



Section 10

Urban Interface Wildfire

Sectors: 1,2,3,4,5,6

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Why is Urban Interface Wildfire a Threat to the City of Nacogdoches?

A key asset to the City of Nacogdoches is its location in the Piney Woods of Deep East Texas. When it comes to wildfire, however, the forests in and around the City of Nacogdoches pose a real and present threat to the lives and property of Nacogdoches' citizens.

History

In the past 5 years, approximately 176 wildfire incidents have been reported in or near the City of Nacogdoches. Each of these wildfires required trenching and other techniques to combat and prevent the spread of the fires into nearby residential areas. In almost every instance, the wildfires were a direct result of long periods of drought causing very dry vegetation. In 2003, no wildfire incidents were reported in the City of Nacogdoches.

The "Chicken Fire" in Melrose, Nacogdoches County occurred in 2000 and consumed over 400 acres of land and necessitated the evacuation of over 100 homes. Just miles from the city limits, the City of Nacogdoches Fire Department was prepared to defend the City against the spread of the wildfire.

Risk Factors for Urban Interface Wildfire

The City of Nacogdoches is at significant risk for urban interface wildfire due to the composition and density of vegetative fuels, extreme weather conditions, density of structures and topography.

Urban Interface Wildfire Terminology

Urban Interface Wildfire occurs when combustible vegetation comes in contact with combustible buildings and land improvements. The three types of settings include:

- a neighborhood in the middle of or surrounded by wild or rural land;
- a neighborhood that has a natural area, such as a park or greenbelt; and
- a home that is in a woodland or rural landscape.

Urban Interface Wildfire Acronyms

TFS – Texas Forest Service

Hazard Assessment

Risk Analysis

The following Table 10-1 reflects the frequency of occurrence for wildfires in and near the City of Nacogdoches.

Table 10-1: Urban/Interface Wildfire Frequency

Total Number of Events	Years in Record	Recurrence Interval	Hazard Frequency	Hazard Frequency %
176	5	0.03	35.2	352

Source: City of Nacogdoches Archival Data

Community Urban Interface Wildfire Issues

What is Susceptible to Wildfire?

Growth and Development in the Interface

The numerous pine trees and forested areas in and around the City of Nacogdoches are considered to be interface areas. Residences, buildings and other development is encroaching onto the forests and expanding the urban interface.

In the event of a wildfire in interface neighborhoods, vegetation, structures and other flammables combine to create an unpredictable and hazardous event. Important factors to combat these fires include access, firebreaks, proximity to water sources, distance to the fire station and availability of personnel and equipment.

Urban Interface Wildfire Mitigation Activities

City of Nacogdoches Ordinances

Fire Code

The International Fire Code 2000 was adopted by the City of Nacogdoches on September 4, 2001 and is included in the Code of Ordinances as Section 38-91 entitled "Fire Prevention Code."

Building Code

The City of Nacogdoches has adopted the 2000 International Building Code, which provides standards for Roof Assemblies and Rooftop Structures in Chapter 15 (Appendix VI). Section 1505 of this chapter specifically addresses fire-retardant materials and classifications of roof assemblies and coverings.

Zoning Ordinance

Within the City of Nacogdoches Zoning Ordinance Development Standards are outlined to maintain adequate distance between both residential and commercial buildings to effectively fight fire.

Outdoor Burning Ordinance

On September 9, 2002 the City of Nacogdoches adopted Section 82-5 "Burning of garbage, refuse and wastes" which reads as follows:

No outdoor burning is allowed within the Corporate City Limits of Nacogdoches without prior written authorization from the Texas Natural Resource Conservation Commission except for ceremonial, non-commercial preparation of food, warming or small recreational fires. (Ref: Article 111.207, Outdoor Burning in Texas.)

Prior to the adoption of this ordinance, citizens of Nacogdoches could burn leaves, pine straw and other trash in their yards. This created a hazardous situation by placing neighboring residences at greater risk for fire.

Weeds and Other Offensive Accumulations

Section 34 of the City of Nacogdoches Code of Ordinances provides states the following:

It shall be unlawful for any owner, occupant or person in charge of any premises within the city to allow weeds to grow or grass to be

over 12 inches in height upon the premises or to allow trash or rubbish to accumulate thereon to such an extent as is reasonable calculated to create a fire hazard or to become injurious to the health of the citizens. Either act is declared to constitute a public nuisance.

Nacogdoches employs a full time Code Enforcement Officer whose responsibilities include ensuring that the above ordinance is enforced. Maintaining weeded lots and properties free of excessive trash and tall grass helps to reduce the risk of fire/wildfire from occurring within the City.

Unsafe Structures

Provisions have also been made in Section 15 of the Code of Ordinances for the removal and/or demolition of unsafe structures in the city limits. The following is an excerpt from Section 14-418 of the Code of Ordinances:

The minimum urban standards code which comprises this article is declared to be remedial and shall be construed to secure the beneficial interests and purposes thereof, which are public safety, health and general welfare through structural strength, stability, sanitation, adequate light and ventilation, and safety to life and property from fire and other hazards incident to the construction, alteration, repair, removal and demolition of unsafe buildings.

GIS Mapping Tools

Utilizing the most recent aerial color infrared photographs, it is possible to note the areas in and around the City of Nacogdoches that contain largely forested areas. These areas are the most likely spots for forest fires to occur. While traditional photography uses the visible light spectrum to capture images, color infrared photography records radiation from the sun that is reflected off objects. Plants photographed with color infrared technology appear red and water appears blue or black. The shade of red, black or blue an object appears depends on the amount of radiation the object reflects. A pine tree reflects more radiation than a hardwood tree. Therefore, pine trees appear dark red and hardwood trees appear to be a lighter shade of red in these types of photographs. Bodies of water that contain large amounts of sediment reflect more radiation than clear bodies of water, and appear to be a light blue color. Clear bodies of water often appear as black features on a color infrared photograph. *Please see Map 10-1 for an aerial color infrared photograph of the City of Nacogdoches.*

Urban Interface Wildfire Mitigation Action Items

ST-UI#1: Develop an informative brochure for public dissemination outlining Urban Interface Wildfire threats and safety precautions.

Implementation:

- Coordinate with local landscape companies and greenhouses to help distribute the brochures.
- Seek grant funding to produce and distribute a comprehensive brochure.
- Utilize utility billing to distribute information.
- Make information available to the public via City's website and local media.

Coordinating Authority: City of Nacogdoches
Local Media
Landscape Companies & Greenhouses

Timeline: Short Term 1-2 Years

MAP Goals Addressed: Protection of Life and Property
Public Awareness

City Sectors Affected: 1,2,3,4,5,6

Cost: \$1,000-\$20,000

Potential Funding Source: OB, EMPG, Grants

ST-UI#2: Compile a list of fire-retardant building materials and distribute it to citizens obtaining building permits.

Implementation:

- Coordinate with local building supply stores to market fire-resistant building materials.
- Utilize utility billing to distribute information.
- Make information available to the public via City's website and local media.

Coordinating Authority: City of Nacogdoches
Local Building Supply Stores
Local Media

Timeline: Short Term 1-2 Years

MAP Goals Addressed: Protection of Life and Property

Public Awareness
City Sectors Affected: 1,2,3,4,5,6
Cost: \$1,000-\$5,000
Potential Funding Source: OB, EMPG, Grants

LT-UI#1: Consider revisions to the City of Nacogdoches Landscaping Ordinance to include plantings more resistant to fire in landscaping design.

Implementation:

- Gather a comprehensive listing of planting materials that are more resistant to the spread of fire.
- Develop landscaping design guidelines to reduce the risk for Urban Interface wildfire in new developments.
- Coordinate with local Builders Association to identify current landscaping practices that pose a greater risk to residential and business owners.

Coordinating Authority: City of Nacogdoches
Builders Association
Timeline: Long Term 2-5 Years
MAP Goals Addressed: Protection of Life and Property
Public Awareness
Natural Systems
City Sectors Affected: 1,2,3,4,5,6
Cost: \$2,500-\$5,000
Potential Funding Source: OB

LT-UI#2: Develop a Fire Prevention Inspection service for residential property owners to utilize.

Implementation:

- Partner with the Texas Forest Service (TFS) to develop and train an Inspection team.
- Provide a checklist to homeowners to outline steps to reduce or eliminate risk.
- Develop a campaign and seek funding sources to offer the service at no cost to the public.

- Utilize existing community groups and neighborhood associations to implement the Inspection campaign.

Coordinating Authority: City of Nacogdoches
 Neighborhood Associations
 TFS
Timeline: Long Term 2-5 Years
MAP Goals Addressed: Protection of Life and Property
 Public Awareness
 Natural Systems
City Sectors Affected: 1,2,3,4,5,6
Cost: \$10,000-\$50,000
Potential Funding Source: OB, Grants

LT-UI#3: Identify existing urban interface neighborhoods.

Implementation:

- Utilizing GIS capabilities, map existing urban interface neighborhoods.
- Train firefighters on special conditions surrounding urban/interface wildfires in each identified neighborhood.
- Promote public awareness campaigns.
- Develop neighborhood associations in neighborhoods most vulnerable.

Coordinating Authority: City of Nacogdoches
 Neighborhood Associations
Timeline: Long Term 2-5 Years
MAP Goals Addressed: Protection of Life and Property
 Public Awareness
 Emergency Services
City Sectors Affected: 1,2,3,4,5,6
Cost: \$10,000-\$100,000
Potential Funding Source: OB, CIP, Grants

Map 10-1

Forest-Urban Interface



0 2,875 5,750 11,500 17,250 23,000 Feet

Source: City of Nacogdoches
Projection: State Plane, NAD 83
Application Program: ArcGIS 8.3
Date of Application: September 1, 2003
Composition by: Larissa Philpot