



Hunt County Hazard Mitigation Action Plan

Hunt County, Texas



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Chapter One: Introduction

1.1 Purpose

Hunt County is susceptible to a number of different natural hazards that have potential to cause property loss, loss of life, economic hardship, and threats to public health and safety. Occurrence of natural disasters cannot be prevented, however hazard mitigation measures are efforts taken before a disaster happens to minimize the impact that future disasters will have on people and property in the community.

Hunt County Multi-Jurisdictional Natural Hazard Mitigation Plan has been developed by the Hunt County Hazard Mitigation Planning Committee. The plan represents collective efforts of citizens, elected and appointed government officials, business leaders, volunteers of non-profit organizations, and other stakeholders.

Through the development of this plan, the Planning Committee has identified the natural hazards that could affect Hunt County, and has evaluated the risks associated with these hazards. The implementation of this plan will make Hunt County more disaster-resistant because the benefits that can be gained by planning ahead and taking measures to reduce damages before the next disaster strikes have been recognized. The plan will allow Hunt County and participating jurisdictions to comply with the Disaster Mitigation Act of 2000 (DMA 2000) and its implementing regulations 44 CFR Part 201.6, thus resulting in eligibility to apply for Federal aid for technical assistance and post-disaster hazard mitigation project funding.

1.2 Hunt County Hazard Mitigation Action Plan Planning Process

The Hunt County Hazard Mitigation Action Plan (HazMAP) was created in order to comply with current federal and state hazard mitigation plan regulations in compliance with the following rules and regulations:

Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390)
Federal Emergency Management Administration's Interim Final Rule, published in the Federal Register on February 26, 2002, at 44 CFR Part 201.

The Hunt County HazMAP is comprised of the following participating jurisdictions:

- Hunt County
- City of Commerce
- City of Lone Oak
- City of Neylandville
- City of Quinlan
- City of Union Valley
- City of West Tawakoni
- City of Wolfe City

Each jurisdiction participated by having a Hazard Mitigation Team (HMT). Each HMT participated in the Hazard Mitigation Action Plan. The North Central Texas Council of Governments Emergency Preparedness Department participated in the HazMAP to assist in compiling the jurisdictional information and prepare the plan for submission. Hunt County Hazard Mitigation Action Plan Meetings were held on October 21, 2013, November 22, 2013, and March 21, 2014.

1.3 HazMAP Planning Process Point of Contact and Demographics

The following are the points of contacts during the HazMAP planning process from October 21, 2013:

Hunt County
Director of Homeland Security

City of Commerce
City Administrator

City of Lone Oak
Police Chief

City of Neylandville
City Councilmember

City of Quinlan
City Administrator

City of Union Valley
Mayor

City of West Tawakoni
Code Enforcement

City of Wolfe City
Mayor

Participating Jurisdiction Population Profiles

Jurisdiction	2010 Population	2012 Population Estimate
Hunt County	86,129	87,290
City of Commerce	8,078	8,100
City of Lone Oak	521	-
City of Neylandville	56	-
City of Quinlan	1,394	1,390
City Union Valley	307	307
City of West Tawakoni	1,576	1,590
City of Wolfe City	1,566	-

Source: North Central Texas Council of Governments Research and Information Services 2013 current population estimates, United States Census Bureau

—: *Data Not Available*

Figure 1. Hunt County



Source: Texas National Resource Inventory

1.4 Hunt County Hazard Mitigation Action Plan Organization

The Hunt County Hazard Mitigation Action Plan is organized into five chapters which satisfy the mitigation requirements in 44 CFR Part 201, with an appendix providing the required supporting documentation.

Chapter One: Introduction

Describes the process and organization of the County Hazard Mitigation Action Plan (Hunt County Hazard Mitigation Action Plan)

Chapter Two: Planning Process

Describes the individual planning process and organization for each participating jurisdiction, satisfying requirements 201.6(c)(1), 201.6(b)(2), 201.6(b)(1), 201.6(b)(3), 201.6(c)(4)(iii), 201.6(c)(4)(i).

Chapter Three: Hazard Identification and Risk Assessment

Describes the hazards identified, known national extent scales, location of hazards, previous events, and jurisdictional profiles, satisfying requirements 201.6(c)(2)(i), 201.6(c)(2)(ii).

Chapter Four: Capabilities Assessment

The capability assessment examines the ability of Hunt County and participating jurisdictions to implement and manage a comprehensive mitigation strategy. The strengths, weaknesses, and resources of these jurisdictions are identified in this assessment as a means to develop an effective Hazard Mitigation Action Plan. 201.6(c)(1).

Chapter Five: Mitigation Strategy

Describes the county-wide goals established by the County Hazard Mitigation Action Plan and the Mitigation Action Items for each jurisdiction, satisfying requirements 201.6(c)(3), 201.6(c)(3)(i), 201.6(c)(3)(ii), 201.6(c)(3)(iii), 201.6(c)(4)(ii).

Chapter Six: Maintenance Process

Describes the monitoring, evaluating, updating, plan incorporation, and future public updates for each participating jurisdiction, satisfying requirements 201.6(c)(4)(i), 201.6(c)(4)(ii), 201.6(c)(4)(iii).

Appendix A: Documentation from Planning and Public Meetings

1.5 Hunt County Hazard Mitigation Strategy Maintenance Process

The Hunt County Hazard Mitigation Action Plan will continue to collaborate as a planning group in coordination with the North Central Texas Council of Governments (NCTCOG) Emergency Preparedness Department. Primary Contact will be through emails and conference calls with strategy meetings to occur at least annually. The Hunt County Department of Homeland Security will lead the plan maintenance and update processes by:

- Assisting jurisdictional Hazard Mitigation Teams in updating their individual contributions to the County HazMAP
- Assisting interested jurisdictions in the County who would like to begin their mitigation planning process
- Facilitating Hunt County HazMAP meetings and disseminating information
- Collaborating data for the county-wide sections
- Requesting updates and status-reports on planning mechanisms
- Requesting updates and status reports on mitigation action projects
- Assisting jurisdictions in mitigation grants
- Assisting jurisdictions in implementing mitigation goals and action projects
- Providing mitigation training opportunities
- Maintaining documentation of local adoption resolutions for the County Hazard Mitigation Action Plan

1.6 Hunt County Hazard Mitigation Action Plan Adoption

Once the Hunt County Hazard Mitigation Action Plan has received FEMA “Approved Pending Local Adoption” each participating jurisdiction will take the Hunt County HazMAP to their Commissioner’s Courts or City Councils for final public comment and local adoption. A copy of the resolution will be inserted into the Hunt County HazMAP and held on file at the North Central Texas Council of Governments.

1.7 FEMA Disaster Declarations

When a disaster occurs, local government officials may determine that the effort needed for recovery appears to be beyond the combined resources of both the state and local governments and that federal assistance may be required. FEMA then manages the process investigating to determine the need for federal aid and makes a recommendation to the president for supplemental assistance. Disaster declarations are affirmed by the president of the United States under The Robert T. Stafford Disaster relief and Emergency Assistance Act. Forms of assistance include response efforts, emergency resources, and public and individual assistance programs.

Chapter Two: Planning Process

(In compliance with 201.6(c)(1))

Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CRF Part 201.6. While Hunt County has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Hunt County officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Hunt County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and the local newspaper.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Hunt County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Hunt County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. Data was gathered through numerous sources, including GIS, statistical, and qualitative. The table below outlines the numerous sources of data for the plan:

Source	Data
City and County Appraisal Data 2012	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Climatic Data Center (NCDC)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Urban Interface
National Recourses Conservation Services	Dam information

Planning Committee

This Hazard Mitigation Action Plan was developed by the Hunt County Hazard Mitigation Planning Team, with support of the North Central Texas Council of Governments. The efforts of the Planning Committee were led by the Hunt County Emergency Management Coordinator.

The Planning Committee was assembled in 2013 with representatives from all jurisdictions including, mayors, police chiefs, fire chiefs, and general public. Hunt County acted as the plan development consultant providing hazard mitigation planning services. The Table below provides a list of the primary entity representative for each jurisdiction on the planning team below.

Hazard Mitigation Team – Primary Representatives

Representing	Position	Role
Hunt County	EMC	General oversight
Hunt County	CRI Coordinator	Plan development
Hunt County	Emergency Planner	GIS and hazard data
Commerce	City Administrator	Plan development
Lone Oak	Police Chief	Plan development
Neylandville	City Councilmember	Plan development
Quinlan	City Administrator	Plan development
Union Valley	Mayor	Plan development
West Tawakoni	City Administrator	Plan development
Wolfe City	City Secretary	Plan development

Hunt County served as the coordinator and lead agency for all jurisdictions, including the unincorporated areas of Hunt County, by accomplishing the following activities through the planning process:

1. Assigned the County's Emergency Management Coordinator to provide technical assistance and necessary data to the Planning Committee.
2. Scheduled, coordinated, and facilitated community meetings with the assistance of the Planning Committee.
3. Provided any necessary materials, handouts, etc. for public planning meetings.
4. Worked with the Planning Committee to collect and analyze data and develop goals and implementation strategies.
5. Prepared, based on community input and Planning Committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
6. Coordinated with the stakeholders within the cities and the unincorporated areas of Hunt County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

1. Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County Planning Committee.
2. Attended regular meetings of the planning team as coordinated by Hunt County.

3. Assisted Hunt County staff with identifying hazards and estimating potential losses from future hazard events.
4. Assisted Hunt County in developing and prioritizing mitigation actions to address the identified risks.
5. Assisted Hunt County in coordinating public meetings to develop the plan.
6. Identified the community resources available to support the planning effort.
7. Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
8. Submitted the proposed plan to all appropriate departments for review and comment and worked with Hunt County to incorporate the resulting comments into the proposed plan.

External stakeholders involved in reviewing the Hunt County Hazard Mitigation Action Plan:

Representing	Position	Role
Texas Forest Service	Hunt County Coordinator	Review of plan
Red Cross	Director	Review of plan
Texas A&M Commerce	Director of Safety and Risk	Review of plan
Farmers Electric Corp	Director of Risk Management	Review of plan
Hunt Regional Medical Center	Director Safety/Emergency Preparedness	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, each jurisdiction also is committed to accomplishing the following activities:

1. Appoint members to a Coordinating Committee to monitor and work toward plan implementation.
2. Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
3. Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the Planning Committee met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Hunt County and included all jurisdiction's participation:

- Hunt County Hazard Mitigation Kickoff Meeting – October 21, 2013
- Hunt County Hazard Analysis Meeting – November 22, 2013
- Hunt County Mitigation Strategies Meeting – March 21, 2014

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The Planning Committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

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- The first public meeting was held on February 21, 2014 and advertised in the Herald Banner and city website inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment.
 - A second opportunity was provided for public input on March 20, 2014. An advertisement was posted in the Herald Banner Tribune and city website inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments received from the citizens, non-profits, businesses, academia, or interested parties. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

Chapter Three: Hazard Identification and Risk Assessment

(In compliance with 201.6(c)(2)(i), 201.6(c)(2)(ii), 201.6(c)(2)(ii)(A), 201.6(c)(2)(ii)(B), 201.6(c)(2)(ii)(C), & 201.6(c)(2)(iii))

Chapter Three of the Hunt County Hazard Mitigation Action Plan (HazMAP) is a hazard identification and risk assessment that provides the factual basis for the action items described in Chapter Five. This information serves to enable the participating jurisdictions to identify and prioritize the appropriate mitigation action items to reduce losses from the identified hazards. Hazards are identified and profiled to include the location and extent of each hazard, detailed previous occurrences, and probability of future events data.

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3.1 Profiling Hazards and Vulnerabilities

The Hazard Mitigation Action Plan for Hunt County is a tool to assist in the identification and documentation of all the hazards faced in the region.

The Hunt County profile is one of many developed by the North Central Texas Council of Governments (NCTCOG) under the FEMA Hazard Mitigation program. These plans are created by compiling data from the NCTCOG regional natural hazards risk assessments, damage assessments, hazard profiling and identification as well as historical data and geographic information. Of the 15 hazards identified in the State of Texas Hazard Mitigation Action Plan, only 11 will be discussed in this plan. The remaining four (expansive soils, land subsidence, coastal erosions, and hurricane/tropical storm) will not be discussed due to their lack of impact on the Hunt County planning area.

Hazards Addressed The Hunt County Hazard Mitigation Action Plan has identified the following natural hazards as having the potential to cause damage in the county. Wildland fire, flooding, and dam failure are the only hazards recognized to have predictable vulnerable areas. All other hazards are equally likely to occur throughout the Hunt County jurisdictions. Also identified in this section are areas that may be more vulnerable to each hazard in the event of an occurrence.

Dam Failure A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams typically are constructed of earth, rock, concrete, or mine tailings. A dam failure is an accidental or unintentional collapse, breach, or other failure of an impoundment structure that results in downstream flooding. Because dams are man-made structures, dam failures are usually considered technological hazards. However, since most dam failures result from prolonged periods of rainfall, they are often cited as secondary or cascading effects of natural flooding disasters and are not named as the primary hazard that causes disaster declarations.

While no record could be found of any previous dam failures in Hunt County, three things are clear: 1) many of the dams in Hunt County are nearing the end of their designed project lives, 2) many of these dams are in desperate need of detailed evaluations and consistent maintenance, and 3) increased development downstream of the dams has put more people, property, and infrastructure at risk.

Based on a quantitative analysis of the dams currently in place in Hunt County and a qualitative analysis of the potential impacts that dam failures would have on the social, economic, and environmental components of the region, the risk of a dam failure hazard is moderate.

There have not been any inundation studies for the dams in Hunt County and the County does not have information from the owners or Emergency Operations Plans for the dams. Therefore, the County has chosen to cite a data deficiency and include an action item to research better inundation data before the next update. In addition, the NCTCOG is applying for mitigation grant funding to complete dam inundation studies for a majority of the high hazard dams in the region, to be complete 1 year from now. The data below is from the National Inventory of Dams (NID):

Jurisdiction	Dam Name	Hazard Potential		Completion		Dam		Water Supply (acre-feet)	Primary Purpose	River	Distance to a City (Mi.)	Condition Assessment
		Potential	Year	Owner Type	Height (Ft.)							
Greenville	Greenville Reservoir No 4 Dam	High	1927	Local Government	30	4804	Water Supply	Cowleech Fork Sabine River	0.5	Not Rated		
Greenville	Greenville Reservoir No 5 Dam	High	1953	Local Government	30	4091	Water Supply	Cowleech Fork Sabine River	-	Not Rated		
Hunt County	Pilot Grove Creek Ws Scs Site 67 Dam	High	1975	Not Listed	25	211	Flood Control	TR-Little Indian Creek	-	Fair		
Hunt County	Roundhouse Pool Dam	High	1800	Private	15	50	Recreation	TR-South Sulphur River	-	Poor		
Hunt County	Upper Lake Fork Creek Ws Scs Site 1 Dam	High	1977	Not Listed	35	2696	Flood Control	Lake Fork Creek	-	Not Rated		
Hunt County	Upper Lake Fork Creek Ws Scs Site 10a Dam	High	1968	Not Listed	32	3072	Flood Control	West Fork Turkey Creek	-	Not Rated		
Wolfe City	Wolfe City Reservoir No 1	High	1926	Local Government	20	670	Water Supply	Turkey Creek	-	Not Rated		
Wolfe City	Wolfe City Reservoir No 2	High	1957	Local Government	32	685	Water Supply	Turkey Creek	21	Not Rated		

Drought Drought can be defined as a water shortage caused by the natural reduction in the amount of precipitation expected over an extended period of time, usually a season or more in length. It can be aggravated by other factors such as high temperatures, high winds, and low relative humidity. Texas experiences a cycle of extended wet and drought conditions that can extend over a period of months even years. Extended periods of drought can have an enormous impact on an area by affecting the abundance of water supply, the agriculture economy, and foundations of structures. Drought may affect the entire planning area equally.

Unincorporated Hunt County The most recent results to drought both this year and 2013 is the loss of water in Lake Tawakoni, a water source for many jurisdictions in Hunt County. At present Lake Tawakoni is 9 feet below average and will result in water conservation for jurisdictions using that water source. Those persons or jurisdictions that had an alternative water source (water well) to fall back on would certainly be less affected by the drought.

City of Commerce No specific areas of vulnerability to drought were identified by Commerce.

City of Lone Oak No specific areas of vulnerability to drought were identified by Lone Oak.

City of Neylandville No specific areas of vulnerability to drought were identified by Neylandville.

City of Quinlan No specific areas of vulnerability to drought were identified by Quinlan.

City of Union Valley No specific areas of vulnerability to drought were identified by Union Valley.

West Tawakoni No specific areas of vulnerability to drought were identified by West Tawakoni.

Wolfe City No specific areas of vulnerability to drought were identified by Wolfe City.

Earthquake An earthquake is a sudden motion or trembling caused by an abrupt release of accumulated strain on the tectonic plates that comprise the Earth's crust. The theory of plate tectonics holds that the Earth's crust is broken into several major plates. These rigid, 50- to 60-mile thick plates move slowly and continuously over the interior of the earth, meeting in some areas and separating in others. As the tectonic plates move together they bump, slide, catch, and hold. Eventually, faults along or near plate boundaries slip abruptly when the stress exceeds the elastic limit of the rock, and an earthquake occurs. The ensuing seismic activity and ground motion provoke secondary hazards: surface faulting, ground failure, and tsunamis. The vibration or shaking of the ground during an earthquake is referred to as ground motion. In general, the severity of ground motion increases with the amount of energy released and decreases with distance from the causative fault or epicenter. When a fault ruptures, seismic waves are propagated in all directions, causing the ground to vibrate at frequencies ranging from 0.1 to 30

Hz. Seismic waves are referred to as P waves, S waves, and surface waves. Due to the risk being associated to a distant quake, earthquakes may affect the entire planning area equally.

There is no history of earthquakes occurring within Hunt County, however, there have been earthquakes measuring up to 3.7 on the Richter scale in nearby counties.

The most likely risk to a significant earthquake event is associated to either a distant larger quake which might occur in Missouri, Tennessee, or Oklahoma, though these earthquakes are probable to occur only once every 500 years.

Unincorporated Hunt County According to Hunt County, earthquakes affect all populations and property in the unincorporated county equally.

City of Commerce No specific areas of vulnerability to earthquake were identified by Commerce.

City of Lone Oak No specific areas of vulnerability to earthquake were identified by Lone Oak.

City of Neylandville No specific areas of vulnerability to earthquake were identified by Neylandville.

City of Quinlan No specific areas of vulnerability to earthquake were identified by Quinlan.

City of Union Valley No specific areas of vulnerability to earthquake were identified by Union Valley.

West Tawakoni No specific areas of vulnerability to earthquake were identified by West Tawakoni.

Wolfe City No specific areas of vulnerability to earthquake were identified by Wolfe City.

Extreme Heat Extreme heat is characterized by a combination of a very high temperatures and exceptionally humid conditions. When persisting over a period of time, it is called a heat wave. Extreme heat can also be a factor that drastically impacts drought conditions as high temperatures lead to an increased rate of evaporation. Extreme heat can also lead to heat stroke and even death in vulnerable populations such as the elderly and the very young if exposed to the high temperatures for an extended period of time. Extreme heat may affect the entire planning area equally.

Unincorporated Hunt County As with most weather extremes, the population that is most affected is the elderly or those that do not have sufficient means to heat or cool their residence. That is why Hunt County has plans for cooling and heating centers and Red Cross and Salvation Army sheltering for overnight.

City of Commerce No specific areas of vulnerability to extreme heat were identified by Commerce.

City of Lone Oak No specific areas of vulnerability to extreme heat were identified by Lone Oak.

City of Neylandville No specific areas of vulnerability to extreme heat were identified by Neylandville.

City of Quinlan No specific areas of vulnerability to extreme heat were identified by Quinlan.

City of Union Valley No specific areas of vulnerability to extreme heat were identified by Union Valley.

West Tawakoni No specific areas of vulnerability to extreme heat were identified by West Tawakoni.

Wolfe City No specific areas of vulnerability to extreme heat were identified by Wolfe City.

Flooding Flooding is defined as the accumulation of water within a water body and the overflow of excess water onto adjacent floodplain lands. The floodplain is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that is susceptible to flooding. The statistical meaning of terms like “25-year storm” and “100-year flood” can be confusing. Simply stated, a floodplain can be located anywhere; it just depends on how large and how often a flood event occurs. Floodplains are those areas that are subject to inundation from flooding. Floods and the floodplains associated with them are often described in terms of the percent chance of a flood event happening in any given year. As a community management or planning term, “floodplain” most often refers to an area that is subject to inundation by a flood that has a one percent chance of occurring in any given year (commonly and incorrectly referred to as the 100-year floodplain). Common flooding hazards within the planning area include flood hazards from flash flooding and from new development.

A flash flood is a rapid flood that inundates low-lying areas in less than six hours. This is caused by intense rainfall from a thunderstorm or several thunderstorms. Flash floods can also occur from the collapse of a man-made structure or ice dam. Construction and development can change the natural drainage and create brand new flood risks as new buildings, parking lots, and roads create less land that can absorb excess precipitation from heavy rains, hurricanes, and tropical storms. Flash floods are a high risk hazard since they can roll boulders, tear out trees, and destroy buildings and bridges.

Unincorporated Hunt County There were no trouble areas identified in Unincorporated Hunt County

City of Commerce No specific areas of vulnerability to flooding were identified by Commerce.

City of Lone Oak No specific areas of vulnerability to flooding were identified by Lone Oak.

City of Neylandville No specific areas of vulnerability to flooding were identified by Neylandville.

City of Quinlan No specific areas of vulnerability to flooding were identified by Quinlan.

City of Union Valley No specific areas of vulnerability to flooding were identified by Union Valley.

West Tawakoni No specific areas of vulnerability to flooding were identified by West Tawakoni.

Wolfe City No specific areas of vulnerability to flooding were identified by Wolfe City.

Hail Hail occurs when, at the outgrowth of a severe thunderstorm, balls or irregularly shaped lumps of ice greater than 0.75 inches in diameter fall with rain. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to warm air rising rapidly into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, they fall as precipitation. Hail may affect the entire planning area equally.

Unincorporated Hunt County As with any violent weather event, those persons that are more vulnerable are those that have housing that are temporal or that cannot withstand extreme events. A large percentage of those would be those that live in mobile homes or travel trailer. As mentioned above, concerning tornados, safe rooms and storm cellars are highly encouraged. Since Hunt County has a large lake, Lake Tawakoni, there seems to be a large number of mobile homes and travel trailers around the lake, which is in the southern part of the county.

City of Commerce No specific areas of vulnerability to hail were identified by Commerce.

City of Lone Oak No specific areas of vulnerability to hail were identified by Lone Oak.

City of Neylandville No specific areas of vulnerability to hail were identified by Neylandville.

City of Quinlan No specific areas of vulnerability to hail were identified by Quinlan.

City of Union Valley No specific areas of vulnerability to hail were identified by Union Valley.

West Tawakoni No specific areas of vulnerability to hail were identified by West Tawakoni.

Wolfe City No specific areas of vulnerability to hail were identified by Wolfe City.

High Winds Wind is defined as the motion of air relative to the earth's surface. The horizontal component of the three-dimensional flow and the near-surface wind phenomenon are the most significant aspects of the hazard. Straight-line winds are often responsible for the wind damage

associated with a thunderstorm. These winds are often confused with tornadoes because of similar damage and wind speeds. However, the strong and gusty winds associated with straight-line winds blow roughly in a straight line unlike the rotating winds of a tornado. Downbursts or micro-bursts are examples of damaging straight-line winds. A downburst is a small area of rapidly descending rain and rain-cooled air beneath a thunderstorm that produces a violent, localized downdraft covering 2.5 miles or less. Wind speeds in some of the stronger downbursts can reach 100 to 150 miles per hour, which is similar to that of a strong tornado. The winds produced from a downburst often occur in one direction, and the worst damage is usually on the forward side of the downburst. High winds may affect the entire planning area equally.

Unincorporated Hunt County As in any jurisdiction, the population most vulnerable to high wind damage are those that do not have sufficient housing that would protect them during such an occurrence. While no structure is 100% high wind proof, there are certain structures that are very vulnerable: being those of a temporal nature: to with mobile homes and travel trailers. Even if such residences are used, we try to encourage the residents to be prepare by having a storm cellar or safe room installed. Since Hunt County has a large lake, Lake Tawakoni, there seems to be a large number of mobile homes and travel trailers around the lake, which is in the southern part of the county.

City of Commerce No specific areas of vulnerability to high winds were identified by Commerce.

City of Lone Oak No specific areas of vulnerability to high winds were identified by Lone Oak.

City of Neylandville No specific areas of vulnerability to high winds were identified by Neylandville.

City of Quinlan No specific areas of vulnerability to high winds were identified by Quinlan.

City of Union Valley No specific areas of vulnerability to high winds were identified by Union Valley.

West Tawakoni No specific areas of vulnerability to high winds were identified by West Tawakoni.

Wolfe City No specific areas of vulnerability to high winds were identified by Wolfe City.

Lightning Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas within thunderstorms. A “bolt” or brilliant flash of light is created when the buildup becomes strong enough. These bolts of lightning can be seen in cloud-to-cloud or cloud-to-ground strikes.

Bolts of lightning can reach temperatures approaching 50,000° Fahrenheit. While lightning is mostly affiliated with thunderstorms, lighting often strikes outside of these storms, as far as 10 miles away from any rainfall. Federal Emergency Management Agency states that an average of 300 people are injured and 80 people are killed in the United States each year by lighting. Direct

strikes have the power to cause significant damage to buildings, critical facilities, infrastructure, and ignition of wildfires which can result in widespread damages to property.

Unincorporated Hunt County According to Hunt County, lightning affects all populations and property in the unincorporated county equally.

City of Commerce No specific areas of vulnerability to lightning were identified by Commerce.

City of Lone Oak No specific areas of vulnerability to lightning were identified by Lone Oak.

City of Neylandville No specific areas of vulnerability to lightning were identified by Neylandville.

City of Quinlan No specific areas of vulnerability to lightning were identified by Quinlan.

City of Union Valley No specific areas of vulnerability to lightning were identified by Union Valley.

West Tawakoni No specific areas of vulnerability to lightning were identified by West Tawakoni.

Wolfe City No specific areas of vulnerability to lightning were identified by Wolfe City.

Tornado A tornado is a violently rotating column of air, in contact with the ground, both pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a condensation funnel. Tornadoes may affect the entire planning area equally.

Unincorporated Hunt County As in any jurisdiction, that population most vulnerable to tornado damage are those that do not have sufficient housing that would protect them during such an occurrence. While no structure is 100% tornado proof, there are certain structures that are very vulnerable: being those of a temporal nature: to with mobile homes and travel trailers. Even if such residences are used, we try to encourage the residents to be prepare by having a storm cellar or safe room installed. Since Hunt County has a large lake, Lake Tawakoni, there seems to be a large number of mobile homes and travel trailers around the lake, which is in the southern part of the county.

City of Commerce No specific areas of vulnerability to tornados were identified by Commerce.

City of Lone Oak No specific areas of vulnerability to tornados were identified by Lone Oak.

City of Neylandville No specific areas of vulnerability to tornados were identified by Neylandville.

City of Quinlan No specific areas of vulnerability to tornados were identified by Quinlan.

City of Union Valley No specific areas of vulnerability to tornados were identified by Union Valley.

West Tawakoni No specific areas of vulnerability to tornados were identified by West Tawakoni.

Wolfe City No specific areas of vulnerability to tornados were identified by Wolfe City.

Wildland Fire Wildland fire is any fire occurring on grassland, forest, or prairie, regardless of ignition source, damages or benefits. Wildland fires are fueled almost exclusively by natural vegetation. They typically occur in national forests and parks, where federal agencies are responsible for fire management and suppression. Interface or intermix fires are urban/wildland fires in which vegetation and the built-environment provide fuel. Firestorms are events of such extreme intensity that effective suppression is virtually impossible. Firestorms occur during extreme weather and generally burn until conditions change or the available fuel is exhausted. Wildland fires affect the entire planning area equally. For the purposes of this hazard analysis, wildland fires are assessed under what is known as the Wildland Urban Interface (WUI). The WUI is an area of development that is susceptible to wildland fires due to the amount of structures located in an area with vegetation that can act a fuel for a wildland fire.

Unincorporated Hunt County According to the Texas Forest Service, approximately 73% of the population of Hunt County lives within the Wildland/Urban Interface.

City of Commerce According to the Texas Forest Service, approximately 48% of the population of Commerce lives within the Wildland/Urban Interface.

City of Lone Oak According to the Texas Forest Service, approximately 94% of the population of Lone Oak lives within the Wildland/Urban Interface.

City of Neylandville According to the Texas Forest Service, approximately 100% of the population of Neylandville lives within the Wildland/Urban Interface.

City of Quinlan According to the Texas Forest Service, approximately 88% of the population of Quinlan lives within the Wildland/Urban Interface.

City of Union Valley According to the Texas Forest Service, approximately 100% of the population of Union Valley lives within the Wildland/Urban Interface.

West Tawakoni According to the Texas Forest Service, approximately 87% of the population of West Tawakoni lives within the Wildland/Urban Interface.

Wolfe City According to the Texas Forest Service, approximately 62% of the population of Wolfe City lives within the Wildland/Urban Interface.

Winter Storms Winter storms originate as mid-latitude depressions or cyclonic weather systems, sometimes following the path of the jet stream. A winter storm or blizzard combines heavy snowfall, high winds, extreme cold and ice storms. Many winter depressions give rise to

exceptionally heavy rain and widespread flooding and conditions worsen if the precipitation falls in the form of snow. The winter storm season varies widely, depending on latitude, altitude and proximity to moderating influences. Winter storms affect the entire planning area equally. Cold snaps in which temperatures fall below the freezing point of 32° Fahrenheit do happen on an annual basis in the planning area and can lead to issues with infrastructure, especially frozen roads and bridges.

Unincorporated Hunt County As with most weather extremes, the population that is most affected is the elderly or those that do not have sufficient means to heat or cool their residence. That is why Hunt County has plans for cooling and heating centers and Red Cross and Salvation Army sheltering for overnight.

Another part of the population that is effected be winter storms is those that live in rural areas that is accessible by County Roads. Last year during the 2013 ice storm many of our citizens living on county roads were stranded until road crews could clear the brush trees that had blocked the road because of ice buildup that broke limbs and trees.

City of Commerce No specific areas of vulnerability to winter storms were identified by Commerce.

City of Lone Oak No specific areas of vulnerability to winter storms were identified by Lone Oak.

City of Neylandville No specific areas of vulnerability to winter storms were identified by Neylandville.

City of Quinlan No specific areas of vulnerability to winter storms were identified by Quinlan.

City of Union Valley No specific areas of vulnerability to winter storms were identified by Union Valley.

West Tawakoni No specific areas of vulnerability to winter storms were identified by West Tawakoni.

Wolfe City No specific areas of vulnerability to winter storms were identified by Wolfe City.

3.2 Location of Hazards

The following maps illustrate the location of the hazards in Hunt County. Maps concerning tornado and hail incidents are in reverence to previous events as they have the potential to occur equally throughout the county. Winter storms, extreme heat, and drought have the potential to occur equally throughout the county and their previous events data is not represented by a map. Likewise, it is assumed that those hazard listed as having the potential to occur equally throughout the HazMAP planning area will affect the area as described in each city's critical infrastructure and structure maps G.1-G.6, in section 3.6.

Map Series A

Dams and Flood Zones

- Map A.1 Hunt County Dams and Flood Zones
- Map A.2 City of Commerce Dams and Flood Zones
- Map A.3 City of Lone Oak Dams and Flood Zones
- Map A.4 City of Neylandville Dams and Flood Zones
- Map A.5 City of Quinlan Dams and Flood Zones
- Map A.6 City of Union Valley Dams and Flood Zones
- Map A.7 City of West Tawakoni Dams and Flood Zones
- Map A.8 City of Wolfe City Dams and Flood Zones

Map Series B

Land Use, Critical Infrastructure, and Flood Zones

- Map B.1 Hunt County Land Use, Critical Infrastructure, and Flood Zones
- Map B.2 City of Commerce Land Use, Critical Infrastructure, and Flood Zones
- Map B.3 City of Lone Oak Land Use, Critical Infrastructure, and Flood Zones
- Map B.4 City of Neylandville Land Use, Critical Infrastructure, and Flood Zones
- Map B.5 City of Quinlan Land Use, Critical Infrastructure, and Flood Zones
- Map B.6 City of Union Valley Land Use, Critical Infrastructure, and Flood Zones
- Map B.7 City of West Tawakoni Land Use, Critical Infrastructure, and Flood Zones
- Map B.8 City of Wolfe City Land Use, Critical Infrastructure, and Flood Zones

Map Series C

Hail Incident

- Map C.1 Hunt County Hail Incidents
- Map C.2 City of Commerce Hail Incidents
- Map C.3 City of Lone Oak Hail Incidents
- Map C.4 City of Neylandville Hail Incidents
- Map C.5 City of Quinlan Hail Incidents

Map C.6 City of Union Valley Hail Incidents
Map C.7 City of West Tawakoni Hail Incidents
Map C.8 City of Wolfe City Hail Incidents

Map Series D

Tornado Incident

Map D.1 Hunt County Tornado Incidents
Map D.2 City of Commerce Tornado Incidents
Map D.3 City of Lone Oak Tornado Incidents
Map D.4 City of Neylandville Tornado Incidents
Map D.5 City of Quinlan Tornado Incidents
Map D.6 City of Union Valley Tornado Incidents
Map D.7 City of West Tawakoni Tornado Incidents
Map D.8 City of Wolfe City Tornado Incidents

Map Series E

Wildfire Risk Assessment

Map E.1 Hunt County Wildfire Risk
Map E.2 City of Commerce Wildfire Risk
Map E.3 City of Lone Oak Wildfire Risk
Map E.4 City of Neylandville Wildfire Risk
Map E.5 City of Quinlan Wildfire Risk
Map E.6 City of Union Valley Wildfire Risk
Map E.7 City of West Tawakoni Wildfire Risk
Map E.8 City of Wolfe City Wildfire Risk

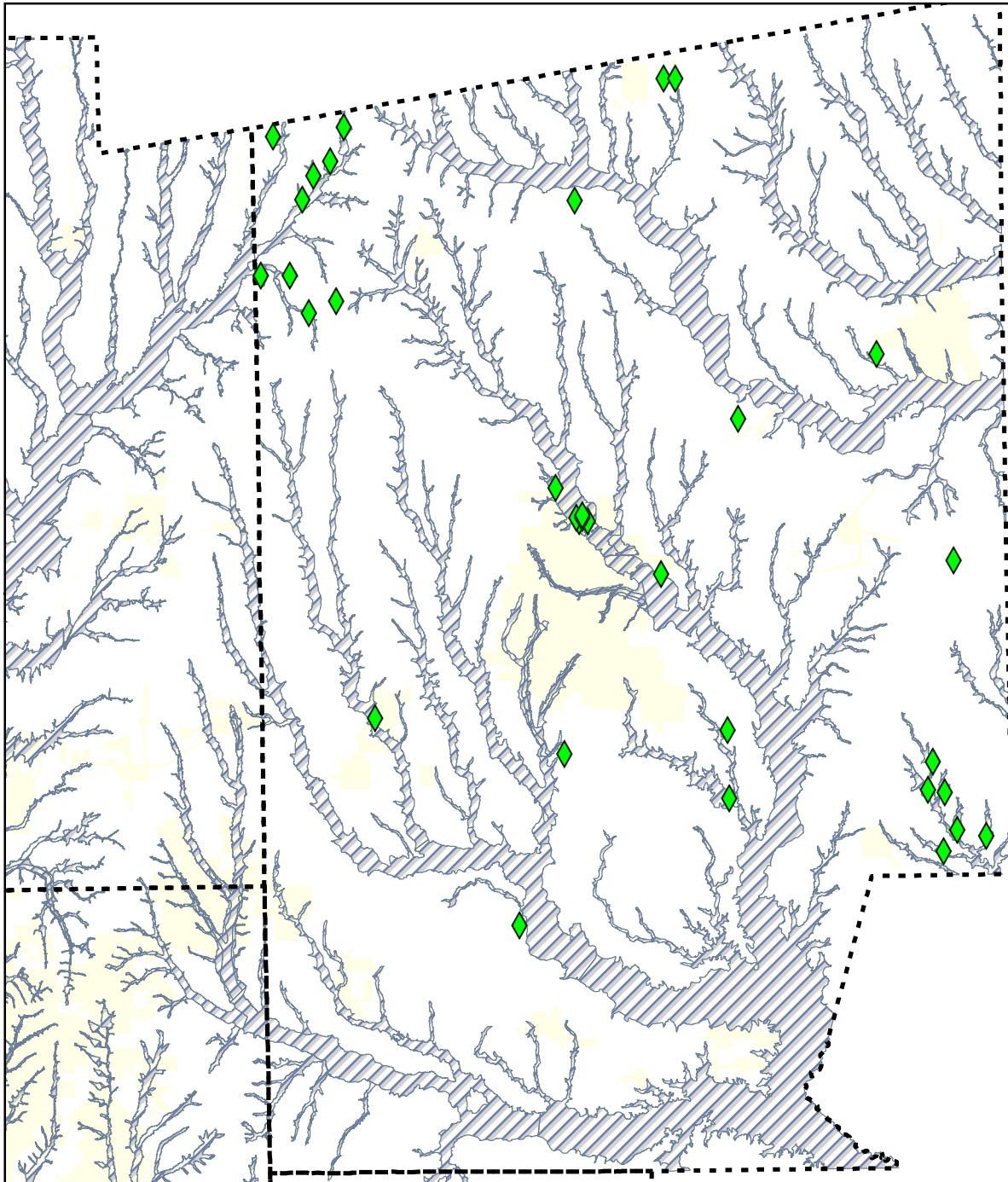
Map Series F

Wildland Urban Interface

Map F.1 Hunt County Wildland Urban Interface
Map F.2 City of Commerce Wildland Urban Interface
Map F.3 City of Lone Oak Wildland Urban Interface
Map F.4 City of Neylandville Wildland Urban Interface
Map F.5 City of Quinlan Wildland Urban Interface
Map F.6 City of Union Valley Wildland Urban Interface
Map F.7 City of West Tawakoni Wildland Urban Interface
Map F.8 City of Wolfe City Wildland Urban Interface

Map A.1

Hunt County



 DAMS

FEMA DFIRM FLOOD ZONES 2012

ZONE

-  100 Year
-  100 Year (Detail)
-  500 Year

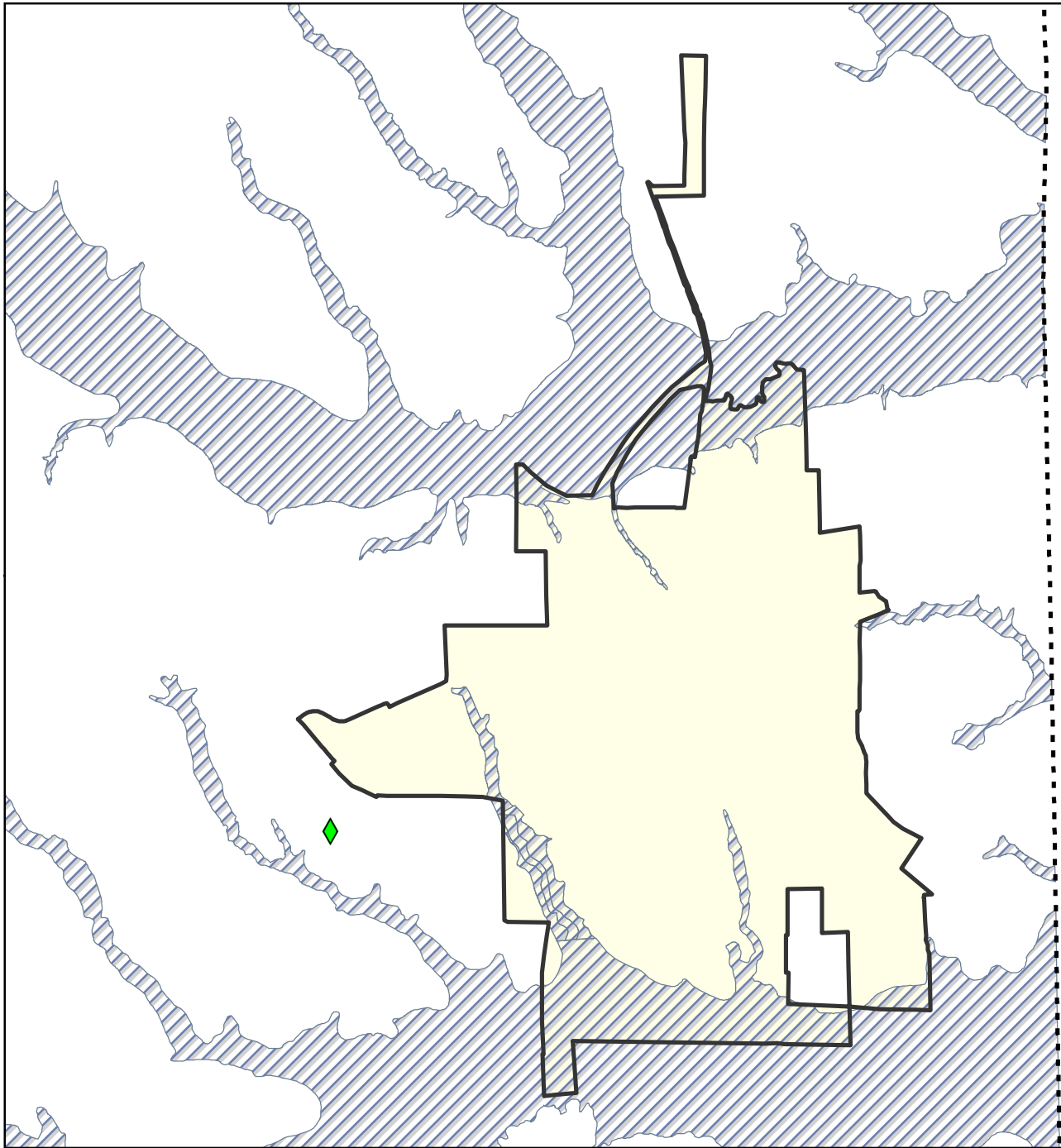
3 1.5 0 3 Miles



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Map A.2

City of Commerce

FEMA DFIRM FLOOD ZONES 2012

ZONE

-  100 Year
-  100 Year (Detail)
-  500 Year
-  DAMS

0.5 0.25 0 0.5 Miles



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Map A.3

City of Lone Oak

FEMA DFIRM FLOOD ZONES 2012

- ZONE**
-  100 Year
 -  100 Year (Detail)
 -  500 Year
 -  DAMS

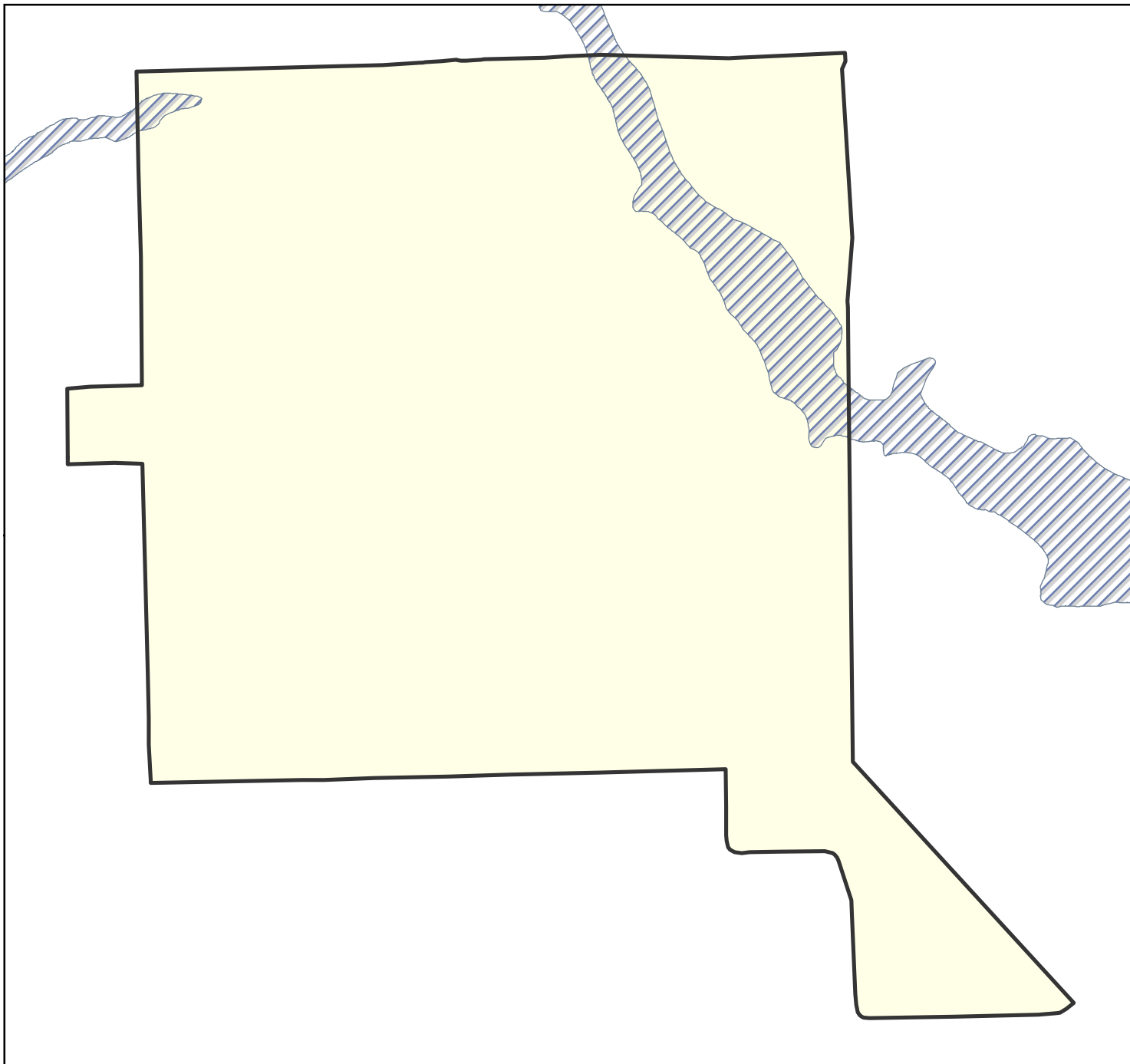
0.1 0.05 0 0.1 Miles



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Map A.4

City of Neylandville

FEMA DFIRM FLOOD ZONES 2012

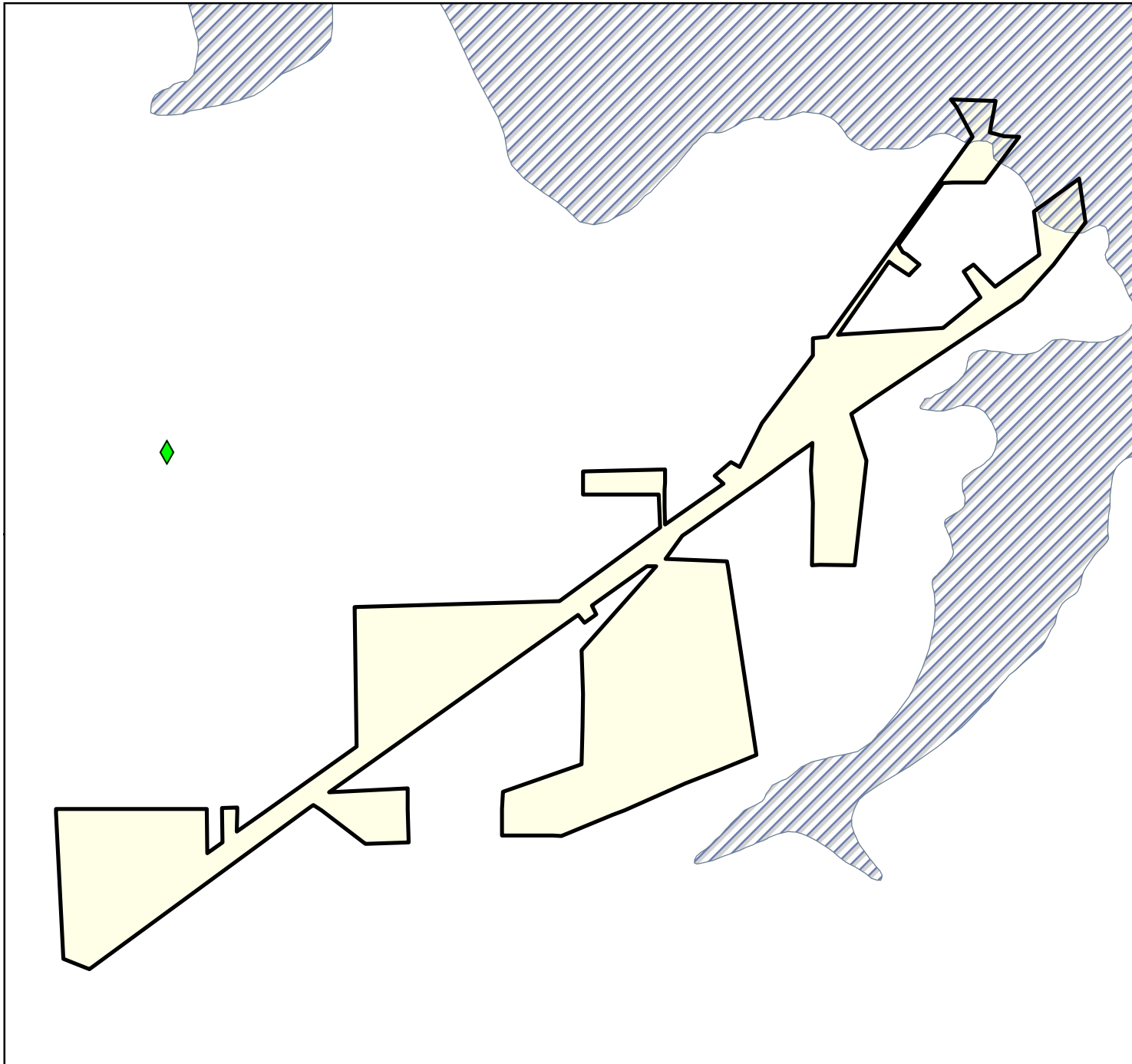
- ZONE**
- 100 Year
 - 100 Year (Detail)
 - 500 Year
 - DAMS

0.1 0.05 0 0.1 Miles



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Map A.5

City of Quinlan

FEMA DFIRM FLOOD ZONES 2012

ZONE

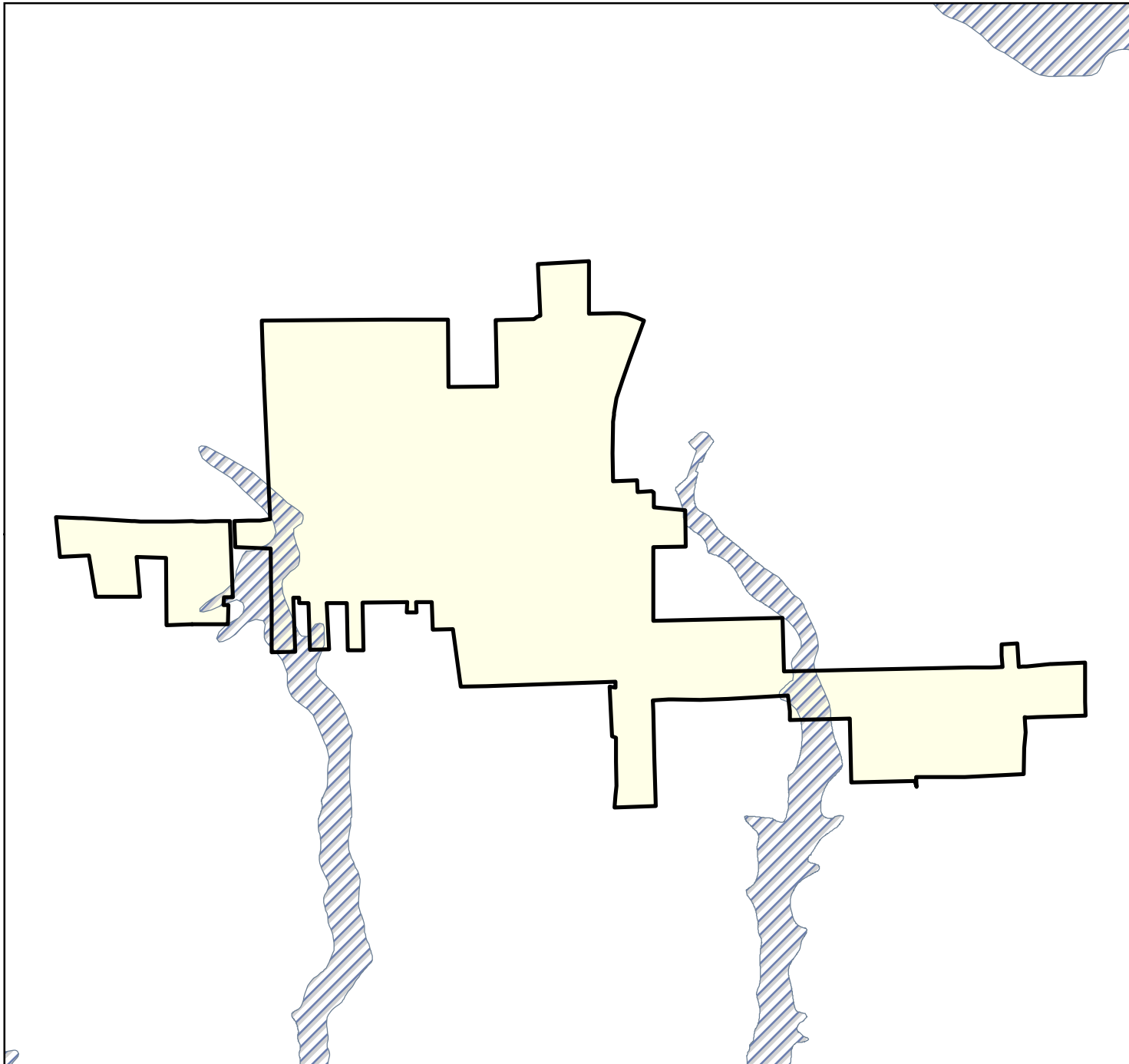
-  100 Year
-  100 Year (Detail)
-  500 Year
-  DAMS

0.25 0.125 0 0.25 Miles



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Map A.6

City of Union Valley

FEMA DFIRM FLOOD ZONES 2012

ZONE

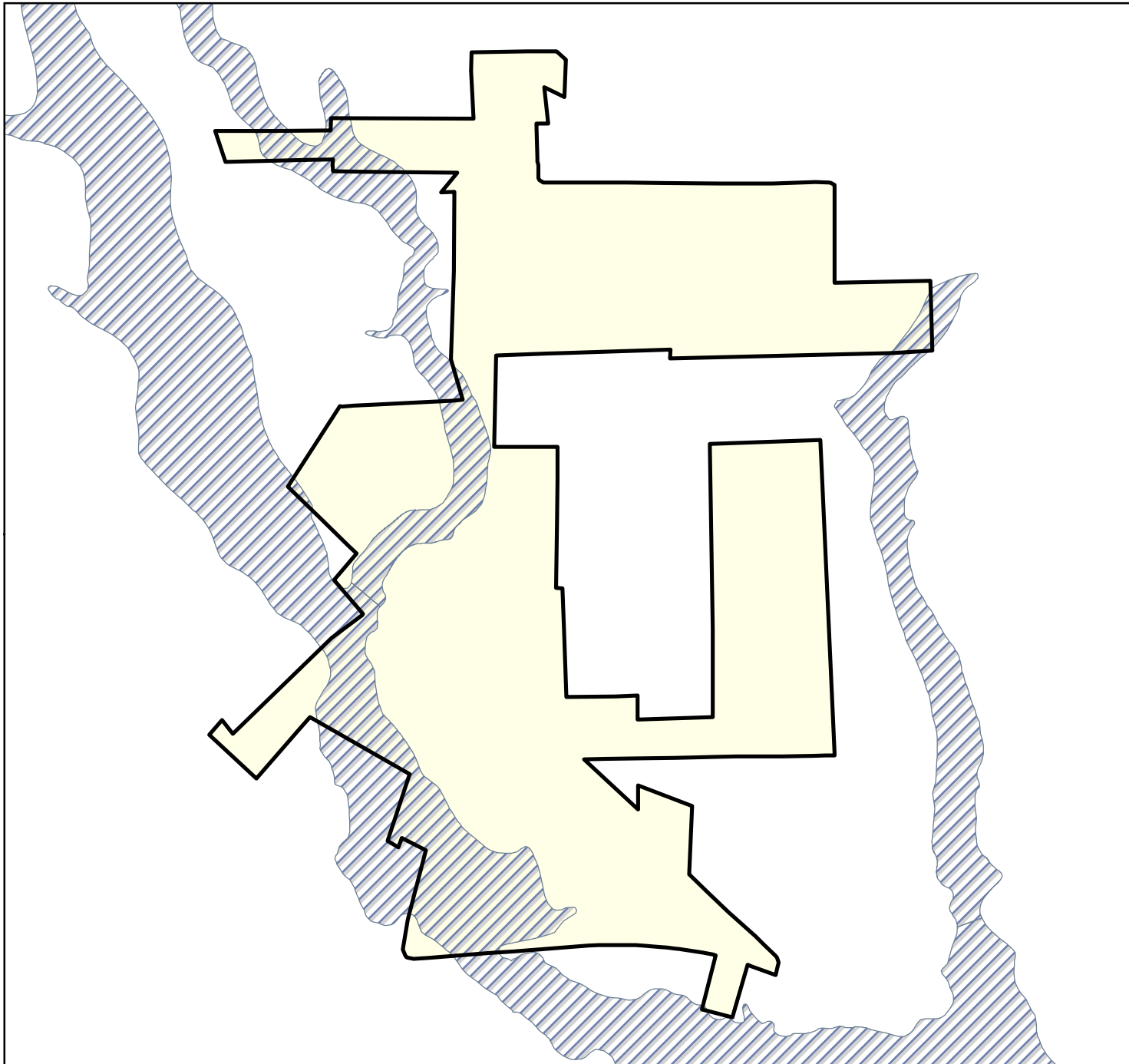
-  100 Year
-  100 Year (Detail)
-  500 Year
-  DAMS

0.2 0.1 0 0.2 Miles



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Map A.7

City of West Tawakoni

FEMA DFIRM FLOOD ZONES 2012

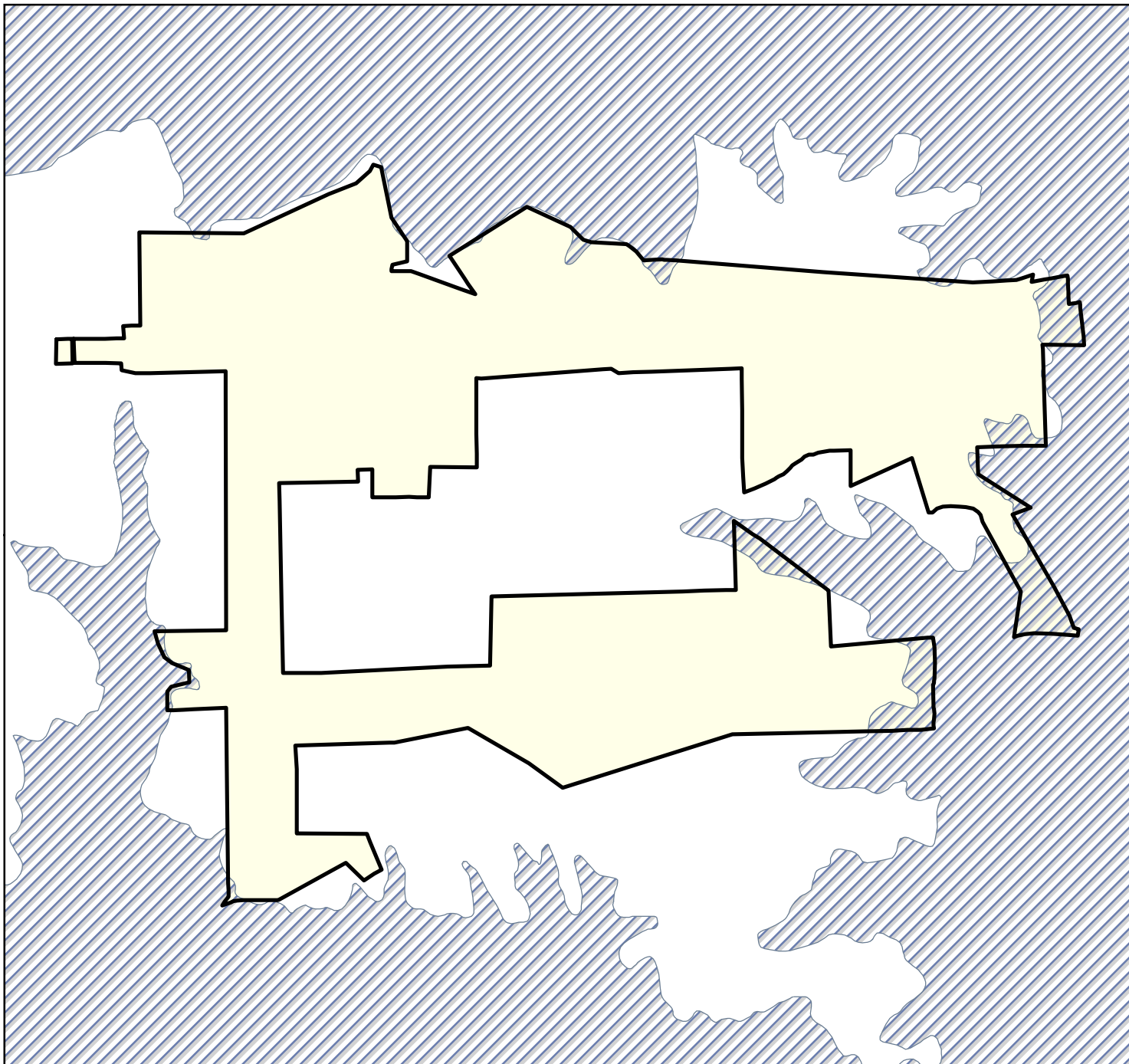
-  100 Year
-  100 Year (Detail)
-  500 Year
-  DAMS

0.25 0.125 0 0.25 Miles



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Map A.8

City of Wolfe City

FEMA DFIRM FLOOD ZONES 2012

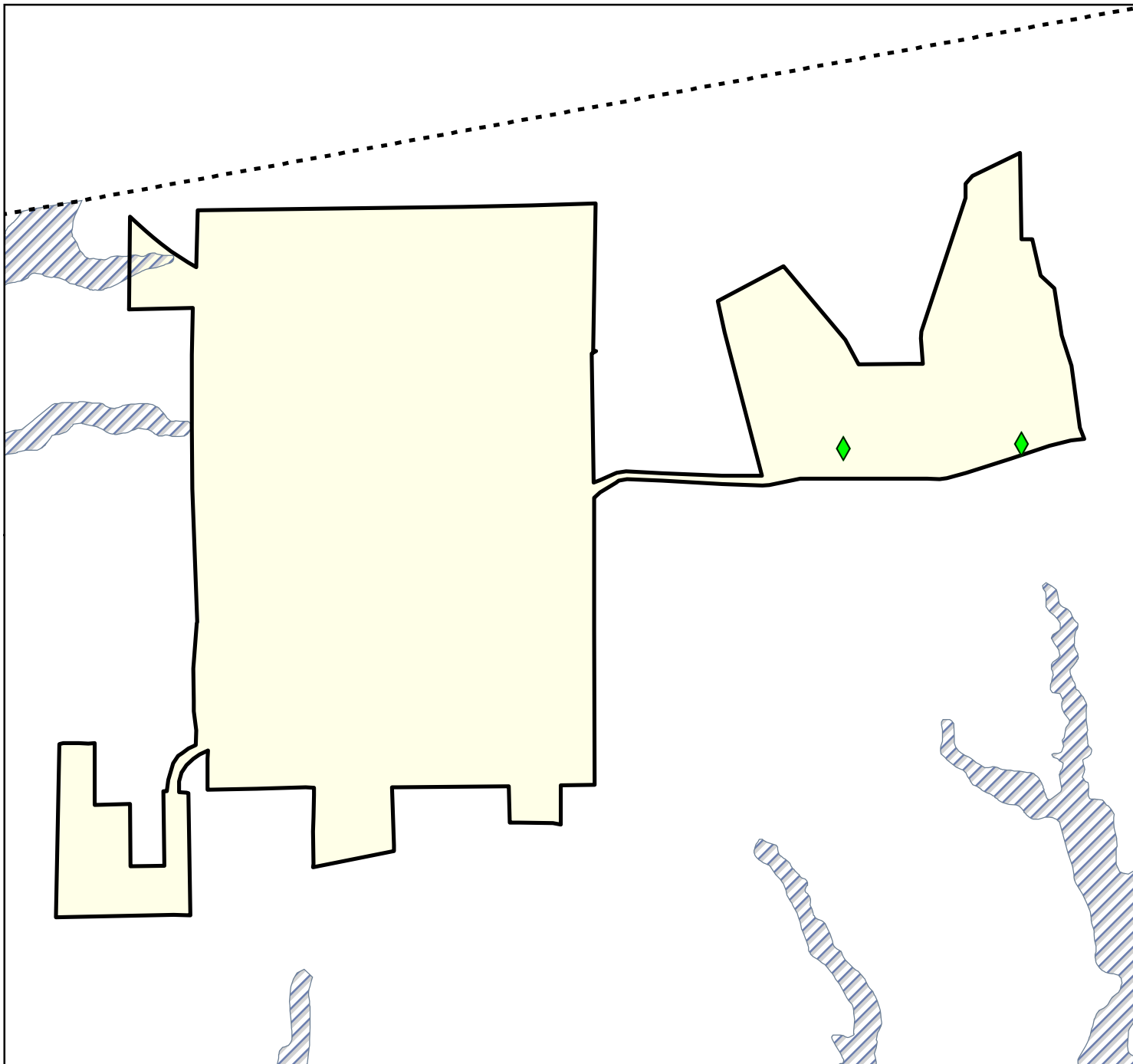
- ZONE**
-  100 Year
 -  100 Year (Detail)
 -  500 Year
 -  DAMS

0.2 0.1 0 0.2 Miles



Emergency Preparedness

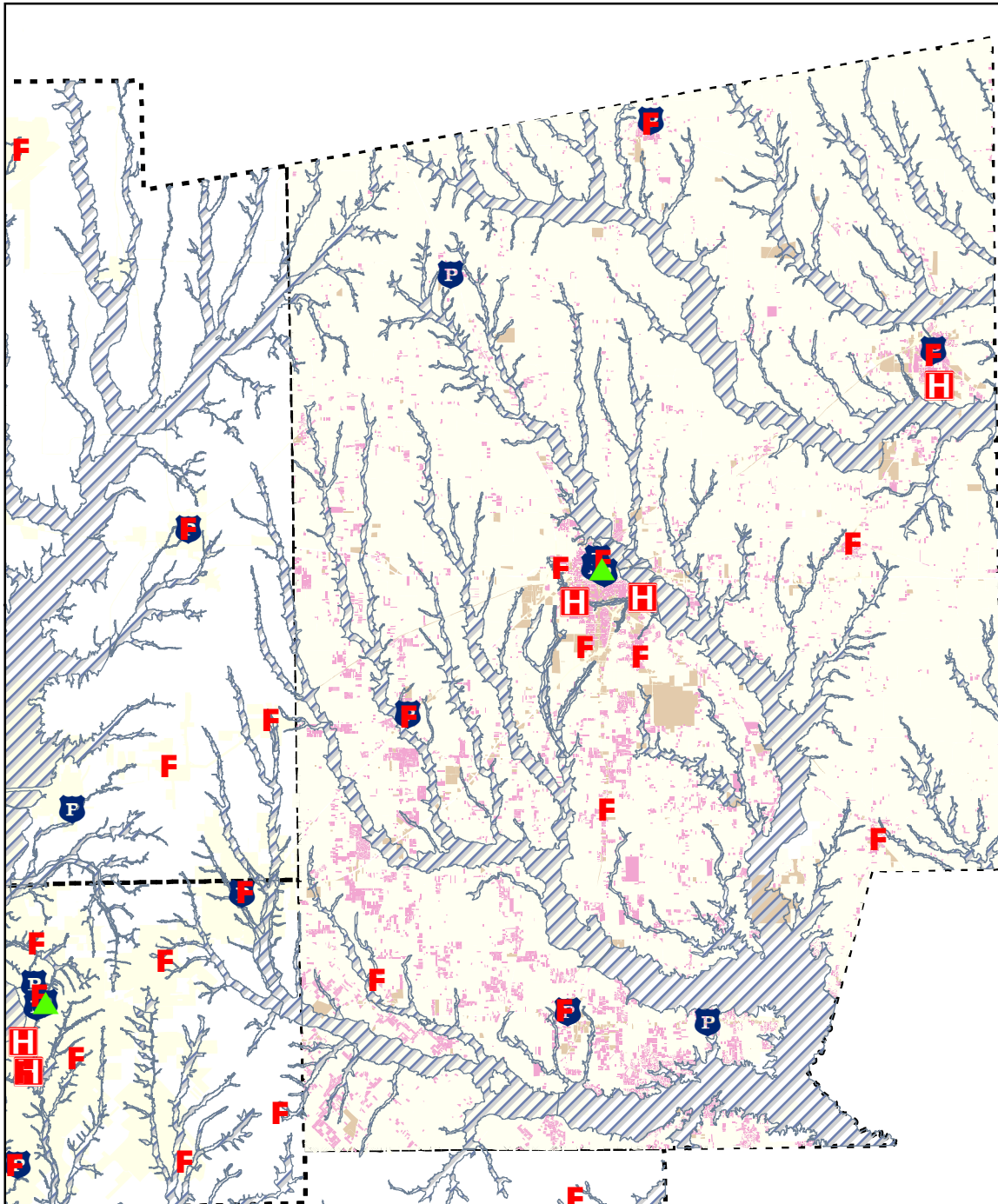
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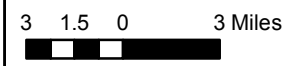
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Map B.1

Hunt County



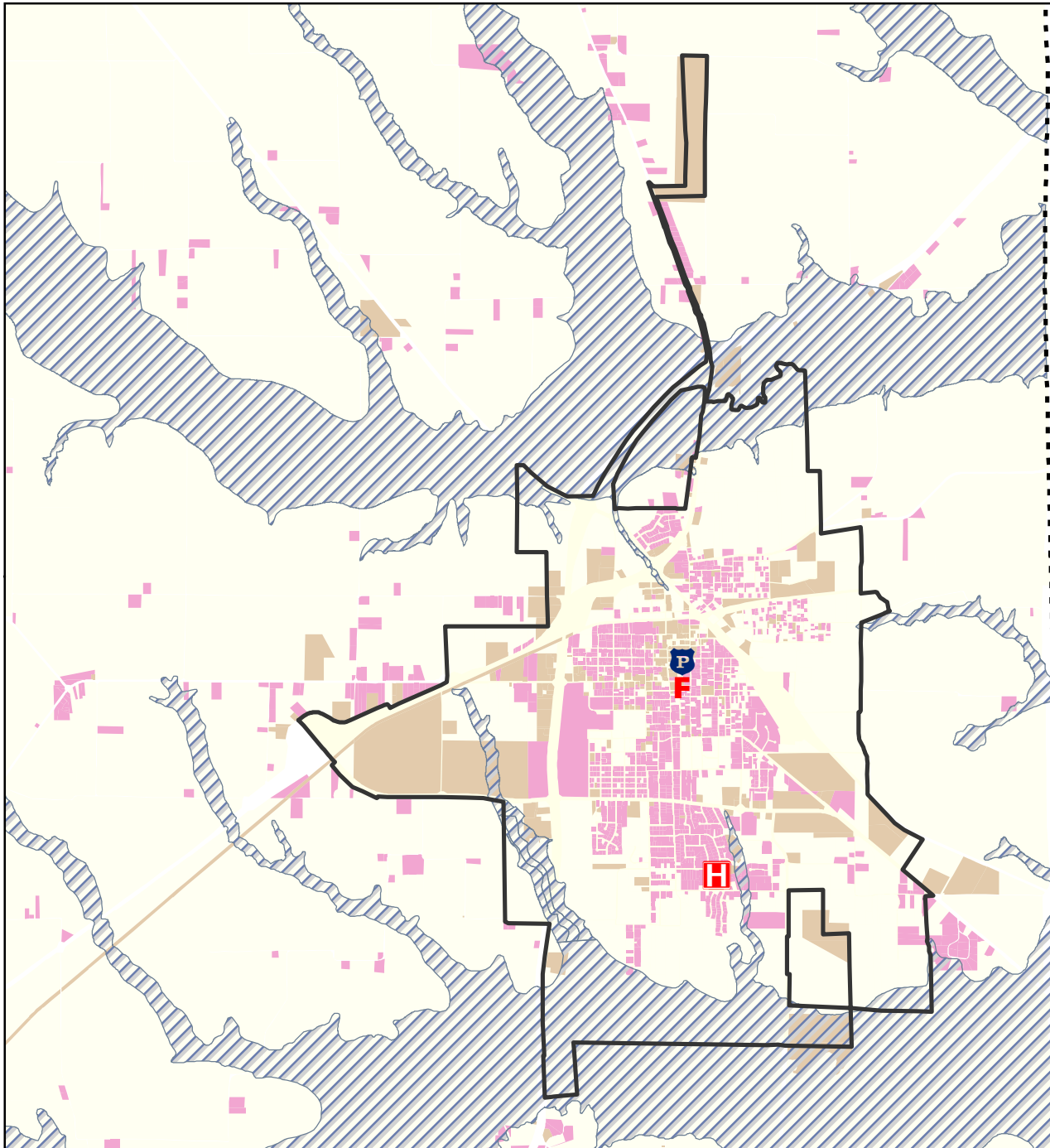
-  Emergency Management
 -  Fire
 -  Police
 -  Hospital
- FEMA DFIRM FLOOD ZONES 2012**
- ZONE**
-  100 Year
 -  100 Year (Detail)
 -  500 Year
 -  Residential
 -  Commercial/Utility
 -  Farmland/Undeveloped



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Map B.2

City of Commerce

FEMA DFIRM FLOOD ZONES 2012

ZONE

-  100 Year
-  100 Year (Detail)
-  500 Year
-  Residential
-  Commercial/Utility
-  Farmland/Undeveloped
-  Emergency Management
-  Fire
-  Police
-  Hospital

0.5 0.25 0 0.5 Miles



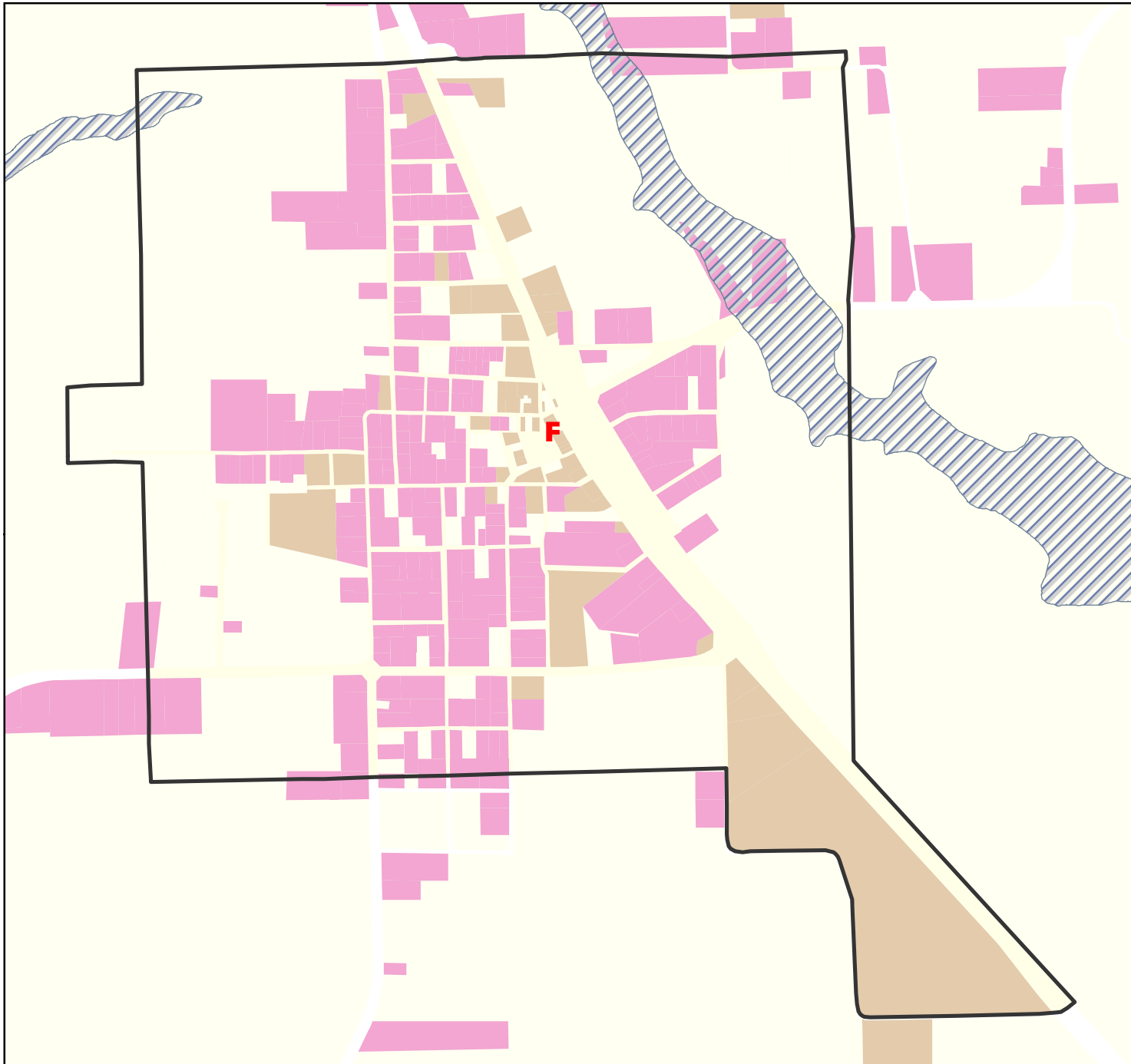
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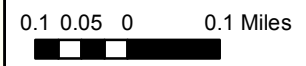
Map B.3

City of Lone Oak



FEMA DFIRM FLOOD ZONES 2012

- ZONE**
- 100 Year
 - 100 Year (Detail)
 - 500 Year
 - Residential
 - Commercial/Utility
 - Farmland/Undeveloped
 - Emergency Management
 - Fire
 - Police
 - Hospital



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Map B.4

City of Neylandville

FEMA DFIRM FLOOD ZONES 2012

ZONE

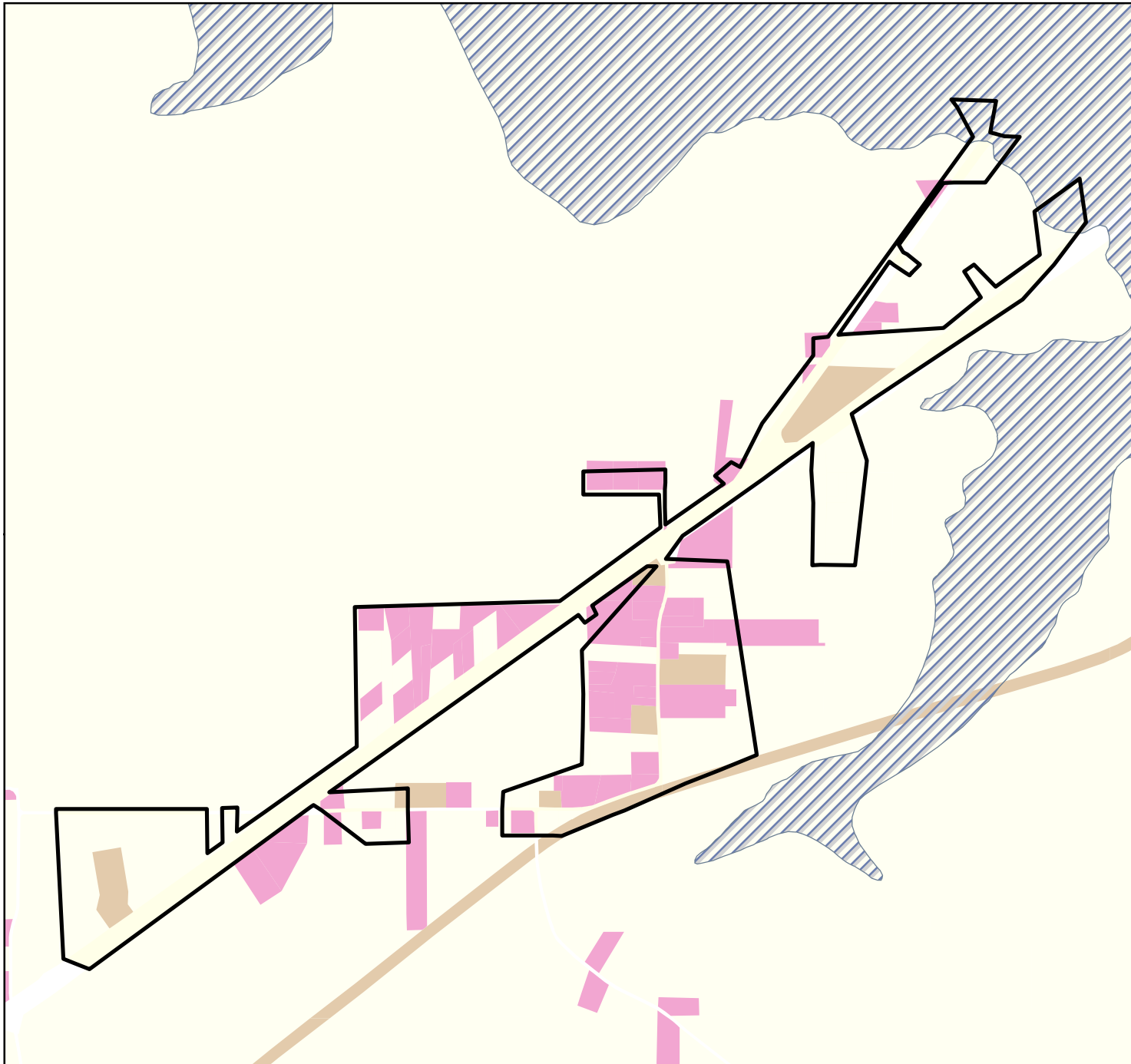
-  100 Year
-  100 Year (Detail)
-  500 Year
-  Residential
-  Commercial/Utility
-  Farmland/Undeveloped
-  Emergency Management
-  Fire
-  Police
-  Hospital

0.1 0.05 0 0.1 Miles



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Map B.5

City of Quinlan

FEMA DFIRM FLOOD ZONES 2012

ZONE

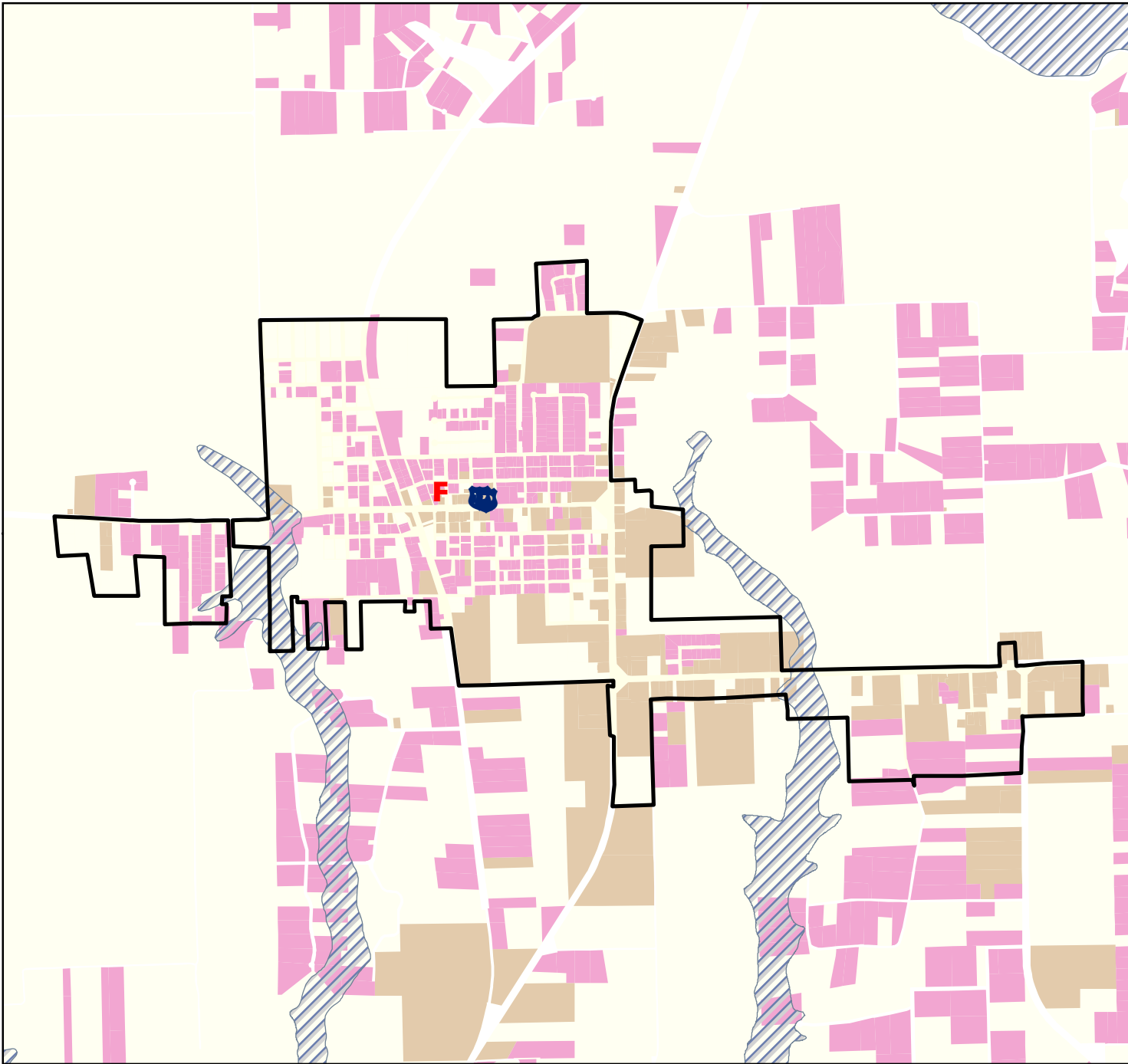
-  100 Year
-  100 Year (Detail)
-  500 Year
-  Residential
-  Commercial/Utility
-  Farmland/Undeveloped
-  Emergency Management
-  Fire
-  Police
-  Hospital

0.2 0.1 0 0.2 Miles



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Map B.6

City of Union Valley

FEMA DFIRM FLOOD ZONES 2012

ZONE

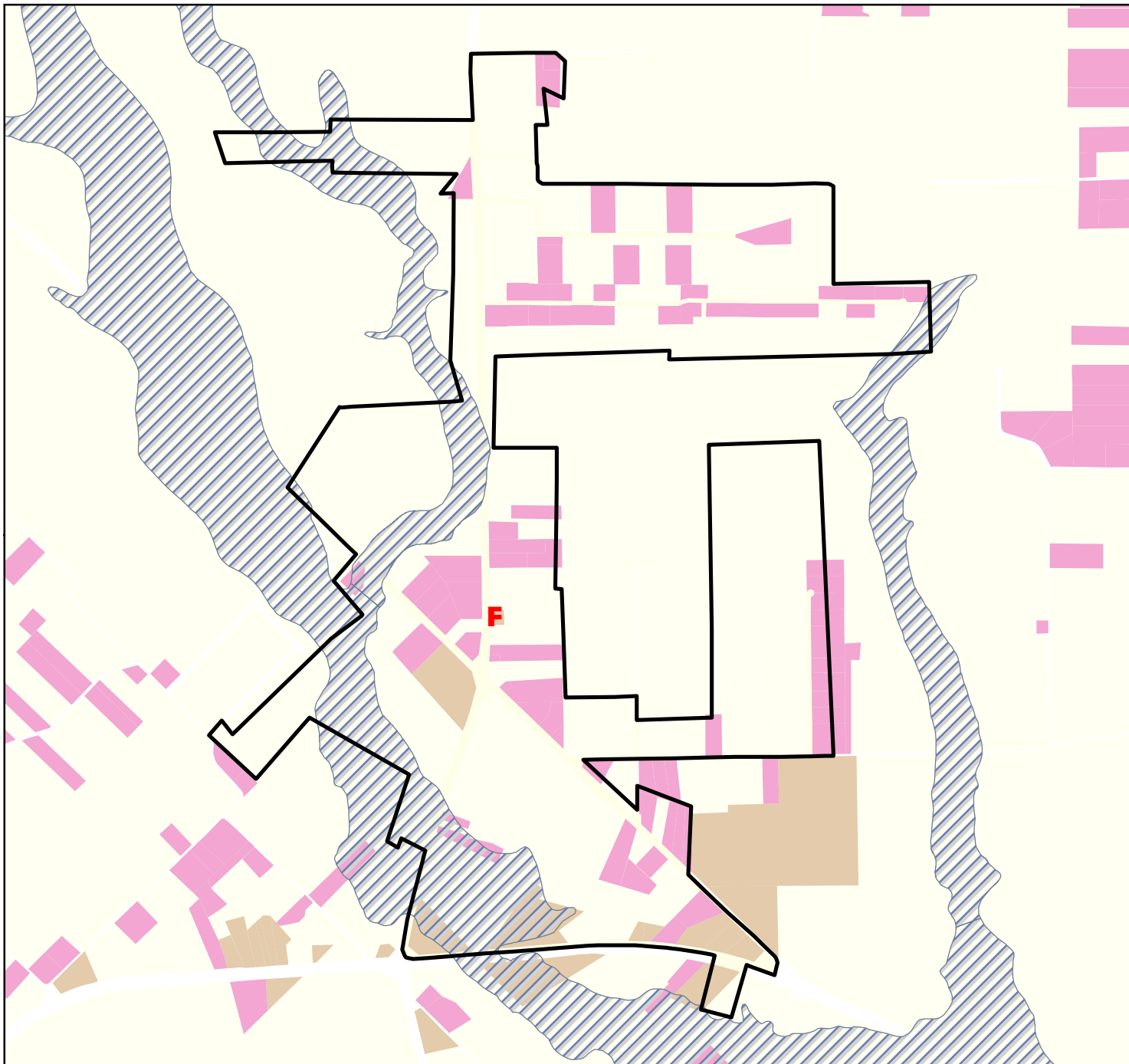
-  100 Year
-  100 Year (Detail)
-  500 Year
-  Residential
-  Commercial/Utility
-  Farmland/Undeveloped
-  Emergency Management
-  Fire
-  Police
-  Hospital

0.15 0.075 0 0.15 Miles



Emergency Preparedness

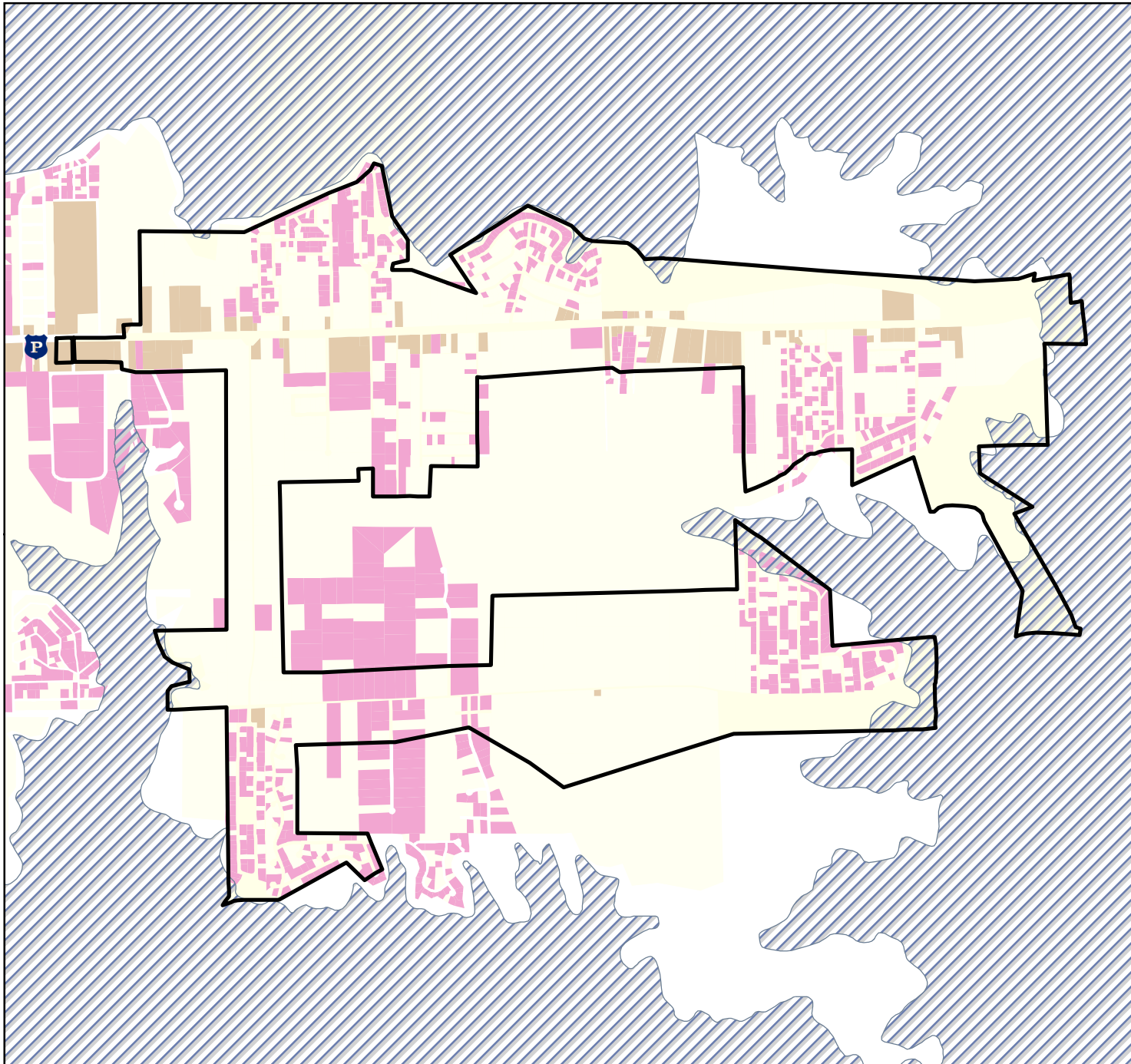
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Map B.7

City of Tawakoni



FEMA DFIRM FLOOD ZONES 2012

ZONE

- 100 Year
- 100 Year (Detail)
- 500 Year
- Residential
- Commercial/Utility
- Farmland/Undeveloped
- Emergency Management
- Fire
- Police
- Hospital

0.2 0.1 0 0.2 Miles



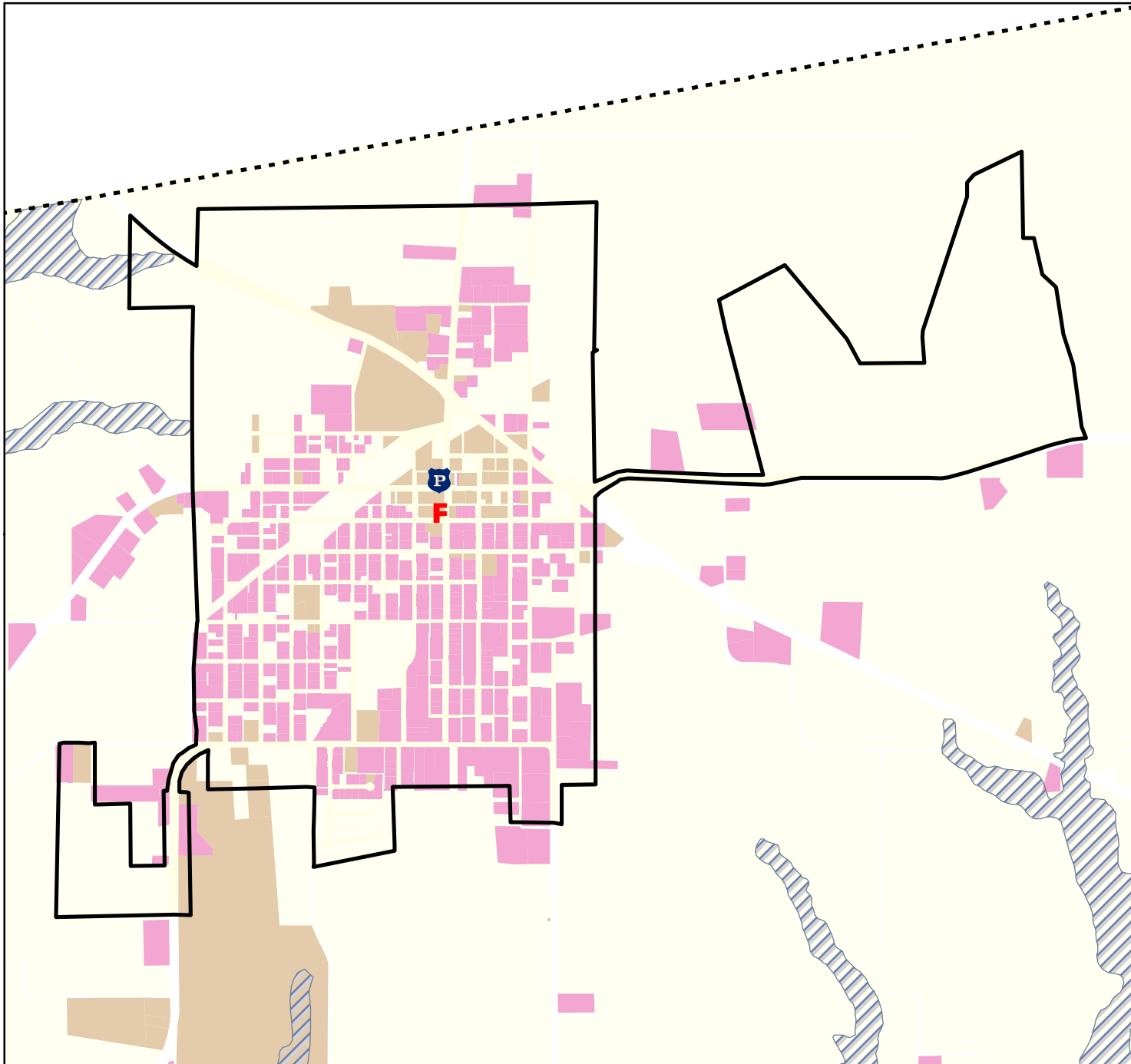
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Map B.8

City of Wolfe City



FEMA DFIRM FLOOD ZONES 2012

ZONE

- 100 Year
- 100 Year (Detail)
- 500 Year
- Residential
- Commercial/Utility
- Farmland/Undeveloped
- Emergency Management
- Fire
- Police
- Hospital

0.15 0.075 0 0.15 Miles



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Map C.1

Hunt County

Hail SIZE

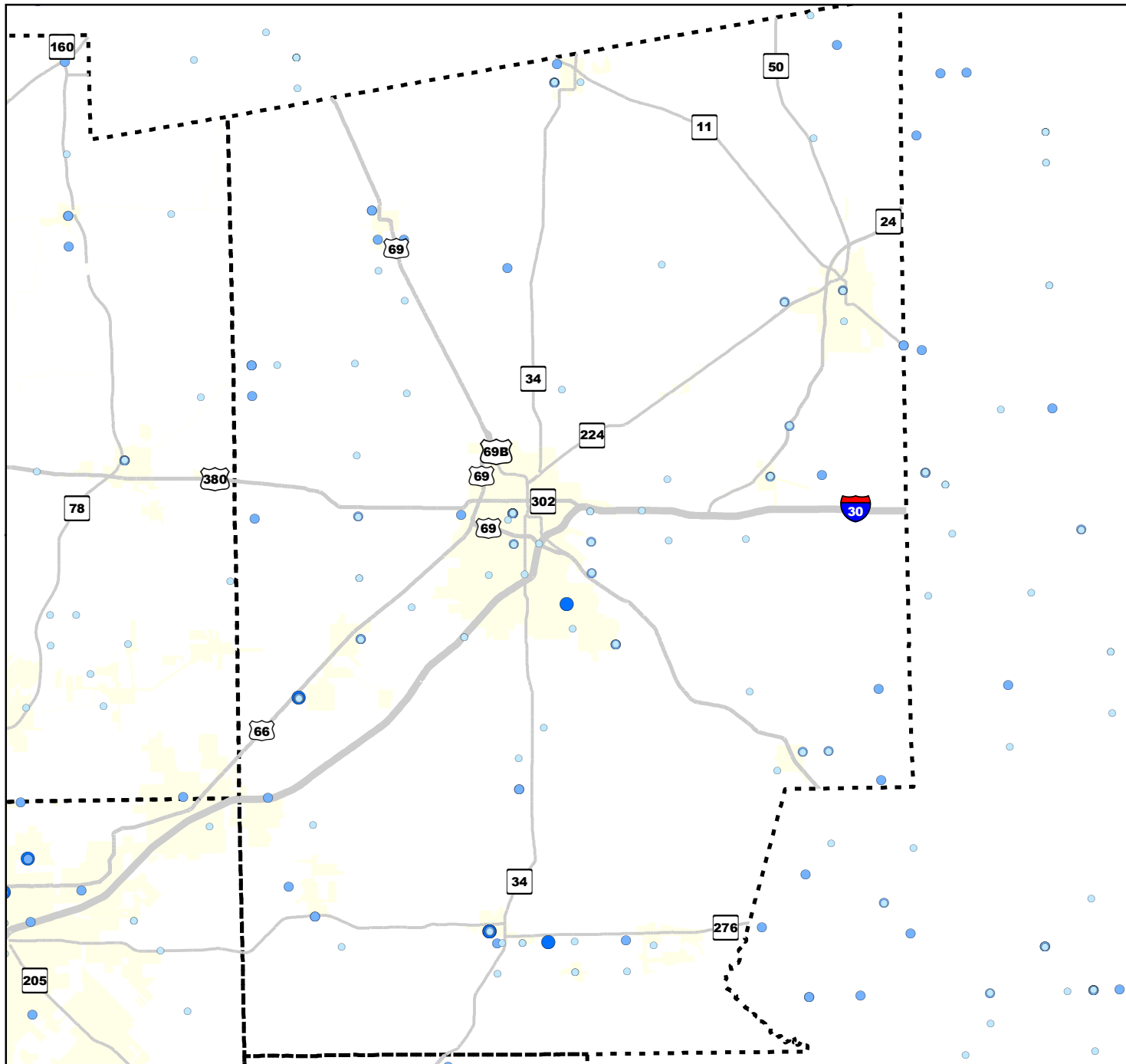
- 0 - 1.5
- 1.5 - 3
- 3 - 4.5
- 4.5 - 6
- 6 - 7.5

3 1.5 0 3 Miles



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Map C.2

City of Commerce

Hail SIZE

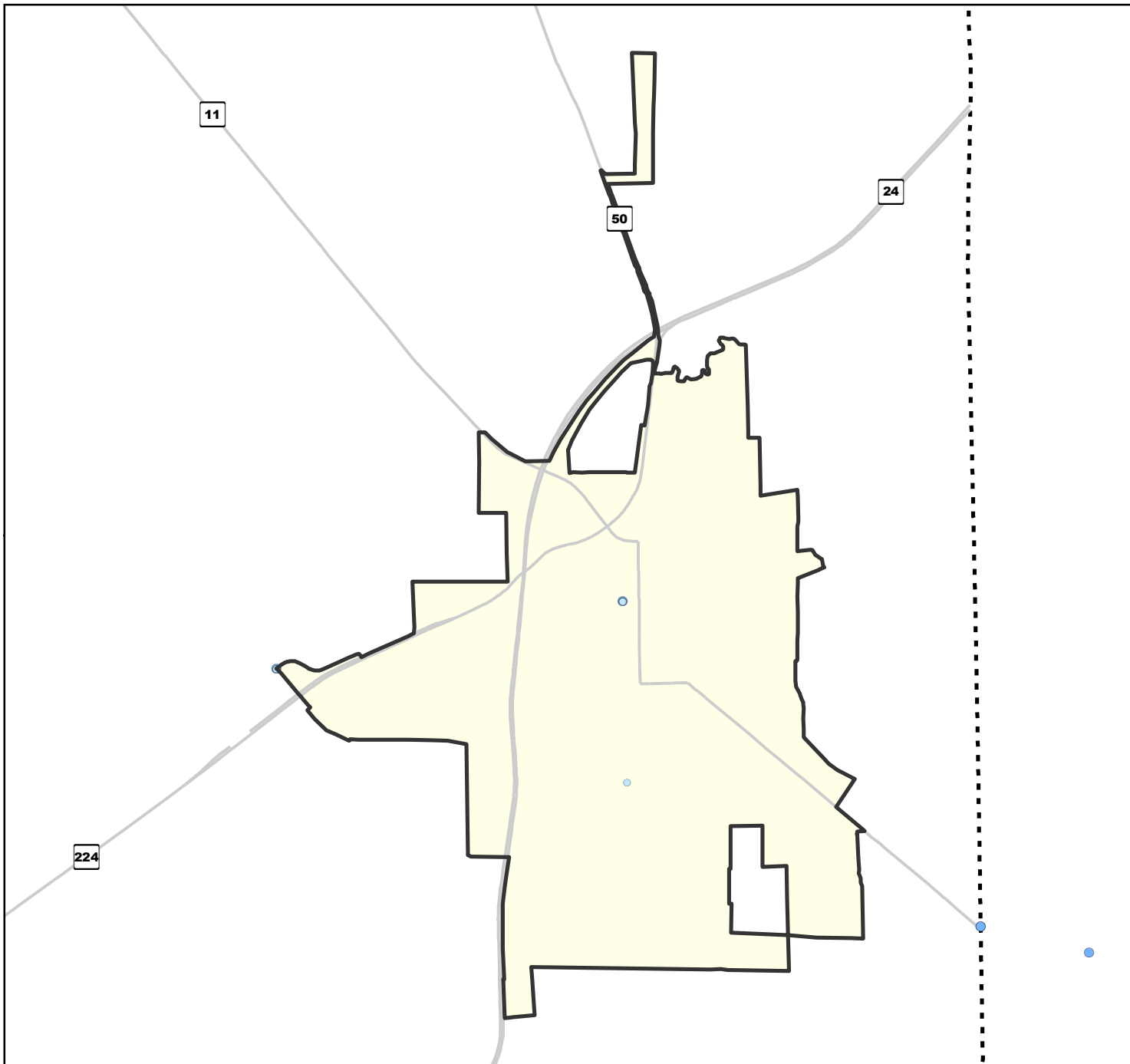
- 0 - 1.5
- 1.5 - 3
- 3 - 4.5
- 4.5 - 6
- 6 - 7.5



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Map C.3

City of Lone Oak

Hail SIZE

- 0 - 1.5
- 1.5 - 3
- 3 - 4.5
- 4.5 - 6
- 6 - 7.5

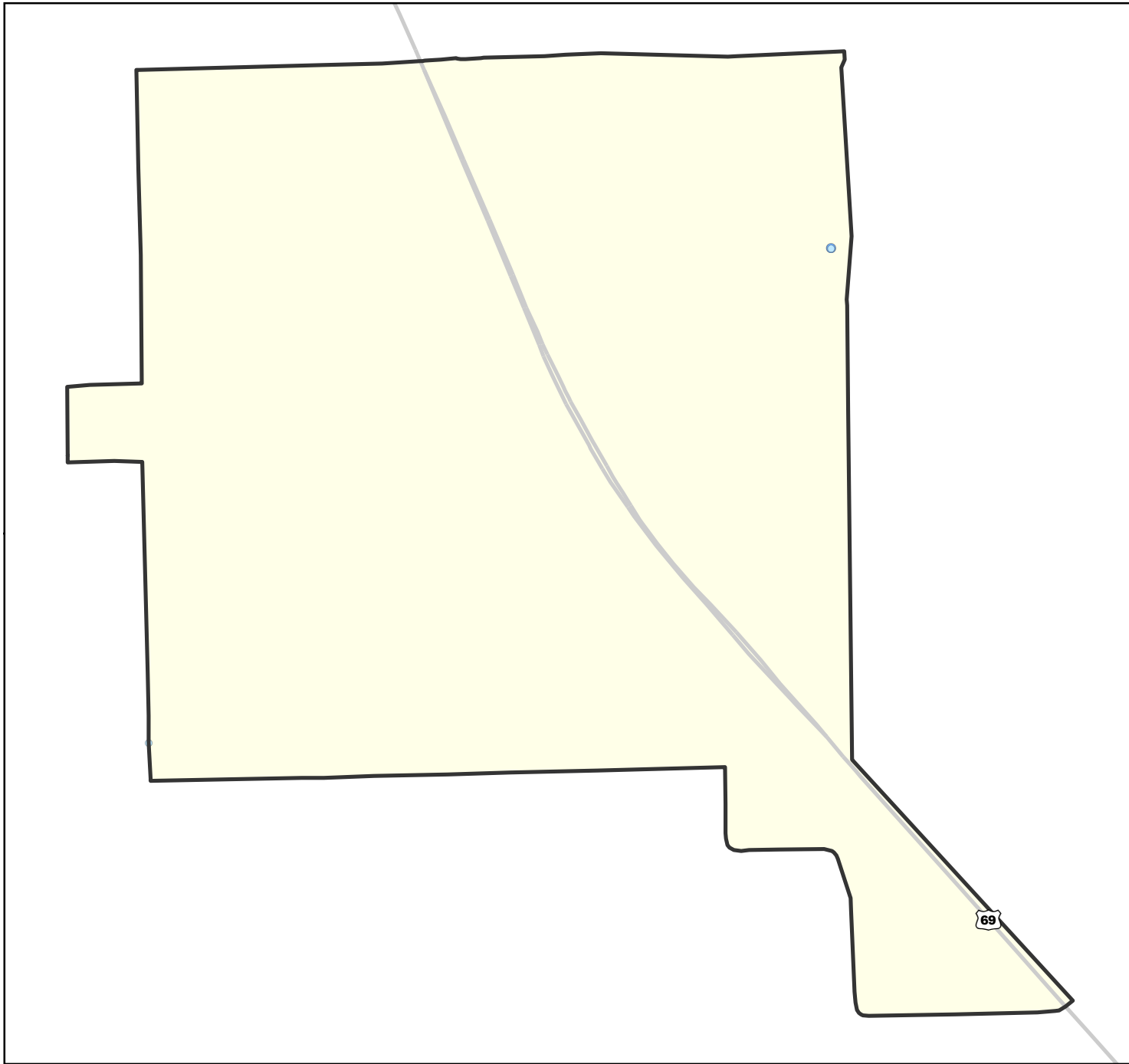
0.1 0.05 0 0.1 Miles



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Map C.4

City of
Neylandville

Hail
SIZE

- 0 - 1.5
- 1.5 - 3
- 3 - 4.5
- 4.5 - 6
- 6 - 7.5

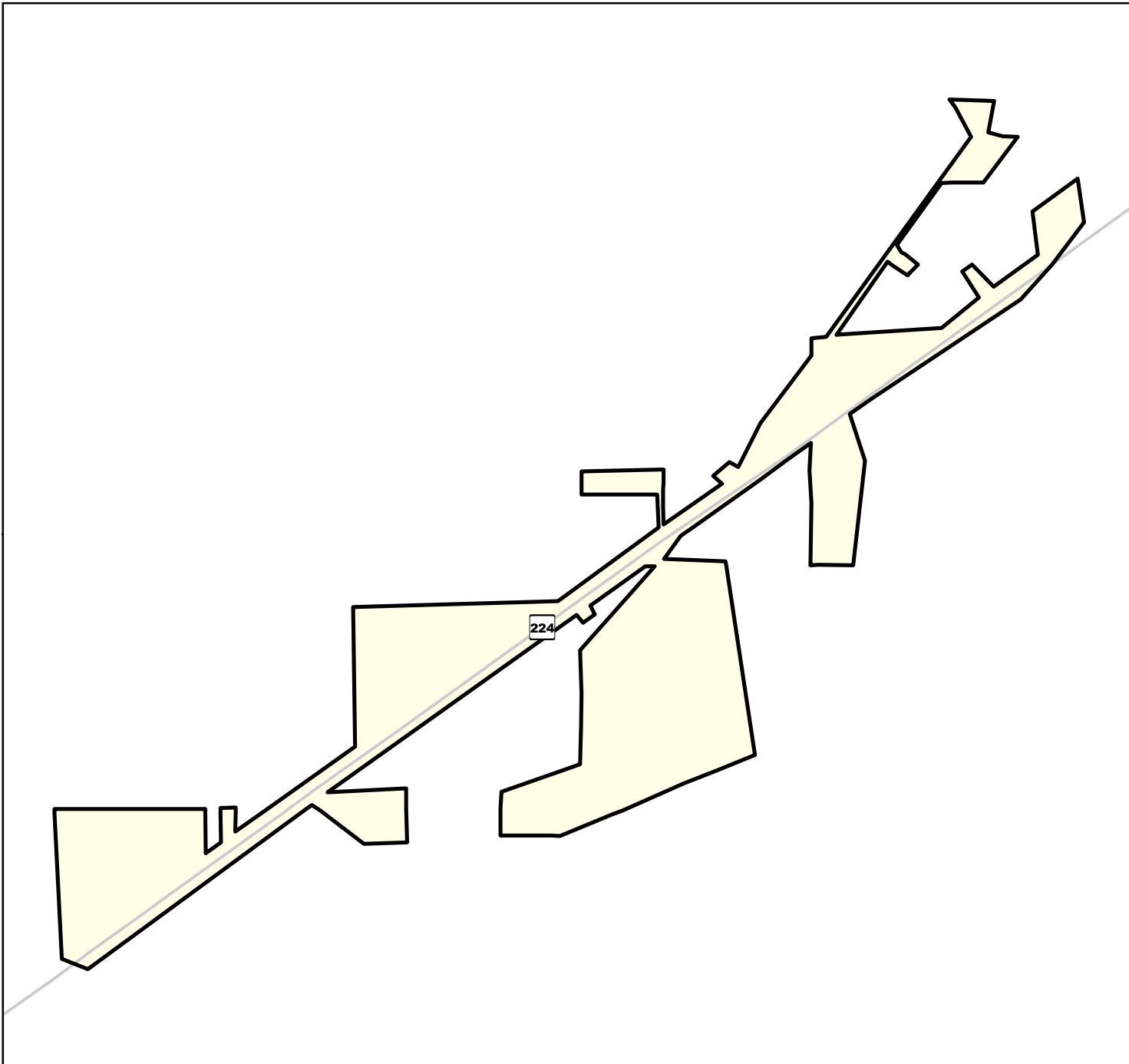
0.1 0.05 0 0.1 Miles



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Map C.5

City of Quinlan

Hail SIZE

- 0 - 1.5
- 1.5 - 3
- 3 - 4.5
- 4.5 - 6
- 6 - 7.5

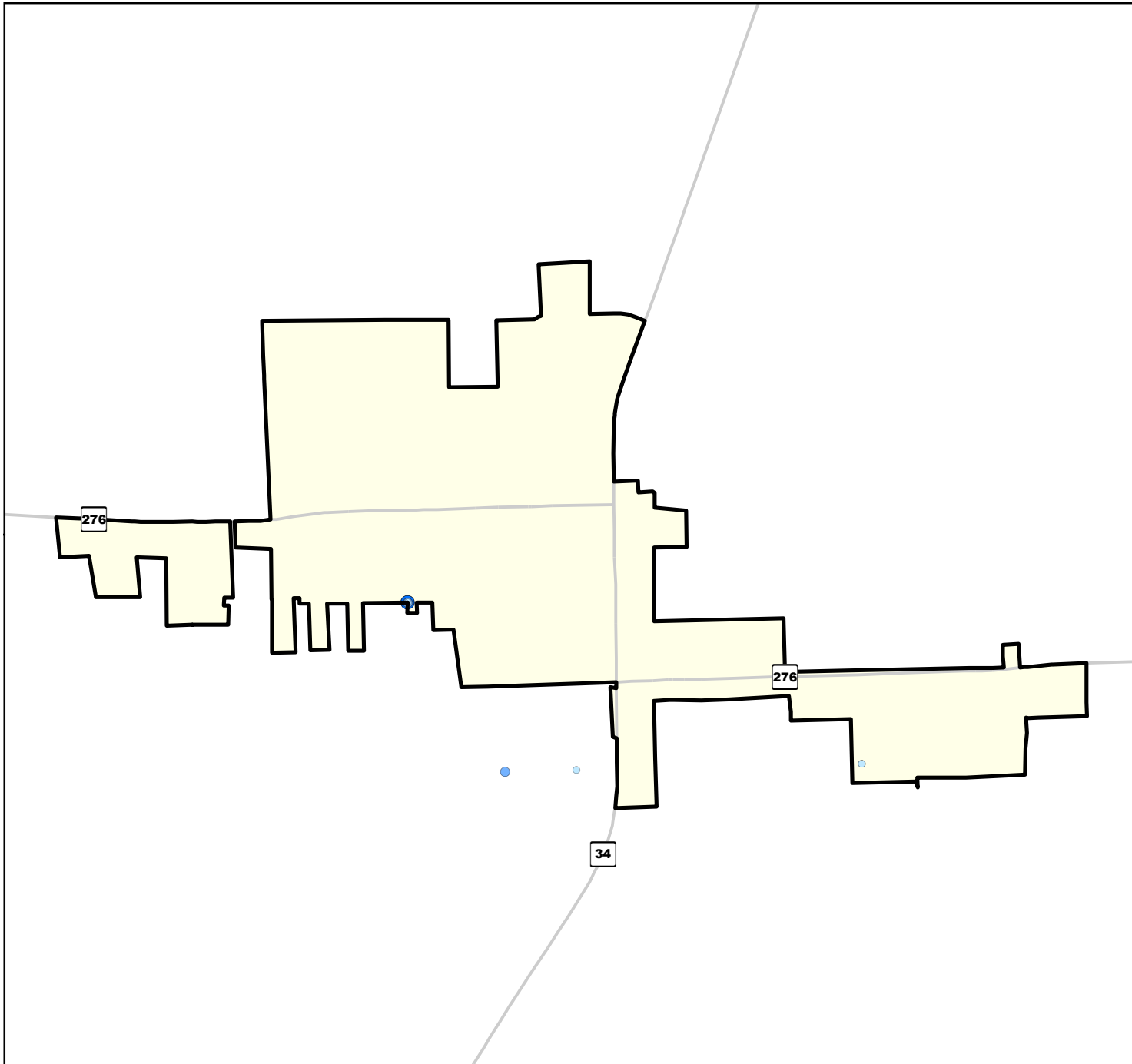
0.25 0.125 0 0.25 Miles



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Map C.6

City of
Union Valley

Hail
SIZE

- 0 - 1.5
- 1.5 - 3
- 3 - 4.5
- 4.5 - 6
- 6 - 7.5

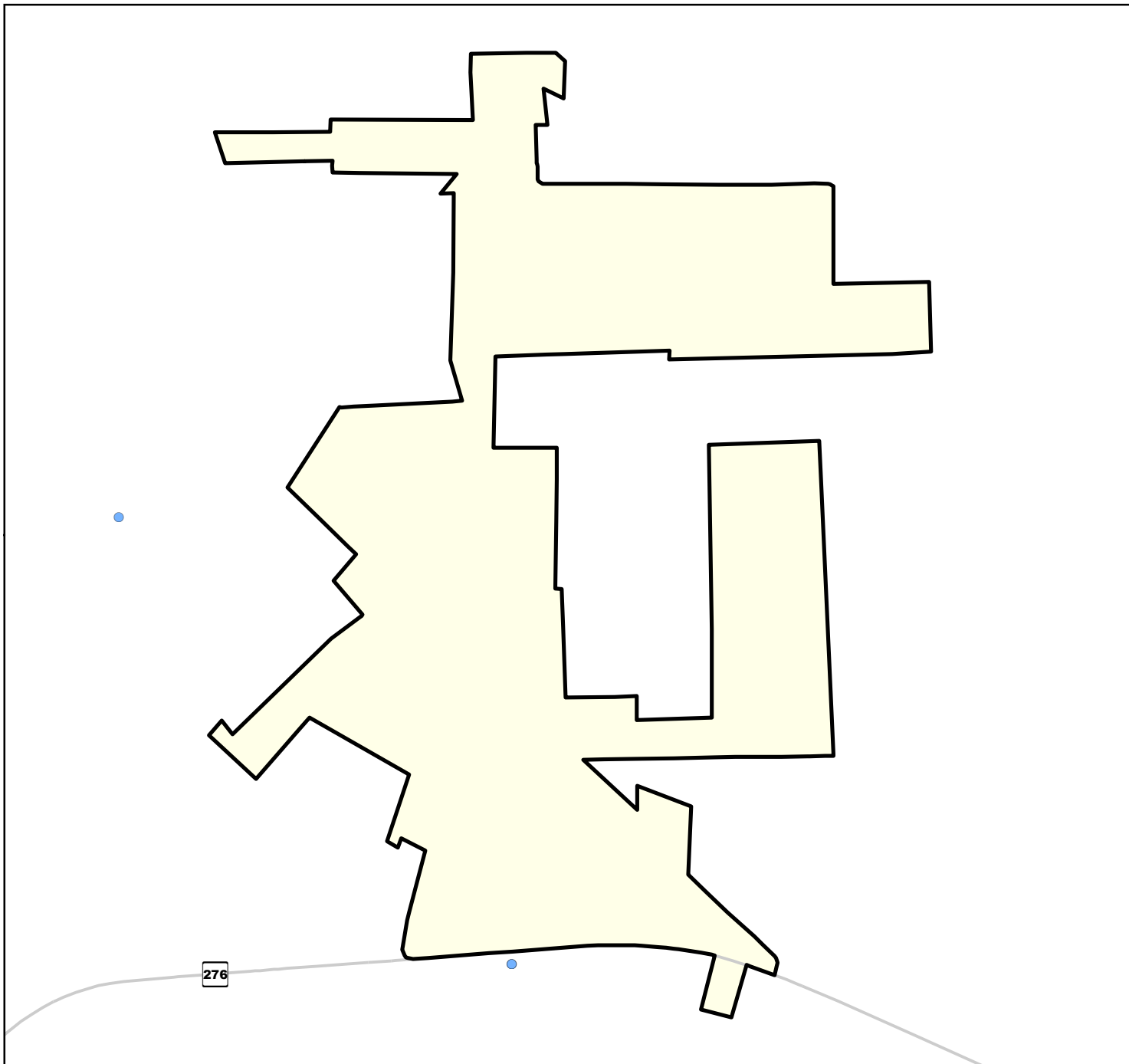
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Emergency Preparedness



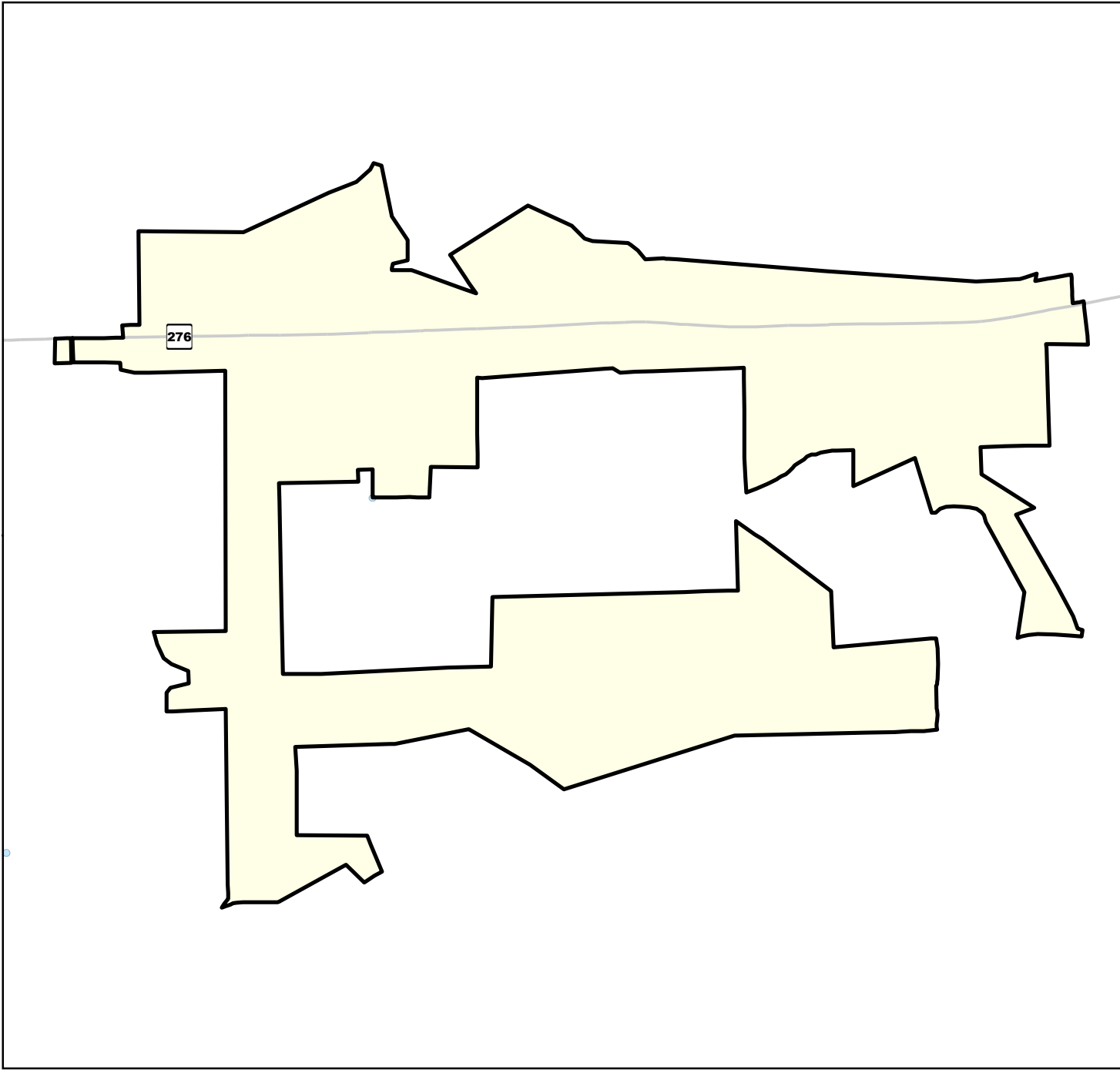
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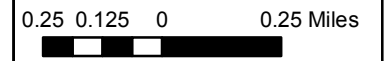
Map C.7

**City of
West Tawakoni**



**Hail
SIZE**

- 0 - 1.5
- 1.5 - 3
- 3 - 4.5
- 4.5 - 6
- 6 - 7.5



Emergency Preparedness

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Map C.8

City of Wolfe City

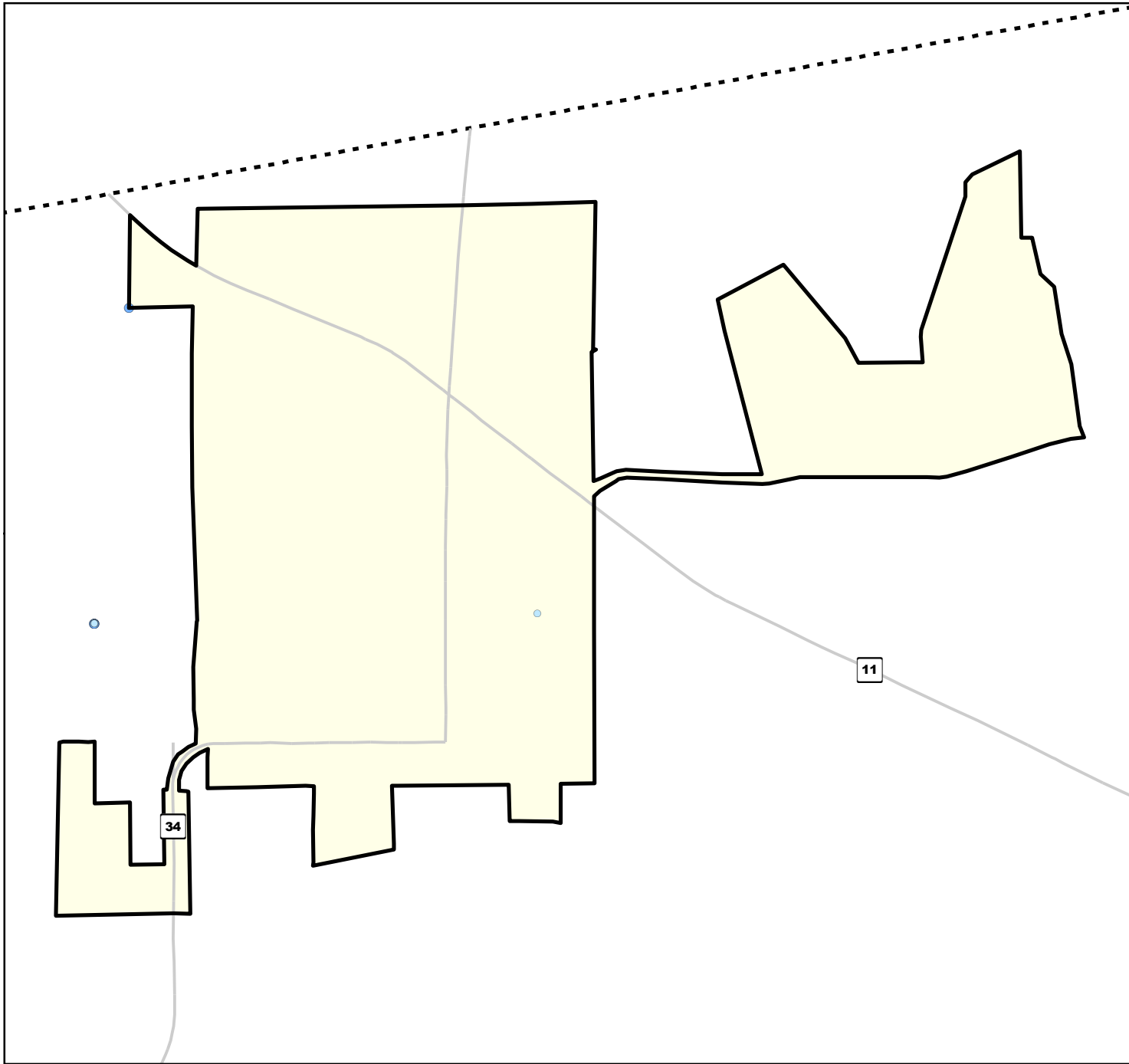
Hail SIZE

- 0 - 1.5
- 1.5 - 3
- 3 - 4.5
- 4.5 - 6
- 6 - 7.5



Emergency Preparedness

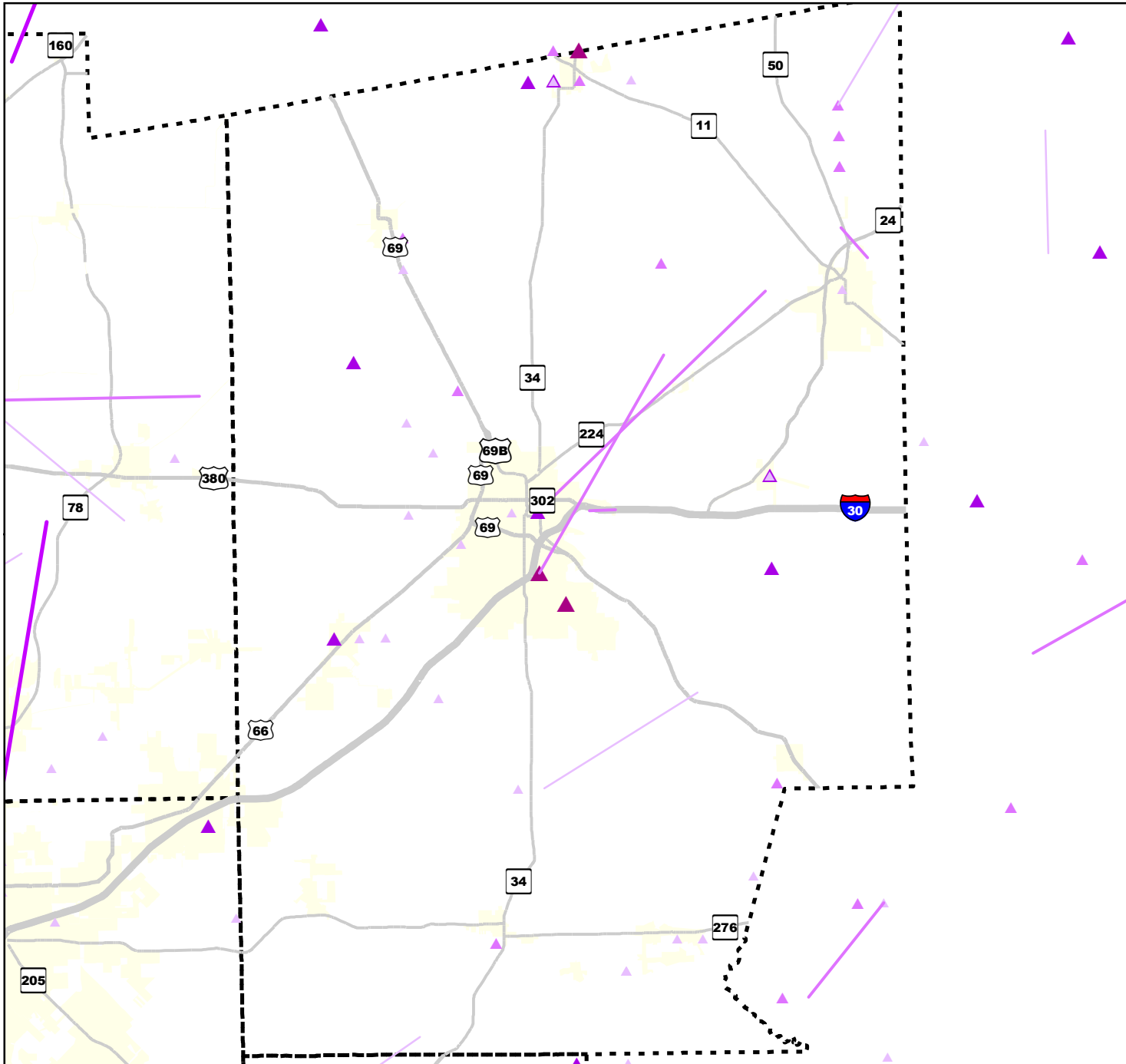
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Map D.1

Hunt County

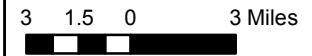


Tornado Track

- 1
- 2
- 3
- 4
- 5

Tornado

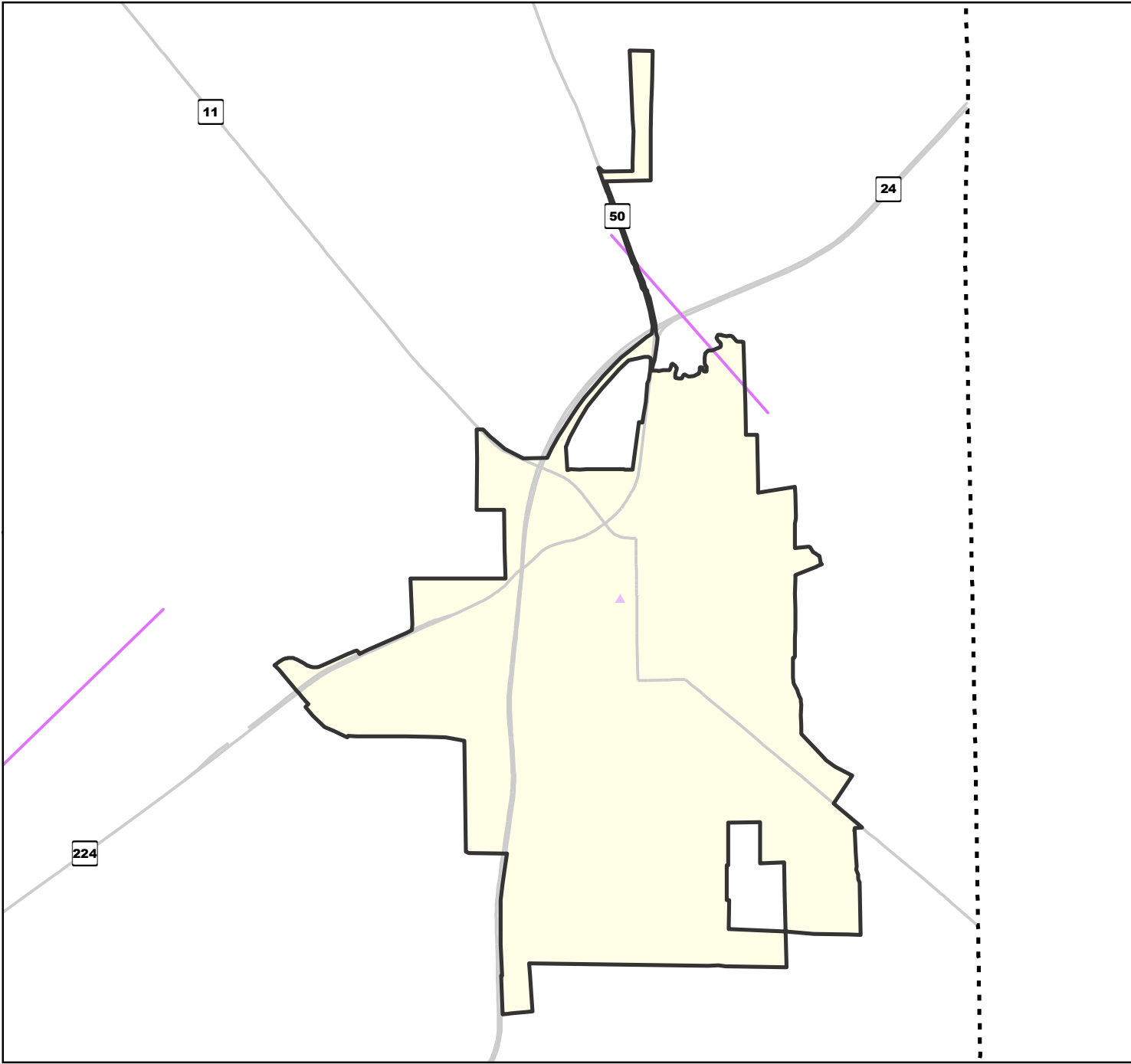
- 0
- 1
- 2
- 3
- 4



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Map D.2

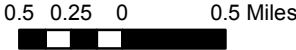
City of Commerce

Tornado Track
Tornado Track

- 1
- 2
- 3
- 4
- 5

Tornado
Tornado

- 0
- 1
- 2
- 3
- 4



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Map D.3

City of Lone Oak

Tornado Track

Tornado Track



Tornado

Tornado



0.1 0.05 0 0.1 Miles



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69

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Map D.4

City of Neylandville

Tornado Track

- 1
- 2
- 3
- 4
- 5

Tornado

- 0
- 1
- 2
- 3
- 4

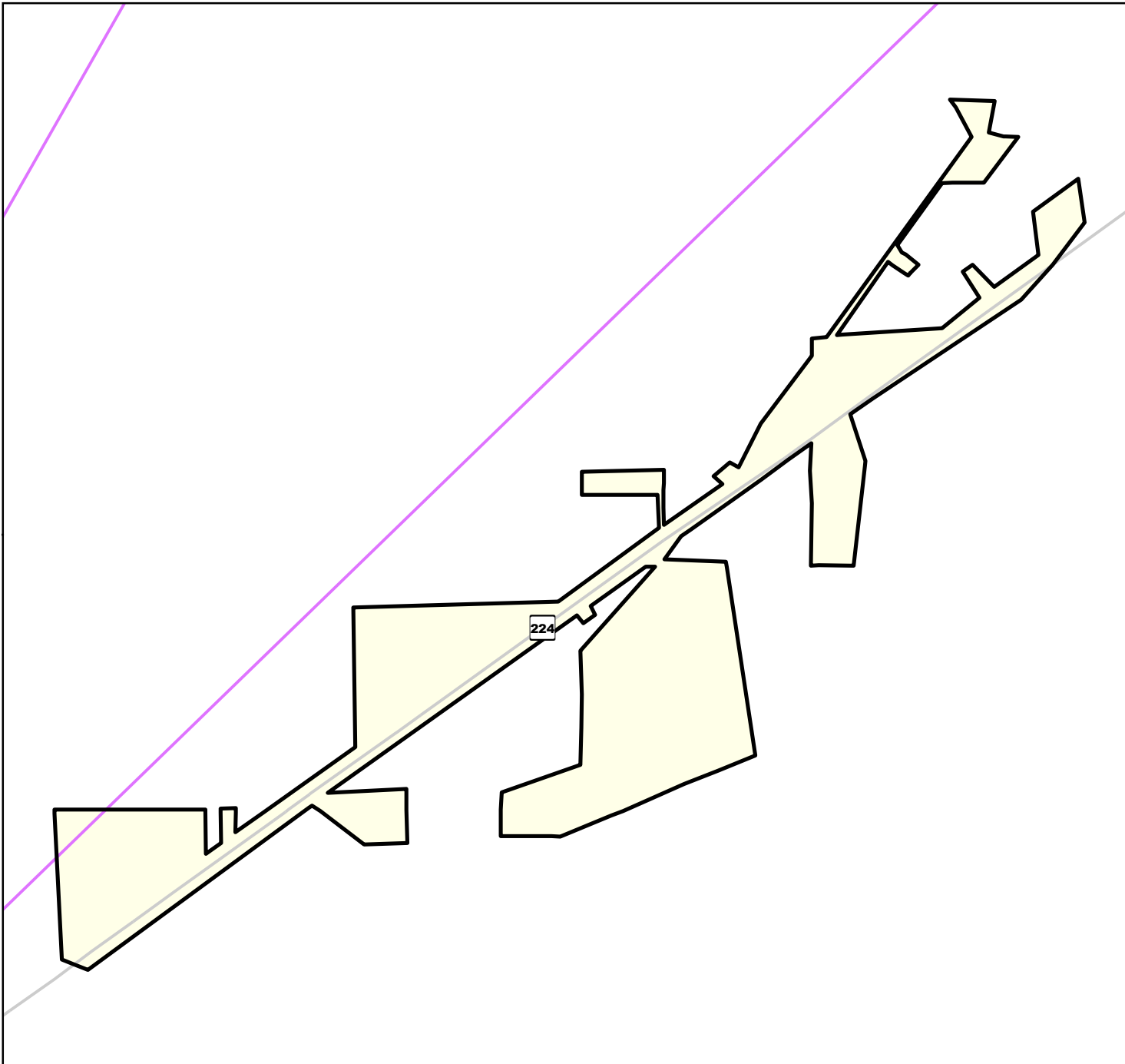
0.1 0.05 0 0.1 Miles



Emergency Preparedness



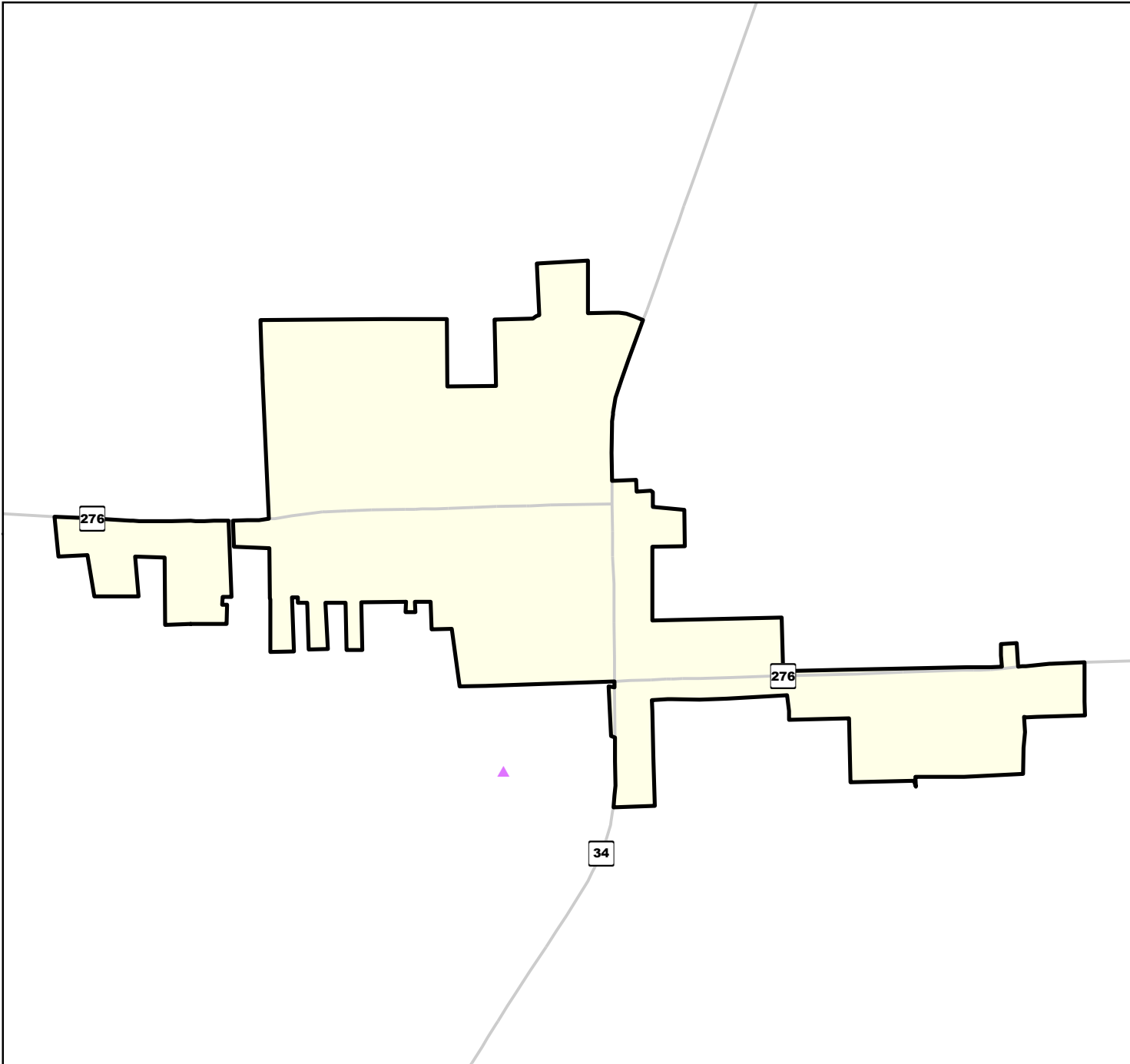
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Map D.5

City of Quinlan



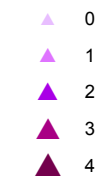
Tornado Track

Tornado Track



Tornado

Tornado



0.25 0.125 0 0.25 Miles



Emergency Preparedness

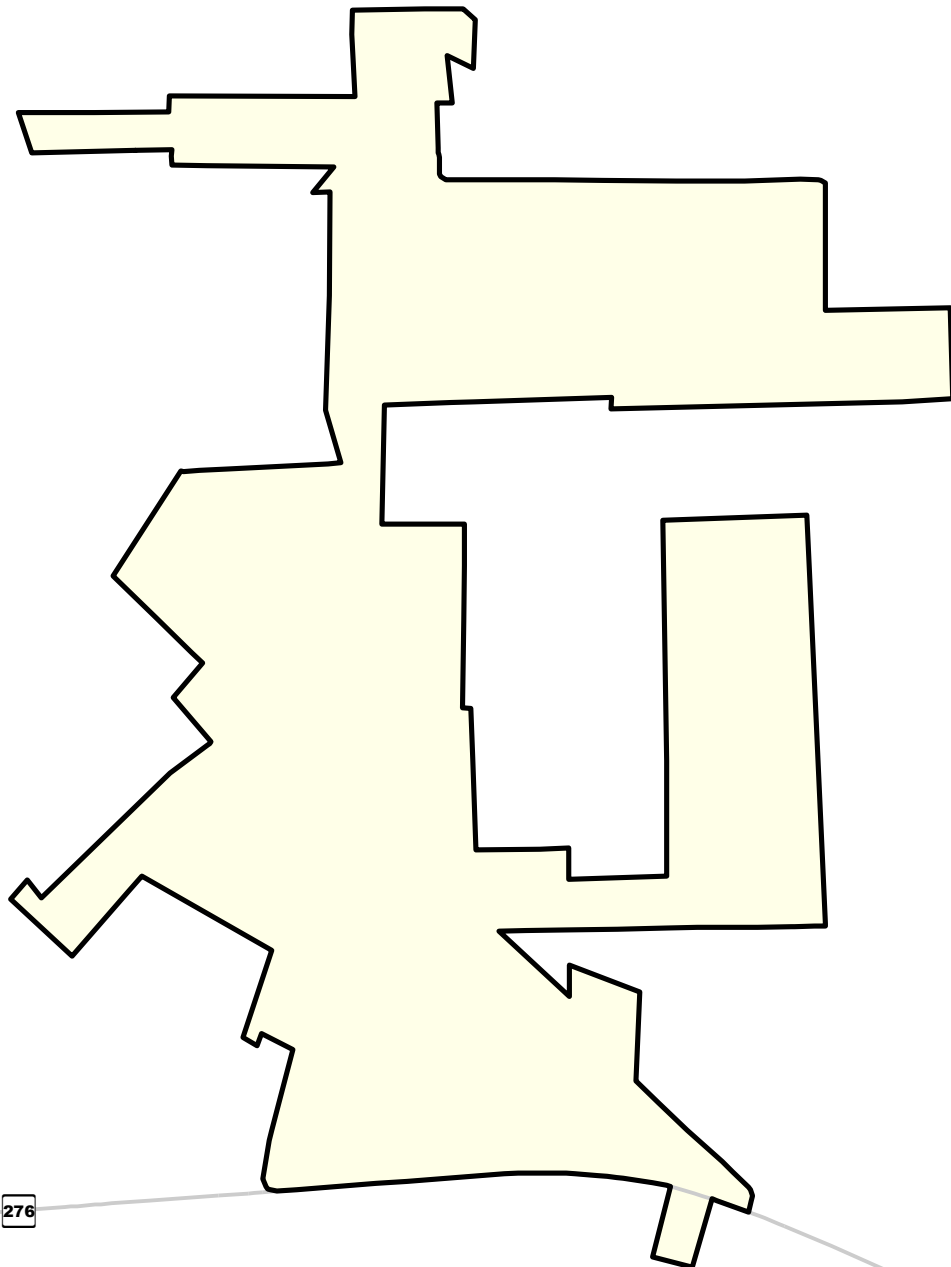


North Central Texas Council of Governments
Map Created By: Amanda Everly
(817)-695-9214
7/22/2014

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Map D.6

City of Union Valley



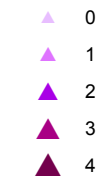
Tornado Track

Tornado Track



Tornado

Tornado



0.25 0.125 0 0.25 Miles



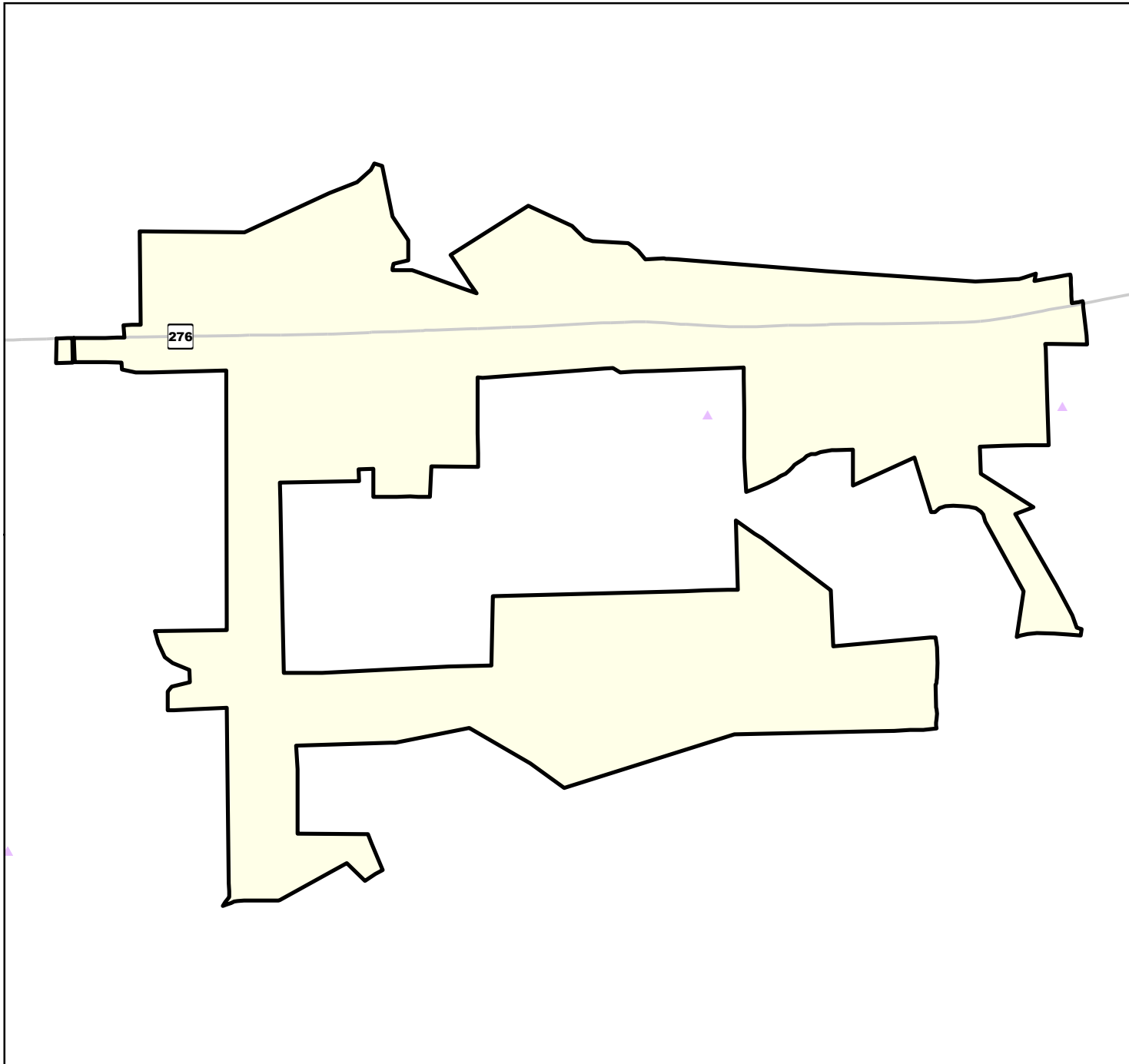
Emergency Preparedness

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7/22/2014

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Map D.7

City of West Tawakoni



Tornado Track

Tornado Track

- 1
- 2
- 3
- 4
- 5

Tornado

Tornado

- 0
- 1
- 2
- 3
- 4

0.25 0.125 0 0.25 Miles



Emergency Preparedness

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Map D.8

City of Wolfe City

Tornado Track

Tornado Track



Tornado

Tornado



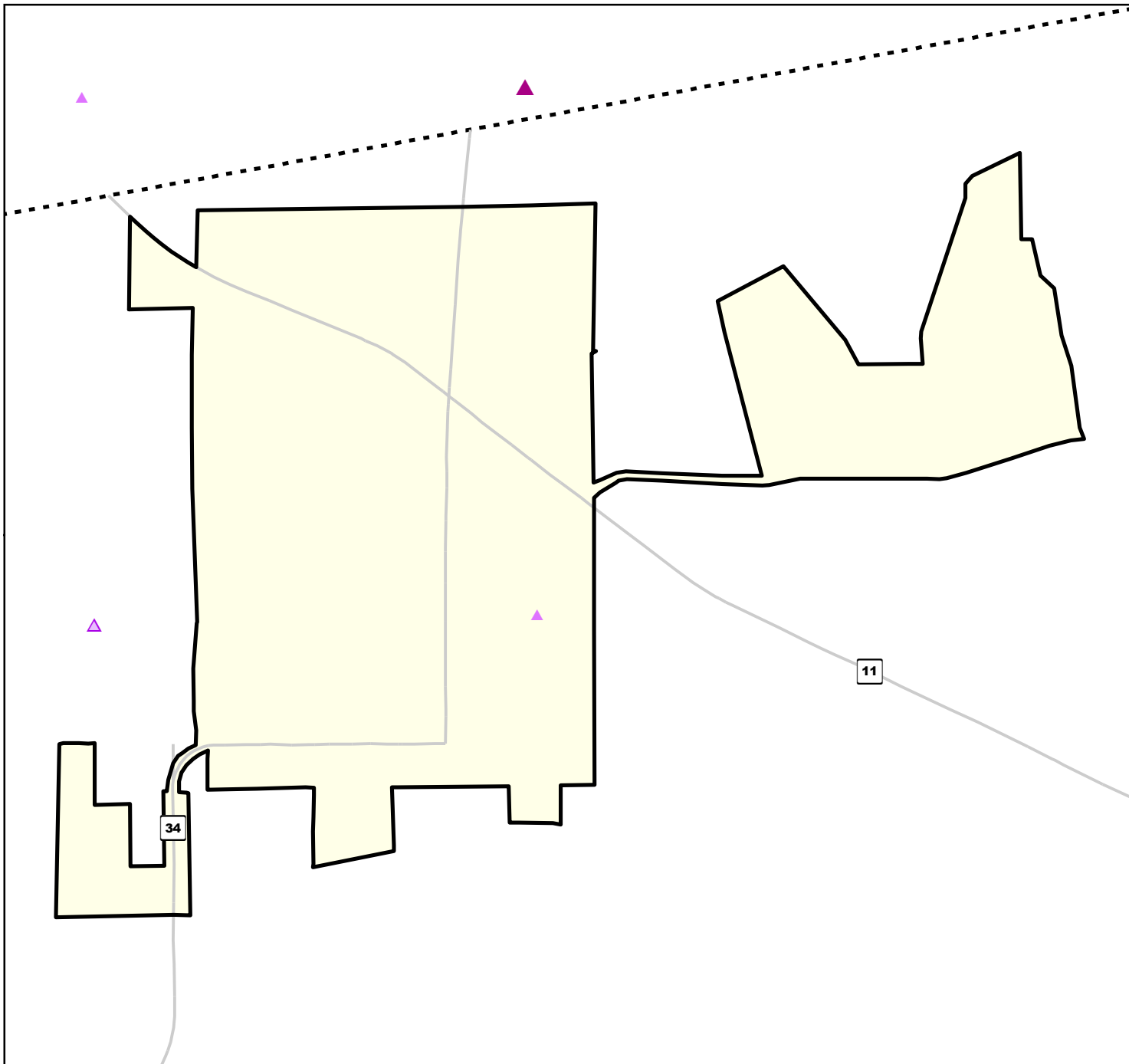
0.2 0.1 0 0.2 Miles



Emergency Preparedness



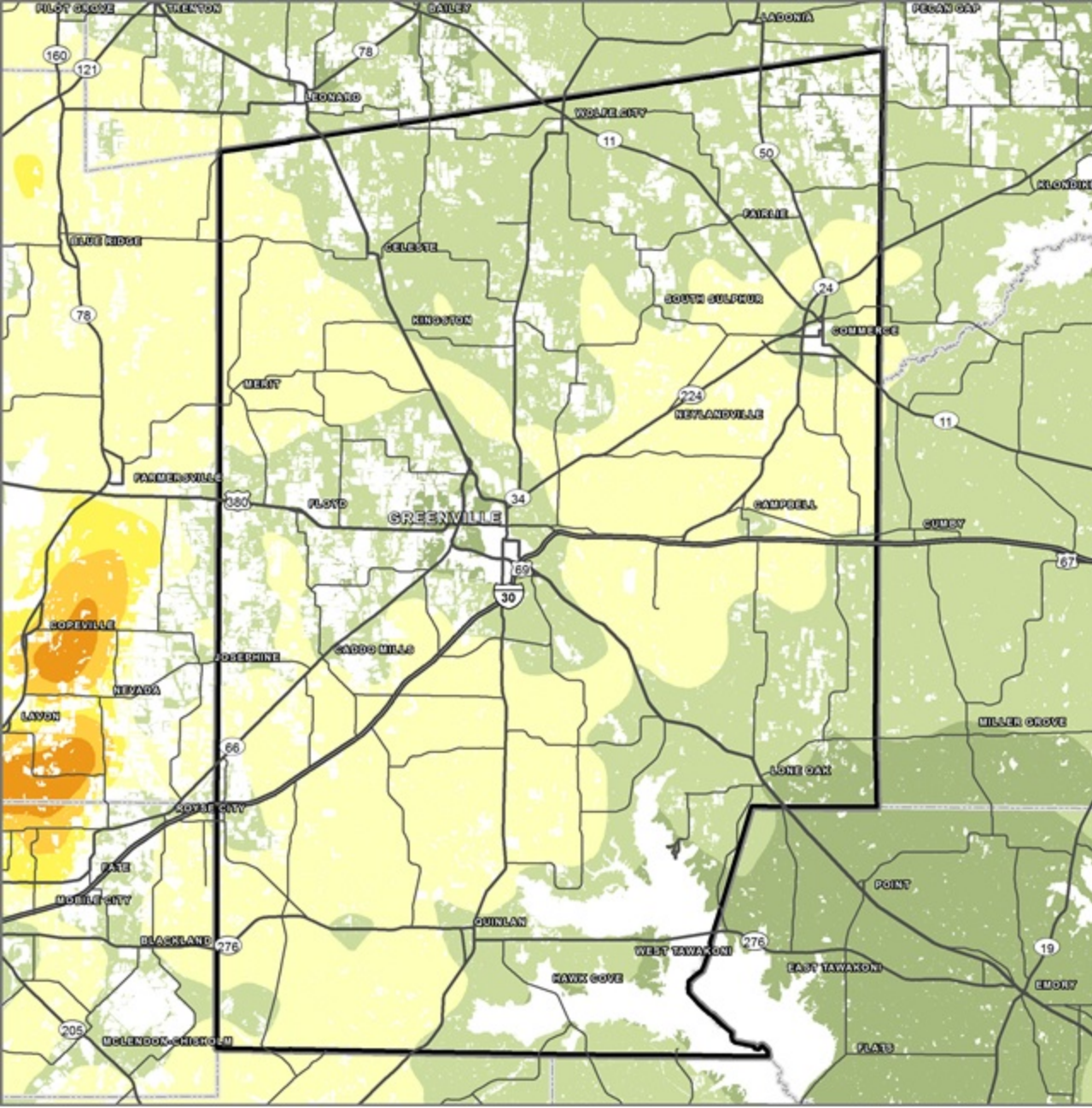
North Central Texas Council of Governments
Map Created By: Amanda Everly
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Map E.1
Hunt County

Wildfire Threat



0 1.5 3 4.5 6 Miles

Date: 7/1/2014




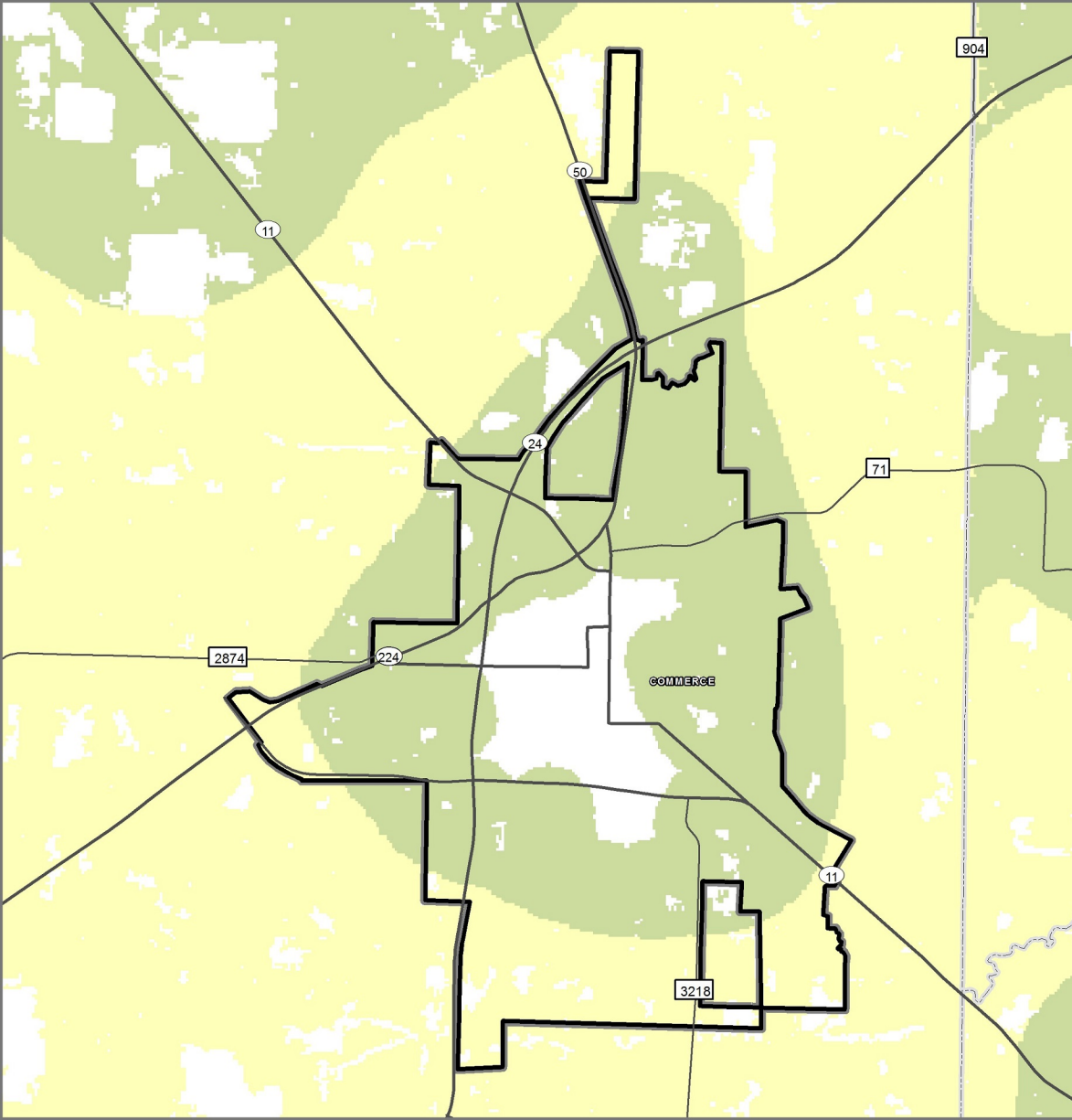
Texas Wildfire Risk Assessment
<http://www.texaswildfirerisk.com>

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Map E.2
City of Commerce

Wildfire Threat

-  Non-Burnable
-  1 (Low)
-  2
-  3 (Moderate)
-  4
-  5 (High)
-  6
-  7 (Very High)



0 0.3 0.6 0.9 1.2 Miles



Date: 6/24/2014

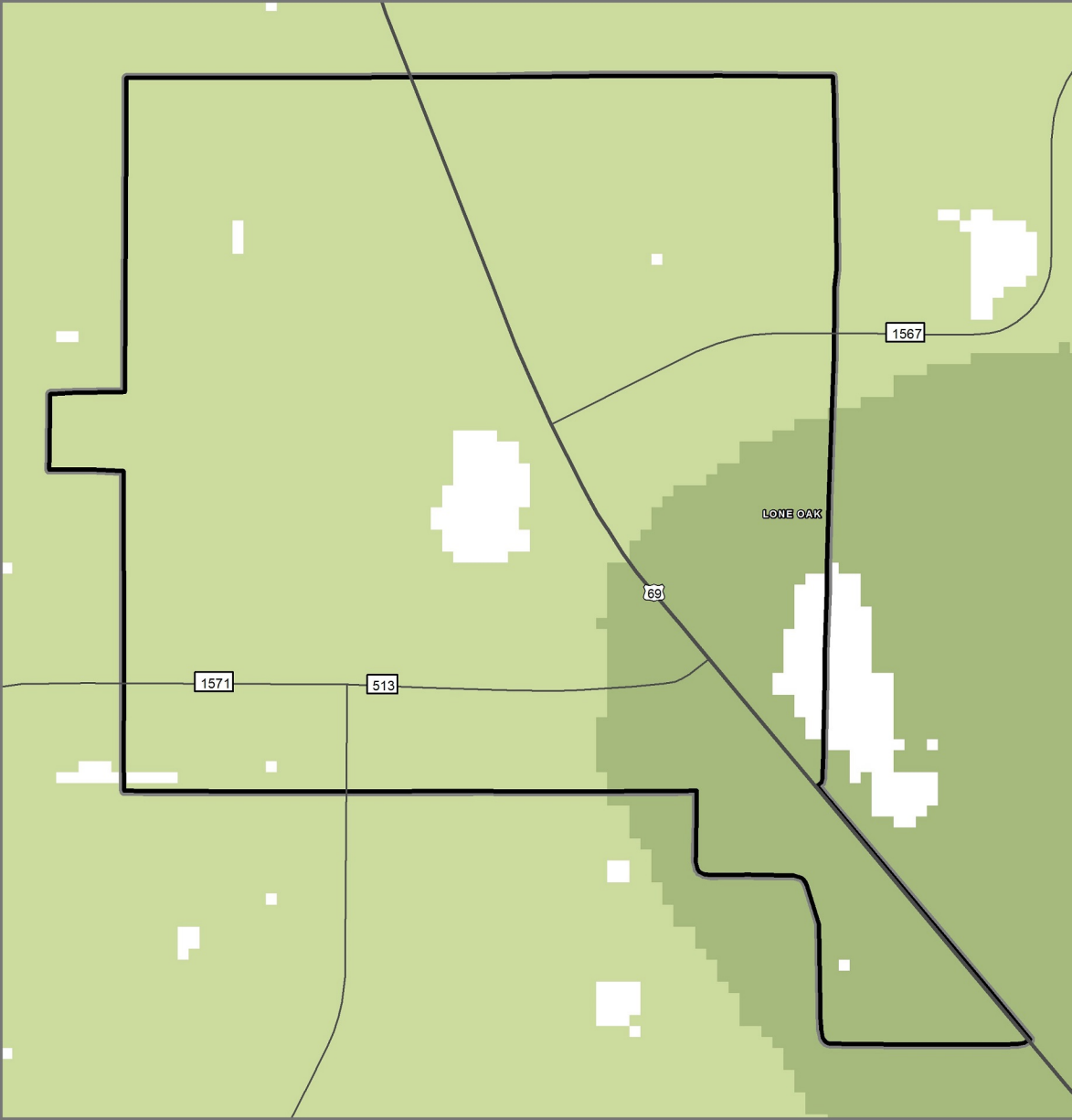


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Map E.3
City of Lone Oak

Wildfire Threat

-  Non-Burnable
-  1 (Low)
-  2
-  3 (Moderate)
-  4
-  5 (High)
-  6
-  7 (Very High)



0 0.065 0.13 0.195 0.26 Miles

Date: 6/24/2014

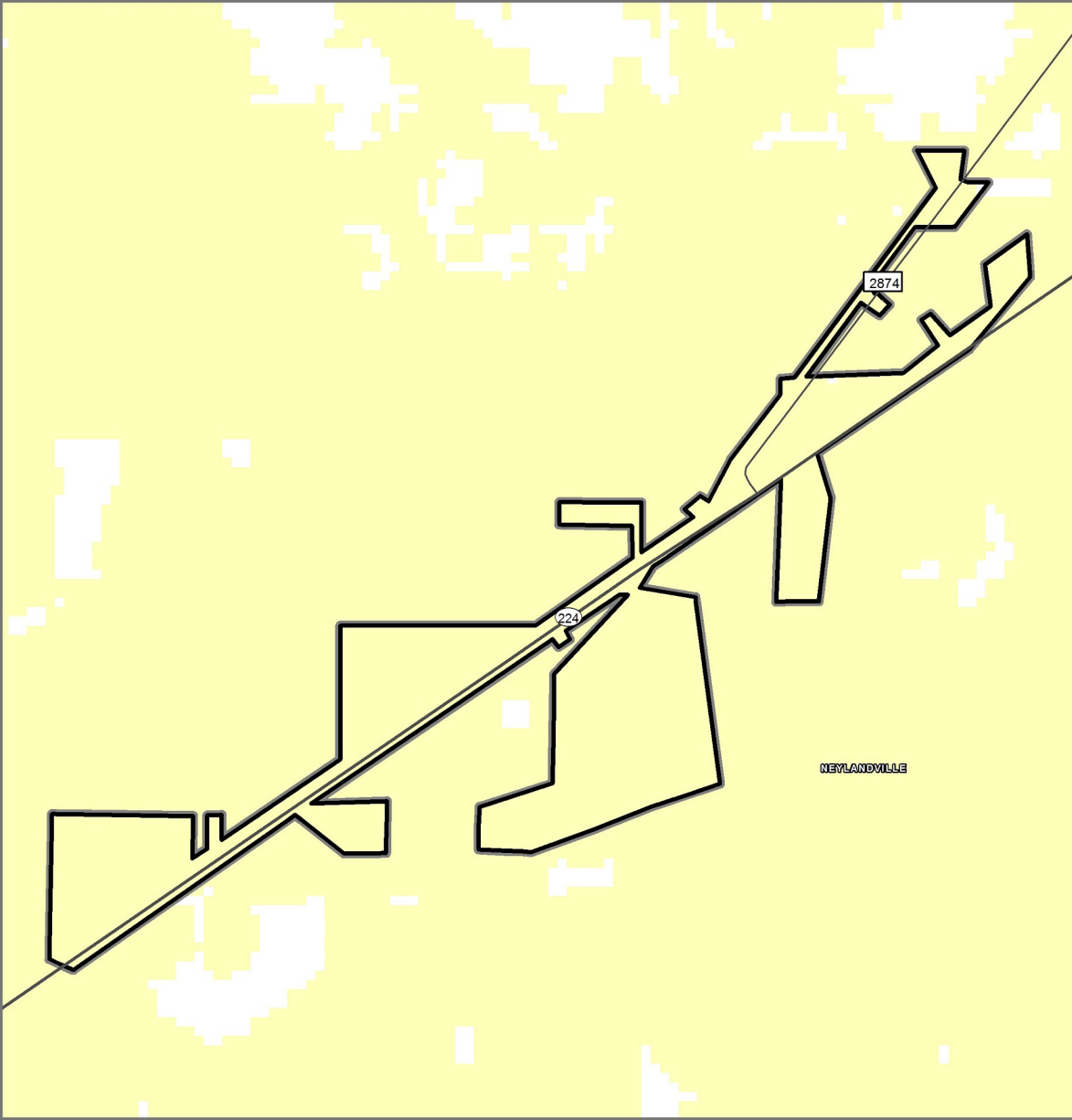


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Map E.4
City of Neylandville

Wildfire Threat

-  Non-Burnable
-  1 (Low)
-  2
-  3 (Moderate)
-  4
-  5 (High)
-  6
-  7 (Very High)



0 0.08 0.16 0.24 0.32 Miles


Date: 6/24/2014

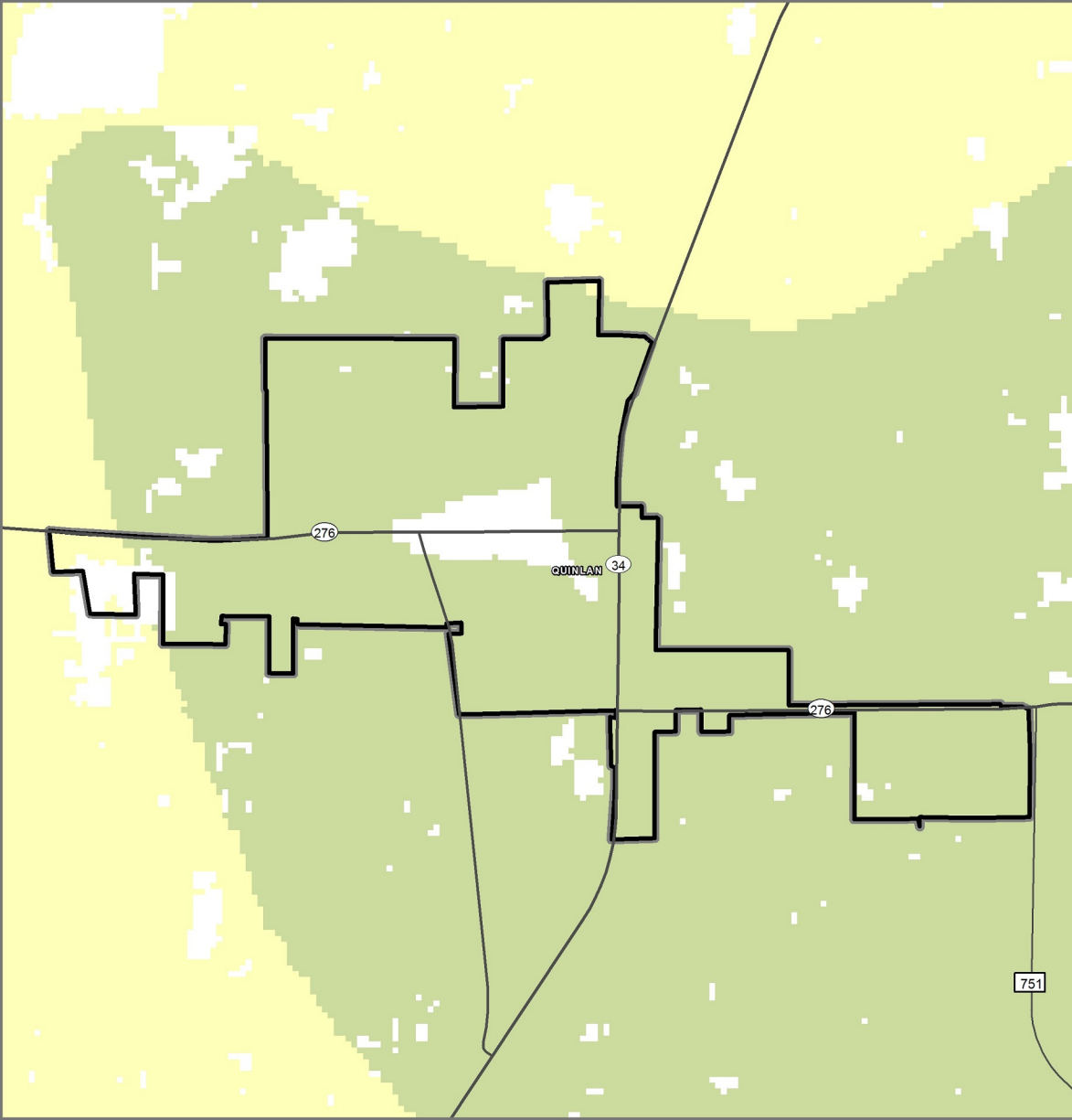


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Map E.5
City of Quinlan

Wildfire Threat

-  Non-Burnable
-  1 (Low)
-  2
-  3 (Moderate)
-  4
-  5 (High)
-  6
-  7 (Very High)



0 0.1 0.2 0.3 0.4 Miles


Date: 6/24/2014

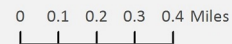
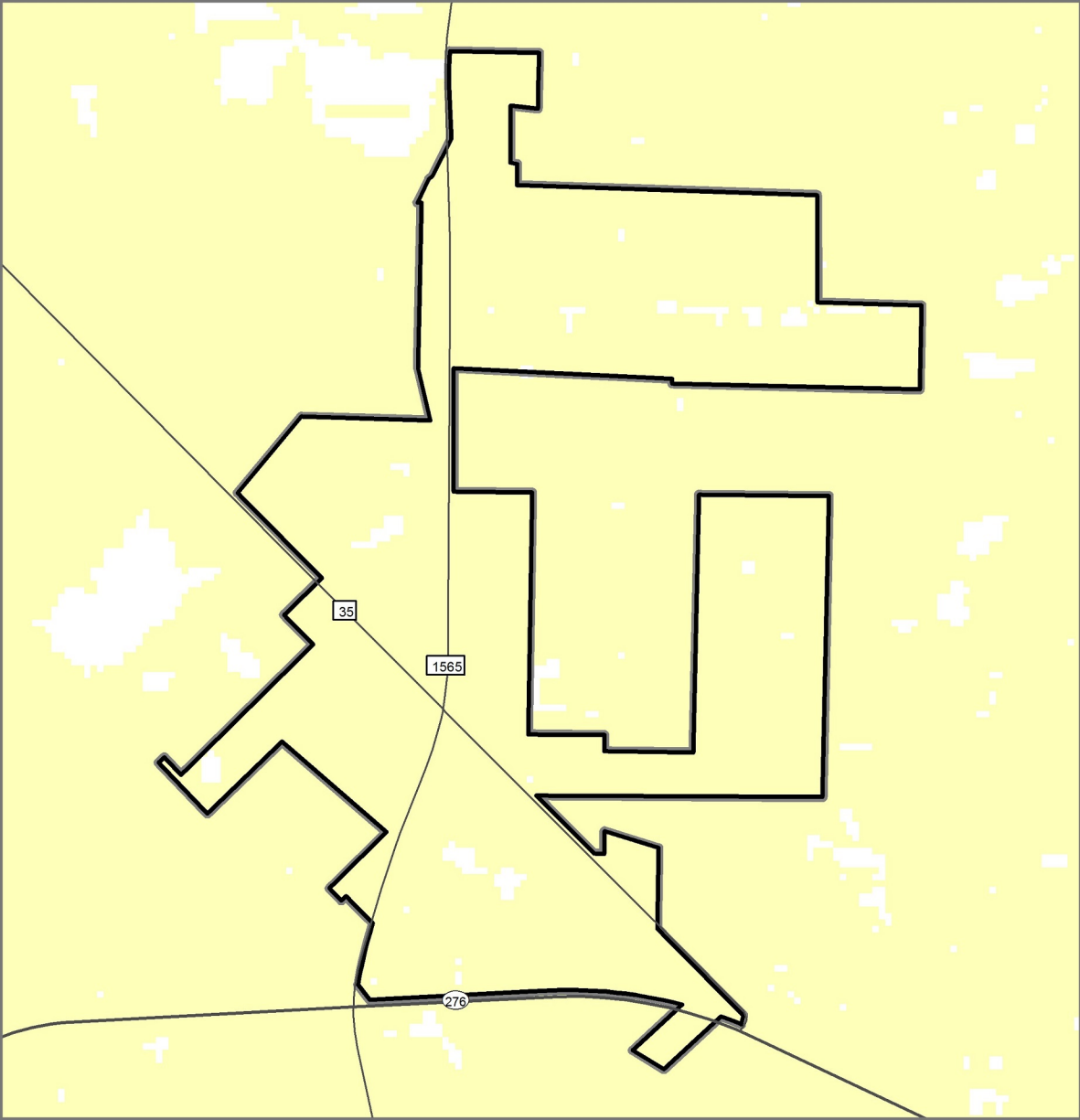


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Map E.6
City of Union Valley

Wildfire Threat

-  Non-Burnable
-  1 (Low)
-  2
-  3 (Moderate)
-  4
-  5 (High)
-  6
-  7 (Very High)




Date: 6/24/2014

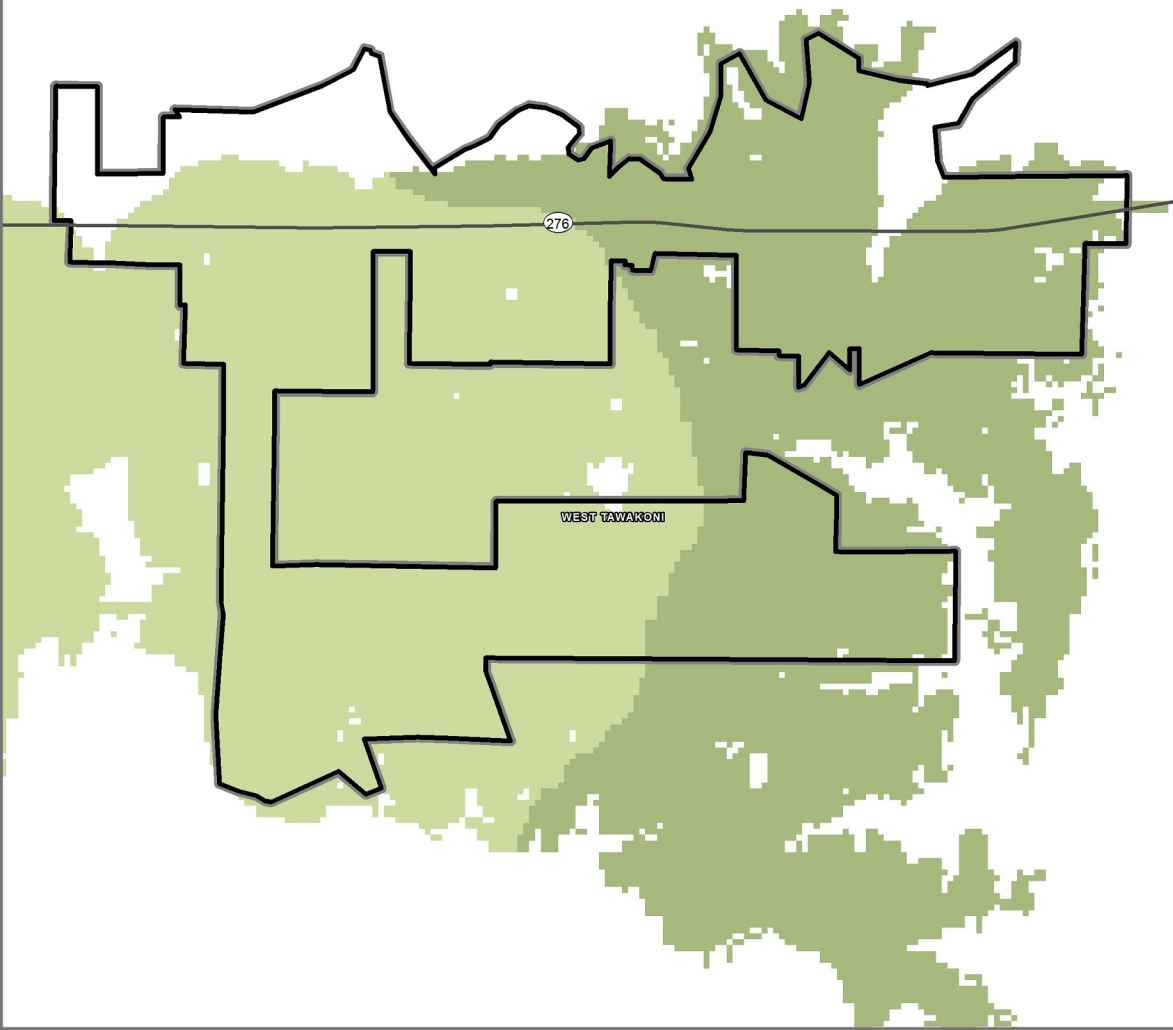


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Map E.7
City of West Tawakoni

Wildfire Threat

-  Non-Burnable
-  1 (Low)
-  2
-  3 (Moderate)
-  4
-  5 (High)
-  6
-  7 (Very High)



0 0.1 0.2 0.3 0.4 Miles

Date: 6/24/2014

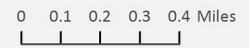
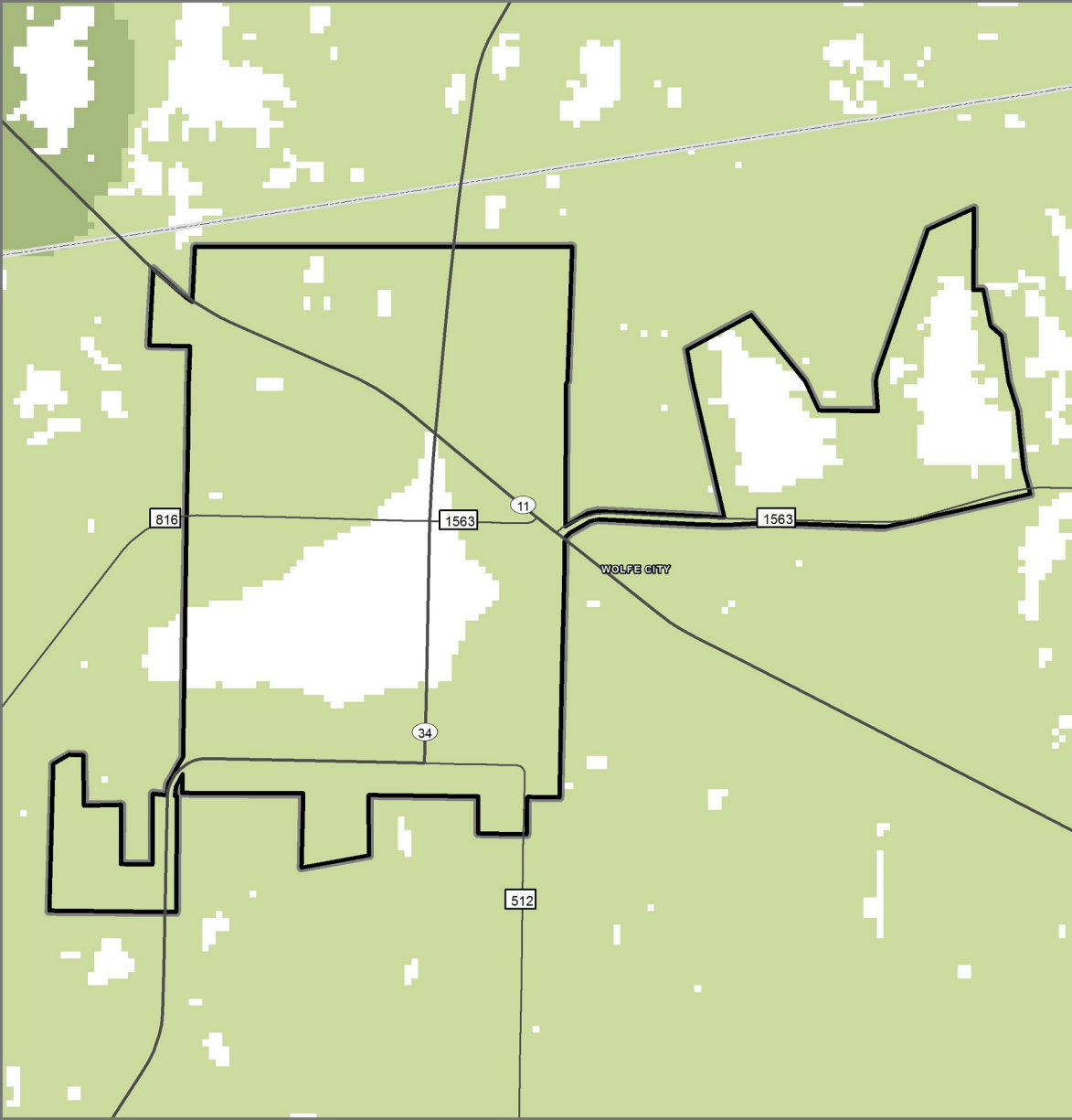


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Map E.8
City of Wolfe City

Wildfire Threat

-  Non-Burnable
-  1 (Low)
-  2
-  3 (Moderate)
-  4
-  5 (High)
-  6
-  7 (Very High)



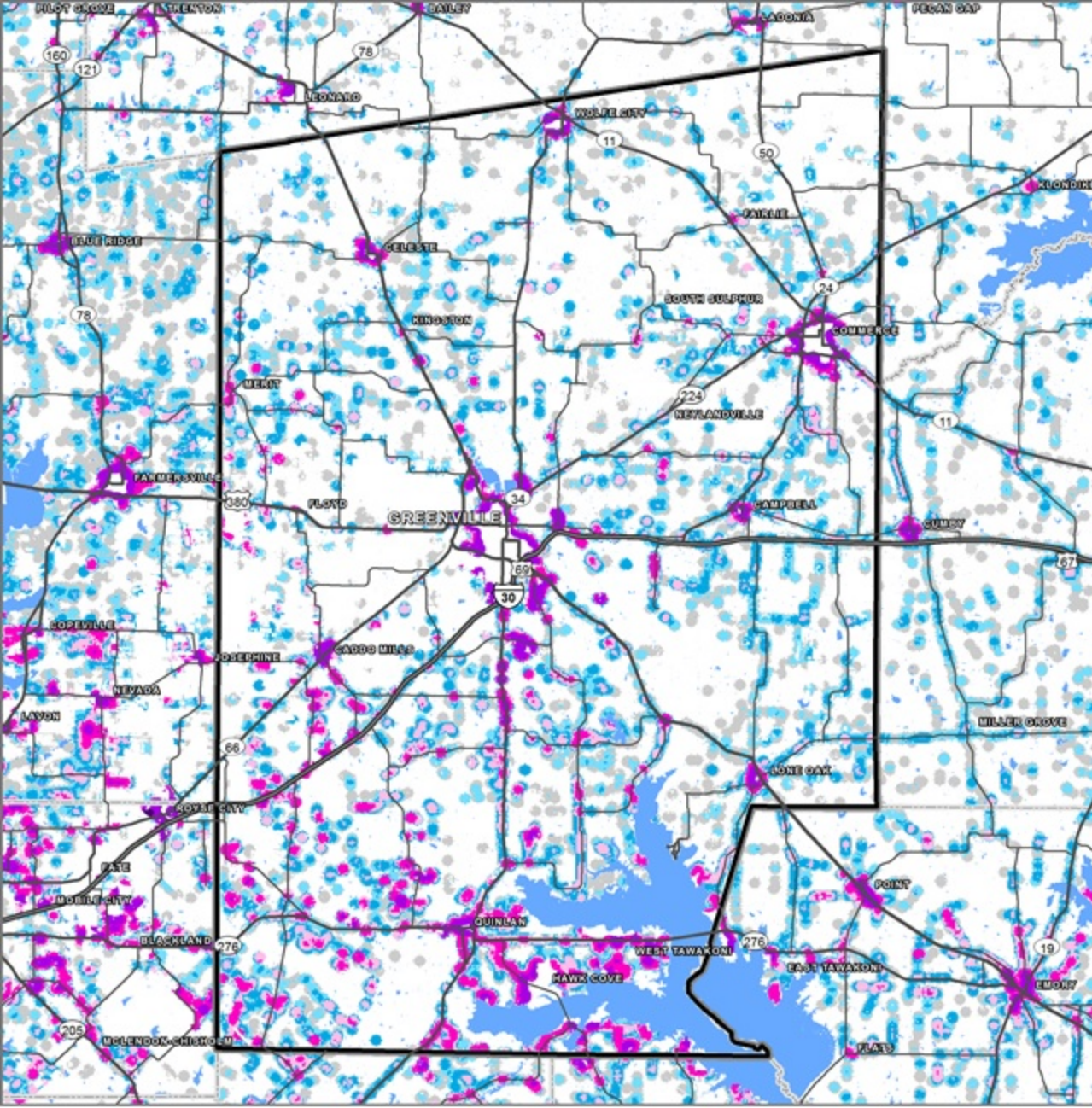
Date: 6/24/2014



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Map F.1
Hunt County

Wildland Urban Interface



0 1.5 3 4.5 6 Miles



Date: 7/1/2014

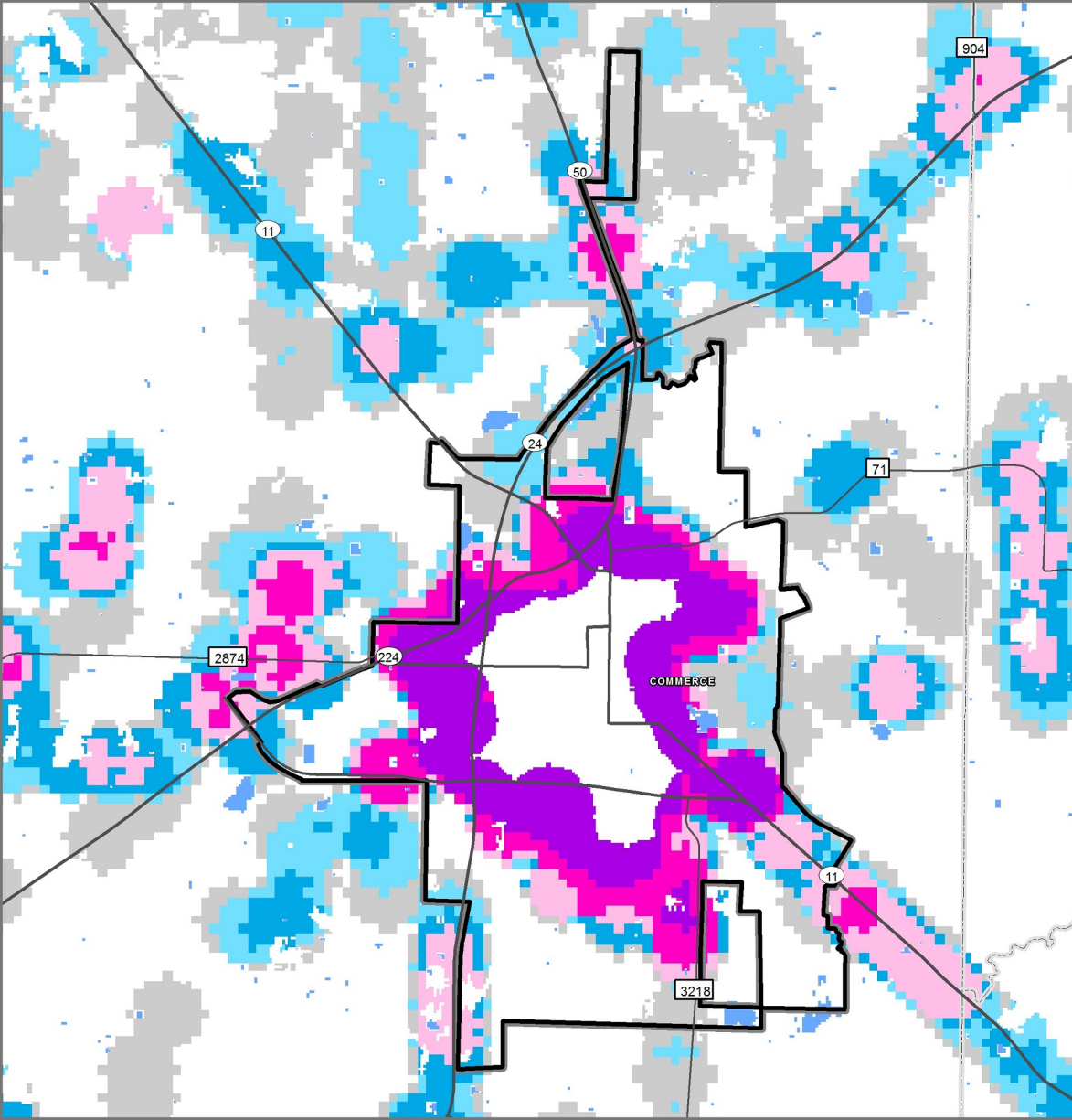


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Map F.2
City of Commerce

Wildland Urban Interface

- 1 - LT 1 hs/40 ac
- 2 - 1 hs/40 to 1 hs/20 ac
- 3 - 1 hs/20 to 1 hs/10 ac
- 4 - 1 hs/10 to 1 hs/5 ac
- 5 - 1 hs/5 to 1 hs/2 ac
- 6 - 1 hs/2 to 3 hs/ac
- 7 - GT 3 hs/ac



0 0.3 0.6 0.9 1.2 Miles

Date: 6/24/2014

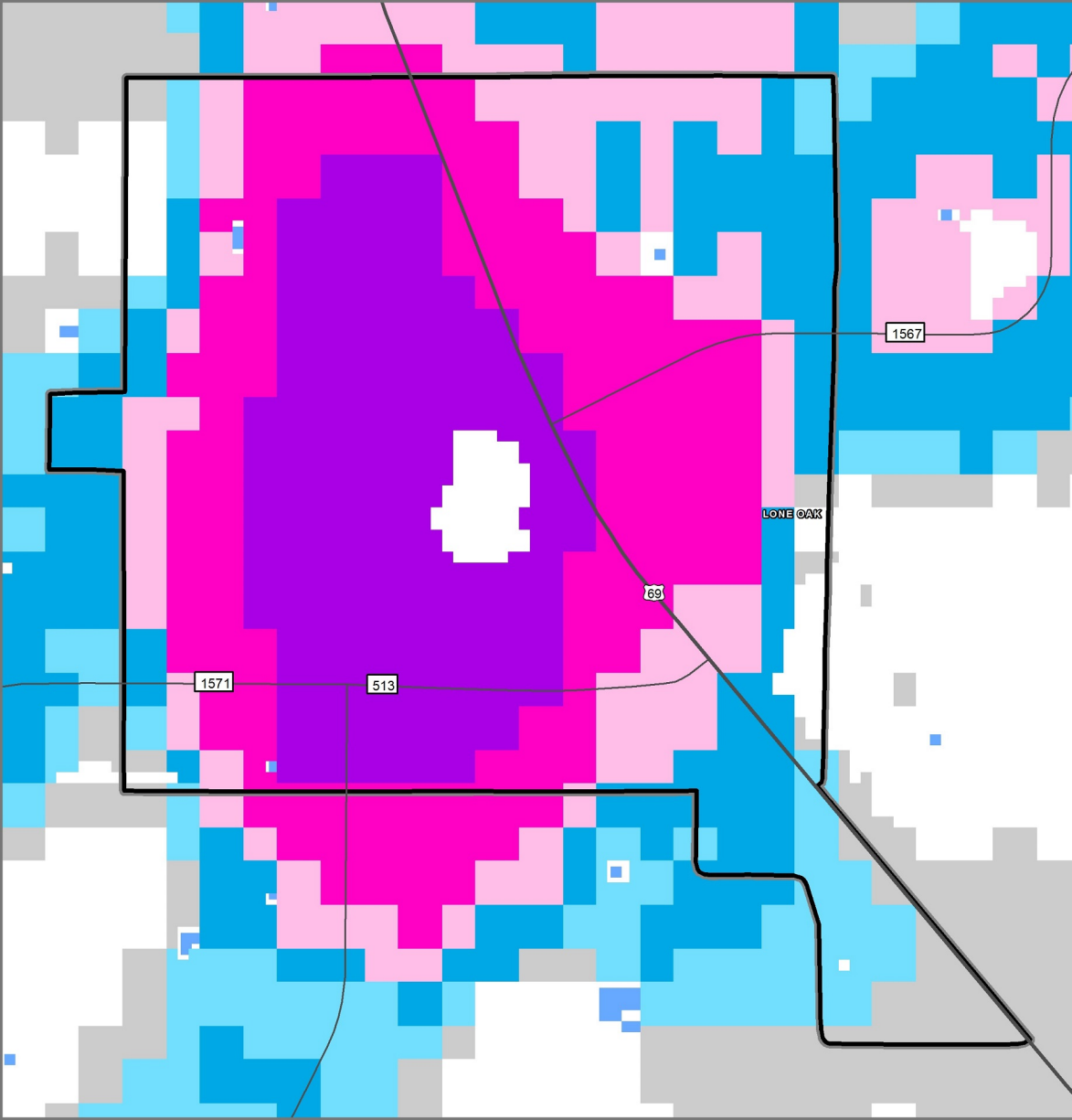


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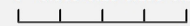
Map F.3
City of Lone Oak

Wildland Urban Interface

- 1 - LT 1 hs/40 ac
- 2 - 1 hs/40 to 1 hs/20 ac
- 3 - 1 hs/20 to 1 hs/10 ac
- 4 - 1 hs/10 to 1 hs/5 ac
- 5 - 1 hs/5 to 1 hs/2 ac
- 6 - 1 hs/2 to 3 hs/ac
- 7 - GT 3 hs/ac



0 0.065 0.13 0.195 0.26 Miles



Date: 6/24/2014

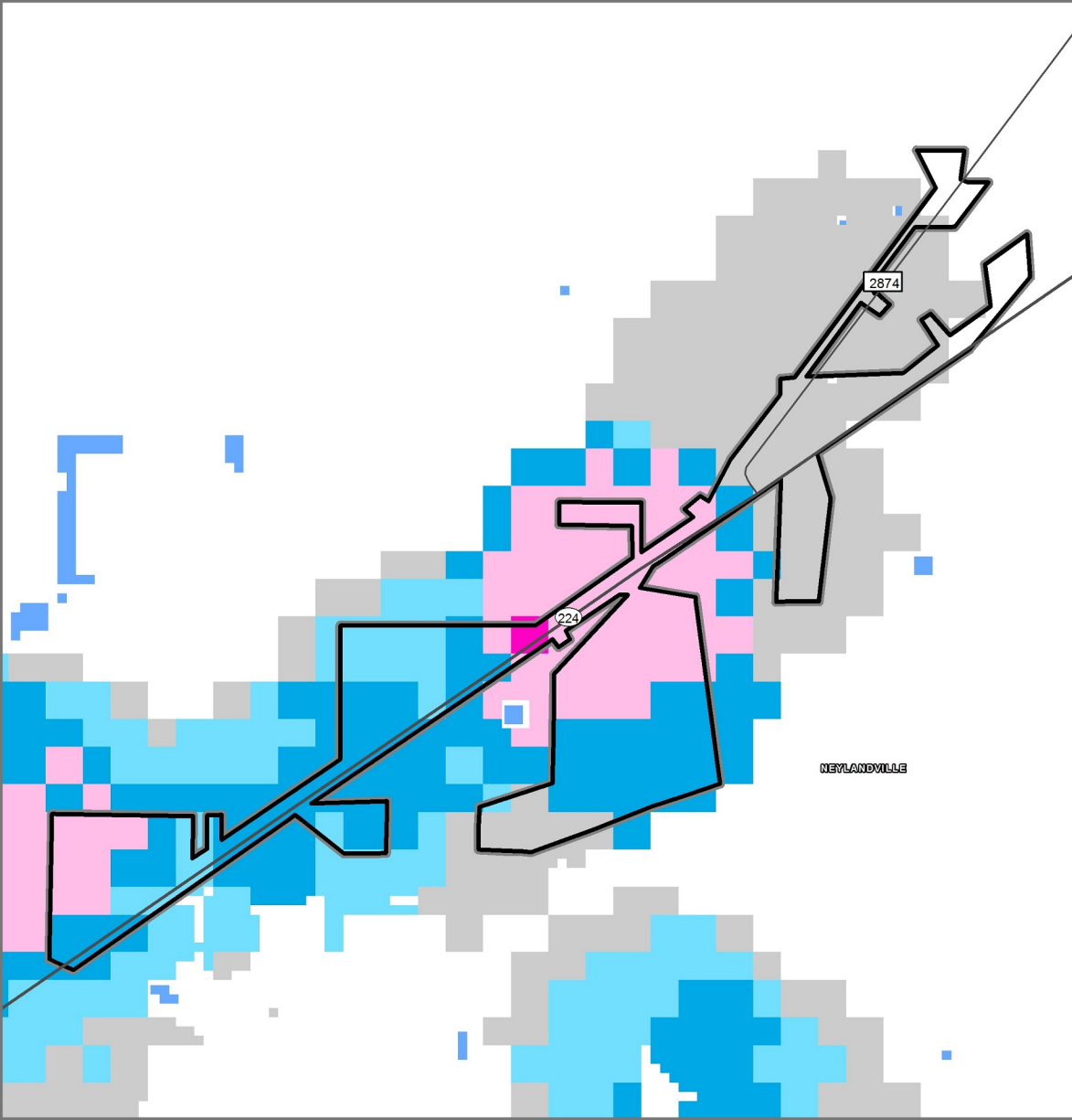


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Map F.4
City of Neylandville

Wildland Urban Interface

- 1 - LT 1 hs/40 ac
- 2 - 1 hs/40 to 1 hs/20 ac
- 3 - 1 hs/20 to 1 hs/10 ac
- 4 - 1 hs/10 to 1 hs/5 ac
- 5 - 1 hs/5 to 1 hs/2 ac
- 6 - 1 hs/2 to 3 hs/ac
- 7 - GT 3 hs/ac



NEYLANDVILLE



Date: 6/24/2014

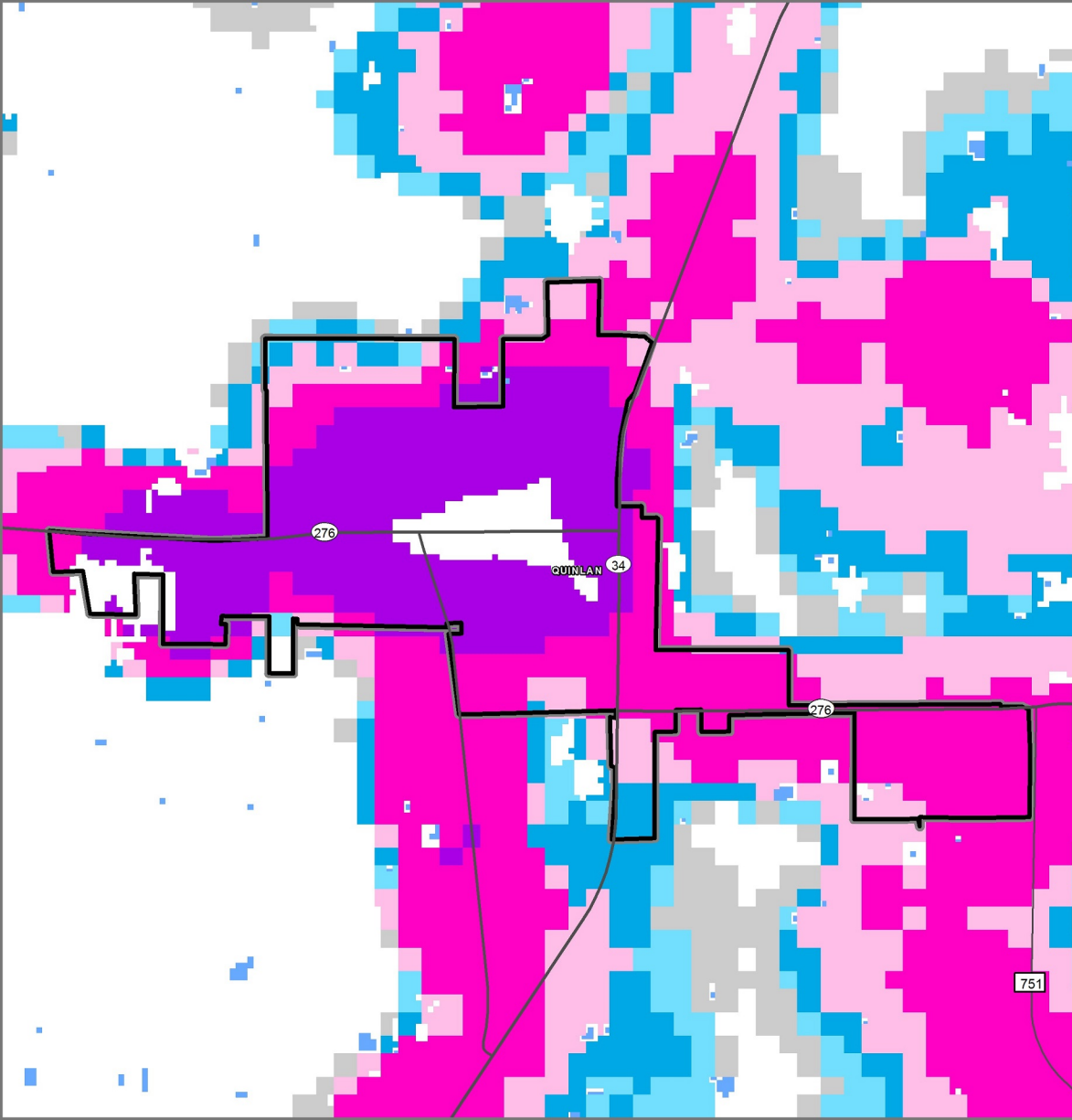


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Map F.5
City of Quinlan

Wildland Urban Interface

- 1 - LT 1 hs/40 ac
- 2 - 1 hs/40 to 1 hs/20 ac
- 3 - 1 hs/20 to 1 hs/10 ac
- 4 - 1 hs/10 to 1 hs/5 ac
- 5 - 1 hs/5 to 1 hs/2 ac
- 6 - 1 hs/2 to 3 hs/ac
- 7 - GT 3 hs/ac



0 0.1 0.2 0.3 0.4 Miles

Date: 6/24/2014

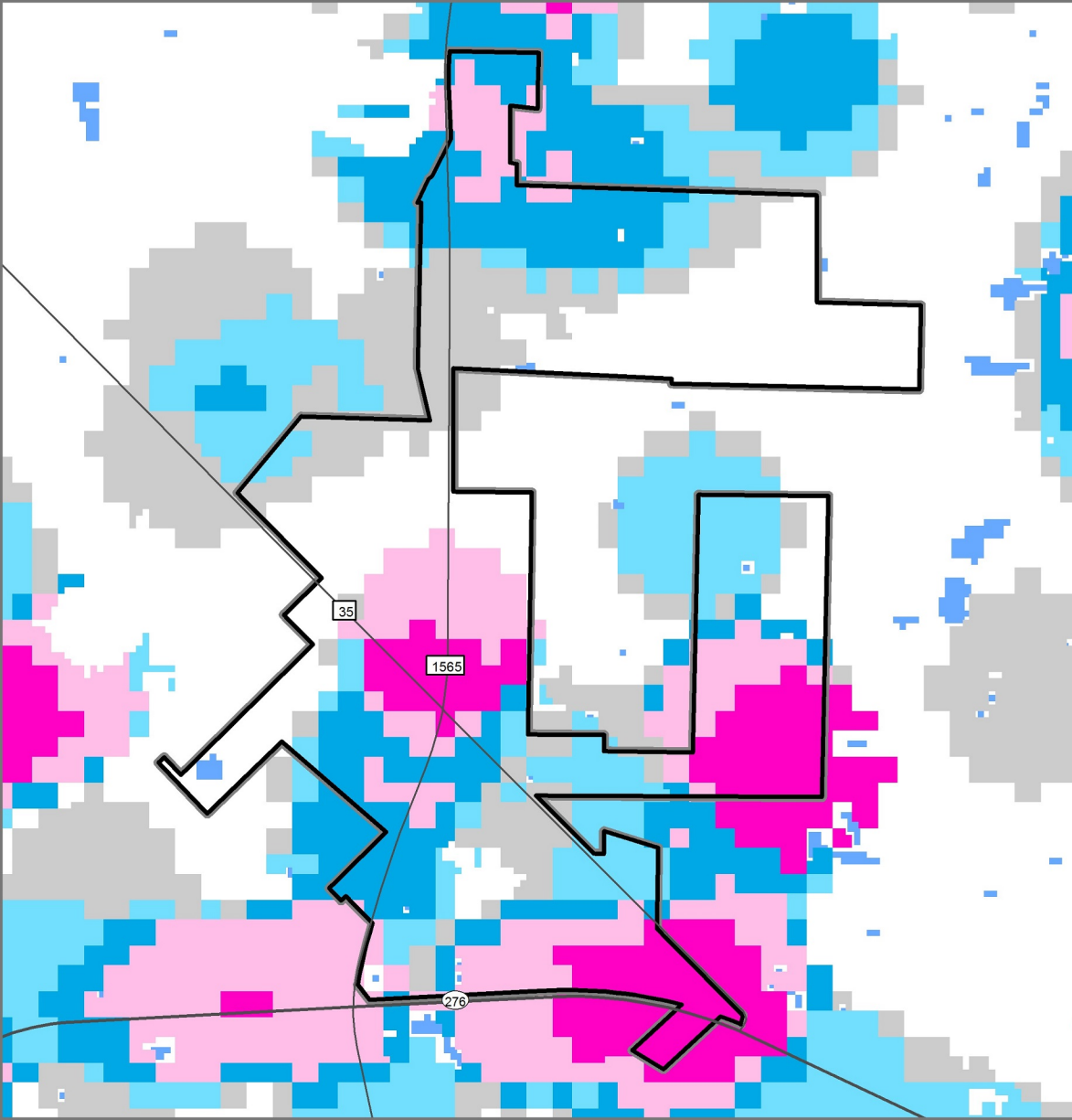


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Map F.6
City of Union Valley

Wildland Urban Interface

- 1 - LT 1 hs/40 ac
- 2 - 1 hs/40 to 1 hs/20 ac
- 3 - 1 hs/20 to 1 hs/10 ac
- 4 - 1 hs/10 to 1 hs/5 ac
- 5 - 1 hs/5 to 1 hs/2 ac
- 6 - 1 hs/2 to 3 hs/ac
- 7 - GT 3 hs/ac



0 0.1 0.2 0.3 0.4 Miles

Date: 6/24/2014

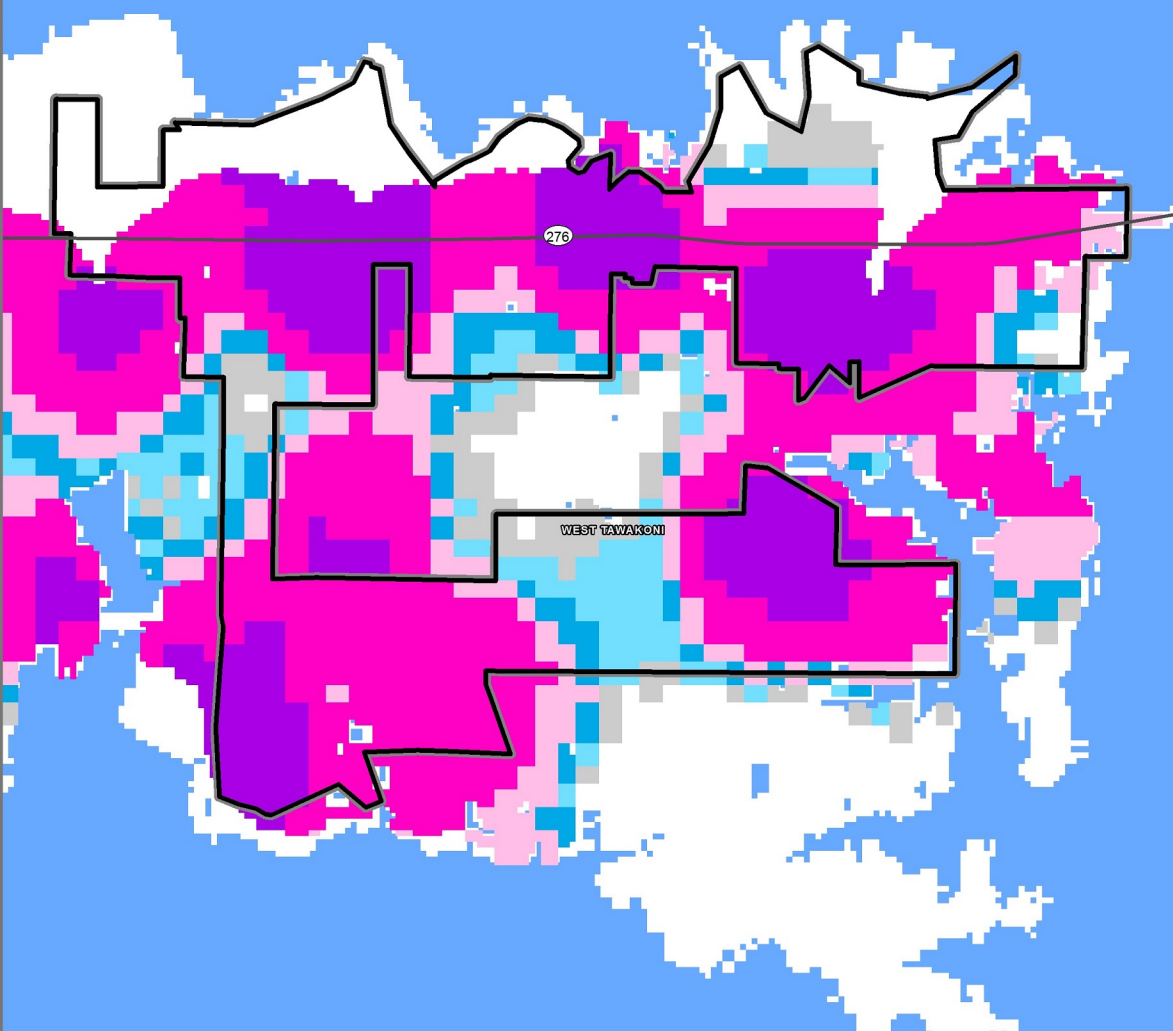


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Map F.7
City of West Tawakoni

Wildland Urban Interface

- 1 - LT 1 hs/40 ac
- 2 - 1 hs/40 to 1 hs/20 ac
- 3 - 1 hs/20 to 1 hs/10 ac
- 4 - 1 hs/10 to 1 hs/5 ac
- 5 - 1 hs/5 to 1 hs/2 ac
- 6 - 1 hs/2 to 3 hs/ac
- 7 - GT 3 hs/ac



0 0.1 0.2 0.3 0.4 Miles

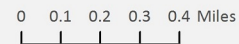
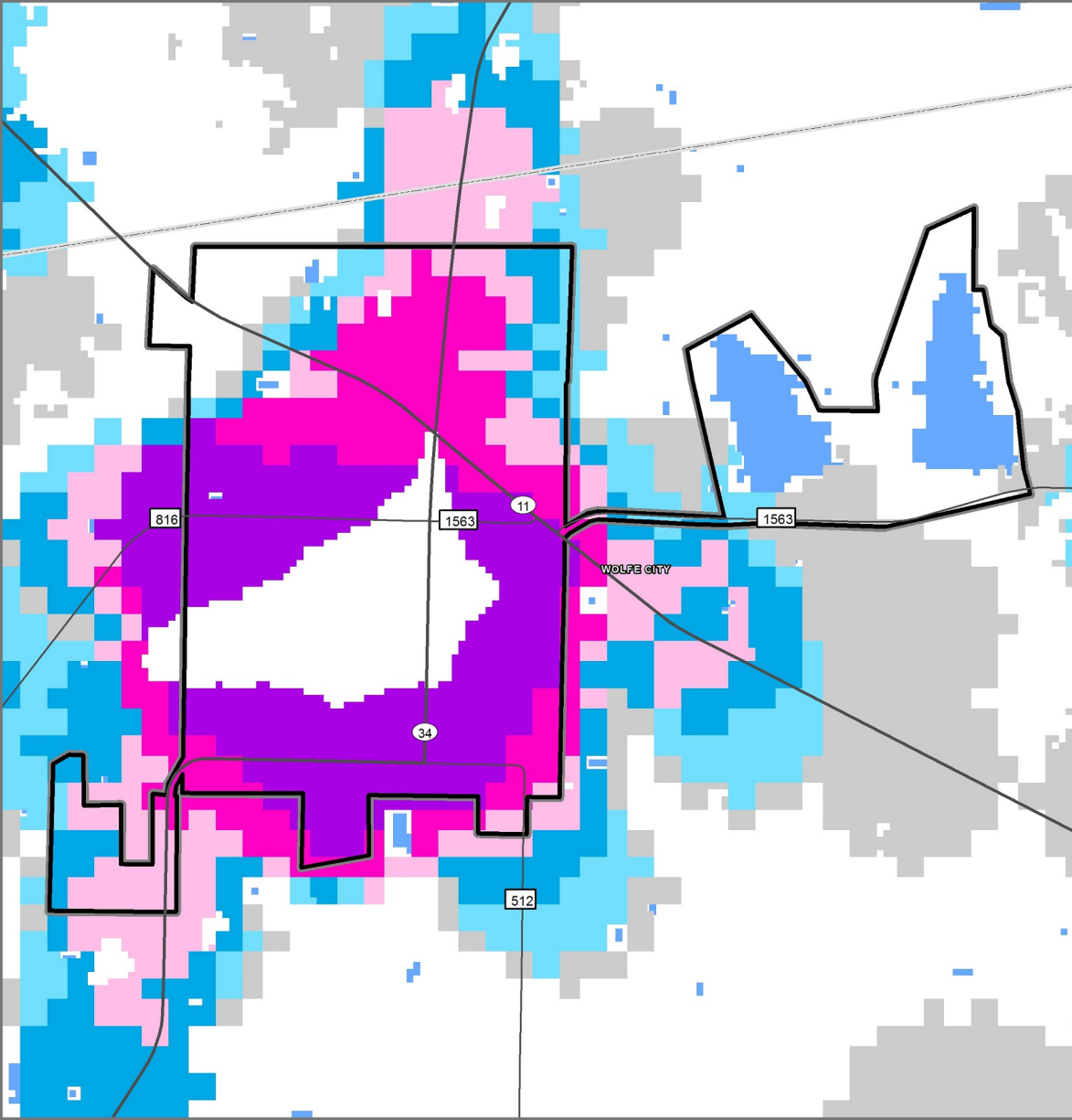
Date: 6/24/2014



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Wildland Urban Interface

- 1 - LT 1 hs/40 ac
- 2 - 1 hs/40 to 1 hs/20 ac
- 3 - 1 hs/20 to 1 hs/10 ac
- 4 - 1 hs/10 to 1 hs/5 ac
- 5 - 1 hs/5 to 1 hs/2 ac
- 6 - 1 hs/2 to 3 hs/ac
- 7 - GT 3 hs/ac



Date: 6/24/2014



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3.3 Extent

Natural Hazards are judged on specific extent scales. The following are the known extent scales for the natural hazard tornadoes as addressed in the Hunt County Hazard Mitigation Action Plan.

Drought

In 1965, Palmer developed an index to "measure the departure of the moisture supply". Palmer based his index on the supply-and-demand concept of the water balance equation, taking into account more than only the precipitation deficit at specific locations. The objective of the Palmer Drought Severity Index (PDSI), as this index is now called, was to provide a measurement of moisture conditions that were "standardized" so that comparisons using the index could be made between locations and between months.

The Palmer Drought Index is based on precipitation and temperature. The Palmer Index can therefore be applied to any site for which sufficient precipitation and temperature data is available.

The Palmer Index varies roughly between -4.0 and +4.0. Weekly Palmer Index values are calculated for the Climate Divisions during every growing season and are on the internet from the Climate Prediction Center.

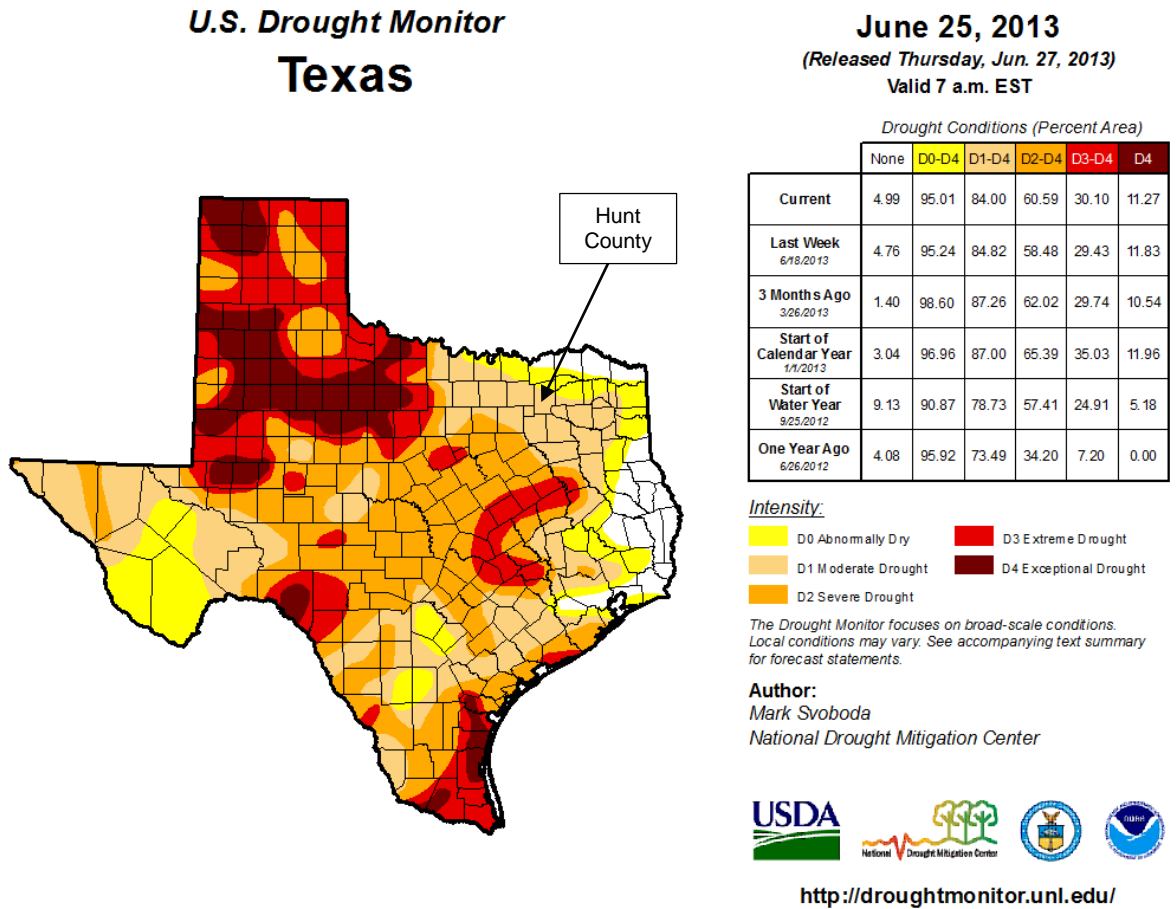
Figure 3.1 PDSI Classifications

PDSI Classifications for Dry and Wet Periods	
4.00 or more	Extremely wet
3.00 to 3.99	Very wet
2.00 to 2.99	Moderately wet
1.00 to 1.99	Slightly wet
0.50 to 0.99	Incipient wet spell
0.49 to -0.49	Near normal
-0.50 to -0.99	Incipient dry spell
-1.00 to -1.99	Mild drought
-2.00 to -2.99	Moderate drought
-3.00 to -3.99	Severe drought
-4.00 or less	Extreme drought

Source: <http://drought.unl.edu/whatis/indices.htm>

Drought conditions do occur in this community. The PDSI Classification allows community planners to anticipate the effects of drought and plan preparedness and mitigation activities for future events as they will likely occur. The last event of widespread drought in Hunt County was in 2013.

Figure 3.2 Drought Monitor



http://droughtmonitor.unl.edu/data/pngs/20130625/20130625_tx_trd.png

Earthquake: Mercalli & Richter Scales Comparison

Figure 3.3 Earthquake: Mercalli & Richter Scales Comparison

Mercalli Scale	Richter Scale	
I.	0 – 1.9	Not felt. Marginal and long period effects of large earthquakes.
II.	2.0 -2.9	Felt by persons at rest, on upper floors, or favorably placed.
III.	3.0 – 3.9	Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.
IV.	4.0 - 4.3	Hanging objects swing. Vibration like passing of heavy trucks. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink the upper range of IV, wooden walls and frame creak.
V.	4.4 - 4.8	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Pendulum clocks stop, start.
VI.	4.9 - 5.4	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Books, etc., off shelves. Pictures off walls. Furniture moved. Weak plaster and masonry D cracked. Small bells ring. Trees, bushes shaken.
VII.	5.5 - 6.1	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices. Some cracks in masonry C. Waves on ponds. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.
VIII.	6.2 - 6.5	Steering of motor cars affected. Damage to masonry C; partial collapse. Some damage to masonry B. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.
IX.	6.6 - 6.9	General panic. Masonry D destroyed; masonry C heavily damaged, sometimes with complete collapse; masonry B seriously damaged. (General damage to foundations.) Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluvial areas sand and mud ejected, earthquake fountains, sand craters.
X.	7.0 - 7.3	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.
XI.	7.4 - 8.1	Rails bent greatly. Underground pipelines completely out of service.
XII.	> 8.1	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.

Masonry A: Good workmanship, mortar, and design; reinforced, especially laterally, and bound together by using steel, concrete, etc.; designed to resist lateral forces.

Masonry B: Good workmanship and mortar; reinforced, but not designed in detail to resist lateral forces.

Masonry C: Ordinary workmanship and mortar; no extreme weaknesses like failing to tie in at corners, but neither reinforced nor designed against horizontal forces.

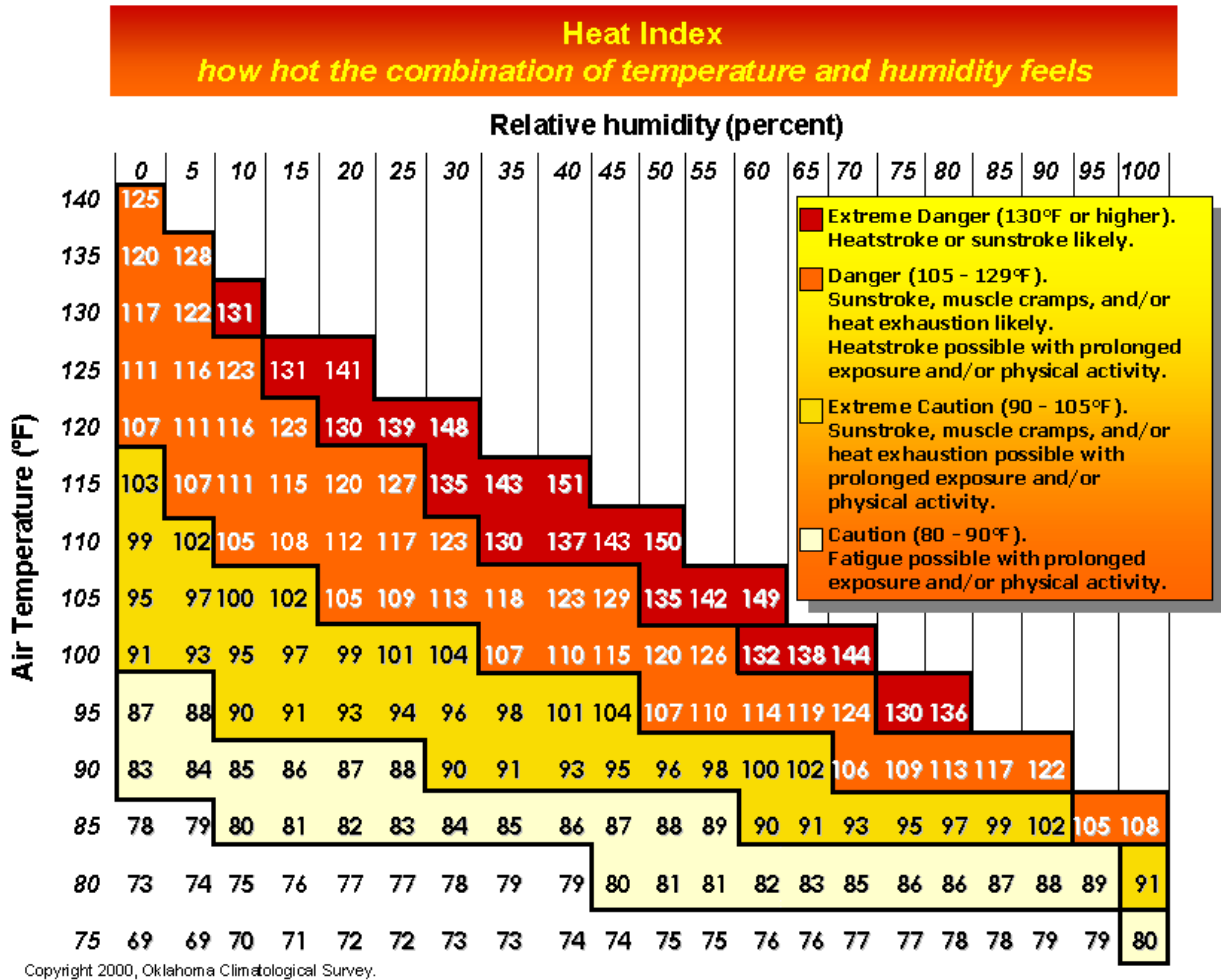
Masonry D: Weak materials, such as adobe; poor mortar; low standards of workmanship; weak horizontally.

Source: <http://www.abag.ca.gov/bayarea/eqmaps/doc/mmigif/m10.html>

The Mercalli and Richter Scales allow planners to assess the impact earthquakes have. There have been no recorded earthquakes in Hunt County since 2002.

Extreme Heat

Figure 3.4 Heat Index



Source: <http://www.ima.army.mil/southwest/sites/divisions/Safety/Heat%20Index.gif>

The Heat Index chart displays the relative danger in regards to air temperature and relative humidity. Extreme heat is a hazard this community faces on an annual basis during the summer season. A combination of high temperatures and high humidity prompt heat advisories. This chart allows communities to assess the citizen's danger in regards to heat index. According to the National Climatic Data Center, there have been two heat events in Hunt County since 2002. One of the events resulted in one fatality.

Flood Zones

Figure 3.5 Flood Zone Classification

The 100-year or Base Floodplain. There are six types of A zones:		
Zone A	A	The base floodplains mapped by approximate methods, i.e., BFEs are not determined. This is often called an unnumbered A zone or an approximate A zone.
	A1-30	These are known as numbered A zones (e.g., A7 or A14). This is the base floodplain where the firm shows a BFE (old format).
	AE	The base floodplain where base flood elevations are provided. AE zones are now used on new format FIRMs instead of A1-30 zones.
	AO	The base floodplain with sheet flow, ponding, or shallow flooding. Base flood depths (feet above ground) are provided.
	AH	Shallow flooding base floodplain. BFE's are provided.
	A99	Area to be protected from base flood by levees or Federal flood protection systems under construction. BFEs are not determined.
Zone V and VE	AR	The base floodplain that results from the de-certification of a previously accredited flood protection system that is in the process of being restored to provide a 100-year or greater level of flood protection
	V	The coastal area subject to velocity hazard (wave action) where BFEs are not determined on the FIRM.
	VE	The coastal area subject to velocity hazard (wave action) where BFEs are provided on the FIRM.
Zone B and Zone X (shaded)	Area of moderate flood hazard, usually the area between the limits of the 100-year and the 500-year floods. B zones are also used to designate base floodplains or lesser hazards, such as areas protected by levees from the 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.	
Zone C and Zone X (unshaded)	Area of minimal flood hazard, usually depiction FIRMs as exceeding the 500-year flood level. Zone C may have ponding and local drainage problems that do not warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood.	
Zone D	Area of undetermined but possible flood hazards.	

Source: <http://www.fema.gov/floodplain-management/flood-zones>

Flood hazard areas are identified as a Special Flood Hazard Area (SFHA). SFHAs are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. SFHAs are labeled as Zone A, Zone V, and Zone VE. Moderate flood hazard areas, labeled Zone B or Zone X, are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are defined as Zone C or Zone X. These flood zone identifications allow planners to determine appropriate land use in designated zones.

For example, according to the National Climatic Data Center, in 2007 a flash flood in the City of Quinlan caused \$40,000 in property damage.

Combined NOAA/TORRO Hailstorm Intensity Scales

Figure 3.6 Combined NOAA/TORRO Hailstorm Intensity Scales

Size Code	Intensity Category	Typical Hail Diameter (inches)	Approximate Size	Typical Damage Impacts
H0	Hard Hail	up to 0.33	Pea	No damage
H1	Potentially Damaging	0.33-0.60	Marble or Mothball	Slight damage to plants, crops
H2	Potentially Damaging	0.60-0.80	Dime or grape	Significant damage to fruit, crops, vegetation
H3	Severe	0.80-1.20	Nickel to Quarter	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	1.2-1.6	Half Dollar to Ping Pong Ball	Widespread glass damage, vehicle bodywork damage
H5	Destructive	1.6-2.0	Silver dollar to Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	2.0-2.4	Lime or Egg	Aircraft bodywork dented, brick walls pitted
H7	Very destructive	2.4-3.0	Tennis ball	Severe roof damage, risk of serious injuries
H8	Very destructive	3.0-3.5	Baseball to Orange	Severe damage to aircraft bodywork
H9	Super Hailstorms	3.5-4.0	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	4+	Softball and up	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Source: <http://www.torro.org.uk/site/hyscale.php>

The Hailstorm Intensity Scale is representative of the damage from hail storms this community has experienced in the past and will likely experience in the future. The Hailstorm Intensity Scale allows planners to gauge past damage and mitigate for future expected damage.

For example, according to the National Climatic Data Center, there has been one storm since 2002 at the H7 ranking. In addition, in 2010, 1.75 inch hail caused \$100,000 in property damage in the City of Commerce.

Beaufort Wind Scale

Figure 3.7 Beaufort Wind Scale

Force	Wind	WMO	Appearance of Wind Effects	
	(Knots)	Classification	On the Water	On Land
0	Less than 1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	17-21	Fresh Breeze	Moderate waves 4-8 ft. taking longer form, many whitecaps, some spray	Small trees in leaf begin to sway
6	22-27	Strong Breeze	Larger waves 8-13 ft., whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Sea heaps up, waves 13-20 ft., white foam streaks off breakers	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Moderately high (13-20 ft.) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Whole trees in motion, resistance felt walking against wind
9	41-47	Strong Gale	High waves (20 ft.), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Very high waves (20-30 ft.) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	Exceptionally high (30-45 ft.) waves, foam patches cover sea, visibility more reduced	
12	64+	Hurricane	Air filled with foam, waves over 45 ft., sea completely white with driving spray, visibility greatly reduced	

Source: <http://www.spc.noaa.gov/faq/tornado/beaufort.html>

The Beaufort Wind Scale is representative of the damage from high winds this community may endure. The Beaufort Wind Scale allows planners in the community to assess historical data and mitigate for future high wind events.

For example, according to the National Climatic Data Center, in 2011 the City of Quinlan experienced over Force 10 (55+ knot winds) that caused \$100,000 in property damage.

Lightning Activity Level Grid

The Lightning Activity Level (LAL) is a common parameter that is part of fire weather forecasts nationwide. LAL is a measure of the amount of lightning activity using values 1 to 6 where:

Figure 3.8 Lightning Activity Level Grid

Lightning Activity Level (LAL) A scale which describes lightning activity. Values are labeled 1-6:	
LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period.
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.

Source: <http://www.nws.noaa.gov/forecasts/wfo/definitions/defineLAL.html>

The Lightning Activity Level grid provides a way to gauge the average number of strikes that may accompany a given type of storm. The average number of strikes is given since the density of lightning strikes varies from storm to storm. According to the National Climatic Data Center, there have been a total of nine lightning events reported in Hunt County since 2002. In 2007, one of the lightning events caused \$100,000 in property damage in the City of Lone Oak.

Fujita Scale
Figure 3.9 Fujita Scale

F-Scale Number	Intensity Phrase	Wind Speed	Type of Damage
F0	Gale tornado	40-72 mph	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
F1	Moderate tornado	73-112 mph	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; manufactured homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
F2	Significant tornado	113-157 mph	Considerable damage. Roofs torn off frame houses; manufactured homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe tornado	158-206 mph	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted
F4	Devastating tornado	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible tornado	261-318 mph	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged.
F6	Inconceivable tornado	319-379 mph	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies

Source: <http://tornadoproject.com/fscale/fscale.htm>

On February 1, 2007, the Fujita scale was decommissioned in favor of the more accurate Enhanced Fujita Scale, which replaced it. None of the tornadoes recorded on or before January 31, 2007 will be re-categorized. Therefore maintaining the Fujita scale will be necessary when referring to previous events.

Enhanced Fujita Scale

Figure 3.10 Enhanced Fujita Scale

Enhanced Fujita Category	Wind Speed (mph)	Potential Damage
EF0	65-85	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110	Moderate damage. Roofs severely stripped; manufactured homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; manufactured homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>200	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd.); high-rise buildings have significant structural deformation;

Source: <http://www.spc.noaa.gov/efscale/>

The Enhanced Fujita Scale is representative of the damage from tornadoes this community has faced in the past and will no doubt face in the future. The Enhanced Fujita Scale allows planners to prepare and mitigate future potential damage by assessing the historical nature of tornados in the planning community.

For example, according to the National Climatic Data Center, in 2012 an EF2 tornado occurred in Union Valley. The tornado caused \$500,000 worth of property damage.

Wildfire

Keetch-Byram Drought Index

Figure 3.11 Keetch-Byram Drought Index

KBDI	Fire Potential
0-200	Soil moisture and large class fuel moistures are high and do not contribute much to fire intensity. Typical of spring dormant season following winter precipitation.
200-400	Typical of late spring, early growing season. Lower litter and duff layers are drying and beginning to contribute to fire intensity
400-600	Typical of late summer, early fall. Lower litter and duff layers contribute to fire intensity and will burn actively.
600-800	Often associated with more severe drought with increased wildfire occurrence. Intense, deep-burning fires with significant downwind spotting can be expected. Live fuels can also be expected to burn actively at these levels.

Source: <http://www.tamu.edu/ticc/KBDI%20Fact%20Sheet.pdf>

The index scale ranges from 0 to 800 and represents moisture deficiency in hundredths of an inch. By looking at indicators of moisture deficiency in the soil in this chart, communities are able to assess when they are at a heightened danger for a wildfire. According to the National Climatic Data Center there have been eight wildfire events in Hunt County since 2002. In 2011, a wildfire caused \$100,000 in property damage.

Fire Danger

Figure 3.12 Fire Danger

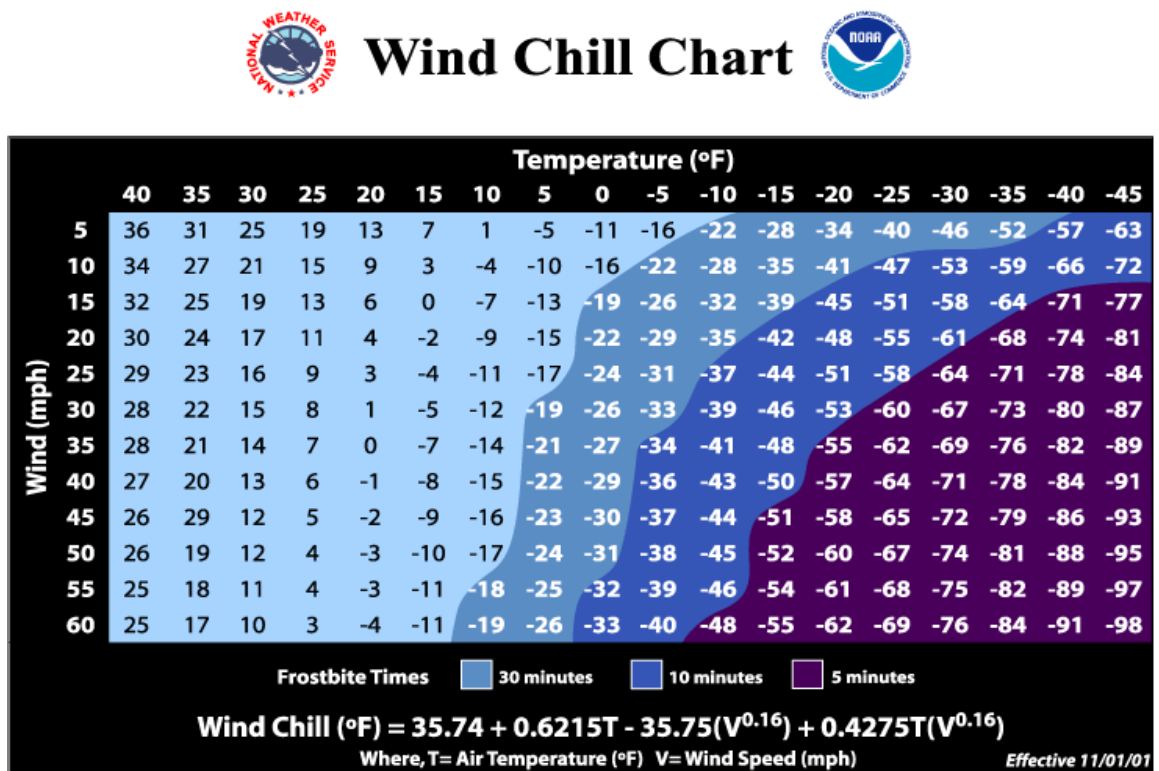
Rating	Basic Description	Detailed Description
CLASS 1: Low Danger (L) COLOR CODE: Green	fires not easily started	Fuels do not ignite readily from small firebrands. Fires in open or cured grassland may burn freely a few hours after rain, but wood fires spread slowly by creeping or smoldering and burn in irregular fingers. There is little danger of spotting.
CLASS 2: Moderate Danger (M) COLOR CODE: Blue	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 – especially draped fuel – may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
CLASS 3: High Danger (H) COLOR CODE: Yellow	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 fine fuel. Fires may become serious and their control difficult, unless they are hit hard and fast while small.
CLASS 4: Very High Danger (VH) COLOR CODE: Orange	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.
CLASS 5: Extreme (E) COLOR CODE: Red	fire situation is explosive and can result in extensive property damage	Fires under extreme conditions 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: <http://www.wfas.net/index.php/fire-danger-rating-fire-potential--danger-32/class-rating-fire-potential-danger-51?task=view>

Wind Chill

Wind Chill temperature you have undoubtedly heard of is simply a measure of how cold the wind makes real air temperature feel to the human body. Since wind can dramatically accelerate heat loss from the body, a blustery 30° day would feel just as cold as a calm day with 0° temperatures. The index was created in 1870, and on November 1, 2001, the National Weather Service released a more scientifically accurate equation, which we use today. Here is a chart for calculating wind chill. (Please note that it is not applicable in calm winds or when the temperature is over 50°.

Figure 3.13 NOAA Wind Chill Chart



Source: National Weather Service and NOAA

The Wind Chill Chart displays the frostbite times in regards to temperature and wind. This chart allows the communities to prepare for a winter storm or an ice event. These events are infrequent but can cause damage. The primary areas of concern are on bridges and roadways. For example, according to the National Climatic Data Center, in 2010 an ice storm caused \$500,000 in property damage across Hunt County.

Ice Accumulation

Figure 3.14 Ice Accumulation Index

The Sperry-Piltz Ice Accumulation Index, or “SPIA Index” – Copyright, February, 2009

ICE DAMAGE INDEX	DAMAGE AND IMPACT DESCRIPTIONS
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

(Categories of damage are based upon combinations of precipitation totals, temperatures and wind speeds/directions.)

Source: <http://www.spia-index.com/SPIAIndexDescription.png>

Local Extent Having identified the extent scales by which hazards are ranked, the participating jurisdictions have utilized the following definitions to determine the expected extent/severity for their planning area.

Figure 3.15 Figure Extent Charts

	High	Medium	Low
Dam Failure	<ul style="list-style-type: none"> Greater than 50% of city structures are in the inundation zone. Greater than 50% of the city's critical infrastructure in the identified inundation zone 	<ul style="list-style-type: none"> 20%-50% of city structures are in the inundation zone. 20%-50% of the city's critical infrastructure in the inundation zone 	<ul style="list-style-type: none"> Less than 20% of city structures are in the inundation zone. Less than 20% of the city's critical infrastructure in the inundation zone
Drought	<ul style="list-style-type: none"> PDSI 3.00- 4.00 or less Severe to extreme drought conditions 	<ul style="list-style-type: none"> PDSI 1.00- 2.99 Mild to moderate drought conditions 	<ul style="list-style-type: none"> PDSI 4.00 or more - 0.99 Extremely wet to incipient dry spells
Earthquake	<ul style="list-style-type: none"> Mercalli Scale: VIII-XII Richter Scale: 6.2->8.1 Driving will be difficult, increase in damage to infrastructures and objects can be thrown 	<ul style="list-style-type: none"> Mercalli Scale: VI-VII Richter Scale: 4.9-6.1 All will feel the event, walking will be difficult, glassware will break, irrigation ditches damaged 	<ul style="list-style-type: none"> Mercalli Scale: I-V Richter Scale: 0-4.8 Range of feeling the event is cannot be felt to being felt outdoors.
Flooding	<ul style="list-style-type: none"> 100yr Flood Zone, Zone A The extent of severity in the 100yr Flood Zone will be dependent on the structures and livestock located in the identified area. 	<ul style="list-style-type: none"> 500yr Flood Zone, Zone B The extent of severity in the 500yr Flood Zone will be dependent on the structures and livestock located in the identified area. 	<ul style="list-style-type: none"> Outside of 100yr and 500yr Flood Zones, Zone C, F, X Potential for flooding due to local drainage problems
Hail	<ul style="list-style-type: none"> H7-H10, 2.4"->4" There will be severe damage. Including roof and structural damage and risk of serious injuries to fatalities. 	<ul style="list-style-type: none"> H5-H6, 1.6"-2.4" There will be a range of severe damage from well-constructed houses being destroyed to houses being swept away. 	<ul style="list-style-type: none"> H0-H4, 0"-1.6" There will be a variance of destruction to vegetation and slight damage to glass.
High Winds	<ul style="list-style-type: none"> Force: 8-12 Knots: 28-64+ Whole trees moving to considerable structure damage 	<ul style="list-style-type: none"> Force: 4-6 Knots: 11-27 Dust, leaves, and loose paper lifted. Small to Large branches moving. 	<ul style="list-style-type: none"> Force: 0-3 Knots: <1-10 Calm, leaves rustle, light flags extended
Lightning	<ul style="list-style-type: none"> LAL 5--Towering cumulus and thunderstorms are numerous, covering more than three-tenths of the sky. Rain is moderate/ heavy, lightning is frequent and intense. LAL 6--Dry thunderstorms, conditions similar to LAL 3 	<ul style="list-style-type: none"> LAL 3-- Towering cumulus covering $\leq 2/10$ of the sky. Two to three thunderstorms must occur. Light/ moderate rain, infrequent lightning LAL 4--Towering cumulus covers $2/10 - 3/10$ of the sky. More than three thunderstorms must occur. Moderate rain, lightning is frequent. 	<ul style="list-style-type: none"> LAL 1-- No thunderstorms. LAL 2-- Cumulus clouds, only a few towering cumulus. A single thunderstorm must be confirmed. The clouds produce virga and occasional light rain. Infrequent lightning.
Tornado	<ul style="list-style-type: none"> EF3-EF5 There will be a range of severe damage from well-constructed houses being destroyed to houses being swept away 	<ul style="list-style-type: none"> EF1-EF2 There will be a range of moderate to considerate damage. Roofs will be severely stripped, manufactured homes overturned, and cars lifted off of the ground 	<ul style="list-style-type: none"> EF0 There will be light damage. Roofs will be peeled off, gutters damaged, and branches broken

	High	Medium	Low
Wildland Fire	<ul style="list-style-type: none"> KBDI 600-800 Associated with severe drought. Intense, deep-burning fires with significant downwind spotting. 	<ul style="list-style-type: none"> KBDI 200-400 Ranges from lower litter and duff layers are drying and beginning to contribute to fire intensity to them causing the fire to burn actively. 	<ul style="list-style-type: none"> KBDI 0-200 Soil moisture and large class fuel moistures are high and do not contribute much to fire intensity.
Winter Storms	<ul style="list-style-type: none"> Temperatures 15F- -45F Wind Chill 7F- -98F At wind chill of -19F frostbite will occur in 30 minutes increasing in severity to occurrence in 5 minutes. 	<ul style="list-style-type: none"> Temperatures 30F- 20F Wind Chill 25F- -4F Bridges and roadways are at risk to ice. 	<ul style="list-style-type: none"> Temperatures 40F- 35F Wind Chill 36F-17F Vulnerable populations and agriculture at risk to lower temperatures and wind chill.

The following are the High, Medium, Low rankings for each of the related extent scales.

Table 3.1 Extent Scales

	Unincorporated	Commerce	Lone Oak	Neylandville
Dam Failure	Low	Low	Low	Low
Drought	High	High	High	High
Earthquake	Low	Low	Low	Low
Extreme Heat	Medium	Medium	Medium	Medium
Flooding	Low	Low	Low	Low
Hail	Medium	Medium	Medium	Medium
High Winds	Medium	Medium	Medium	Medium
Lightning	Medium	Medium	Medium	Medium
Tornado	High	High	High	High
Wildland Fire	High	High	High	High
Winter Storms	Medium	Medium	Medium	Medium

	Quinlan	Union Valley	West Tawakoni	Wolfe City
Dam Failure	Low	Low	Low	Low
Drought	High	High	High	High
Earthquake	Low	Low	Low	Low
Extreme Heat	Medium	Medium	Medium	Medium
Flooding	Low	Low	Low	Low
Hail	Medium	Medium	Medium	Medium
High Winds	Medium	Medium	Medium	Medium
Lightning	Medium	Medium	Medium	Medium
Tornado	High	High	High	High
Wildland Fire	High	High	High	High
Winter Storms	Medium	Medium	Medium	Medium

3.4 Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for Hunt County and ranks each hazard as high, moderate, low, or no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Hunt County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Hunt County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Hunt County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent. Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Hunt County, the highest possible PRI value is 4.0.

Table 3.2 Priority Risk Index for Unincorporated Hunt County

Hazard	Category/Degree of Risk				
	Probability Index Value	Life Impact Index Value	Property Impact Index Value	Spatial Extent Index Value	
Dam Failure	1	0	0	0	0.3
Drought	3	0	2	2	1.6
Earthquake	1	0	0	0	0.3
Extreme Heat	1	1	0	1	0.75
Flooding	3	1	1	1	1.6
Hail	3	0	1	3	1.45
High Winds	0	0	0	0	0
Lightning	2	1	0	0	0.95
Tornado	2	1	1	1	1.3
Wildfire	3	1	2	1	1.85
Winter Storms	3	2	1	3	2.15

Table 3.3 Priority Risk Index for the City of Commerce

Hazard	Category/Degree of Risk				
	Probability Index Value	Life Impact Index Value	Property Impact Index Value	Spatial Extent Index Value	
Dam Failure	1	0	0	0	0.3
Drought	3	0	2	2	1.6
Earthquake	1	0	0	0	0.3
Extreme Heat	1	1	0	1	0.75
Flooding	3	1	1	1	1.6
Hail	3	0	1	3	1.45
High Winds	0	0	0	0	0
Lightning	2	1	0	0	0.95
Tornado	2	1	1	1	1.3
Wildfire	1	0	0	1	0.4
Winter Storms	3	2	1	3	2.15

Table 3.4 Priority Risk Index for the City of Lone Oak

Hazard	Category/Degree of Risk				
	Probability Index Value	Life Impact Index Value	Property Impact Index Value	Spatial Extent Index Value	
Dam Failure	0	0	0	0	0
Drought	3	0	2	2	1.6
Earthquake	0	0	0	0	0
Extreme Heat	1	1	0	1	0.75
Flooding	3	1	1	1	1.6
Hail	3	0	1	3	1.45
High Winds	0	0	0	0	0
Lightning	2	1	0	0	0.95
Tornado	2	1	1	1	1.3
Wildfire	0	0	0	0	0
Winter Storms	3	2	1	3	2.15

Table 3.5 Priority Risk Index for the City of Quinlan

Hazard	Category/Degree of Risk				
	Probability Index Value	Life Impact Index Value	Property Impact Index Value	Spatial Extent Index Value	
Dam Failure	0	0	0	0	0
Drought	3	0	1	3	1.45
Earthquake	0	0	0	0	0
Extreme Heat	3	0	0	3	1.2
Flooding	0	0	0	1	0.1
Hail	3	0	0	3	1.2
High Winds	3	0	0	2	1.1
Lightning	2	1	0	0	0.95
Tornado	2	1	1	1	1.3
Wildfire	1	1	0	0	0.65
Winter Storms	1	0	0	3	0.6

Table 3.6 Priority Risk Index for the City of West Tawakoni

Hazard	Category/Degree of Risk				
	Probability Index Value	Life Impact Index Value	Property Impact Index Value	Spatial Extent Index Value	
Dam Failure	0	0	0	0	0
Drought	3	0	2	2	1.6
Earthquake	1	0	0	0	0.3
Extreme Heat	1	1	0	1	0.75
Flooding	3	1	1	2	1.7
Hail	3	0	1	3	1.45
High Winds	1	0	0	1	0.4
Lightning	2	1	0	0	0.95
Tornado	2	1	1	1	1.3
Wildfire	2	1	2	1	1.55
Winter Storms	3	2	1	3	2.15

Table 3.7 Priority Risk Index for Wolfe City

Hazard	Category/Degree of Risk				
	Probability Index Value	Life Impact Index Value	Property Impact Index Value	Spatial Extent Index Value	
Dam Failure	1	0	0	0	0.3
Drought	3	0	2	2	1.6
Earthquake	1	0	0	0	0.3
Extreme Heat	1	1	0	1	0.75
Flooding	3	1	1	1	1.6
Hail	3	0	1	3	1.45
High Winds	0	0	0	0	0
Lightning	2	1	0	0	0.95
Tornado	2	1	1	1	1.3
Wildfire	1	1	2	1	1.25
Winter Storms	3	2	1	3	2.15

Table 3.8 Priority Risk Index for the City of Neylandville

Hazard	Category/Degree of Risk				
	Probability Index Value	Life Impact Index Value	Property Impact Index Value	Spatial Extent Index Value	
Dam Failure	0	0	0	0	0
Drought	3	0	2	2	1.6
Earthquake	1	0	0	0	0.3
Extreme Heat	1	1	0	1	0.75
Flooding	3	1	1	1	1.6
Hail	3	0	1	3	1.45
High Winds	0	0	0	0	0
Lightning	2	1	0	0	0.95
Tornado	2	1	1	1	1.3
Wildfire	2	1	1	1	1.3
Winter Storms	3	2	1	3	2.15

Table 3.9 Priority Risk Index for the City of Union Valley

Hazard	Category/Degree of Risk				
	Probability Index Value	Life Impact Index Value	Property Impact Index Value	Spatial Extent Index Value	
Dam Failure	0	0	0	0	0
Drought	2	2	1	0	1.55
Earthquake	0	0	0	0	0
Extreme Heat	1	0	1	0	0.55
Flooding	1	0	0	0	0.3
Hail	2	1	2	2	1.65
High Winds	2	0	0	0	0.6
Lightning	2	1	0	0	0.95
Tornado	2	1	1	1	1.3
Wildfire	1	0	1	1	0.65
Winter Storms	0	0	0	0	0

The conclusions drawn from the hazard profiling process for Hunt County jurisdictions, resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and No Risk. For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in Hunt County.

Hunt County

High Risk (PRI 2 - 3)	Winter Storms
Moderate Risk (PRI 1.1 -1.9)	Wildfire Drought Flooding Hail Tornado
Low Risk (PRI 0.50 – 1)	Lightning Extreme Heat
No Risk (PRI 0 – 0.49)	High Wind Earthquake Dam Failure

Commerce

High Risk (PRI 2 - 3)	Winter Storms
Moderate Risk (PRI 1.1 -1.9)	Drought Flooding Hail Tornado
Low Risk (PRI 0.50 – 1)	Lightning Extreme Heat
No Risk (PRI 0 – 0.49)	Wildfire Earthquake Dam Failure High Winds

Lone Oak

High Risk (PRI 2 - 3)	Winter Storms
Moderate Risk (PRI 1.1 -1.9)	Drought Flooding Hail Tornado
Low Risk (PRI 0.50 – 1)	Lightning Extreme Heat
No Risk (PRI 0 – 0.49)	High Wind Earthquake Wildfire Dam Failure

Neylandville

High Risk (PRI 2 - 3)	Winter Storms
Moderate Risk (PRI 1.1 -1.9)	Drought Flooding Hail Tornado Wildfire
Low Risk (PRI 0.50 – 1)	Lightning Extreme Heat
No Risk (PRI 0 – 0.49)	Earthquake High Wind Dam Failure

Quinlan

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.1 -1.9)	Drought Tornado Hail Extreme Heat High Wind
Low Risk (PRI 0.50 – 1)	Lightning Wildfire Winter Storms
No Risk (PRI 0 – 0.49)	Flooding Earthquakes Dam Failure

Union Valley

High Risk (PRI 2 - 3)	Winter Storms
Moderate Risk (PRI 1.1 -1.9)	Wildfire Drought Flooding Hail Tornado
Low Risk (PRI 0.50 – 1)	Lightning Extreme Heat High Wind
No Risk (PRI 0 – 0.49)	Earthquake Dam Failure

West Tawakoni

High Risk (PRI 2 - 3)	Winter Storms
Moderate Risk (PRI 1.1 -1.9)	Flooding Drought Wildfire Hail Tornado
Low Risk (PRI 0.50 – 1)	Lightning Extreme Heat
No Risk (PRI 0 – 0.49)	High Wind Earthquake

Wolfe City

High Risk (PRI 2 - 3)	Winter Storms
Moderate Risk (PRI 1.1 -1.9)	Drought Flooding Hail Tornado Wildfire
Low Risk (PRI 0.50 – 1)	Lightning Extreme Heat
No Risk (PRI 0 – 0.49)	Earthquake Dam Failure High Wind

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Vulnerability Assessment

According to Requirement 201.6(c)(2)(ii) “The risk assessment shall include a description of the jurisdiction’s vulnerability to the hazards that can affect the jurisdiction. This description shall include an overall summary of each hazard and its impact on the community.” In compliance with Requirement 201.6(c)(2)(iii) the vulnerability assessment was conducted for each jurisdiction as needed to reflect unique or varied risks within the County. This objective was met by analyzing the data on an individual basis to assess each jurisdiction risk.

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3.5 Identification of Assets

An inventory of Hunt County's geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Hunt County as delineated by U.S. Census 2000 block data provided by NCTCOG.
- **Improved property**: Includes all developed properties according to local parcel data from the Hunt County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Hunt County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, Hunt County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Hunt County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the U.S. Census 2010 block data provided by NCTCOG, the total population of Hunt County in 2010 was 86,129 people, with 30,682 households. The count breakdown by municipal jurisdiction is provided in *Table 3.18*.

Table 3.18. Hunt County Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
<i>Hunt County**</i>	86,129	100%	97.65	30,682	100%	34.79
Commerce	8,078	9.38%	1,022	2,586	1.25%	2.51
Lone Oak*	598	0.7%	653	234	0.8%	293.5
Neylandville*	56	0.1%	177	32	0.1%	101.2
Quinlan*	1,394	1.62%	1,162	546	1.78%	420
Union Valley	307	0.4%	171	113	0.4%	62.78
West Tawakoni	1,576	1.83%	716	639	2.08%	290.46
Wolfe City	1,412	1.64%	941	567	1.85%	378
Total	86,129	100%	97.65	30,682	100%	34.79

Source: 2010 Census Data

**Total County area: Including totals from incorporated jurisdictions not participating in the plan.

* 2000 Census Data Used. 2010 data unavailable

Table 3.19 summarizes population counts and population change (absolute and percent predictions for Hunt County).

Table 3.19 Population Predictions

County	Population 2010 Census	Population 2012 Estimate	Population 2013 Estimate	Absolute Change 2012-2013	Percent (%) Change 2012-2013
Hunt County	86,129	87,290	88,170	780	0.9

Source: 2010 Census Data

Property

There are an estimated 45,155 parcels in Hunt County with an estimated \$3,611,854,822 in total assessed value of, *Table 3.20* lists the total number and percentage of parcels by jurisdiction.

Table 3.20 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
<i>Hunt County*</i>	37,660	60.74%	\$3,027,794,945
Commerce	3,134	5.05%	\$321,247,163
Lone Oak	491	0.79%	\$35,871,250
Neylandville	135	0.22%	\$7,344,400
Quinlan	985	1.59%	\$103,588,051
Union Valley	229	0.37%	\$32,578,630
West Tawakoni	1614	2.60%	\$60,834,985
Wolfe City	907	1.46%	\$55,141,449
Total	45,155	72.82%	\$3,611,854,822

Source: County Data and Regional Hazard Assessment Tool

**Hunt County unincorporated areas*

¹Includes public buildings (residential, commercial, industrial, agricultural, religion, government, education)

Emergency Facilities

There are 14 identified emergency facilities in Hunt County, including 9 fire stations, 4 police stations, and 1 hospital. *Table 3.21* presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.21 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
<i>Hunt County*</i>	3	0	0
Commerce	1	1	1
Lone Oak	1	0	0
Neylandville	0	0	0

Jurisdiction	Fire Stations	Police Stations	Hospitals
Quinlan	1	1	0
Union Valley	1	0	0
West Tawakoni	1	1	0
Wolfe City	1	1	0
TOTAL	9	4	1

Source: County Data and Regional Hazard Assessment Tool

* Hunt County unincorporated areas

Critical Facilities

There are 35 critical facilities, which are considered non-emergency in Hunt County. The critical facilities include 24 schools and 11 historical property sites (*Table 3.22*). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.22 Critical Facilities

Jurisdiction	Schools	Historical Property
<i>Hunt County*</i>	4	7
Commerce	4	2
Lone Oak	5	0
Neylandville	0	1
Quinlan	7	0
Union Valley	1	1
West Tawakoni	0	0
Wolfe City	3	0
Total	24	11

Source: Local jurisdictions

* Hunt County unincorporated areas

Critical Infrastructure

There are 34 identified critical infrastructure facilities in Hunt County, including 2 airports, 0 natural gas facilities, 6 water treatment facilities, 6 wastewater treatment facilities, 7 dams, and 13 railway/highway bridges (*Table 3.23*).

Table 3.23 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
<i>Hunt County*</i>	1	0	1	1	4	9
Commerce	1	0	1	1	1	3
Lone Oak	0	0	1	1	0	0
Neylandville	0	0	0	0	0	0
Quinlan	0	0	1	1	0	0
Union Valley	0	0	0	0	0	0
West Tawakoni	0	0	1	1	0	1
Wolfe City	0	0	1	1	2	0
Total	2	0	6	6	7	13

Source: Local jurisdictions

* Hunt County unincorporated areas

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3.6 Methodology

Based on the type of information available for analysis, Hunt County’s vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Climatic Data Center, the Texas Forest Service, and NCTCOG Regional Hazard Assessment Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 11 hazards evaluated for Hunt County, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining two hazards using a qualitative analysis. The qualitative analysis was limited to two of the hazards due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these events is unattainable at the present time, but will be an objective in the five-year planning cycle update. *Table 3.24* summarizes the methodology used for each hazard.

Table 3.24 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			√
Drought	√		
Earthquake			√
Extreme Heat		√	
Flood	√		
Hailstorm	√		
High Wind		√	
Lightning		√	
Tornado		√	
Wildfire	√		
Winter Storm		√	

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3.7 Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in Section 3.4.

Summary Table 1

Drought	
Population	According to National Climatic Data Center (NCDC) 0 recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to National Climatic Data Center (NCDC), a loss of \$173.91 per year can be expected in property loss due to damage from drought. Available historical data indicates that the expected losses from drought correspond to crop losses in the amount of \$78,695.65 per year, mostly experienced in water shortages and crop losses on agricultural lands.
Emergency Facilities	Because of the nature of this hazard, there are no losses or direct impacts expected on emergency facilities due to drought events.
Critical Facilities	Because of the nature of this hazard, there are no losses or direct impacts expected on critical facilities due to drought events.
Critical Infrastructure	Because of the nature of this hazard, there are no losses or direct impacts expected on critical infrastructure due to drought events.

Summary Table 2

Extreme Heat	
Population	According to National Climatic Data Center (NCDC), there were 0 injuries and .0869 fatalities recorded due to extreme heat. Hunt County and its population is exposed to this hazard.
Improved Property	According to National Climatic Data Center (NCDC), there is no impact of extreme heat to developed areas and the improve property in Hunt County is not exposed to this hazard.
Emergency Facilities	According to National Climatic Data Center (NCDC), there is no impact of extreme heat to buildings and the emergency facilities in Hunt County are not exposed to this hazard.
Critical Facilities	According to National Climatic Data Center (NCDC), there is no impact of extreme heat to buildings, and the critical facilities in Hunt County are not exposed to this hazard.
Critical Infrastructure	According to National Climatic Data Center (NCDC there is no impact of extreme heat to critical infrastructure, and exposure to this hazard is considered minimal in Hunt County

Summary Table 3

Flooding	
Population	Flooding produces an expected annualized count of zero fatalities and injuries per year.
Improved Property	A loss of \$9,826.08 per year can be expected in property loss due to flooding.
Emergency Facilities	There are 0 emergency facilities at imminent risk from the 100-year storm event.
Critical Facilities	There are 0 critical facilities located within the 100-year storm event.
Critical Infrastructure	0% of railways/highways and bridges, 100% of dams, 0% of water treatment works, and 83.33% waste water treatment facilities, are at risk from the 100-year storm event. Many of these structures are designed to traverse or be located within the floodplain due to unavoidable circumstances. Additionally, treated wastewater is typically discharged towards streams, which makes portions of wastewater treatment facilities likely to be located within the floodplain.

Summary Table 4

Hail	
Population	According to National Climatic Data Center (NCDC), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to National Climatic Data Center (NCDC), a loss of \$12,000 per year can be expected in property loss due to hailstorm damage, and all improved property is exposed to this hazard. Although some crops are susceptible to hail hazards, available historical data for Hunt County indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in Hunt County are exposed to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in Hunt County are exposed to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in Hunt County are exposed to this hazard.

Summary Table 5

High Wind	
Population	According to National Climatic Data Center (NCDC), there are an average of .0869 injuries and zero fatalities from high wind events. All the population of Hunt County is exposed to this hazard.
Improved Property	According to National Climatic Data Center (NCDC), an average loss of \$97,260.86 per year in property losses is expected from high wind events in Hunt County. No crop losses resulted from this hazard in Hunt County.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in Hunt County are exposed to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in Hunt County are exposed to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in Hunt County are exposed to this hazard.

Summary Table 6

Lightning	
Population	According to National Climatic Data Center (NCDC), lightning events can be expected to cause no deaths and injuries in Hunt County. All the population of Hunt County is exposed to this hazard.
Improved Property	According to National Climatic Data Center (NCDC), an average loss of \$17,434.78 per year in property losses is expected from lightning events in Hunt County. No crop losses resulted from this hazard in Hunt County.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in Hunt County are exposed to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in Hunt County are exposed to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in Hunt County are exposed to this hazard.

Summary Table 7

Tornado	
Population	According to National Climatic Data Center (NCDC), there have been no recorded injuries or fatalities from tornado events in Hunt County. All the population of Hunt County is exposed and vulnerable to this hazard.
Improved Property	According to National Climatic Data Center (NCDC), an average loss of \$108,695.65 per year in property losses is expected to result from tornado events. \$2,608.69 crop losses are expected from this hazard in Hunt County.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in Hunt County are exposed to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in Hunt County are exposed to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in Hunt County are exposed to this hazard.

Summary Table 8

Wildfire	
Population	Based on geographical data, approximately 73% of Hunt County is vulnerable to wildfires, with Hunt and the unincorporated areas contributing with the majority of the exposed population.
Improved Property	Based on geographical data, a loss of \$32,260.86 per year can be expected in property loss due to wildfires, which is less than 1% of the overall property improvement values across Hunt County.
Emergency Facilities	Based on geographic information there are 2 fire stations at risk from wildfire events.
Critical Facilities	Based on geographic information there are 24 schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are 0 bridges, 7 dams, and 3 water facilities at risk from wildfire events.

Summary Table 9

Winter Storm	
Population	According to National Climatic Data Center (NCDC), there have been no recorded injuries or fatalities from winter storms. All the population of Hunt County is exposed to this hazard.
Improved Property	According to National Climatic Data Center (NCDC), an average loss of \$72,173.91 per year in property losses is expected to result from winter storm events. No crop losses are expected from this hazard in Hunt County.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in Hunt County are exposed to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in Hunt County are exposed to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in Hunt County are exposed to this hazard.

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3.8 Geographic Information System Based Analysis

For the Geographic Information System-based assessment, digital data was collected from local, state, and national sources. ESRI® ArcMap™ 10.0 was used to assess risk utilizing digital data, which included local tax records for individual parcels and geo-referenced point locations for buildings and critical facilities.

The objective of the Geographic Information System-based analysis was to determine the estimated vulnerability of the five categories of assets to the identified hazards for Hunt County using best available geospatial data. Local databases made available through Hunt County such as local tax assessor records, parcel boundaries, building footprints and critical and emergency facilities data, were used in combination with digital hazard data obtained from the National Climatic Data Center and the Regional Hazard Assessment Tool. The results of the analysis provided an estimated number of people, as well as the numbers and values of buildings and critical facilities determined to be potentially at risk to those hazards with delineable geographic hazard boundaries.

For some of the hazards, the Geographic Information System analysis was supplemented with a statistical analysis conducted on the historical data obtained from National Climatic Data Center and the Texas Forest Service for wildfires. The data included both casualty and property losses from hazard events that occurred in Hunt County from 1/1/2002 – 6/30/2013. Annualized personal and property losses were calculated by dividing the total losses by the number of years for which data was available (i.e. 11.5 years).

Drought

Because drought impacts large areas that cross jurisdictional boundaries, all of the improved property and population in Hunt County are considered to be exposed to this hazard. However, drought impacts are mostly experienced in water shortages and crop losses on agricultural lands, with no impact on buildings.

Since crop losses are expected to be the most vulnerable assets for this hazard, agricultural land acreage was acquired from the USGS land cover classification data to estimate the relative area of Hunt County that would be affected by this event. *Table 3.25* below provides the distribution of agricultural land for each jurisdiction in Hunt County. Hunt County has a total of 239,099 acres of agricultural lands, which represents approximately 50.79% of Hunt County territory, with the vast majority located in the unincorporated areas.

Table 3.25 Agricultural Land in Hunt County

Jurisdiction	Total Acres	Agricultural Land Acres	Percentage (%) of Total Acres
<i>Hunt County*</i>	470,749	239,099	50.79%
Commerce	5,125	2,181	42.55%
Lone Oak	697	276	39.59%
Neylandville	1,263	264	20.90%
Quinlan	1,797	1,218	67.77%
Union Valley	1,974	686	34.75%
West Tawakoni	1,419	773	54.47%
Wolfe City	1,337	699	52.58%
Total	484,361	245,196	50.62%

Sources: Texas Forest Service, U.S. Geological Survey, and local jurisdictions

* *Hunt County unincorporated areas*

Based on the available information, vulnerability to drought was assessed using two techniques: (1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the Texas Hazard Mitigation Package was used to predict expected monetary and human losses from the event; (2) in fulfillment of Element A of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for drought and the nature of the impacts expected from drought events were used to identify the assets, including existing structures, vulnerable to this hazard. The vulnerability to future structures was not conducted at this time due to unattainable data. Therefore, compliance with Element B of *Requirement 201.6(c)(2)(ii)(A)*, describing vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities will be an objective in the five-year planning cycle.

Table 3.26 presents Hunt County's recorded historical losses due to drought events as provided in the hazard events database obtained from the National Climatic Data Center. Property and personal losses in each expected in each jurisdiction are presented in *Table 3.26*.

Table 3.26 Historical Annualized Losses Due to Drought (1/1/2002 – 6/30/2013)

Jurisdiction	Date	Fatalities	Injuries	Property Damage	Annualized Expected Property Losses	Crop Damage Including	Annualized Expected Crop Loss	Annualized Expected Crop Loss per Acre
Hunt County Territory	6/1/2005	0	0	\$0	\$0	\$0	\$0	\$0
	7/1/2005	0	0	\$0	\$0	\$0	\$0	\$0
	8/1/2005	0	0	\$0	\$0	\$0	\$0	\$0
	9/1/2005	0	0	\$0	\$0	\$0	\$0	\$0
	10/1/2005	0	0	\$0	\$0	\$0	\$0	\$0
	11/1/2005	0	0	\$0	\$0	\$0	\$0	\$0
	12/1/2005	0	0	\$0	\$0	\$0	\$0	\$0
	1/1/2006	0	0	\$0	\$0	\$0	\$0	\$0
	2/1/2006	0	0	\$0	\$0	\$0	\$0	\$0
	3/1/2006	0	0	\$0	\$0	\$0	\$0	\$0
	4/1/2006	0	0	\$0	\$0	\$0	\$0	\$0
	5/1/2006	0	0	\$0	\$0	\$0	\$0	\$0
	6/6/2006	0	0	\$0	\$0	\$0	\$0	\$0
	7/1/2006	0	0	\$0	\$0	\$0	\$0	\$0
	8/1/2006	0	0	\$0	\$0	\$0	\$0	\$0
	9/1/2006	0	0	\$0	\$0	\$0	\$0	\$0
	11/1/2006	0	0	\$0	\$0	\$800,000	\$69,565.22	\$0.12
	3/7/2011	0	0	\$0	\$0	\$7,000	\$70,173.91	\$0.12
	4/1/2011	0	0	\$0	\$0	\$30,000	\$72,782.61	\$0.13
	5/1/2011	0	0	\$0	\$0	\$4,000	\$73,130.43	\$0.13
8/1/2011	0	0	\$0	\$0	\$10,000	\$74,000.00	\$0.13	
9/1/2011	0	0	\$0	\$0	\$25,000	\$76,173.91	\$0.13	
10/1/2011	0	0	\$0	\$0	\$10,000	\$77,043.48	\$0.13	
11/1/2011	0	0	\$0	\$0	\$5,000	\$77,478.26	\$0.13	

Jurisdiction	Date	Fatalities	Injuries	Property Damage	Annualized Expected Property Losses	Crop Damage Including	Annualized Expected Crop Loss	Annualized Expected Crop Loss per Acre
Hunt County Territory	11/13/2012	0	0	\$0	\$0	\$2,000	\$77,652.17	\$0.13
	12/1/2012	0	0	\$0	\$0	\$2,000	\$77,826.09	\$0.13
	1/1/2013	0	0	\$0	\$0	\$3,000	\$78,086.96	\$0.13
	2/1/2013	0	0	\$0	\$0	\$2,000	\$78,260.87	\$0.13
	3/1/2013	0	0	\$2,000	\$173.91	\$0	\$0	\$0.13
	4/1/2013	0	0	\$0	\$173.91	\$2,000	\$78,434.78	\$0.13
	5/14/2013	0	0	\$0	\$173.91	\$3,000	\$78,695.65	\$0.14
Total	31	0	0	\$2,000	\$173.91	\$905,000	\$78,695.65	\$0.14

Source: National Climatic Data Center

As described on Section 3.4, calculations of annualized losses due to drought events were conducted using historical data obtained from the National Climatic Data Center (*Table 3.26*). The annualized loss value can be interpreted as the impact expected from drought in terms of annualized human losses and human injuries, and annualized property losses. As observed in *Table 3.26*, Hunt County can expect approximately an annual \$173.91 in property losses, and \$78,695.65 of crop losses each year as a result of drought, with no injuries or deaths expected from this event.

Since the geographical occurrence of drought is typically regional, the area of potential impacts corresponds to all of Hunt County’s territory. However, due to the nature of this event, property losses are more likely related to crop damage. Buildings and infrastructure are not expected to be directly impacted by drought events. Therefore, improved property, emergency and critical facilities, and critical structures are not exposed to this hazard.

In compliance to *Requirement 201.6(c)(2)(ii)*, vulnerability to drought and impacts to assets expected from drought events can be summarized as follows:

- **Population:** According to National Climatic Data Center (NCDC) no recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events. All the population of Hunt County is exposed to this hazard, but there are no personal losses expected from drought events.
- **Improved Property:** According to National Climatic Data Center (NCDC), a loss of \$173.91 per year can be expected in property loss due to damage from drought. Available historical data indicates that the expected losses from drought correspond to crop losses in the amount of \$78,695.65 per year.
- **Emergency Facilities:** Because of the nature of this hazard, there are no losses or direct impacts expected on emergency facilities due to drought events.
- **Critical Facilities:** Because of the nature of this hazard, there are no losses or direct impacts expected on critical facilities due to drought events.

-
- **Critical Infrastructure:** Because of the nature of this hazard, there are no losses or direct impacts expected on critical infrastructure due to drought events.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

Flood

Floods impact large areas and cross jurisdictional boundaries. All five categories of assets are considered vulnerable and can be exposed to this hazard. Based on the available information, vulnerability to flooding was assessed using two techniques: (1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from National Climatic Data Center was used to predict expected monetary and human losses from the event; (2) in fulfillment of Element A of *Requirement 201.6(c)(2)(ii)(A)*, geographical data was used to identify the assets, including existing structures, vulnerable to flooding. The vulnerability to future structures was not assessed at this time due to unattainable data. Therefore, compliance with Element B of *Requirement 201.6(c)(2)(ii)(A)*, describing vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities will be an objective in the five-year planning cycle.

Table 3.27 presents Hunt County's recorded historical losses due to flooding as provided in the hazard events database obtained by National Climatic Data Center. Although specific data is provided by jurisdiction, the figures presented may reflect the place where the event was more relevant or where it started.

Table 3.27 Historical Annualized Losses Due to Flood Events 1/1/2002 – 6/30/2013

Jurisdiction	Number of Events	Fatalities	Annualized Expected Fatalities	Injuries	Property Damage	Annualized Expected Property Losses	Crop Damage (\$)
<i>Hunt County*</i>	3	0	0	0	\$40,000	\$3,478.26	\$0
<i>Commerce</i>	3	0	0	0	\$0	\$0	\$0
<i>Lone Oak</i>	2	0	0	0	\$13,000	\$1,130.43	\$0
<i>Neylandville</i>	-	-	-	-	-	-	-
<i>Quinlan</i>	9	0	0	0	\$40,000	\$3,478.26	\$0
<i>Union Valley</i>	4	0	0	0	\$15,000	\$1,304.43	\$0
<i>West Tawakoni</i>	-	-	-	-	-	-	-
<i>Wolfe City</i>	3	0	0	0	\$5,000	\$434.78	\$0
Total	24	0	0	0	\$113,000	\$9,826.08	\$0

Source: National Climatic Data Center

*: Hunt County unincorporated areas

—: No Recorded Information

As described in Section 3.4, calculations of annualized losses due to flooding events were conducted using historical data obtained from National Climatic Data Center (Table 3.27). The annualized loss value can be interpreted as the impact expected from flooding in terms of annualized human losses and human injuries, and annualized property losses. As observed in Table 3.27, Hunt County can expect a total

property loss of \$9,826.08 each year as a result of flooding, with no injuries, no fatalities, and no crop losses.

In order to assess flood risk and vulnerability of the identified assets, a Geographic Information System-based analysis was conducted to estimate exposure to flood events using Federal Emergency Management Agency’s digital 100-year floodplain in combination with Hunt Central Appraisal District property records and the geo-referenced assets provided by Regional Hazard Assessment Tool. The 100-year floodplain data layer for this analysis is a subset of FAFDS Nationwide Floodmap Database as of May 2007.

By overlaying the geo-referenced assets and the floodplain layers using Geographic Information System, the number of emergency facilities, critical facilities, and critical infrastructure located within the 100-year floodplain was calculated. Although, having a facility located within the floodplain does not necessarily imply that would be impacted by the 100-year storm event (e.g., the building could be flood-proofed, or the buildings may be constructed above the 100-year elevation), it provides with a good approximation of potential impacts from flooding.

According to the analysis conducted, 12 emergency or critical facilities are located within the 100-year floodplain. Critical infrastructure located within the 100-year floodplain is presented in *Table 3.28*.

Table 3.28 Critical Infrastructure Located in 100-year FEMA Floodplain

Jurisdiction	Critical Infrastructure											
	Railway/Highway Bridges		Dams		Water Treatment Facilities		Waste Water Treatment Facilities		Natural Gas		Airports	
	Total	Percentage (%)	Total	Percentage (%)	Total	Percentage (%)	Total	Percentage (%)	Total	Percentage (%)	Total	Percentage (%)
<i>Hunt County*</i>	0	0	7	100%	0	0	5	83.33%	0	0	0	0
Total	0	0	7	100%	0	0	5	83.33%	0	0	0	0

Source: *Regional Hazard Assessment Tool and local jurisdictions*

* *Hunt County unincorporated areas*

As noted in *Table 3.28* the total and percentage of critical infrastructure located within the 100-year floodplain corresponds to approximately 0% of railway/highway bridges, 100% of dams, 0% of water treatment works, and 83.33% wastewater treatment works. The percent of railway/highway bridges located within the floodplain is high, however, many of these structures are designed to traverse or be located within the floodplain due to unavoidable circumstances. Additionally, treated wastewater is typically discharged towards streams, which makes portions of wastewater treatment facilities likely to be located within the floodplain. However, some of the critical facilities located within the 100-year floodplain may be subject to impacts from flooding.

Table 3.29 shows Residential Parcels and Improved Property at risk from flooding events. The determination of residential parcel vulnerability was calculated by adding the total residential parcel counts from 2013 that had at least some portion located within the 100-year floodplain. The determination of commercial and utility property value at-risk (exposure) was calculated adding the total assessed building values for only those parcels that were confirmed to have at least one building located within the 100-year floodplain.

Table 3.29 Residential Parcels and Buildings potentially located within the 100-year floodplain

Jurisdiction	Residential Parcels located in the 100-year Floodplain	Percentage of Total Residential Parcels located in the 100-year Floodplain	Commercial and Utility parcels in the 100-year Floodplain	Percentage of Commercial and Utility Parcels in the 100-year Floodplain
Hunt County*	2055	12.13%	57	9.46%
Commerce	57	2.90%	14	4.66%
Lone Oak	5	1.84%	0	0%
Neylandville	1	1.78%	1	12.5%
Quinlan	10	1.94%	5	3.16%
Union Valley	17	13.49%	3	27.27%
West Tawakoni	19	2.72%	0	0%
Wolfe City	0	0%	1	1.25%
Total	2,164	10.51%	81	6.98%

Source: Hunt County Appraisal District

* Hunt County unincorporated areas

As it can be observed in *Table 3.29*, approximately 10.51% of the residential parcels in Hunt County, and 6.98% of its commercial and utility parcels are located within the 100-year floodplain.

Since Hunt County is composed by large areas used for cropland, an analysis was conducted to determine the vulnerability of the land to flooding relative to the type of land cover (*Table 3.30*). The calculations were made using Geographic Information System. The USGS land cover shapefile was clipped with the 100-year floodplain to calculate the area (acreage) of each land cover type potentially affected by flooding. Reservoirs, streams, and channels were excluded from the calculations.

Table 3.30 Land Cover Types and Acreage located within the 100-year Floodplain

Land Cover Type	Total Areas For Hunt County (Acres)	Total Area Affected By 100-year Flood (Acres)	Percentage of Area Affected By 100-year Flood (%)
Commercial	19,227	2,391	12.43%
Utilities	10,180	3,869	38%
Residential	663	271	40.87%
Farmland/Undeveloped	244,489	238,597	97.5%
Total	274,559	245,128	89.28%

Source: USGS, Hunt County Appraisal District

As observed, approximately 89.28% of the total area of Hunt County is located within the 100-year floodplain. The vast majority of this percentage comes from Farmland/Undeveloped land with 97.5% located in the 100-year Floodplain.

In compliance to *Requirement 201.6(c)(2)(ii)* Hunt County vulnerability from flooding and impacts to assets expected from flooding can be summarized as follows:

- **Population:** Based on historical data, flooding produces an expected annualized zero injuries and fatalities per year.
- **Improved Property:** Based on historical data, a loss of \$9,826.08 per year can be expected in property loss due to flooding, with no expected crop losses. Based on geographic information and assuming that a facility within the 100-year floodplain is exposed to impact, 89.28% of the total assessed value of improvements in Hunt County is at risk from the 100-year storm event.
- **Emergency Facilities:** Based on geographic information and assuming that a facility within the 100-year floodplain is exposed to impact, there are no emergency facilities at imminent risk from the 100-year storm event.
- **Critical Facilities:** Based on geographic information and assuming that a facility within the 100-year floodplain is exposed to impact, there are no critical facilities at imminent risk from the 100-year storm event.
- **Critical Infrastructure:** Based on geographic information and assuming that a critical infrastructure within the 100-year floodplain is exposed to impact 0% of railways/highways and bridges, 100% of dams, 0% of water treatment works, and 83.33 % waste water treatment facilities.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

Repetitive Loss

As per Requirement 201.6(c)(2)(ii) “The risk assessments in all plans approved after 2012 must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.” Repetitive Loss Property information provides local jurisdictions with the properties that had submitted insurance claims due to flooding damage to buildings and its contents. The information provided by Federal Emergency Management Agency included 3 repetitive loss properties in Hunt County as of 07/09/2014 (*Table 3.31*).

Address information available for 3 repetitive loss properties recorded allowed those properties to be geo-referenced using ESRI® ArcMap™ 10.2. The probability of future repetitive losses on those properties was estimated using Geographic Information System by overlying the geo-referenced properties with the 100-year floodplain layer. *Table 3.31* summarizes with the number of properties located within the 100-year floodplain as obtained using this approach.

Table 3.31 Repetitive Loss Properties located within the 100-year Floodplain

Jurisdiction	Total Number of Repetitive Loss Properties	Properties within 100-year Floodplain			Total Number of Repetitive Loss Properties Within 100-year Floodplain	Percent of Repetitive Loss Properties Within 100-year Floodplain
		Single Family	Other Residential	Non Residential		
Hunt County*	2	2	-	-	1	100%
Commerce	1	1	-	-	1	100%
Lone Oak	-	-	-	-	-	-
Neylandville	-	-	-	-	-	-
Quinlan	-	-	-	-	-	-
Union Valley	-	-	-	-	-	-
West Tawakoni	-	-	-	-	-	-
Wolfe City	-	-	-	-	-	-
Total	3	3	-	-	2	100%

Source: Federal Emergency Management Agency

*Hunt County unincorporated areas
 —: No Recorded Information

As noted in *Table 3.31* most of the repetitive loss properties are located in Hunt County, with only approximately 50% of those properties located within the 100-year floodplain. The City of Commerce had 1 recorded repetitive loss property each, located outside the floodplain. All of the properties are located within the 100-year floodplain, which can be interpreted as having a greater probability of future losses resulting from flood events. In compliance with Requirement 201.6(c)(2)(ii), *Table 3.31* provides the type

(residential, commercial, institutional, etc.) and numbers of repetitive loss properties located in the identified flood hazard zones within Hunt County.

Table 3.32 shows the repetitive loss property statistics for the 3 properties recorded in Hunt County classified by jurisdiction. The numbers provided can be used to estimate the vulnerability to repetitive loss properties in terms of dollar losses. Only cities with repetitive loss properties were included in Table 3.32.

Table 3.32 Repetitive Loss Property Statistics

Jurisdiction	Single Family				Other Residential				Non Residential				Total			
	Years	Properties	Number of Losses	Payments	Years	Properties	Number of Losses	Payments	Years	Properties	Number of Losses	Payments	Years	Properties	Number of Losses	Payments
Hunt County	1999-2007	2	4	\$162,179.62	-	-	-	-	-	-	-	-	1999-2007	2	4	\$162,179.62
Commerce	1997-1998	1	2	\$9,277.77	-	-	-	-	-	-	-	-	1997-1998	1	2	\$9,277.77
Lone Oak	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neylandville	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Quinlan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Union Valley	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West Tawakoni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wolfe City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1997-2007	3	6	\$171,457.39	-	-	-	-	-	-	-	-	1997-2007	3	6	\$171,457.39

Source: Federal Emergency Management Agency

*Hunt County unincorporated areas
 —: No Recorded Information

The dollar amounts in the tables represent the payments made for insurance claims due to flood damage to buildings and contents. As can be observed in Table 3.32 and, consistent with having the greatest number of repetitive loss properties, unincorporated Hunt County has the greatest value dollar of claims, with only single family properties damaged. It is followed by the City of Commerce, with 2 losses on 1 property.

Although, both repetitive loss information (Tables 3.31 and 3.32) and the historical annualized losses expected from flooding (Table 3.27) represent actual historical information, the data cannot be compared or correlated to each other. The repetitive loss information presents insurance claims on properties and buildings, whereas the historical annualized losses represent property losses in the community due to flood events.

Hail

Table 3.33 Historical Annualized Losses Due to Hail Events (01/01/2002-6/30/2013)

Jurisdiction	Number of Events	Years	Magnitude	Fatalities	Injuries	Property Damage	Annualized Expected Property Losses	Crop Damage
Hunt County*	8	2003 - 2012	.75in – 1.75in	0	0	\$16,000	\$1,391.30	\$0
Commerce	3	2008 -2011	.75in – 1.75in	0	0	\$100,000	\$8695.65	\$0
Lone Oak	3	2005 -2010	.75in – 1.75in	0	0	\$20,000	\$1,739.13	\$0
Neylandville	-	-	-	-	-	-	-	-
Quinlan	6	2002 – 2010	.75in – 1.75in	0	0	\$0	\$0	\$0
Union Valley	1	2003	1.00in	0	0	\$0	\$0	\$0
West Tawakoni	-	-	-	-	-	-	-	-
Wolfe City	6	2002 - 2011	.75in – 1.00in	0	0	\$2,000	\$173.91	\$0
Total	27	2002-2012	.75in – 1.75in	0	0	\$138,000	\$12,000	\$0

Source: National Climatic Data Center

* Hunt County unincorporated areas
 —: No Recorded Information

As described in Section 3.6, calculations of annualized losses due to hail events were conducted using historical data obtained from the National Climatic Data Center (*Table 3.33*). The annualized loss value can be interpreted as the impact expected from hail in terms of annualized human losses and human injuries, and annualized property losses. As observed in *Table 3.33*, Hunt County can expect a total property loss of \$8,173.91 each year as a result of hail, with no injuries, deaths, or crop losses expected from this event.

The geographical occurrence of hailstorm events cannot be predicted; therefore, the area of potential impacts corresponds to all of Hunt County's territory. Therefore, all improved property, emergency and critical facilities, and critical structures are exposed to this hazard, including 12 fire stations, four police stations, one hospital, 15 schools, and six historical properties. As described above, roofs and structures are more vulnerable to this hazard. Therefore, it is expected that building improvements would be most affected.

In compliance to *Requirement 201.6(c)(2)(ii)*, vulnerability to hail and impacts to assets expected from hail events can be summarized as follows:

- **Population:** According to National Climatic Data Center (NCDC), zero recorded injuries or fatalities have been recorded for hailstorm events. All the population of Hunt County is exposed to this hazard, but there are no personal losses expected from hailstorm events.
- **Improved Property:** Based on historical data, a loss of \$12,000 per year can be expected in property loss due to hailstorm damage. Because of the unpredictability of the geographical location of hailstorms, all improved property in Hunt County is exposed to this hazard. Although some crops are susceptible to hail hazards, available historical data for Hunt County indicates that there are no expected crop losses from this event.

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- **Emergency Facilities**: Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in Hunt County are exposed to this hazard.
 - **Critical Facilities**: Because of the unpredictability of the geographical location of hailstorms, all critical facilities in Hunt County are exposed to this hazard.
 - **Critical Infrastructure**: Because of the unpredictability of the geographical location of hailstorms, all critical infrastructure in Hunt County is exposed to this hazard.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle

Wildfires

By definition, wildfires are fires occurring in a wildland area (e.g., grassland, forest, brush land) except for fire under prescription. Therefore, impacts from this hazard are related to wildland areas and what is known as Wildland Urban Interface (WUI), which are defined as the area where structures and other human development meet or intermingle with undeveloped wildland. The WUI creates an environment in which fire can move readily between structural and vegetation fuels. The expansion of these areas has increased the likelihood that wildfires will threaten structures and people.

Wildfires can cause significant damage to property and threatens the lives of people who are unable to evacuate WUI areas. All five categories of assets located in these wildfire-prone areas are considered vulnerable and can be exposed to this hazard.

WUI data was obtained from the Texas Forest Service wildfire database. The data provides GIS data for wildfires and households affected. Data from the National Climatic Data Center provided the property and crop damage totals for Hunt County wildfires.

Table 3.34 Wildfire Events (01/01/2002-6/30/2013)

Jurisdiction	Date	Time	Fatalities	Injuries	Property Damage	Crop Damage
Hunt County Territory	1/5/2006	18:00	0	0	\$130,000	\$0
	3/12/2011	13:00	0	0	\$75,000	\$0
	8/18/2011	13:30	0	0	\$100,000	\$0
	8/18/2011	15:30	0	0	\$0	\$0
	9/4/2011	15:50	0	0	\$30,000	\$400,000
	9/9/2011	15:30	0	0	\$24,000	\$0
	9/9/2011	16:00	0	0	\$12,000	\$0
	6/28/2012	16:00	0	0	\$0	\$5,000
TOTALS:			0	0	\$371,000	\$405,000

Source: National Climatic Data Center

Table 3.34 provides the magnitude, number of fatalities, property and crop damage caused by fires in the county.

In order to assess wildfire risk and vulnerability of the identified assets, a Geographic Information System-based analysis was conducted to estimate exposure to this event using GIS data in combination with Hunt Central Appraisal District property records, and the Regional Hazard Assessment Tool.

Wildland fires in Hunt County are highly likely to occur in the next year and will impact the county as a whole. Based on previous occurrences, the extent of wildland fires will be very high. Fires will start easily and spread at a rapid rate, which can result in extensive county wide property damage. According to the Texas Forest Service Wildfire Summary Report, 73% of Hunt County's population is located in the Wildland Urban Interface. Maps depicting the WUI and wildfire risk can be found in Map Series E and F.

Table 3.35 Distribution of WUI Interface Communities in Hunt County

Jurisdiction	Area (Sq. Mile)	WUI-Interface Community				
		Low Density (Sq. Mile)	Medium Density (Sq. Mile)	High Density (Sq. Mile)	Total (Sq. Mile)	Percentage of Total Area (%)
Hunt County*	802	254.7	78.38	13.90	346.98	43.26%
Commerce	8	1.60	1.49	1.79	4.88	61.00%
Lone Oak	1.08	.25	.49	.30	1.04	96.29%
Neylandville	1.97	.21	.08	0	.29	14.72%
Quinlan	2.80	.04	.52	.56	1.12	40.00%
Union Valley	3.08	.72	.47	0	1.19	38.63%
West Tawakoni	2.21	.38	1.13	.63	2.14	96.83%
Wolfe City	2.08	.18	.35	.40	.93	44.71%
Total	823.22	258.08	82.91	17.58	358.57	43.56%

Source: Texas Forest Service

Table 3.36 Schools within the Wildland/Urban Interface

Jurisdiction	Schools	
	Schools Located Within Low/Medium/High Density Interface Communities	Percentage (%) of Schools within WUI Communities
Hunt County	24	100%
Total	24	100%

Source: Texas Forest Service

Table 3.36 Critical Facilities within Wildland Urban Interface

Jurisdiction	Bridge		Airports		Dams		Water Facilities	
	Facilities Located Within Interface Communities	Percentage (%) of Facilities	Facilities Located Within Interface Communities	Percentage (%) of Facilities	Facilities Located Within Interface Communities	Percentage (%) of Facilities	Facilities Located Within Interface Communities	Percentage (%) of Facilities
Hunt County	0	-	2	100%	7	100%	3	33.33%
Total	0	-	2	100%	7	100%	3	33.33%

Source: Texas Forest Service

—: No Recorded Information

Table 3.37 Emergency Facilities within Wildland Urban Interface

Jurisdiction	Hospitals		Fire Stations		Police Stations	
	Facilities Located Within Low/Medium/High Density Interface Communities	Percentage (%) of Facilities within WUI Communities	Facilities Located Within Low/Medium/High Density Interface Communities	Percentage (%) of Facilities within WUI Communities	Facilities Located Within Low/Medium/High Density Interface Communities	Percentage (%) of Facilities within WUI Communities
Hunt County*	1	100%	2	22.22%	4	100%
Total	1	100%	2	22.22%	4	100%

Source: Texas Forest Service

The determination of population vulnerability to wildfires was calculated by overlaying the population data from the 2000 U.S. Census Block shapefile to the Texas Fire Service data. The determination of assessed value at-risk (exposure) to wildfires was calculated by overlaying the improved property shapefile to the WUI polygons, and adding the total assessed building values within each of the low/medium/high density WUI Interface communities (Table 3.37).

Table 3.38 Population and Assessed Value of Improvements

Jurisdiction	Population at Risk	Percentage (%) of Population at Risk	Total Assessed Value of Improvements (Buildings & Contents) at Risk	Percentage (%) of Assessed Value of Improvements (Buildings & Contents) at Risk
Hunt County*	51,986	73%	\$1,218,792,603	40%
Commerce	3,676	48%	\$177,735,899	55%
Lone Oak	581	94%	\$28,193,140	79%

Jurisdiction	Population at Risk	Percentage (%) of Population at Risk	Total Assessed Value of Improvements (Buildings & Contents) at Risk	Percentage (%) of Assessed Value of Improvements (Buildings & Contents) at Risk
Neylandville	39	100%	\$4,299,490	59%
Quinlan	1,412	88%	\$65,327,607	63%
Union Valley	242	100%	\$17,032,500	52%
West Tawakoni	1,444	87%	\$27,287,545	45%
Wolfe City	959	62%	\$31,233,999	57%
Total	60,339	70.05%	\$1,569,902,783	43%

Source: Texas Forest Service

As observed in *Table 3.38*, approximately 70.05% of Hunt County is vulnerable to wildfires, unincorporated areas, Commerce, and West Tawakoni, and Quinlan contributing with the majority of the exposed population. Based on geographical location, a total of \$1,569,902,783 worth of property value composed by buildings and its contents are vulnerable to this hazard. This corresponds to a 43% of the overall property improvement values across Hunt County.

In compliance to *Requirement 201.6(c)(2)(ii)* Hunt County's vulnerability to wildfire and impacts to assets expected from this event can be summarized as follows:

- **Population:** Based on geographical data, approximately 73% of Hunt County is vulnerable to wildfires, with the City of Hunt and unincorporated areas contributing with the majority of the exposed population.
- **Improved Property:** Based on geographical data, a loss of \$1,569,902,783 worth of buildings and its contents is exposed to wildfires. This corresponds to 43% of overall property improvement values across Hunt County.
- **Emergency Facilities:** Based on geographic information and assuming that the facilities located within the WUI polygons is exposed to impact from wildfire, there are 2 fire stations, 1 hospital, and 4 police station at risk from wildfire events.
- **Critical Facilities:** Based on geographic information and assuming that the facilities located within the WUI polygons is exposed to impacts from wildfire, there are 24 schools at risk from wildfire events.
- **Critical Infrastructure:** Based on geographic information and assuming that the infrastructure located within the WUI polygons is exposed to impacts from fire, there are 0 bridges, 7 dams, and 3 water facilities at risk from wildfire events.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(c)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

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3.9 Statistical Risk Assessment

A statistical risk assessment uses statistical and mathematical tools to predict hazard frequency and hazard estimated impacts. Data collected from National Climatic Data Center storm events database (recorded historic hazard events), census block data from the U.S. Census 2010 block data provided by the Texas Forest Service and Regional Hazard Assessment Tool were used to assess vulnerability of the five vulnerable categories of assets: population, improved property, critical facilities, critical infrastructure, and emergency facilities.

The statistical analysis was conducted using the historical data obtained from National Climatic Data Center. The data included both personal and property losses from hazard events that occurred in Hunt County from 1/1/2002 through 6/30/2013. Annualized personal and property losses were calculated by dividing the total losses by the number of years for which data was available (i.e. 11.5 years).

Extreme Heat

Extreme heat impacts large areas and cross jurisdictional boundaries; therefore, all Hunt County is exposed to this hazard. Improved property, emergency facilities, critical infrastructure, and critical facilities are not considered vulnerable to extreme heat or cold events; therefore, estimated vulnerability to these assets is anticipated to be minimal. However, population is significantly vulnerable to extreme heat.

Based on the available information, vulnerability to extreme heat was assessed using two techniques: 1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the National Climatic Data Center was used to predict expected monetary and human losses from the event; 2) in fulfillment of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for extreme heat and the nature of the impacts expected from this hazard event were used to identify the vulnerable assets.

Table 3.39 presents Hunt County's recorded historical losses due to extreme heat events as provided in the hazard events database obtained from the National Climatic Data Center. The annualized losses due to extreme events were calculated using the methodology described in Section 3.4

Table 3.39 Extreme Heat Historical Occurrences (01/01/2002-6/30/2013)

Jurisdiction	Date	Type	Fatalities	Annualized Expected Fatalities	Injuries	Property Damage	Crop Damage
Hunt County	8/1/2011	Excessive Heat	0	0	0	\$0	\$0
Territory	8/6/2011	Heat	1	.09	0	\$0	\$0
Total	2	-	1	.09	0	\$0	\$0

Source: National Climatic Data Center

The annualized loss value can be interpreted as the impact expected from extreme heat in terms of annualized human losses and human injuries, and annualized property losses. As observed in *Table 3.39*, Hunt County can expect zero fatalities and injuries per year, and no property or crop losses expected from extreme heat.

The occurrence of extreme heat is regional; therefore the area of potential impacts corresponds to all Hunt County's territory. However, according to the recorded historical information, extreme heat does not have a significant impact on property value.

In compliance to *Requirement 201.6(c)(2)(ii)*, vulnerability to extreme heat and impacts to assets expected from these events can be summarized as follows:

- **Population:** Based on historical data, extreme heat can be expected to produce an average of zero fatalities and injuries per year. All the population of Hunt County is exposed to this hazard.
- **Improved Property:** Based on historical data and the negligible impact of extreme heat to developed areas, the improved property in Hunt County is not exposed to this hazard.

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- **Emergency Facilities**: Based on historical data and the negligible impact of extreme heat to buildings, the existing and future emergency facilities in Hunt County are not exposed to this hazard.
 - **Critical Facilities**: Based on historical data and the negligible impact of extreme heat to buildings, the existing and future critical facilities in Hunt County are not exposed to this hazard.
 - **Critical Infrastructure**: Based on historical data and the negligible impact of extreme heat to existing and future critical infrastructure, exposure to this hazard is considered minimal in Hunt County.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

High Wind

High wind events impact large areas and cross jurisdictional boundaries; therefore, all of Hunt County is exposed to this hazard. Improved property, emergency facilities, critical infrastructure, and critical facilities, and population are considered vulnerable to this hazard.

Based on the available information, vulnerability to high winds was assessed using two techniques: (1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the National Climatic Data Center was used to predict expected monetary and human losses from the event; (2) in fulfillment of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for high winds and the nature of the impacts expected from this hazard event were used to identify the vulnerable assets.

Table 3.40 presents Hunt County's recorded historical losses due to high wind events as provided in the hazard events database obtained from the National Climatic Data Center.

Table 3.40 High Wind Historical Occurrences (01/01/2002-6/30/2013)

Jurisdiction	Number of Events	Years	Magnitude (Knots)	Fatalities	Injuries	Property Damage (Present Value)	Crop Damage	Annualized Expected Property Losses
Hunt County*	17	2002 - 2013	32 kts. – 78 kts.	0	1	\$306,500	\$0	\$26,652.17
Commerce	5	2002 - 2013	50 kts. – 65 kts.	0	0	\$527,000	\$0	\$45,826.08
Lone Oak	6	2002 - 2013	50 kts. – 60 kts.	0	0	\$111,000	\$0	\$9,652.17
Neylandville	-	-	-	-	-	-	-	-
Quinlan	6	2002 - 2013	50 kts. – 78 kts.	0	0	\$125,000	\$0	\$10,869.56
Union Valley	-	-	-	-	-	-	-	-
West Tawakoni	-	-	-	-	-	-	-	-
Wolfe City	5	2002 - 2013	50 kts. – 56 kts.	0	0	\$49,000	\$0	\$4,260.86
Total	39	2002 - 2013	32 kts. – 78 kts.	0	1	\$1,118,500	\$0	\$97,260.86

Source: National Climatic Data Center

*Hunt County unincorporated areas
 —: No Recorded Information

The annualized losses due to high wind events were calculated using the methodology described previously. The annualized loss value can be interpreted as the impact expected from high wind in terms of annualized human losses and human injuries, and annualized property losses. As observed in Table 3.40, Hunt County can expect an average of \$97,260.86 per year in property losses, with no fatalities, injuries, or crop losses from high wind events.

The occurrence of high winds is regional; therefore the area of potential impacts corresponds to all Hunt County's territory. According to the recorded historical information, high winds impact property. Currently, there is no information available with respect to the type structures that had been historically damaged by high wind events. However, because of the regional character of this hazard event, all improved property, emergency and critical facilities, and critical structures are exposed to this hazard.

In compliance to *Requirement 201.6(c)(2)(ii)*, vulnerability to high wind and impacts to assets expected from this event can be summarized as follows:

- **Population:** Based on historical data, high wind events can be expected to produce an average of .0869 injuries and zero fatalities per year. All the population of Hunt County is exposed to this hazard.
- **Improved Property:** Based on historical data, an average loss of \$97,260.86 per year in property losses are expected from high wind events in Hunt County. Zero crop losses are expected from this hazard in Hunt County.
- **Emergency Facilities:** Because of the expected geographical widespread nature of high winds, all existing and future emergency facilities in Hunt County are exposed to this hazard.
- **Critical Facilities:** Because of the expected geographical widespread nature of high winds, all existing and future emergency facilities in Hunt County are exposed to this hazard.
- **Critical Infrastructure:** Because of the expected geographical widespread nature of high winds, all existing and future critical infrastructures in Hunt County are exposed to this hazard.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

Lightning

Because the location at which a lightning events cannot be predicted, all existing and future buildings, critical facilities, critical infrastructure, emergency facilities, improved property, and population are considered to be exposed to this hazard.

Based on the available information, vulnerability to lightning was assessed using two techniques: (1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the National Climatic Data Center was used to predict expected monetary and human losses from the event; (2) in fulfillment of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for lightning and the nature of the impacts expected from this hazard event were used to identify the vulnerable assets.

Table 3.41 presents Hunt County's recorded historical losses due to lightning events as provided in the hazard events database obtained from the National Climatic Data Center.

Table 3.41 Historical Lightning Occurrences (01/01/2002 – 06/30/2013)

Jurisdiction	Number of Events	Years	Fatalities	Injuries	Property Damage	Crop Damage	Annualized Expected Property Losses
Hunt County*	2	2011	0	0	\$100,500	\$0	\$8,739.13
Commerce	0	-	-	-	-	-	-
Lone Oak	1	2007	0	0	\$100,000	\$0	\$8,695.65
Neylandville	-	-	-	-	-	-	-
Quinlan	-	-	-	-	-	-	-
Union Valley	-	-	-	-	-	-	-
West Tawakoni	-	-	-	-	-	-	-
Wolfe City	-	-	-	-	-	-	-
Total	3	2007-2011	0	0	\$200,500	\$0	\$17,434.78

Source: National Climatic Data Center

*Hunt County unincorporated areas
 —: No Recorded Information

The annualized losses due to lightning events were calculated using the methodology described in Section 3.4. The annualized loss value can be interpreted as the impact expected from lightning in terms of annualized human losses and human injuries, and annualized property losses. As observed in *Table 3.41*, Hunt County can expect in average an annual \$17,434.78 in property losses, with no deaths, no injuries, and no losses in crop production from lightning events.

The geographical occurrence of lightning events cannot be predicted; therefore the area of potential impacts corresponds to all Hunt County's territory. According to the recorded historical information, lightning impact property. Because of the regional character of this hazard event, all improved property, emergency and critical facilities, and critical structures are exposed to this hazard.

In compliance to *Requirement 201.6(c)(2)(ii)*, vulnerability to lightning and impacts to assets expected from this event can be summarized as follows:

- **Population:** Based on historical data, lightning events can be expected to cause 0 deaths and 0 injuries in Hunt County. All the population of Hunt County is exposed to this hazard.
- **Improved Property:** Based on historical data, an average loss of \$17,434.78 per year in property losses are expected from lightning events in Hunt County. No crop losses are expected from this hazard in Hunt County.
- **Emergency Facilities:** Because of the expected geographical widespread nature of lightning, all existing and future emergency facilities in Hunt County are exposed to this hazard.
- **Critical Facilities:** Because of the expected geographical widespread nature of lightning, all existing and future critical facilities in Hunt County are exposed to this hazard.
- **Critical Infrastructure:** Because of the expected geographical widespread nature of lightning, all existing and future critical infrastructures in Hunt County are exposed to this hazard.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this Hazard Mitigation Plan. Compliance with this requirement will be an objective in the five-year planning cycle.

Tornado

The areas of impact from tornado events cannot be predicted, and they can affect extensive areas of a county. All existing and future buildings, critical facilities, critical infrastructure, emergency facilities, improved property, and population are considered to be exposed to this hazard.

Based on the available information, vulnerability to tornadoes was assessed using two techniques: 1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the National Climatic Data Center, and the Texas Hazard Mitigation Action Plan was used to predict expected monetary and human losses from the event; 2) in fulfillment of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for tornadoes and the nature of the impacts expected from this hazard event were used to identify the vulnerable assets.

Table 3.42 presents Hunt County's recorded historical losses due to tornado events as provided in the hazard events database obtained from the National Climatic Data Center.

Table 3.42 Historical Tornado Occurrences between (01/01/2002 – 06/30/2013)

Jurisdiction	Number of Events	Years	Magnitude (Fujita Scale & Enhanced Fujita Scale)	Fatalities	Injuries	Property Damage	Annualized Expected Property Losses	Crop Damage
Hunt County*	3	2011-2012	EF0 – EF1	0	0	\$250,000	\$21,739.13	\$30,000
Commerce	-		-	-	-	-	-	-
Lone Oak	1	2010	EF0	0	0	\$500,000	\$43,478.26	\$0
Neylandville	-		-	-	-	-	-	-
Quinlan	-		-	-	-	-	-	-
Union Valley	1	2012	EF2	0	0	\$500,000	\$43,478.26	\$0
West Tawakoni	-		-	-	-	-	-	-
Wolfe City	-		-	-	-	-	-	-
Total	5	2010-2012	EF0 – EF2	0	0	\$1,250,000	\$108,695.65	\$30,000

Source: National Climatic Data Center

*Hunt County unincorporated areas
 —: No Recorded Information

The annualized losses due to tornado events were calculated using the methodology described in Section 3.4. The annualized loss value can be interpreted as the impact expected from tornadoes in terms of annualized human losses and human injuries, and annualized property losses. As observed in Table 3.42, Hunt County can expect an average of zero fatalities and injuries per year. All the population of

Hunt County is exposed to this hazard. Also, an expected average of \$108,695.65 per year in property losses is expected from tornadoes, with most of the historical events occurring in the unincorporated areas of Hunt County. Finally, there are no expected crop losses as result of tornado events.

As stated before, the geographical area of impact for tornado events cannot be predicted, the area of potential impacts corresponds to all Hunt County's territory, and all improved property, emergency and critical facilities, and critical structures are exposed to this hazard. According to the recorded historical information, expected casualties and property losses from tornado events are significant.

In compliance to Requirement 201.6(c)(2)(ii), vulnerability to tornadoes and impacts to assets expected from this event can be summarized as follows:

- **Population:** Based on historical data, tornado events can be expected to cause an average of zero injuries and fatalities per year in Hunt County. All the population of Hunt County is exposed to this hazard.
- **Improved Property:** Based on historical data, an average loss of \$108,695.65 per year in property losses are expected to result from tornado events in Hunt County. An average loss of \$2,608.69 per year in crop losses are expected from this hazard in Hunt County.
- **Emergency Facilities:** Because of the impossibility to predict the geographical area of impact for tornadoes, all existing and future emergency facilities in Hunt County are exposed to this hazard.
- **Critical Facilities:** Because of the impossibility to predict the geographical area of impact for tornados, all existing and future critical facilities in Hunt County are exposed to this hazard.
- **Critical Infrastructure:** Because of the impossibility to predict the geographical area of impact for tornados, all existing and future critical infrastructures in Hunt County are exposed to this hazard.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

Winter Storms

Because winter storm events are large and can affect extensive areas of a county, all existing and future buildings, critical facilities, critical infrastructure, emergency facilities, improved property, and population are considered to be exposed to this hazard.

Based on the available information, vulnerability to winter storms was assessed using two techniques: 1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the National Climatic Data Center was used to predict expected monetary and human losses from the event; 2) in fulfillment of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for winter storms and the nature of the impacts expected from this hazard event were used to identify the vulnerable assets.

Table 3.43 presents Hunt County's recorded historical losses due to winter storm events as provided in the hazard events database obtained from the National Climatic Data Center.

Table 3.43 Winter Storm Historical Occurrences between (01/01/2002 – 06/30/2013)

Jurisdiction	Date	Fatalities	Injuries	Property Damage	Annualized Expected Property Losses	Crop Damage
Hunt County Territory	2/5/2002	0	0	\$0	\$0	\$0
	3/2/2002	0	0	\$0	\$0	\$0
	2/24/2003	0	0	\$0	\$0	\$0
	2/14/2004	0	0	\$0	\$0	\$0
	12/7/2005	0	0	\$0	\$0	\$0
	1/14/2007	0	0	\$5,000	\$434.78	\$0
	12/15/2008	0	0	\$0	\$434.78	\$0
	1/27/2009	0	0	\$10,000	\$1,304.34	\$0
	2/11/2010	0	0	\$500,000	\$44,782.60	\$0
	3/20/2010	0	0	\$0	\$44,782.60	\$0
	1/9/2011	0	0	\$150,000	\$57,826.08	\$0
	2/1/2011	0	0	\$150,000	\$70,869.56	\$0
	2/3/2011	0	0	\$15,000	\$72,173.91	\$0
Total	13	0	0	\$830,000	\$72,173.91	\$0

Source: National Climatic Data Center

The annualized losses due to winter storm events were calculated using the methodology described previously. The annualized loss value can be interpreted as the impact expected from winter storm in terms of annualized human losses and human injuries, and annualized property losses. As observed in *Table 3.43*, Hunt County can expect in average an annual \$72,173.91 in property losses, with zero injuries, fatalities, and crop losses from winter storm events.

The geographical occurrence of winter storm events is widespread; therefore the area of potential impacts corresponds to all Hunt County's territory. According to the recorded historical information, winter storm events impact property. Because of the regional character of this hazard event, all improved property, emergency and critical facilities, and critical structures are exposed to this hazard.

In compliance to *Requirement 201.6(c)(2)(ii)*, vulnerability to winter storm events and impacts to assets expected from this event can be summarized as follows:

- **Population**: Based on historical data, winter storm events can be expected to cause an average of zero injuries and fatalities per year in Hunt County. All the population of Hunt County is exposed to this hazard.
- **Improved Property**: Based on historical data, an average loss of \$72,173.91 per year in property losses are expected to result from winter storm events in Hunt County. No crop losses are expected from this hazard in Hunt County.
- **Emergency Facilities**: Because of the expected geographical widespread nature of winter storms, all existing and future emergency facilities in Hunt County are exposed to this hazard.
- **Critical Facilities**: Because of the expected geographical widespread nature of winter storms, all existing and future critical facilities in Hunt County are exposed to this hazard.
- **Critical Infrastructure**: Because of the expected geographical widespread nature of winter storms, all existing and future critical infrastructures in Hunt County are exposed to this hazard.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)©*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

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3.10 Qualitative Analysis

In compliance to *Requirement 201.6(c)(2)(ii)* a qualitative analysis was made for two of the hazards representing low risk to Hunt County. While historical and geographical information regarding these events is unattainable at the present time, conducting a quantitative analysis for these hazards will be an objective in the five-year planning cycle update, should information become available.

Dam Failure

The probability of occurrence for dam and/or levee events in Hunt County is likely. However, due to unattainable information regarding this hazard, quantitative predictions are not available at the present time. All five categories, population, improved property, emergency facilities, critical facilities, and critical infrastructure are considered vulnerable to damage caused by dam and/or levee failure. According to the Priority Risk Index analysis presented in section 3.4, any estimated losses associated with this hazard are anticipated to be of little to no risk across Hunt County.

Based on data from the participating jurisdictions a total of 40 dams are located in Hunt County (*Table 3.44*).

Table 3.44 Dams located in Hunt County and Participating Jurisdictions

Jurisdiction	Number of Dams	Dam Classification		
		High	Significant	Low
<i>Hunt County*</i>	34	6	2	26
Commerce	0	0	0	0
Lone Oak	0	0	0	0
Neylandville	0	0	0	0
Quinlan	0	0	0	0
Union Valley	0	0	0	0
West Tawakoni	0	0	0	0
Wolfe City	0	0	0	0
<i>Greenville**</i>	6	2	0	4
Total	40	8	2	30

Source: *National Inventory of Dams (NID)*

* *Hunt County unincorporated areas*

** *City of Greenville included in Dam Totals due to the presence of two high hazard dams. Greenville is not participating in the Hunt County HazMAP.*

The Hazard Mitigation Planning Team provided a list of high hazard dams located in Hunt County. Eight of these dams have received federal funds from the Natural Resources Conservation Service to conduct an assessment to determine needs of dam rehabilitation. The National Inventory of Dams considers these eight dams to be of high hazard, thus the need for the assessment (*Table 3.45*)

Table 3.45 High Hazard Dams

Jurisdiction	Dam Name
Greenville	Greenville Reservoir No 4 Dam
Greenville	Greenville Reservoir No 5 Dam
Hunt County	Pilot Grove Creek Ws Scs Site 67 Dam
Hunt County	Roundhouse Pool Dam
Hunt County	Upper Lake Fork Creek Ws Scs Site 1 Dam
Hunt County	Upper Lake Fork Creek Ws Scs Site 10a Dam
Hunt County	Wolfe City Reservoir No 1
Hunt County	Wolfe City Reservoir No 2

Source: National Inventory of Dams (NID)

Earthquake

The probability of occurrence for an earthquake event in Hunt County is extremely low. Due to unattainable information regarding this hazard, quantitative predictions are not available at the present time. All five categories, population, improved property, emergency facilities, critical facilities, and critical infrastructure are considered vulnerable to damage caused by an earthquake. According to the Priority Risk Index analysis presented in Section 3.4, any estimated losses associated with this hazard are anticipated to be of no risk across Hunt County.

3.11 Summary

Table 3.50 provides a summary of annualized losses for each of the nine hazard events for which the quantitative analysis (Geographic Information System and/or statistical) was conducted. Table 3.50 summarizes the qualitative analysis conducted on the two hazard events.

Table 3.50 Annualized Losses Expected from Hazards Analyzed using a Quantitative Analysis

Hazard Event	Annualized Expected Fatalities	Annualized Expected Injuries	Annualized Expected Property Losses	Annualized Expected Crop Loss	Annualized Expected Crop Loss per Acre
Drought	0	0	\$173.91	\$78,695.65	\$0.14
Extreme Heat	.09	0	\$0	\$0	\$0
Flood	0	0	\$9,826.08	\$0	\$0
Hail	0	0	\$12,000	\$0	\$0
High Wind	0	.09	\$97,260.86	\$0	\$0
Lightning	0	0	\$17,434.78	\$0	\$0
Tornado	0	0	\$108,695.65	\$2,608.69	\$0
Wildfire	0	0	\$32,260.86	\$35,217.39	\$0.06
Winter Storm	0	0	\$72,173.91	\$0	\$0

—: No Recorded Information

Table 3.51 Summary of Qualitative Analysis

Hazard Event	Probability of Occurrence According to the Priority Risk Index	Vulnerable Categories				
		Population	Property Damage	Emergency Facilities	Critical Facilities	Critical Infrastructures
Dam Failure	Low Risk	√	√	√	√	√
Earthquake	No Risk	√	√	√	√	√

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Chapter Four: Capability Assessment

(In compliance with 201.6 (C1))

County government structure is spelled out in the Texas Constitution, which makes counties functional agents of the state. Thus, counties, unlike cities, are limited in their actions to areas of responsibility specifically spelled out in laws passed by the legislature.

At the heart of each county is the Commissioners Court. Each Texas County has four precinct commissioners and a county judge who serve on this court. Although this body conducts the general business of the county and oversees financial matters, the Texas Constitution established a strong system of checks and balances by creating other elective offices in each county. The major elective offices found in most counties include the county judge, county attorneys, county and district clerks, county treasurers, sheriffs, tax assessor-collectors, justices of the peace, and constables. As a part of the checks and balances system, counties have an auditor appointed by the district courts.

While many county functions are administered by elected officials, others are run by individuals employed by the Commissioners Court. They include such departments as public health and human services, personnel and budget, and in some counties, public transportation, and emergency medical services.

The capability assessment examines the ability of Hunt County and participating jurisdictions to implement and manage a comprehensive mitigation strategy. The strengths, weaknesses, and resources of these jurisdictions are identified in this assessment as a means to develop an effective Hazard Mitigation Action Plan. The capabilities identified in this assessment are evaluated collectively to develop feasible recommendations, which support the implementation of effective mitigation activities, given existing conditions throughout the County.

A questionnaire was distributed to the Hunt County Office of Emergency Management and to the Hazard Mitigation Planning Team in order to initiate this assessment. This capability assessment was distributed to the participating jurisdictions to request information pertaining to existing plans, policies, and regulations that contribute to or hinder the ability to implement hazard mitigation activities, including legal and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities. The completed questionnaire was received on March 27, 2014.

Hunt County's legal and regulatory capabilities are associated with the meaningful policies and projects designed to reduce the impacts of future hazard events. The administrative and technical capabilities are assessed by evaluating whether there are an adequate number of personnel to complete mitigation activities, and assessing the level of knowledge and technical expertise of local government employees. The fiscal capabilities are associated with the financial ability of a local government to implement mitigation activities.

Table 4.1, Table 4.2, and Table 4.3, each provide a summary of the legal and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities for Hunt County and participating jurisdictions. To assess the capabilities of each participating jurisdiction, the number of "yes" answers is added horizontally in each Table. Then, a percentage is obtained relative to the total number of "yes" answers possible.

To assess the capabilities of Hunt County in each category, the number of "yes" answers is added vertically in each column. Then, a percentage is obtained relative to the number of jurisdictions.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
<i>Hunt County</i>	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	21%
<i>Commerce</i>	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	86%
<i>Lone Oak</i>	Y	Y	Y	N	N	N	N	N	N	Y	N	N	N	N	29%
<i>Neylandville</i>	N	N	N	N	N	N	N	N	N	N	N	N	N	N	0%
<i>Quinlan</i>	Y	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	36%
<i>Union Valley</i>	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	21%
<i>West Tawakoni</i>	Y	Y	Y	Y	N	Y	Y	N	N	Y	N	N	N	N	50%
<i>Wolfe City</i>	Y	Y	N	Y	N	N	N	Y	N	Y	Y	N	N	N	43%
Average % Yes Capabilities – 36%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes per Jurisdiction
<i>Hunt County</i>	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	90%
<i>Commerce</i>	Y	Y	Y	Y	N	Y	N	N	Y	Y	70%
<i>Lone Oak</i>	N	N	N	N	N	Y	N	Y	Y	N	30%
<i>Neylandville</i>	N	N	N	N	N	N	N	N	N	N	0%
<i>Quinlan</i>	Y	N	N	Y	N	N	Y	N	N	N	30%
<i>Union Valley</i>	N	N	N	N	N	N	N	N	N	N	0%
<i>West Tawakoni</i>	N	N	N	Y	N	N	N	N	N	N	10%
<i>Wolfe City</i>	N	N	N	N	N	N	N	N	N	N	0%
Average % Yes Capabilities – 29%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes per Jurisdiction
<i>Hunt County</i>	N	N	N	N	N	N	N	N	N	N	0%
<i>Commerce</i>	Y	Y	N	Y	Y	Y	Y	N	N	Y	70%
<i>Lone Oak</i>	Y	N	Y	Y	N	Y	Y	Y	N	N	60%
<i>Neylandville</i>	N	N	Y	Y	N	N	N	N	N	N	20%
<i>Quinlan</i>	Y	Y	Y	Y	N	Y	Y	N	N	N	60%
<i>Union Valley</i>	N	N	N	N	N	N	N	N	N	N	0%
<i>West Tawakoni</i>	Y	N	Y	Y	N	Y	N	N	Y	N	50%
<i>Wolfe City</i>	N	Y	N	Y	N	N	N	N	N	N	20%
Average % Yes Capabilities – 35%											
Y- Yes N- No ?- Don't Know											

To quantify Hunt County's legal and regulatory capabilities, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category; limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, Hunt County and its jurisdictions have 36% of legal and regulatory capabilities, 29% of administrative and technical capabilities of, and 35% fiscal capabilities.

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, Hunt County considered not only its level of hazard risk but also the existing capability to minimize or eliminate that risk.

Chapter Five: Mitigation Strategy

Chapter Five of the Hunt County Hazard Mitigation Action Plan (HazMAP) describes each participating jurisdiction's blueprint for reducing the potential losses identified in the risk assessment and its ability to expand and improve on these existing tools. The HazMAP includes mitigation goals and action items which each participating jurisdiction plans to achieve.

The chapter identifies specific and identifiable action items for each participating jurisdiction. The action items are laid out and an explanation of how they will be implemented and administered is given, including: the department responsible, existing and potential funding sources, and the timeframe that each item will be completed in. The action items also present a cost benefit review statement and demonstrate the priority of emphasis on each action item by that particular jurisdiction.

According to the Texas State Mitigation Plan, hazard mitigation is defined as any action taken to eliminate or reduce the long-term risk to life and property from natural and human-caused hazards. This is a long-term, ongoing management process that consists of a variety of both pre-incident and post-incident actions.

According to *Requirement 201.6(c)(3)(i) the plan shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards*. For the development of the mitigation goals, Hunt County took into consideration both state and jurisdictional needs.

5.1 Goals 5-3

The hazard mitigation goals describe the overall purpose of the HazMAP, and target specific objectives through which those goals are to be achieved. Each participating jurisdiction aligns their specific action items to these goals through specific and measurable objectives.

5.2 Action Items 5-4

The action items are organized by each hazard assessed, are listed in order of the participating jurisdiction. They identify items specific to each jurisdiction and how that particular jurisdiction plans to reduce the potential losses identified in Chapter Three.

Unincorporated Hunt County Action Items	Section 5.2.A
Commerce Action Items	Section 5.2.B
Lone Oak Action items	Section 5.2.C
Neylandville Action Items	Section 5.2.D
Quinlan Action Items	Section 5.2.E
Union Valley Action Items	Section 5.2.F
West Tawakoni Action Items	Section 5.2.G
Wolfe City Action Items	Section 5.2.H

5.3 National Flood Insurance Program (NFIP) Compliance

5-40

Chapter Five of the Hunt County HazMAP also describes each participating jurisdiction's participation in the National Flood Insurance Program (NFIP). It identifies, analyzes, and prioritizes those action items related to continued compliance with the NFIP.

5.1 Goals

The Hunt County Hazard Mitigation Action Plan corporately assessed the mitigation goals of the participating jurisdictions. The following goals and objectives were identified:

Goal 1 Reduce the loss of life caused by natural hazard events in Hunt County

Objective 1-A Promote the use of early warning systems.

Objective 1-B Conduct public education campaigns to insure Hunt County Citizens have access to and are aware of emergency preparedness information.

Objective 1-C Increase public support and understanding of hazard mitigation and disasters.

Goal 2 Protect public and private property from the effects of natural hazards

Objective 2-A Minimize potential impacts for future development from natural hazards.

Objective 2-B Identify and implement hazard mitigation projects to reduce the impact of hazard events and disasters.

5.2 Action Items

Each participating jurisdiction's Hazard Mitigation Planning Team (HMPT) in the Hunt County Hazard Mitigation Action Plan (HazMAP) collaboratively created Action Items based upon the direction of the city as identified in capital improvement plans and special projects within each city department, as well as identified new mitigation action items within the HazMAP. The mitigation strategy addresses how the actions will be implemented and administered, including the responsible department, existing and potential resources, and the timeframe to complete each action. The format for the Action Items follows this guideline and addresses the following areas:

1. Jurisdiction
2. Action Item Title
3. Hazard(s) Addressed
4. Goal/Objective
5. Priority
6. Estimated Cost
7. Potential Funding Sources
8. Potential Matching Sources
9. Lead Agency/Department Responsible
10. Implementation Schedule
11. Effect on New Buildings
12. Effect on Existing Buildings
13. Cost Effectiveness
14. Discussion

Hazard Mitigation Planning Team representatives collaborated as a Hazard Mitigation Action Plan through the North Central Texas Council of Governments (NCTCOG) to further analyze the mitigation needs as a county.

The comprehensive range of specific mitigation actions and projects being considered in the Hunt County HazMAP has been determined by each of the HMPT. Each mitigation action item for the participating jurisdictions has a priority indicator of high, medium, or low, and the cost-benefit review was conducted as a part of determining the priority based on the evaluation criteria of use in current planning mechanisms, public approval, feasibility, and political implications. The priorities were determined by the Hazard Mitigation Planning Teams by examining available jurisdictional funding, local priorities, economic impact, and comparison to special projects, Capital Improvement Plans, plans and studies, and the benefit of the mitigation action in comparison to another or to no action at all.

Action Item Complete Listing

The complete listing of each participating jurisdiction's action items is detailed below, grouped by participating jurisdiction. Each action item addresses how the actions will be implemented and administered, including the responsible department, existing and potential resources, and the timeframe to complete each action. The action item discussion also includes the jurisdiction's assessed priority according to the prioritization methodology utilized, as well as the results of the cost-benefit review.

Unincorporated Hunt County Action Items	Section 5.2.A
Commerce Action Items	Section 5.2.B
Lone Oak Action items	Section 5.2.C
Neylandville Action Items	Section 5.2.D
Quinlan Action Items	Section 5.2.E
Union Valley Action Items	Section 5.2.F
West Tawakoni Action Items	Section 5.2.G
Wolfe City Action Items	Section 5.2.H

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Section 5.2.A – Unincorporated Hunt County Action Items

Hunt County Action Item	Adopt and promote KnoWhat2Do, the NCTCOG official public education program for the region
Hazard(s) Addressed	Tornado, High Winds, Hail, Winter Storms, Flooding, Wildfire, Extreme Heat, Drought
Goal/Objective	1-B
Priority	High
Estimated Cost	\$10,000
Potential Funding Sources	General funds, State, federal grant funding
Potential Matching Sources	Local funds, private donations
Lead Department	Hunt County Emergency Management
Implementation Schedule	6 – 9 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Public education is extremely effective for low cost
Discussion	

Hunt County Action Item	Participate in the Texas Tornado Shelter Rebate Program
Hazard(s) Addressed	Tornado, High Winds, Hail
Goal/Objective	1-B
Priority	High
Estimated Cost	\$3,000 per shelter
Potential Funding Sources	Federal grants, state grants, local funds
Potential Matching Sources	Local cost share, in-kind match
Lead Department	Hunt County Emergency Management
Implementation Schedule	6-18 Months
Effect on Old Buildings	Installation of shelters for residents
Effect on New Buildings	Installation of shelters for residents
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes of high wind
Discussion	

Hunt County Action Item	Increase the ability of residents and businesses of Hunt County to receive early warning from the National Weather Services. This would be accomplished by conduct a public awareness campaign on how citizens can receive alerts from numerous sources on their cells phones and the use low cost weather radios.
Hazard(s) Addressed	Winter Storms, Flooding, Hail, and Tornado
Goal/Objective	1-A
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	General funds, federal grants, state grants
Potential Matching Sources	Local funds, private donations, resident cost share
Lead Department	Hunt County Emergency Management
Implementation Schedule	6-18 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Advanced warning saves lives, which outweighs any expenses
Discussion	

Hunt County Action Item	The Firewise Program provides a series of steps that individual residents and their neighbors can take to keep their homes and neighborhoods safer from fire.
Hazard(s) Addressed	Wildfire
Goal/Objective	2-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Hunt County Fire Marshal
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	The use of this program could save lives and thousands of dollars in property damage.
Discussion	

Hunt County Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as cooling centers during extreme heat events, and then to distribute that list of locations to those who might be in need of such facilities.
Hazard(s) Addressed	Extreme Heat
Goal/Objective	1-C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Hunt County Emergency Management
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as cooling centers.
Discussion	

Hunt County Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as warming centers during winter storm events, and then to distribute that list of locations to those who might be in need of such facilities. Also, to work with Red Cross, Salvation Army, Churches and civic groups in having overnight facilities available as needed
Hazard(s) Addressed	Winter Storms
Goal/Objective	1-C
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Hunt County Emergency Management
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as warming centers.
Discussion	

Hunt County Action Item	Promote the program of "Turn Around Don't Drown Campaign." This is a campaign that would be aired through the media, meetings and written material to educate people on the dangers of driving through floodwaters.
Hazard(s) Addressed	Flooding
Goal/Objective	1-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Hunt County Emergency Management
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	A proven program in awareness and saving lives.
Discussion	

Hunt County Action Item	Work with County Extension Agent and local nurseries on the education of the general public on using drought resistance vegetation in landscaping
Hazard(s) Addressed	Drought
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Hunt County Emergency Management
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	While not a life-saving action item, it will save property and the expense that is incurred when replacing vegetation in landscaping.
Discussion	

Section 5.2.B - Commerce Action Items

City of Commerce Action Item	Adopt and promote KnowWhat2Do, the NCTCOG official public education program for the region
Hazard(s) Addressed	Tornado, High Winds, Hail, Winter Storms, Flooding, Wildfire, Extreme Heat, Drought
Goal/Objective	1-B
Priority	High
Estimated Cost	\$10,000
Potential Funding Sources	General funds, State, federal grant funding
Potential Matching Sources	Local funds, private donations
Lead Department	Commerce Emergency Management
Implementation Schedule	6 – 9 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Public education is extremely effective for low cost
Discussion	

City of Commerce Action Item	Participate in the Texas Tornado Shelter Rebate Program
Hazard(s) Addressed	Tornado, High Winds, Hail
Goal/Objective	1-B
Priority	High
Estimated Cost	\$3,000 per shelter
Potential Funding Sources	Federal grants, state grants, local funds
Potential Matching Sources	Local cost share, in-kind match
Lead Department	Commerce Emergency Management
Implementation Schedule	6-18 Months
Effect on Old Buildings	Installation of shelters for residents
Effect on New Buildings	Installation of shelters for residents
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes of high wind
Discussion	

City of Commerce Action Item	Increase the ability of residents and businesses of City of Commerce to receive early warning from the National Weather Services. This would be accomplished by conduct a public awareness campaign on how citizens can receive alerts from numerous sources on their cells phones and the use low cost weather radios.
Hazard(s) Addressed	Winter Storms, Flooding, Hail, and Tornado
Goal/Objective	1-A
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	General funds, federal grants, state grants
Potential Matching Sources	Local funds, private donations, resident cost share
Lead Department	Commerce Emergency Management
Implementation Schedule	6-18 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Advanced warning saves lives, which outweighs any expenses
Discussion	

City of Commerce Action Item	The Firewise Program provides a series of steps that individual residents and their neighbors can take to keep their homes and neighborhoods safer from fire.
Hazard(s) Addressed	Wildfire
Goal/Objective	2-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Commerce Emergency Management
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	The use of this program could save lives and thousands of dollars in property damage.
Discussion	

City of Commerce Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as cooling centers during extreme heat events, and then to distribute that list of locations to those who might be in need of such facilities.
Hazard(s) Addressed	Extreme Heat
Goal/Objective	1-C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Commerce Emergency Management
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as cooling centers.
Discussion	

City of Commerce Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as warming centers during winter storm events, and then to distribute that list of locations to those who might be in need of such facilities. Also, to work with Red Cross, Salvation Army, Churches and civic groups in having overnight facilities available as needed
Hazard(s) Addressed	Winter Storms
Goal/Objective	1-C
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Commerce Emergency Management
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as warming centers.
Discussion	

City of Commerce Action Item	Promote the program of "Turn Around Don't Drown Campaign." This is a campaign that would be aired through the media, meetings and written material to educate people on the dangers of driving through floodwaters.
Hazard(s) Addressed	Flooding
Goal/Objective	1-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Commerce Emergency Management
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	A proven program in awareness and saving lives.
Discussion	

City of Commerce Action Item	Work with County Extension Agent and local nurseries on the education of the general public on using drought resistance vegetation in landscaping
Hazard(s) Addressed	Drought
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Commerce Emergency Management
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	While not a life-saving action item, it will save property and the expense that is incurred when replacing vegetation in landscaping.
Discussion	

Section 5.2.C - Lone Oak Action items

City of Lone Oak Action Item	Adopt and promote KnoWhat2Do, the NCTCOG official public education program for the region
Hazard(s) Addressed	Tornado, High Winds, Hail, Winter Storms, Flooding, Wildfire, Extreme Heat, Drought
Goal/Objective	1-B
Priority	High
Estimated Cost	\$10,000
Potential Funding Sources	General funds, State, federal grant funding
Potential Matching Sources	Local funds, private donations
Lead Department	Lone Oak City Council
Implementation Schedule	6 – 9 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Public education is extremely effective for low cost
Discussion	

City of Lone Oak Action Item	Participate in the Texas Tornado Shelter Rebate Program
Hazard(s) Addressed	Tornado, High Winds, Hail
Goal/Objective	1-B
Priority	High
Estimated Cost	\$3,000 per shelter
Potential Funding Sources	Federal grants, state grants, local funds
Potential Matching Sources	Local cost share, in-kind match
Lead Department	Lone Oak City Council
Implementation Schedule	6-18 Months
Effect on Old Buildings	Installation of shelters for residents
Effect on New Buildings	Installation of shelters for residents
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes of high wind
Discussion	

City of Lone Oak Action Item	Increase the ability of residents and businesses of Lone Oak to receive early warning from the National Weather Services. This would be accomplished by conduct a public awareness campaign on how citizens can receive alerts from numerous sources on their cells phones and the use low cost weather radios.
Hazard(s) Addressed	Winter Storms, Flooding, Hail, and Tornado
Goal/Objective	1-A
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	General funds, federal grants, state grants
Potential Matching Sources	Local funds, private donations, resident cost share
Lead Department	Lone Oak City Council
Implementation Schedule	6-18 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Advanced warning saves lives, which outweighs any expenses
Discussion	

City of Lone Oak Action Item	The Firewise Program provides a series of steps that individual residents and their neighbors can take to keep their homes and neighborhoods safer from fire.
Hazard(s) Addressed	Wildfire
Goal/Objective	2-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Lone Oak City Council
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	The use of this program could save lives and thousands of dollars in property damage.
Discussion	

City of Lone Oak Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as cooling centers during extreme heat events, and then to distribute that list of locations to those who might be in need of such facilities.
Hazard(s) Addressed	Extreme Heat
Goal/Objective	1-C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Lone Oak City Council
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as cooling centers.
Discussion	

City of Lone Oak Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as warming centers during winter storm events, and then to distribute that list of locations to those who might be in need of such facilities. Also, to work with Red Cross, Salvation Army, Churches and civic groups in having overnight facilities available as needed
Hazard(s) Addressed	Winter Storms
Goal/Objective	1-C
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Lone Oak City Council
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as warming centers.
Discussion	

City of Lone Oak Action Item	Promote the program of "Turn Around Don't Drown Campaign." This is a campaign that would be aired through the media, meetings and written material to educate people on the dangers of driving through floodwaters.
Hazard(s) Addressed	Flooding
Goal/Objective	1-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Lone Oak City Council
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	A proven program in awareness and saving lives.
Discussion	

City of Lone Oak Action Item	Work with County Extension Agent and local nurseries on the education of the general public on using drought resistance vegetation in landscaping
Hazard(s) Addressed	Drought
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Lone Oak City Council
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	While not a life-saving action item, it will save property and the expense that is incurred when replacing vegetation in landscaping.
Discussion	

Section 5.2.D - Neylandville Action Items

City of Neylandville Action Item	Adopt and promote KnowWhat2Do, the NCTCOG official public education program for the region
Hazard(s) Addressed	Tornado, High Winds, Hail, Winter Storms, Flooding, Wildfire, Extreme Heat, Drought
Goal/Objective	1-B
Priority	High
Estimated Cost	\$10,000
Potential Funding Sources	General funds, State, federal grant funding
Potential Matching Sources	Local funds, private donations
Lead Department	City of Neylandville
Implementation Schedule	6 – 9 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Public education is extremely effective for low cost
Discussion	

City of Neylandville Action Item	Participate in the Texas Tornado Shelter Rebate Program
Hazard(s) Addressed	Tornado, High Winds, Hail
Goal/Objective	1-B
Priority	High
Estimated Cost	\$3,000 per shelter
Potential Funding Sources	Federal grants, state grants, local funds
Potential Matching Sources	Local cost share, in-kind match
Lead Department	City of Neylandville
Implementation Schedule	6-18 Months
Effect on Old Buildings	Installation of shelters for residents
Effect on New Buildings	Installation of shelters for residents
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes of high wind
Discussion	

City of Neylandville Action Item	Increase the ability of residents and businesses of the City of Neylandville to receive early warning from the National Weather Services. This would be accomplished by conduct a public awareness campaign on how citizens can receive alerts from numerous sources on their cells phones and the use low cost weather radios.
Hazard(s) Addressed	Winter Storms, Flooding, Hail, and Tornado
Goal/Objective	1-A
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	General funds, federal grants, state grants
Potential Matching Sources	Local funds, private donations, resident cost share
Lead Department	City of Neylandville
Implementation Schedule	6-18 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Advanced warning saves lives, which outweighs any expenses
Discussion	

City of Neylandville Action Item	The Firewise Program provides a series of steps that individual residents and their neighbors can take to keep their homes and neighborhoods safer from fire.
Hazard(s) Addressed	Wildfire
Goal/Objective	2-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	City of Neylandville
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	The use of this program could save lives and thousands of dollars in property damage.
Discussion	

City of Neylandville Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as cooling centers during extreme heat events, and then to distribute that list of locations to those who might be in need of such facilities.
Hazard(s) Addressed	Extreme Heat
Goal/Objective	1-C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	City of Neylandville
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as cooling centers.
Discussion	

City of Neylandville Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as warming centers during winter storm events, and then to distribute that list of locations to those who might be in need of such facilities. Also, to work with Red Cross, Salvation Army, Churches and civic groups in having overnight facilities available as needed
Hazard(s) Addressed	Winter Storms
Goal/Objective	1-C
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	City of Neylandville
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as warming centers.
Discussion	

City of Neylandville Action Item	Promote the program of "Turn Around Don't Drown Campaign." This is a campaign that would be aired through the media, meetings and written material to educate people on the dangers of driving through floodwaters.
Hazard(s) Addressed	Flooding
Goal/Objective	1-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	City of Neylandville
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	A proven program in awareness and saving lives.
Discussion	

City of Neylandville Action Item	Work with County Extension Agent and local nurseries on the education of the general public on using drought resistance vegetation in landscaping
Hazard(s) Addressed	Drought
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	City of Neylandville
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	While not a life-saving action item, it will save property and the expense that is incurred when replacing vegetation in landscaping.
Discussion	

Section 5.2.E - Quinlan Action Items

City of Quinlan Action Item	Review and revise development regulations to require underground utilities for new developments.
Hazard(s) Addressed	Winter Storms, High Winds, Wildfire, Tornado
Goal/Objective	2-A
Priority	Medium
Estimated Cost	None
Potential Funding Sources	n/a
Potential Matching Sources	n/a
Lead Department	City Administration, Planning and Zoning Commission, City Council
Implementation Schedule	12 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Low cost with potentially high benefits.
Discussion	The City of Quinlan can create a more safe and sustainable infrastructure system by requiring underground power and utility lines with a reduced chance of damage due to high winds, tornadoes, winter storms and wildfire.

City of Quinlan Action Item	Create and Implement a Natural Hazard Public Education Program for Residents
Hazard(s) Addressed	Tornado, High Winds, Hail, Winter Storms, Flooding, Wildfire, Extreme Heat, Drought
Goal/Objective	1-B
Priority	Medium
Estimated Cost	\$2,500
Potential Funding Sources	Local Funds
Potential Matching Sources	n/a
Lead Department	City Administration, Public Utilities Department
Implementation Schedule	12 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Low cost with potentially high benefits.
Discussion	Using the Hunt County Hazard Mitigation Action Plan, the city of Quinlan can create public information programs to allow citizens to become aware of natural hazards in the City of Quinlan and what they can do to reduce these hazards.

City of Quinlan Action Item	Study alternatives and possible implementation of early warning programs for Quinlan residents
Hazard(s) Addressed	Winter Storms, High Winds, Hail, Tornado, Flooding
Goal/Objective	1-A
Priority	Low
Estimated Cost	\$5,000 - \$50,000
Potential Funding Sources	Federal Grants, State Grants, Private Grants
Potential Matching Sources	Local Funds, In-Kind Match, Private Donations
Lead Department	City Administration, City Council
Implementation Schedule	12 - 24 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Low cost with potentially high benefits.
Discussion	The City of Quinlan should consider a variety of possible alternatives for providing early warnings for weather events. This may include participation in Code Red, implementation of a weather radio program, outdoor early warning sirens or other possible alternatives based on community needs and available funding.

City of Quinlan Action Item	Improve Code Enforcement activity to remove high grass, weeds, brush, debris and dilapidated structures.
Hazard(s) Addressed	Wildfire
Goal/Objective	2-B
Priority	High
Estimated Cost	\$20,000
Potential Funding Sources	Local Funding
Potential Matching Sources	n/a
Lead Department	Code Enforcement
Implementation Schedule	0 – 12 months
Effect on Old Buildings	Abandoned/Dilapidated structures may be removed.
Effect on New Buildings	None
Cost Effectiveness	Effective code enforcement with existing staff will yield high benefits for community safety, hazard removal and improved community appearance.
Discussion	The City of Quinlan will create new code enforcement activities and procedures.

City of Quinlan Action Item	Create a buffer zone around critical facilities by clearing underbrush, debris and keeping are mowed and free of wildfire fuel.
Hazard(s) Addressed	Wildfire
Goal/Objective	2-B
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	Local Funding
Potential Matching Sources	n/a
Lead Department	Public Works
Implementation Schedule	0 – 12 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Low cost with high benefits.
Discussion	Maintaining adequate buffer zones around critical facilities such as Wastewater Treatment Plant, Storage Tanks, Pump Stations, etc. will help mitigate wildfire hazard to these facilities.

City of Quinlan Action Item	Improve Water Delivery/Storage Monitoring Systems to more quickly identify leaks, breaks and other forms of water loss.
Hazard(s) Addressed	Drought
Goal/Objective	2-B
Priority	Medium
Estimated Cost	\$40,000
Potential Funding Sources	Local Funding
Potential Matching Sources	n/a
Lead Department	Public Utilities
Implementation Schedule	6 – 24 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Long term cost effectiveness for identifying system failures, water loss trends and customer leaks.
Discussion	Electronic read water meters, SCADA and other systems can be used for monitoring and analysis of water usage trends and anomalies. City will continue to install electronic water meters throughout the water delivery system and complete the SCADA monitoring system installation.

City of Quinlan Action Item	Ensure enforcement of water conservation measures (water restrictions) during periods of drought.
Hazard(s) Addressed	Drought
Goal/Objective	2-B
Priority	High
Estimated Cost	\$0 – \$1,000, Utilize existing staff
Potential Funding Sources	Local funds – existing staff
Potential Matching Sources	n/a
Lead Department	Public Utilities, Code Enforcement
Implementation Schedule	Implement immediately
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Very cost effective with high potential benefits utilizing existing staff.
Discussion	The City has adopted a drought contingency plan. To assist in its implementation, incorporate water restriction violations into code enforcement procedures, develop information materials for residents and businesses.

City of Quinlan Action Item	Develop annual program for maintaining storm drains, ditches and culverts to minimize flash flooding
Hazard(s) Addressed	Flooding
Goal/Objective	2-B
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	Local Funding
Potential Matching Sources	n/a
Lead Department	Public Works
Implementation Schedule	0 – 24 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Long term cost effectiveness for maintaining existing storm water system.
Discussion	Annual project to prevent buildup in culverts and storm drains, and will provide monitoring of the system to alert the City of needed repairs.

City of Quinlan Action Item	Develop and Implement City-wide drainage master plan.
Hazard(s) Addressed	Flooding
Goal/Objective	2-A
Priority	Medium
Estimated Cost	\$30,000
Potential Funding Sources	Local funds – existing staff
Potential Matching Sources	n/a
Lead Department	Public Works
Implementation Schedule	12- 24 months
Effect on Old Buildings	Ensure proper drainage for new development.
Effect on New Buildings	Protect existing structures from flash flood.
Cost Effectiveness	Moderate initial costs with planned long term expenditures will provide high long term benefits to the community.
Discussion	The City will need to identify a long term plan to manage storm water drainage throughout the community.

Section 5.2.F - Union Valley Action Items

Union Valley Action Item	Adopt and promote KnoWhat2Do, the NCTCOG official public education program for the region
Hazard(s) Addressed	Tornado, High Winds, Hail, Winter Storms, Flooding, Wildfire, Extreme Heat, Drought
Goal/Objective	1-B
Priority	High
Estimated Cost	\$1,000
Potential Funding Sources	General funds, State, federal grant funding
Potential Matching Sources	Local funds, private donations
Lead Department	Union Valley City Council
Implementation Schedule	6 – 9 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Public education is extremely effective for low cost
Discussion	

Union Valley Action Item	Participate in the Texas Tornado Shelter Rebate Program
Hazard(s) Addressed	Tornado, High Winds, Hail
Goal/Objective	1-B
Priority	High
Estimated Cost	\$3,000 per shelter
Potential Funding Sources	Federal grants, state grants, local funds
Potential Matching Sources	Local cost share, in-kind match
Lead Department	Union Valley City Council
Implementation Schedule	6-18 Months
Effect on Old Buildings	Installation of shelters for residents
Effect on New Buildings	Installation of shelters for residents
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes of high wind
Discussion	

Union Valley Action Item	Increase the ability of residents and businesses of Union Valley to receive early warning from the National Weather Services. This would be accomplished by conduct a public awareness campaign on how citizens can receive alerts from numerous sources on their cells phones and the use low cost weather radios.
Hazard(s) Addressed	Winter Storms, Flooding, Hail, Tornado, High Winds
Goal/Objective	1-A
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	General funds, federal grants, state grants
Potential Matching Sources	Local funds, private donations, resident cost share
Lead Department	Union Valley City Council
Implementation Schedule	6-18 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Advanced warning saves lives, which outweighs any expenses
Discussion	

Union Valley Action Item	The Firewise Program provides a series of steps that individual residents and their neighbors can take to keep their homes and neighborhoods safer from fire.
Hazard(s) Addressed	Wildfire
Goal/Objective	2-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Union Valley City Council
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	The use of this program could save lives and thousands of dollars in property damage.
Discussion	

Union Valley Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as cooling centers during extreme heat events, and then to distribute that list of locations to those who might be in need of such facilities.
Hazard(s) Addressed	Extreme Heat
Goal/Objective	1-C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Union Valley City Council
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as cooling centers.
Discussion	

Union Valley Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as warming centers during winter storm events, and then to distribute that list of locations to those who might be in need of such facilities. Also, to work with Red Cross, Salvation Army, Churches and civic groups in having overnight facilities available as needed
Hazard(s) Addressed	Winter Storms
Goal/Objective	1-C
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Union Valley City Council
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as warming centers.
Discussion	

Union Valley Action Item	Promote the program of "Turn Around Don't Drown Campaign." This is a campaign that would be aired through the media, meetings and written material to educate people on the dangers of driving through floodwaters.
Hazard(s) Addressed	Flooding
Goal/Objective	1-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Union Valley City Council
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	A proven program in awareness and saving lives.
Discussion	

Union Valley Action Item	Work with County Extension Agent and local nurseries on the education of the general public on using drought resistance vegetation in landscaping
Hazard(s) Addressed	Drought
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Union Valley City Council
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	While not a life-saving action item, it will save property and the expense that is incurred when replacing vegetation in landscaping.
Discussion	

Section 5.2.G - West Tawakoni Action Items

West Tawakoni Action Item	Adopt and promote KnowWhat2Do, the NCTCOG official public education program for the region
Hazard(s) Addressed	Tornado, High Winds, Hail, Winter Storms, Flooding, Wildfire, Extreme Heat, Drought
Goal/Objective	1-B
Priority	High
Estimated Cost	\$10,000
Potential Funding Sources	General funds, State, federal grant funding
Potential Matching Sources	Local funds, private donations
Lead Department	City Administrator
Implementation Schedule	6 – 9 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Public education is extremely effective for low cost
Discussion	

West Tawakoni Action Item	Participate in the Texas Tornado Shelter Rebate Program
Hazard(s) Addressed	Tornado, High Winds, Hail
Goal/Objective	1-B
Priority	High
Estimated Cost	\$3,000 per shelter
Potential Funding Sources	Federal grants, state grants, local funds
Potential Matching Sources	Local cost share, in-kind match
Lead Department	City Administrator
Implementation Schedule	6-18 Months
Effect on Old Buildings	Installation of shelters for residents
Effect on New Buildings	Installation of shelters for residents
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes of high wind
Discussion	

West Tawakoni Action Item	Increase the ability of residents and businesses of West Tawakoni to receive early warning from the National Weather Services. This would be accomplished by conduct a public awareness campaign on how citizens can receive alerts from numerous sources on their cells phones and the use low cost weather radios.
Hazard(s) Addressed	Winter Storms, Flooding, Hail, and Tornado
Goal/Objective	1-A
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	General funds, federal grants, state grants
Potential Matching Sources	Local funds, private donations, resident cost share
Lead Department	City Administrator
Implementation Schedule	6-18 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Advanced warning saves lives, which outweighs any expenses
Discussion	

West Tawakoni Action Item	The Firewise Program provides a series of steps that individual residents and their neighbors can take to keep their homes and neighborhoods safer from fire.
Hazard(s) Addressed	Wildfire
Goal/Objective	2-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	City Administrator
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	The use of this program could save lives and thousands of dollars in property damage.
Discussion	

West Tawakoni Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as cooling centers during extreme heat events, and then to distribute that list of locations to those who might be in need of such facilities.
Hazard(s) Addressed	Extreme Heat
Goal/Objective	1-C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	City Administrator
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as cooling centers.
Discussion	

West Tawakoni Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as warming centers during winter storm events, and then to distribute that list of locations to those who might be in need of such facilities. Also, to work with Red Cross, Salvation Army, Churches and civic groups in having overnight facilities available as needed
Hazard(s) Addressed	Winter Storms
Goal/Objective	1-C
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	City Administrator
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as warming centers.
Discussion	

West Tawakoni Action Item	Promote the program of "Turn Around Don't Drown Campaign." This is a campaign that would be aired through the media, meetings and written material to educate people on the dangers of driving through floodwaters.
Hazard(s) Addressed	Flooding
Goal/Objective	1-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	City Administrator
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	A proven program in awareness and saving lives.
Discussion	

West Tawakoni Action Item	Work with County Extension Agent and local nurseries on the education of the general public on using drought resistance vegetation in landscaping
Hazard(s) Addressed	Drought
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	City Administrator
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	While not a life-saving action item, it will save property and the expense that is incurred when replacing vegetation in landscaping.
Discussion	

Section 5.2.H - Wolfe City Action Items

Wolfe City Action Item	Adopt and promote KnowWhat2Do, the NCTCOG official public education program for the region
Hazard(s) Addressed	Tornado, High Winds, Hail, Winter Storms, Flooding, Wildfire, Extreme Heat, Drought
Goal/Objective	1-B
Priority	High
Estimated Cost	\$10,000
Potential Funding Sources	General funds, State, federal grant funding
Potential Matching Sources	Local funds, private donations
Lead Department	Wolfe City
Implementation Schedule	6 – 9 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Public education is extremely effective for low cost
Discussion	

Wolfe City Action Item	Participate in the Texas Tornado Shelter Rebate Program
Hazard(s) Addressed	Tornado, High Winds, Hail
Goal/Objective	1-B
Priority	High
Estimated Cost	\$3,000 per shelter
Potential Funding Sources	Federal grants, state grants, local funds
Potential Matching Sources	Local cost share, in-kind match
Lead Department	Wolfe City
Implementation Schedule	6-18 Months
Effect on Old Buildings	Installation of shelters for residents
Effect on New Buildings	Installation of shelters for residents
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes of high wind
Discussion	

Wolfe City Action Item	Increase the ability of residents and businesses of Wolfe City to receive early warning from the National Weather Services. This would be accomplished by conduct a public awareness campaign on how citizens can receive alerts from numerous sources on their cells phones and the use low cost weather radios.
Hazard(s) Addressed	Winter Storms, Flooding, Hail, and Tornado
Goal/Objective	1-A
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	General funds, federal grants, state grants
Potential Matching Sources	Local funds, private donations, resident cost share
Lead Department	Wolfe City
Implementation Schedule	6-18 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Advanced warning saves lives, which outweighs any expenses
Discussion	

Wolfe City Action Item	The Firewise Program provides a series of steps that individual residents and their neighbors can take to keep their homes and neighborhoods safer from fire.
Hazard(s) Addressed	Wildfire
Goal/Objective	2-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Wolfe City
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	The use of this program could save lives and thousands of dollars in property damage.
Discussion	

Wolfe City Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as cooling centers during extreme heat events, and then to distribute that list of locations to those who might be in need of such facilities.
Hazard(s) Addressed	Extreme Heat
Goal/Objective	1-C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Wolfe City
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as cooling centers.
Discussion	

Wolfe City Action Item	To coordinate with social, governmental, educational, fraternal agencies to see what facilities are large enough to host citizens as warming centers during winter storm events, and then to distribute that list of locations to those who might be in need of such facilities. Also, to work with Red Cross, Salvation Army, Churches and civic groups in having overnight facilities available as needed
Hazard(s) Addressed	Winter Storms
Goal/Objective	1-C
Priority	Moderate
Estimated Cost	\$5,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Wolfe City
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Life-saving program and many of these facilities are already in operation, just need to tailor them to also act as warming centers.
Discussion	

Wolfe City Action Item	Promote the program of “Turn Around Don’t Drown Campaign.” This is a campaign that would be aired through the media, meetings and written material to educate people on the dangers of driving through floodwaters.
Hazard(s) Addressed	Flooding
Goal/Objective	1-B
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Wolfe City
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	A proven program in awareness and saving lives.
Discussion	

Wolfe City Action Item	Work with County Extension Agent and local nurseries on the education of the general public on using drought resistance vegetation in landscaping
Hazard(s) Addressed	Drought
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants, general funds
Potential Matching Sources	Local funds, private donations, in-kind match
Lead Department	Wolfe City
Implementation Schedule	6-18 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	While not a life-saving action item, it will save property and the expense that is incurred when replacing vegetation in landscaping.
Discussion	

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5.3 National Flood Insurance Program (NFIP) Compliance



The National Flood Insurance Program (NFIP)

The National Flood Insurance Program is a federally run program which enables property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages.

Community Participation

A community applies for participation in the National Flood Insurance Program (NFIP) either as a result of interest in eligibility for flood insurance or as a result of receiving notification from FEMA that it contains one or more Special Flood Hazard Areas (SFHAs). In order for a community to apply for and receive participation in the NFIP, that community must adopt resolutions or ordinances to minimally regulate new construction in identified SFHAs. FEMA works closely with state and local officials to identify flood hazard areas and flood risks. The floodplain management requirements within the SFHA are designed to prevent new development from increasing the flood threat and to protect new and existing buildings from anticipated flood events.

When a community chooses to join the NFIP, it must require permits for all development in the SFHA and ensure that construction materials and methods used will minimize future flood damage. Permit files must contain documentation to substantiate how buildings were actually constructed. In return, the Federal Government makes flood insurance available for almost every building and its contents within the community.

Communities must ensure that their adopted floodplain management ordinance and enforcement procedures meet program requirements. Local regulations must be updated when additional data are provided by FEMA or when Federal or State standards are revised

Hunt County Jurisdiction Participation Hunt County jurisdictions are participating in the National Flood Insurance Program and have identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Hunt County							
Communities Participating in the National Flood Program							
CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480366#	COMMERCE, CITY OF	HUNT COUNTY	3/8/1974	3/2/1981	1/6/2012	3/2/1981	No
480363#	HUNT COUNTY*	HUNT COUNTY	8/22/1978	9/4/1991	1/6/2012	9/4/1991	No
480370#	QUINLAN, CITY OF	HUNT COUNTY	4/16/1976	9/4/1991	1/6/2012	5/10/2010	No
480246#	UNION VALLEY, CITY OF	HUNT COUNTY		1/6/2012	1/6/2012	4/1/2010	No
480371#	WEST TAWAKONI, CITY OF	HUNT COUNTY	4/16/1976	9/4/1991	01/06/12(M)	3/3/2014	No

Source: <http://www.fema.gov/cis/TX.html>

* - Unincorporated Hunt County

Jurisdiction Compliance

Once the community applies for the NFIP, FEMA arranges for a study of the community to determine base flood elevations and flood risk zones. Consultation with the community occurs at the start of and during the study, and those communities with minimal flood risk are converted to the Regular Program without a study.

FEMA provides the studied community with a Flood Insurance Rate Map delineating base flood elevations and flood risk zones. The community is then given 6 months to adopt base flood elevations in its local zoning and building code ordinances. Once the community adopts more stringent ordinances, FEMA converts the community to the NFIP's Regular Program. FEMA then authorizes the sale of additional flood insurance in the community up to the Regular Program limits. The community must implement and enforce the adopted floodplain management measures. FEMA provides periodic community assistance visits with local officials to provide technical assistance regarding complying with NFIP floodplain management requirements.

The purchase of flood insurance is mandatory as a condition of receipt of federal or federally-related financial assistance for acquisition and/or construction of buildings in SFHAs of any participating community. Those communities notified as flood-prone which do not apply for participation in the NFIP within 1 year of notification are ineligible for federal or federally-related financial assistance for acquisition, construction, or reconstruction of insurable buildings in the SFHA.

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Hunt County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Jurisdiction	NFIP Activity	Activity Description
Hunt County	Completing and maintaining FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the Land Use department
Commerce	Completing and maintaining FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the public works department
Lone Oak	Not a member of NFIP	Lone Oak lacks the municipal capabilities to maintain NFIP status.
Neylandville	Not a member of NFIP	Neylandville lacks the municipal capabilities to maintain NFIP status.
Quinlan	Completing and maintaining FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the public works department

Union Valley	Completing and maintaining FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the public works department
West Tawakoni	Completing and maintaining FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the public works department
Wolfe City	Not a member of NFIP	Wolfe City lacks the municipal capabilities to maintain NFIP status.

The Community Rating System (CRS)

The Community Rating System (CRS) is a voluntary program for NFIP-participating communities. The goals of the CRS are to reduce flood damages to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management. All CRS communities must maintain completed FEMA elevation and flood proofing certificates for all new and substantially improved construction in the Special Flood Hazard Area after the date of application for CRS classification.

The Hunt County Hazard Mitigation Action Plan will apply for and participate in the CRS program to provide discounted insurance premium incentives for communities to go beyond the minimum floodplain management requirements and to analyze and manage future development.

According to the current CRS document located at the following link <http://www.fema.gov/library/viewRecord.do?id=3629>, there are no communities in Hunt County that are currently participating.

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Chapter Six Plan: Maintenance Process

(In compliance with 201.6(c)(4)(i))

6.1 Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), Hunt County has developed a plan maintenance process which is described in the following paragraphs. Hunt County, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by Hunt County Commissioners Court, and formal adoption of the plan by City Council by each participating jurisdiction, the actions outlined in the Hunt County Hazard Mitigation Plan would be implemented by the county and participating jurisdictions as described throughout this document.

The Hunt County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, Hunt County will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Personnel	What	Time
Hunt County Emergency Management Coordinator	Tracking implementation and action items	Biannually
Hunt County Emergency Management Coordinator	Evaluate Plan	Annually
Hunt County Emergency Management Coordinator	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information and analyses and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval and presented to the Hunt County Commissioner's Court and the respective incorporated cities', included in the Hunt County plan, City Councils for approval. Likewise, each participating jurisdiction will undergo the same process for reviewing, revising and updating their respective plans and submitting same for state, federal and jurisdiction's respective local governing body approval. The plan will be updated every five years in accordance.

6.2 Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdictions were carefully reviewed and considered when developing the mitigation actions for this plan. The Hazard Mitigation team will

establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated in to these existing mechanisms as applicable. Those mechanisms include the following:

- Floodplain ordinances
- Capital improvement plans
- Building codes and subdivision development (requirements for soils stabilization, siren requirements, drainage requirements, warning siren systems, etc.)
- Burn ban ordinances
- Water restriction plans
- Watershed plans
- FEMA floodplain mapping

Once the plan is adopted the Hazard Mitigation team will coordinate implementation with the engineering and planning and emergency management departments for the county, participating jurisdictions, river authorities, and drainage districts.

6.3 Continued Public Involvement *(In compliance with 201.6(c)(4)(iii))*

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Hunt County website. The planning committee will continue meeting on a weekly basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Hunt County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Appendix A: Planning and Public Meeting Documentation

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MEETING SIGN-IN SHEET

Meeting:		Hunt County Hazard Mitigation Action Plan Kickoff		Meeting Date:	10/21/2013
Facilitator:		Nicholas F. LaGrassa		Place/Room:	
Name	Title	Company	Phone	E-Mail	
Jelly A. Mark	Commissioner	Hunt Co	903-408-4195		
ERIC A. EVANS	Comm. Pres. I	Hunt Co		evans@huntcounty.net	
Kerry Crews	Police Chief	City of Commerce	903-886-1135	KLCrews@CommerceTX.org	
MARC CLAYTON	City Manager	City of Commerce	(903) 886-1130	Marc.Clayton@CommerceTX.org	
Steve Wilson	Dir. of Com. Dev.	City of Commerce	903-886-1127	Steve.Wilson@CommerceTX.org	
JACK BERNI	FIRE CHIEF	CITY OF COMMERCE	903 886-1147	jberni@commerctfd.com	
DWAYNE HALL	Code Compliance	CITY OF WEST TAWAKONI	903-447-2285	wcode.hall@yaho.com	
JOHN ATTEL	CITY ADMINISTRATOR	CITY OF BUNNLAN	903-356-3306	JADEL.C.CITYOFBUNNLAN.NET	
DANN ALEXANDER	Hunt Co Emergency Mgr	Hunt Co	903-408-4282	hanslandsecurity@huntcounty.net	
NEIL DENT	CHIEF OF POLICE	CITY OF LONE OAK	903-441-2489	NEILDENT@LONEOAKTX.GOV	
Richard Hill	Director	Hunt County	903-408-4246	home land security	
David Jones	CAI Coordinator	Hunt County	903-408-4188	hunteri@huntcounty.net	

MEETING SIGN-IN SHEET

Meeting:		Hunt County HazMAP Meeting		Meeting Date:		11/22/2013	
Facilitator:		Nicholas F. LaGrassa, NCTCOG		Place/Room:		Hunt County Extension Room	
Name	Title	Company	Phone	E-Mail			
Nicholas LaGrassa	Person Assistant	NCTCOG	817 608 2323	n.lagrassa@nctcog.org			
J. David Jones	CR I Coordinator	HCHS	903-408-4188	hunterj@huntcounty.net			
Chris Elliott	Mayor	City of Union Valley	972-636-2196	union_valley@att.net			
Richard Hill	Director		903-408-4246	homelandsecurity@huntcounty.net			
Dave Alexander	Homeland Security		903-408-4232	hope@homelandsecurity@huntcounty.net			
Ezekiel Wilson, Jr.	city Rep.	city of Neylandville	903- 259 -4311	N/A			
Patricia Wilson	city Rep.	City of Neylandville	903-461-0183	PWilson577@gmail.com			
JOHN APPEL	ADMINISTRATOR	CITY OF DUNNAN	903-356-3306	JAPPEL@CITYOFDUNNAN.NET			
Angie Strickler	EP Specialist	NCTCOG	817-965-3221	astri@nctcog.org			

late
 Yes need Feb next LERC meeting

Notice of Public Meeting

The North Central Texas Council of Governments and Hunt County are hosting a public hearing for discussion on the Hunt County Hazard Mitigation Action Plan, during the regular meeting of the Local Emergency Planning Committee of Hunt County. Hunt County invites all interested citizens, non-profits, businesses, and neighboring jurisdictions to comment. Participating communities include: Hunt County, Caddo Mills, Campbell, Celeste, Commerce, Hawk Cove, Lone Oak, Neylandville, Quinlan, West Tawakoni, Union Valley, and Wolfe City. Topics will include potential hazards, severity of hazards, and future plan deliverables. Meeting date and location are as follows:

02/19/2014
10:00 AM

Hunt County Regional Medical Center
6th Floor Conference Room
4215 Joe Ramsey Blvd
Greenville, TX 75401

14 FEB 17 AM 9:08
BY: *J. Ramsey*
DEPUTY

FILE FOR RECORD
JENNIFER LINDENZWEIG
COUNTY CLERK HUNT CO. TX

INSERT PUBLIC MEETING #1 SIGN-IN SHEET HERE

INSERT PUBLIC MEETING #2 MEETING POSTING HERE

INSERT PUBLIC MEETING #2 SIGN-IN SHEET HERE