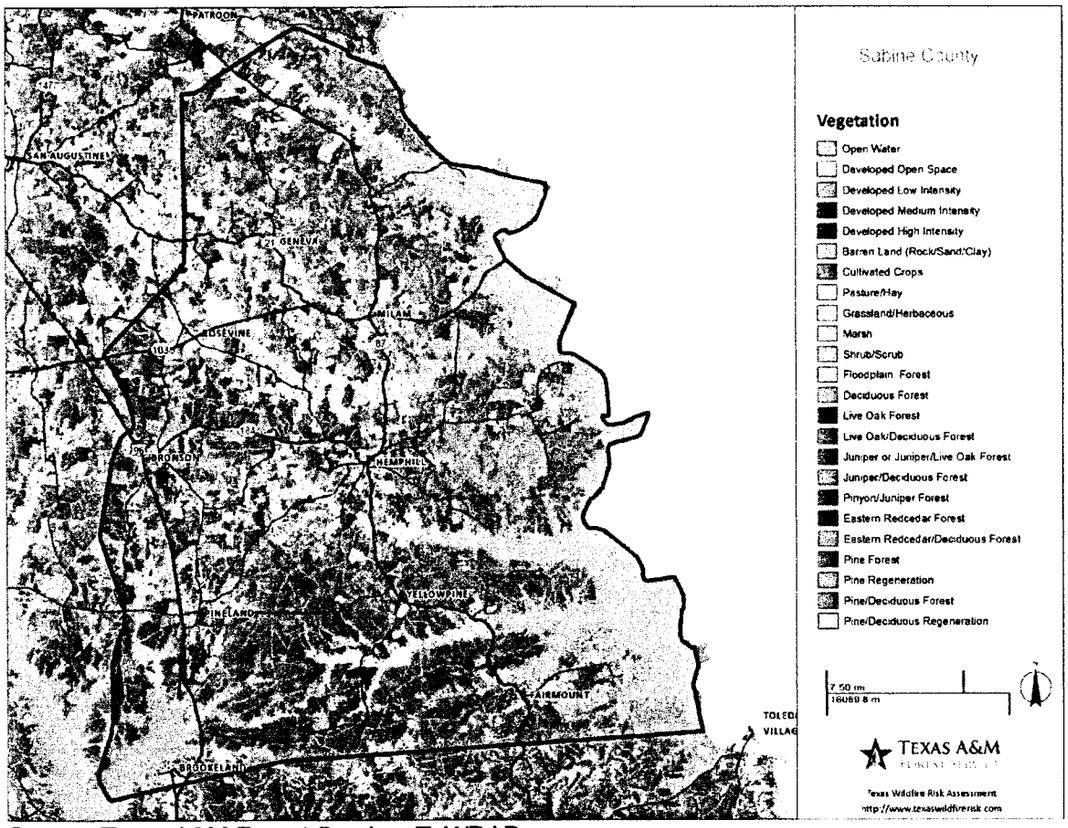
1. National Landcover Dataset 2001, sponsored by the US Geological Survey (USGS), formed the foundation for the vegetation map. Satellite imagery used in the classification is circa 2001.

2. East Texas Fuels Classification Project, sponsored by Texas A&M Forest Service, supplied the vegetation data for 65 counties in East Texas. Satellite imagery used in the classification is circa 2007.

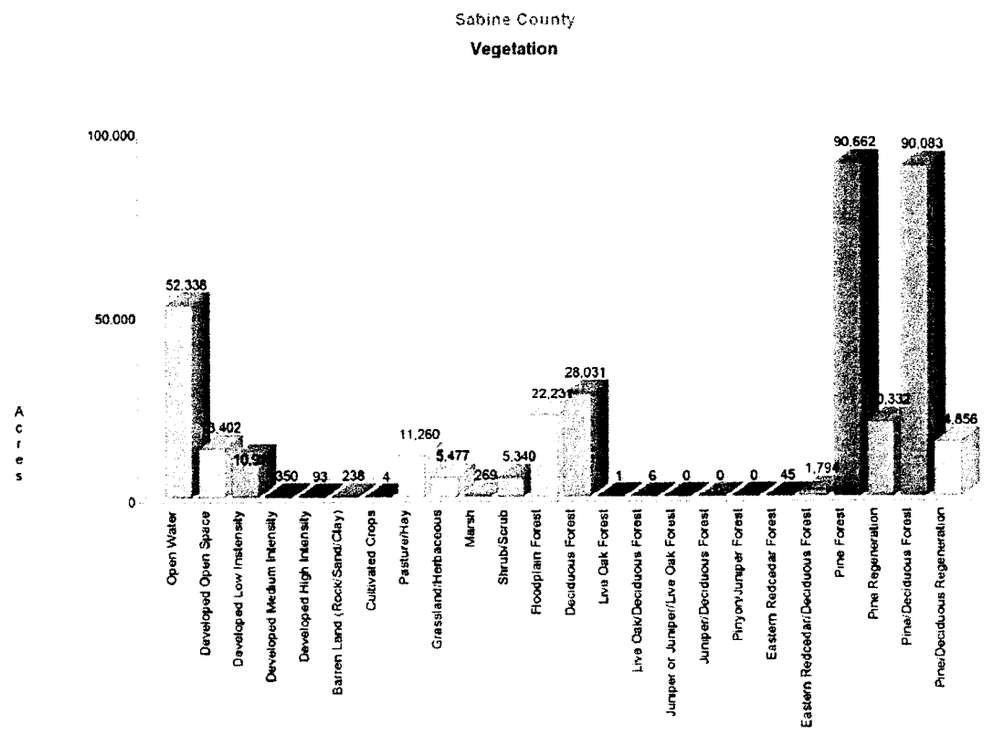
3. Specific evergreen vegetation classes (i.e. juniper, mixed juniper, and live oak) were extracted for Central Texas from the Texas Ecological Systems Classification Project - Phase 1 to enhance the vegetation map. This project is sponsored by Texas Parks and Wildlife and contracted to Missouri Resource Assessment Partnership. Satellite imagery used in the classification is circa 2007/2008.

SABINE COUNTY VEGETATION COVER CATEGORIES BY ACREAGE AND PERCENTAGE

Class	Description	Acres	Percent
Open Water	All areas of open water, generally with < 25% cover of vegetation or soil	52,338	14.2 %
Developed Open Space	Impervious surfaces account for < 20% of total cover (i.e. golf courses, parks, etc...)	13,402	3.6 %
Developed Low Intensity	Impervious surfaces account for 20-49% of total cover	10,912	3.0 %
Developed Medium Intensity	Impervious surfaces account for 50-79% of total cover	350	0.1 %
Developed High Intensity	Impervious surfaces account for 80-100%of total cover	93	0.0 %
Barren Land (Rock/Sand/Clay)	Vegetation generally accounts for <15% of total cover	238	0.1 %
Cultivated Crops	Areas used for the production of annual crops, includes land being actively tilled	4	0.0 %
Pasture/Hay	Areas of grasses and/or legumes planted for livestock grazing or hay production	11,260	3.1 %
Grassland/Herbaceous	Areas dominated (> 80%) by grammanoid or herbaceous vegetation, can be grazed	5,477	1.5 %
Marsh	Low wet areas dominated (>80%) by herbaceous vegetation	269	0.1 %
Shrub/Scrub	Areas dominated by shrubs/trees < 5 meters tall, shrub canopy > than 20% of total vegetation	5,340	1.5 %
Floodplain Forest	> 20% tree cover, the soil is periodically covered or saturated with water	22,231	6.0 %
Deciduous Forest	> 20% tree cover, >75% of tree species shed leaves in response to seasonal change	28,031	7.6 %
Live Oak Forest	> 20% tree cover, live oak species represent >75% of the total tree cover	1	0.0 %
Live Oak/Deciduous Forest	> 20% tree cover, neither live oak or deciduous species represent >75% of the total tree cover	6	0.0 %
Juniper or Juniper/Live Oak Forest	> 20% tree cover, juniper or juniper/live oak species represent > 75% of the total tree cover	0	0.0 %
Juniper/Deciduous Forest	> 20% tree cover, neither juniper or deciduous species represent > 75% of the total tree cover	0	0.0 %
Pinyon/Juniper Forest	> 20% tree cover, pinyon or juniper species represent > 75% of the total tree cover	0	0.0 %
Eastern Redcedar Forest	> 20% tree cover, eastern redcedar represents > 75% of the total tree cover	45	0.0 %
Eastern Redcedar/Deciduous Forest	> 20% tree cover, neither eastern redcedar or deciduous species represent > 75% of the total tree cover	1,794	0.5 %
Pine Forest	> 20% tree cover, pine species represent > 75% of the total tree cover	90,662	24.7 %
Pine Regeneration	Areas of pine forest in an early successional or transitional stage	20,332	5.5 %
Pine/Deciduous Forest	> 20% tree cover, neither pine or deciduous species represent > 75% of the total tree cover	90,083	24.5 %
Pine/Deciduous Regeneration	Areas of pine or pine/deciduous forest in an early successional or transitional stage	14,856	4.0 %
Total		**367,724**	**100.0 %**

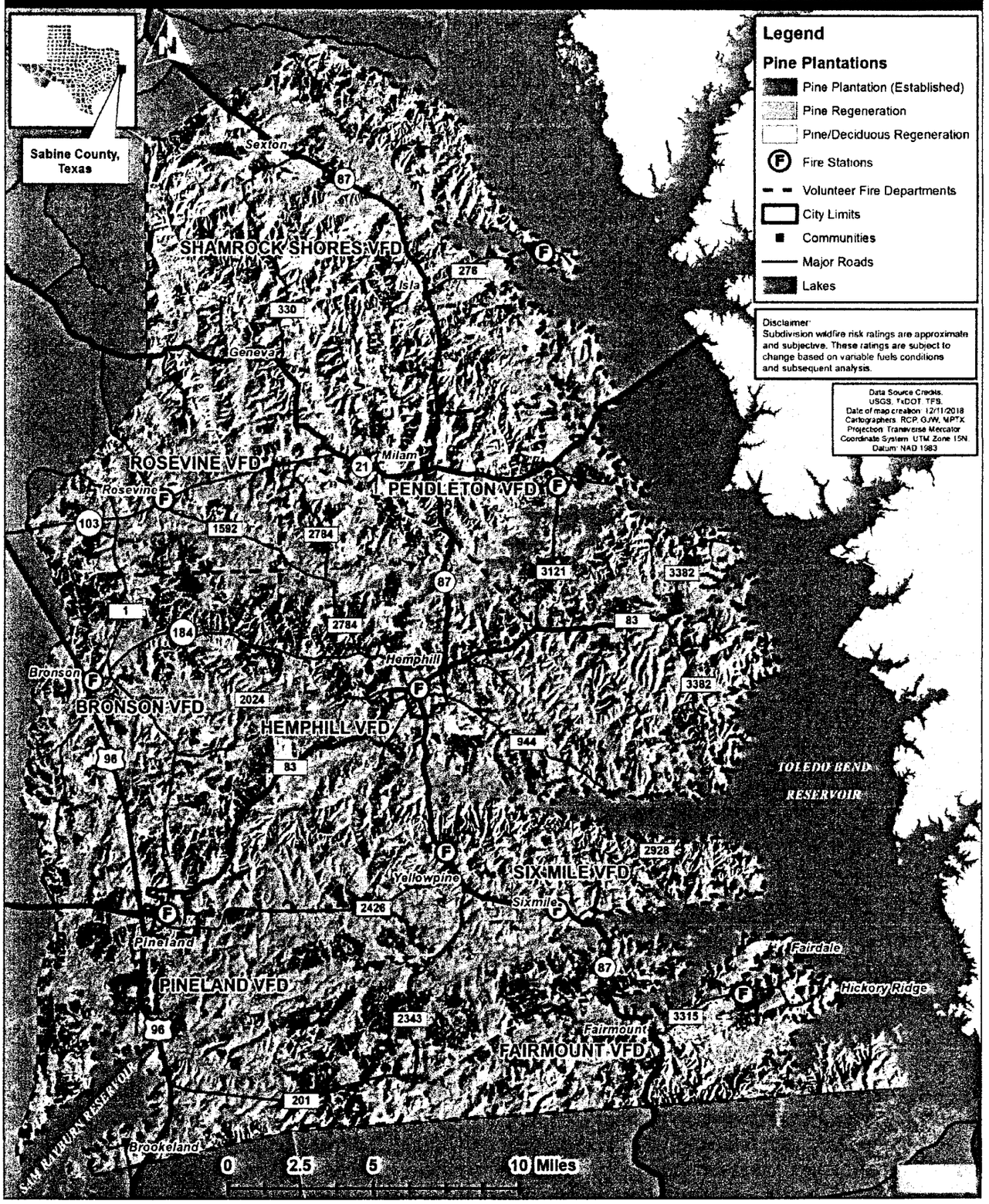


Source: Texas A&M Forest Service; TxWRAP



PINE PLANTATIONS IN SABINE COUNTY

SABINE COUNTY TEXAS COMMUNITY WILDFIRE PROTECTION PLAN



3.1.6 Structure Ignitability

The reduction of structure ignitability in Sabine County will be a long term process and must be approached with some sensitivity. From a public policy standpoint, the ideal approach is to encourage homebuilders and remodelers to consider ignitability factors at the project design and material selection stage, via methods of education and technical assistance.

The ignitability of a structure is determined by its design, construction materials and/or location. Additionally, there are steps a homeowner should consider to reduce the chance of their home catching fire, or resist further damage if it does catch fire. The following subsections discuss the primary factors relating to structure ignitability.

Construction and Materials

How a structure is constructed and the type of material used is just as important as where a structure is located. Utilizing ignition resistant materials to address roofing, attic ventilation, siding, decking, windows and wall vents will assist in resisting the intrusion of flames or burning embers projected by a vegetation and wildfire exposure. Studies show that as many as 80% of homes lost to wildfire could have been saved if proper materials were used. Non-combustible construction materials increase the chance of a structure surviving a wildfire.

- Roofing— The more fire-resistant the roofing material, the better. The roof is the portion of the house that is most vulnerable to ignition by falling embers. Metal roofs afford the best protection against ignition from falling embers. Slate or tile roofs are also non-combustible, and Class-A asphalt shingles are recommended as well. The most dangerous type of roofing material is wood shingles.
- Siding—Non-combustible materials are ideal for the home exterior. Preferred materials include stucco, cement, block, brick, and masonry.
- Windows—Double-pane windows are most resistant to heat and flames. Smaller windows tend to hold up better within their frames than larger windows. Tempered glass is best, particularly for skylights, because it will not melt as plastic will.
- Fencing and Trellises—Any structure attached to the house should be considered part of the house. Using nonflammable materials or protective barriers such as metal or masonry between the fence and the house will help prevent fire from being carried to a home by a wooden fence or trellis.

Periodic Property Maintenance

Many committed members of the County serve their neighbors as volunteer firefighters, but these firefighting resources are continually stretched, particularly during a widespread wildfire. Burning ember intrusion is the main reason homes are destroyed in wildland-urban interface fires. Since a home within one mile of a wildfire is in the "ember zone", wind driven embers can attack the structure and cause destruction far from the actual flame front. Therefore, caring for the outside of a structure is equally as important and the following are effective periodic property maintenance strategies that are intended to reduce structural ignitability.

- Gutter Debris - Removing debris from roof gutters and downspouts at least twice a year will help to prevent fire, along with keeping them functioning properly.
- Screen Off the Area Beneath Decks and Porches - The area below an aboveground deck or porch can become a trap for burning embers or debris. Screen off the area using screening with openings no larger than one-half inch. Keep the area behind the screen free of all leaves and debris.
- Firewood, Kindling and Other Flammables - Although convenient, stacked firewood or other flammable materials near a structure adds fuel that can feed a fire. All wood should be moved away from a structure and stacked uphill at least 30 feet and preferably 100 feet from a structure during fire season. Flammable materials such as paint, solvents, or gasoline, should always be stored in approved safety containers away from any sources of ignition such as hot water tanks or furnaces. The fumes from highly volatile liquids can travel a great distance after they turn into a gas. If possible, store the containers in a safe, separate location away from the main house.

- Chimneys and Fireplace Flues – Chimneys and dampers should be checked at least twice a year and the chimney cleaned every year before first use. Dead limbs should be cleared away from within 15 feet of chimneys and stovepipes
- Fireplace and Woodstove Ashes - Ashes from the fireplace should never be put into the garbage or dumped on the ground. Even in winter, one hot ember can quickly start a grass fire. Instead, place ashes in a metal container, and as an extra precaution, soak them with water. Cover the container with its metal cover and place it in a safe location for a couple of days. Then either dispose of the cold ash with other garbage or bury the ash residue in the earth and cover it with at least 6 inches of mineral soil.
- Propane Tanks - Propane tanks have as many as hundreds of gallons of highly flammable liquid that could become an explosive incendiary source in the event of a fire. A propane tank should be located at least 30 feet from any structure. All flammables should be kept at least 10 feet from a tank. Property owners should learn how to turn the tank off and on. In the event of a fire, property owners should know how to turn the tank off and on so that the gas could be turned off at the tank before evacuating, if safety and time allow.

It is important to note that no two properties are the same. Some structural ignitability hazards are related to homes being in disrepair, vacant or abandoned lots and minimal yard maintenance.

Abandoned buildings are recognized as a hazard to health, safety, and the welfare of a community. Sabine County consists of a large number of abandoned properties that are owned by absentee property owners. It is often difficult and time consuming to contact these individuals to coordinate clean-up and mitigation issues. Statistically, property owners are often indifferent about their dilapidated properties or disagree with the opinions of the County.

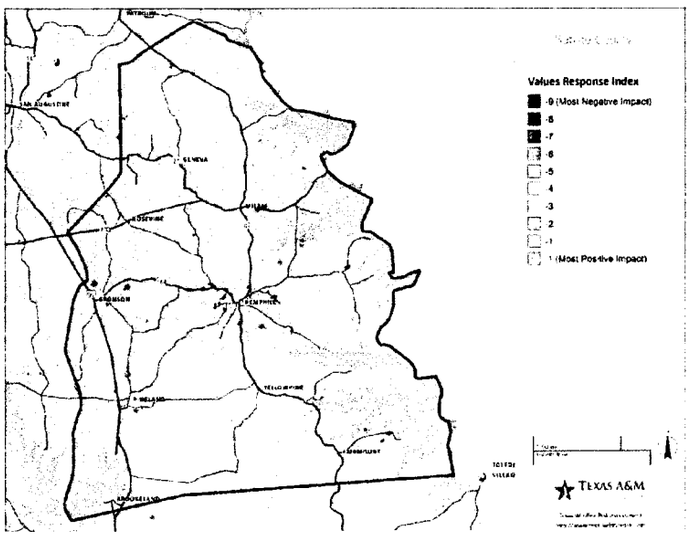
Another problem that occasionally occurs is owners not having the resources needed to keep their properties clean and in good repair either because they are elderly, in ill health, or do not have the funds. To resolve these issues the County may consider planning options to assist these property owners in removing weeds and junk from their property and to repair or remove abandoned or dilapidated structures.

The following analysis from Texas A&M Forest Service TxWRAP system shows ratings of potential impact of a wildfire on values and assets.

The Wildland Urban Interface (WUI) Response Index layer is a rating of the potential impact of a wildfire on people and their homes. The key input, WUI, reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the Wildland Urban Interface and rural areas is key information for defining potential wildfire impacts to people and homes.

The WUI Response Index is derived using a Response Function modeling approach. Response functions are a method of assigning a net change in the value to a *resource* or *asset* based on susceptibility to fire at different intensity levels, such as flame length. The range of values is from -1 to -9, with 1 representing the least negative impact and -9 representing the most negative impact. For example, areas with high housing density and high flame lengths are rated -9 while areas with low housing density and low flame lengths are rated -1.

To calculate the WUI Response Index, the WUI housing density data was combined with Flame Length data and response functions were defined to represent potential impacts. The response functions were defined by a team of experts led by the Texas A&M Forest Service mitigation planning staff. By combining flame length with the WUI housing density data, you can determine where the greatest potential impact to homes and people is likely to occur.



Fire intensity data is modeled to incorporate penetration into urban fringe areas so that outputs better reflect real world conditions for fire spread and impact in urban interface areas. All areas in Texas have the WUI Response Index calculated consistently, which allows for comparison and ordination of areas across the entire state. Data is modeled at a 30-meter cell resolution, which is consistent with other TWRA layers.

Class	Acres	Percent
-9 (Most Negative Impact)	58	0.1 %
-8	880	1.1 %
-7	2,800	3.4 %
-6	3,083	3.8 %
-5	14,102	17.4 %
-4	12,842	15.8 %
-3	12,695	15.6 %
-2	23,778	29.3 %
-1	10,982	13.5 %
Total	**81,220**	**100.0 %**

3.1.7 Probability of Wildfire Occurrence

Large tracts of Sabine County are owned by companies and real estate investment trusts with operations focused on the harvesting of pine timber. Additional tracts are managed by the National Park Service and Big Thicket National Preserve.

Risk of wildfire is not confined to a particular geographic region of the county, though; the risk of damage from wildfire is clearly highest in the wildland-urban interface. The wildland-urban interface is generally described as an area where development meets dense forest. In general, summertime is considered the most threatening time of year for wildfire activity, with the combination of dry fuels, high temperatures, and risk prone human activities such as fireworks at their peak.

Sabine County contains high concentrations of what the State of Texas Hazard Mitigation Plan (2010) ranks as the most hazardous fuels in the State: pine plantations. Fires burning in this fuel type under drought conditions are extremely hard to contain, require multiple firefighting resources, and threaten all homes in its vicinity.

The East Texas Piney Woods (including Sabine County) is very susceptible to forest fires. Wildfire danger can vary greatly season to season and is exacerbated by dry weather conditions. Based on patterns of previous occurrences, with many fires occurring in a typical year, probability of future occurrence is **High.**

A common method for rating wildfire probability over short timeframes is the Keetch-Byram Drought Index (KBDI). This index predicts the likelihood of wildfire based on soil moisture and other conditions related to drought. KBDI classes range from 0 (no drought) to 800 (extreme drought) and is based on the soil capacity in 8 inches (200 mm) of water. The depth of soil required to hold 8 inches of moisture varies. A prolonged drought (high KBDI) influences fire intensity largely because fuels have lower moisture content. Figure 3-6 describes conditions associated with the various KBDI classifications.

Figure 3-6 Keetch-Byram Drought Index Classifications

KBDI Class	Description of Conditions
0 – 200 Low Fire Danger	Soil and fuel moisture is high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in spots and patches.
200 – 400 Moderate Fire Danger	Fires more readily burn and will carry across an area with no "gaps". Heavier fuels will still not readily ignite and burn. Also, expect smoldering and the resulting smoke to carry into and possibly through the night.
400 - 600 High Fire Danger	Fire intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.
600 – 800 Extreme Fire Danger	Surface litter and most of organic layer is consumed. 1000 hour fuels contribute to intensity. Stumps will burn to the end of roots underground. Any dead snag will ignite. Spotting from snags is a major problem if close to line. Expect dead limbs on trees to ignite from sparks. Expect extreme intensity on all fires which makes control efforts difficult. With winds above 10 miles per hour, spotting is the rule. Expect increased need for resources for fire suppression. Direct initial attack is almost impossible. Only rapid response time to wildfire with complete mop-up and patrol will prevent a major fire situation from developing.

Source: Texas A&M Forest Service

Produced by the National Weather Service, temperature, precipitation and drought outlook maps forecast potential conditions in future months.

For latest version of nationwide temperature outlook map, see following link:
https://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/t.gif
For latest version of nationwide precipitation outlook map, see following link:
https://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/p.gif

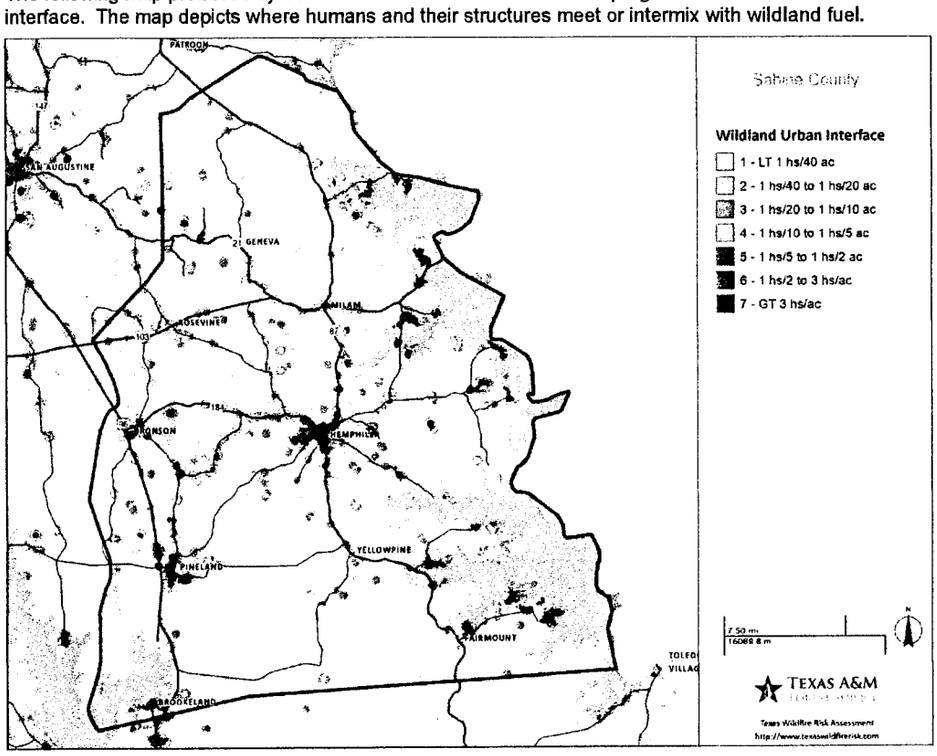
For latest version of nationwide monthly drought outlook see the following link: http://go.usa.gov/3eZGd

3.2 WILDLAND URBAN INTERFACE

Wildland – Urban Interface (WUI) Defined

In general terms, structures located outside the fringes of cities and towns have notably higher propensity for wildfire impacts. This includes both individual home units that are relatively isolated from other development, and rural neighborhoods with variable physical layouts. Wildfire vulnerability is higher in these areas due to a number of factors. Fire detection and response is typically slower in outlying areas than in cities and towns, water supply and fire-fighting resources are more limited, and density of fuels (trees, brush, tall grass, etc.) generally increases along with distance from urban centers and communities.

The following map produced by Texas A&M Forest Service TxWRAP program shows concentrations of structures in the wildland urban interface. The map depicts where humans and their structures meet or intermix with wildland fuel.



3.3 MITIGATION PRIORITY ASSESSMENT BY COMMUNITY

The method for evaluating community wildfire risk was the Wildfire Hazard & Risk Assessment Scoresheet for a Subdivision that is consistent with NFPA 1144 (Appendix C) within which three (3) categories (Vegetation Fuel Types, Defensible Space, and Area Fuel Density) were given a two (2) times multiplier. This scoresheet evaluates risk of wildfire impact via scoring method according to the following criteria by grouping:

Accessibility • Number of primary roads • Width of primary road • Surface of primary road • Layout of secondary roads • Fire department response time
Neighborhood Layout • Average lot size • Presence of street signs • Above or below ground utilities • Water source
Fuel Load • Fuel density • Defensible space
Structural Ignitability • Roofing material • Construction framing materials

When viewing and using the score sheet it is important to understand how the different criteria interact with each other. The fact that many of these subdivisions have only one means of ingress/egress via one primary road can not only affect the citizens' escape, but also the ability of the fire department to respond in a safe and timely manner. The fuel density on either side, and the width of the primary and secondary roads can have an adverse effect on the ability to see ahead in the curves, and can also allow the flames to get closer to the responding apparatus and the firefighters inside. There should also be ample room for the apparatus to turn around in case of emergency egress along with present and visible street signs with access to water sources readily available.

Ideally, each property would have the structure placed in the center of the lot and be well maintained and clear of pine needles, underbrush and other detritus. This would work well along with underground utilities to create a manageable defensible space. If possible, the roof should be either a Class A or B fire retardant roof, and the attachments (i.e., porch and garage) would be made of non-combustible materials.

Certain neighborhoods exhibit higher density of development than others, but spatial concentration is generally low as is typical of the rural counties of East Texas. The communities evaluated were identified by locating concentrations of homes throughout the county. Roughly 1,468 homes housing an estimated 4,397 residents are represented in this analysis, or roughly 50 percent of the total population of the county. It should be noted that highly urbanized areas with dense development were not included in this analysis, but it is assumed that wildfire risk for homes located in larger towns is relatively low for a variety of reasons.

'Overall Risk' is the sum of scores from the rating criteria. Results are shown in the graphics and table on the following pages. Please note that wildfire can impact virtually any location in Sabine County, and these assessments should only be considered as one of many criteria for gauging risk and prioritizing mitigation efforts.

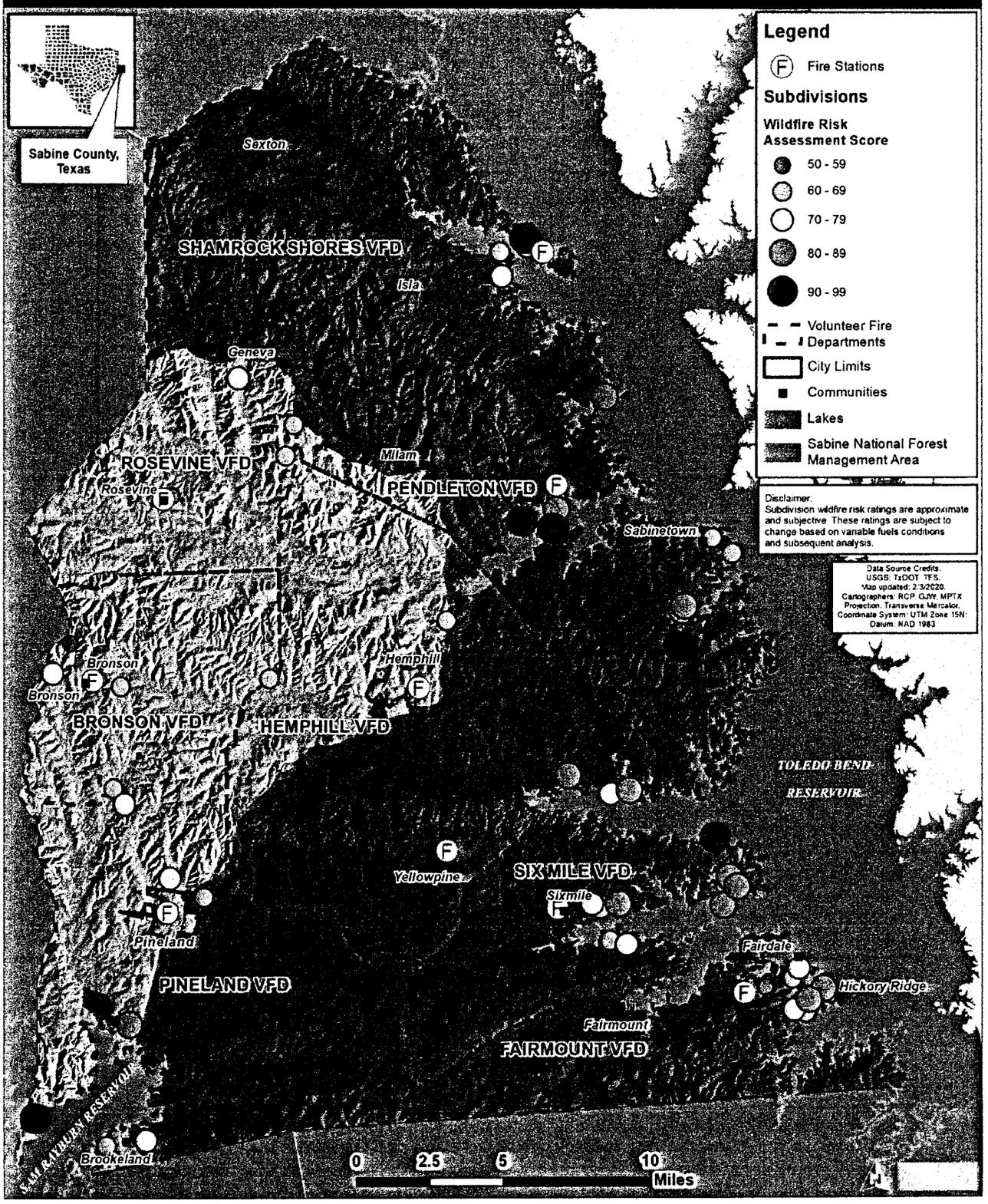
The following table provides a summary for all subdivisions evaluated for the study. Original Risk Assessment Rating Sheet located in Appendix C

VFD Response Area	Subdivision Name	Primary Roads	Width of Primary Road	Accessibility	Secondary Roads	Average Lot Size	Street Signs	Utilities	Vegetation Fuel Types	Defensible Space	Area Fuel Density	Fire Department Response Time	Fire Protection-Water	Roofing Material	Existing Building Construction	Total
Bronson	103 East of VFD	3	1	1	4	3	1	5	8	6	10	1	3	3	3	52
Bronson	North 96	3	1	1	3	3	1	5	12	6	12	1	2	2	2	54
Bronson	Bronson	1	1	1	1	3	3	5	8	10	10	1	3	3	5	55
Bronson	Housen Hollow	5	3	3	3	3	3	5	10	2	4	1	7	6	5	60
Bronson	Plainview FM 2024	1	1	1	2	3	3	5	10	10	12	5	5	3	4	65
Bronson	FM 1 Temple Rd to Hwy 103	3	1	1	5	1	1	5	10	10	12	4	7	3	5	68
Bronson	Click Circle	3	3	3	3	3	2	5	10	6	12	4	5	5	5	69
Bronson	Centerview Rd	1	2	2	2	3	1	5	10	10	10	5	7	5	5	70
Bronson	Little Flock	1	3	3	5	3	3	5	10	16	12	1	3	3	5	73
Fairmount	Pineridge # 1	5	1	2	2	3	3	4	4	4	18	2	2	2	2	52
Fairmount	Arrowcrest	3	1	2	4	1	4	5	10	4	18	2	1	3	3	61
Fairmount	Rods Road	5	2	2	3	5	1	1	10	10	16	4	2	1	3	65
Fairmount	Hickory Hill South	5	2	2	4	1	2	5	8	8	16	4	3	3	4	66
Fairmount	Vacation Point	5	2	2	3	5	1	3	8	10	16	3	2	2	4	66
Fairmount	Beechwood 3 & 4	5	2	2	3	5	1	3	8	10	16	2	2	3	5	67
Fairmount	Paradise Point	5	2	2	3	5	2	5	10	10	14	2	3	2	5	72
Fairmount	McGee's Landing	5	1	3	3	5	1	3	10	10	14	4	3	3	5	70
Fairmount	Toledo West	5	3	2	5	3	2	5	10	10	14	4	2	5	5	75
Fairmount	Springhill	5	2	2	3	5	1	3	20	14	14	4	2	4	5	84
Fairmount	Beechwood 1 & 2	5	2	3	3	4	4	5	16	14	16	4	2	6	5	89
Hemphill	Sutton Pl	1	1	1	5	3	1	5	10	10	10	1	5	3	3	61
Hemphill	Jack's Marina	5	1	1	2	5	1	5	10	10	16	4	3	3	10	73
Hemphill	Ladner's Landing	5	3	3	5	3	1	5	14	10	16	4	5	3	5	82
Hemphill	Busby Point	5	3	3	5	5	1	5	14	10	12	7	3	3	10	86
Hemphill	Hill Country	5	3	3	5	3	1	5	14	10	18	4	7	5	10	93
Pendleton Harbor	Lowe Creek Subdivision	3	3	1	5	5	3	3	10	16	14	7	3	3	5	83
Pendleton Harbor	Rebel Ridge	2	2	1	2	3	2	5	8	10	12	2	3	4	4	60
Pendleton Harbor	Mid Lake	1	3	2	3	5	5	5	8	10	8	1	3	5	5	61
Pendleton Harbor	River Bend	5	2	1	3	3	3	3	10	10	16	3	3	3	3	68
Pendleton Harbor	Midlake Campground	5	3	3	5	5	5	3	10	20	12	2	3	3	5	82
Pendleton Harbor	Pendleton Harbor	5	3	3	5	3	2	3	10	20	12	4	3	3	5	83
Pendleton Harbor	Lowe's Creek Campground	3	3	5	5	5	3	3	10	20	14	7	3	3	5	89
Pendleton Harbor	Lowe's Creek	3	3	5	5	5	3	3	10	20	14	7	3	3	5	89
Pendleton Harbor	Indian Mounds	5	1	5	5	5	3	3	10	20	20	4	3	3	5	92
Pendleton Harbor	Harborlight	5	3	3	5	5	3	3	20	20	14	2	3	3	5	94
Pineland	Mill Creek KOA Campground	5	1	1	3	3	1	5	10	2	10	4	5	3	10	63
Pineland	Whitehead Cemetary Road	5	3	3	5	3	1	5	2	10	10	4	5	3	5	64
Pineland	Lake Sam Rayburn Estates	5	3	3	5	5	1	5	14	10	18	7	3	5	7	91
Pineland	Railroad Crossing Rd	5	3	3	5	3	1	5	6	10	10	4	5	3	10	73
Pineland	Barrow Rd	5	3	3	5	3	1	5	6	10	18	4	5	5	5	76
Pineland	Bell Rd	5	3	3	5	3	1	5	14	10	14	4	5	3	10	85
Rosevine	Kings Road	3	5	3	3	2	3	3	12	8	8	6	4	5	5	68
Rosevine	Sid Dennis	5	3	3	3	3	1	3	6	8	12	10	5	3	5	70
Shamrock Shores	Shamrock Shores	2	2	2	2	5	4	5	8	10	8	1	3	6	7	65
Shamrock Shores	Playcation	5	3	1	5	1	1	2	12	20	10	2	2	2	2	68
Shamrock Shores	Playcation South	5	3	3	4	5	3	4	14	14	2	2	5	5	5	74
Shamrock Shores	Nine Mile	5	3	3	5	3	3	3	20	20	16	2	3	3	5	94
Six Mile	Six Mile Drake Addition	5	1	3	2	4	1	5	10	8	16	1	2	2	3	63
Six Mile	Holiday Forest	5	1	1	4	5	1	5	10	12	8	1	3	4	4	64
Six Mile	Woodland Estates	5	1	1	3	5	1	3	12	12	10	2	2	4	5	66
Six Mile	Toledo Hills	5	3	3	3	5	2	3	10	10	14	1	3	3	5	70
Six Mile	Shawnee Shores	5	2	2	2	5	1	5	10	10	18	2	3	3	6	74
Six Mile	Gilley Point	5	1	2	5	5	1	5	6	10	20	5	3	5	7	80
Six Mile	Timberlane Estates/Pin Oak	5	3	3	4	5	1	5	10	12	18	5	3	2	4	80
Six Mile	Toledo Village	3	1	1	2	4	1	5	16	16	16	4	2	8	6	83
Six Mile	Timberlane Subdivision	5	1	1	4	5	1	5	10	10	20	6	3	6	8	85
Six Mile	Hammock Subdivision	5	3	3	5	5	2	3	20	20	18	6	3	3	5	99

Source: Field data collection, Subdivision Wildfire Risk Assessment. Note: Map of subdivision scoes on the following pages.

SUBDIVISION WILDFIRE RISK ASSESSMENT

SABINE COUNTY TEXAS COMMUNITY WILDFIRE PROTECTION PLAN



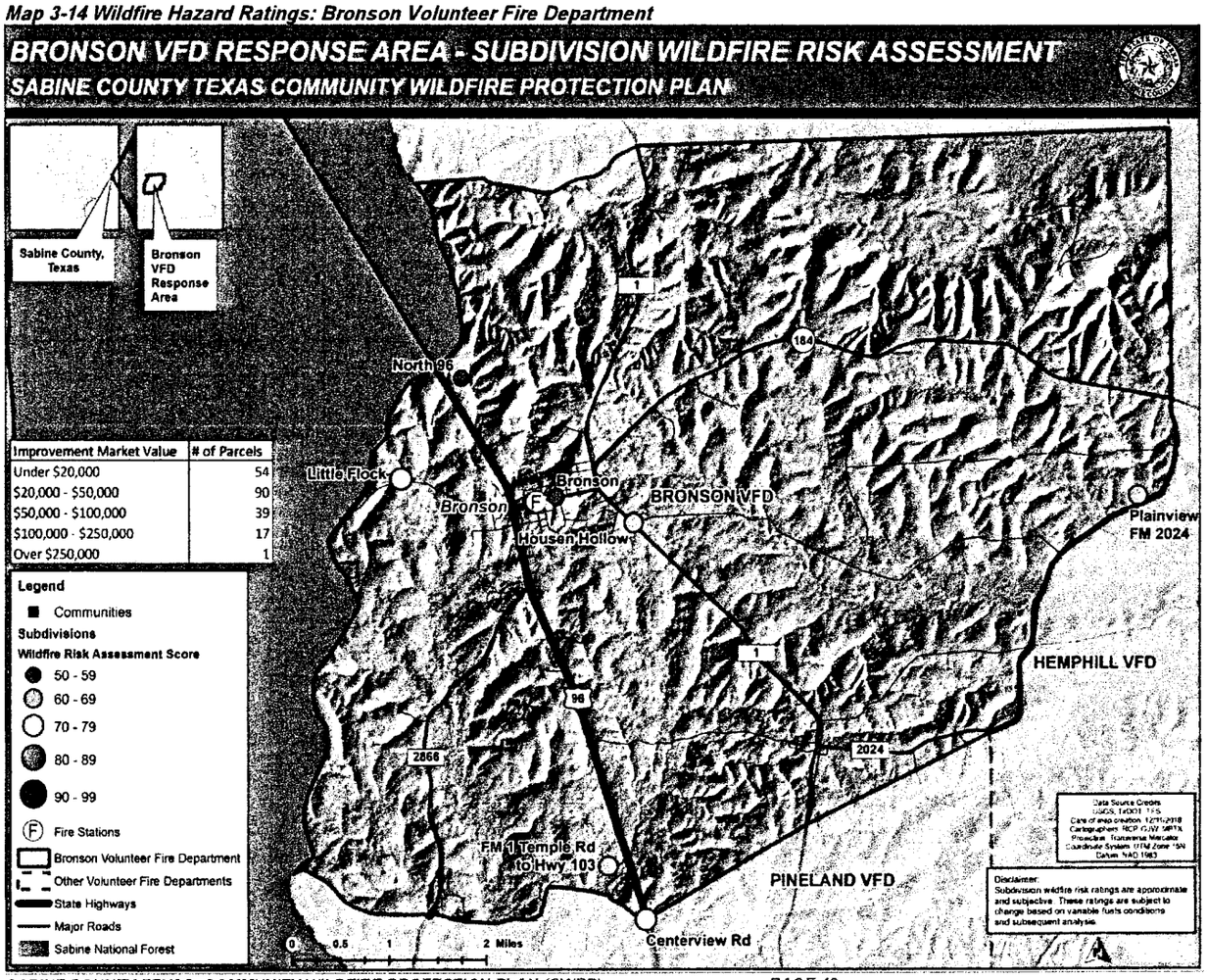
While all communities have a certain degree of wildfire risk, the following list of subdivisions may be considered as high priorities for wildfire mitigation projects. Street and aerial views and specific fuels projects for these neighborhoods which scored at 86 or higher are shown on the following pages.

Community	Subdivision Risk Score	Geographic Coordinates	Primary Risk	Primary Fuels Reduction Technique
Hammock Subdivision	99	31.27963 -93.70299	One route of Ingress/Egress with narrow Right of Way	Mechanical Fuels Reduction / Right of Way Expansion
Harborlight	94	31.40830 -93.78250	Various structures that are rarely lived in or totally abandoned.	Mechanical Fuels Reduction / Remove abandoned structures
Nine Mile	94	31.52860 -93.79620	Areas with minimal Defensible Space	Defensible Space Fuels Reduction
Hill Country	93	31.41126 -93.79761	One route of Ingress/Egress with narrow Right of Way	Mechanical Fuels Reduction / Right of Way Expansion
Indian Mounds	92	31.32394 -93.71746	Heavy encroachment of the forest on the subdivision	Mechanical Fuels Reduction where allowed, Controlled Burn where
Lake Sam Rayburn Estates	91	31.16258 -94.03949	Moderate encroachment of the forest on the subdivision	Controlled Burn
Lowe's Creek Subdivision	89	31.37610 -93.71810	High levels of pine straw and fuels in proximity to structures. Areas with minimal Defensible Space	Defensible Space Fuels Reduction
Beechwood I & 2	89	31.21190 -93.65660	Heavy encroachment of the forest on the subdivision	Mechanical Fuels Reduction (neighborhood perimeter)
Lowe's Creek Campground	89	31.37420 -93.71910	Various structures that are rarely lived in or totally abandoned.	Mechanical Fuels Reduction / Remove abandoned structures
Busby Point	86	31.29916 -93.74487	One route of Ingress/Egress with narrow Right of Way	Mechanical Fuels Reduction / Right of Way Expansion
Bell Road	85	31.20181 -93.99197	High / Moderate encroachment of the forest on the subdivision	Controlled Burn
Timberlane Subdivision	85	31.2593 -93.6919	Moderate encroachment of the forest on the subdivision	Controlled Burn
Springhill	84	31.2166 -93.6492	High / moderate levels of pine straw and fuels in proximity to structures.	Defensible Space Fuels Reduction
Pendleton Harbor	83	31.4631 -93.7568	High / moderate levels of pine straw and fuels in proximity to structures.	Controlled Burn / Defensible Space Fuels Reduction
Toledo Village	83	31.252 -93.7501	Areas with minimal Defensible Space	Controlled Burn / Defensible Space Fuels Reduction
Ladner's Landing	82	31.30541 -93.77464	High / Moderate encroachment of the forest on the subdivision	Controlled Burn

***Note: Risk Assessment and Primary Fuels Reduction Technique are appoximate and overlap.**
****Note: See individual wildfire risk / fuels reduction projects in Section 4.3 for more information.**

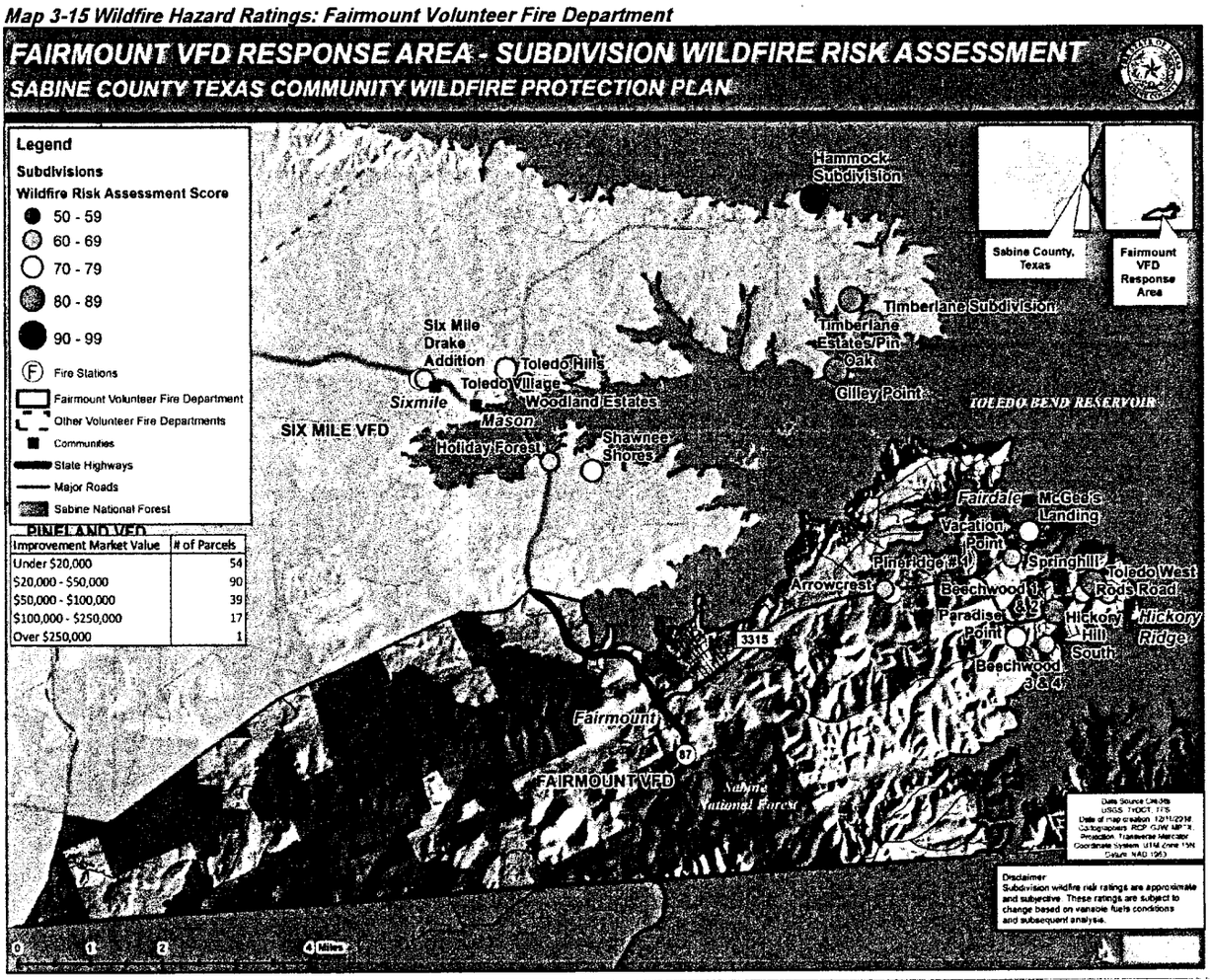
Vol 3T Page 292

Map 3-14 Wildfire Hazard Ratings: Bronson Volunteer Fire Department



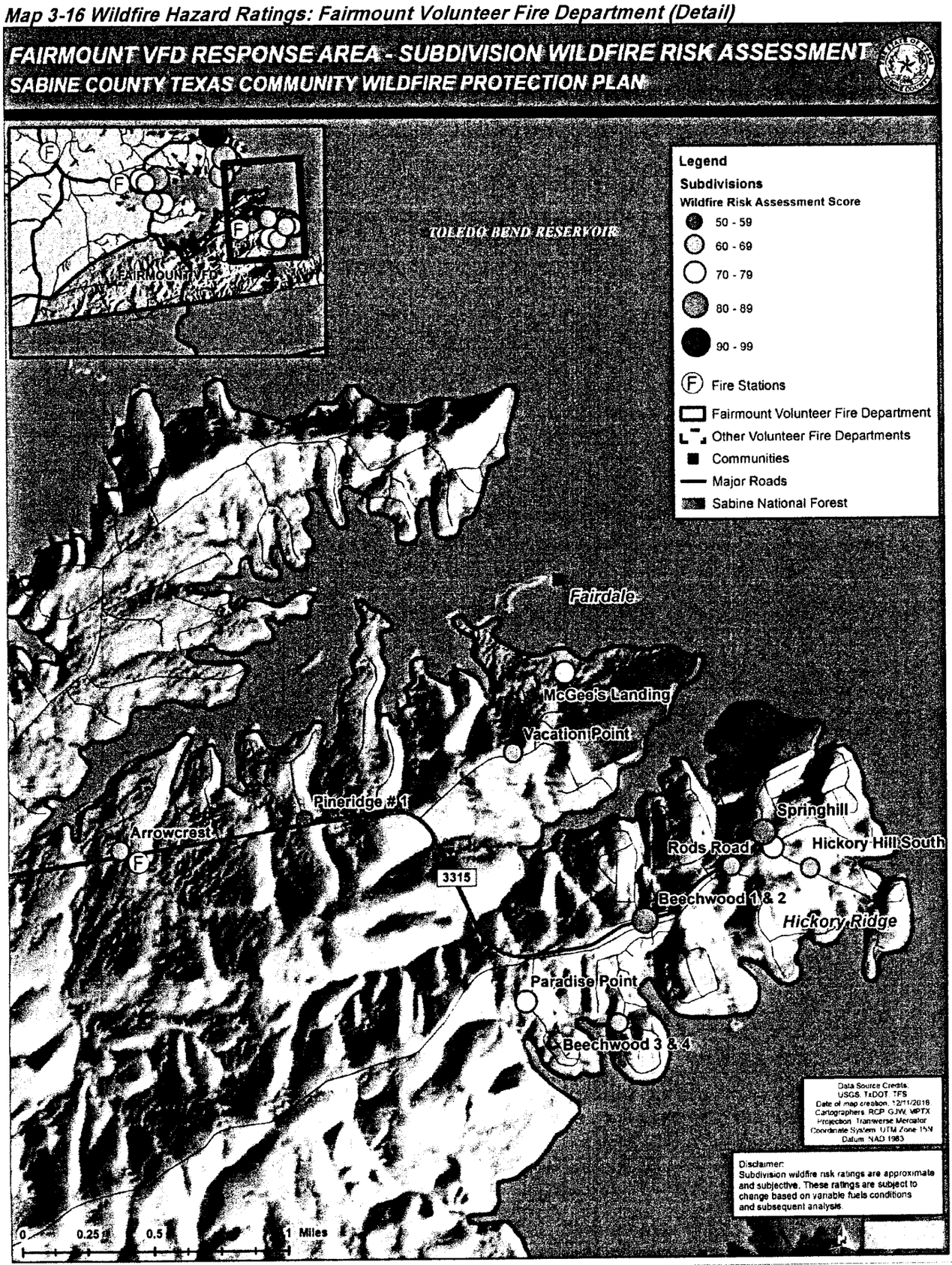
Vol 3-T Page 293

Map 3-15 Wildfire Hazard Ratings: Fairmount Volunteer Fire Department

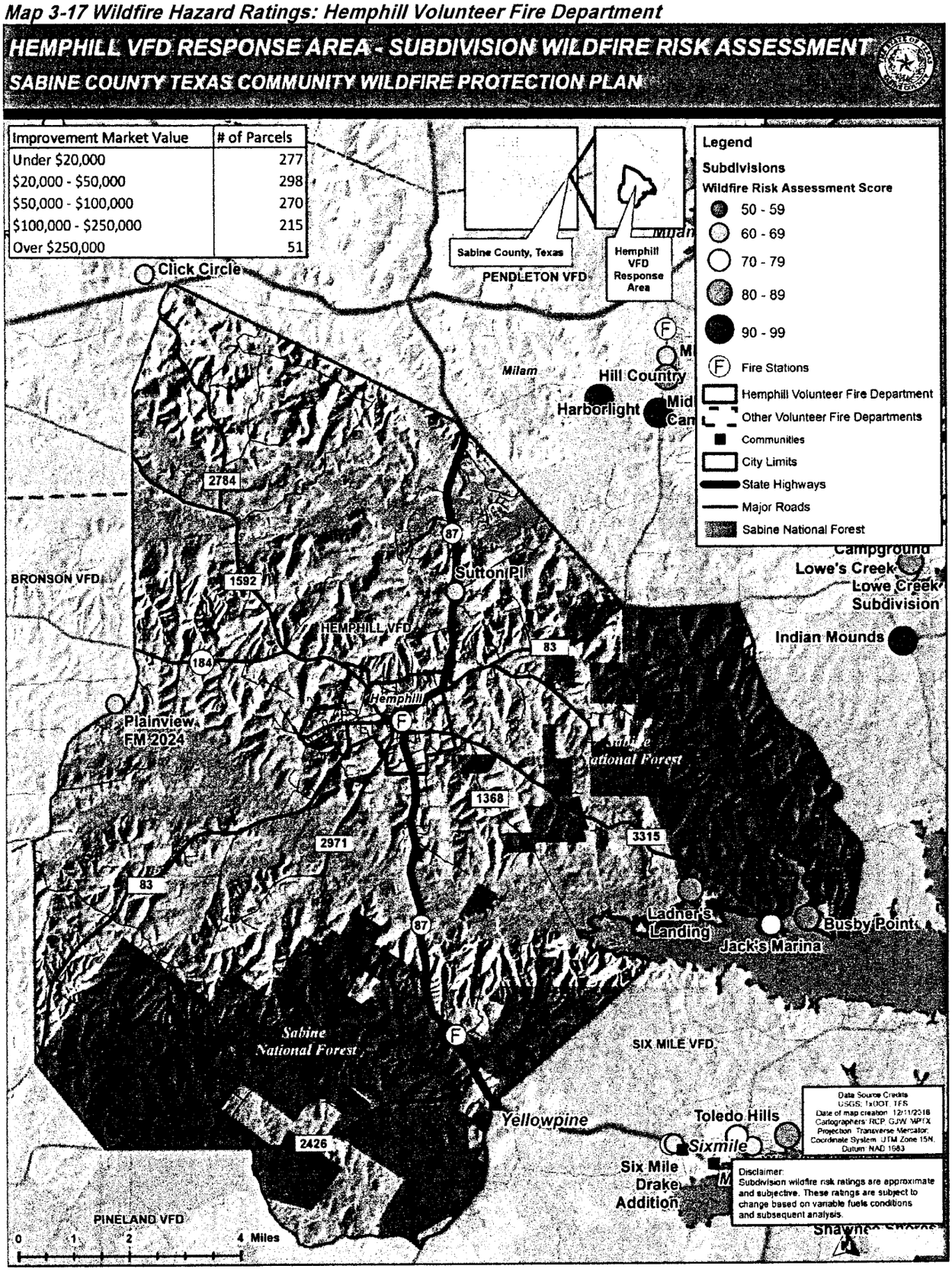


Vol 3.T Page 294

Map 3-16 Wildfire Hazard Ratings: Fairmount Volunteer Fire Department (Detail)

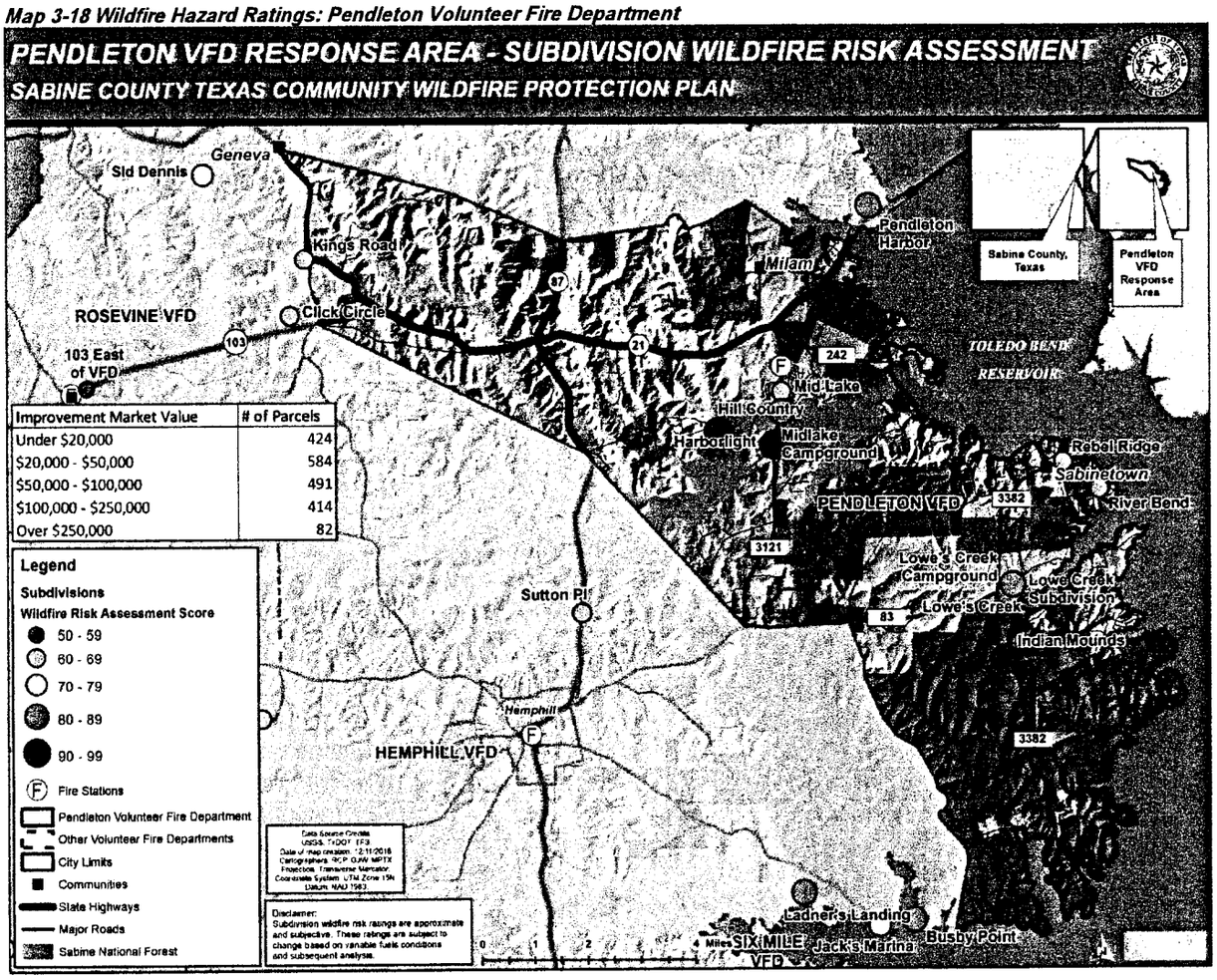


Map 3-17 Wildfire Hazard Ratings: Hemphill Volunteer Fire Department



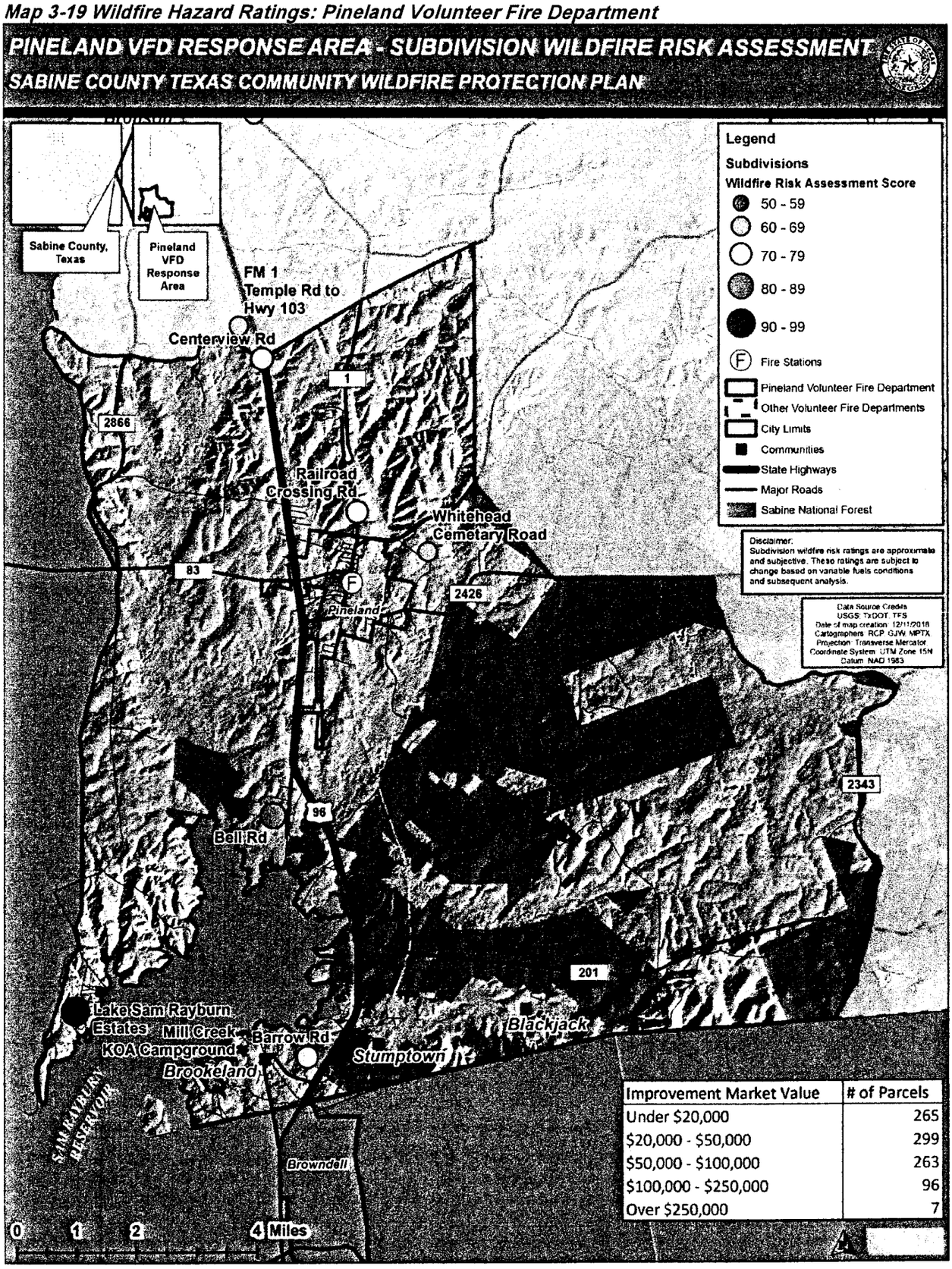
Vol 3.T Page 296

Map 3-18 Wildfire Hazard Ratings: Pendleton Volunteer Fire Department



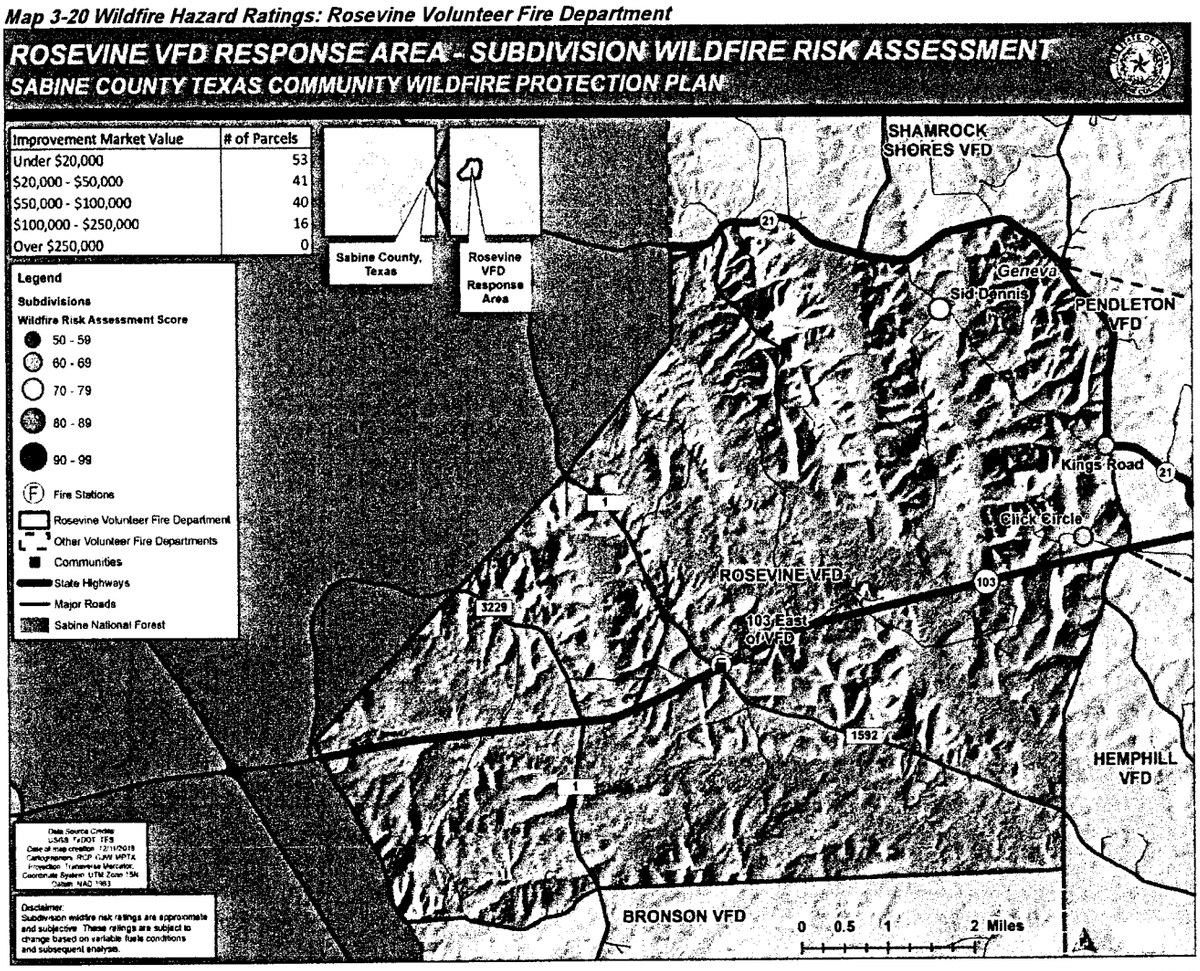
Vol 3.T Page 297

Map 3-19 Wildfire Hazard Ratings: Pineland Volunteer Fire Department



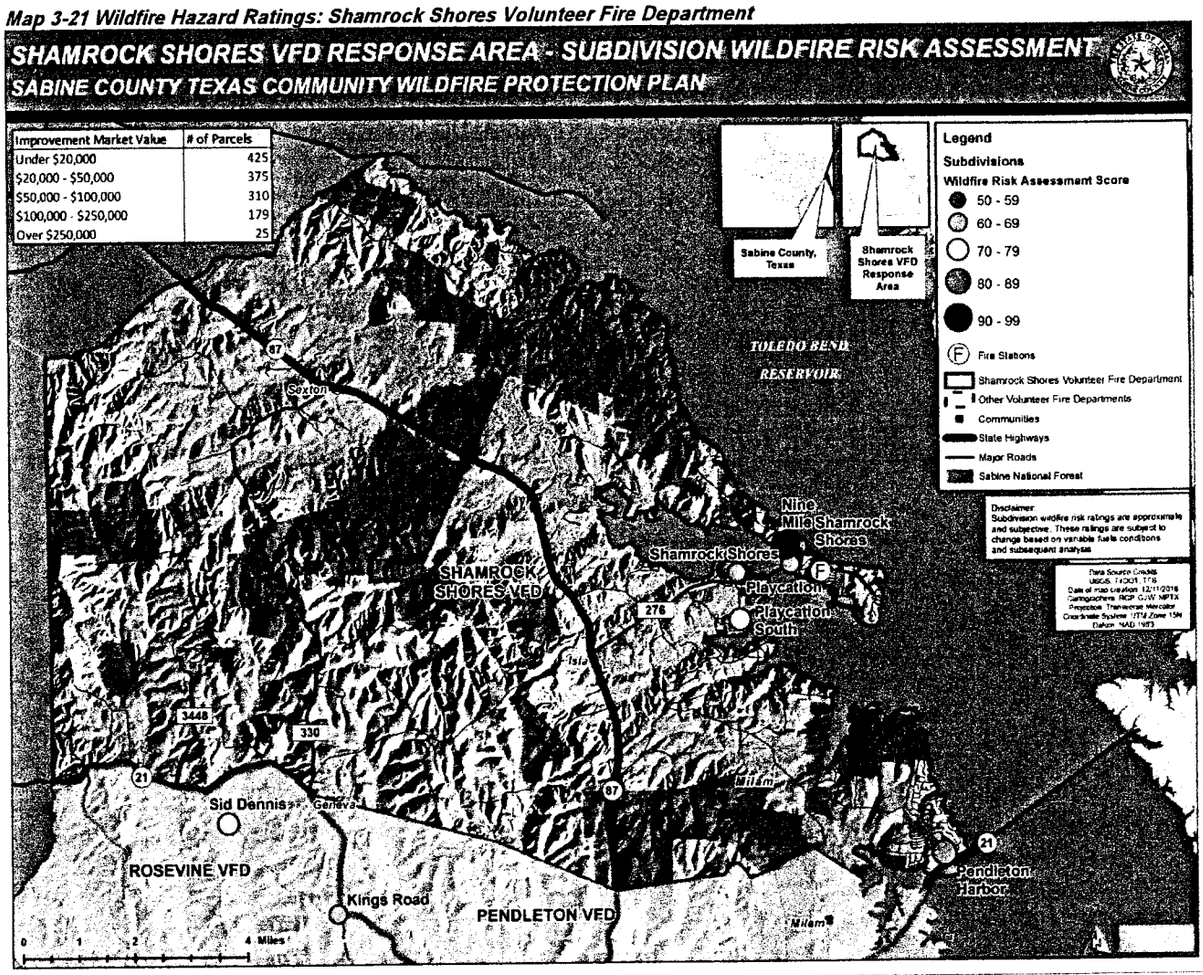
Improvement Market Value	# of Parcels
Under $20,000	265
$20,000 - $50,000	299
$50,000 - $100,000	263
$100,000 - $250,000	96
Over $250,000	7

Map 3-20 Wildfire Hazard Ratings: Rosevine Volunteer Fire Department



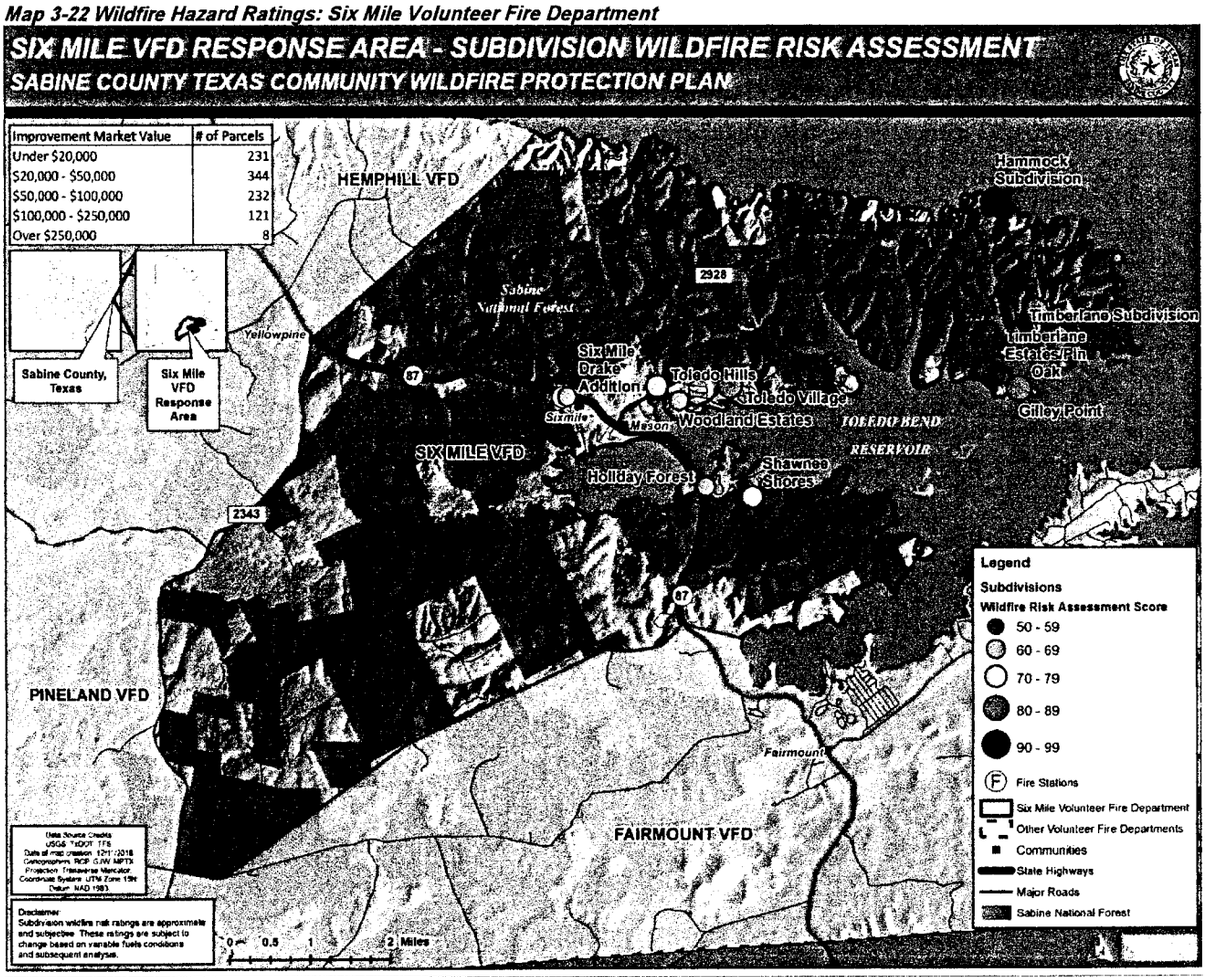
Vol 3-T Page 299

Map 3-21 Wildfire Hazard Ratings: Shamrock Shores Volunteer Fire Department



Vol 3.T Page 300

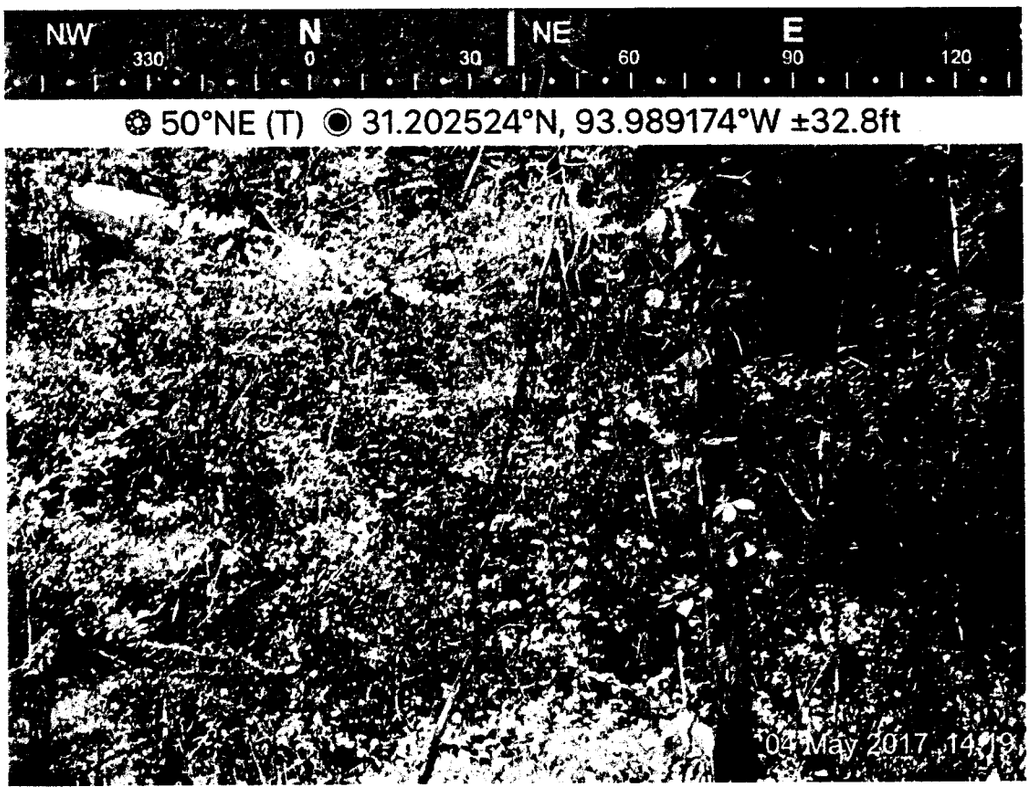
Map 3-22 Wildfire Hazard Ratings: Six Mile Volunteer Fire Department



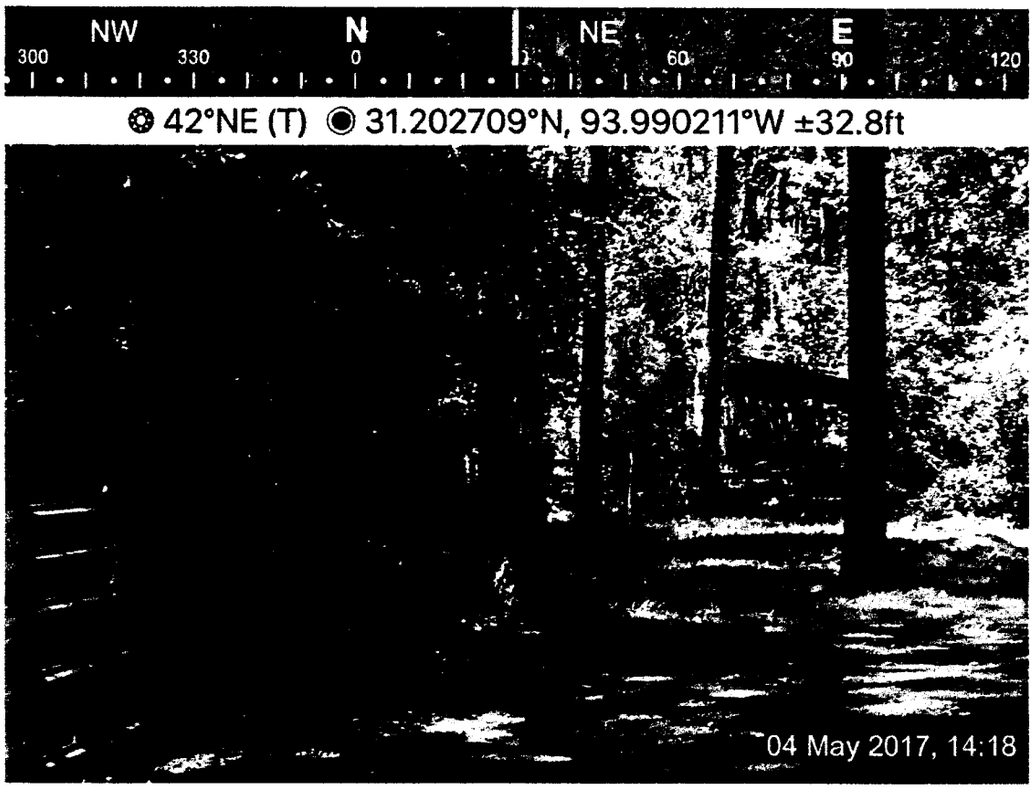
Vol 3-T Page 301

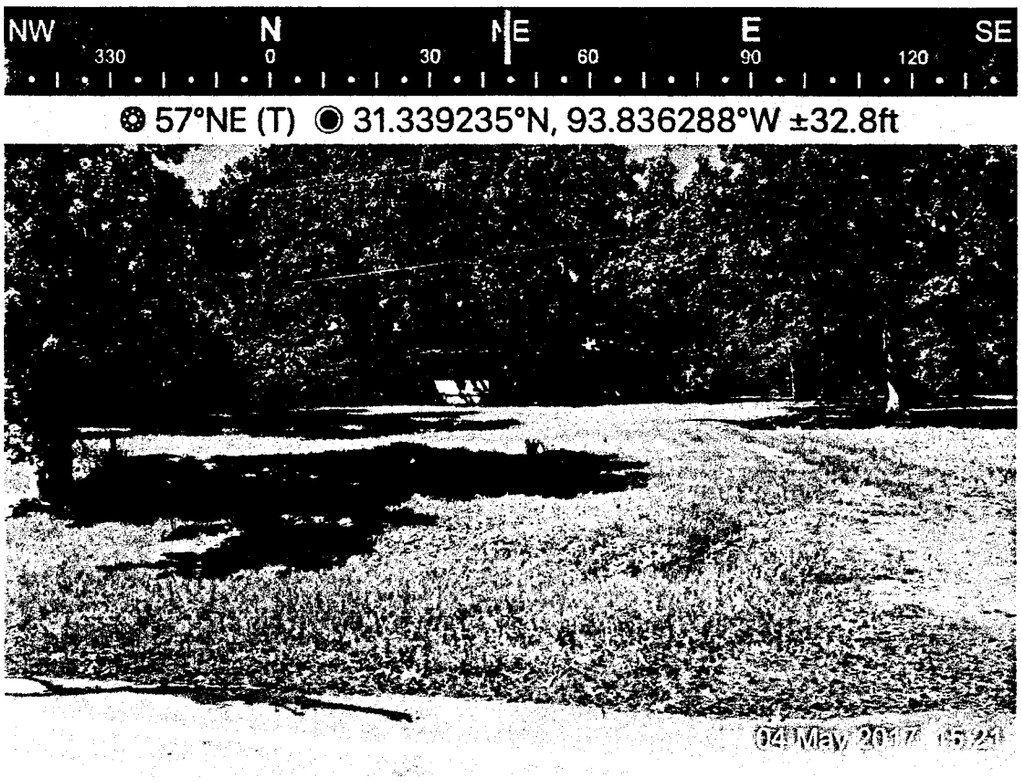
The following series of photos are examples of fuels conditions in proximity to structures in Sabine County.

EXAMPLE STREET VIEWS: FUEL CONDITIONS IN RELATION TO STRUCTURES

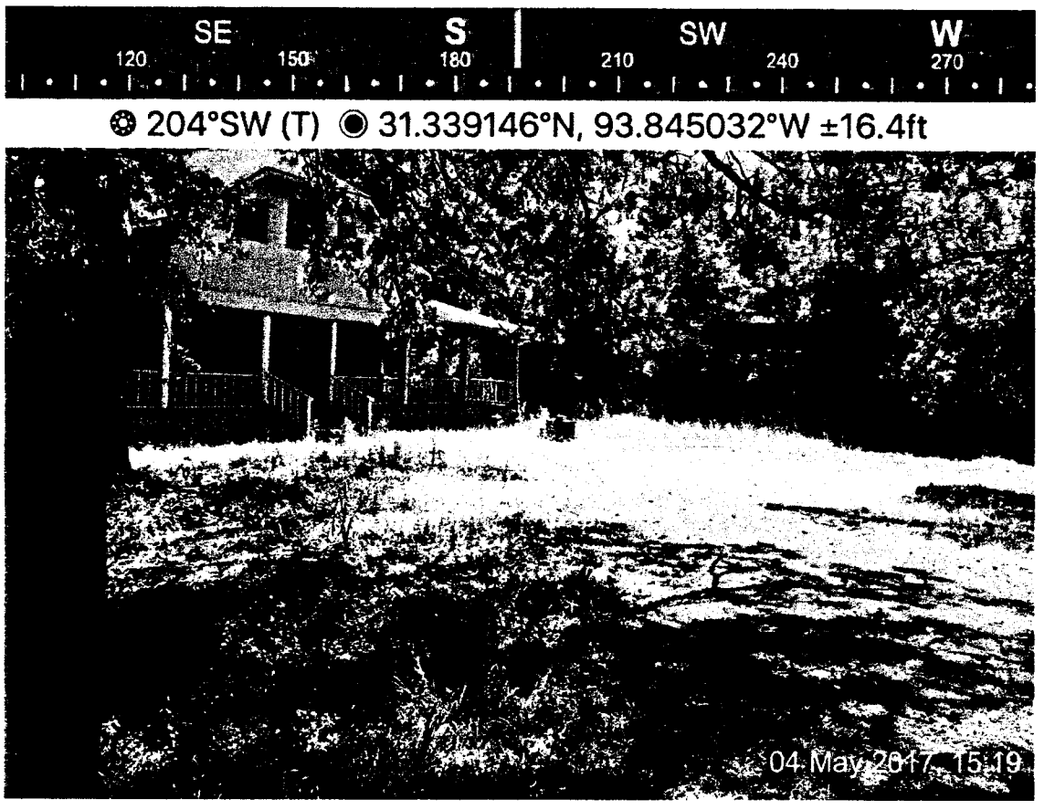


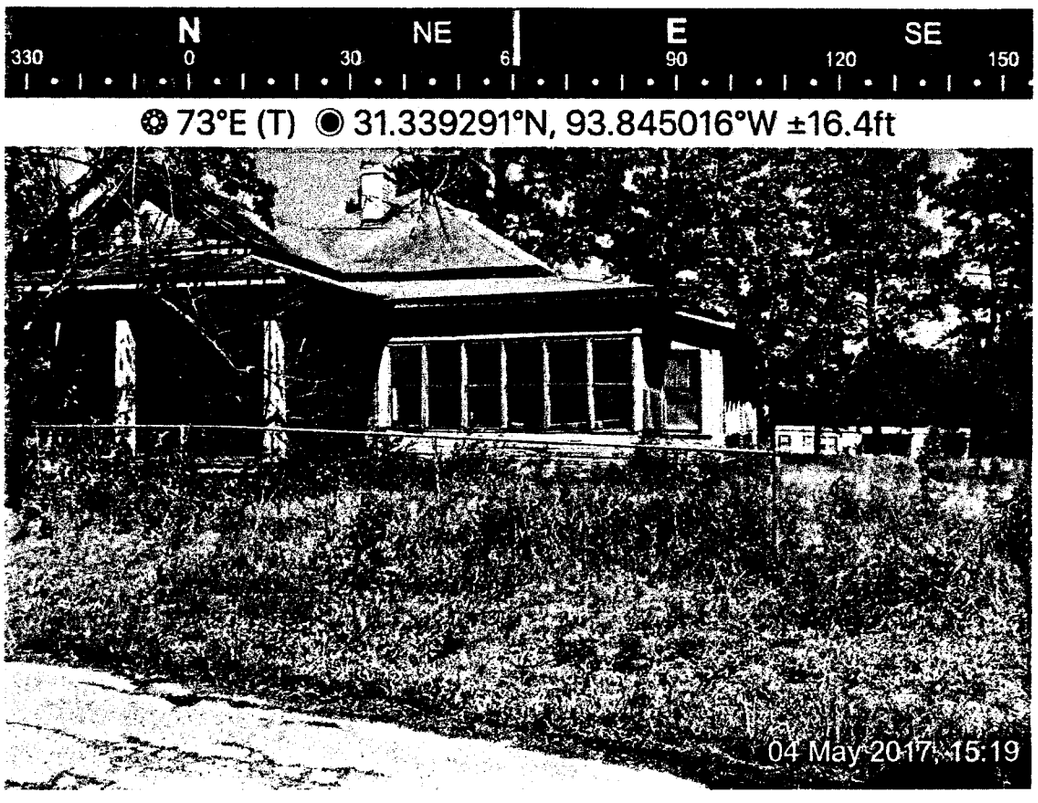
EXAMPLE STREET VIEWS: FUEL CONDITIONS IN RELATION TO STRUCTURES





EXAMPLE STREET VIEWS: FUEL CONDITIONS IN RELATION TO STRUCTURES





CHAPTER 4. MITIGATION STRATEGY

4.1 WILDFIRE MITIGATION-COUNTYWIDE

As an introduction to the mitigation strategy for this plan, the following are general categories of wildfire mitigation with some specific implementation measures. Individuals and the community can reduce structural ignitability throughout the community by taking the following measures, and importantly, maintaining these activities over time. Federal agencies and private landowners of forests surrounding the identified communities, structures or areas of concern were invited to submit projects that provide protection and reduce risk.

Listed in no particular order, the following list of project types summarizes the range of mitigation tools available based on stakeholder input and community recommendations. Also listed in the subsection number where each mitigation tool is explained in further detail.

- **Mechanical Fuels Reduction (Section 4.1.1)**
- **Increase Defensible Space (Section 4.1.2)**
- **Prescribed Burns (Section 4.1.3)**
- **Reduce Structural Ignitability (Section 4.1.4)**
- **Improve Water Accessibility (Section 4.1.5)**
- **Enhance Public Awareness-Education - Burn-Ban Compliance (Section 4.1.6)**
- **Improve Emergency Access, Ingress, Egress (Section 4.1.7)**
- **Facilitate Multi-Agency Communication (Section 4.1.8)**
- **Initiate a "Cleaning Up to Prevent Wildfires" Proclamation (Section 4.1.9)**
- **Coordinate Mitigation with Oil/Gas, Timber, and Electric Utilities (Section 4.1.10)**
- **Eliminate or Mitigate Abandoned Structures (Section 4.1.11)**
- **Bioengineering, Forestry Management, and Landscape Mitigation Techniques (Section 4.1.12)**

4.1.1 Mechanical Fuel Reduction

Dense pine plantation, pine straw, and underbrush are the primary accelerants during a wildfire. It is a recommendation from this committee that each VFD participate in the Texas A&M Forest Service 'Mechanical Fuel Clean Up' program. Mechanical fuels reduction targets dense vegetation surrounding high priority/vulnerability communities and implements thinning and clearing via chipping and mechanical removal. A starting point for identifying high priority locations/communities can be found in Section 3.3 Mitigation Priority Assessment by community.

Establishing basic defensible space, strategic fuel breaks, and creating equipment access roads are the starting point for a mechanical fuel reduction project, if necessary. Secondary steps can be extending the defensible space perimeters to a variable radius from existing structures. Third stage fuels reduction involves clearing, crushing or chipping, and thinning small diameter vegetation and woody debris between larger standing trees beyond the extended defensible space perimeter. Final stage fuels reduction completes the thinning and clearing process across an entire timber stand.

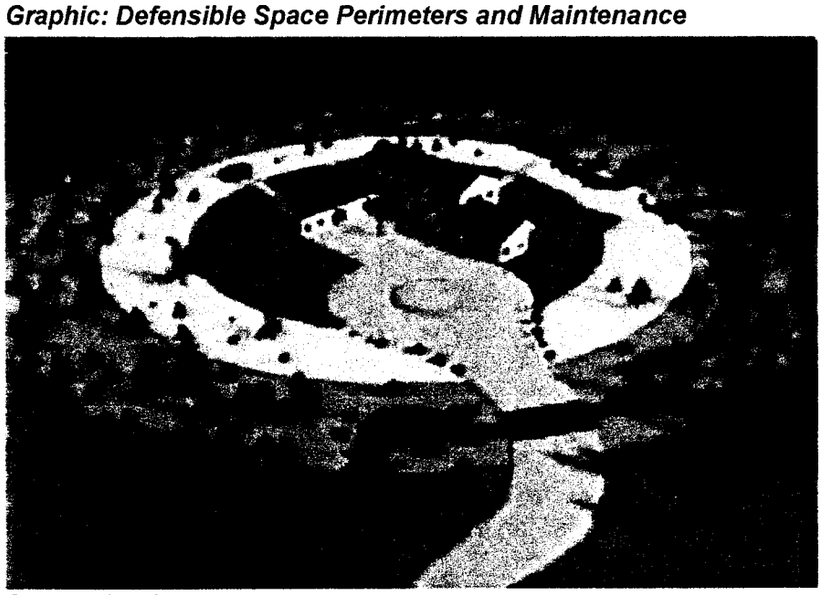
Techniques for fuels reduction include: falling, yarding, and chipping densely packed trees; slash busters (rotating, chopping attachment mounted to excavator boom); grinders, chippers, and mower/masticators (bush hogs); goats (for brush, difficult access, steep or boggy areas). Additional considerations include obtaining appropriate property access permission and/or easements, liability, and biomass disposal. Biomass utilization projects that make products or generate electricity from small diameter woody materials may be a future opportunity.

4.1.2 Increase Defensible Space

1. **Increase Defensible Space (Residential Homes and Commercial / Industrial Facilities)**

One of the single most important mitigating factors to increase the chances for the home's survival during a wildland-urban interface fire is the creation and maintenance of an asset protection zone (defensible space). The need for defensible space extends beyond homeowners to include pipelines, drilling sites and other industrial facilities. Defensible space refers to an area around the home where the native vegetation has been modified to reduce the wildland/urban interface fire threat to the home and provides a safe area for firefighters to work effectively and safely. Ready, Set, Go developed by the International Fire Chiefs Association is homeowners guide to implementing defensible space and reducing structural ignitability. See also Appendix B. (Homeowner's Guide) for more detailed information.

Graphic: Defensible Space Perimeters and Maintenance



Source: firewise.org

Defensible space around homes or industrial facility perimeters should be a minimum of 100 feet, and maintained according to the following guidelines and diagram shown above.

- **Zone 1 (Red)** Area immediately next to the home or facility perimeter to a distance of approximately 5 feet should be clear of flammables. The purpose of this zone is to have little or no flammable landscaping immediately adjacent to the home to prevent ignition from firebrands or direct flame.
- **Zone 2 (Yellow)** 5' to at least 30' from the home or facility perimeter. Zone 2 provides the critical area where firefighters can defend the home or facility perimeter and where fuels should be substantially reduced in height and volume.
- **Zone 3 (Blue)** 30' to approximately 100' from the structure or facility perimeter. This area lies outside the formal landscape area and should be thinned and cleared of any dense underbrush.

2. **Fire Resistant Landscaping**

Landscaping a yard is an integral component of the defensible space developed by the homeowner. Each lot should be thought of in terms of four zones according to the outline shown above, with each zone having a different purpose and emphasis in the overall defensible space concept for the property or facility. See also 4.1.12 for more details.

4.1.3 Prescribed Burns

Prescribed burning aka controlled burns can serve as an effective way to manage hazardous fuels and maintain a healthy fire-adapted forest ecosystem. Prescribed burns utilize the method of setting fire to brush and undergrowth under controlled circumstances in order to char or incinerate otherwise potentially hazardous fuel loads.

Important considerations fire managers take into account when planning a prescribed burn are:

- wind direction,
- moisture and humidity,
- water and equipment staging,
- crew placement and communications.

The Texas A&M Forest Service has established a recommended 3-step sequence prior to initiating a prescribed burn listed as follows:

1) Write a Prescribed Burn Plan

2) Fill out "Go/No-Go" Checklist for the day of the prescribed burn.

3) Complete report to Texas Prescribed Burn Reporting System.

Photo: William Goodrich (W.G.) Jones State Forest. Credit: Houston Chronicle

4.1.4 Reduce Structure Ignitability

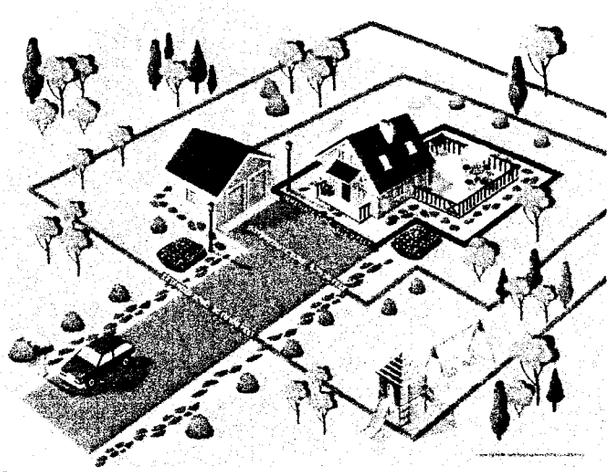
Embers and small flames account for the majority of structural ignitions during a wildfire. By managing the vegetation surrounding structures, and using fire resistant construction materials and techniques, risk of structure loss from wildfire can be reduced. While no structure can be completely safe from wildfire, reducing structural ignitability can help prevent structure loss during a wildfire.

One method for doing this is to encourage builders to consider tin, tile or ceramic roofing and brick, stucco framing materials and fire-resistant fencing and decking. Educate homeowners to clean leaves and pine straw from roofs and gutters and keep wood piles away from structures. If evacuation is necessary, property owners can be instructed to close vents, seal windows, safeguard propane tanks and turn yard irrigation on.

In general terms, reducing structural ignitability can be broken down into two parts: A) vegetation management, and B) fire resistive construction, which are described respectively as follows.

Vegetation Management

- Home Ignition Zones: Limit amount of flammable vegetation, choose fire-resistant building materials and construction techniques, along with periodic exterior maintenance on the 3 home ignition zones. The zones include the Immediate Zone: 0-5 feet around the structure; Intermediate Zone: 5-30 feet; and the Extended Zone: 30-100 feet. (Note: this also corresponds to Section 4.1.2 Increasing Defensible Space).
- Landscaping and Maintenance—Trim branches that overhang the home, porch and deck, and prune branches of large trees up to (depending on their height) 6 to 10 feet from the ground. Remove plants containing resins, oils and waxes, and ensure mulches in the Immediate Zone are non-combustible options like crushed stone and gravel. Maintain vegetation annually.



Source: firewise.org

Fire Resistive Construction

- Roofing and Vents—Class A fire-rated roofing products offer the best protection. Examples include: composite shingles, metal, concrete and clay tiles. Replace loose or missing roof shingles. Box-in eaves, but provide ventilation to prevent condensation and mildew. Roof and attic vents should be screened to prevent ember entry.
- Decks and Porches—Never store flammable materials underneath decks or porches. Remove dead vegetation and debris from under decks/porches and between deck board joints.
- Siding and Windows—Embers can collect in small nook and crannies and ignite combustible materials; radiant heat from flames can crack windows. Use fire-resistant siding such as brick, fiber-cement, plaster or stucco and dual-pane tempered glass windows.
- Emergency Responder Access—Ensure your home and neighborhood has legible and clearly marked street names and numbers. Driveways should be at least 12 feet wide with a vertical clearance of 15 feet, for emergency vehicle access.

4.1.5 Improve Water Accessibility

1. More water storage sites throughout the county for easier access. Consider abandoned oil pad sites for tank sites.
2. Develop-expand drafting sites at bridge crossings
3. Identify and develop dry hydrant sites

4.1.6 Public Awareness-Education – Burn-Ban Compliance

1. Improve public awareness, understanding, and compliance with Burn Bans
2. Flags flown in more locations throughout the county
3. Large signs strategically placed throughout the county
4. Work with businesses: get addresses throughout the county and mail burn ban flyers to be placed on windows within their business for awareness
5. Signs placed throughout VFD boundaries in a manner that would not invite vandals
6. Write warnings-tickets for violations during a burn ban
7. Periodic articles in local newspapers focusing on ways to prevent wildfires as well as instructions to implement defensible spaces around homes
8. Events: Booth at County Fair; National Fire Week at schools, Smokey the Bear program
9. Pursue participation in the Firewise Community Program. Distribute "Ready, Set, Go" wildfire preparation brochure to homeowners.

4.1.7 Improve Emergency Access, Ingress and Egress

1. Maintain and improve 911 address system
2. Insure all roads have signs, and install dead end signs where needed
3. Widen narrow culverts
4. Educate-encourage subdivision developers and individual home builders to consider fire truck access and turn around space

4.1.8 Facilitate Multi-Agency Communication

1. Improve communication between county officials and all VFDs
2. Implement procedures to insure the correct VFD is notified of a fire call
3. Standardized fire reporting forms to be used uniformly throughout the county, continuing education on procedures to fill them out and submit to TFS

4.1.9 Initiate a "Cleaning Up to Prevent Wildfires" Proclamation

1. Implement a continuous county wide clean-up of fuels and debris
2. Focus on wooded areas used by county residents as dumping grounds for personal use rather than going to the dump

4.1.10 Coordinate Mitigation with Oil/Gas, Timber, and Electric Utilities

1. Educate managers of pipelines, drilling sites, and compressor stations of the need for defensible space surrounding their facilities.
   a. Extend flare height from 24' to 40'
   b. Extend pad size from 12x12 to 75x75
   c. Obtain and improve inventories of old, abandoned pipeline locations, depth, and direction

d. Encourage oil/pipeline companies to provide foam to VFDs where they are located as well as insure that all lines and production sites are properly maintained as required by the Sara Act.

2. Build relationships with timber companies with the goal of:
   a. Plow fire lanes with bigger brakes
   b. Require that cut trees are moved from logging sites
   c. Resolve inaccessibility to timber company land as a result of:
      i. Locked gates to timber plantations and/or hunting clubs
      ii. Brush piles placed at the entrance of plow lanes or roads
3. Encourage enlightened electrical transmission infrastructure design and continuous maintenance to reduce potential arcing and/or wildfire ignition.

4.1.11 Eliminate or Mitigate Abandoned Structures

Abandoned structures was a common concern raised throughout plan development from a risk management perspective. Uninhabited structures create a potential source for illicit fires which can migrate through dense overgrowth with a direct fuel path to surrounding forest. Besides fire danger, abandoned structures also create various other health and safety issues for the community. In order to address this concern, this plan suggests the following mitigation strategy:

1. Identify the specific locations of abandoned structures throughout the county, notating the county road, latitude and longitude, driving directions.

2. Establish this information in a database.

3. Research county records to identify ownership data and potential contact information for future reference.

4. Research methods for potential mitigation and suggest options.

4.1.12 Bioengineering, Forestry Management, and Landscape Mitigation Techniques

Bioengineered wildfire mitigation uses aspects of the natural environment to mitigate the risk of wildfire to the community, including residential and commercial property, utilities, and infrastructure.

Forestry management practices can include replanting plans which encourage adequate spacing of trees for forest health, mix of deciduous and coniferous tree species, and adequate buffers.

For residential site plans, design defensible space with driveways, walkways, lawn space, patios, and fences using materials such as brick, stone, and cement to reduce fuel loads. Use rock or gravel instead of bark or wood mulches. Refrain from using landscape timbers such as railroad ties. Integrate and use natural features such as rock outcroppings, wetlands, streams, lakes, ponds, and fish ponds.

For residential landscaping design, avoid planting under eaves and vents, under trees or decks, and adjacent to siding. Prioritize plants that have high moisture content. Use herbaceous instead of woody plants, include succulents, perennials, and low shrubs. Use deciduous instead of evergreen plants. Avoid plants that have oils, resins, or waxes.

4.2 GRANT FUNDING OPPORTUNITIES

4.2.1 Texas A&M Forest Service Grants

Texas A&M Forest Service offers grants to landowners to complete prescribed fires on private land. Each grant targets landowners in different priority areas across the state.

The Community Protection Program Grant provides assistance to reduce the hazard of high-risk fuels on private lands through the use of prescribed burning. The treatment area will be within 10 miles of a National Forest boundary. The grant's goal is to protect high-risk communities and associated forest resources by reducing the risk of catastrophic wildfire on private and public lands. Priority will be given to projects that meet both criteria.

The National Fire Plan Grant provides assistance to communities that have been or may be threatened by wildfire by funding prescribed burning to reduce hazardous fuels in and around communities. Treatment areas will be private property in the 30 Texas Counties that have a Community Wildfire Protection Plan within the county. The goal is to protect high-risk communities and aid in ecosystem restoration by utilizing prescribed fire to consume excess vegetation before it contributes to catastrophic wildfire. Priority will be given to treatments sites that are within a CWPP, located near a Firewise community, located near homes based on Texas Wildfire Risk Assessment Portal and contain ecosystems that will benefit from prescribed fire.

Neches River and Cypress Basin Watershed Restoration Program - Prescribed Fire Grant provides assistance to landowners in utilizing prescribed fire for ecological improvement to the Neches River and Cypress Basin watersheds. This program will benefit the public and natural resources through improvement of water quality and quantity, control of invasive species and enhancement of wildlife habitat. Treatment areas will be private property in the Neches River and Cypress Basin Watersheds. Priority will be given to prescribed burn treatments that promote native ecosystem restoration, are in priority watershed protection zones and near public land.

The Texas Longleaf Conservation Assistance Program provides eligible landowners with financial and technical assistance for establishing, enhancing and managing longleaf pine. Landowners with property within ten East Texas counties which include Angelina, Hardin, Jasper, Nacogdoches, Newton, Polk, San Augustine, Sabine, Trinity and Tyler are eligible to apply. Approved participants may receive up to 50% payment not to exceed a standard cap rate for implementing approved conservation practices. Approved conservation practices include prescribed burning, reforestation, site preparation and forest stand improvement.

4.2.2 USDA & DOI Federal Funds for Hazardous Fuels Management

Fuel reduction is the manipulation (including combustion) or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control. The U.S. Forest Services' Hazardous Fuels Management appropriation and Department of Interior's Fuels Management appropriation are used for fuel reduction projects, or treatments, on federal lands and in high-priority areas in the wildland-urban interface, the area where structures are intermingled with—or adjacent to— vegetated wildlands such as forests or rangelands.

In FY2017, Congress appropriated $570.0 million for hazardous fuels reduction activities to both FS ($390.0 million) and DOI ($180.0 million), a 5% increase over the total FY2016 level ($545.0 million). On average, the combined hazardous fuels reduction appropriation has been $516.1 million annually over the last 10 years (FY2008-FY2017). Since becoming a stand-alone budget item in FY2001, the Hazardous Fuels subaccount has received the third-largest share of WFM appropriations for both agencies (after suppression and preparedness).

4.2.3 Secure Rural Schools Act – Title III Firewise Communities Program Grants

Title III of the Secure Rural Schools Act as amended in Public Law 112-141 (2012) authorizes funds for counties with federal lands within the boundaries of their jurisdictions. Section 302(a) of Title III outlines certain activities for which the funds may be used, as summarized below:

Examples of fuels mitigation assistance to Firewise communities include:

- Assisting communities with Firewise planning, including conducting a Firewise community assessment;
- Hosting "clean-up days' to encourage homeowners to remove brush and other vegetation from around their homes;
- Assisting communities with applications for Firewise Communities recognition;
- Providing grants or partial funding for removal of vegetation from around homes;
- Salary and transportation costs for youth crews removing vegetation from around homes;
- Supervision, transportation and related costs for parolees or prisoners removing vegetation from around homes; and
- Providing chippers to treat hazardous vegetation within the home ignition zone.

Examples of education assistance to homeowners include:

- Disseminating Firewise information with door hangers, print or radio advertisements;
- Making Firewise information available at community events;
- Holding Firewise educational workshops for homeowners;
- Creating or distributing videos on Firewise principles related to the home ignition zone and fire-resistant building materials; and
- Outfitting and staffing Firewise trailers or mobile units to educate homeowners about the Firewise principles related to the home ignition zone and fire-resistant building materials.

4.2.4 FEMA Hazard Mitigation Grant Program Funds (HMGP) & Pre-Disaster Mitigation Grant Program Funds (PDM)

FEMA sanctions and provides funding for two grant programs which list wildfire mitigation as eligible activities. Both FEMA grant programs are administered by the Texas Division of Emergency Management (TDEM).

The larger and more common of these is the Hazard Mitigation Grant Program (HMGP). HMGP is available following a federal disaster declaration. Available funds are calculated based on a formula of 15% of Public Assistance (PA) and Individual Assistance (IA) expenditures for a given federal disaster declaration. The Pre-Disaster Mitigation Program (PDM) is a smaller funding pool allocated annually by Congress.

Both programs can fund wildfire mitigation grants, specific eligible activities are listed as follows:

- Defensible space measures – The creation of perimeters around residential and non-residential buildings and structures through the removal or reduction of flammable vegetation
- Ignition-resistant construction – The application of non-combustible building envelope assemblies, the use of ignition-resistant materials, and the use of proper retrofit techniques in new and existing structures
- Hazardous fuels reduction – Vegetation management to reduce hazardous fuels, vegetation thinning, and the reduction of flammable materials to protect life and property beyond defensible space perimeters but proximate to at-risk structures

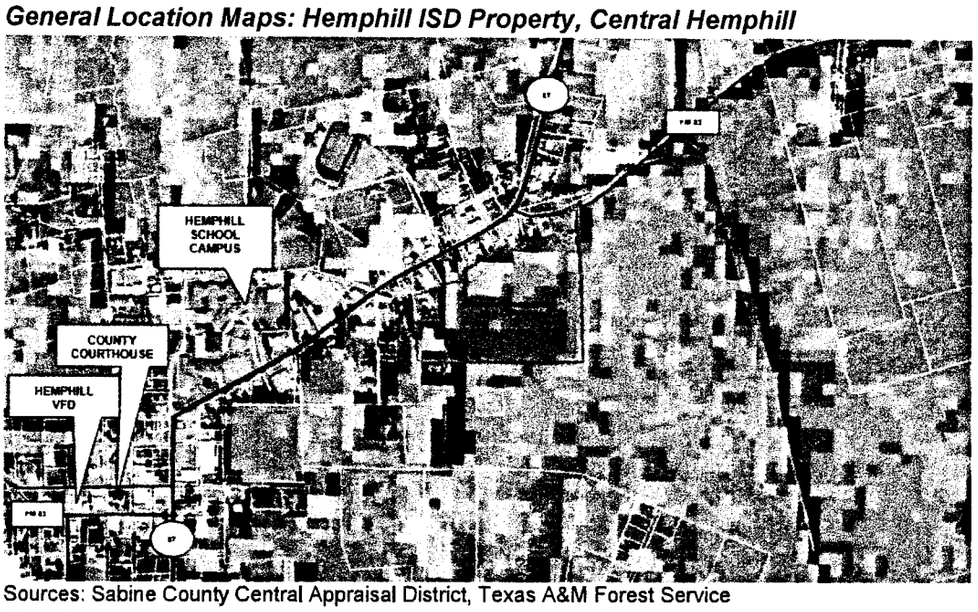
4.3 SPECIFIC MITIGATION PROJECTS

PROJECT 1: Fuels Reduction: Hemphill Independent School District Property

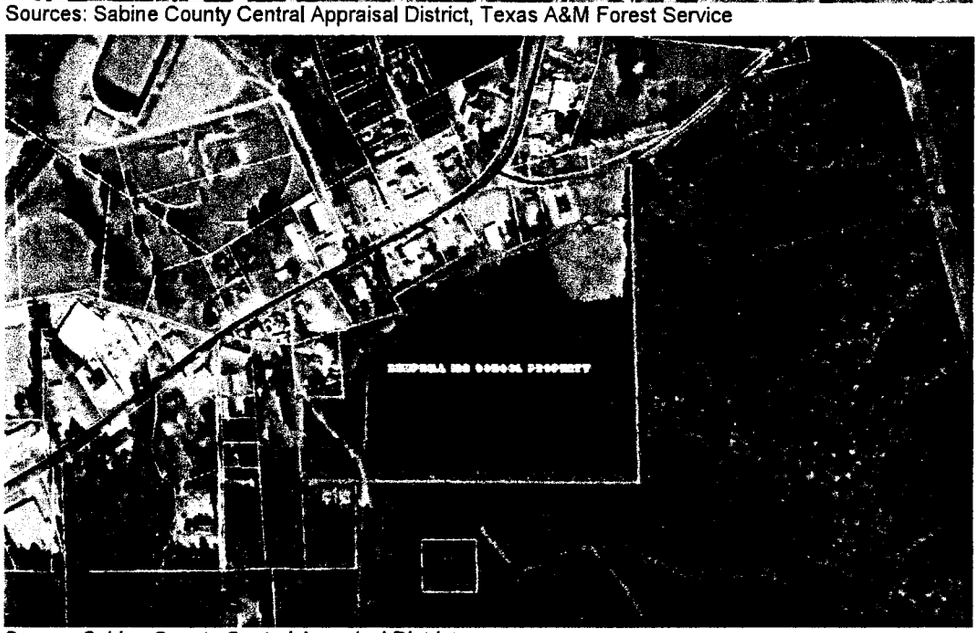
Project Scope: Fuels reduction treatment for approximately 30 acres of forestlands directly adjacent to city commercial center and structures. Project will involve mulching, thinning and culling of trees in partnership with Texas A&M Forest Service for joint use of mulching equipment in coordination with Hemphill ISD. Focus areas are north and west property boundaries in proximity to adjacent structures.

Background/Location: The property was last logged in the 1980's and is in direct proximity to commercial-retail establishments, a petroleum facility, and an adjacent housing authority subdivision. Location is within City of Hemphill south of Hwy 87 junction with FM 83 eastbound, Lat 31.3477N, -93.8383W. It is 29.49 acres in area, thickly forested with approximately 25-year pine. The following map shows property outline in blue, color coded with Characteristic Fire Rate of Spread Index. The characteristic rate of spread index for this property (50-150 ch/hr) is equal to the highest index rating of any property in the county.

General Location Maps: Hemphill ISD Property, Central Hemphill



Sources: Sabine County Central Appraisal District, Texas A&M Forest Service



Source: Sabine County Central Appraisal District

PROJECT 2: Countywide Abandoned Structures Inventory Report

Project Scope: The countywide wildfire risk assessment for Sabine County resulted in strong consensus on the fire hazard associated with vacant, abandoned structures. These structures are a potential ignition point for large conflagrations due to the density of fuels which surround the buildings, as well as potential hazards of faulty electrical wiring, gas lines, and unauthorized use by trespassers. Due to the hazard posed to surrounding neighborhoods and forests, local fire officials, emergency management, and county executive staff place a high priority on proactive mitigation measures. The key initial step is systematically locating, mapping, and researching these vacant, abandoned structures, which will be the purpose of this report. Report will include a detailed catalog of vacant structures with owner records, street view photos, lat-lon coordinates, aerial map, and mitigation options. Final report will be incorporated as a formal annex to the CWPP

Background/Location: Strictly unincorporated county, primary focus in east Sabine County near lake.

General Location Map: Preliminary Abandoned Structures Inventory

Source: Sabine County Central Appraisal District

Example Photo: Preliminary Abandoned Structures Inventory

Source: Field Data Collection, May 2017

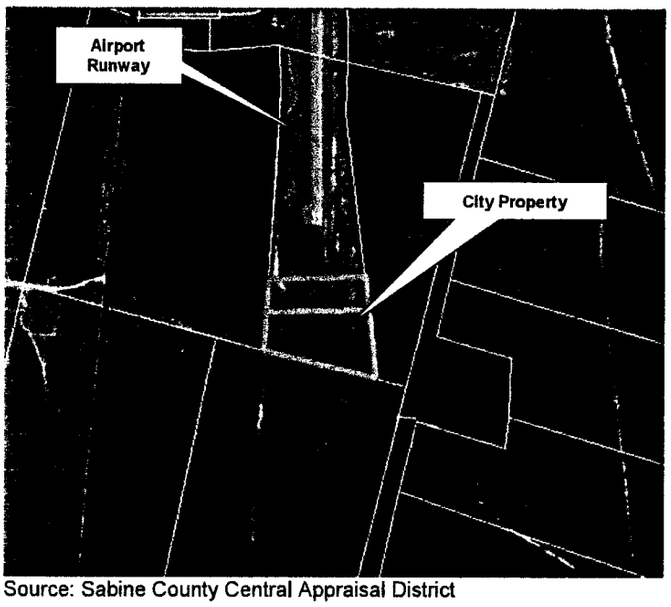
PROJECT 3: Fuels Reduction: Pineland Airport

Project Scope: Fuels reduction / fire break treatment for 200 yard by 300 yard swath on south approach to Pineland Airport. Project to involve clearing of vegetation taller than 2 feet on southward approach area.

Background/Location: Current conditions present a significant safety risk for approaching flights and a wildfire would pose an even more serious problem. Area in direct proximity of runway is owned by City of Pineland. Location is east of Hwy 96, Lat 31.2257N, -93.981W. The following map shows property outline in blue, color coded with Characteristic Fire Rate of Spread Index. The characteristic rate of spread index for this property (30-150 ch/hr).

General Location Maps: Pineland Airport and Approach

Sources: Sabine County Central Appraisal District, Texas A&M Forest Service



Source: Sabine County Central Appraisal District

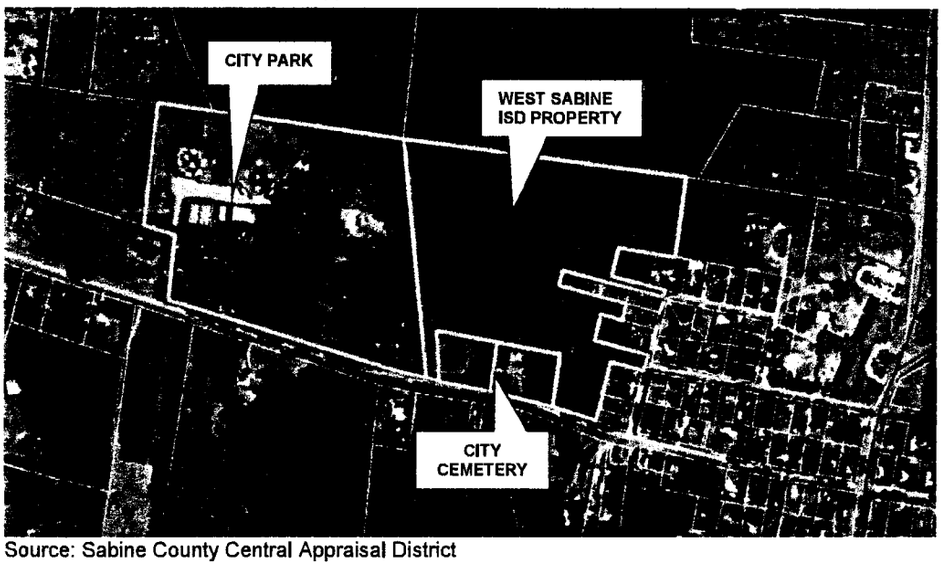
PROJECT 4: Fuels Reduction: Pineland City Park and West Sabine ISD Property

Project Scope: Fuels reduction treatment for forested portions of a 23-acre city owned park, portions of city cemetery, and potential shaded fuels breaks for portions of 25 acres directly to the east owned by West Sabine ISD. Project may involve mulching, thinning and culling of trees in partnership with Texas A&M Forest Service for joint use of mulching equipment in coordination with City of Pineland and West Sabine ISD. Focus areas include the city park itself, potential shaded fuel breaks for ISD property boundaries in proximity to adjacent structures.

Background/Location: Location is within City of Pineland east of Hwy 96, Lat 31.2567N, -93.9793W. The project site is directly adjacent to residential neighborhood to the east on Cypress Street. It is thickly forested with 35-year pine. Forested areas cover approximately 60% (15 acres) of the city park, 30% (2 acres) of the city cemetery, and 100% (25 acres) of the ISD property. The following map shows property outline in blue, color coded with Characteristic Fire Rate of Spread Index. The characteristic rate of spread index for this property (5-150 ch/hr).

General Location Maps: Pineland Park & West Sabine ISD Property, NW Pineland

Sources: Sabine County Central Appraisal District, Texas A&M Forest Service



Source: Sabine County Central Appraisal District

Hammock Subdivision

Specific Fuels Projects

Total Hazard Rating

99 - Extreme

Surrounding Environment Rating

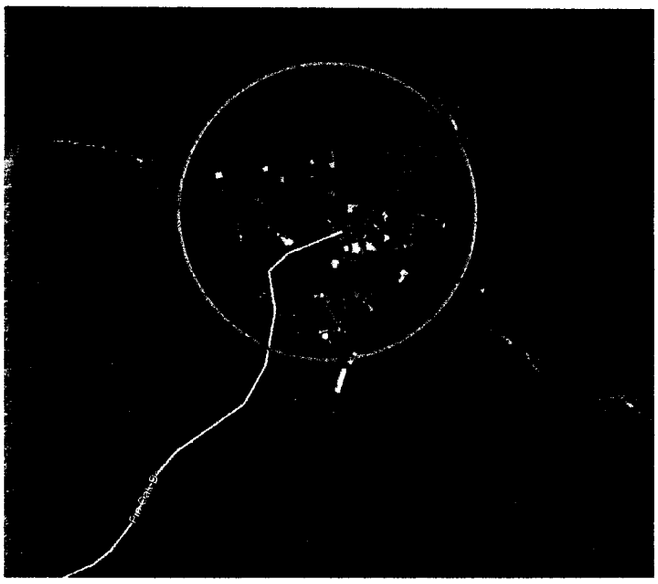
Area fuel density scored 16 out of 20
Vegetation fuel types scored 20 out of 20

Home Construction Rating

Defensible space scored 20 out of 20
Building construction scored 5 out of 10

Fire Department

Six Mile



Community Information

Latitude	31.27963
Longitude	-93.70299
Number of Homes	16
Size	18.0 acres
Residential Type	RV
Road Width	< 20 ft
Single Ingress/Egress?	Yes

Surrounding Environment Treatment:

Thin trees and underbrush (5-10 acres)

More frequent prescribed burns.

Widen roads & trim the trees back away from powerlines.

Reduce the density of tall trees so the canopies do not touch.

Remove combustible debris.

Create fire lines throughout the forest.

Subdivision Treatment:

Trim tree canopies regularly to keep their branches a minimum of 10' from structures and other trees.

Leave 30' between clusters of 2-3 trees, or 20 feet between individual trees.

Create spacing of approximately 30' between tree crowns.

Water plants, trees and mulch regularly.

Plant a mixture of deciduous and coniferous trees.

Create fuel breaks like driveways and walkways.

Work together as a community to reduce fuels and create defensible space of about 200' or more.

Demolish and remove abandoned structures.

Structure Treatment:

Clean vents of debris to prevent them from catching embers while allowing for ventilation.

Clean gutters regularly.

Make sure there are no cracks or holes in the siding that could catch embers.

Spread gravel or other non-combustible material under the deck.

Keep propane tanks away from your home and other structures.

Prune trees with branches that overhang the roof and around overhead power lines.

Use fire resistant shutters reduce the likelihood of fire spread.

Create a "fire free" area within 5' of your home using non-flammable landscaping material.

Remove dead vegetation from under the deck, on top of the roof and within 10 feet of the house.

Inspect the roof for gaps that expose decking.

Use heat or fire resistant siding such as metal, brick, stone, block, cement board or fire retardant lumber.

Install double paned or tempered glass windows.

Harborlight

Specific Fuels Projects

Total Hazard Rating

94 - Extreme

Surrounding Environment Rating

High Fuels Hazard

Home Construction Rating

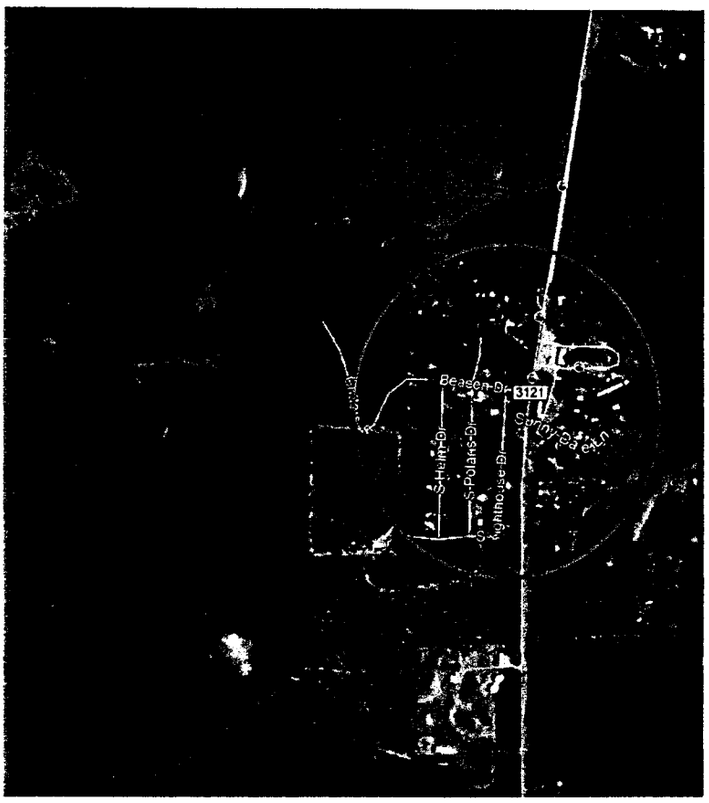
Moderate Structure Ignition Hazard

Fire Department

Pendleton Harbor

Community Information

Latitude	31.40830
Longitude	-93.78250
Number of Homes	85
Size	58.8 acres
Residential Type	Fixed
Road Width	< 20 ft
Single Ingress/Egress?	No



Surrounding Environment Treatment:

Thin trees and underbrush (10-15 acres).

Reduce the density of tall trees so the canopies do not touch.

Remove combustible debris.

Subdivision Treatment:

Trim tree canopies regularly to keep their branches a minimum of 10' from structures and other trees.

Prune trees 6-10' from the ground.

Mow lawns regularly.

Create spacing of approximately 30' between tree crowns.

Water plants, trees and mulch regularly.

Plant a mixture of deciduous and coniferous trees.

Create fuel breaks like driveways and walkways.

Work together as a community to reduce fuels and create defensible space of about 200' or more.

Demolish and remove abandoned structures.

Structure Treatment:

Clean vents of debris to prevent them from catching embers while allowing for ventilation.

Make sure there are no cracks or holes in the siding that could catch embers.

Spread gravel or other non-combustible material under the deck.

Screen in the bottom of the deck with metal screening.

Keep propane tanks away from your home and other structures.

Create a "fire free" area within 5' of your home using non-flammable landscaping material.

Remove dead vegetation from under the deck, on top of the roof and within 10 feet of the house.

Inspect the roof for gaps that expose decking.

Use heat or fire resistant siding such as metal, brick, stone, block, cement board or fire retardant lumber.

Install double paned or tempered glass windows

Nine Mile

Specific Fuels Projects

Total Hazard Rating

94 - Extreme

Surrounding Environment Rating

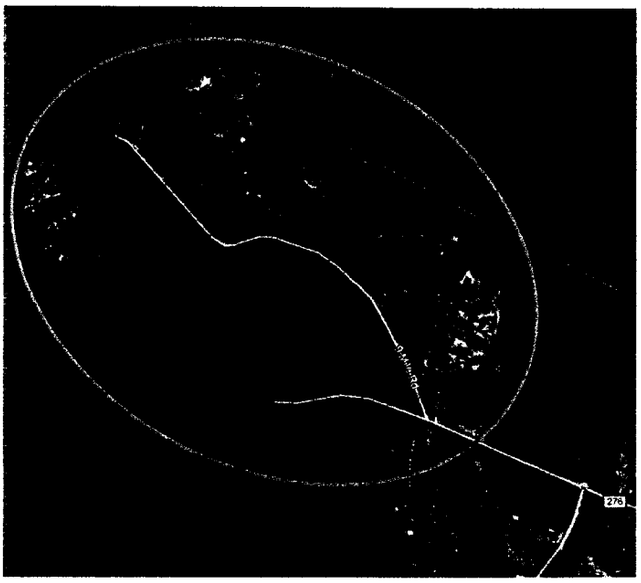
High Fuels Hazard

Home Construction Rating

Significant Structure Ignition Hazard

Fire Department

Shamrock Shores



Community Information

Latitude	31.52860
Longitude	-93.79620
Number of Homes	22
Size	281.2 acres
Residential Type	Mobile
Road Width	< 20 ft
Single Ingress/Egress?	Yes

Surrounding Environment Treatment:

Prescribed burns.

Trim the trees back away from powerlines.

Reduce the density of tall trees so the canopies do not touch.

Create fire lines throughout the forest.

Subdivision Treatment:

Trim tree canopies regularly to keep their branches a minimum of 10' from structures and other trees.

Leave 30' between clusters of 2-3 trees, or 20 feet between individual trees.

Prune trees 6-10' from the ground.

Mow lawns regularly.

Create spacing of approximately 30' between tree crowns.

Water plants, trees and mulch regularly.

Plant a mixture of deciduous and coniferous trees.

Create fuel breaks like driveways and walkways.

Demolish and remove abandoned structures.

Structures Treatment:

Clean vents of debris to prevent them from catching embers while allowing for ventilation.

Clean gutters regularly.

Spread gravel or other non-combustible material under the deck.

Screen in the bottom of the deck with metal screening.

Prune trees with branches that overhang the roof and around overhead power lines.

Use fire resistant shutters reduce the likelihood of fire spread.

Create a "fire free" area within 5' of your home using non-flammable landscaping material.

Remove dead vegetation from under the deck, on top of the roof and within 10 feet of the house.

Inspect the roof for gaps that expose decking.

Use heat or fire resistant siding such as metal, brick, stone, block, cement board or fire retardant lumber.

Install double paned or tempered glass windows.

Hill Country

Specific Fuels Projects

Total Hazard Rating

93 - Extreme

Surrounding Environment Rating

High Fuels Hazard

Home Construction Rating

Indian Mounds

Specific Fuels Projects

Total Hazard Rating

92 - Extreme

Surrounding Environment Rating

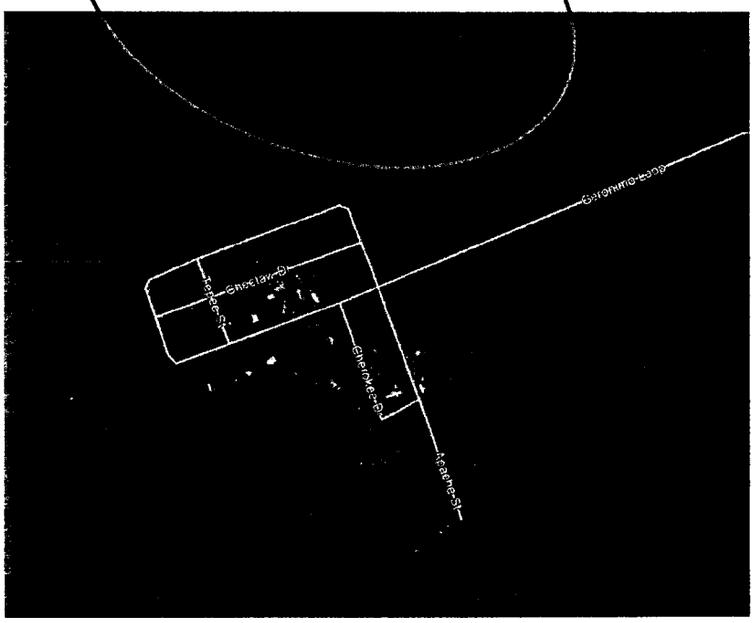
High Fuels Hazard

Home Construction Rating

Significant Structure Ignition Hazard

Fire Department

Pendleton Harbor



Community Information

Latitude	31.32394
Longitude	-93.71746
Number of Homes	30
Size	28.8 acres
Residential Type	Mobile
Road Width	< 20 ft
Single Ingress/Egress?	Yes

Vol 3.T Page 321

Surrounding Environment Treatment:

Thin trees and underbrush (10-15 acres).

Widen the roads trim the trees back away from powerlines.

Reduce the density of tall trees so the canopies do not touch.

Create fire lines throughout the forest.

Subdivision Treatment:

Trim tree canopies regularly to keep their branches a minimum of 10' from structures and other trees.

Prune trees 6-10' from the ground.

Create spacing of approximately 30' between tree crowns.

Water plants, trees and mulch regularly.

Structures Treatment:

Clean vents of debris to prevent them from catching embers while allowing for ventilation.

Make sure there are no cracks or holes in the siding that could catch embers.

Spread gravel or other non-combustible material under the deck.

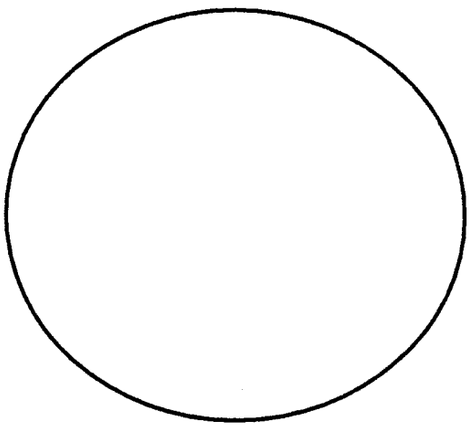
Keep propane tanks away from your home and other structures.

Prune trees with branches that overhang the roof and around overhead power lines.

Separate wooden fences from the house with a stone or metal barrier.

Use fire resistant shutters reduce the likelihood of fire spread.

Create a "fire free" area within 5' of your home using non-



Lake Sam Rayburn Estates

Specific Fuels Projects

Total Hazard Rating

91 - Extreme

Surrounding Environment Rating

High Fuels Hazard

Home Construction Rating

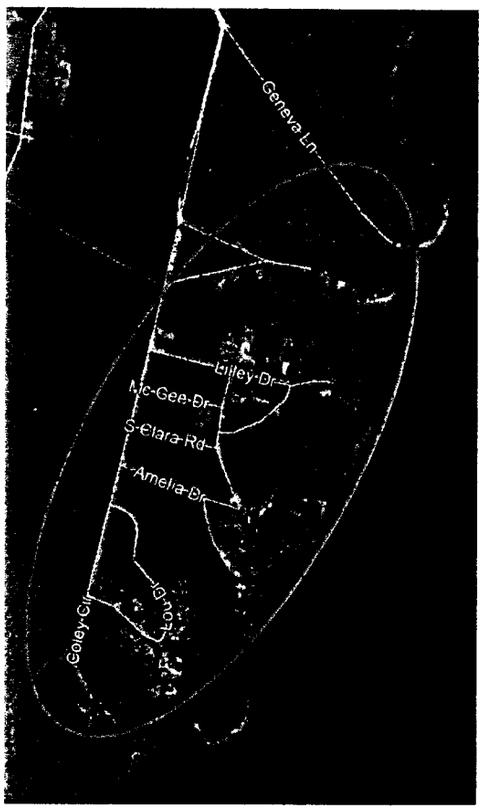
Moderate Structure Ignition Hazard

Fire Department

Pineland

Community Information

Latitude	31.16258
Longitude	-93.03949
Number of Homes	45
Size	248.5 acres
Residential Type	Fixed
Road Width	< 20 ft
Single Ingress/Egress?	No



Surrounding Environment Treatment:

Thin trees and underbrush (15-20 acres).

Consider more frequent prescribed burns.

Reduce the density of tall trees so the canopies do not touch.

Remove combustible debris.

Create fire lines throughout the forest.

Subdivision Treatment:

Trim tree canopies regularly to keep their branches a minimum of 10' from structures and other trees.

Leave 30' between clusters of 2-3 trees, or 20 feet between individual trees.

Prune trees 6-10' from the ground.

Create spacing of approximately 30' between tree crowns.

Water plants, trees and mulch regularly.

Plant a mixture of deciduous and coniferous trees.

Work together as a community to reduce fuels and create defensible space of about 200' or more.

Demolish and remove abandoned structures.

Structures Treatment:

Clean vents of debris to prevent them from catching embers while allowing for ventilation.

Clean gutters regularly.

Spread gravel or other non-combustible material under the deck.

Screen in the bottom of the deck with metal screening.

Prune trees with branches that overhang the roof and around overhead power lines.

Separate wooden fences from the house with a stone or metal barrier.

Use fire resistant shutters reduce the likelihood of fire spread.

Create a "fire free" area within 5' of your home using non-flammable landscaping material.

Remove dead vegetation from under the deck, on top of the roof and within 10 feet of the house.

Use heat or fire resistant siding such as metal, brick, stone, block, cement board or fire retardant lumber.

Install double paned or tempered glass windows.

Vol 3T Page 323

Beechwood 1 & 2

Specific Fuels Projects

Total Hazard Rating

89 - High

Surrounding Environment Rating

High Fuels Hazard

Home Construction Rating

Significant Structure Ignition Hazard

Fire Department

Fairmount

Community Information

Latitude	31.21190
Longitude	-93.65660
Number of Homes	250
Size	600.0 acres
Residential Type	Mobile
Road Width	< 20 ft
Single Ingress/Egress?	No

Surrounding Environment Treatment:

Widen the roads trim the trees back away from powerlines.

Reduce the density of tall trees so the canopies do not touch.

Remove combustible debris.

Create fire lines throughout the forest.

Subdivision Treatment:

Trim tree canopies regularly to keep their branches a minimum of 10' from structures and other trees.

Leave 30' between clusters of 2-3 trees, or 20 feet between individual trees.

Prune trees 6-10' from the ground.

Create spacing of approximately 30' between tree crowns.

Water plants, trees and mulch regularly.

Work together as a community to reduce fuels and create defensible space of about 200' or more.

Demolish and remove abandoned structures.

Structures Treatment:

Clean vents of debris to prevent them from catching embers while allowing for ventilation.

Clean gutters regularly.

Spread gravel or other non-combustible material under the deck.

Screen in the bottom of the deck with metal screening.

Keep propane tanks away from your home and other structures.

Prune trees with branches that overhang the roof and around overhead power lines.

Create a "fire free" area within 5' of your home using non-flammable landscaping material.

Remove dead vegetation from under the deck, on top of the roof and within 10 feet of the house.

Inspect the roof for gaps that expose decking.

Use heat or fire resistant siding such as metal, brick, stone, block, cement board or fire retardant lumber.

Install double paned or tempered glass windows.

Lowe's Creek Campground

Specific Fuels Projects

Total Hazard Rating

89 - High

Surrounding Environment Rating

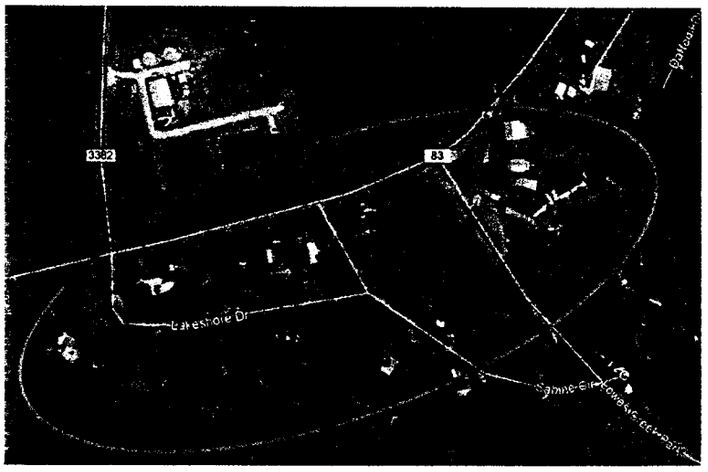
High / Moderate Fuels Hazard

Home Construction Rating

Moderate Structure Ignition Hazard

Fire Department

Pendleton Harbor



Community Information

Latitude	31.37420
Longitude	-93.71910
Number of Homes	45
Size	30.9 acres
Residential Type	Fixed
Road Width	< 20 ft
Single Ingress/Egress?	Yes

Surrounding Environment Treatment:

Widen the roads trim the trees back away from powerlines.

Reduce the density of tall trees so the canopies do not touch.

Remove combustible debris.

Subdivision Treatment:

Trim tree canopies regularly to keep their branches a minimum of 10' from structures and other trees.

Leave 30' between clusters of 2-3 trees, or 20 feet between individual trees.

Prune trees 6-10' from the ground.

Mow lawns regularly.

Create spacing of approximately 30' between tree crowns.

Water plants, trees and mulch regularly.

Plant a mixture of deciduous and coniferous trees.

Create fuel breaks like driveways and walkways.

Work together as a community to reduce fuels and create defensible space of about 200' or more.

Structures Treatment:

Clean vents of debris to prevent them from catching embers while allowing for ventilation.

Clean gutters regularly.

Make sure there are no cracks or holes in the siding that could catch embers.

Spread gravel or other non-combustible material under the deck.

Screen in the bottom of the deck with metal screening.

Keep propane tanks away from your home and other structures.

Prune trees with branches that overhang the roof and around overhead power lines.

Create a "fire free" area within 5' of your home using non-flammable landscaping material.

Remove dead vegetation from under the deck, on top of the roof and within 10 feet of the house.

Inspect the roof for gaps that expose decking.

Use heat or fire resistant siding such as metal, brick, stone, block, cement board or fire retardant lumber.

Busby Point

Specific Fuels Projects

Total Hazard Rating

86 - High

Surrounding Environment Rating

Moderate Fuels Hazard

Home Construction Rating

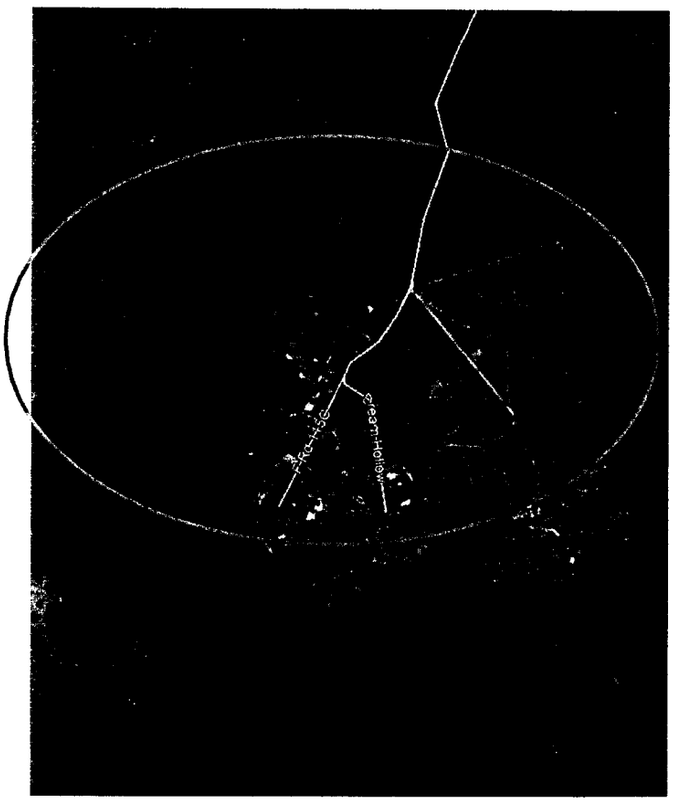
Moderate Structure Ignition Hazard

Fire Department

Hemphill

Community Information

Latitude	31.29916
Longitude	-93.74487
Number of Homes	32
Size	45.0 acres
Residential Type	Fixed
Road Width	< 20 ft
Single Ingress/Egress?	Yes



Surrounding Environment Treatment:

Thin trees and underbrush (5-10 acres).

Consider more frequent prescribed burns.

Widen the roads trim the trees back away from powerlines.

Reduce the density of tall trees so the canopies do not touch.

Remove combustible debris.

Create fire lines throughout the forest.

Subdivision Treatment:

Trim tree canopies regularly to keep their branches a minimum of 10' from structures and other trees.

Leave 30' between clusters of 2-3 trees, or 20 feet between individual trees.

Prune trees 6-10' from the ground.

Mow lawns regularly.

Create spacing of approximately 30' between tree crowns.

Water plants, trees and mulch regularly.

Plant a mixture of deciduous and coniferous trees.

Structures Treatment:

Clean vents of debris to prevent them from catching embers while allowing for ventilation.

Clean gutters regularly.

Make sure there are no cracks or holes in the siding that could catch embers.

Screen in the bottom of the deck with metal screening.

Keep propane tanks away from your home and other structures.

Prune trees with branches that overhang the roof and around overhead power lines.

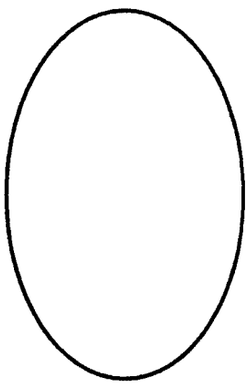
Separate wooden fences from the house with a stone or metal barrier.

Create a "fire free" area within 5' of your home using non-flammable landscaping material.

Remove dead vegetation from under the deck, on top of the roof and within 10 feet of the house.

Inspect the roof for gaps that expose decking.

Use heat or fire resistant siding such as metal, brick, stone, block, cement board or fire retardant lumber.



CHAPTER 5. CONCLUSIONS

Sabine County is located in a portion of east Texas with remarkable forest resources. Along with the natural conditions that make the County's forests so productive and scenic comes an increased probability for wildfires, and susceptibility for severe occurrences that can cause economic and ecosystem damage.

It is clear that concerns for forest health and productivity, in addition to the primary concerns of human safety and property protection, are vital for all residents and stakeholders. The primary conclusion of this report and plan is that these concerns and interests are compatible and mutually supportive. A key focus of the parties engaged in the planning process will be to identify ways that stakeholders can improve working relationships in the future, remove obstacles to cooperation, open lines of communication, and create opportunities for dialogue and constructive decision-making.

An equal focus moving forward will be to address the specific causes and vulnerabilities of wildfire occurrence. Many of the identified wildfire issues involve private land owners and problems with accessibility to fight wildfires. Other identified issues revolve around maintenance of property and facilities (or lack of maintenance), on both small and large tracts, that can and often does present hazardous conditions. A third main theme identified by this report and plan is that the actions of a few: namely those that do not abide by Burn Bans when they are in effect, cause an unacceptable number of wildfire flashpoints.

The participants in this Plan intend to assess progress annually and invite agencies and landowners to submit projects that provide community protection. As additional projects are conceived and implemented in the future, they will be displayed in the last appendix of this plan (Future Plan Additions).

5.1 GENERAL THEMES/CONCERNS

The following conditions, factors, and long-term trends were identified by planning team members as increasing the wildland-urban interface risk for Sabine County:

- Abandoned structures in Sabine County are a significant wildfire concern. Uninhabited structures create a potential source for illicit fires which can migrate through dense overgrowth with a direct fuel path to surrounding forest. Besides fire danger, abandoned structures also create various other health and safety issues for the community.
- Public's desire to live in a secluded area surrounded by natural vegetation with little or no defensible space.
- Challenges for conducting outreach and Burn Ban Notification including remote home sites and lack of phone service.
- Need to continue to promote public awareness. High percentages of wildfires in Sabine County are caused by human activities most prominently outdoor burning and arson. Noted general cooperation from community during latest drought and high fire hazard period (good).
- Water access and supply.
- Thick undergrowth and concentrated planting patterns on pine plantations.

Also, many if not most subdivisions are surrounded by forest, some privately owned land and some National Forests. During the planning process it was mentioned that the National Forest is very good about doing prescribed burns, but the majority of the private land is not. This leads to overgrowth and an abundance of fuel.

Inside of the subdivisions it was observed that the majority of the properties were between 30%-70% cleared for defensible space. However, those that were not were either owned by the elderly or infirmed,

or were abandoned properties, the last of which were severely overgrown and had forest encroaching upon the structure.

The lack of a water source for some of the subdivisions was a major concern, most notably the fact that there are no operational fire hydrants in Sabine County outside of the city of Hemphill. The time that it takes to locate a draft source, unload hard suction hose and get good flow costs quite a few minutes more than hooking up to an active hydrant. The fire departments do a great job of practicing this action, along with performing a water shuttle, in order to be quicker and shave seconds off the time between alarm and extinguishment.

All of the fire departments in Sabine County have mutual aid agreements and Pineland VFD has a mutual aid agreement with Jasper County for areas around Lake Sam Rayburn. There was consensus among all departments that the Texas A&M Forest Service class 'Firefighter Safety in the Urban Wildland Interface' is a high priority for new firefighters and continuing education for veterans.

5.2 EQUIPMENT NEEDS

All Fire Departments

- Wildland gear that meets NFPA Standards
- GPS systems for the VFDs
- Radio equipment meeting NFPA Standards
- Thermal Imaging Cameras (TIC)'s

Items Needed by Individual VFDs

Pineland Volunteer Fire Department
- Tanker Truck
- Battery Powered Rescue Tool (Cutter/Spreader/Ram)
- Bunker Gear

Bronson Volunteer Fire Department
- Wildland Gear

Fairmount Volunteer Fire Department
- Wildland Gear

Pendleton Volunteer Fire Department Station 1
- Slide in Foam units for skid units in Brush Trucks
- Wildland/Extrication Gear
- Bunker Gear
- Thermal Imaging Camera (TIC)
- 1st Responder/Rescue Sprint Vehicle for Lowe's Creek Station

Hemphill Volunteer Fire Department
- Wildland Gear

Shamrock Shores Volunteer Fire Dep't Station 2
- New Fire Station
- New SCBA's
- Thermal Imaging Camera (TIC)
- Grass Flaps, Class A Extinguishers

Rosevine Volunteer Fire Department Station 3
- Rebuild Station
- 4x4 Brush Truck
- 3" Deck Gun

Six Mile Volunteer Fire Department
- Improved Radio System
- Thermal Imaging Camera (TIC)

APPENDICES

APPENDIX A. DECLARATIONS OF AGREEMENT AND CONCURRENCE

The Sabine County Community Wildfire Protection Plan:

1) Was collaboratively developed. Interested parties and federal land management agencies managing land in the vicinity of Sabine County have been consulted.
2) Identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment that will protect Sabine County.
3) Recommends measures to reduce the ignitability of structures throughout the area addressed by the plan.

Declaration of Agreement and Concurrence

The following partners in development of this Community Wildfire Protection Plan have reviewed and mutually agree with its contents:

Daryl Melton — 2/19/20
Signature — Date
Daryl Melton, Sabine County Judge

BB Lloyd — 2-19-2020
Signature — Date
Kerwin Lloyd, Sabine County EMC

[signature] — 2-19-2020
Signature — Date
Lonnie Johnston, Sabine County Fire Association President

[signature] — 3-3-2020
Signature — Date
Tom Boggus, Texas A&M Forest Service Director

Mark Stanford — 2/27/2020
Signature — Date
Mark Stanford, Texas A&M Forest Service Fire Chief

Bruce Woods — 2/27/20
Signature — Date
Bruce Woods
Texas A&M Forest Service Mitigation and Prevention Dept. Head

APPENDIX B. 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 interface fires. More information can be obtained at www.firewise.org, by contacting your local Texas A&M Forest Service, or the "Ready, Set, Go" Personal Protection Wildfire Action Plan for homeowners, published by the International Fire Chiefs Association.

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 an Asphalt shingles also provides 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 soaks with water or covers and allows cooling 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 space 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-spaces 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.

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 lines are at least 14 ft. above ground
- Consider a "turn around" within your property at least 45 ft. wide, especially if your 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

APPENDIX C. WILDFIRE HAZARD & RISK ASSESSMENT SCORESHEET: SUBDIVISION

Shown below is an example Wildfire Hazard & Risk Assessment Scoresheet for subdivisions (communities) that is consistent with NFPA 1144. This template was used to evaluate wildfire risk in Section 3.3 (Mitigation Priority Assessment by Community).

Name of Subdivision:	Date:	Size(acres):	Coords:	# of Homes:
County:				

A. Subdivision Design	Score	B. Vegetation	Score
1. Primary Roads		**1. Fuel types**	
- Two or more primary roads	1	- Light	1
- One road	3	- Medium	5
- One way in, one way out	5	- Heavy	10
2. Width of Primary Road		**2. Defensible Space**	
- 20 ft. or more	1	- 70% or more of site	1
- 20 ft. or less	3	- 30% or more, but less than 70% of site	5
		- Less than 30% of site	10
3. Accessibility		**C. Fire Department Response Time**	
- Paved road	1	- Within 15 min.	1
- Unpaved road	3	- Within 16-30 min.	4
		- More than 30 min.	7
		- No organized FD	10
4. Secondary Roads		**D. Fire Protection – Water Source**	
- Loop roads, cul-de-sacs with turning radius of 45' or more	1	- Hydrant within 1000'	1
- Cul-de-sac turnaround radius less than 45'	2	- Hydrant farther than 1000' or draft site	3
- Dead-end roads 200 feet or less in length	3	- Water source within 20 min. or less round trip	5
- Dead-end roads greater than 200 feet in length	5	- Water source farther than 20 min. and less than 45 min. round trip	7
		- Water source farther than 45 min.	10
5. Average lot size		**E. Roofing Material**	
- 10 acres or larger	1	- Metal or Clay tile roofs	1
- Larger than 1 acre, but less than 10 acres	3	- Asphalt shingle or mobile home metal roofs	3
- 1 acre or less	5	- Wood shingle roofs	5
		- Non-Rated (holes, tarps, corrugated tin, plywood, tar paper)	10
6. Street signs		**F. Existing Building Construction Materials**	
- Present	1	- Noncombustible siding/deck	1
- Partially present	3	- Noncombustible siding & combustible Deck or attachments	5
- Not present	5	- Combustible siding & deck	10
7. Utilities		**Rating Scale**	**Total Rating**
- All underground	1	Low Hazard < 39	
- 1 underground, 1 above ground	3	Moderate Hazard 40-59	
- All above ground	5	High Hazard 60-74	
		Extreme Hazard 75+	

Additional Comments / Mitigation Actions:

APPENDIX D. SABINE NATIONAL FOREST FIRE MANAGEMENT

The Sabine National Forest manages approximately 97,049 acres in Sabine County. Due to the size of the Sabine National Forest and proximity of urban-interface, a pre-treatment and suppression-oriented strategy is utilized. The Sabine National Forest has an active prescribed fire program to help reduce the risk of wildfire through the treatment of prescribed fire burning between 30,000 to 50,000 acres annually. The primary goals of the fire management program are:

- Public and firefighter safety.
- Restoration and maintainence of fire adapted ecosystems.

Under the direction of the Fire Management Officer, permanent fire staff fill wildland fire incident command system organization structure positions. During extended high fire danger periods or for prescribed burns the FMO will order out of area resources for additional firefighting capability.

Forest Fire Management Officer

Jamie Sowell

Office Phone: 936-897-1068

Email: jtsowell@usda.gov

National Forests and Grasslands in Texas Website

https://www.fs.usda.gov/Texas

Sabine Ranger District Assistant Fire Management Officer

Michael A. Davis

Office Phone: 409-625-1940

Email: michaeladavis@usda.gov

Sabine National Forest Website

https://www.fs.usda.gov/detail/texas/about-forest/districts/?cid=fswdev3_008442

WILDFIRE

Wildfire Control - Wildfire occurrence in the Sabine National Forest varies considerably year by year, being influenced by rainfall and incendiary (arson) activities. In a recent 10-year period, there was an average of 12 wildfires per year. These wildfires were 93 percent man-caused, and slightly more than half of them (51 percent) were incendiary in origin.

TFS and USFS have a cooperative agreement to coordinate the prevention, law enforcement, aerial detection, and suppression of wildfire.

PRESCRIBED FIRE

Fire has a proven ecological role in the development and management of the forests and rangelands. It is used as a tool to maintain or restore fire-adapted ecosystems. It reduces heavy accumulations of forest fuels and minimizes damage in the event of wildfires. Carefully developed and applied prescriptions, based on such factors as weather and fuel conditions, seasonal timing of burning projects, and specific techniques of fire application, guide trained personnel in prescribed burning.

ECOSYSTEM MANAGEMENT

The Sabine National Forest is managed under the ecosystem management concept, which follows standards, guidelines, and objectives found in the forest management plan. Ecosystem management is a means to achieve sustainable conditions and to provide wildlife and fish habitat and forage, outdoor recreation, wilderness, water, wood, and minerals while retaining the aesthetic, historic, and spiritual qualities of the land. The objective is to consider all resources and, using public involvement, create a plan for management that will provide an optimum level of multi-resource goods and services with a focus on forest health and biological diversity.

In the mid-1930's, when the land that makes up the Sabine National Forest was purchased, most of the acreage was severely cut over, and few trees were left standing. Due to early reforestation efforts, most of the trees in the Sabine National Forest are 60 years or older today and are a testimony to the success of these early efforts. Most of the land, except for some deep, sandy ridges, is very productive for growing trees and is managed on a sustained-yield basis. Our objectives, by law, must be multi-resource, and no single resource can be emphasized to the detriment of the other resources. The general objective is to strike a balance so that all resources can be managed in a compatible fashion.

Our objective for the timber resource is two-fold: to provide a continuous supply of multiple products for local and national needs and for timber management to meet other resource objectives such as threatened and endangered species and wildlife habitat improvement. The goal is to maintain the productivity and sustainability of renewable natural resources without long-term detriment to other resource values. An ecological classification system is used to identify the ecological potential and limitations of a given piece of land. Both uneven-age and even-age management systems are available to meet site-specific objectives and desired future conditions. For example, within RCW management areas, the two-age system (a variation of even-age management) is emphasized because it provides sustainable foraging and nesting habitat for RCW. Even-age management is emphasized where the forest types are primarily species intolerant to shade. Uneven-age management is emphasized in visually sensitive areas and within community types that are composed of tree species that are tolerant to shade. In areas subject to vegetation management, periodic thinning is conducted to maintain and improve growth conditions and the health of the forest.

WILDERNESS

The 12,369-acre Indian Mounds Wilderness Area has been designated by the U.S. Congress as an area set aside to allow the Earth's natural processes to shape and influence the area. Hunting, horseback riding, and hiking are allowed. Bicycles or other wheeled vehicles and mechanized and motorized equipment are not allowed.

RESTRICTIONS

The Forest Service attempts to impose as few regulations as possible, but some are necessary to protect the recreation visitor and to prevent damage to resources, sites, and facilities. Regulations are posted on the bulletin boards at developed recreation sites. Visitors need to read and follow the rules. The district ranger can furnish regulations for use of the general forest areas. Call your local district ranger or visit the National Forests and Grasslands in Texas website at www.southernregion.fs.fed.us/texas for a copy of the forest-wide rules.

APPENDIX E. GLOSSARY

A

- **Aerial Fuels**: All live and dead vegetation in the forest canopy or above the surface fuels, including tree branches, twigs and cones, snags, moss, and high brush.
- **Air Tanker**: A fixed-wing aircraft equipped to drop fire retardants or suppressants.
- **Agency**: Any federal, state, county or city organization participating with jurisdictional responsibilities.
- **Aspect**: Direction toward which a slope faces.

B

- **Blow-Up**: A sudden increase in fire intensity or rate of spread strong enough to prevent direct control or to upset control plans. Blow-ups are often accompanied by violent convection and may have other characteristics of a fire storm.
- **Brush**: A collective term that refers to stands of vegetation dominated by shrubby, woody plants, or low growing trees, usually of a type undesirable for livestock or timber management.
- **Brush Fire**: A fire burning in vegetation that is predominantly shrubs, brush and scrub growth.
- **Buffer Zones**: An area of reduced vegetation that separates wildland fuels from vulnerable residential or business developments. This barrier is similar to a greenbelt in that it is usually used for another purpose such as agriculture, recreation areas, parks, or golf courses.
- **Burning Ban**: A declared ban on open air burning within a specified area, usually due to sustained high fire danger.
- **Burning Conditions**: The state of the combined factors of the environment that affect fire behavior in a specified fuel type.
- **Burning Index**: An estimate of the potential difficulty of fire containment as it relates to the flame length at the most rapidly spreading portion of a fire's perimeter.
- **Burning Period**: That part of each 24 hour period when fires spread most rapidly, typically from 10:00am until sundown.

C

- **Chipping**: Reducing wood related material by mechanical means into small pieces to be used as mulch or fuel. Chipping and mulching are often used interchangeably.
- **Chain**: A unit of linear measurement equal to 66 feet.
- **Closure**: Legal restriction, but not necessarily elimination of specified activities such as smoking, camping or entry that might cause fires in a given areas.
- **Command Staff**: The command staff consists of the information officer, safety officer and liaison officer. They report directly to the incident commander and may have assistants.
- **Complex**: Two or more individual incidents located in the same general area which are assigned to a single incident commander or unified command.
- **Condition Class**: The classification system used by the Forest Service to determine the extent of departure from the natural fire regime.
- **Condition Class I**: A forest system within its natural fire range and at low risk for catastrophic fire.
- **Condition Class II**: A forest that has moderately departed from its historic fire occurrence and is at moderate risk of experiencing losses to a wildfire.
- **Condition Class III**: A forest that has departed from its historic fire regime and the risk of losing key habitat is high.

- **Cooperating Agency**: An agency supplying assistance other than direct suppression, rescue, support, or service functions to the incident control effort; e.g. Red Cross, law enforcement agency, Telephone Company, etc.

- **Creeping Fire**: Fire burning with a low flame and spreading slowly.

- **Crown Fire (Crowning)**: The movement of fire through the crowns of trees or shrubs more or less independently of the surface fire.

- **Curing**: Drying and browning of herbaceous vegetation or slash.

D

- **Dead Fuels**: Fuels with no living tissue in which moisture content is governed almost entirely by atmospheric moisture (relative humidity and precipitation), dry-bulb temperature, and solar radiation.

- **Debris Burning**: A fire spreading from any fire originally set for the purpose of clearing land of for rubbish, garbage, range, stubble, or meadow burning.

- **Defensible Space**: An area either natural or manmade where material capable of causing a fire to spread has been treated, cleared, reduced or changed to act as a barrier between and advancing wildland fire and the loss to life, property or resource. In practice, "defensible space" is defined as an area a minimum of 30 feet around a structure that is cleared of flammable brush or vegetation.

- **Detection**: The act or system of discovering and locating fires.

- **Dozer**: Any tracked vehicle with a front-mounted blade used for exposing mineral soil.

- **Dozer Line**: Fire line constructed by the front blade of a dozer.

- **Drop Zone**: Target area for air tankers, helitankers and cargo dropping.

- **Drought Index**: A number representing net effect of evaporation, transpiration, and precipitation in producing cumulative moisture depletion in deep duff or upper soil.

- **Dry Lightning Storm**: Thunderstorm in which negligible precipitation reaches the ground. Also called a dry storm.

- **Duff**: The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles and leaves immediately above the mineral soil.

E

- **Energy Release Component (ERC)**: The computed total heat released per unit area (British Thermal Units per square foot) within the fire front at the head of a moving fire.

- **Engine**: Any ground vehicle providing specified levels of pumping, water and hose capacity.

- **Engine Crew**: Firefighters assigned to an engine. The Fireline Handbook defines the minimum crew makeup by engine type.

- **Entrapment**: A situation where personnel are unexpectedly caught in a fire behavior-related, life threatening position where planned escape routes or safety zones are absent, inadequate or compromised. An entrapment may or may not include deployment of a fire shelter for its intended purpose. These situations may or may not result in injury. They include "near misses".

- **Environmental Assessment (EA)**: EA's were authorized by the National Environmental Policy Act (NEPA) of1969. They are concise, analytical documents prepared with public participation that determine if an Environmental Impact Statement (EIS) is needed for a particular project or action. If an EA determines an EIS is not needed, the EA becomes the document allowing agency compliance with NEPA requirements.

- **Environmental Impact Statement (EIS)**: EIS's were authorized by the National Environmental Policy Act (NEPA) of 1969. Prepared with public participation, they assist decision makers by providing information, analysis and an array of action alternatives, allowing managers to see the probable effects of decisions on the environment. Generally, EIS's are written for large-scale actions or geographical areas.

- **Escape Route**: A preplanned and understood route firefighters take to move to a safety zone or other low-risk area, such as an already burned area, previously constructed safety area, a meadow that won't burn, natural rocky area that is large enough to take refuge without being burned. When escape routes deviate from a defined physical path, they should be clearly marked.

- **Escaped Fire**: A fire which has exceeded or is expected to exceed initials attack capabilities or prescription.

- **Extended Attack Incident**: A wildland fire that has not been contained or controlled by initial attack forces and for which more firefighting resources are arriving, en route, or being ordered by the initial attack incident commander.

- **Extreme Fire Behavior**: "Extreme" implies a level of fire behavior characteristics that ordinarily precludes methods of direct control action. One or more of the following usually involved: high rate of spread, prolific crowning and/or spotting, presence of fire whirls, strong convection column. Predictability is difficult because such fires often exercise some degree of influence on their environment and behave erratically, sometimes dangerously.

F

- **Fingers of a Fire**: The long narrow extensions of a fire projecting from the main body.

- **Fire Behavior**: The manner in which a fire reacts to the influences of fuel, weather and topography.

- **Fire Behavior Forecast**: Prediction of probable fire behavior usually prepared by a Fire Behavior Officer, in support of fire suppression or prescribed burning operations.

- **Fire Break**: A natural or constructed barrier used to stop or check fires that may occur, or to provide a control line from which to work.

- **Fire Cache**: A supply of fire tools and equipment assembled in planned quantities or standard units at a strategic point for exclusive use in fire suppression.

- **Fire Crew**: An organized group of firefighters under the leadership of a crew leader or other designated official.

- **Fire Front**: The part of a fire within which continuous flaming combustion is taking place. Unless otherwise specified the fire front is assumed to be the leading edge of the fire perimeter. In ground fire, the fire front maybe mainly smoldering combustion.

- **Fire Intensity**: A general term relating to the heat energy released by a fire.

- **Fire Line**: A linear fire barrier that is scraped or dug to mineral soil.

- **Fire Load**: The number and size of fires historically experienced on a specified unit over a specified period (usually one day) at a specified index of fire danger.

- **Fire Management Plan (FMP)**: A strategic plan that defines a program to manage wildland and prescribed fires and documents the Fire Management Program in the approved land use plan. The plan is supplemented by operational plans such as preparedness plans, preplanned dispatch plans, prescribed fire plans, and prevention plans.

- **Fire Perimeter**: The entire outer edge or boundary of a fire

- **Fire Regime**: A natural fire regime is a classification of the role that fire would play across a landscape in the absence of human intervention.

- **Fire Season**: 1) Period(s) of the year during which wildland fires are likely to occur, spread, and affects resource values sufficient to warrant organized fire management activities. 2) A legally enacted time during which burning activities are regulated by state or local authority.

- **Fire Storm**: Violent convection caused by a large continuous area of intense fire. Often characterized by destructively violent surface in drafts, near and beyond the perimeter, and sometimes by tornado-like whirls.

- **Fire Triangle**: Instructional aid in which the sides of a triangle are used to represent the three (3) factors (oxygen, heat, fuel) necessary for combustion and flame production; removal of any of the three (3) factors causes flame production to cease.

- **Fire Weather**: Weather conditions that influence fire ignition, behavior and suppression.

- **Fire Weather Watch**: A term used by fire weather forecasters to notify using agencies, usually 24 to 72 hours ahead of the event, that current and developing meteorological conditions may evolve into dangerous fire weather.

- **Fire Whirl**: Spinning vortex column of ascending hot air and gases rising from a fire and carrying aloft smoke, debris and flame. Fire whirls range in size from less than one foot to more than 500 feet in diameter. Large fire whirls have the intensity of a small tornado.

- **Firefighting Resources**: All people and major items of equipment that can or potentially could be assigned to fires.

- **Flame Height**: The average maximum vertical extension of flames at the leading edge of the fire front. Occasional flashes that rise about the general level of flames are not considered. This distance is less than the flame length if flames are tilted due to wind of slope.

- **Flame Length**: The distance between the flame tip and the midpoint of the flame depth at the base of the flame (generally the ground surface); an indicator of fire intensity.

- **Flaming Front**: The zone of a moving fire where the combustion is primarily flaming. Behind this flaming zone combustion is primarily glowing. Light fuels typically have a shallow flaming front, whereas heavy fuels have a deeper front. Also called fire front.

- **Flanks of a Fire**: The parts of a fire's perimeter that are roughly parallel to the main direction of spread.

- **Flare-up**: Any sudden acceleration of fire spread or intensification of a fire. Unlike a blow-up, a flare-up lasts a relatively short time and does not radically change control plans.

- **Flash Fuels**: Fuels such as grass, leaves, draped pine needles, fern, tree moss and some kinds of slash, that ignite readily and are consumed rapidly when dry. Also called fine fuels

- **Forbs**: Plants with a soft, rather than permanent woody stem, that is not a grass or grass-like plant.

- **Forest Health**: The ability of forest ecosystems to remain productive, resilient, and stable over time and to withstand the effects of periodic natural or human-caused stresses such as drought, insect attack, disease, climatic changes, fire flood, resource management practices and resource demands.

- **Fuel**: Combustible material. This includes, vegetation, such as grass, leaves, ground litter, plants shrubs and trees, which feed a fire.

- **Fuel Bed**: An array of fuels usually constructed with specific loading, depth and particle size to meet experimental requirements; also, commonly used to describe the fuel composition in natural settings.

- **Fuel Loading**: The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area.

- **Fuel Model**: Simulated fuel complex (or combination of vegetation types) for which all fuel descriptors required for the solution of a mathematical rate of spread model has been specified.

- **Fuel Moisture Content**: The quantity of moisture in fuel expressed as a percentage of the weight when thoroughly dried at 212 degrees Fahrenheit.

- **Fuel Reduction**: Manipulation, including combustion or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control.

- **Fuel Type**: An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

- **Future Desired Conditions**: The future desired conditions on federal land is a return to Condition Class I.

G

- **Geographic Area**: A political boundary designated by the wildland fire protection agencies where these agencies work together in the coordination and effective utilization.

- **Ground Fuel**: All combustible materials below the surface litter, including duff, tree or shrub roots, punch wood, peat, and sawdust that normally support a glowing combustion without flame.

Vol 3·T Page 341

H

- **Haines Index**: An atmosphere index used to indicate the potential for wildfire growth by measuring the stability and dryness of the air over a fire.
- **Hand Line**: A fireline built with hand tools
- **Hazard Reduction**: Any treatment of a hazard that reduces the threat of ignition and fire intensity or rate of spread
- **Head of a Fire**: The side of the fire having the fastest rate of spread
- **Heavy Fuels**: Fuels of large diameter such as snags, logs, large limb wood, that ignite and are consumed more slowly than flash fuels
- **Helibase**: The main location within the general incident area for parking, fueling, maintaining, and loading helicopters. The helibase is usually located at or near the incident base.
- **Helispot**: A temporary landing spot for helicopters
- **Hotspot**: A particular active part of a fire
- **Hot Spotting**: Reducing or stopping the spread of fire at points of particularly rapid rate of spread or special threat, generally the first step in prompt control, with emphasis on first priorities

I

- **Incident**: A human-caused or natural occurrence, such as wildland fire, that requires emergency service action to prevent or reduce the loss of life or damage to property or natural resources
- **Incident Action Plan (IAP)**: Contains objectives reflecting the overall incident strategy and specific tactical actions and supporting information for the next operational period. The plan may be oral or written. When written, the plan may have a number of attachments, including but not limited to: incident objectives, organization assignment list, division assignment, incident radio communication plan, medical plan, traffic plan, safety plan and incident map.
- **Incident Command Post (ICP)**: Location at which primary command functions are executed. The ICP may be co-located with the incident base or other incident facilities.
- **Incident Command System (ICS)**: The combination of facilities, equipment, personnel, procedure and communication operating within a common organization structure, with responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident.
- **Incident Commander**: Individual responsible for the management of all incident operations at the incident site.
- **Initial Attack**: The actions taken by the first resources to arrive at a wildfire to protect lives and property, and prevent further extension of the fire.

J

- **Job Hazard Analysis**: This analysis of a project is completed by staff to identify hazards to employees and the public. It identifies hazards, corrective actions and the required safety equipment to ensure public and employee safety.

K

- **Keech Byram Drought Index (KBDI)**: Commonly used drought index adapted for fire management applications, with a numerical range from 0 (no moisture deficiency) to 800 (maximum drought)

L

- **Ladder Fuels**: Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help initiate and assure the continuation of crowning.

- **Light (Fine) Fuels**: Fast-drying fuels, generally with comparatively high surface area-to-volume ratios, which are less than ¼ inch in diameter and have a time lag of one hour or less. These fuels readily ignite and are rapidly consumed by fire when dry.

- **Lightning Activity Level (LAL)**: A number, on a scale of 1 to 6 that reflects frequency and character of cloud-to-ground lightning. The scale is exponential based on powers of 2 (i.e., LAL 3 indicates twice the lightning of LAL 2)

- **Litter**: Top layer of the forest, scrubland, or grassland floor, directly above the fermentation layer, composed of loose debris of dead sticks, branches, twigs and recently fallen leaves or needles little altered in structure by decomposition.

- **Live Fuels**: Living plants, such as trees, grasses, and shrubs, in which the seasonal moisture content cycle is controlled largely by internal physiological mechanisms rather than by external weather influences.

M

- **Mineral Soil**: Soil layers below the predominantly organic horizons; soil with little combustible material.

- **Mobilization**: The process and procedures used by all organization, federal, state and local for activating, assembling, and transporting all resources that have been requested to respond to or support an incident

- **Mop-up**: To make a fire safe or reduce residual smoke after the fire has been controlled by extinguishing or removing burning material along or near the control line, felling snags or moving logs so they won't roll down.

- **Multi-Agency Coordination (MAC)**: A generalized term which described the functions and activities of representative of involved agencies and/or jurisdictions who come together to make decisions regarding the prioritizing of incidents, and the sharing and use of critical resources. The MAC organization is not a part of the on-scene ICS and is not involved in developing incident strategy or tactics.

- **Mutual Aid Agreement**: Written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel and equipment.

N

- **National Environmental Policy Act (NEPA)**: NEPA is the basic national law for protection of the environment, passed by Congress in 1969. It sets policy and procedures for environmental protection, and authorizes Environmental Impact Statements and Environmental Assessments to be used as analytical tools to help federal managers make decisions.

- **National Fire Danger Rating System (NFDRS)**: A uniform fire danger rating system that focuses on the environmental factors that control the moisture content of fuels.

- **National Wildfire Coordinating Group**: A group formed under the direction of the Secretaries of Agriculture and the interior and comprised of representatives of the US Forest Service, Bureau of Land Management, Bureau of Indian Affairs, National Park Service, US Fish and Wildlife Service and Association of State Foresters. The group's purpose is to facilitate coordination and effectiveness of wildland fire activities and provide a forum to discuss, recommend action or resolve issues and problems of substantive nature. NWCG is the certifying body for all courses in the National Fire Curriculum.

- **Normal Fire Season**: 1) A season when weather, fire danger and number and distribution of fires are about average. 2) Period of the year that normally comprises the fire season.

O

- **Operational Period**: The period of time scheduled for execution of a given set of tactical actions as specified in the Incident Action Plan. Operational periods can be of various lengths, although usually not more than 24 hours.

- **Overhead**: People assigned to supervisory positions, including incident commanders, command staff, general staff, directors, supervisors and unit leaders.

P

- **Peak Fire Season**: That period of the fire season during which fires are expected to ignite most readily, to burn with greater than average intensity, and to create damages at an unacceptable level.

- **Preparedness**: Condition or degree of being ready to cope with a potential fire situation.

- **Prescribed Fire**: Any fire ignited by management actions under certain, predetermined conditions to meet specific objectives related to hazardous fuels or habitat improvement. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

- **Prescribed Fire Plan (Burn Plan)**: This document provides the prescribed fire burn boss information needed to implement an individual prescribed fire project.

- **Prescription**: Measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social or legal considerations.

- **Prevention**: Activities directed at reducing the incidence of fires, including public education, law enforcement, personal contact and reduction of fuel hazards.

R

- **Radiant Burn**: A burn received from a radiant heat source.

- **Rate of Spread**: The relative activity of a fire in extending its horizontal dimensions. It is expressed as a rate of increase of the total perimeter of the fire, as rate of forward spread of the fire front or as rate of increase in area, depending on the intended use of the information. Usually it is expressed in chains or acres per hour for a specific period in the fire's history.

- **Reburn**: The burning of an area that has been previously burned but that contains flammable fuel that ignites when burning conditions are more favorable; an area that has reburned.

- **Red Flag Warning**: Term used by fire weather forecasters to alert forecast users to an ongoing or imminent critical fire weather pattern.

- **Rehabilitation**: The activities necessary to repair damage or disturbance caused by wildland fires or the fire suppression activity.

- **Relative Humidity (Rh)**: The ratio of the amount of moisture in the air, to the maximum amount of moisture that air would contain if it were saturated. The ratio of the actual vapor pressure to the saturated vapor pressure.

- **Remote Automatic Weather Station (RAWS)**: An apparatus that automatically acquires, processes and stores local weather data for later transmission to the GOES Satellite, from which the data is re-transmitted to an earth-receiving station for use in the National Fire Danger Rating System.

- **Resources**: 1) Personnel, equipment, services and supplies available, or potentially available, for assignment to incidents. 2) The natural resources of an area, such as timber, crass, watershed values, recreation values, and wildlife habitat.

- **Resource Management Plan (RMP)**: A document prepared by field office staff with public participation and approved by field office managers that provides general identities the need for fire in a particular area and for a specific benefit.

- **Retardant**: A substance or chemical agent which reduced the flammability of combustibles.

- **Run (of a fire)**: The rapid advance of the head of a fire with a marked change in fire line intensity and rate of spread from that noted before and after the advance.

S

- **Safety Zone**: An area cleared of flammable materials used for escape in the event the line is outflanked or in case a spot fire causes fuels outside the control line to render the line unsafe. In firing operations, crews progress so as to maintain a safety zone close at hand allowing the fuels inside the control line to be consumed before going ahead. Safety zones may also be constructed as integral parts of fuel breaks; they are greatly enlarged areas which can be used with relative safety by fire fighters and their equipment in the event of a blowup in the vicinity.

- **Severity Funding**: Funds provided to increase wildland fire suppression response capability necessitated by abnormal weather patterns, extended drought, or other events causing abnormal increase in the fire potential and/or danger.

- **Single Resource**: An individual, a piece of equipment and its personnel complement, or a crews or team of individuals with an identified work supervisor that can be used on an incident.

- **Size-up**: To evaluate a fire to determine a course of action for fire suppression.

- **Slash**: Debris left after logging, pruning, thinning or brush cutting; includes logs, chips, bark, branches, stumps and broken understory trees or brush.

- **Slop-over**: A fire edge that crosses a control line or natural barrier intended to contain the fire.
- **Smoke Management**: Application of fire intensities and meteorological processes to minimize degradation of air quality during prescribed fires.
- **Snag**: A standing dead tree or part of a dead tree from which at least the smaller branches have fallen.
- **Spark Arrester**: A device installed in a chimney, flue, or exhaust pipe to stop the emission of sparks and burning fragments.
- **Spot Fire**: A fire ignited outside the perimeter of the main fire by flying sparks or embers.
- **Spot Weather Forecast**: A special forecast issued to fit the time, topography and weather of each specific fire. These forecasts are issued upon request of the user agency and are more detailed, timely and.specific than zone forecasts.
- **Spotting**: Behavior of a fire producing sparks or embers that are carried by the wind and start new fires beyond the zone of direct ignition by the main fire.
- **Staging Area**: Locations set up at an incident where resources can be placed while awaiting a tactical assignment on a three-minute available basis. Staging areas are managed by the operations section.
- **Strategy**: the science and art of command as applied to the overall planning and conduct of an incident.
- **Structure Fire**: Fire originating in and burning any part of all of any building, shelter or other structure.
- **Suppressant**: An agent, such as water or foam, used to extinguish the flaming and glowing phases of combustion when directions applied to burning fuels.
- **Suppression**: All the work of extinguishing or containing a fire, beginning with its discovery.
- **Surface Fuels**: Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones and small branches that have not yet decayed enough to lose their identity; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branchwood, downed logs, and stumps interspersed with or partially replacing the litter.

T

- **Tactics**: Deploying and directing resources on an incident to accomplish the objectives designated by strategy.
- **Temporary Flight Restrictions (TFR)**: A restriction requested by an agency and put into effect by the Federal Aviation Administration in the vicinity of an incident which restricts the operation of nonessential aircraft in the airspace around that incident.
- **Torching**: The ignition and flare-up of a tree or small group of trees, usually from bottom to top.
- **Type**: The capability of a firefighting resource in comparison to another type. Type 1 usually means a greater capability due to power, size or capacity.

U

- **Uncontrolled Fire**: Any fire which threatens to destroy life, property or natural resources
- **Under Burn**: A fire that consumes surface fuels but not trees or shrubs.

V

- **Volunteer Fire Department (VFD)**: A fire department of which some or all members are unpaid.

W

- **Water Tender (Tanker)**: A ground vehicle capable of transporting specified quantities of water.
- **Wildland Fire**: Any nonstructural fire, other than prescribed fire, that occurs in the wildland.

Vol 3.T Page 345

- **Wildland Fire Implementation Plan (WFIP)**: A progressively developed assessment and operational management plan that documents the analysis and selection of strategi9es and describes the appropriate management response for a wildland fire being managed for resource benefits.

- **Wildland Fire Use**: The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in redefined geographic areas outlined in Fire Management Plans.

- **Wildland Urban Interface**: The line, area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

APPENDIX F. LIST OF ABBREVIATIONS

°F	Degrees Fahrenheit
BAER	Burned Area Emergency Rehabilitation
BLM	Bureau of Land Management
CARs	Communities at Risk
CVAR	Community Value at Risk
CWPP	Community Wildfire Protection Plan
EPA	U.S. Environmental Protection Agency
FD	fire department
FEMA	Federal Emergency Management Agency
GIS	geographic information system
GPM	gallons per minute
GPS	global positioning system
HFRA	Healthy Forests Restoration Act
HIZ	Home Ignition Zone
ICC	International Code Council
ISO	International Standards Organization
JPA	Joint Powers Agreement
MFI	mean fire interval
MOU	Memorandum of Agreement
NFP	National Fire Plan
NFPA	National Fire Protection Association
NIFC	National Interagency Fire Center
NRCS	Natural Resources Conservation Service
RAW	remote automated weather SAF Society of American Foresters
SWCD	Soil and Water Conservation District
SWCA	SWCA Environmental Consultants
USDA	U.S. Department of Agriculture
USDI	U.S. Department of Interior
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VFD	volunteer fire department
WUI	Wildland Urban Interface

APPENDIX G. FUTURE PLAN ADDITIONS

Future proposed mitigation project ideas, data sources, future meeting notes, reports, and stakeholder input is to be included below as it is compiled.

Vol 3.T Page 348