



Hazard Mitigation Action Plan

Johnson County, Texas



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Chapter One: Multi-jurisdictional Planning Process

Johnson County Hazard Mitigation Action Plan Planning Process The Johnson 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 Johnson County HazMAP is comprised of the following participating jurisdictions:

- Unincorporated Johnson County
- Alvarado
- Burleson
- Cleburne
- Godley
- Joshua
- Keene

Each jurisdiction participated by having a Hazard Mitigation Team (HMT). Each HMT participated in the Hazard Mitigation Action Plan. The NCTCOG Emergency Preparedness Department participated in the HazMAP to assist in compiling the jurisdictional information and prepare the plan for submission. Johnson County Hazard Mitigation Action Plan Meetings were held on June 7, 2012, June 20, 2012, November 16, 2012, December 11, 2012, July 23, 2013, and August 28, 2013.

HazMAP Planning Process Point of Contact The following are the points of contact during the HazMAP planning process from June 2012 – September 2013:

Unincorporated Johnson County	Emergency Management Coordinator
Alvarado	Emergency Management Coordinator/Fire Chief
Burleson	Emergency Management Coordinator
Cleburne	Emergency Management Coordinator
Godley	Mayor
Joshua	Emergency Management Coordinator
Keene	Emergency Management Coordinator

Participating Jurisdiction Population Profiles

Jurisdiction	2010 Population	2012 Population
Unincorporated County	150,934	153,060
Alvarado	3,785	3,800
Burleson	36,690	38,130
Cleburne	29,337	29,180
Godley	1,009	1,010
Joshua	5,910	5,950

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

Johnson County Hazard Mitigation Action Plan Organization The Johnson County Hazard Mitigation Action Plan is organized into six chapters which satisfy the mitigation requirements in 44 CFR Part 201.

Chapter One: Multi-Jurisdictional Planning Process

Describes the process and organization of the County Hazard Mitigation Action Plan (Johnson 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 Analysis

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: Mitigation Goals and Actions

Describes the county-wide goals established by the Johnson 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 Five: 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

Appendix B: Capabilities Assessment

Johnson County Hazard Mitigation Strategy Maintenance Process The Johnson County Hazard Mitigation Action Planning Team will continue to collaborate as a planning group in coordination with all currently participating jurisdictions and any other who choose to join. The North Central Texas Council of Governments (NCTCOG) will continue to be available as a resource. Johnson County will lead the plan maintenance and update processes by:

- Assisting jurisdictional Hazard Mitigation Teams in updating their individual contributions to the Johnson County HazMAP
- Assisting interested jurisdiction in Johnson County who would like to begin their mitigation planning process
- Facilitating Johnson 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 Johnson County Hazard Mitigation Action Plan

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



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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 CFR Part 201.6. While Johnson County has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Johnson County officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts achieved through the implementation of a Hazard Mitigation Plan. Johnson 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), Johnson County developed this Hazard Mitigation Action Plan. This plan identifies hazards, and mechanisms to minimize future damages associated with these hazards, which threaten Johnson 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 Incorporation	Purpose
City and County Appraisal Data 2012	Population and demographics in Section 3.5 to 3.7	Population counts, parcel data and land use data
Regional Hazard Assessment Tool	Hazard occurrences in Section 3.2	Mapping for all hazards but wildfire
National Climatic Data Center (NCDC)	Hazard occurrences in Section 3.1 to 3.6	Previous event occurrences and mapping for all hazards
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Urban Interface in Section 3.1 to 3.2, 3.6	Mapping and Wildfire Vulnerability data
National Dam Inventory	Dam information in Section 3.1 to 3.3, 3.5, 3.6	High Hazard Dam list
FEMA DFIRM Flood Zones	Flood Zone Maps in Section 3.5	GIS mapping of flood zones

The data in this table was incorporated into Johnson County and all participating jurisdictions.

Planning Committee

This Hazard Mitigation Action Plan was developed by the Johnson 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 Johnson County Emergency Management Coordinator.

The Planning Committee was assembled in 2012 with representatives from all jurisdictions including, mayors, police chiefs, fire chiefs, and general public. Johnson 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
City of Godley	Mayor	Plan Development
Johnson County	EMC	General Oversight & Plan development
Johnson County	Floodplain Manager	Plan development
Johnson County	Inspector	Plan development
City of Alvarado	Mayor	Plan development
City of Burleson	Fire Chief	Plan development
City of Burleson	Battalion Chief	Plan development
City of Burleson	Public Works Director	Plan development
City of Cleburne	EMC	Plan development
City of Cleburne	Engineer	Plan development
City of Cleburne	Director of Public Works	Plan development
City of Godley	Mayor	Plan development
City of Keene	Fire Chief	Plan development
City of Keene	EMC	Plan development
City of Joshua	Fire Chief	Plan development

See lists below for details of all jurisdictional participation

Johnson County served as the coordinator and lead agency for all jurisdictions, including the unincorporated areas of Johnson 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 Johnson 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 Johnson County.
3. Assisted Johnson County staff with identifying hazards and estimating potential losses from future hazard events.
4. Assisted Johnson County in developing and prioritizing mitigation actions to address the identified risks.
5. Assisted Johnson 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 Johnson County to incorporate the resulting comments into the proposed plan.
9. Capabilities, ordinances, policies and current procedures are listed in the Capability Assessment Table and NFIP Table in Chapter 4 and Chapter 5, and Integration Plan Table in Chapter 6.

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

Representing	Position	Role
Red Cross	Regional Contact	Review of plan
Texas Health Cleburne	EMC	Review of plan
Salvation Army	County Director	Review of plan
LEPC	Voting Member	Review of plan
City of Cresson	EMC	Review of plan

All stakeholders listed above were contacted through email and Public Meeting Notices as shown in Appendix A. Subsequent to the State of Texas and FEMA approval of the plan, each organization is also 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 Johnson County and included all jurisdiction's participation:

- Johnson County Mitigation Strategy Working Group Meeting - June 7, 2012
- Johnson County Mitigation Strategy Working Group Meeting - June 20, 2012
- Johnson County Hazard Analysis Working Group Meeting – November 16, 2012
- Johnson County Hazard Analysis Working Group Meeting – December 11, 2012

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.

- The first public meeting was held on December 11, 2012 and advertised in the County News and on the city website inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment.
- The second public meeting was held on August 28, 2013 and advertised in the County News and city website inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment.

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.

These opportunities 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 Analysis

(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 Johnson County Hazard Mitigation Action Plan (HazMAP) is a risk assessment that provides the factual basis for the action items described in Chapter Four. 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 location and extent of each hazard as well as detailed previous occurrence and probability of future events data.

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| 3.1 | Profiling Hazards and Vulnerabilities | 3-3 |
| | This section presents a description of the natural hazards which have been identified to affect the participating area. Johnson County HazMAP has identified a vulnerability to 14 hazards, three which are considered to be geographically defined and further assessment has been provided by the participating jurisdictions. | |
| 3.2 | Location of Hazards | 3-19 |
| | This section provides the geographic location and vulnerability of each identified hazard to the participating jurisdictions within the Johnson County HazMAP. Maps, to include flood zone, land use, and critical infrastructure depict the nature of vulnerability to people and structures from the identified hazards. | |
| 3.3 | Extent | 3-77 |
| | There are two descriptions of the extent in which the magnitude and severity of each hazard affect the planning area: one is an overall detail of the natural hazard specific extent scales within the Johnson County HazMAP, the second is a participation jurisdiction specific analysis and ranking of each identified hazard, and can be found on page 3-90. | |
| 3.4 | Occurrence | 3-91 |
| | This section details past events, from 01/01/2002-12/31/2012, on pages 3-92 through 3-105, with data from the National Climatic Data Center, with the probability of future events for each jurisdiction on 3-106. | |
| 3.5 | Impact | 3-107 |
| | This section illustrates the impact of each hazard on the participating jurisdictions within the Multi-Jurisdictional Hazard Mitigation Action Plan. | |
| 3.6 | Structures, Losses, and Trends | 3-127 |
| | This section focuses on forecasting and further assessment of vulnerability in terms of the types and numbers of existing and future structures (identified as single family, multi-family, and manufactured homes, infrastructure, and critical facilities) located in the identified hazard area. | |
| 3.7 | Repetitive Loss Properties | 3-149 |
| | This section depicts the National Flood Insurance Program insured structures that have been repetitively damaged by floods, and describes the vulnerability in terms of the types and numbers as well as damage claims for those properties located in the identified hazard areas. | |



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3.1 Profiling Hazard and Vulnerabilities

The Hazard Mitigation Action Plan for Johnson County is a tool to assist in the identification and documentation of all the hazards faced in the region. The Johnson 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 nine will be discussed in detail in this plan, with one briefly discussed. The remaining five (earthquake, expansive soils, land subsidence, coastal erosions, and hurricane/tropical storm) will not be discussed due to their lack of impact on the Johnson County planning area.

Hazards Addressed Johnson 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 Johnson County jurisdictions. Also identified in this section are areas that may be more vulnerable to each hazard in the event of an occurrence.

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 Johnson County Tornadoes in Johnson County have the ability to occur with little warning and no predictable pattern. Throughout the County, there are many developments that are all or nearly all mobile home type structures that will offer little to limited protection

Based on GIS analysis there are five fire stations, six schools, one hospital, one wastewater treatment facility, and zero police stations, public airports, emergency operation centers, or water treatment facilities in Unincorporated Johnson County that are at risk from the tornado hazard.

City of Alvarado Tornadoes in Alvarado have the ability to occur with little warning and no predictable pattern. Throughout the City, there are many developments that are all or nearly all older built structures that will offer little to limited protection.

Based on GIS analysis there is one fire station, one wastewater treatment facility, five schools, one police station, one wastewater treatment facility, one water treatment facility, and zero hospitals, emergency operation centers, or public airports in the city of Alvarado at risk from the tornado hazard.

City of Burleson Tornadoes in Burleson have the ability to occur with little warning and no predictable pattern. Throughout the City, there are many developments that are all or nearly all older built structures that will offer little to limited protection.

Based on GIS analysis there is one police station, fire stations, one hospital, one wastewater treatment facility, one emergency operations center, 19 schools, and zero water treatment facilities or public airports in the city of Burleson at risk from the tornado hazard.

City of Cleburne Tornadoes in Cleburne have the ability to occur with little warning and no predictable pattern. Throughout the City, there are many developments that are all or nearly all mobile home or “poorly-built” type structures that will offer little to limited protection.

Based on GIS analysis there is two fire stations, three police stations, one hospital, one wastewater treatment facility, two emergency operation centers, 20 schools, one public airport, and zero water treatment facilities in the city of Cleburne at risk from the tornado hazard.

City of Godley Tornadoes in Godley have the ability to occur with little warning and no predictable pattern. Throughout the City, there are many developments that are all or nearly all mobile home type structures that will offer little to limited protection.

Based on GIS analysis there is one fire station, one wastewater treatment facility, four schools, one police station, and zero hospitals, emergency operation centers, water treatment facilities, or public airports in the city of Godley at risk from the tornado hazard.

City of Joshua Tornadoes in Joshua have the ability to occur with little warning and no predictable pattern. Throughout the City, there are many developments that are all or nearly all mobile home type structures that will offer little to limited protection.

Based on GIS analysis there is one police station, one fire station, seven schools and zero hospitals, wastewater treatment facilities, water treatment facilities, emergency operations centers, schools, and public airports in the city of Joshua at risk from the tornado hazard.

City of Keene Tornadoes in Keene have the ability to occur with little warning and no predictable pattern. Throughout the City, there are many developments that are all or nearly all mobile home type structures that will offer little to limited protection. Southwestern Adventist College is also located in Keene and is high profile.

Based on GIS analysis there is one fire station, one police station, one wastewater treatment facility, one water treatment facility, 11 schools, and zero hospitals, emergency operation centers, or public airports in the city of Keene at risk from the tornado hazard

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 Johnson County The entire county is susceptible to damaging hail. A majority of the residential developments are comprised of mobile homes. A majority of these mobile homes are older and are constructed of lightweight materials. Because of the rural nature of Johnson County, there are limited buildings and shelters available to the public.

Based on GIS analysis there are five fire stations, six schools, one hospital, one wastewater treatment facility, and zero police stations, public airports, emergency operation centers, or water treatment facilities in Unincorporated Johnson County that are at risk from the hail hazard.

City of Alvarado The entire City of Alvarado is susceptible to damaging hail. A majority of the residential developments are comprised of large neighborhoods. There are many outdoor parks and sporting facilities, with little to no shelter if hail were to occur.

Based on GIS analysis there is one fire station, one wastewater treatment facility, five schools, one police station, one wastewater treatment facility, one water treatment facility, and zero hospitals, emergency operation centers, or public airports in the city of Alvarado at risk from the hail hazard.

City of Burleson The entire City of Burleson is susceptible to damaging hail. A majority of the residential developments are comprised of large neighborhoods. There are many outdoor parks and sporting facilities, with little to no shelter if hail were to occur.

Based on GIS analysis there is one police station, fire stations, one hospital, one wastewater treatment facility, one emergency operations center, 19 schools, and zero water treatment facilities or public airports in the city of Burleson at risk from the hail hazard.

City of Cleburne The entire City of Cleburne is susceptible to damaging hail. A majority of the residential developments are comprised of mobile homes and poorly built homes. A majority of these homes are older and are constructed of lightweight materials.

Based on GIS analysis there is two fire stations, three police stations, one hospital, one wastewater treatment facility, two emergency operation centers, 20 schools, one public airport, and zero water treatment facilities in the city of Cleburne at risk from the hail hazard.

City of Godley The entire city of Godley is susceptible to damaging hail. A majority of the residential developments are comprised of mobile homes. A majority of these mobile homes are older and are constructed of lightweight materials. Because of the rural nature of Godley, there are limited buildings and shelters available to the public.

Based on GIS analysis there is one fire station, one wastewater treatment facility, four schools, one police station, and zero hospitals, emergency operation centers, water treatment facilities, or public airports in the city of Godley at risk from the hail hazard.

City of Joshua The entire City of Joshua is susceptible to damaging hail. A majority of the residential developments are comprised of mobile homes. A majority of these homes are older and are constructed of lightweight materials.

Based on GIS analysis there is one police station, one fire station, seven schools and zero hospitals, wastewater treatment facilities, water treatment facilities, emergency operations centers, schools, and public airports in the city of Joshua at risk from the hail hazard.

City of Keene The entire City of Keene is susceptible to damaging hail. A majority of the residential developments are comprised of mobile homes. A majority of these mobile homes are older and are constructed of lightweight materials.

Based on GIS analysis there is one fire station, one police station, one wastewater treatment facility, one water treatment facility, 11 schools, and zero hospitals, emergency operation centers, or public airports in the city of Keene at risk from the hail hazard.

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 tornados 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 Johnson County High winds can be an impact throughout the county. With the rural nature of the county, areas affected may pose access challenges. These winds can occur suddenly and without warning. There have been instances where mobile homes have been severely damaged by wind while occupied.

Based on GIS analysis there are five fire stations, six schools, one hospital, one wastewater treatment facility, and zero police stations, public airports, emergency operation centers, or water treatment facilities in Unincorporated Johnson County that are at risk from the high wind hazard.

City of Alvarado High winds can be an impact throughout the City. With the suburban nature of the city, areas affected may pose access challenges. These winds can occur suddenly and without warning. There have been instances where businesses and homes have been severely damaged by wind while occupied.

Based on GIS analysis there is one fire station, one wastewater treatment facility, five schools, one police station, one wastewater treatment facility, one water treatment facility, and zero hospitals, emergency operation centers, or public airports in the city of Alvarado at risk from the high wind hazard.

City of Burleson High winds can be an impact throughout the City. With the suburban nature of the city, areas affected may pose access challenges. These winds can occur suddenly and without warning. There have been instances where businesses and homes have been severely damaged by wind while occupied.

Based on GIS analysis there is one police station, fire stations, one hospital, one wastewater treatment facility, one emergency operations center, 19 schools, and zero water treatment facilities or public airports in the city of Burleson at risk from the high wind hazard.

City of Cleburne High winds can be an impact throughout the City. With the rural nature of the city, areas affected may pose access challenges. These winds can occur suddenly and without warning. There have been instances where homes and buildings have been severely damaged by wind while occupied.

Based on GIS analysis there is two fire stations, three police stations, one hospital, one wastewater treatment facility, two emergency operation centers, 20 schools, one public airport, and zero water treatment facilities in the city of Cleburne at risk from the high wind hazard.

City of Godley High winds can be an impact throughout the City. With the rural nature of the city, areas affected may pose access challenges. These winds can occur suddenly and without warning. There have been instances where mobile homes have been severely damaged by wind while occupied.

Based on GIS analysis there is one fire station, one wastewater treatment facility, four schools, one police station, and zero hospitals, emergency operation centers, water treatment facilities, or public airports in the city of Godley at risk from the high wind hazard.

City of Joshua High winds can be an impact throughout the City. With the rural nature of the city, areas affected may pose access challenges. These winds can occur suddenly and without warning. There have been instances where mobile homes have been severely damaged by wind while occupied.

Based on GIS analysis there is one police station, one fire station, seven schools and zero hospitals, wastewater treatment facilities, water treatment facilities, emergency operations centers, schools, and public airports in the city of Joshua at risk from the high wind hazard.

City of Keene High winds can be an impact throughout the City. With the rural nature of the city, areas affected may pose access challenges. These winds can occur suddenly and without warning. There have been instances where mobile homes have been severely damaged by wind while occupied.

Based on GIS analysis there is one fire station, one police station, one wastewater treatment facility, one water treatment facility, 11 schools, and zero hospitals, emergency operation centers, or public airports in the city of Keene at risk from the high wind hazard.

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 Johnson County Winter storms are no exception to have the ability to affect the entire county. With the potential for freezing precipitation, icing of roadways are of an utmost concern. Major roadways such as U.S. Hwy 174, Chisolm Trail Parkway, I-35, and Hwy. 67 would be given priority for surface cleaning. Rural roadways that are not given the same priority and this could potentially strand a large percentage of the population as well as limit first responder access during an emergency.

Based on GIS analysis there are five fire stations, six schools, one hospital, one wastewater treatment facility, and zero police stations, public airports, emergency operation centers, or water treatment facilities in Unincorporated Johnson County that are at risk from the winter storms hazard.

City of Alvarado Winter storms are no exception to have the ability to affect the entire City. With the potential for freezing precipitation, icing of roadways is of an utmost concern. Major roadways such as I-35 and Hwy. 67 could be given priority for surface cleaning. Rural roadways that are not given the same priority and this could potentially strand a large percentage of the population as well as limit first responder access during an emergency.

Based on GIS analysis there is one fire station, one wastewater treatment facility, five schools, one police station, one wastewater treatment facility, one water treatment facility, and zero hospitals, emergency operation centers, or public airports in the city of Alvarado at risk from the winter storms hazard.

City of Burleson Winter storms are no exception to have the ability to affect the entire City. With the potential for freezing precipitation, icing of roadways is of an utmost concern. Major roadways such as I-35 and Hwy. 174 could be given priority for surface cleaning. Rural roadways that are not given the same priority and this could potentially strand a large percentage of the population as well as limit first responder access during an emergency.

Based on GIS analysis there is one police station, fire stations, one hospital, one wastewater treatment facility, one emergency operations center, 19 schools, and zero water treatment facilities or public airports in the city of Burleson at risk from the winter storms hazard.

City of Cleburne Winter storms are no exception to have the ability to affect the entire City. With the potential for freezing precipitation, icing of roadways is of an utmost concern. Major roadways such as U.S. Hwy 174, Hwy. 171, and Hwy 67 would be given priority for surface cleaning. Rural roadways that are not given the same priority and this could potentially strand a large percentage of the population as well as limit first responder access during an emergency.

Based on GIS analysis there is two fire stations, three police stations, one hospital, one wastewater treatment facility, two emergency operation centers, 20 schools, one public airport, and zero water treatment facilities in the city of Cleburne at risk from the winter storms hazard.

City of Godley Winter storms are no exception to have the ability to affect the entire City. With the potential for freezing precipitation, icing of roadways are of an utmost concern. Major roadways such as U.S. Hwy 171 and Chisolm Trail Parkway would be given priority for surface cleaning. Rural roadways that are not given the same priority and this could potentially strand a large percentage of the population as well as limit first responder access during an emergency.

Based on GIS analysis there is one fire station, one wastewater treatment facility, four schools, one police station, and zero hospitals, emergency operation centers, water treatment facilities, or public airports in the city of Godley at risk from the winter storms hazard.

City of Joshua Winter storms are no exception to have the ability to affect the entire City. With the potential for freezing precipitation, icing of roadways is of an utmost concern. Major roadways such as U.S. Hwy 174 and the Chisholm Parkway could be given priority for surface cleaning. Rural roadways that are not given the same priority and this could potentially strand a large percentage of the population as well as limit first responder access during an emergency.

Based on GIS analysis there is one police station, one fire station, seven schools and zero hospitals, wastewater treatment facilities, water treatment facilities, emergency operations centers, schools, and public airports in the city of Joshua at risk from the winter storms hazard.

City of Keene Winter storms are no exception to have the ability to affect the entire City. With the potential for freezing precipitation, icing of roadways is of an utmost concern. Major roadways such as U.S. Hwy 67 could be given priority for surface cleaning. Rural roadways that are not given the same priority and this could potentially strand a large percentage of the population as well as limit first responder access during an emergency.

Based on GIS analysis there is one fire station, one police station, one wastewater treatment facility, one water treatment facility, 11 schools, and zero hospitals, emergency operation centers, or public airports in the city of Keene at risk from the winter storms hazard.

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. Summer heat affects the entire planning area equally.

Unincorporated Johnson County Extreme heat happens regularly and often for extended periods of time. This type of an extended heat issue can cause a rapid and continual loss of moisture in vegetation leading to another problem of wide scale fires. As much of the county is considered rural, there exists a large farming and ranching base. This type of extreme condition contributes greatly to a loss in these related industries system experiences a higher demand.

Based on GIS analysis there are five fire stations, six schools, one hospital, one wastewater treatment facility, and zero police stations, public airports, emergency operation centers, or water treatment facilities in Unincorporated Johnson County that are at risk from the extreme heat hazard.

City of Alvarado Extreme heat happens regularly and often for extended periods of time. This type of an extended heat issue can cause a rapid and continual loss of moisture in vegetation leading to another problem of wide scale fires.

Based on GIS analysis there is one fire station, one wastewater treatment facility, five schools, one police station, one wastewater treatment facility, one water treatment facility, and zero hospitals, emergency operation centers, or public airports in the city of Alvarado at risk from the extreme heat hazard.

City of Burleson Extreme heat happens regularly and often for extended periods of time. This type of an extended heat issue can cause a rapid and continual loss of moisture in vegetation leading to another problem of wide scale fires.

Based on GIS analysis there is one police station, fire stations, one hospital, one wastewater treatment facility, one emergency operations center, 19 schools, and zero water treatment facilities or public airports in the city of Burleson at risk from the extreme heat hazard.

City of Cleburne City of Cleburne: Extreme heat happens regularly and often for extended periods of time. This type of an extended heat issue can cause a rapid and continual loss of moisture in vegetation leading to another problem of wide scale fires. As much of the City is considered rural, there exists a large farming and ranching base. This type of extreme condition contributes greatly to a loss in these related industries system experiences a higher demand.

Based on GIS analysis there is two fire stations, three police stations, one hospital, one wastewater treatment facility, two emergency operation centers, 20 schools, one public airport, and zero water treatment facilities in the city of Cleburne at risk from the extreme heat hazard.

City of Godley Extreme heat happens regularly and often for extended periods of time. This type of an extended heat issue can cause a rapid and continual loss of moisture in vegetation leading to another problem of wide scale fires. As much of the City is considered rural, there exists a large farming and ranching base. This type of extreme condition contributes greatly to a loss in these related industries system experiences a higher demand.

Based on GIS analysis there is one fire station, one wastewater treatment facility, four schools, one police station, and zero hospitals, emergency operation centers, water treatment facilities, or public airports in the city of Godley at risk from the extreme heat hazard.

City of Joshua Extreme heat happens regularly and often for extended periods of time. This type of an extended heat issue can cause a rapid and continual loss of moisture in vegetation leading to another problem of wide scale fires. As much of the City is considered rural, there exists a large farming and ranching base. This type of extreme condition contributes greatly to a loss in these related industries system experiences a higher demand.

Based on GIS analysis there is one police station, one fire station, seven schools and zero hospitals, wastewater treatment facilities, water treatment facilities, emergency operations centers, schools, and public airports in the city of Joshua at risk from the extreme heat hazard.

City of Keene Extreme heat happens regularly and often for extended periods of time. This type of an extended heat issue can cause a rapid and continual loss of moisture in vegetation leading to another problem of wide scale fires. As much of the City is considered rural, there exists a large farming and ranching base. This type of extreme condition contributes greatly to a loss in these related industries system experiences a higher demand.

Based on GIS analysis there is one fire station, one police station, one wastewater treatment facility, one water treatment facility, 11 schools, and zero hospitals, emergency operation centers, or public airports in the city of Keene at risk from the extreme heat hazard.

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, and may affect the entire planning area equally.

Unincorporated Johnson County Drought in a rural county provides for many difficult issues. The farm and ranch industry is pressed due to a lack of crops and feed. As a drought continues, many residents who are on private wells as well as those served by small water utilities begin to experience water shortages. The lack of water can also impact emergency responder capabilities in the form of firefighting efforts.

Based on GIS analysis there are five fire stations, six schools, one hospital, one wastewater treatment facility, and zero police stations, public airports, emergency operation centers, or water treatment facilities in Unincorporated Johnson County that are at risk from the drought hazard.

City of Alvarado Drought in a suburban city provides for many difficult issues. The business industry is pressed due to lack of water available. As a drought continues, many residents who are on private wells as well as those served by small water utilities begin to experience water shortages. The lack of water can also impact emergency responder capabilities in the form of firefighting efforts.

Based on GIS analysis there is one fire station, one wastewater treatment facility, five schools, one police station, one wastewater treatment facility, one water treatment facility, and zero hospitals, emergency operation centers, or public airports in the city of Alvarado at risk from the drought hazard.

City of Burleson Drought in a suburban city provides for many difficult issues. The business industry is pressed due to lack of water available. As a drought continues, many residents who are on private wells as well as those served by small water utilities begin to experience water shortages. The lack of water can also impact emergency responder capabilities in the form of firefighting efforts.

Based on GIS analysis there is one police station, fire stations, one hospital, one wastewater treatment facility, one emergency operations center, 19 schools, and zero water treatment facilities or public airports in the city of Burleson at risk from the drought hazard.

City of Cleburne Drought in a rural city provides for many difficult issues. The farm and ranch industry is pressed due to a lack of crops and feed. As a drought continues, many residents who are on private wells as well as those served by small water utilities begin to experience water shortages. The lack of water can also impact emergency responder capabilities in the form of firefighting efforts.

Based on GIS analysis there is two fire stations, three police stations, one hospital, one wastewater treatment facility, two emergency operation centers, 20 schools, one public airport, and zero water treatment facilities in the city of Cleburne at risk from the drought hazard.

City of Godley Drought in a rural city provides for many difficult issues. The farm and ranch industry is pressed due to a lack of crops and feed. As a drought continues, many residents who are on private wells as well as those served by small water utilities begin to experience water shortages. The lack of water can also impact emergency responder capabilities in the form of firefighting efforts.

Based on GIS analysis there is one fire station, one wastewater treatment facility, four schools, one police station, and zero hospitals, emergency operation centers, water treatment facilities, or public airports in the city of Godley at risk from the drought hazard.

City of Joshua Drought in a rural city provides for many difficult issues. The farm and ranch industry is pressed due to a lack of crops and feed. As a drought continues, many residents who are on private wells as well as those served by small water utilities begin to experience water shortages. The lack of water can also impact emergency responder capabilities in the form of firefighting efforts.

Based on GIS analysis there is one police station, one fire station, seven schools and zero hospitals, wastewater treatment facilities, water treatment facilities, emergency operations centers, schools, and public airports in the city of Joshua at risk from the drought hazard.

City of Keene Drought in a rural city provides for many difficult issues. The farm and ranch industry is pressed due to a lack of crops and feed. As a drought continues, many residents who are on private wells as well as those served by small water utilities begin to experience water shortages. This includes Southwestern Adventist College is also located in Keene, which is a large water consumer. The lack of water can also impact emergency responder capabilities in the form of firefighting efforts.

Based on GIS analysis there is one fire station, one police station, one wastewater treatment facility, one water treatment facility, 11 schools, and zero hospitals, emergency operation centers, or public airports in the city of Keene at risk from the drought hazard.

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, lightning 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 lightning. 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 Johnson County According to Johnson County, all property and populations in the unincorporated areas have the potential to be at risk from lightning.

Based on GIS analysis there are five fire stations, six schools, one hospital, one wastewater treatment facility, and zero police stations, public airports, emergency operation centers, or water treatment facilities in Unincorporated Johnson County that are at risk from the lightning hazard.

City of Alvarado According to the city of Alvarado, all property and populations in the jurisdiction have the potential to be at risk from lightning.

Based on GIS analysis there is one fire station, one wastewater treatment facility, five schools, one police station, one wastewater treatment facility, one water treatment facility, and zero hospitals, emergency operation centers, or public airports in the city of Alvarado at risk from the lightning hazard.

City of Burleson According to the city of Burleson, all property and populations in the jurisdiction have the potential to be at risk from lightning.

Based on GIS analysis there is one police station, fire stations, one hospital, one wastewater treatment facility, one emergency operations center, 19 schools, and zero water treatment facilities or public airports in the city of Burleson at risk from the lightning hazard.

City of Cleburne According to the city of Cleburne, all property and populations in the jurisdiction have the potential to be at risk from lightning.

Based on GIS analysis there is two fire stations, three police stations, one hospital, one wastewater treatment facility, two emergency operation centers, 20 schools, one public airport, and zero water treatment facilities in the city of Cleburne at risk from the lightning hazard.

City of Godley According to the city of Godley, all property and populations in the jurisdiction have the potential to be at risk from lightning.

Based on GIS analysis there is one fire station, one wastewater treatment facility, four schools, one police station, and zero hospitals, emergency operation centers, water treatment facilities, or public airports in the city of Godley at risk from the lightning hazard.

City of Joshua According to the city of Joshua, all property and populations in the jurisdiction have the potential to be at risk from lightning.

Based on GIS analysis there is one police station, one fire station, seven schools and zero hospitals, wastewater treatment facilities, water treatment facilities, emergency operations centers, schools, and public airports in the city of Joshua at risk from the lightning hazard.

City of Keene According to the city of Keene, all property and populations in the jurisdiction have the potential to be at risk from lightning.

Based on GIS analysis there is one fire station, one police station, one wastewater treatment facility, one water treatment facility, 11 schools, and zero hospitals, emergency operation centers, or public airports in the city of Keene at risk from the lightning hazard.

Wildland Fire A 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.

Unincorporated Johnson County 72% of the county's population is located in the Wildland Urban Interface according to the Texas Forest Service (TFS) Risk Assessment Summary. See section 3.2, maps C.1 and D.1. Portions of the county are more susceptible to wildfire due to their inaccessibility and terrain, such as the Retreat area in the southwestern portion of the county.

Based on GIS analysis there are five fire stations, seven schools, one wastewater treatment facility, and zero public airports, police stations, hospitals, emergency operation centers, wastewater treatment facilities, or, water treatment facilities in Unincorporated Johnson County that are at risk from the wildland-urban interface.

City of Alvarado According to the Texas Forest Service Wildfire Risk Assessment Summary Report, 87% of Alvarado's population is located within the Wildland Urban Interface. Areas more susceptible to wildfires include Quail Haven, Stonegate, Alvarado Hill, and the area south of Davis St and east of Baugh. A lot of open land is located in each of the identified areas. For a visual reference, see maps D.2 and E.2 in section 3.2.

Based on GIS analysis there is one police station, one wastewater treatment facility, four schools, and zero fire stations, hospitals, emergency operation centers, water treatment facilities, or public airports in the city of Alvarado at risk from the wildland-urban interface.

City of Burleson According to the Texas Forest Service Wildfire Risk Assessment Summary Report, 69% of Burleson's population is located within the Wildland Urban Interface. The following locations are more susceptible to wildfire: Tanterra Estates, Ranchway Estates, Southwest Hulen, East Renfro, South I-35, Houston Road, and FM 1902. The TFS map is viewable in section 3.2, maps D.3 and E.3.

Based on GIS analysis there are two fire stations, one emergency operations center, one hospital, 12 schools, and zero police stations, wastewater treatment facilities, water treatment facilities, and public airports in the city of Burleson at risk from the wildland-urban interface.

City of Cleburne According to the Texas Forest Service Wildfire Risk Summary Report for Cleburne, 52% of Cleburne's population is located within the Wildland Urban Interface. In general, the entire City of Cleburne is surrounded by rural land. Joshua city limits are to the north and Keene City limits are to the east. All other boundaries are rural. Particular neighborhoods which interface with wildland areas include: Winchester Addition, south of Country Club Rd, Belle Meadows Addition west of S. Nolan River Rd in the southwest quadrant, Lakeshore Dr. and Lakecrest Ct. area east of Lake Pat Cleburne Brookhaven Addition northwest of N. Nolan River Rd in the west quadrant, and East Cleburne along Old Mansfield Rd. between E. Henderson St. and E. Kilpatrick St in the northwest quadrant. The TFS map is viewable in section 3.2, maps D.4 and E.4.

Based on GIS analysis there is one fire station, two police stations, one hospital, one emergency operation center, 13 schools, and zero wastewater treatment facilities, water treatment facilities, or public airports in the city of Cleburne at risk from the wildland-urban interface.

City of Godley According to the Texas Forest Service Wildfire Risk Summary Report for Godley, 98% of Godley's population is located in Wildland Urban Interface. The entire city is encircled by open prairie lands which are susceptible to grass fires. The TFS map is viewable in section 3.2, maps D.5 and E.5

Based on GIS analysis there is one fire station, one police station, one wastewater treatment facility, four schools, and zero hospitals, emergency operation centers, water treatment facilities, or public airports in the city of Godley at risk from the wildland-urban interface.

City of Joshua According to the Texas Forest Service Wildfire Risk Summary Report for Joshua, 94% of Joshua's population is located with the Wildland Urban Interface based on the Texas Forest Service Wildland Fire Risk Assessment Summary Report. One area prone to wildland fire is the south end in Joshua Meadows that has a high population that is surrounded by wildland. The TFS map is viewable in section 3.2, maps D.6 and E.6

Based on GIS analysis there is one police station, one fire station, one hospital, eight schools, and zero wastewater treatment facilities, water treatment facilities, emergency operations centers, or public airports in the city of Joshua at risk from the wildland-urban interface.

City of Keene According to the Texas Forest Service Wildfire Risk Summary Report for Keene, 86% of Keene's population is located within the Wildland Urban Interface. See maps D.7, and E.7 in section 3.2 for a visual reference.

Based on GIS analysis there are 10 schools, and zero fire stations, police stations, hospitals, wastewater treatment facilities, water treatment facilities, emergency operation centers, or public airports in the city of Keene at risk from the wildland-urban interface.

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.

These are a list of specific areas in each jurisdiction that are prone to flooding.

Unincorporated Johnson County The following areas are susceptible to flooding: County Road (CR) 907 0.2 miles west of 1006-new LWC, CR 913 near 1002 (has gates but floods by culverts), CR 1008 doesn't not have gates and floods, CR 1106 from SH174 to 1208 and 1223 to 1222, CR 1112 (Old Foamy) approximately 0.75 miles from SH174, CR 1116 near US 67, CR 1123 (Woodward) from US 67 to 1121-bridge, CR 1126- one water crossing and one bridge on each end of SH171, and CR 1205 from FM 916 to 1107.

Based on previous occurrence data from the National Climatic Data Center, Johnson County has experienced flood and flash flood events that have covered roadways, impeding traffic. Any future events can be expected to be of similar magnitude.

City of Alvarado The worst of the flooding issues are in the North portion of the city along HWY 67 to I-35 to the Quail Haven Addition where water starts collecting north of town and flows through the city. There are also several manufactured homes in the area that are in the flood plain, usually resulting in homes being evacuated and rescued. Two manufactured home parks are on Atchley and Parkway, the other is located on College Street and Parkway. Drainage that crosses HWY 67 into Baugh Street, and Maple Street also flood due to drainage.

Based on previous occurrence data from the National Climatic Data Center, the city of Alvarado has experienced flood and flash flood events that have covered roadways, impeding traffic. Any future events can be expected to be of similar magnitude.

City of Burleson The following areas are susceptible to flooding: the Tarrant Low Water Crossing at the intersection of Tarrant and Miller, South Dobson Road between Miller and Village Creek, Southwest Hulen under the railroad bridge, Johnson at Town Creek Bridge, County Road 714 at Village Creek, Warren at Town Creek, Dobson Road at Town Creek, Thomas at Town Creek, Lorna at HWY 174, Hillary at HWY 174, and King at HWY 174.

Based on previous occurrence data from the National Climatic Data Center, the city of Burleson has experienced flood events ranging from six inches to eight inches. Any future events can be expected to be of similar magnitude.

City of Cleburne Several areas of Cleburne fall within the FEMA DFIRM 100 year flood zone.

Based on previous occurrence data from the National Climatic Data Center, the city of Cleburne has experienced flood events that have covered roadways, impeding traffic, in one case. Any future events can be expected to be of similar magnitude.

City of Godley The following areas are susceptible to flooding: Sky Road/ County Road 1003, areas between County Road 1004 and Grande Vista Way on the eastern portion of ETJ., County Road 913 west FM 1902, County Road 1126 southern, County Road 1228 southern, and County Road 1217 southern. City of Godley does not have any non-mitigated repetitive loss properties.

Based on previous occurrence data from the National Climatic Data Center, the city of Godley has experienced flood events ranging up to 12 feet, in one case. Any future events can be expected to be of similar magnitude.

City of Joshua Several areas of Joshua fall within the FEMA DFIRM 100 year flood zone.

Based on previous occurrence data from the National Climatic Data Center, the city of Joshua has experienced flood events that reached 1.5 feet (knee deep), in one case. Any future events can be expected to be of similar magnitude.

City of Keene Keene experiences flooding in the following locations: around the City's floodgate located at FM 317 at the Exit 67 a quarter mile down, County Road 700- bridge crossing Buffalo Creek, County Road 701-Buffalo Creek, County Road 801C, County Road 704C, Springcreek and Shelly Drive, Westward loop of 67 between Exit for 2280 and County Road 801B, SPUR 102 between 1st and 2nd Street, 67 at 317 at the east end of the city limits, 67 at 318 at the east end of the city limits, Lockett Branch runs along the west side of 317 through town, Turkey Creek in the ETJ, and Shady Lakes Ranch at 414 and 316C.

Based on previous occurrence data from the National Climatic Data Center, the city of Keene has experienced flood events that have covered roadways, impeding traffic, in one case. Any future events can be expected to be of similar magnitude.

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.

There have not been any inundation studies for the dams in Johnson 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. The data below is from the National Inventory of Dams (NID):

Unincorporated Johnson County The following dams are considered high hazard in Johnson County: Cleburne State Park Lake Dam, TX 03591, Chambers Watershed Site FRS 30, FRS 31, FRS 32, FRS 33, FRS 36, FRS 37, FRS 58, FRS 59, FRS 61, and FRS 62. Please refer to the Johnson County DFIRMS maps in section 3.2 for specific flooding analysis.

City of Alvarado In the event of a dam failure, Conservation Lake, located north of Alvarado, would flow directly through town causing drastic impact on the citizens and homes. Also, Lake Alvarado is located along the city limits and if dam failure were to occur there would be an impact on the ETJ of the city.

City of Burleson Burleson has negligible to no vulnerability to dam failure.

City of Cleburne The City of Cleburne owns and operates two high hazard dams: Lake Pat Cleburne Dam on the Nolan River which is a tributary of the Brazos River. Lake Pat is the

primary water supply for Cleburne. Marti Lake Dam on the West Fork Buffalo Creek. The primary purpose is flood control.

City of Godley Godley has negligible to no vulnerability to dam failure.

City of Joshua Joshua has negligible to no vulnerability to dam failure

City of Keene Keene has negligible to no vulnerability to dam failure.

3.2 Location of Hazards

The following maps illustrate the location of the hazards in Johnson 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, summer 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 land use maps H.1-H.7, in section 3.6.

Map Series A

Tornado Incidents

- Map A.1 Johnson County Tornado Incidents
- Map A.2 City of Alvarado Tornado Incidents
- Map A.3 City of Burleson Tornado Incidents
- Map A.4 City of Cleburne Tornado Incidents
- Map A.5 City of Godley Tornado Incidents
- Map A.6 City of Joshua Tornado Incidents
- Map A.7 City of Keene Tornado Incidents

Map Series B

Hail Incidents

- Map B.1 Johnson County Hail Incidents
- Map B.2 City of Alvarado Hail Incidents
- Map B.3 City of Burleson Hail Incidents
- Map B.4 City of Cleburne Hail Incidents
- Map B.5 City of Godley Hail Incidents
- Map B.6 City of Joshua Hail Incidents
- Map B.7 City of Keene Hail Incidents

Map Series C

Wildland Urban Interface

- Map C.1 Johnson County Wildland Urban Interface
- Map C.2 City of Alvarado Wildland Urban Interface
- Map C.3 City of Burleson Wildland Urban Interface
- Map C.4 City of Cleburne Wildland Urban Interface
- Map C.5 City of Godley Wildland Urban Interface
- Map C.6 City of Joshua Wildland Urban Interface
- Map C.7 City of Keene Wildland Urban Interface

Map Series D

Wildfire Risk Assessment

- Map D.1 Johnson County Wildfire Risk Assessment
- Map D.2 City of Alvarado Wildfire Risk Assessment
- Map D.3 City of Burleson Wildfire Risk Assessment
- Map D.4 City of Cleburne Wildfire Risk Assessment
- Map D.5 City of Godley Wildfire Risk Assessment
- Map D.6 City of Joshua Wildfire Risk Assessment
- Map D.7 City of Keene Wildfire Risk Assessment

Map Series E

Flood Zones

Map E.1 Johnson County Flood Zones
Map E.2 City of Alvarado Flood Zones
Map E.3 City of Burleson Flood Zones
Map E.4 City of Cleburne Flood Zones
Map E.5 City of Godley Flood Zones
Map E.6 City of Joshua Flood Zones
Map E.7 City of Keene Flood Zones

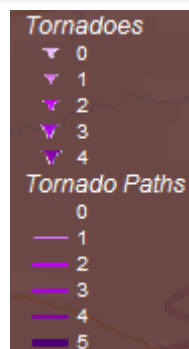
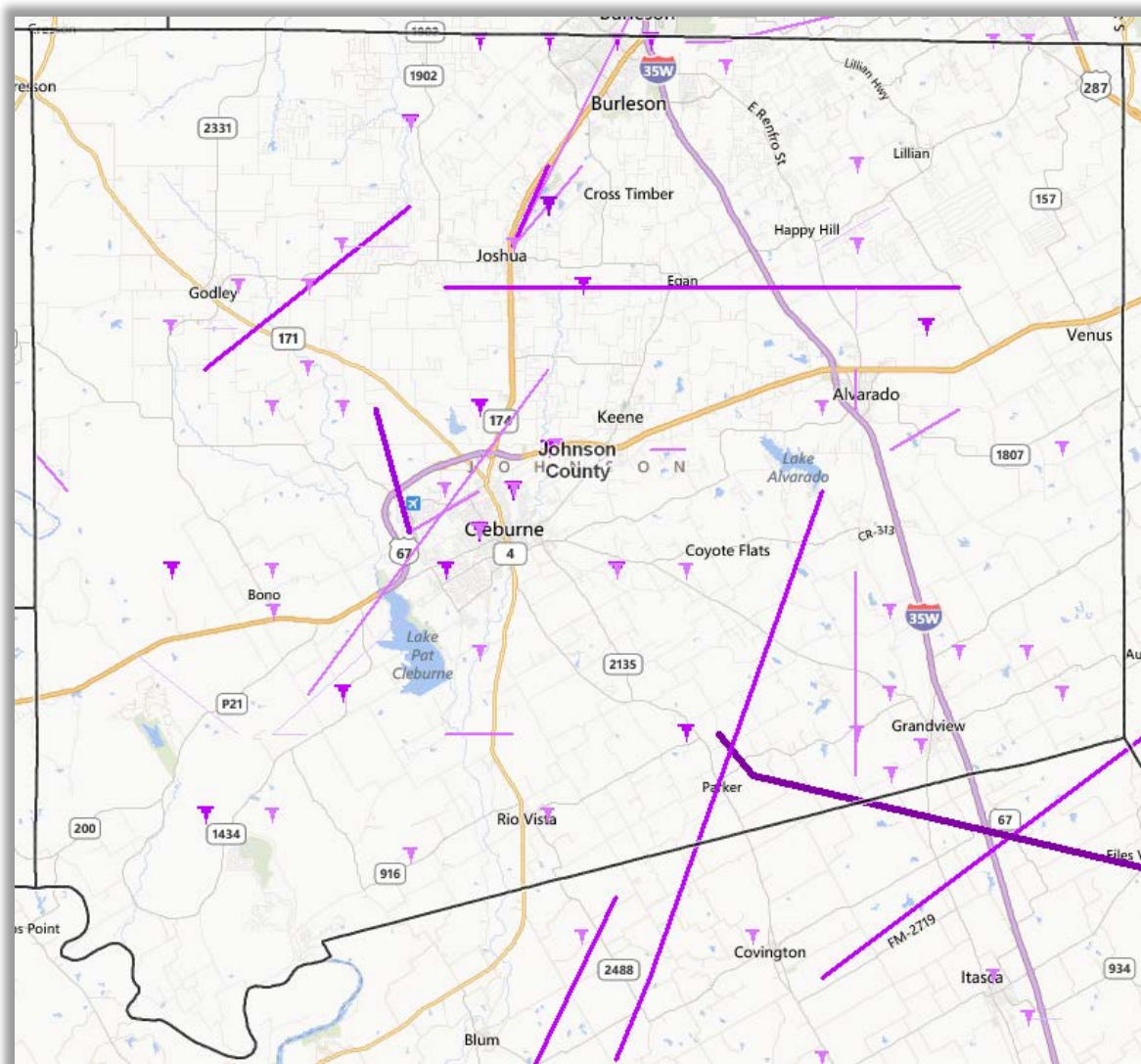
Map Series F

Dams

Map F.1 Johnson County Dams
Map F.2 City of Alvarado Dams
Map F.3 City of Burleson Dams
Map F.4 City of Cleburne Dams
Map F.5 City of Godley Dams
Map F.6 City of Joshua Dams
Map F.7 City of Keene Dams

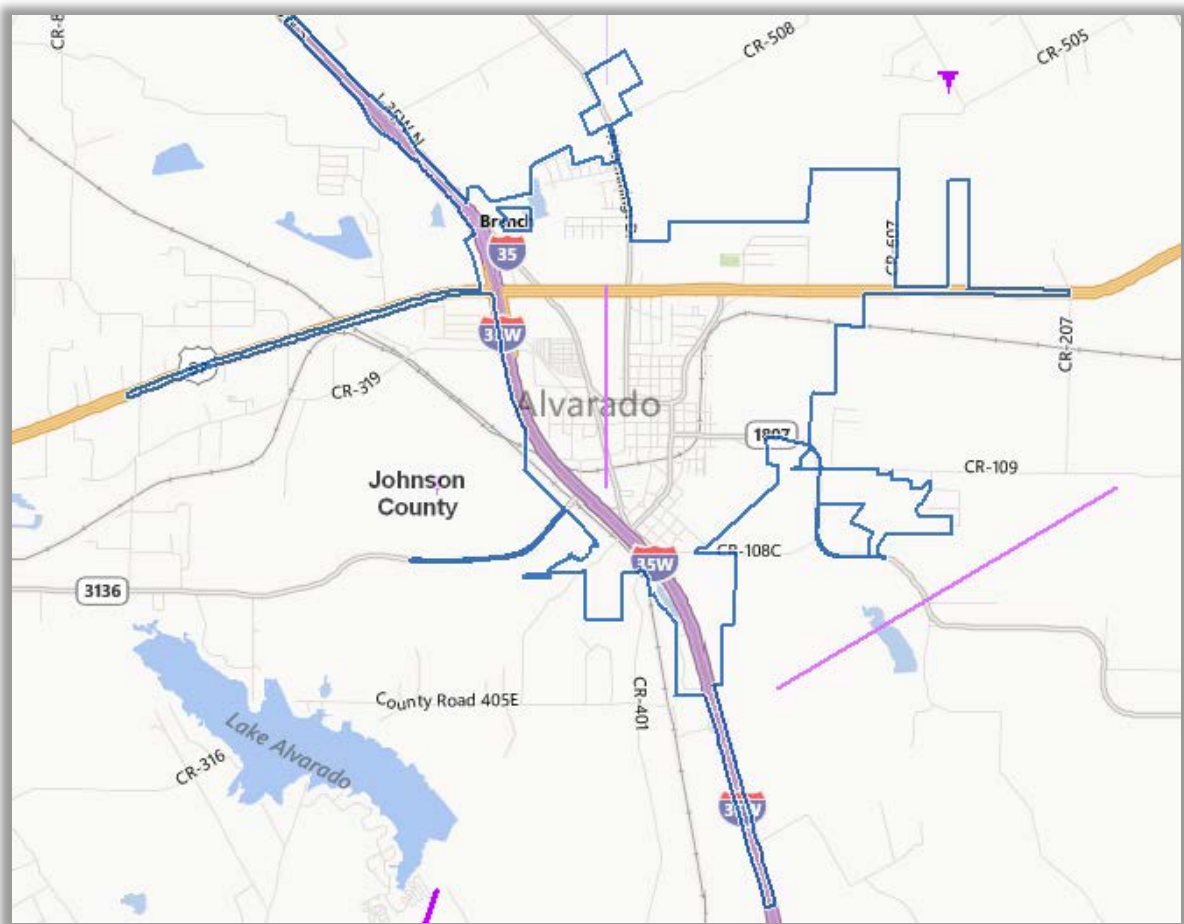
Map Series A – Tornado Incidents

Map A.1- Johnson County Tornado Incidents



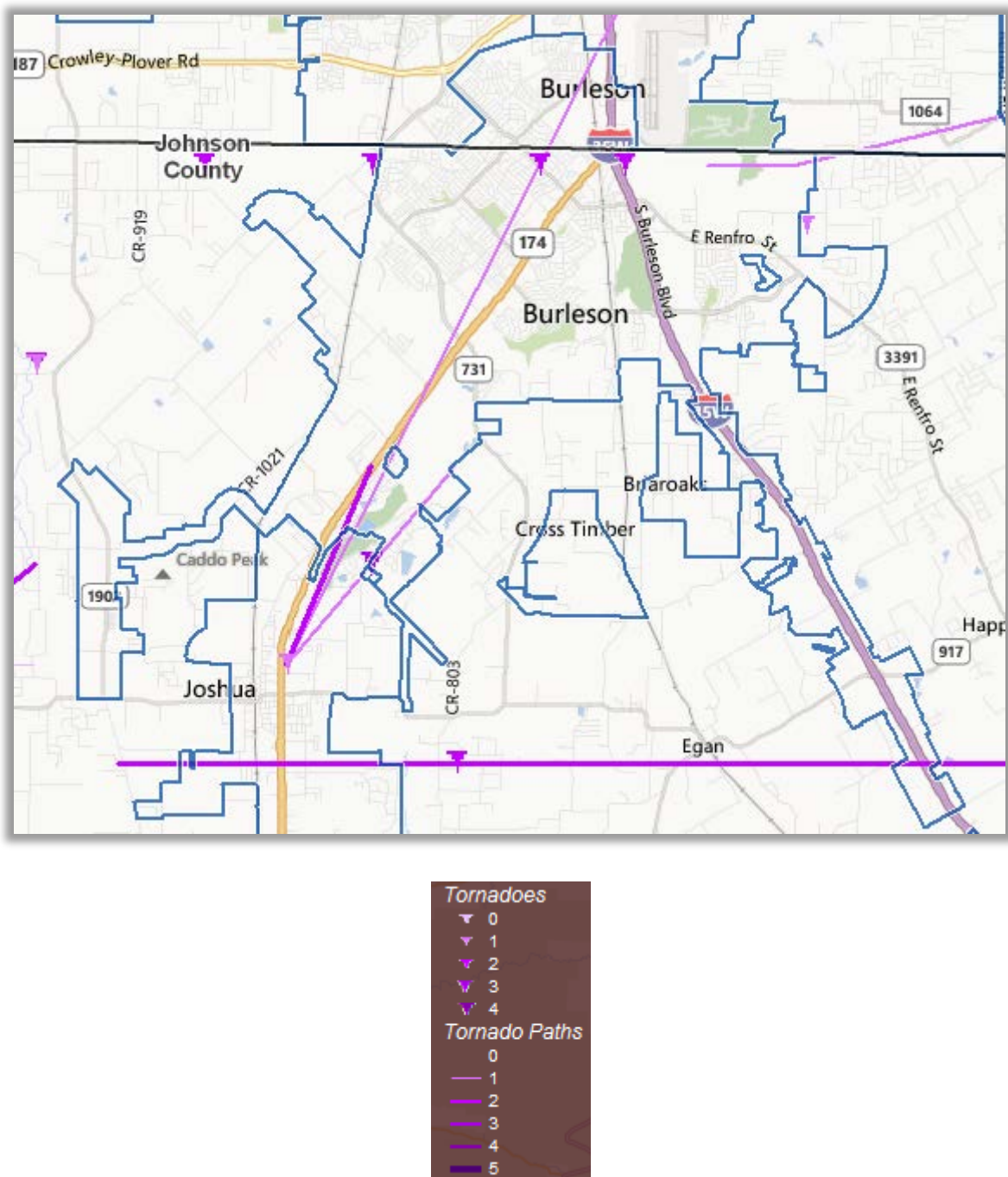
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map A.2 – Alvarado Tornado Incidents



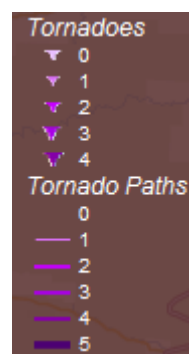
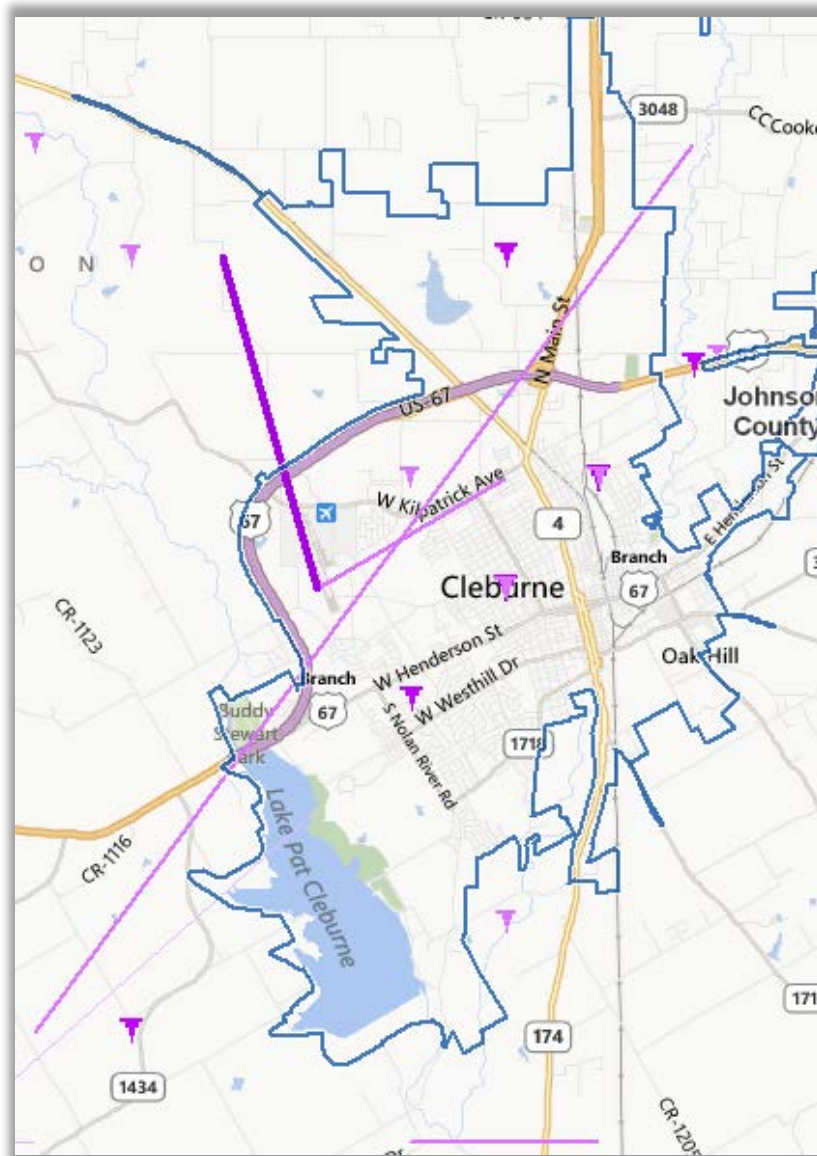
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map A.3 – Burleson Tornado Incidents



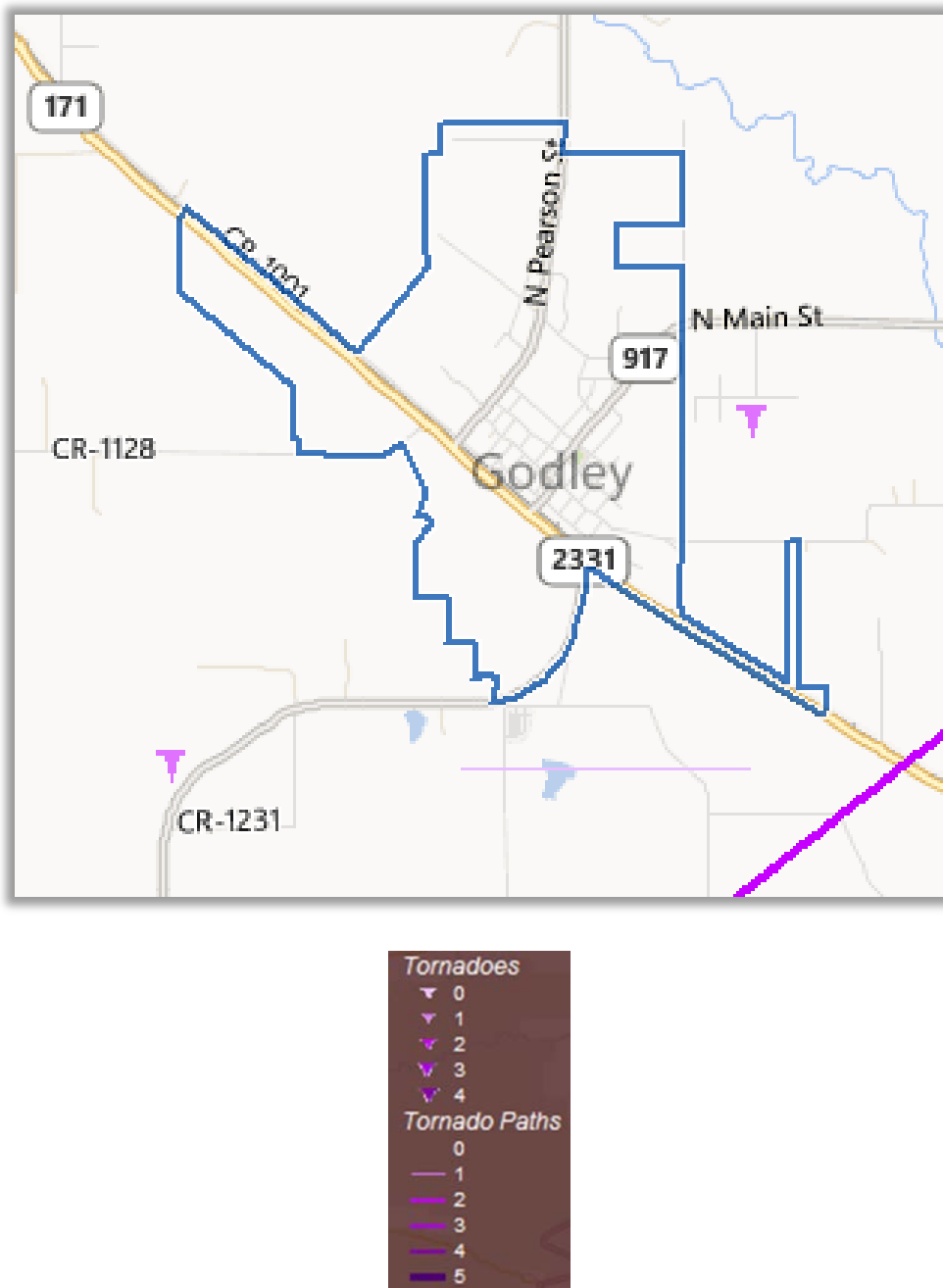
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map A.4 – Cleburne Tornado Incidents



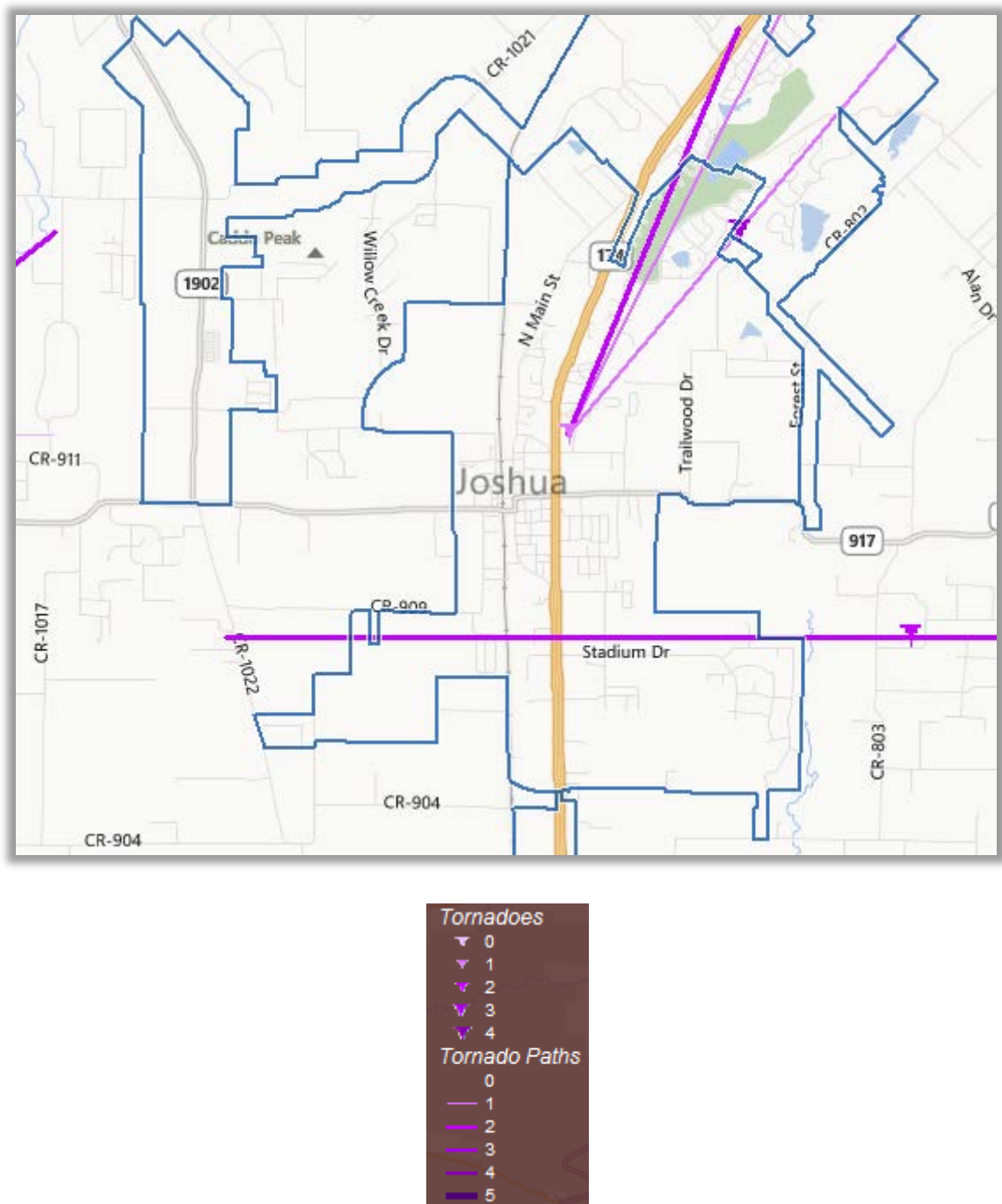
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map A.5 – Godley Tornado Incidents



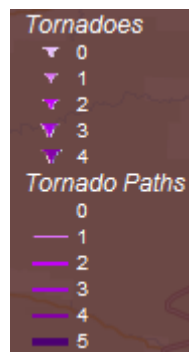
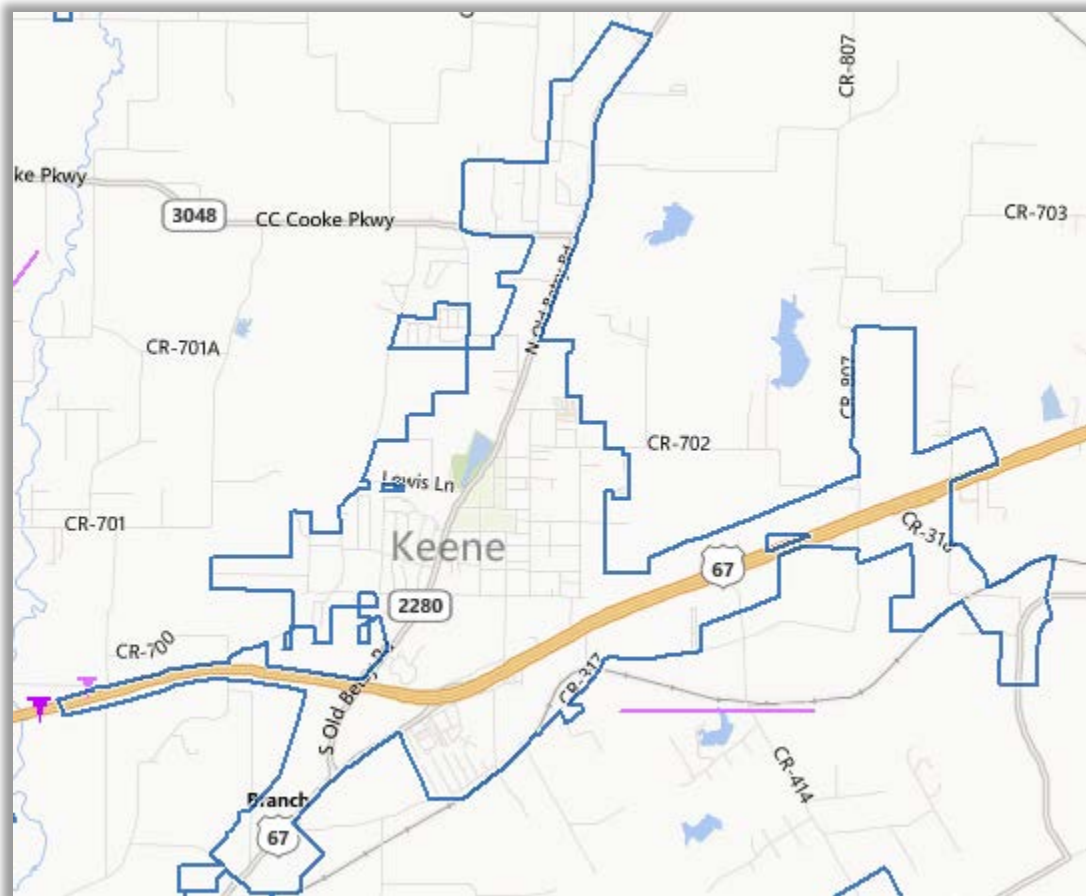
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map A.6 – Joshua Tornado Incidents



Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

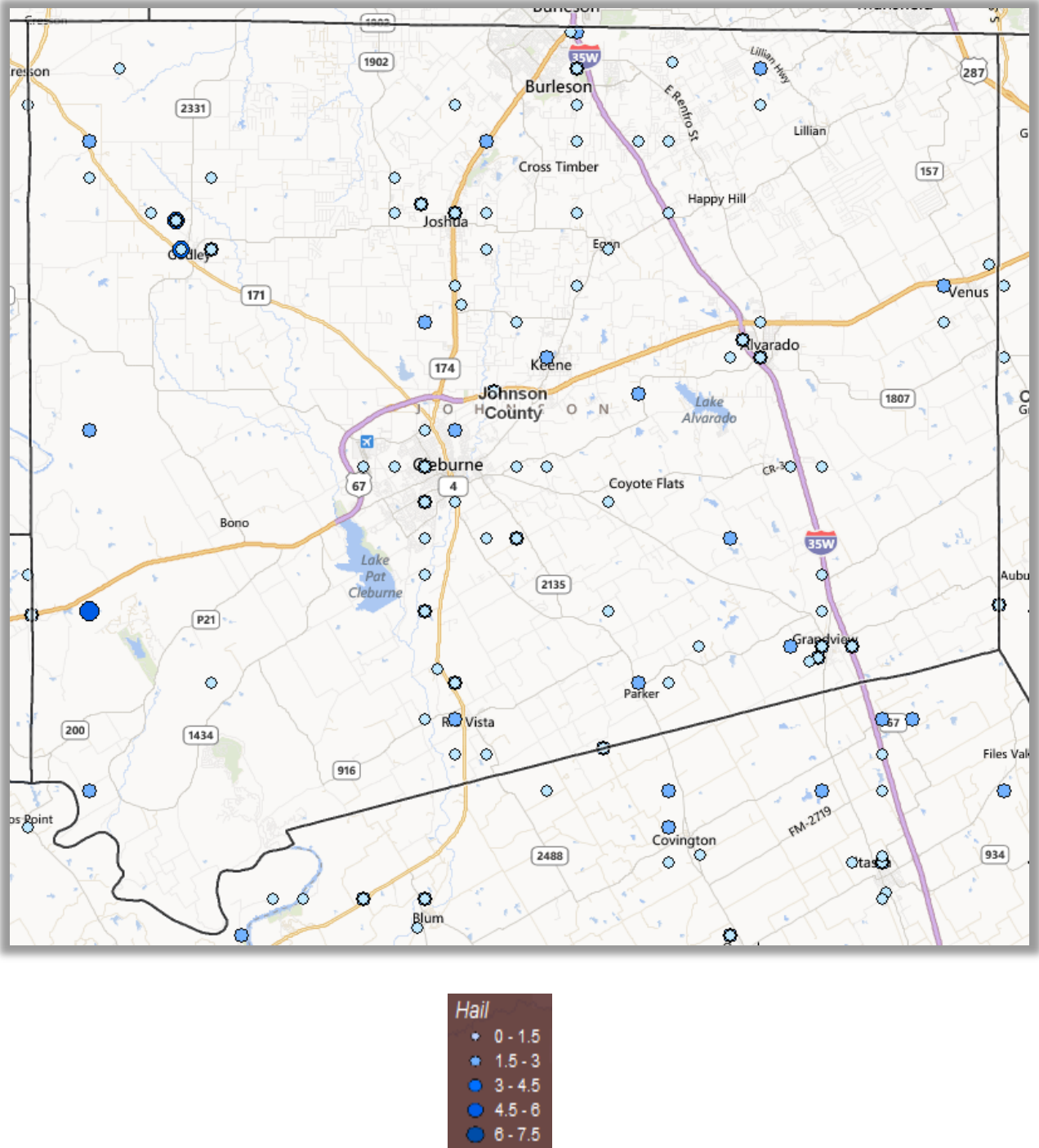
Map A.7 – Keene Tornado Incidents



Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

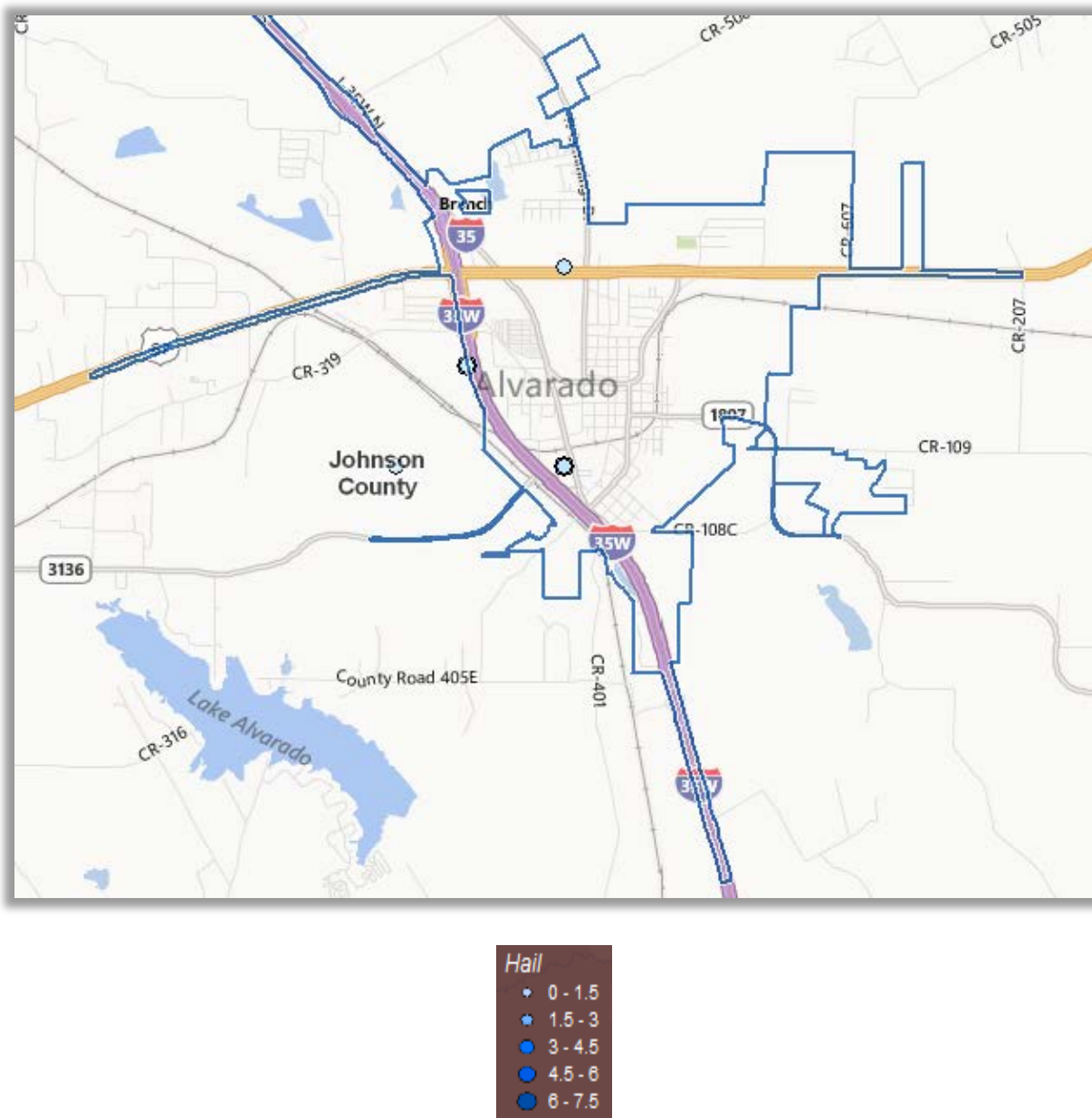
Map Series B – Hail Incidents

Map B.1 - Johnson County Hail Incidents



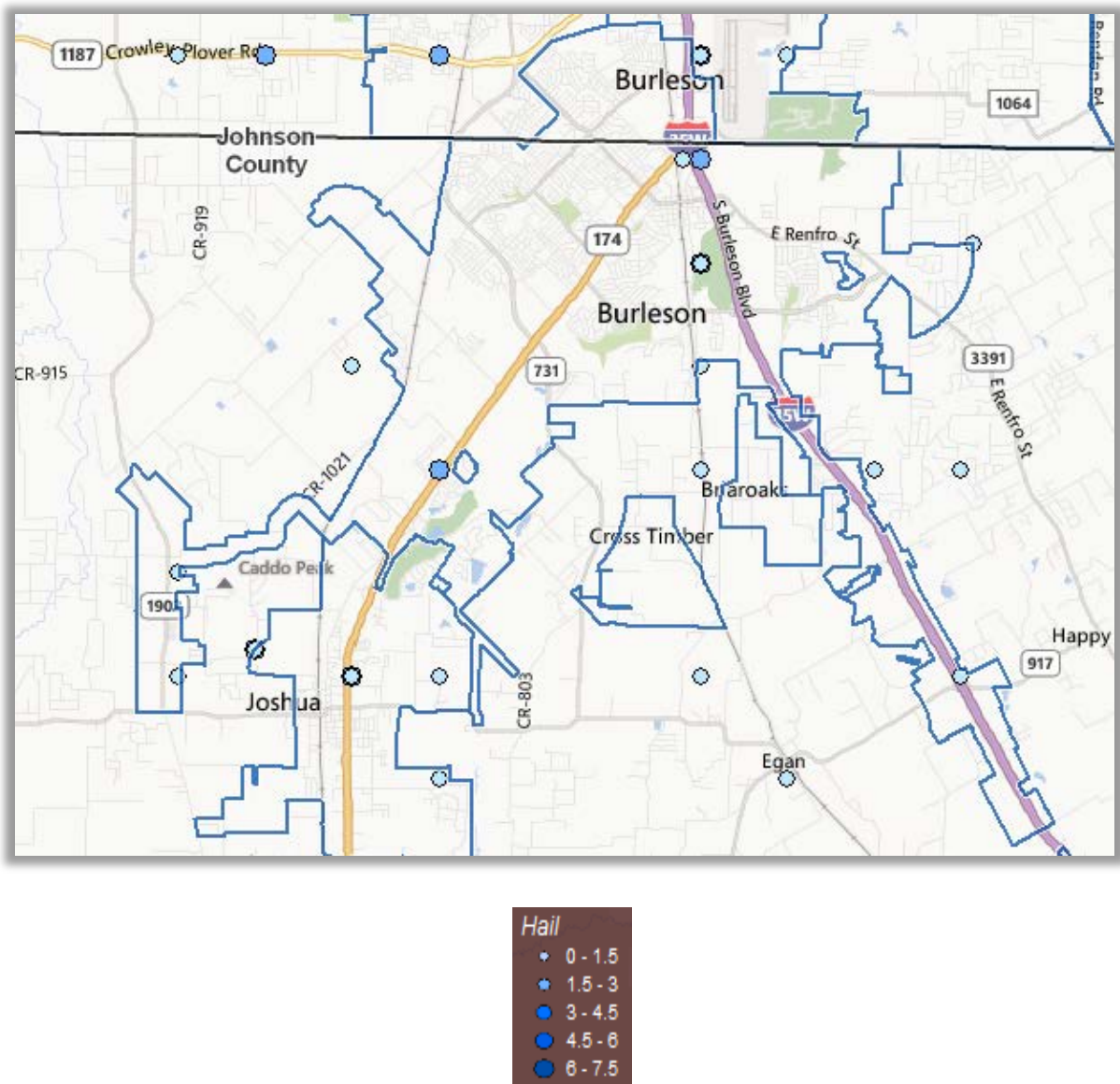
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map B.2 - Alvarado Hail Incidents



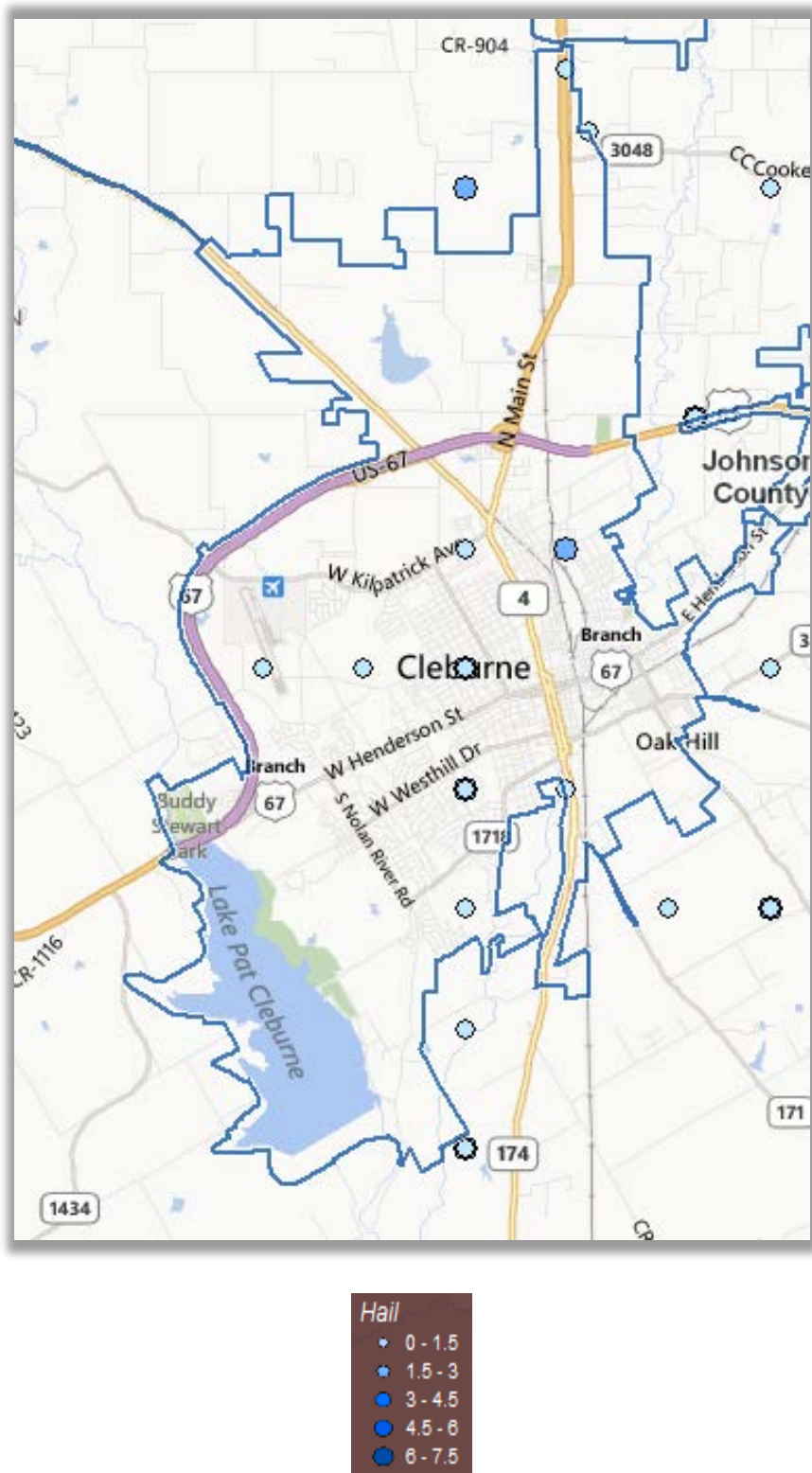
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map B.3 - Burleson Hail Incidents



Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map B.4 - Cleburne Hail Incidents



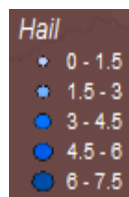
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map B.5 - Godley Hail Incidents



Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map B.6 - Joshua Hail Incidents



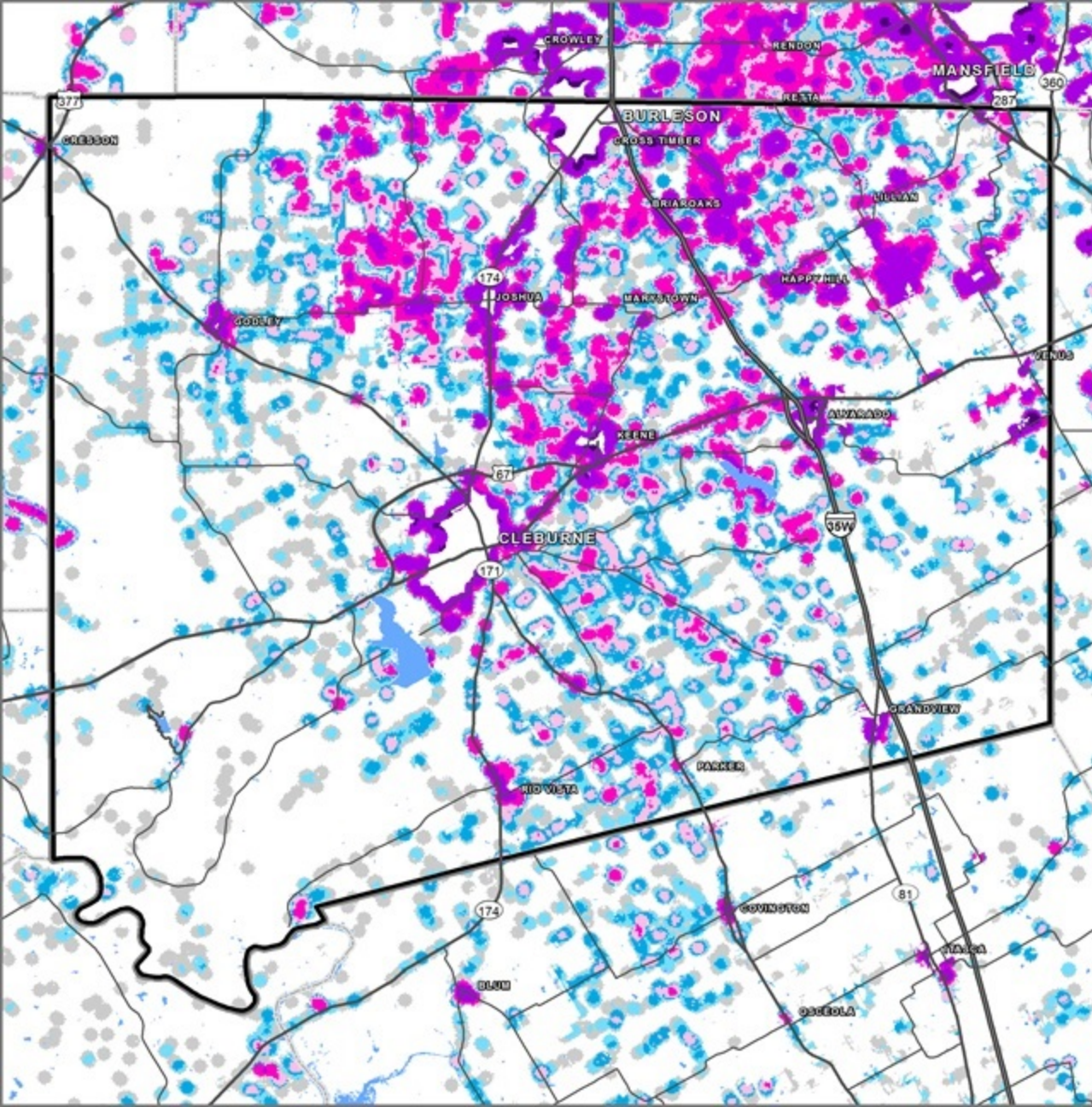
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map B.7 - Keene Hail Incidents



Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Wildland Urban Interface



0 1.5 3 4.5 6 Miles

Date: 11/11/2014





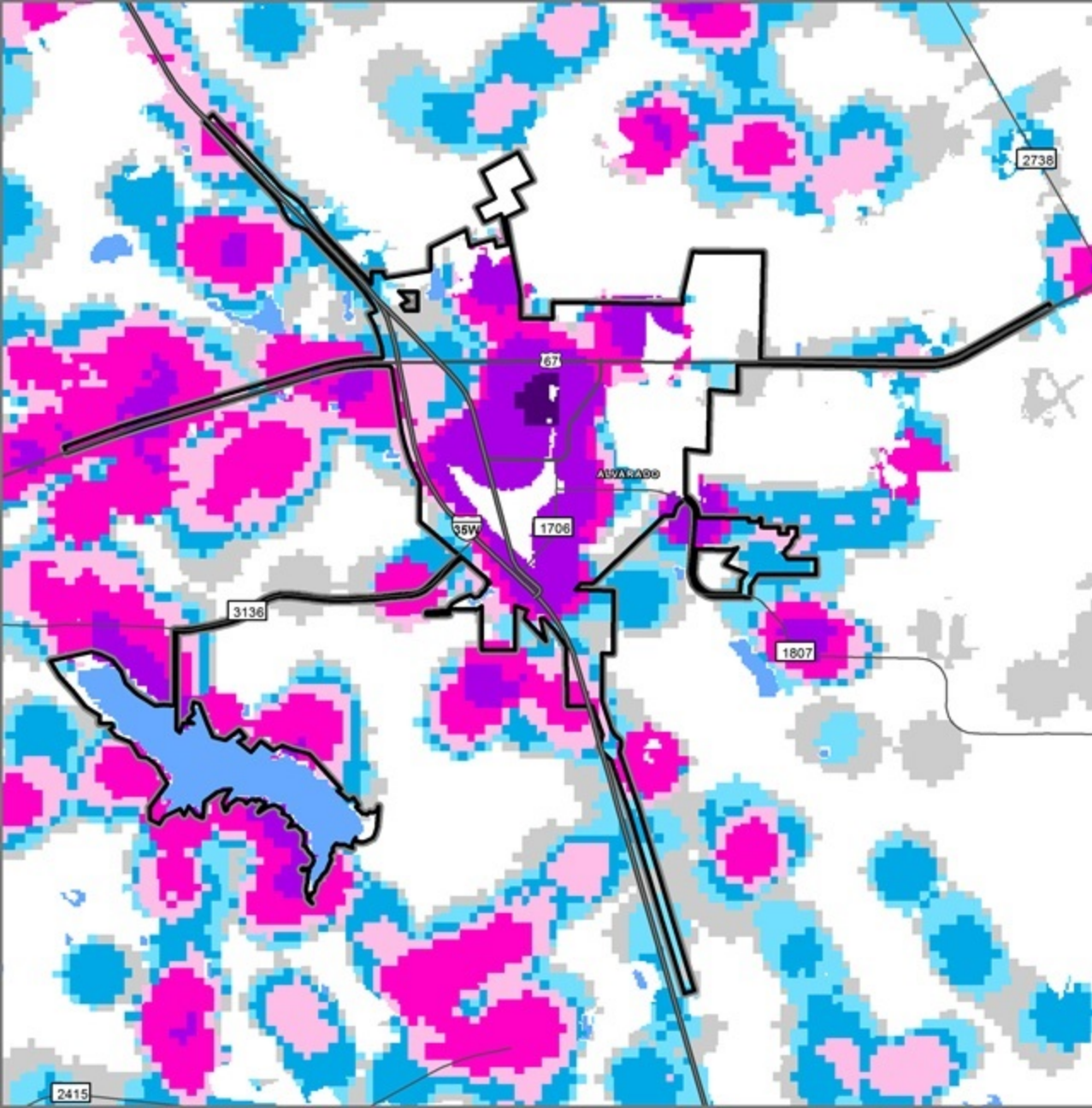
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Wildland Urban Interface

- 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

0 0.3 0.6 0.9 1.2 Miles

Date: 11/11/2014

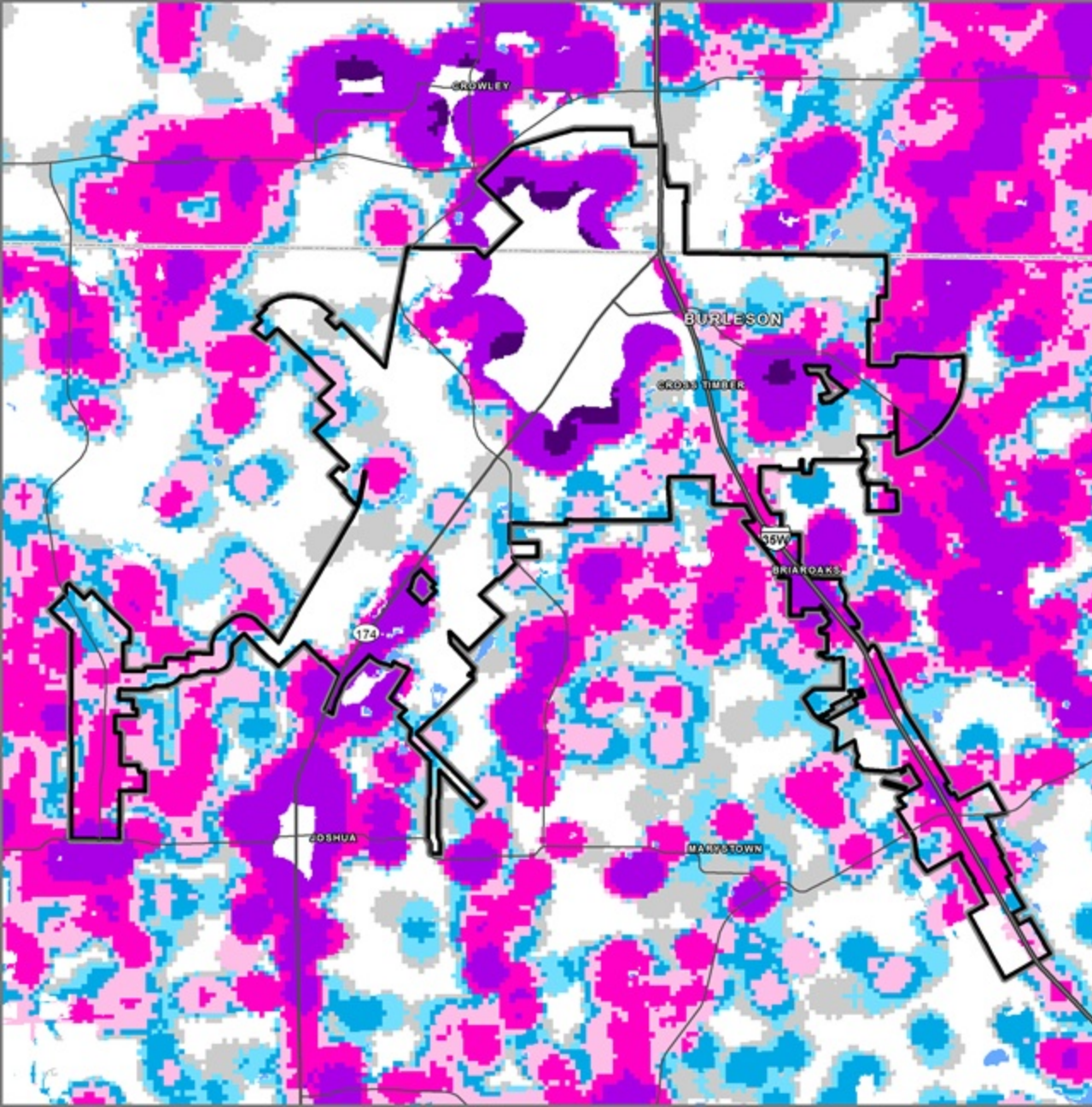




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Wildland Urban Interface

- 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



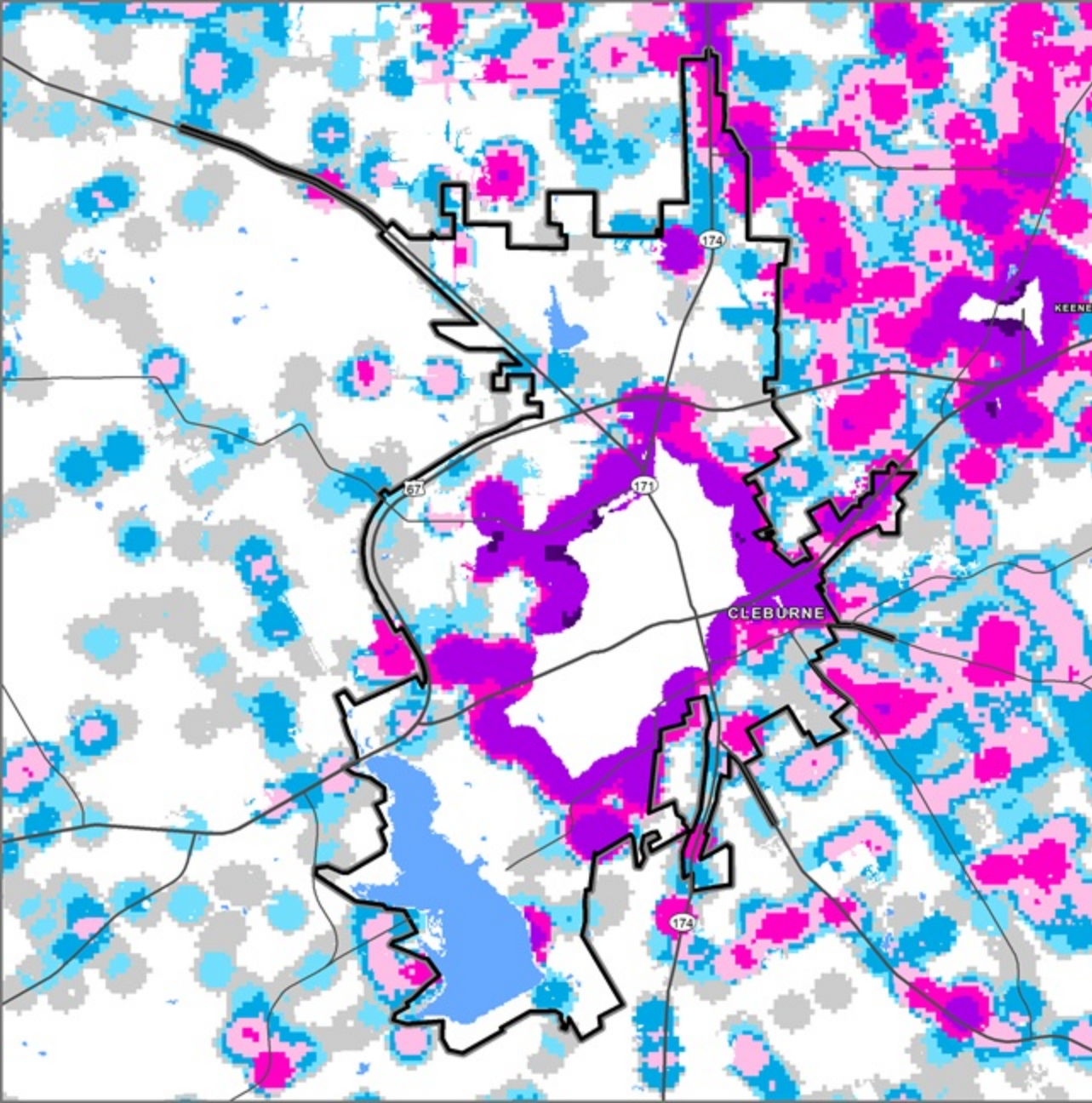


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Cleburne
Map D.4

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: 11/11/2014



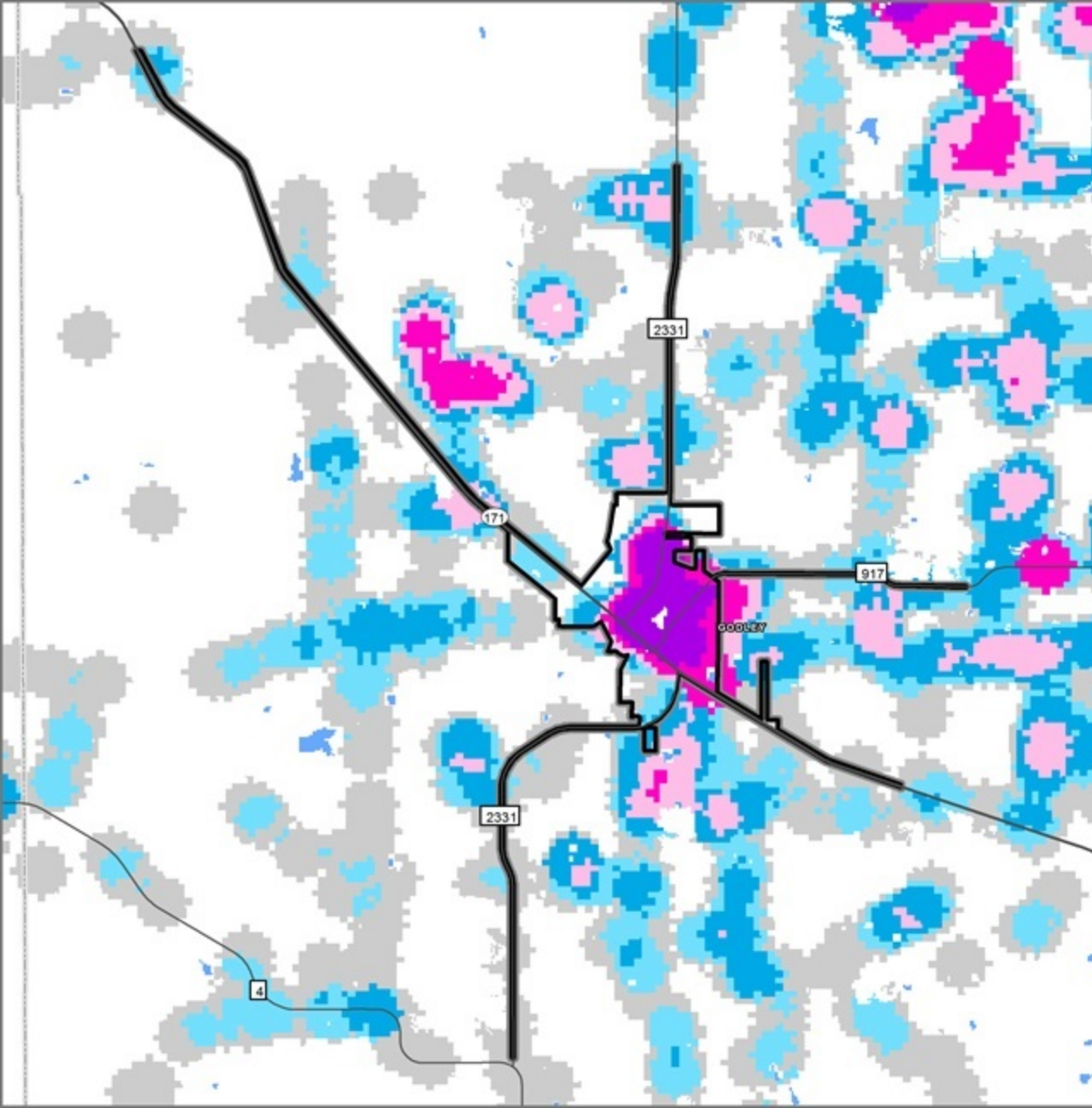
Texas Wildfire Risk Assessment
<http://www.texaswildfirerisk.com>



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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



0 0.4 0.8 1.2 1.6 Miles

Date: 11/11/2014

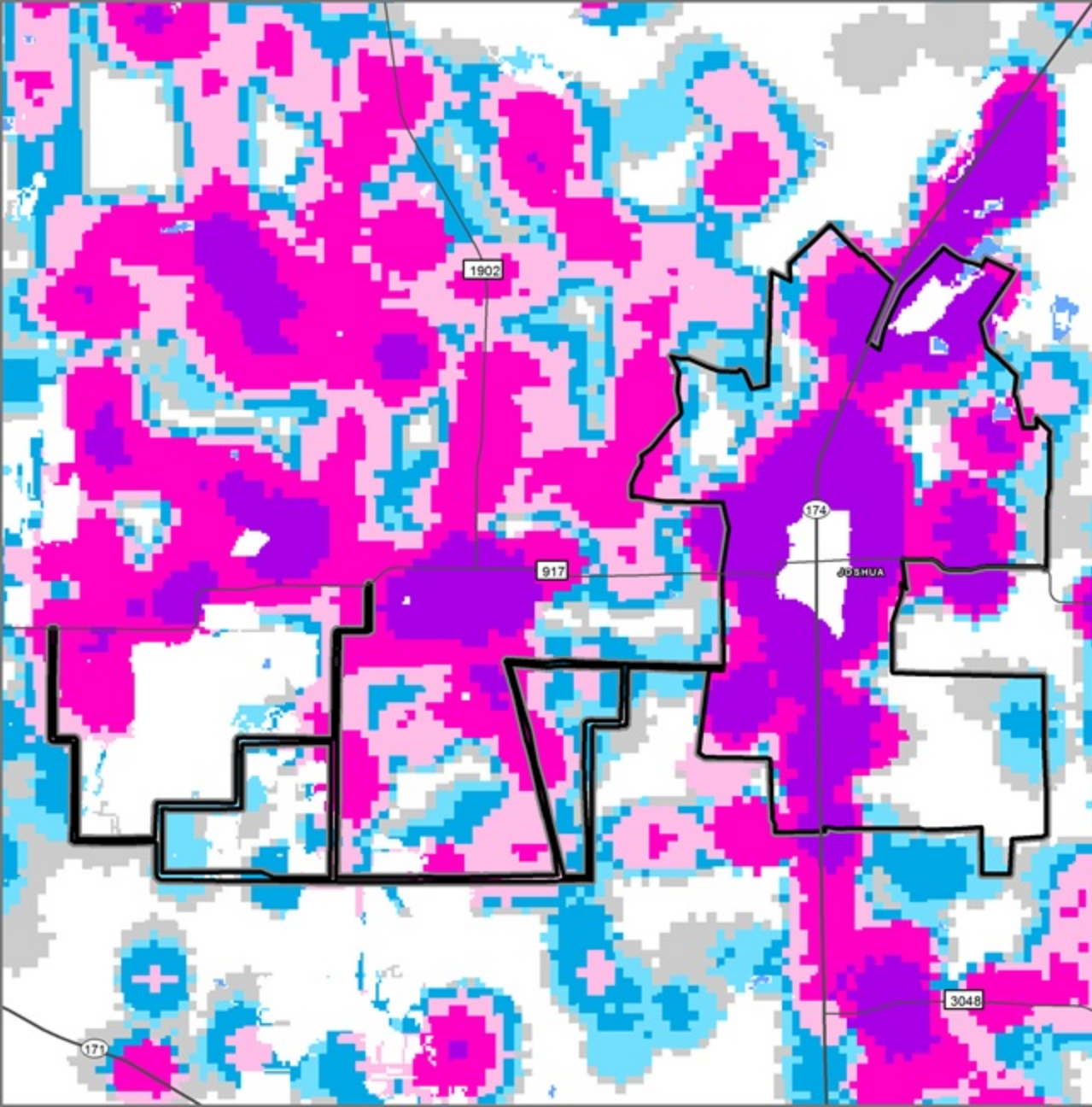




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Wildland Urban Interface


- 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



0 0.3 0.6 0.9 1.2 Miles

Date: 11/11/2014

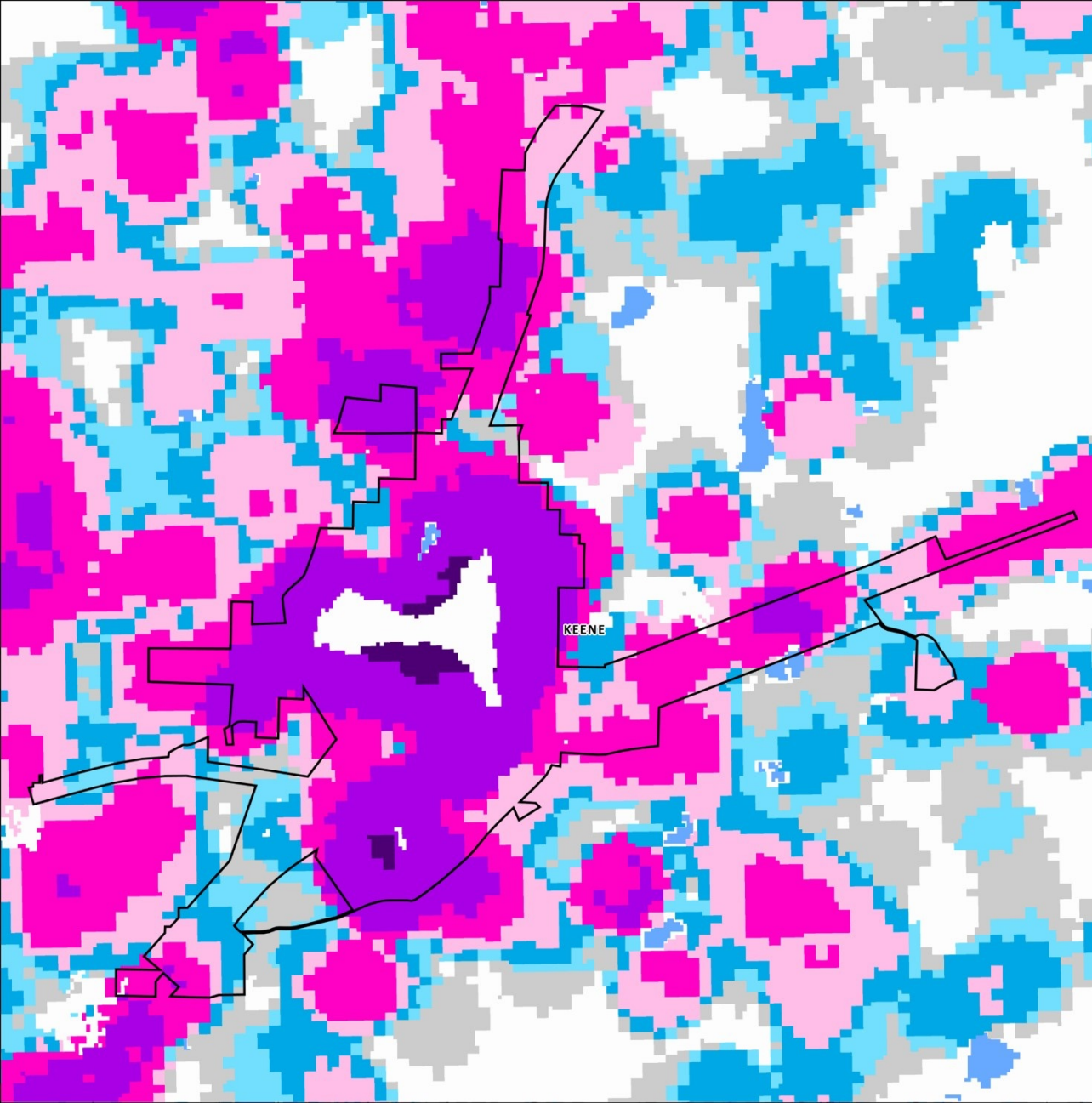




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Wildland Urban Interface

- 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



1.13 mi
2426.7 m





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Wildfire Threat



0 1.5 3 4.5 6 Miles

Date: 11/11/2014

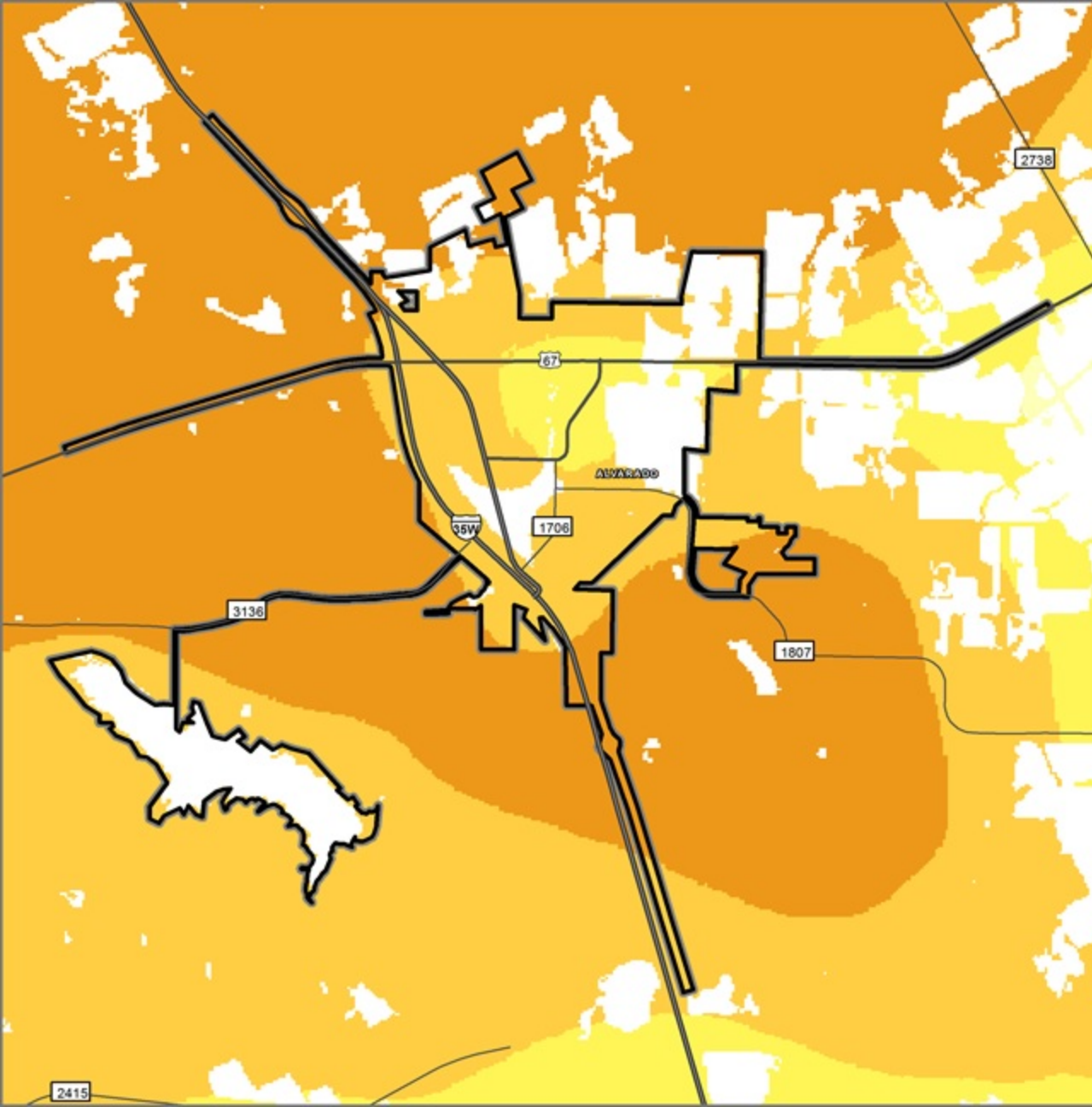




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Wildfire Threat


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



0 0.3 0.6 0.9 1.2 Miles

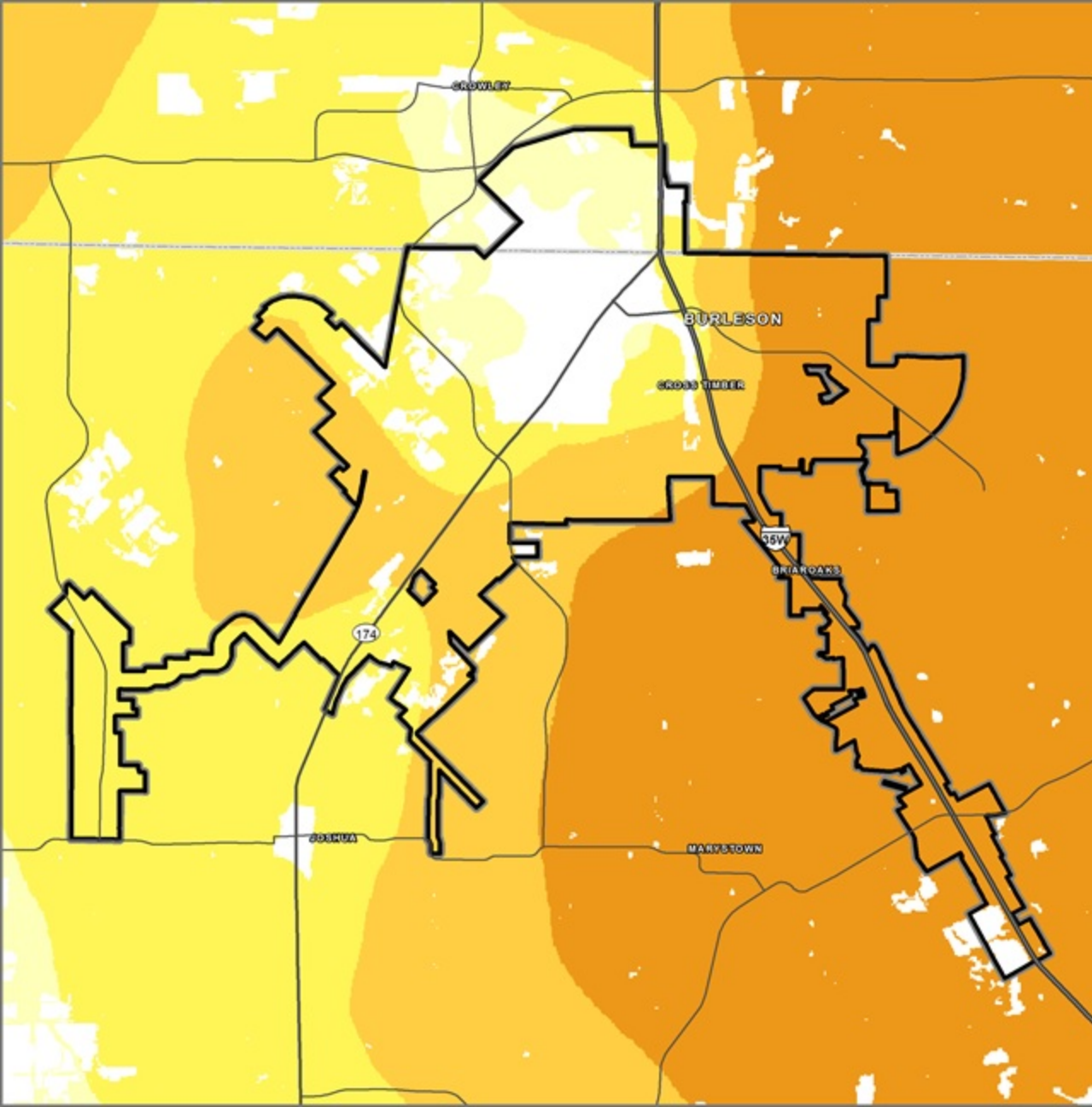
Date: 11/11/2014





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Wildfire Threat



0 0.5 1 1.5 2 Miles

Date: 11/11/2014

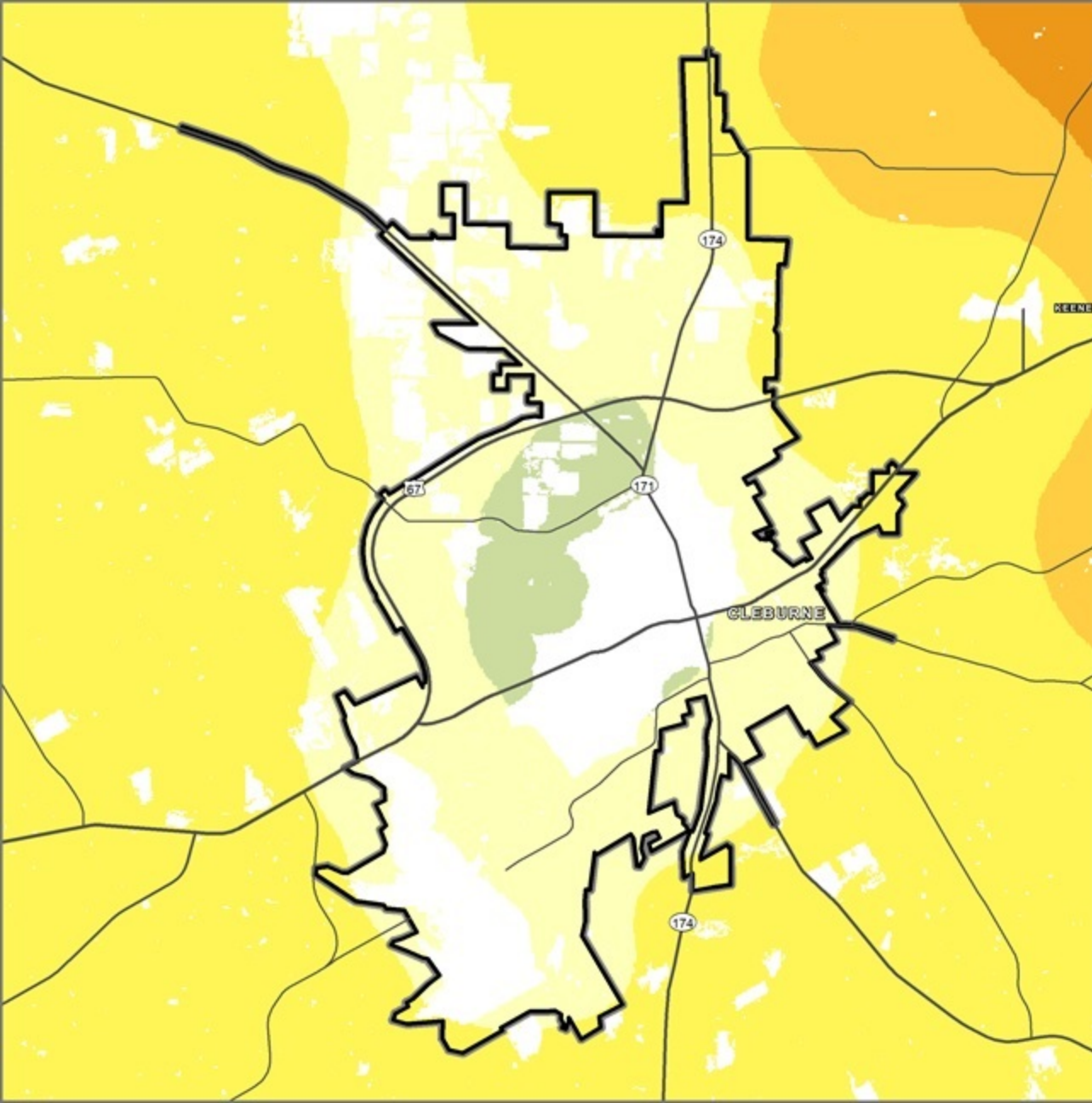




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Cleburne
Map E.4

Wildfire Threat

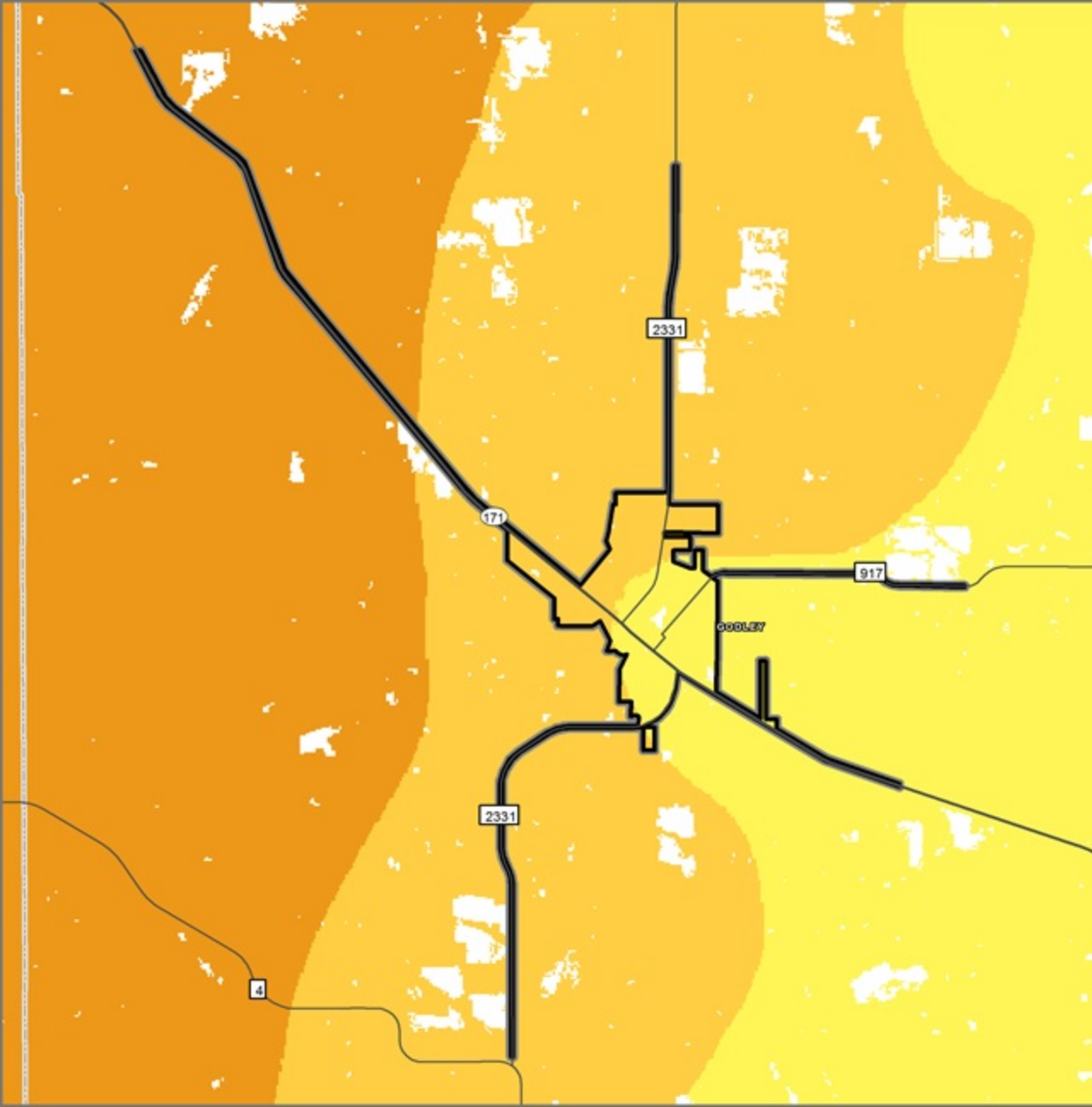




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Wildfire Threat


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



0 0.4 0.8 1.2 1.6 Miles

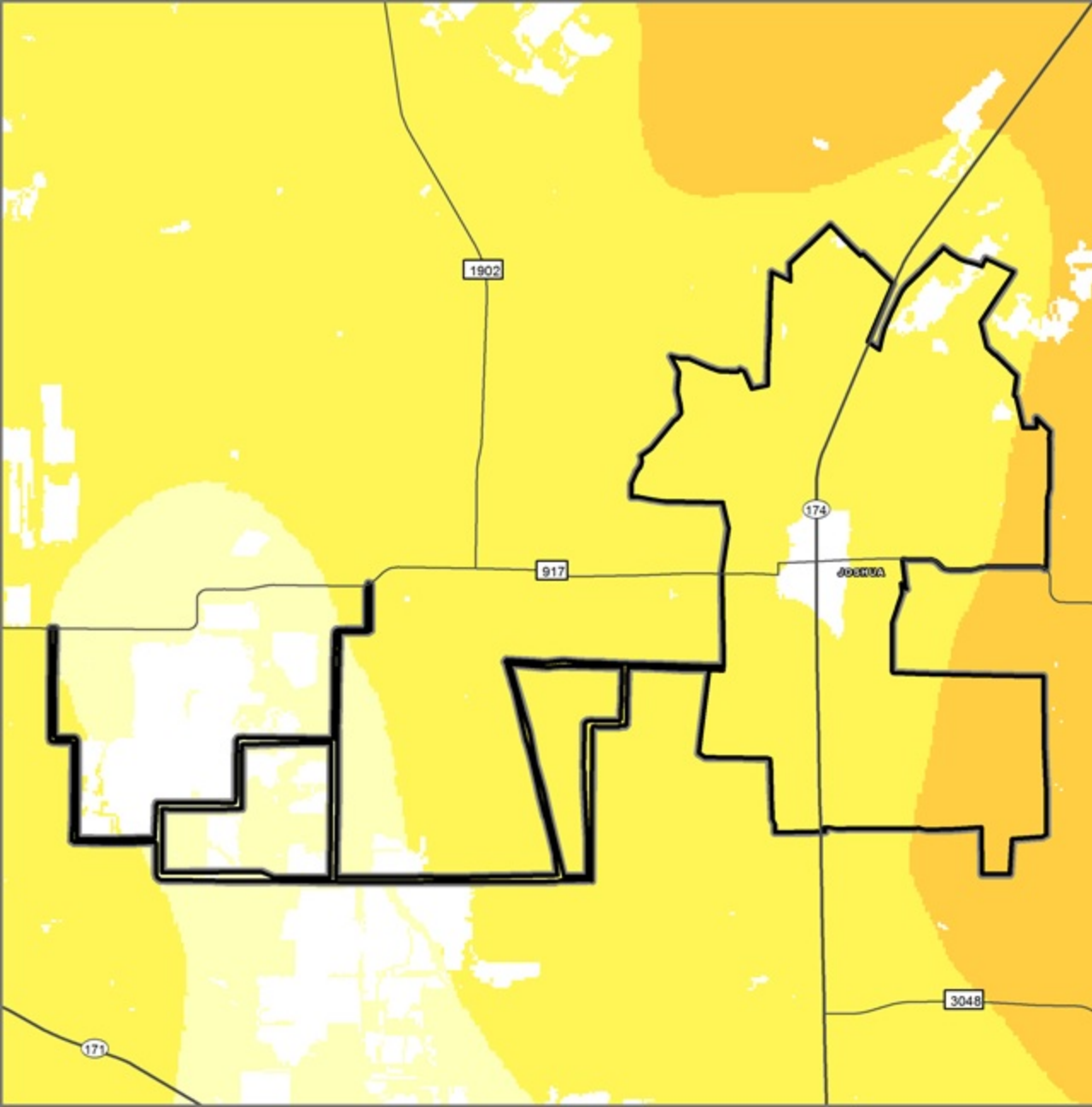
Date: 11/11/2014





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Wildfire Threat



0 0.3 0.6 0.9 1.2 Miles

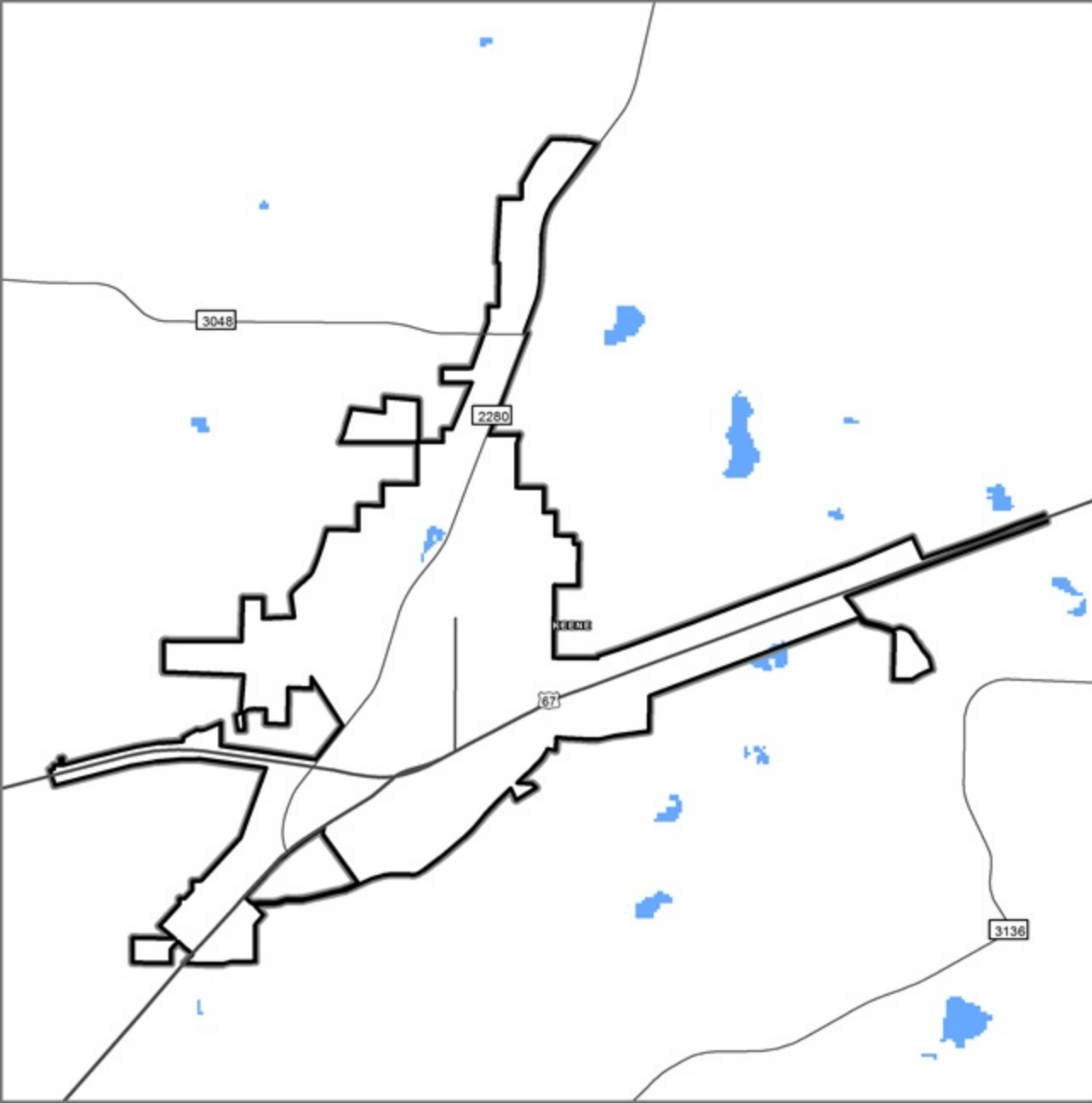
Date: 11/11/2014





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Wildfire Threat



0 0.25 0.5 0.75 1 Miles

Date: 11/25/2014

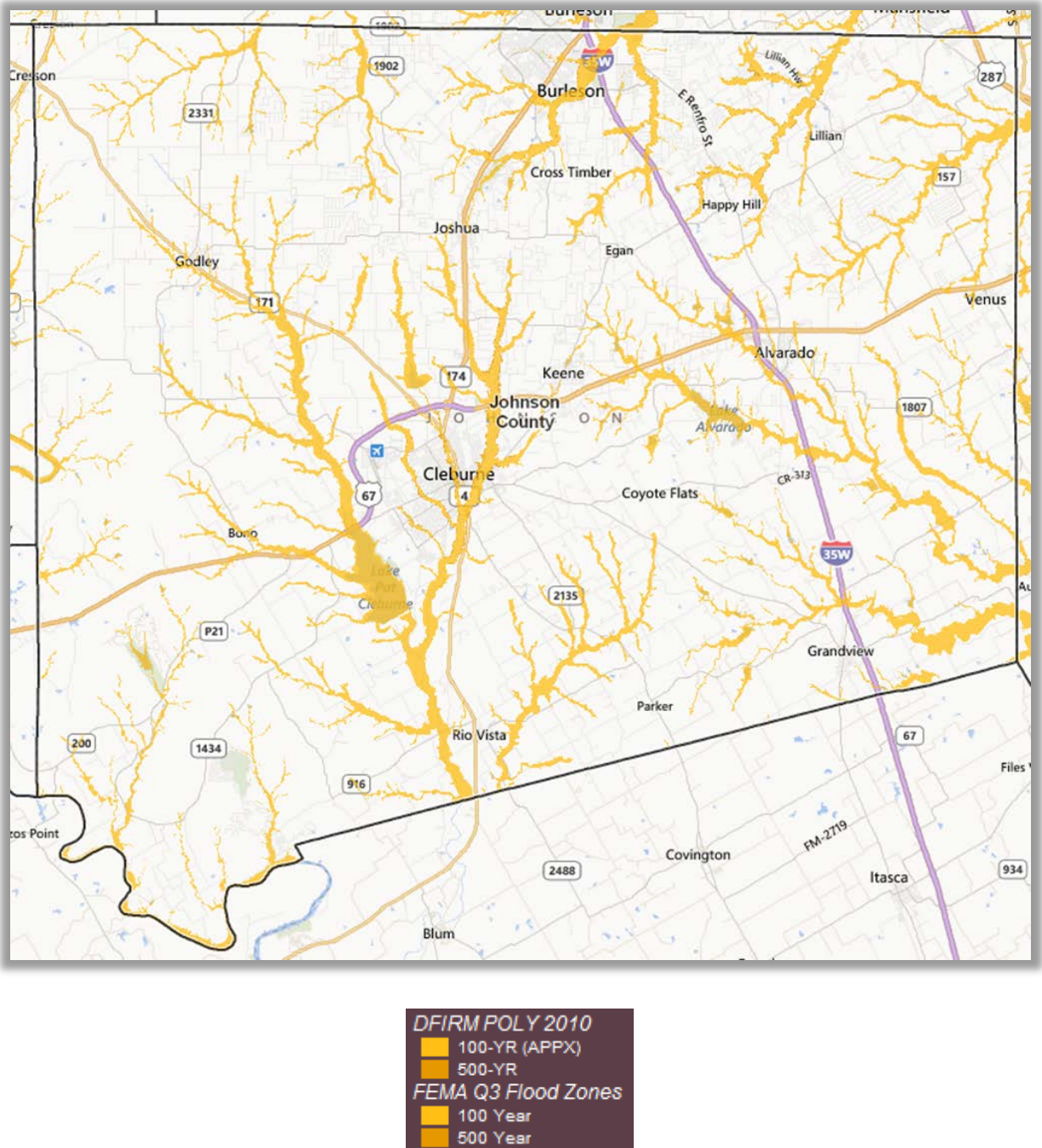




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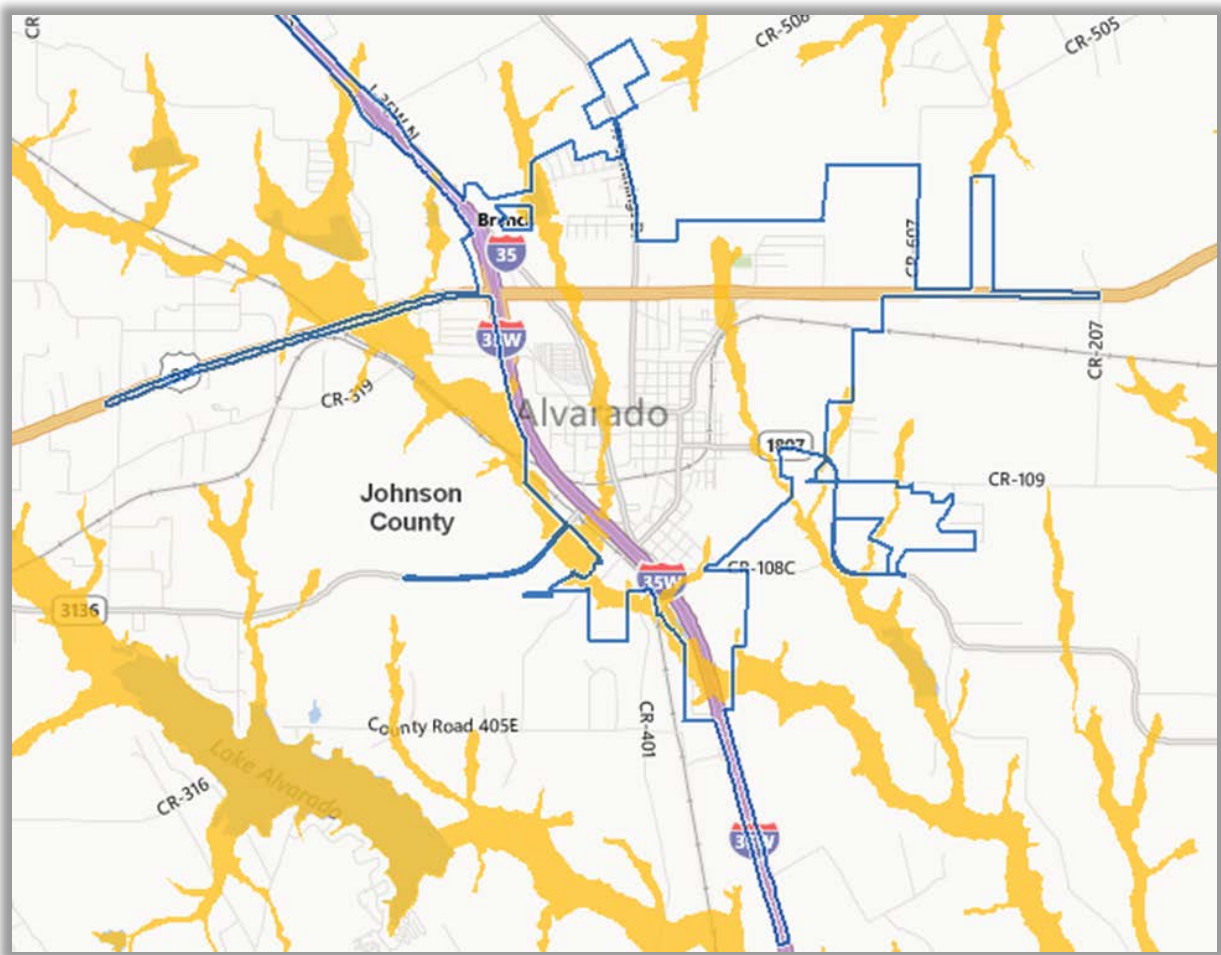
Map Series E – Flood Zones

Map E.1 - Johnson County Flood Zones



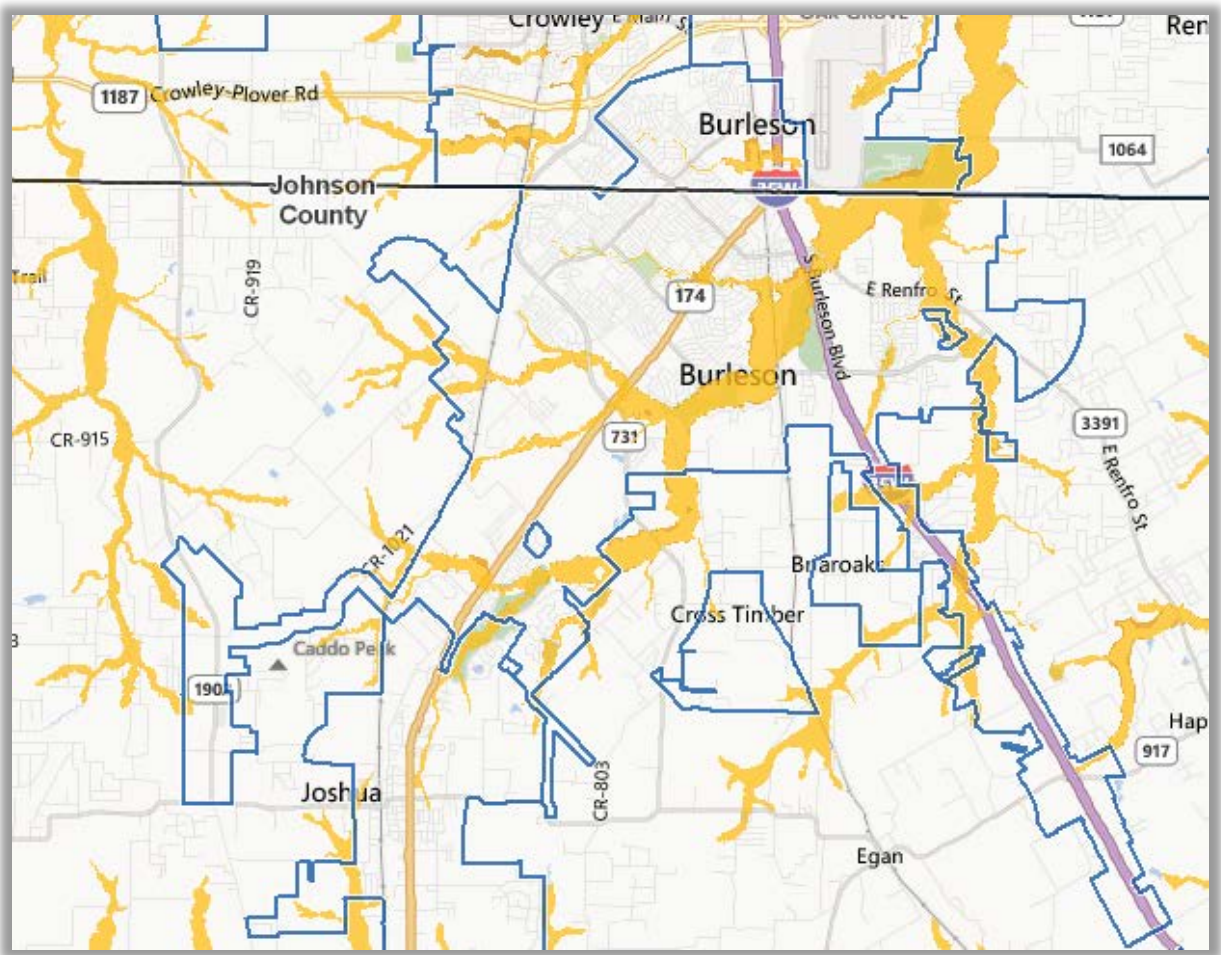
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map E.2 - Alvarado Flood Zones



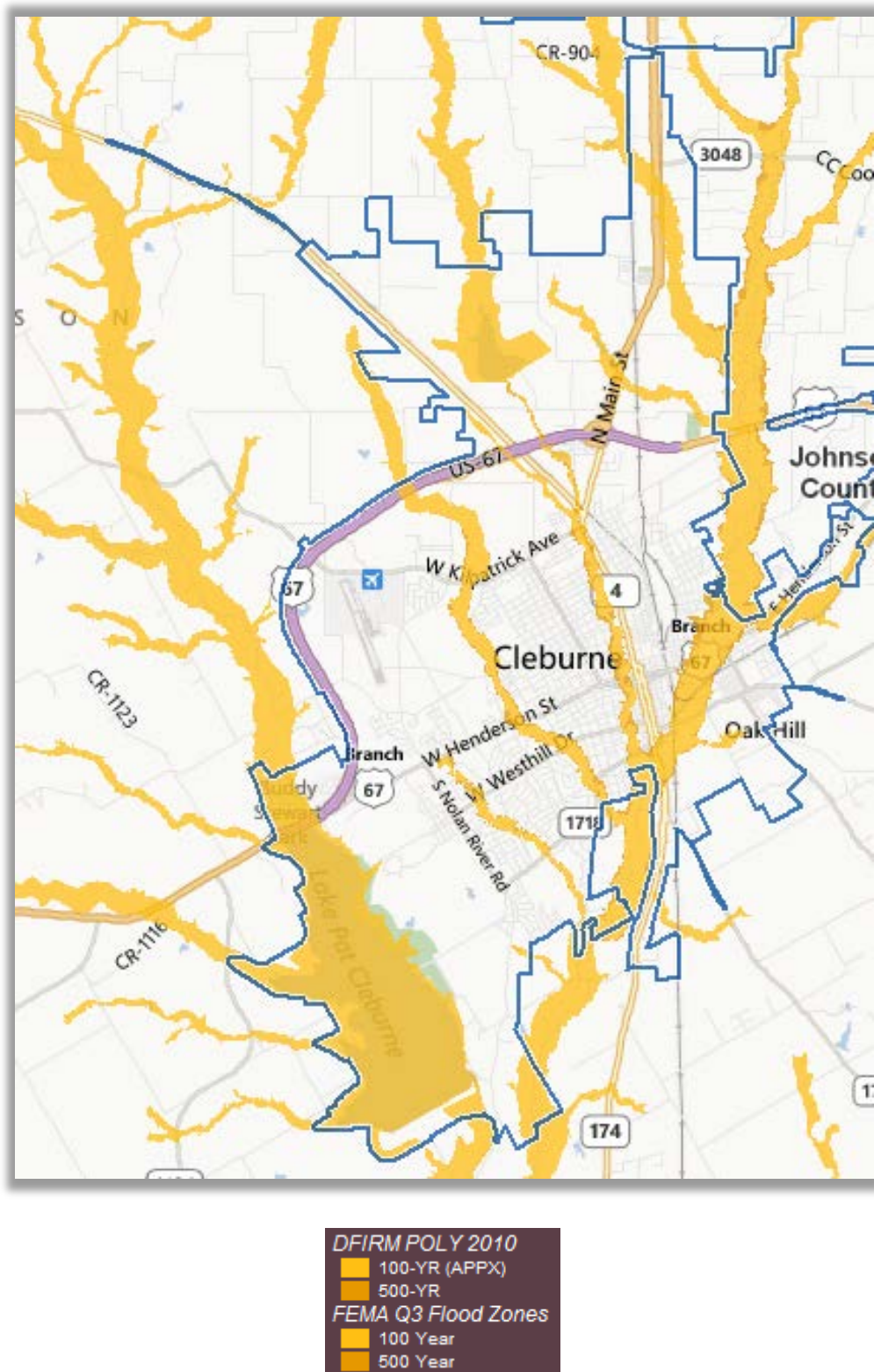
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map E.3 - Burleson Flood Zones



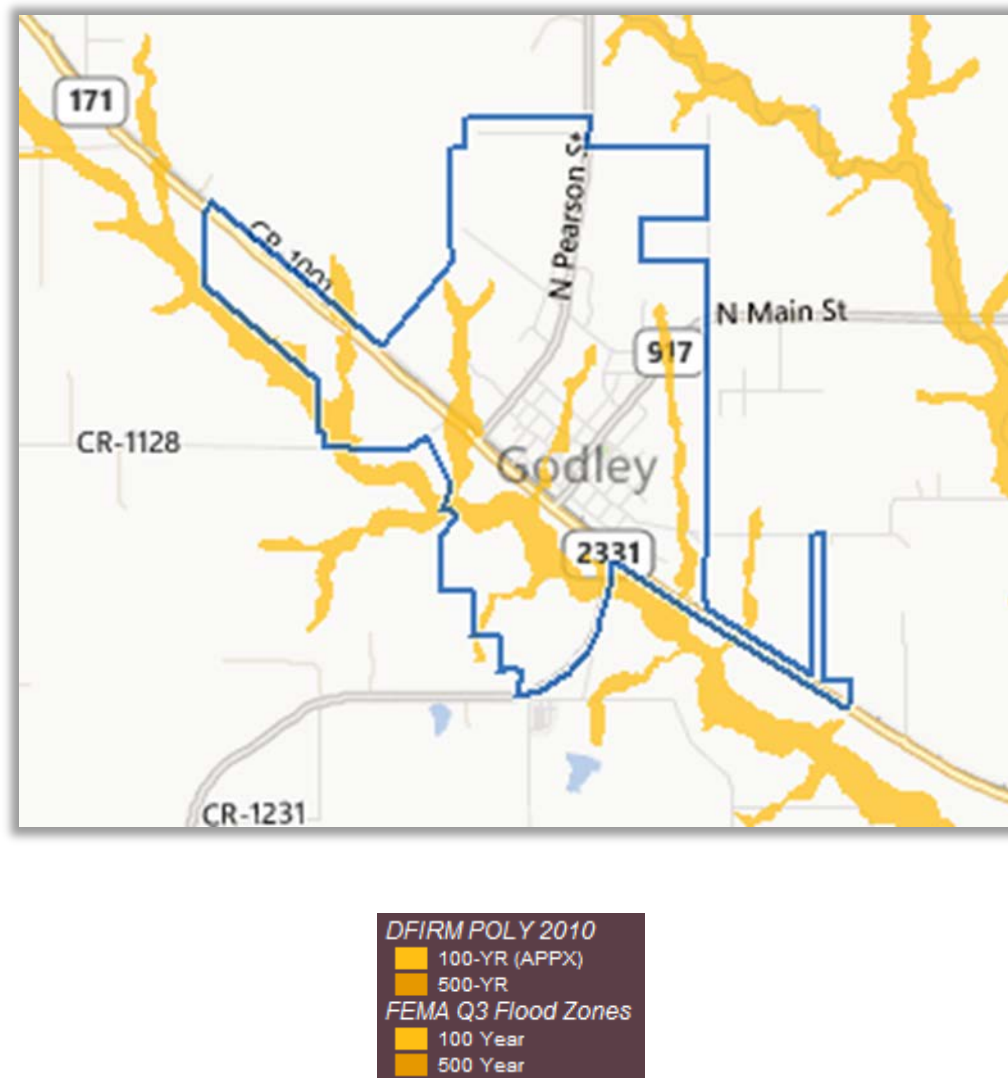
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map E.4 - Cleburne Flood Zones



Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map E.5 - Godley Flood Zones



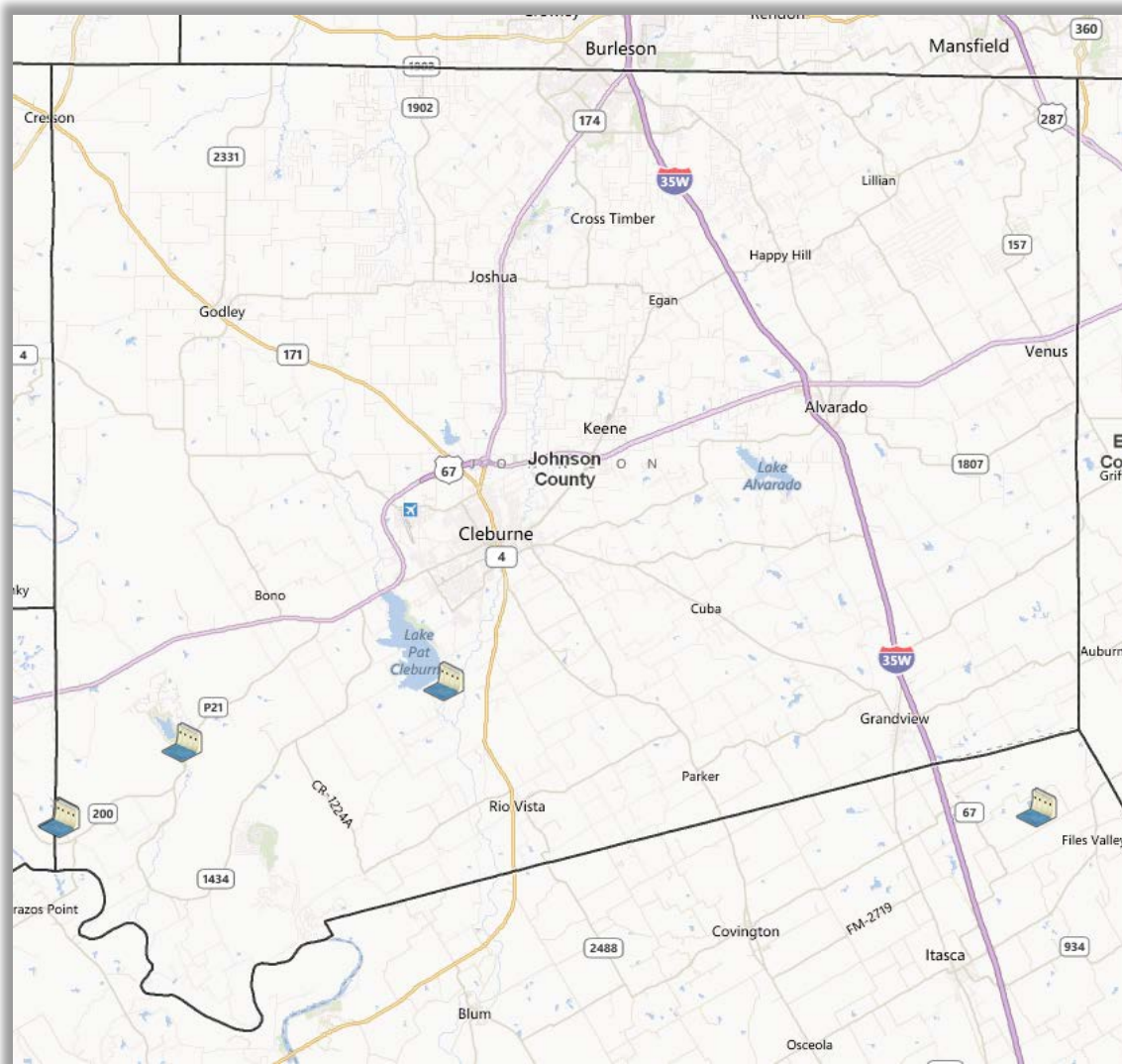
Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)





Map Series F – Dam Maps

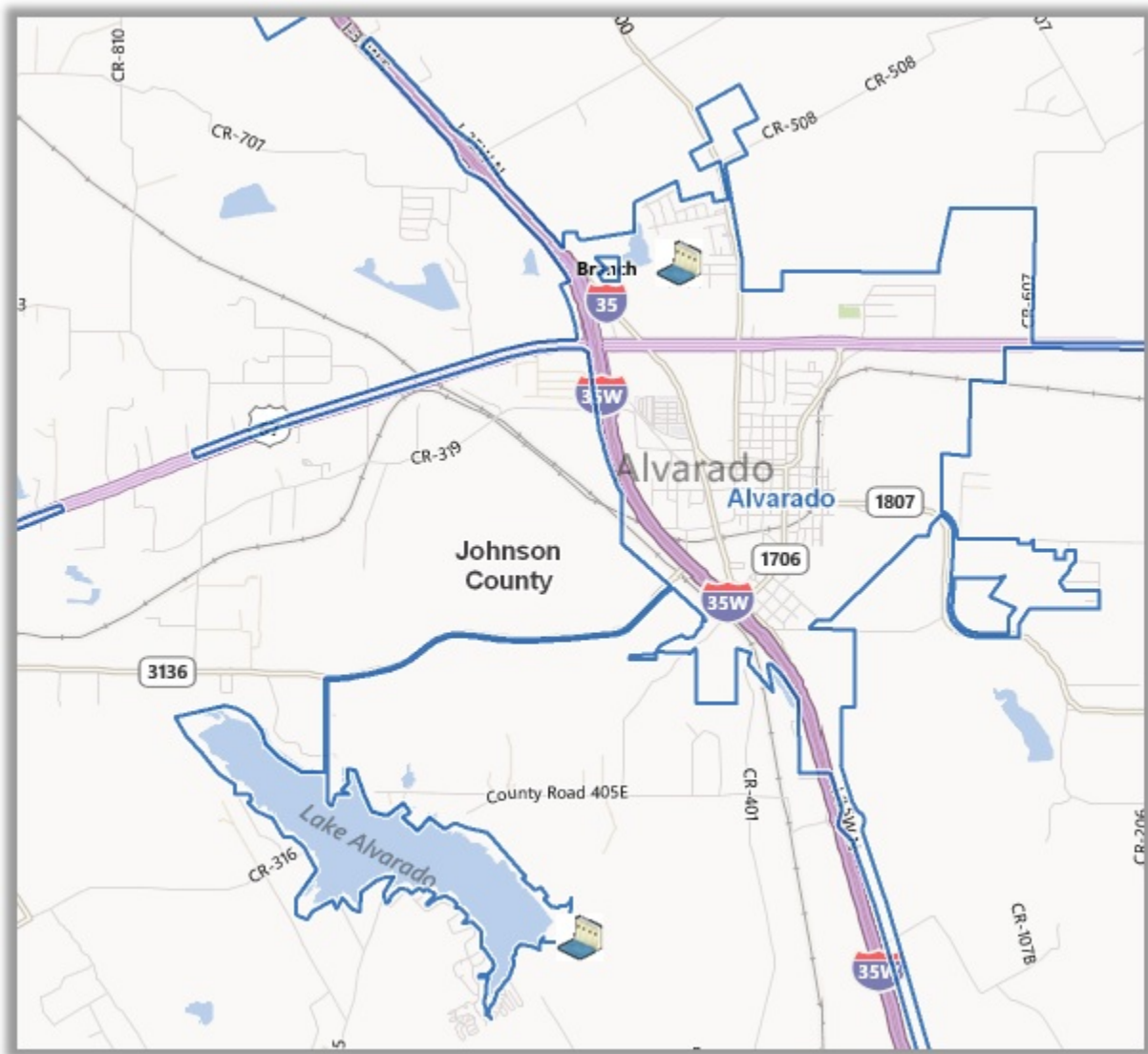
Map F.1 – Johnson County Dams



- Indicates Presence of Dam

Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

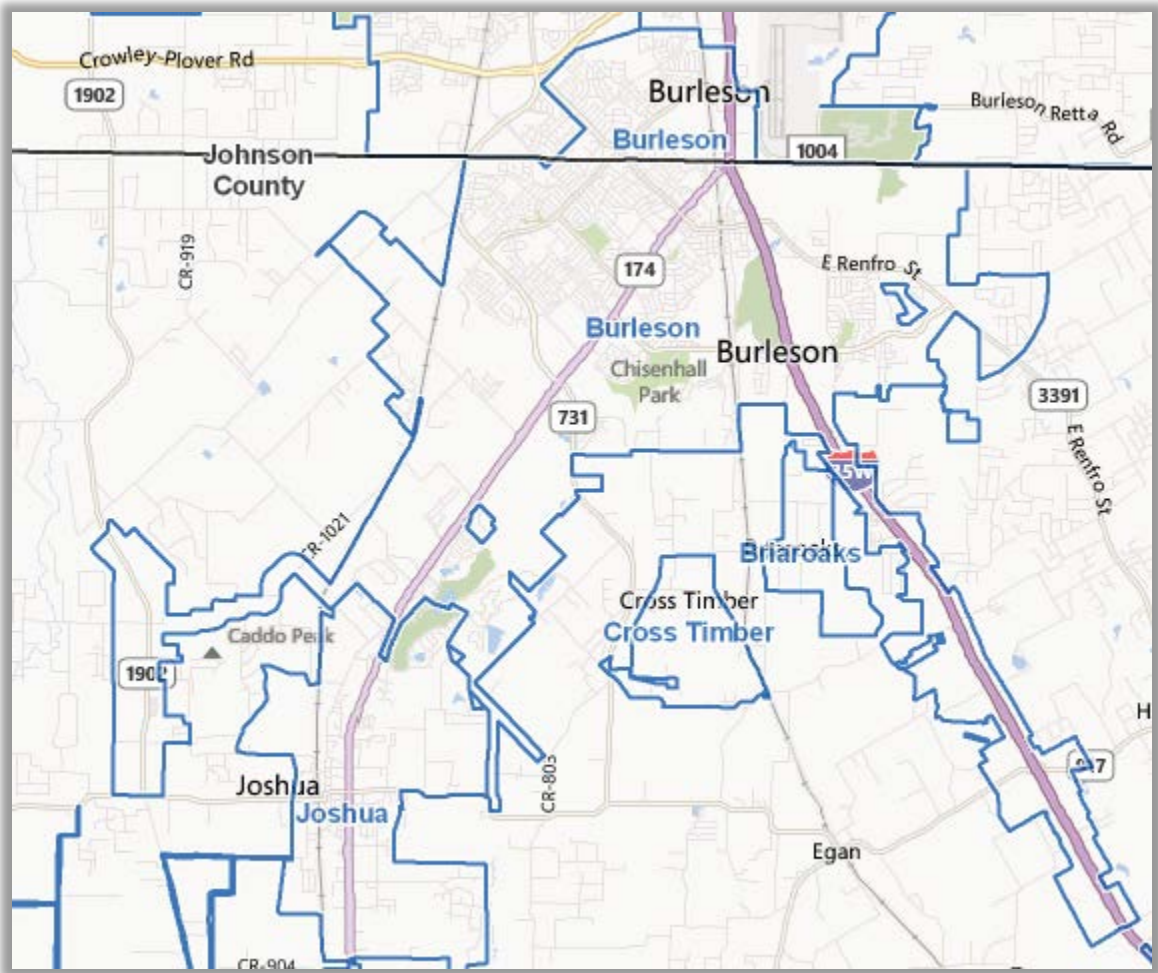
Map F.2 – Alvarado Dams



- Indicates Presence of Dam

Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map F.3 – Burleson Dams



 - Indicates Presence of Dam*

*No dams present in jurisdiction

Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map F.4 – Cleburne Dams



 - Indicates Presence of Dam*

Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

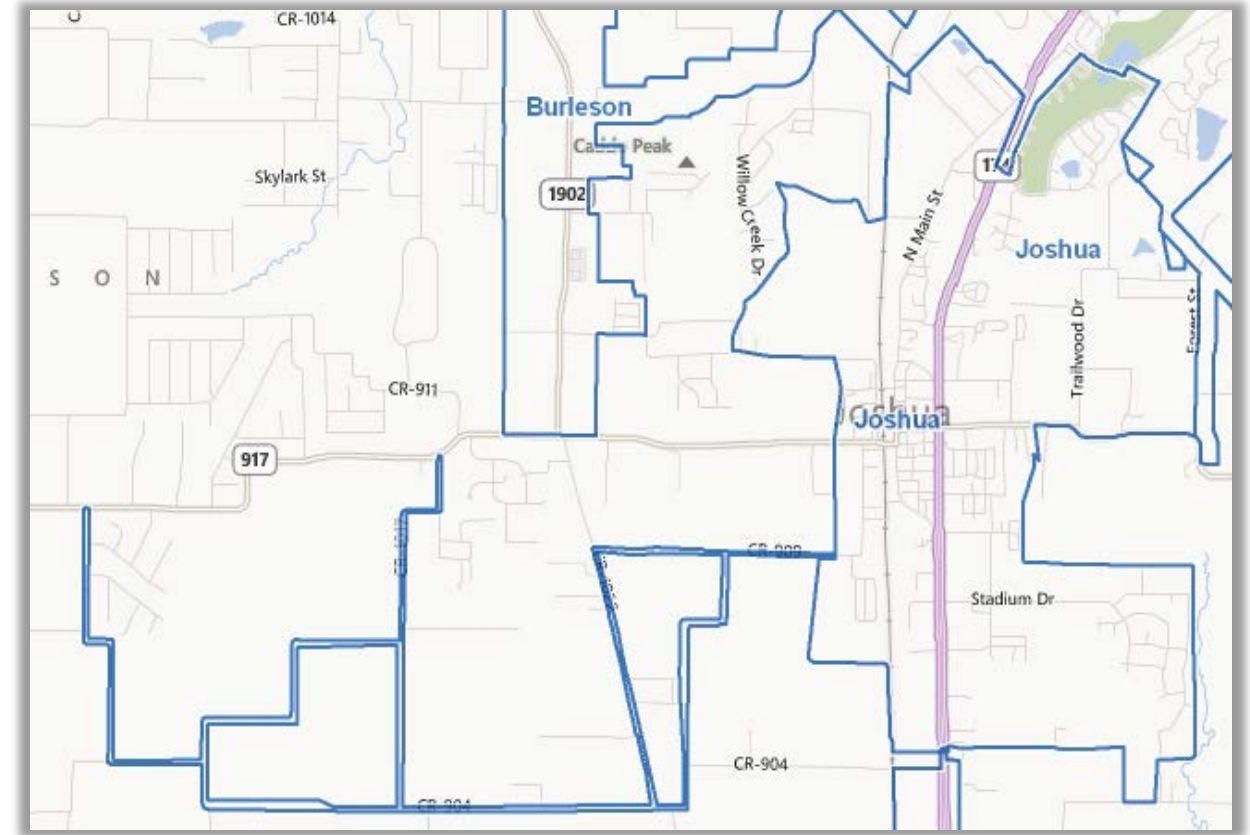
Map F.5 – Godley Dams



- Indicates Presence of Dam*

*No dams present in jurisdiction

Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)



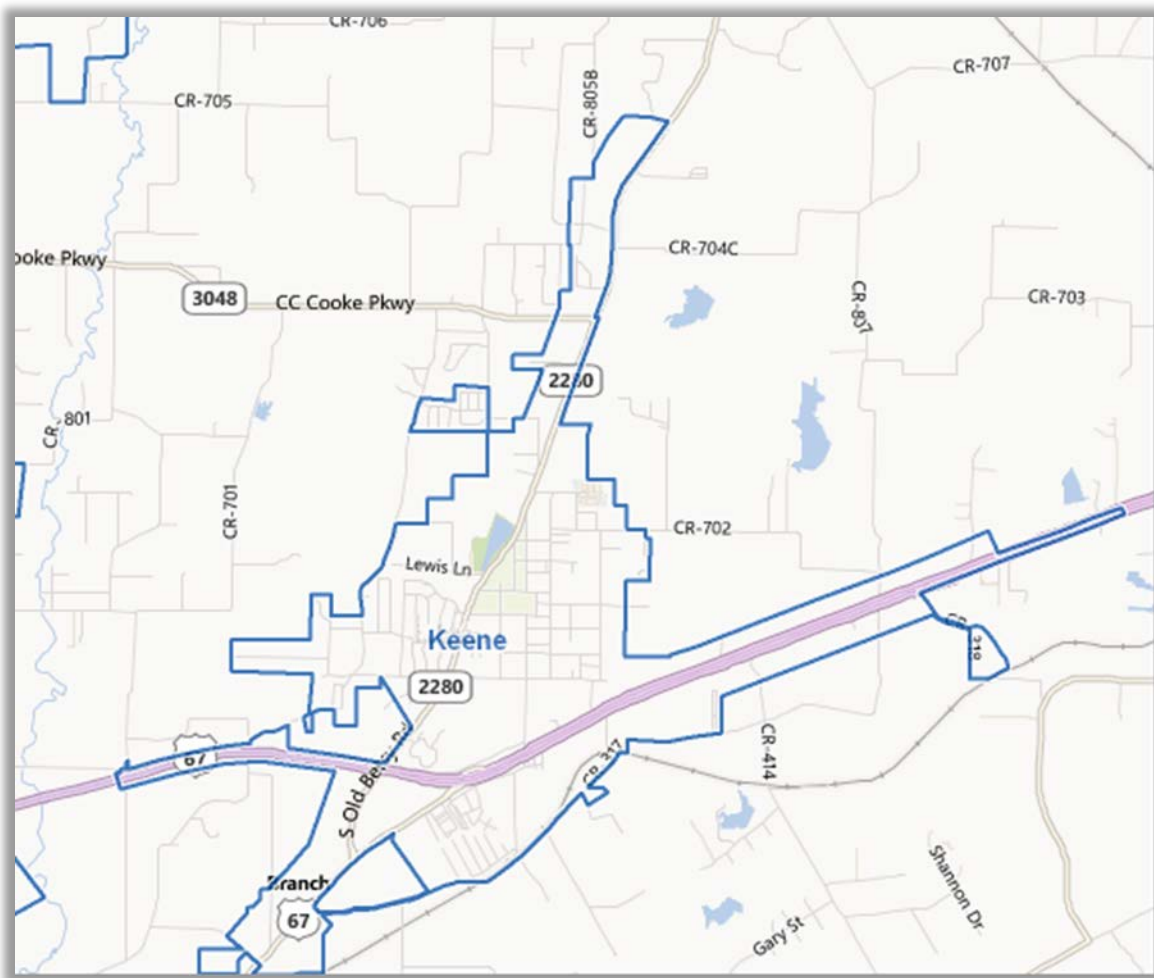
 - Indicates Presence of Dam*

 - Indicates Presence of Dam*

*No dams present in jurisdiction

Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

Map F.7 – Keene Dams



- Indicates Presence of Dam*

*No dams present in jurisdiction

Source: North Central Texas Council of Government's Regional Hazard Assessment Tool (RHAT)

3.3 Extent

Natural Hazards are judged on specific extent scales. The following are the known extent scales for the natural hazard tornados as addressed in the Johnson County HazMAP.

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 tornados 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

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 tornadoes in the planning community. For example, according to the National Climatic Data Center, in 2012 an EF1 tornado occurred at the Joshua Airport. The tornado caused \$600,000 worth of property damage.

Johnson County and participating jurisdictions experienced 18 tornado events ranging from F0 & EF0 to F2 & EF1, during the time period analyzed for this plan (01/01/2002-12/31/2012). It can be expected that any future tornado events will be similar in magnitude.

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/hscale.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 according to the National Climatic Data Center, there have been at least four storms in the planning area since 2002, at the H7 ranking. In 2012, 1.75 inch* (H5/golf ball size) hail caused \$850,000 of property damage in the City of Cleburne.

Johnson County and participating jurisdictions experienced 69 hail events ranging from magnitude H2 (.75 inch diameters) to magnitude H7 (2.75 inch diameters), during the time period analyzed for this plan (01/01/2002-12/31/2012). It can be expected that any future hail events will be similar in magnitude.

Beaufort Wind Scale

Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects	
			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 storms. For example, according to the National Climatic Data Center in 2011 the City of Rio Vista experienced Force 10 (55 knot) winds that blew down trees and fences and caused \$250,000 worth of damage.

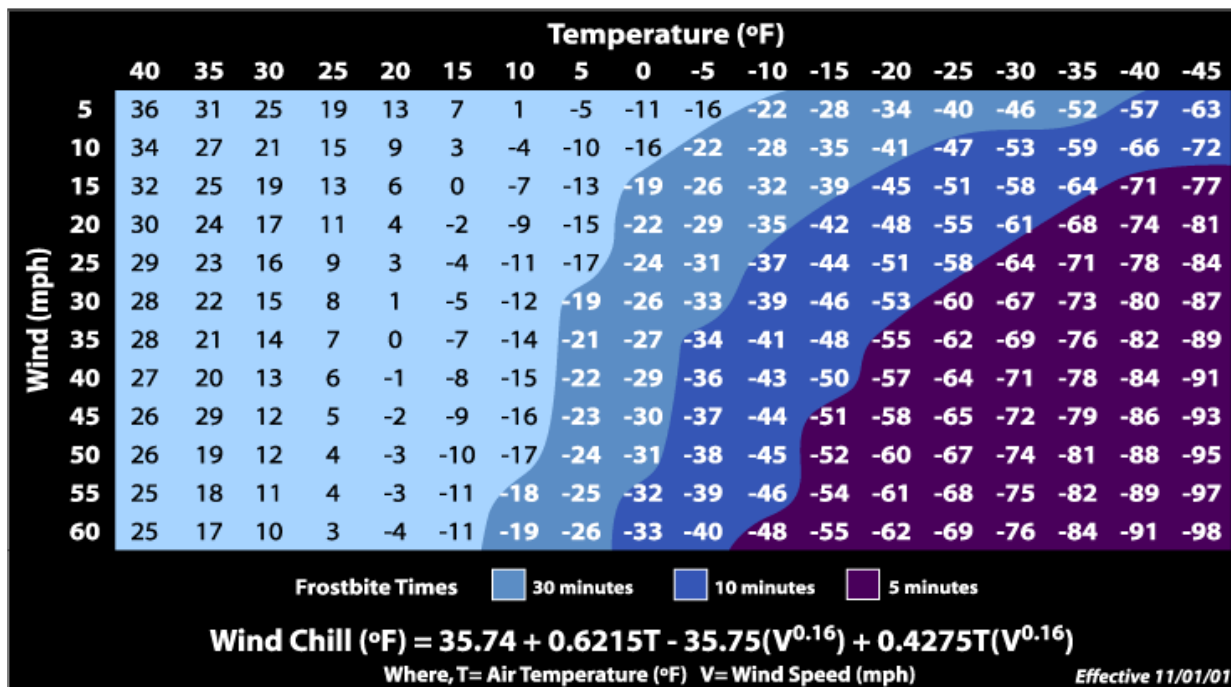
Johnson County and participating jurisdictions experienced 92 high wind events ranging from 50 knots to 96 knots (57.5 to 110.5 mph), during the time period analyzed for this plan (01/01/2002-12/31/2012). It can be expected that any future high wind events will be similar in magnitude.

Wind Chill

Wind Chill temperature 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. Below is a chart for calculating wind chill. (Please note that it is not applicable in calm winds or when the temperature is over 50°.)



Wind Chill Chart

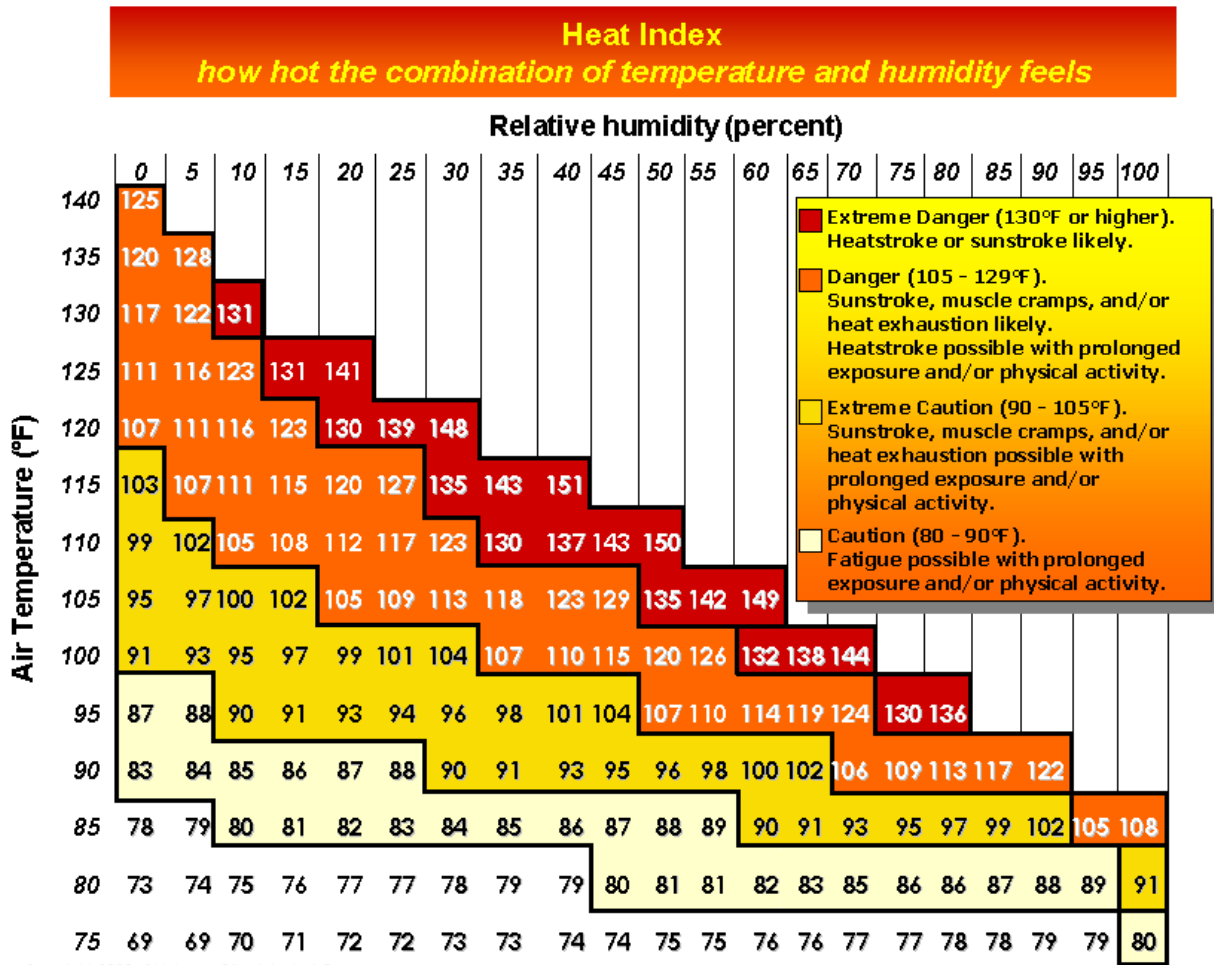


Source: National Weather Service and NOAA

The Wind Chill Chart displays the frostbite times in regards to temperature and wind. This chart allows the communities to prepare for severe 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, heavy snowfall was recorded county-wide in Johnson County. The heavy snow caused \$400,000 in property damage.

Johnson County and participating jurisdictions experienced 8 winter storm events ranging from heavy snow to ice, during the time period analyzed for this plan (01/01/2002-12/31/2012). The winter storm events ranged from 3-5 inches of snow fall, 1-3 inches of sleet, and up to an inch of ice accumulation. It can be expected that any future events will be similar in magnitude.

Extreme Heat / 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. For example, according to the National Climatic Data Center two heat events were recorded in Johnson County in 2011. One of these heat events resulted in a fatality.

Johnson and participating jurisdictions experienced one excessive heat event during a prolonged period of heat at the beginning of August in 2011. The whole North Texas Region experienced over a month of 100-degree plus temperatures around this time. It can be expected that any future heat or excessive heat incidents will be similar in magnitude.

Drought

Drought Severity Classification							
Category	Description	Possible Impacts	Palmer Drought Index	Ranges			
				CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Short and Long-term Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought; short-term dryness slowing planting, growth of crops or pastures. Coming out of drought; some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9	21-30	21-30	-0.5 to -0.7	21-30
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9	11-20	11-20	-0.8 to -1.2	11-20
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10	6-10	-1.3 to -1.5	6-10
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9	3-5	3-5	-1.6 to -1.9	3-5
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0-2	0-2	-2.0 or less	0-2

Short-term drought indicator blends focus on 1-3 month precipitation. Long-term blends focus on 6-60 months. Additional indices used, mainly during the growing season, include the USDA/NASS Topsoil Moisture, Keetch-Byram Drought Index (KBDI), and NOAA/NESDIS satellite Vegetation Health Indices. Indices used primarily during the snow season and in the West include snow water content, river basin precipitation, and the Surface Water Supply Index (SWSI). Other indicators include groundwater levels, reservoir storage, and pasture/range conditions.

Source: <http://droughtmonitor.unl.edu/AboutUs/ClassificationScheme.aspx>

Short-term drought indicator blends focus on 1-3 month precipitation. Long-term blends focus on 6-60 months. Additional indices used, mainly during the growing season, include the USDA/NASS Topsoil Moisture, Keetch-Byram Drought Index (KBDI), and NOAA/NESDIS satellite Vegetation Health Indices. The last event of widespread drought in Johnson County was in 2012.

Johnson County and participating jurisdictions have experienced 29 drought events, ranging from **Abnormally Dry (D0) to Exceptional Drought (D4)**, during the time period analyzed for this plan (01/01/2002-12/31/2012). It can be expected that future drought events will be of similar magnitude.

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:

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 six lightning events reported in Johnson County during the time period analyzed for this plan, 2002-2012. In 2007, one of the lightning events caused \$220,000 in property damage in the City of Burleson.

As a whole, Johnson County experienced \$367,000 in property damage during the time period analyzed for this plan, 2002-2012. The damage ranged in magnitude from minor: apartment complexes and electrical; to complete destruction: family homes, antenna and radio equipment, and a salt water disposal site.

Wildfire

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 7 wildland fire events in Johnson County since 2002. In 2011 a wildfire caused \$500,000 in property damage.

Johnson County and participating jurisdictions experienced 7 wildfire events ranging from 2 acres to 1,000 acres, during the time period analyzed for this plan (01/01/2002-12/31/2012). It can be expected that any future wildland fire events will be similar in magnitude.

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>

Flood Zones

Zone A	The 100-year or Base Floodplain. There are six types of A zones:	
	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.
Zone V and VE	AH A99	Shallow flooding base floodplain. BFE's are provided. Area to be protected from base flood by levees or Federal flood protection systems under construction. BFEs are not determined.
	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 VE	The coastal area subject to velocity hazard (wave action) where BFEs are not determined on the FIRM. 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.

The planning communities are participants in the National Flood Insurance Program and actively take measures to plan land use. The communities are subject to flash flooding hazards such as the event in 2004 that affected all of Johnson County. According to the National Climatic Data Center the flash flood event resulted in \$100,000 worth of property damage.

Johnson County and participating jurisdictions experienced 26 flood and flash flood events during the time period analyzed for this plan (01/01/2002-12/31/2012). Most of the flood and flash flood events were

a result of excessive rainfall over a short amount of time, in one instance 6 inches in 24 hours. These events resulted mainly in over-the-road flooding and minor to moderate property damage. It can be expected that any future flood or flash flood events will be similar in magnitude.

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.

	High	Medium	Low
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
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
Winter Storms	<ul style="list-style-type: none"> Temperatures 15F- -45F Wind Chill 7F- -98F At wind chill of -19 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.
Extreme Heat	<ul style="list-style-type: none"> Heat Index >130F Heatstroke or sunstroke likely 	<ul style="list-style-type: none"> Heat Index 105F-129F Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity. 	<ul style="list-style-type: none"> Heat Index 80F-105F Fatigue possible with prolonged exposure and/or physical activity, Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
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

	High	Medium	Low
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.
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.
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
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

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

	Unincorporated	Alvarado	Burleson	Cleburne	Godley	Joshua	Keene
Dam Failure	Medium	Medium	Low	High	Low	Low	Low
Drought	High	Medium	Medium	Medium	Medium	High	Medium
Extreme Heat	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Flooding	Medium	High	Medium	High	Low	Medium	Low
Hail	Medium	Medium	Medium	Medium	Medium	Medium	Medium
High Winds	Medium	High	Medium	High	Medium	High	High
Lightning	Low	Low	Medium	Low	Medium	Low	Low
Tornado	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Wildland Fire	High	Medium	Low	Medium	High	High	Medium
Winter Storms	Low	Medium	Low	Low/Medium	Low	Medium	Medium



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3.4 Occurrence

The following tables list the previous events data according to the National Climatic Data Center reported in Johnson County, Texas. For those hazards which have the potential to affect the county equally, all data provided by the National Climatic Data Center has been included. The belief is that hazards do not stay within jurisdictional boundaries and thus it is important to be aware of occurrences that have impacted neighboring jurisdictions to further assess the Johnson County HazMAP participating jurisdictions' risks.

All previous events data was gathered from the National Climatic Data Center at <http://www4.ncdc.noaa.gov/cgi-win/wwwcgi.dll?wwevent~storms>

Dam Failure There is no recorded information or known history of previous occurrence/history of dam failure within Johnson County.

16 Tornado events were reported in Johnson County, Texas and participating jurisdictions between 01/01/2002 and 12/31/2012

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
BURLESON	4/3/2012	12:08	TORNADO	EF0	0	0	0	2K
JOSHUA ARPT	4/3/2012	11:41	TORNADO	EF1	0	0	600K	0
LAKE PAT CLEBURNE	4/25/2011	14:15	TORNADO	EF0	0	0	0	0
CLEBURNE MUNI ARPT	4/25/2011	14:10	TORNADO	EF0	0	0	0	0
ALVARADO	4/11/2011	0:22	TORNADO	EF1	0	2	100K	0
LAKE PAT CLEBURNE	4/11/2011	0:09	TORNADO	EF1	0	0	150K	0
LILLIAN	4/10/2008	2:30	TORNADO	EF1	0	0	25M	0
GODLEY	3/31/2008	14:10	TORNADO	EF0	0	0	75K	0
GODLEY	3/31/2008	14:05	TORNADO	EF0	0	0	35K	0
VENUS	6/26/2007	17:40	TORNADO	EF0	0	0	15K	0
CLEBURNE	5/2/2007	16:11	TORNADO	EF0	0	0	0	0
ALVARADO	4/25/2005	15:25	TORNADO	F0	0	0	0	0
GRANDVIEW	4/16/2002	18:14	TORNADO	F0	0	0	0	0
GRANDVIEW	4/16/2002	18:11	TORNADO	F0	0	0	0	0
GRANDVIEW	4/16/2002	18:07	TORNADO	F0	0	0	0	0
GRANDVIEW	4/16/2002	17:56	TORNADO	F0	0	0	0	0
TOTALS:					0	2	25.975M	2K

**68 Hail events were reported in Johnson County, Texas and participating jurisdictions
between 01/01/2002 and 12/31/2012**

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
GRANDVIEW	6/12/2012	14:05	HAIL	0.88 in.	0	0	0	0
JOSHUA	6/6/2012	15:15	HAIL	1.00 in.	0	0	0	0
CLEBURNE	5/30/2012	6:00	HAIL	1.75 in.	0	0	12K	0
BURLESON	4/3/2012	12:00	HAIL	1.50 in.	0	0	15K	0
CLEBURNE	4/3/2012	13:15	HAIL	1.75 in.	0	0	850K	0
GRANDVIEW	4/3/2012	13:52	HAIL	0.75 in.	0	0	0	0
GODLEY	5/24/2011	21:12	HAIL	0.88 in.	0	0	0	0
KEENE	5/24/2011	21:40	HAIL	1.00 in.	0	0	0	0
CLEBURNE	5/24/2011	21:40	HAIL	1.50 in.	0	0	2K	0
BURLESON	5/1/2011	2:55	HAIL	1.00 in.	0	0	0	0
JOSHUA	5/1/2011	3:00	HAIL	1.00 in.	0	0	0	0
BURLESON	5/1/2011	22:58	HAIL	1.00 in.	0	0	0	0
GRANDVIEW	4/26/2011	14:08	HAIL	1.00 in.	0	0	0	0
BONO	4/26/2011	15:15	HAIL	1.75 in.	0	0	10K	0
ALVARADO HARDGRAVE A	4/26/2011	15:27	HAIL	1.00 in.	0	0	0	0
VENUS	4/26/2011	15:32	HAIL	0.88 in.	0	0	0	0
VENUS	4/26/2011	15:34	HAIL	1.00 in.	0	0	0	0
RIO VISTA	4/25/2011	14:40	HAIL	0.75 in.	0	0	0	0
GRANDVIEW	4/25/2011	15:48	HAIL	1.00 in.	0	0	0	0
GODLEY	4/19/2011	17:22	HAIL	1.75 in.	0	0	20K	0
BURLESON	4/19/2011	17:23	HAIL	1.00 in.	0	0	0	0
JOSHUA	4/19/2011	17:43	HAIL	1.75 in.	0	0	20K	0
CLEBURNE	4/19/2011	18:06	HAIL	2.75 in.	0	0	80K	0
PARKER	4/19/2011	18:28	HAIL	1.25 in.	0	0	0	0
PARKER	4/19/2011	18:30	HAIL	1.75 in.	0	0	20K	0
RIO VISTA	4/19/2011	18:40	HAIL	1.00 in.	0	0	0	0
VENUS	4/4/2011	3:33	HAIL	0.88 in.	0	0	0	0
VENUS	4/4/2011	3:49	HAIL	1.00 in.	0	0	0	0
BONO	3/10/2010	11:36	HAIL	0.75 in.	0	0	0	0
PARKER	3/10/2010	11:42	HAIL	0.75 in.	0	0	0	0
GODLEY	6/12/2009	19:08	HAIL	1.75 in.	0	0	5K	0
GODLEY	5/26/2009	19:11	HAIL	1.00 in.	0	0	0	0
ALVARADO	5/13/2008	12:35	HAIL	0.75 in.	0	0	0	0
LAKE PAT CLEBURNE	4/23/2008	19:43	HAIL	0.75 in.	0	0	0	0

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
BURLESON	4/17/2008	19:28	HAIL	1.25 in.	0	0	0	0
GRANDVIEW	4/4/2008	4:40	HAIL	0.88 in.	0	0	0	0
BURLESON	3/31/2008	14:26	HAIL	1.50 in.	0	0	0	0
CLEBURNE	10/14/2007	20:20	HAIL	1.75 in.	0	0	5K	0
JOSHUA	4/17/2007	17:50	HAIL	1.50 in.	0	0	5K	0
BURLESON	3/13/2007	16:00	HAIL	0.75 in.	0	0	0	0
JOSHUA	4/6/2006	15:22	HAIL	0.88 in.	0	0	0	0
GODLEY	4/25/2005	14:57	HAIL	1.00 in.	0	0	0	0
JOSHUA	4/25/2005	15:08	HAIL	0.75 in.	0	0	0	0
CLEBURNE	4/25/2005	15:16	HAIL	1.00 in.	0	0	0	0
KEENE	4/25/2005	15:20	HAIL	2.75 in.	0	0	25K	0
ALVARADO	4/25/2005	15:30	HAIL	1.00 in.	0	0	25K	0
VENUS	4/25/2005	15:40	HAIL	1.75 in.	0	0	5K	0
ALVARADO	4/25/2005	15:45	HAIL	1.00 in.	0	0	0	0
BURLESON	6/1/2004	20:40	HAIL	1.00 in.	0	0	0	0
BURLESON	6/1/2004	20:42	HAIL	1.00 in.	0	0	0	0
RIO VISTA	5/31/2004	17:28	HAIL	1.00 in.	0	0	0	0
CLEBURNE	8/11/2003	19:28	HAIL	2.75 in.	0	0	0	0
CLEBURNE	5/14/2003	23:25	HAIL	2.75 in.	0	0	0	0
CLEBURNE	5/1/2003	15:57	HAIL	1.00 in.	0	0	0	0
BONO	5/1/2003	16:44	HAIL	1.75 in.	0	0	0	0
CLEBURNE	4/23/2003	19:55	HAIL	1.75 in.	0	0	0	0
ALVARADO	4/23/2003	20:10	HAIL	1.75 in.	0	0	0	0
CLEBURNE	8/14/2002	15:25	HAIL	1.75 in.	0	0	0	0
JOSHUA	5/9/2002	22:28	HAIL	1.00 in.	0	0	0	0
JOSHUA	4/16/2002	16:00	HAIL	0.88 in.	0	0	0	0
CLEBURNE	4/16/2002	17:07	HAIL	1.00 in.	0	0	0	0
RIO VISTA	4/16/2002	17:10	HAIL	1.00 in.	0	0	0	0
ALVARADO	4/16/2002	17:15	HAIL	0.75 in.	0	0	0	0
ALVARADO	4/16/2002	18:07	HAIL	0.75 in.	0	0	0	0
CLEBURNE	4/7/2002	18:55	HAIL	0.75 in.	0	0	0	0
CLEBURNE	4/7/2002	18:58	HAIL	0.75 in.	0	0	0	0
CLEBURNE	3/30/2002	17:52	HAIL	1.00 in.	0	0	0	0
BURLESON	3/30/2002	18:09	HAIL	1.25 in.	0	0	0	0
TOTALS:					0	0	1.099M	0

94 High Wind events were reported in Johnson County, Texas and participating jurisdictions between 01/01/2002 and 12/31/2012

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
RETTA	8/12/2012	18:47	T-STORM WIND	55 kts. EG	0	0	10K	0
VENUS	8/12/2012	19:03	T-STORM WIND	55 kts. EG	0	0	5K	0
ALVARADO	8/12/2012	19:15	T-STORM WIND	52 kts. EG	0	0	10K	0
CLEBURNE	5/4/2012	19:28	T-STORM WIND	50 kts. MG	0	0	3K	0
CLEBURNE	5/4/2012	19:35	T-STORM WIND	52 kts. EG	0	0	5K	0
ALVARADO	5/4/2012	19:47	T-STORM WIND	52 kts. EG	0	0	5K	0
CLEBURNE	9/29/2011	21:15	T-STORM WIND	52 kts. EG	0	0	0	0
GRANDVIEW MCELROY AR	9/29/2011	21:25	T-STORM WIND	52 kts. EG	0	0	0	0
BURLESON	5/1/2011	2:55	T-STORM WIND	56 kts. EG	0	0	0	0
GODLEY	4/11/2011	0:00	T-STORM WIND	65 kts. EG	0	0	7K	0
WEATHERFORD JCT	4/11/2011	0:06	T-STORM WIND	75 kts. EG	0	0	35K	0
RIO VISTA	4/11/2011	0:12	T-STORM WIND	70 kts. EG	0	0	250K	0
CLEBURNE	4/11/2011	0:15	T-STORM WIND	75 kts. EG	0	0	10K	0
BURLESON	4/11/2011	0:23	T-STORM WIND	61 kts. MG	0	0	0	0
ALVARADO	4/11/2011	0:23	T-STORM WIND	70 kts. EG	0	0	300K	0
PARKER	4/11/2011	0:26	T-STORM WIND	58 kts. MG	0	0	0	0
VENUS	4/11/2011	0:30	T-STORM WIND	70 kts. EG	0	0	40K	0
GRANDVIEW	4/11/2011	0:30	T-STORM WIND	70 kts. EG	0	0	150K	0
VENUS	4/11/2011	0:30	T-STORM WIND	70 kts. EG	0	0	90K	0
VENUS	4/11/2011	0:32	T-STORM WIND	70 kts. EG	0	0	20K	0
VENUS	4/11/2011	0:35	T-STORM WIND	65 kts. EG	0	0	0	0
ALVARADO	4/11/2011	0:36	T-STORM WIND	71 kts. MG	0	0	0	0
LAKE PAT CLEBURNE	4/4/2011	4:15	T-STORM WIND	39 kts. EG	0	0	7K	0

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
VENUS	4/4/2011	5:05	T-STORM WIND	52 kts. EG	0	0	4K	0
BURLESON	5/30/2010	14:00	T-STORM WIND	55 kts. EG	0	0	10K	0
WEATHERFORD JCT	1/28/2010	15:18	T-STORM WIND	54 kts. MG	0	0	0	0
BURLESON	10/1/2009	16:50	T-STORM WIND	70 kts. EG	0	0	7K	0
GODLEY	9/21/2009	18:40	T-STORM WIND	83 kts. EG	0	0	800K	0
BURLESON	9/21/2009	18:59	T-STORM WIND	52 kts. EG	0	0	1K	0
WEATHERFORD JCT	9/21/2009	19:00	T-STORM WIND	52 kts. EG	0	0	0.2K	0
EGAN	9/21/2009	19:00	T-STORM WIND	52 kts. EG	0	0	0.5K	0
BURLESON	9/21/2009	19:10	T-STORM WIND	56 kts. EG	0	0	1K	0
MANSFIELD	9/21/2009	19:14	T-STORM WIND	58 kts. MG	0	0	0.5K	0
KEENE	9/21/2009	19:15	T-STORM WIND	56 kts. MG	0	0	0.5K	0
GRANDVIEW	9/21/2009	20:00	T-STORM WIND	52 kts. EG	0	0	5K	0
BURLESON	8/27/2009	18:50	T-STORM WIND	61 kts. EG	0	0	20K	0
ALVARADO	8/27/2009	19:21	T-STORM WIND	50 kts. EG	0	0	20K	0
ALVARADO	8/27/2009	19:21	T-STORM WIND	56 kts. EG	0	0	20K	0
BURLESON	8/21/2009	6:30	T-STORM WIND	61 kts. EG	0	0	15K	0
LILLIAN	7/31/2009	19:00	T-STORM WIND	56 kts. EG	0	0	25K	0
RIO VISTA	6/12/2009	19:55	T-STORM WIND	61 kts. EG	0	0	2K	0
GRANDVIEW	6/10/2009	18:25	T-STORM WIND	56 kts. EG	0	0	2K	0
CLEBURNE	5/26/2009	20:01	T-STORM WIND	52 kts. EG	0	0	3K	0
JOSHUA ARPT	5/26/2009	20:06	T-STORM WIND	61 kts. EG	0	0	10K	0
GRANDVIEW	5/26/2009	22:10	T-STORM WIND	52 kts. EG	0	0	2K	0
CLEBURNE	4/23/2008	19:40	T-STORM WIND	56 kts. EG	0	0	20K	0
MANSFIELD	4/23/2008	19:47	T-STORM WIND	50 kts. EG	0	0	1K	0
BONO	4/23/2008	19:57	T-STORM WIND	52 kts. EG	0	0	0	0
VENUS	4/23/2008	20:10	T-STORM WIND	61 kts. EG	0	0	0	0

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
CLEBURNE	4/17/2008	20:09	T-STORM WIND	52 kts. EG	0	0	0	0
CLEBURNE	4/10/2008	2:25	T-STORM WIND	56 kts. EG	0	0	120K	0
LILLIAN	4/10/2008	2:40	T-STORM WIND	74 kts. EG	0	1	30K	0
LAKE PAT CLEBURNE	7/8/2007	14:45	T-STORM WIND	50 kts. EG	0	0	0	0
BURLESON	5/30/2007	9:19	T-STORM WIND	50 kts. EG	0	0	0	0
GODLEY	5/2/2007	16:48	T-STORM WIND	70 kts. EG	0	0	0	0
ALVARADO	5/2/2007	17:00	T-STORM WIND	61 kts. EG	0	0	200K	0
CLEBURNE	5/2/2007	17:05	T-STORM WIND	70 kts. EG	0	0	5K	0
BURLESON	5/2/2007	17:15	T-STORM WIND	50 kts. EG	0	0	15K	0
CLEBURNE	5/2/2007	17:25	T-STORM WIND	52 kts. MG	0	0	0	0
GRANDVIEW	5/2/2007	17:30	T-STORM WIND	50 kts. EG	0	0	20K	0
ALVARADO	5/2/2007	17:35	T-STORM WIND	50 kts. EG	0	0	15K	0
GRANDVIEW	5/2/2007	17:40	T-STORM WIND	56 kts. EG	0	0	40K	0
GODLEY	4/24/2007	12:52	T-STORM WIND	50 kts. EG	0	0	10K	0
GRANDVIEW	4/24/2007	20:45	T-STORM WIND	50 kts. EG	0	0	1K	0
VENUS	4/17/2007	18:15	T-STORM WIND	52 kts. EG	0	0	0	0
JOHNSON (ZONE)	4/28/2006	23:00	HIGH WIND	50 kts. ES	0	0	0	0
KEENE	7/15/2005	18:30	T-STORM WIND	50 kts. ES	0	0	5K	0
CLEBURNE	7/14/2005	19:00	T-STORM WIND	50 kts. ES	0	0	20K	0
JOSHUA	7/1/2005	12:02	T-STORM WIND	50 kts. ES	0	0	10K	0
JOSHUA	12/6/2004	16:28	T-STORM WIND	52 kts. ES	0	0	5K	0
CLEBURNE	12/6/2004	16:38	T-STORM WIND	52 kts. ES	0	0	25K	0
GRANDVIEW	12/6/2004	16:55	T-STORM WIND	52 kts. ES	0	0	10K	0
BURLESON	6/1/2004	20:30	T-STORM WIND	56 kts. ES	0	0	0	0
BURLESON	6/1/2004	20:32	T-STORM WIND	61 kts. ES	0	0	100K	0
BURLESON	6/1/2004	20:40	T-STORM WIND	56 kts. ES	0	0	15K	0
LILLIAN	6/1/2004	20:45	T-STORM WIND	61 kts. ES	0	2	50K	0

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
CLEBURNE	6/1/2004	20:45	T-STORM WIND	61 kts. ES	0	0	60K	0
ALVARADO	6/1/2004	21:00	T-STORM WIND	61 kts. ES	0	0	50K	0
ALVARADO	5/27/2004	18:30	T-STORM WIND	65 kts. ES	0	1	80K	0
BURLESON	5/27/2004	18:38	T-STORM WIND	52 kts. ES	0	0	0K	0
CLEBURNE	3/4/2004	14:30	T-STORM WIND	60 kts. ES	0	0	15K	0
CLEBURNE	8/11/2003	19:28	T-STORM WIND	61 kts. ES	0	0	200K	0
CLEBURNE	8/9/2003	22:00	T-STORM WIND	52 kts. ES	0	0	2K	0
CLEBURNE	4/23/2003	19:52	T-STORM WIND	61 kts. MS	0	0	0	0
CLEBURNE	4/23/2003	19:52	T-STORM WIND	52 kts. ES	0	0	1K	0
KEENE	4/23/2003	20:00	T-STORM WIND	52 kts. MS	0	0	0	0
LILLIAN	4/23/2003	20:20	T-STORM WIND	96 kts. ES	0	0	4M	0
BURLESON	6/15/2002	23:40	T-STORM WIND	52 kts. E	0	0	0	0
ALVARADO	6/15/2002	23:50	T-STORM WIND	69 kts. E	0	0	0	0
BONO	5/27/2002	15:06	T-STORM WIND	N/A	0	0	8K	0
RIO VISTA	5/27/2002	16:40	T-STORM WIND	52 kts. E	0	0	0	0
LAKE PAT CLEBURNE	5/3/2002	5:00	T-STORM WIND	N/A	0	0	10K	0
GRANDVIEW	5/3/2002	5:14	T-STORM WIND	66 kts. E	0	0	25K	0
RIO VISTA	4/7/2002	18:55	T-STORM WIND	52 kts. E	0	0	0	0
TOTALS:					0	4	7.969M	0

11 Winter Storm events were reported in Johnson County, Texas and participating jurisdictions between 01/01/2002 and 12/31/2012

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
JOHNSON COUNTY	2/1/2011	4:00	ICE STORM	N/A	0	0	75K	0
JOHNSON COUNTY	2/11/2010	5:00	HEAVY SNOW	N/A	0	0	400K	0
JOHNSON COUNTY	1/7/2010	3:00	WINTER WEATHER	N/A	0	0	50K	0
JOHNSON COUNTY	12/24/2009	12:30	WINTER WEATHER	N/A	0	0	50K	0
JOHNSON COUNTY	1/27/2009	8:00	ICE STORM	N/A	0	0	60K	0
JOHNSON COUNTY	1/5/2009	8:00	WINTER WEATHER	N/A	0	0	7K	0
JOHNSON COUNTY	12/15/2008	18:00	WINTER WEATHER	N/A	0	0	0	0
JOHNSON COUNTY	1/14/2007	4:00	ICE STORM	N/A	0	0	40K	0
JOHNSON COUNTY	12/7/2005	9:00	WINTER STORM	N/A	0	0	0	0
JOHNSON COUNTY	2/24/2003	11:20	WINTER STORM	N/A	0	0	0	0
JOHNSON COUNTY	2/5/2002	10:00	WINTER STORM	N/A	0	0	0	0
TOTALS:					0	0	682K	0

2 Extreme Temperature events reported in Johnson County, Texas between and participating jurisdictions 01/01/2002 and 12/31/2012

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
JOHNSON COUNTY	8/1/2011	6:00	EXCESSIVE HEAT	N/A	0	0	0	0
JOHNSON COUNTY	7/1/2011	0:00	HEAT	N/A	1	0	0	0
TOTALS:					1	0	0	0

27 Drought events were reported in Johnson County, Texas and participating jurisdictions between 01/01/2002 and 12/31/2012

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
JOHNSON COUNTY	12/1/2012	0:00	DROUGHT	N/A	0	0	0	1K
JOHNSON COUNTY	11/13/2012	0:00	DROUGHT	N/A	0	0	0	2K
JOHNSON COUNTY	9/25/2012	0:00	DROUGHT	N/A	0	0	0	2K
JOHNSON COUNTY	1/1/2012	0:00	DROUGHT	N/A	0	0	0	4K
JOHNSON COUNTY	12/1/2011	0:00	DROUGHT	N/A	0	0	0	5K
JOHNSON COUNTY	11/1/2011	0:00	DROUGHT	N/A	0	0	0	5K
JOHNSON COUNTY	10/1/2011	0:00	DROUGHT	N/A	0	0	0	10K
JOHNSON COUNTY	9/1/2011	0:00	DROUGHT	N/A	0	0	0	30K
JOHNSON COUNTY	8/1/2011	0:00	DROUGHT	N/A	0	0	0	50K
JOHNSON COUNTY	7/1/2011	0:00	DROUGHT	N/A	0	0	0	17K
JOHNSON COUNTY	6/7/2011	0:00	DROUGHT	N/A	0	0	4K	0
JOHNSON COUNTY	4/17/2011	0:00	DROUGHT	N/A	0	0	0	15K
JOHNSON COUNTY	9/1/2006	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	8/1/2006	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	7/1/2006	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	6/6/2006	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	5/1/2006	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	4/1/2006	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	3/1/2006	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	2/1/2006	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	1/1/2006	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	12/1/2005	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	11/1/2005	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	10/1/2005	0:00	DROUGHT	N/A	0	0	0	0

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
JOHNSON COUNTY	9/1/2005	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	8/1/2005	0:00	DROUGHT	N/A	0	0	0	0
JOHNSON COUNTY	7/1/2005	0:00	DROUGHT	N/A	0	0	0	0
TOTALS:					0	0	4K	141K

6 Lightning events were reported in Johnson County, Texas and participating jurisdictions between 01/01/2002 and 12/31/2012

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
CLEBURNE	10/31/2005	11:30	Lightning		0	0	15.00K	0.00K
CLEBURNE	11/6/2006	1:00	Lightning		0	0	2.00K	0.00K
BURLESON	5/2/2007	17:45	Lightning		0	0	220.00K	0.00K
CLEBURNE	4/23/2008	18:12	Lightning		0	0	10.00K	0.00K
KEENE	9/3/2009	20:30	Lightning		0	0	20.00K	0.00K
GODLEY	9/21/2009	19:10	Lightning		0	0	100.00K	0.00K
Totals:					0	0	367.00K	0.00K

7 Wildfire events were reported in Johnson County, Texas and participating jurisdictions between 01/01/2002 and 12/31/2012

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
JOHNSON COUNTY	8/2/2012	13:30	WILDFIRE	N/A	0	0	15K	0
JOHNSON COUNTY	8/18/2011	13:30	WILDFIRE	N/A	0	0	0K	2.5K
JOHNSON COUNTY	8/18/2011	14:14	WILDFIRE	N/A	0	0	500K	0
JOHNSON COUNTY	7/13/2011	17:00	WILDFIRE	N/A	0	0	72K	0
JOHNSON COUNTY	7/3/2011	14:00	WILDFIRE	N/A	0	0	2K	0
JOHNSON COUNTY	1/1/2008	11:00	WILDFIRE	N/A	0	0	10K	0
JOHNSON COUNTY	11/27/2005	18:05	WILDFIRE	N/A	0	0	850K	0
TOTALS:					0	0	1.449M	2.5K

**25 Flood events reported in Johnson County, Texas and participating jurisdictions
between 01/01/2002 and 12/31/2012**

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
MANSFIELD	9/8/2010	9:00	FLASH FLOOD	N/A	1	0	400K	0
GODLEY	9/8/2010	13:00	FLOOD	N/A	0	0	0	0
LAKE PAT CLEBURNE	10/25/2009	21:57	FLASH FLOOD	N/A	0	0	1K	0
MANSFIELD	10/22/2009	7:00	FLOOD	N/A	0	0	5K	0
MANSFIELD	10/21/2009	22:15	FLASH FLOOD	N/A	0	0	2K	0
CUBA	9/21/2009	19:56	FLASH FLOOD	N/A	0	0	0	0
WEATHERFORD JCT	9/21/2009	20:15	FLASH FLOOD	N/A	0	0	0	0
MANSFIELD	9/13/2009	2:51	FLASH FLOOD	N/A	0	0	75K	0
BURLESON	4/23/2008	20:14	FLASH FLOOD	N/A	0	0	0	0
BURLESON	9/9/2007	15:00	FLASH FLOOD	N/A	0	0	0	0
VENUS	9/5/2007	4:45	FLASH FLOOD	N/A	0	0	50K	0
BURLESON	8/2/2007	5:00	FLASH FLOOD	N/A	0	0	1K	0
CLEBURNE	7/8/2007	16:00	FLASH FLOOD	N/A	0	0	0	0
GODLEY	5/29/2007	16:00	FLASH FLOOD	N/A	0	0	15K	0
GODLEY	5/29/2007	18:00	FLOOD	N/A	0	0	0	0
CLEBURNE	5/2/2007	18:00	FLASH FLOOD	N/A	0	0	15K	0
CLEBURNE	3/30/2007	19:30	FLASH FLOOD	N/A	0	0	15K	0
BURLESON	3/19/2006	13:30	FLASH FLOOD	N/A	0	0	0	0
COUNTYWIDE	3/19/2006	17:45	FLASH FLOOD	N/A	0	0	0	0
GRANDVIEW	8/19/2004	13:00	FLASH FLOOD	N/A	0	0	0	0
COUNTYWIDE	7/29/2004	2:30	FLASH FLOOD	N/A	0	0	100K	0
CLEBURNE	6/29/2004	19:30	FLASH FLOOD	N/A	0	0	0	0
BURLESON	6/9/2004	14:50	FLASH FLOOD	N/A	0	0	0	0
CLEBURNE	4/7/2002	18:55	FLASH FLOOD	N/A	0	0	0	0
CLEBURNE	3/19/2002	20:00	FLASH FLOOD	N/A	0	0	0	0
TOTALS:					1	0	679K	0

Occurrence Based on the previous events data, participating jurisdictions have analyzed the expected occurrence of the assessed hazards to be the following:

Highly Likely	Event probable in the next year
Likely	Event probable in the next 3 years
Occasional	Event possible in the next 5 years
Unlikely	Event possible in the next 10 years

	Unincorporated	Alvarado	Burleson	Cleburne
Dam Failure	Likely	Unlikely	Unlikely	Unlikely
Drought	Highly Likely	Likely	Likely	Likely
Extreme Heat	Highly Likely	Highly Likely	Highly Likely	Highly Likely
Flooding	Likely	Likely	Likely	Likely
Hail	Highly Likely	Likely	Highly Likely	Highly Likely
High Winds	Highly Likely	Likely	Highly Likely	Highly Likely
Lightning	Likely	Occasional	Occasional	Likely
Tornado	Highly Likely	Likely	Likely	Likely
Wildland Fire	Highly Likely	Occasional	Unlikely	Highly Likely
Winter Storms	Likely	Occasional	Likely	Highly Likely

	Godley	Joshua	Keene
Dam Failure	Unlikely	Unlikely	Unlikely
Drought	Likely	Likely	Likely
Extreme Heat	Highly Likely	Highly Likely	Highly Likely
Flooding	Occasional	Likely	Likely
Hail	Highly Likely	Highly Likely	Highly Likely
High Winds	Highly Likely	Highly Likely	Highly Likely
Lightning	Occasional	Occasional	Occasional
Tornado	Likely	Likely	Likely
Wildland Fire	Highly Likely	Highly Likely	Highly Likely
Winter Storms	Occasional	Likely	Highly Likely

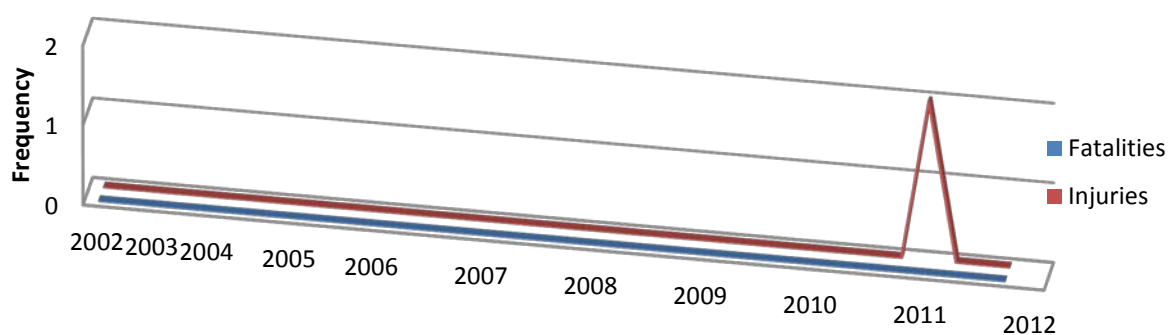
3.5 Impact

Impact has been assessed utilizing the previous events data, maps, assessments, and the following definitions:

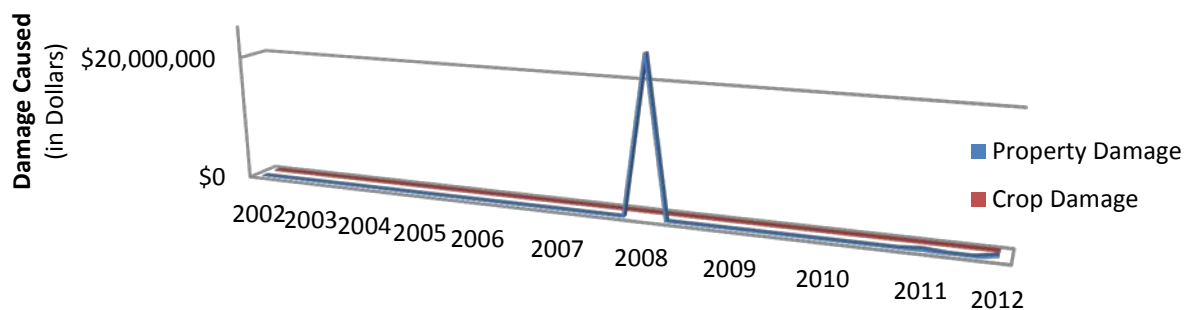
- Substantial (4): Multiple Fatalities
Complete shutdown of facilities for 30 days or more.
More than 50 percent of property destroyed or with major damage.
- Major (3): Injuries and/or illnesses result in permanent disability.
Complete shutdown of critical facilities for at least two weeks.
More than 25% of property destroyed or with major damage.
- Minor (2): Injuries or illnesses do not result in permanent disability.
Complete shutdown of critical facilities for more than a week.
More than 10% of property destroyed or with major damage.
- Limited(0/1): Injuries and illnesses are treatable with first aid.
Minor quality of life lost.
Shut down of critical facilities and services for 24 hours or less.
Less than 10% of property destroyed or with major damage.

Tornado According to the historical data recorded by the National Climatic Data Center, there have been 16 tornado events during 01/01/2002-12/31/2012 in Johnson County. These events have caused a recorded total of 2 injuries, \$25,975,000 in property damage, and \$2,000 in crop damage. Using these historical values over a time span of 11 years, the average per year is 1.45 events, .18 injuries, \$2,361,363 in property damage, and \$182 in crop damage.

Tornado Impact

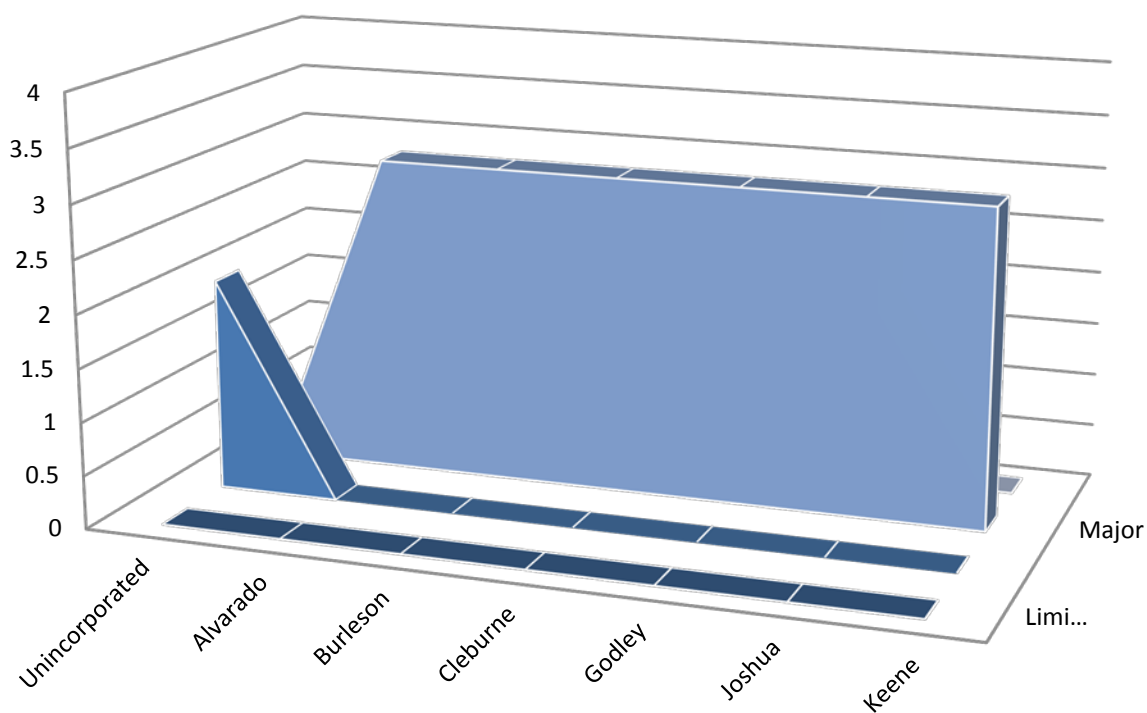


Tornado Impact



Utilizing the provided definitions, as well as land use maps, the participating jurisdictions have assessed the impact of tornado events to be as follows:

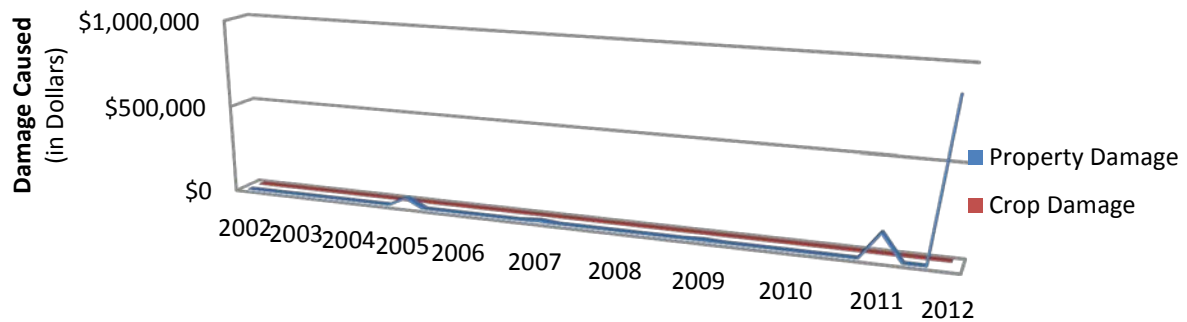
Tornado Impact



	Unincorporated	Alvarado	Burleson	Cleburne	Godley	Joshua	Keene
■ Limited							
■ Minor	2						
■ Major		3	3	3	3	3	3
■ Substantial							

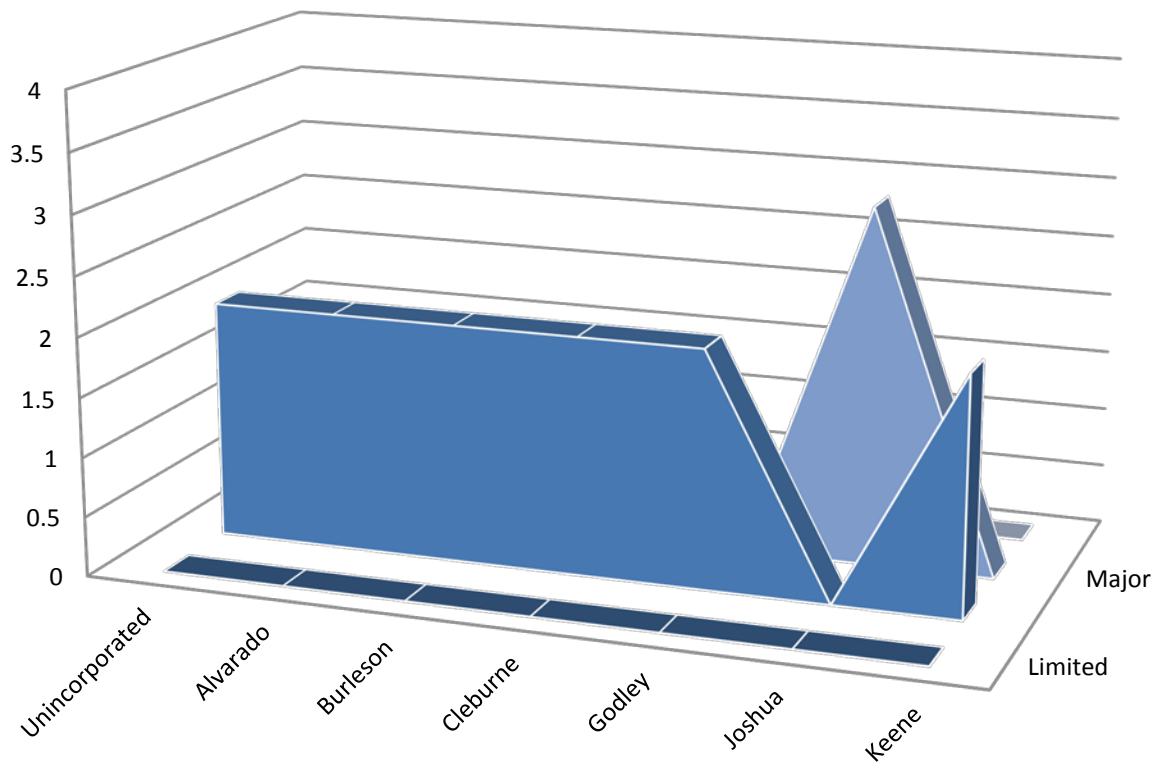
Hail According to historical data recorded by the National Climatic Data Center, there have been 68 hail events during 01/01/2002-12/31/2012 in Johnson County. These events have caused a recorded total of \$1,099,000 in property damage. Using these historical values over the time span of 11 years, the average per year is 6.18 events and \$99,909 in property damage. (According to the National Climatic Data Center there have been no recorded injuries or fatalities due to hail events.)

Hail Impact



Utilizing the provided definitions, as well as land use maps, the participating jurisdictions have assessed the impact of hail events to be as follows:

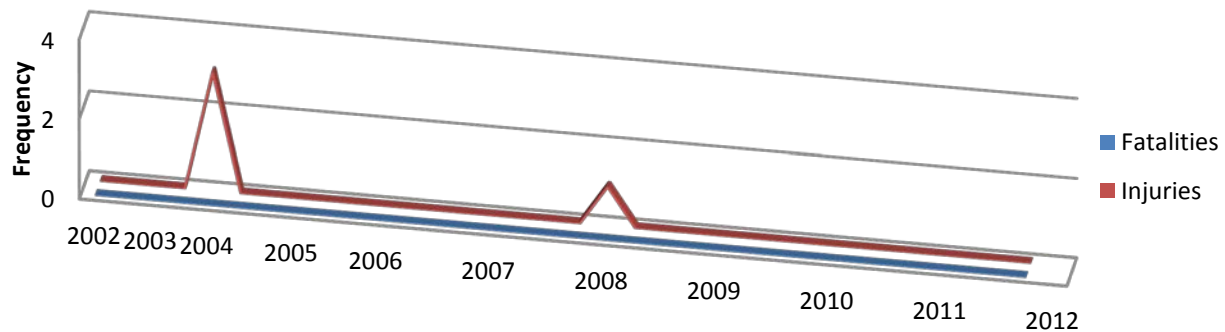
Hail Impact



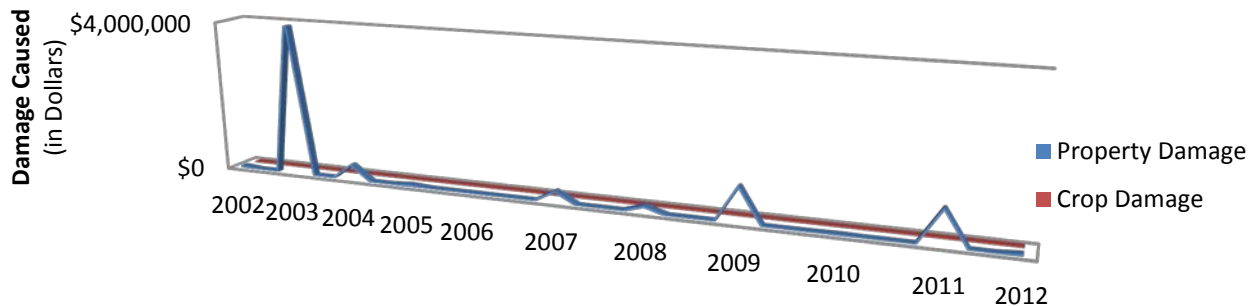
	Unincorporated	Alvarado	Burleson	Cleburne	Godley	Joshua	Keene
■ Limited							
■ Minor	2	2	2	2	2		2
■ Major						3	
■ Substantial							

High Wind According to historical data recorded by the National Climatic Data Center, there have been 94 high-t-storm wind and lightning events during 01/01/2002-12/31/2012. These events have caused a recorded total of 4 injuries, and \$7,064,000 in property damage. Using the historical values over the time span of 11 years, the average per year is 8.55 events, .36 injuries and \$642,181 in property damage.

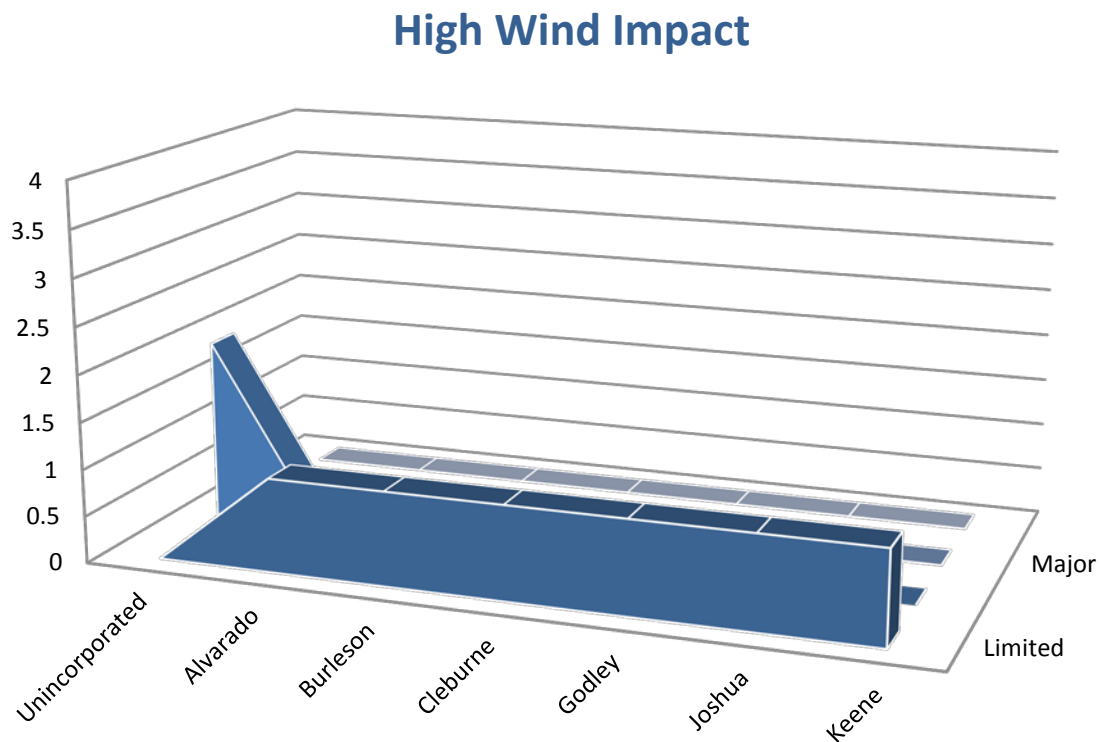
High Wind Impact



High Wind Impact



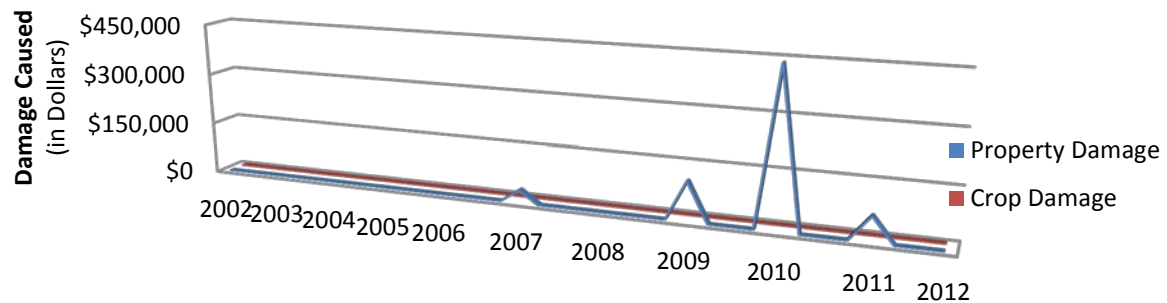
Utilizing the provided definitions, as well as land use maps, the participating jurisdictions have assessed the impact of high wind events to be as follows:



	Unincorporated	Alvarado	Burleson	Cleburne	Godley	Joshua	Keene
■ Limited		1	1	1	1	1	1
■ Minor	2						
■ Major							
■ Substantial							

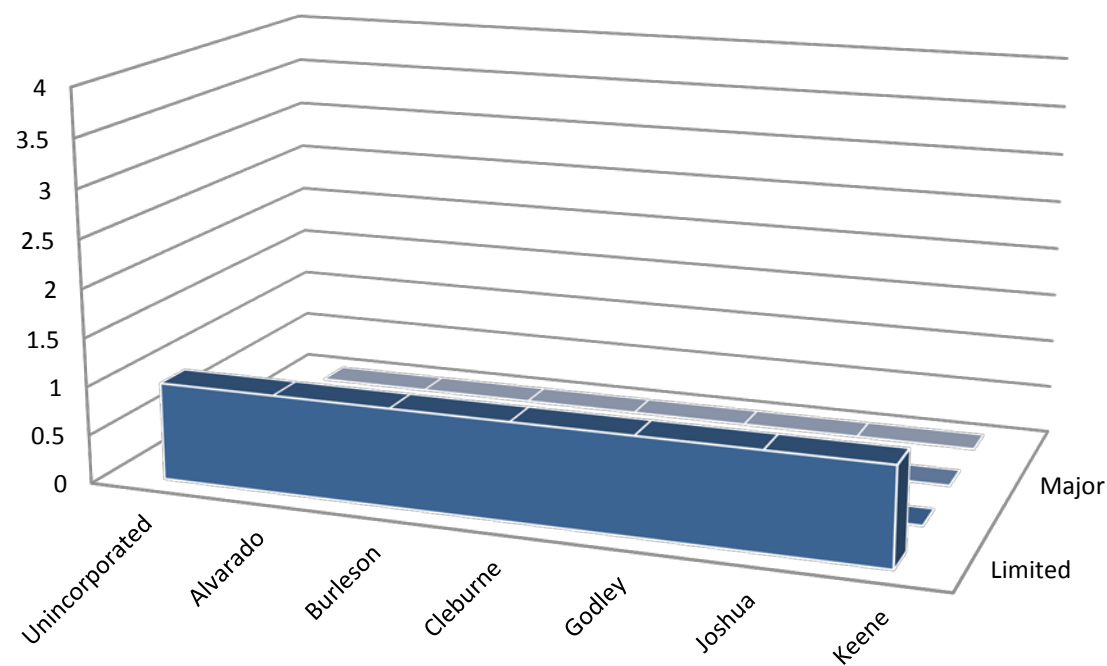
Winter Storm According to historical data recorded by the National Climatic Data Center there have been 11 winter storm events during 01/01/2002-12/31/2012 in Johnson County. These events have caused a recorded total of \$682,000 in property damage. Using these historical values over the time span of 11 years, the average per year is 1 event and \$62,000 in property damage. (According to the National Climatic Data Center there have been no recorded injuries or fatalities due to winter storm events.)

Winter Storm Impact



Utilizing the provided definitions, as well as land use maps, the participating jurisdictions have assessed the impact of winter storm events to be as follows:

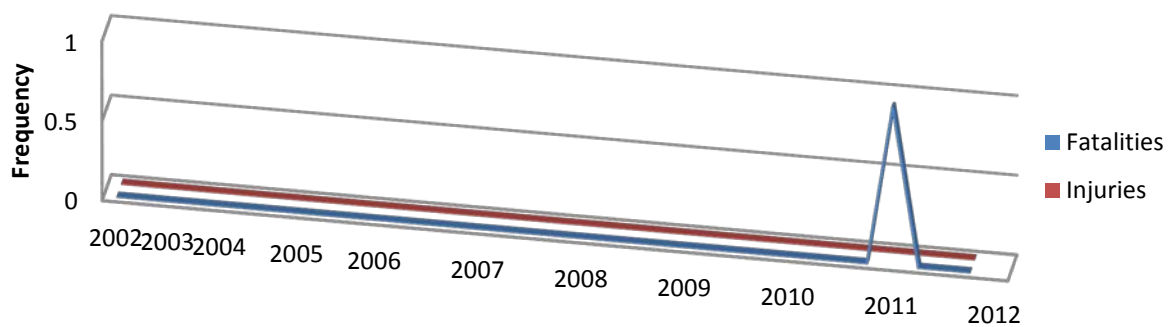
Winter Storm Impact



	Unincorporated	Alvarado	Burleson	Cleburne	Godley	Joshua	Keene
■ Limited	1	1	1	1	1	1	1
■ Minor							
■ Major							
■ Substantial							

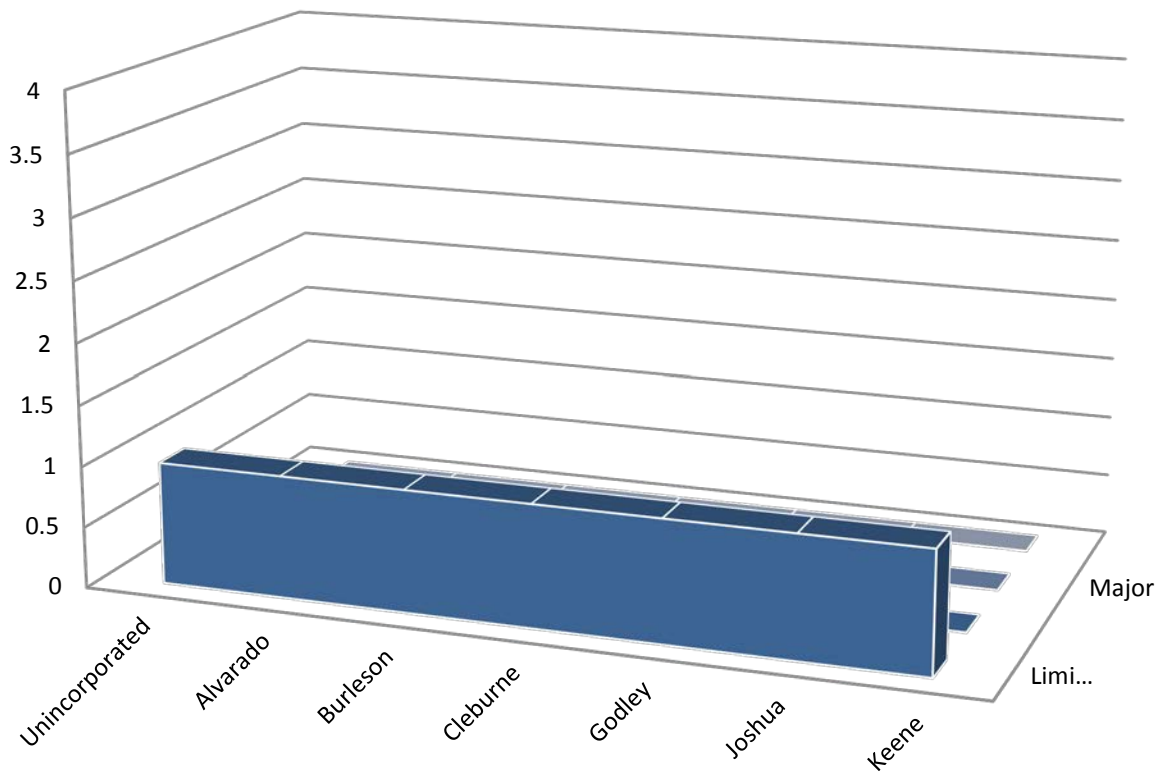
Extreme Heat According to this historical data recorded by the National Climatic Data Center, there have been 2 extreme heat events during 01/01/2002-12/31/2012 in Johnson County. These events caused a recorded total of one fatality. Using these historical values over the time span of 11 years, the average per year .18 events and .09 fatalities. (According to the National Climatic Data Center there have been no recorded property damage or crop damage due to extreme heat events.)

Extreme Heat Impact



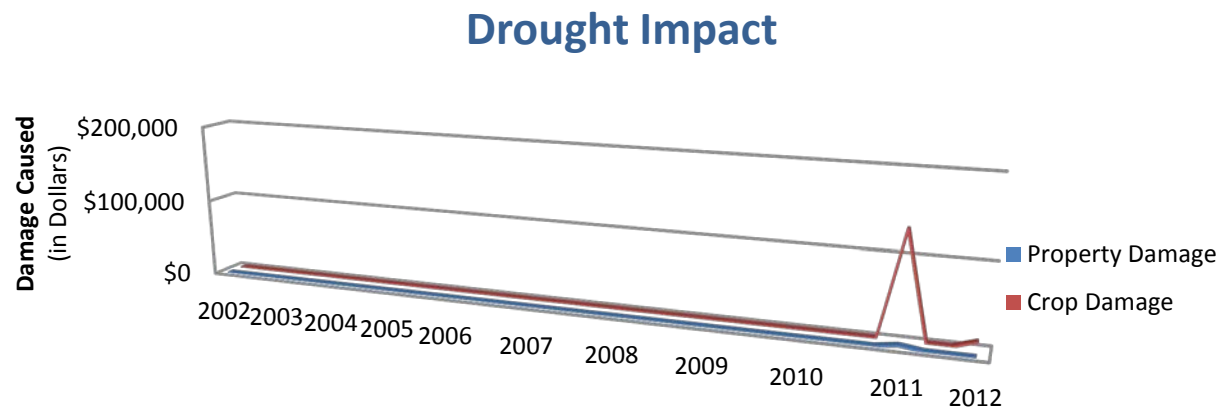
Utilizing the provided definitions, as well as land use maps, the participating jurisdictions have assessed the impact of extreme heat events to be as follows:

Extreme Heat Impact



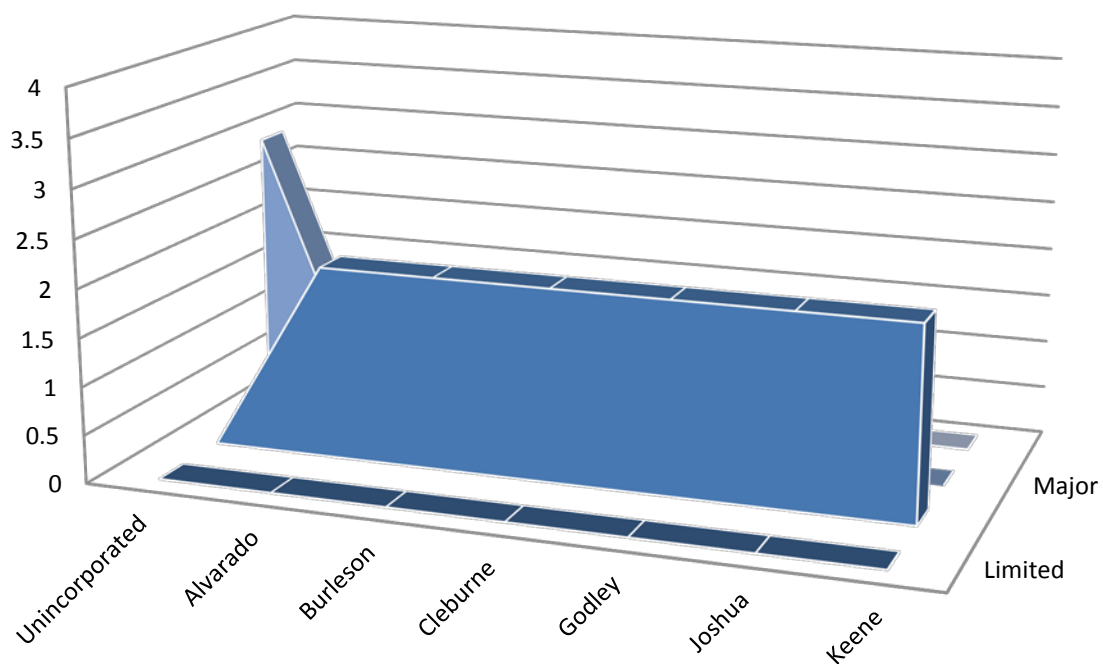
	Unincorporated	Alvarado	Burleson	Cleburne	Godley	Joshua	Keene
■ Limited	1	1	1	1	1	1	1
■ Minor							
■ Major							
■ Substantial							

Drought According to the historical data recorded by the National Climatic Data Center, there have been 27 drought events recorded during 01/01/2002-12/31/2012. These events have caused a recorded total of \$4,000 in property damage and \$141,000 in crop damage. Using these historical values over the time span of 11 years, the average per year is 2.45 events, \$363 in property damage, and \$12,818 in crop damage. (According to the National Climatic Data Center, there have been no recorded injuries or fatalities or due to drought events.)



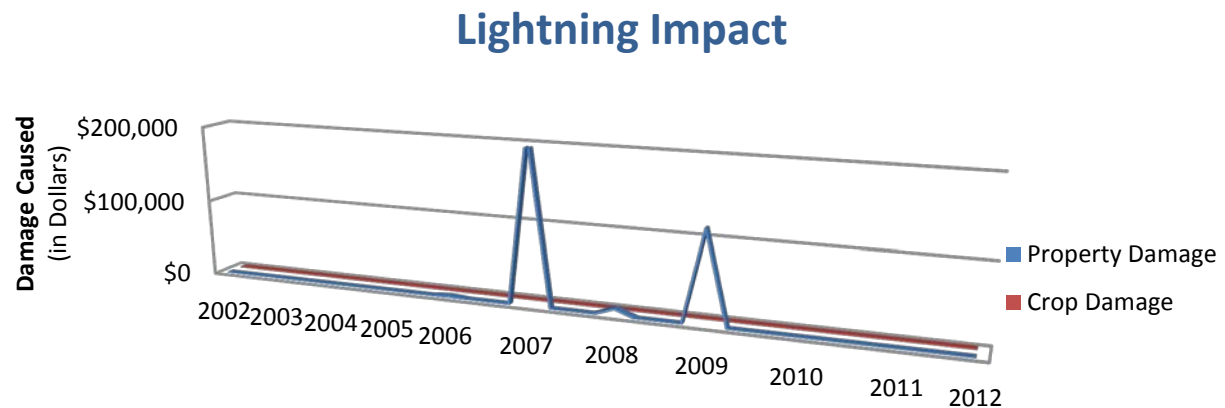
Utilizing the provided definitions, as well as land use maps, the participating jurisdictions have assessed the impact of drought events to be as follows:

Drought Impact



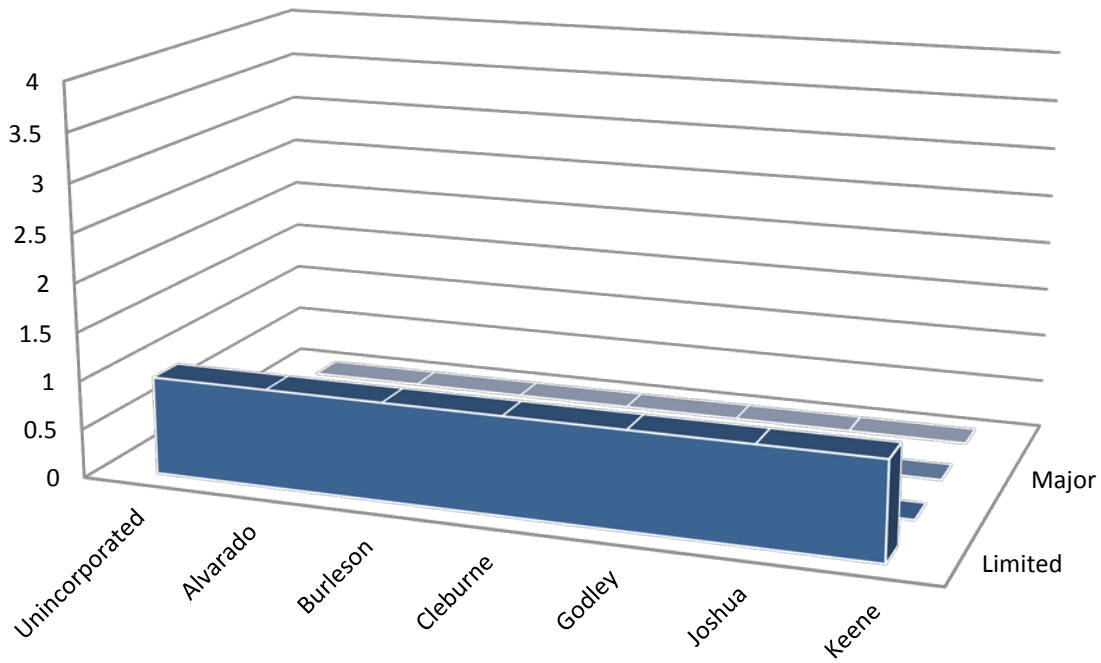
	Unincorporated	Alvarado	Burleson	Cleburne	Godley	Joshua	Keene
■ Limited							
■ Minor		2	2	2	2	2	2
■ Major	3						
■ Substantial							

Lightning According to the historical data recorded by the National Climatic Data Center, there have been 6 lightning events recorded during 01/01/2002-12/31/2012. These events have caused a recorded total of \$367,000 in property damage and \$0 in crop damage. Using these historical values over the time span of 11 years, the average per year is 0.55 events, \$33,363.63 in property damage, and \$0 in crop damage. (According to the National Climatic Data Center, there have been no recorded injuries or fatalities or due to drought events.)



Utilizing the provided definitions, as well as land use maps, the participating jurisdictions have assessed the impact of lightning events to be as follows:

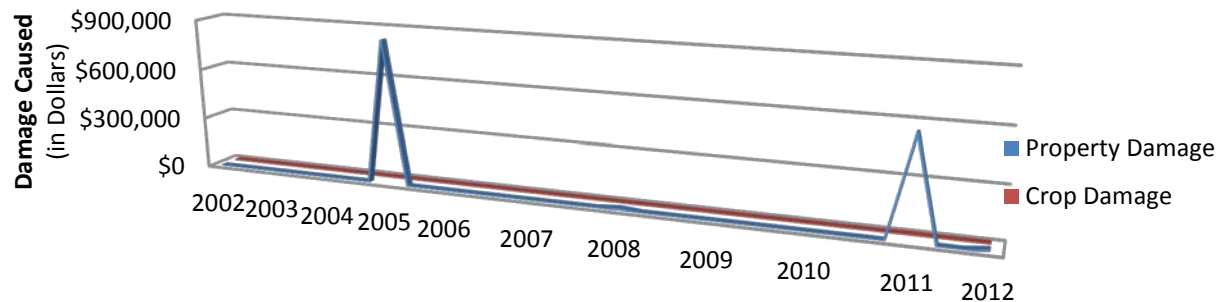
Lightning Impact



	Unincorporated	Alvarado	Burleson	Cleburne	Godley	Joshua	Keene
■ Limited	1	1	1	1	1	1	1
■ Minor							
■ Major							
■ Substantial							

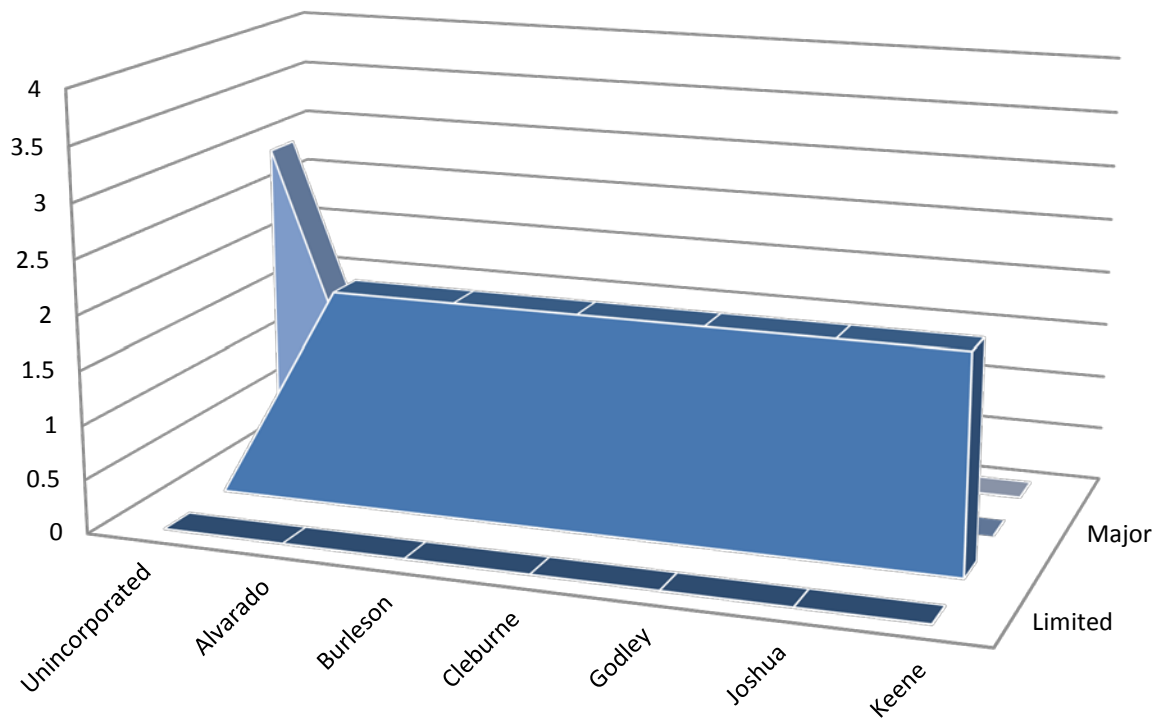
Wildland Fire According to historical data recorded by the National Climatic Data Center, there have been 7 wildland fire events during 01/01/2002-12/31/2012 in Johnson County. These events have caused a recorded total of \$1,449,000 in property damage and \$2,500 in crop damage. Using these historical values over the time span of 11 years, the average per year is .64 events, \$131,727 in property damage, and \$227 in crop damage. (According to the National Climatic Data Center, there have been no recorded injuries or fatalities due to wildland fire events.)

Wildland Fire Impact



Utilizing the provided definitions, as well as land use maps, the participating jurisdictions have assessed the impact of wildland fire events to be as follows:

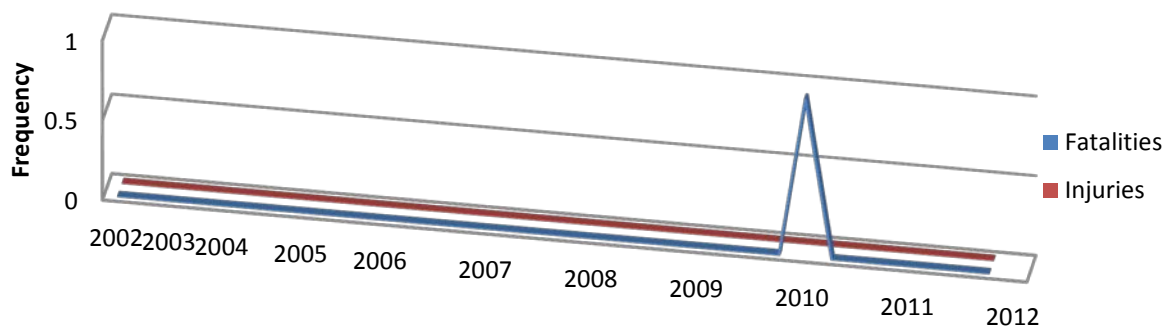
Wildland Fire Impact



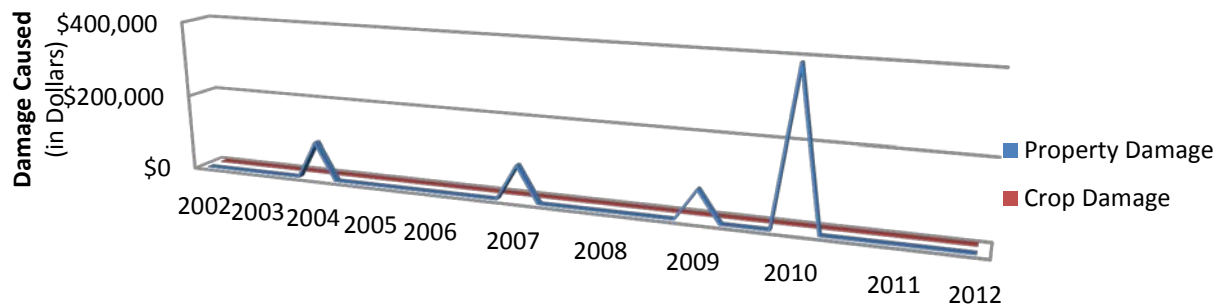
	Unincorporated	Alvarado	Burleson	Cleburne	Godley	Joshua	Keene
■ Limited							
■ Minor		2	2	2	2	2	2
■ Major	3						
■ Substantial							

Flooding According to the historical data recorded by the National Climatic Data Center there have been 25 flash flood and flood events during 01/01/2002-12/31/2012. These events have caused a recorded total of 1 fatality and \$679,000 in property damage. Using these historical values over the time span of 11 years, the average per year is 2.27 events, .09 fatalities, and \$61,727 in property damage.

Flooding Impact

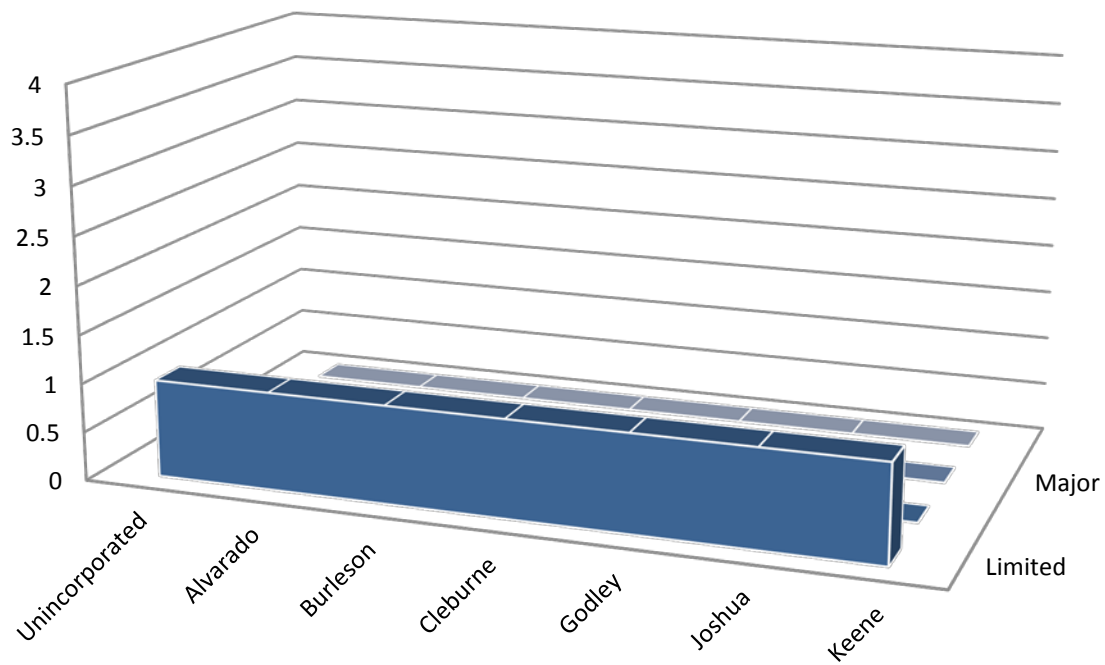


Flooding Impact



Utilizing the provided definitions, as well as land use maps, the participating jurisdictions have assessed the impact of flooding events to be as follows:

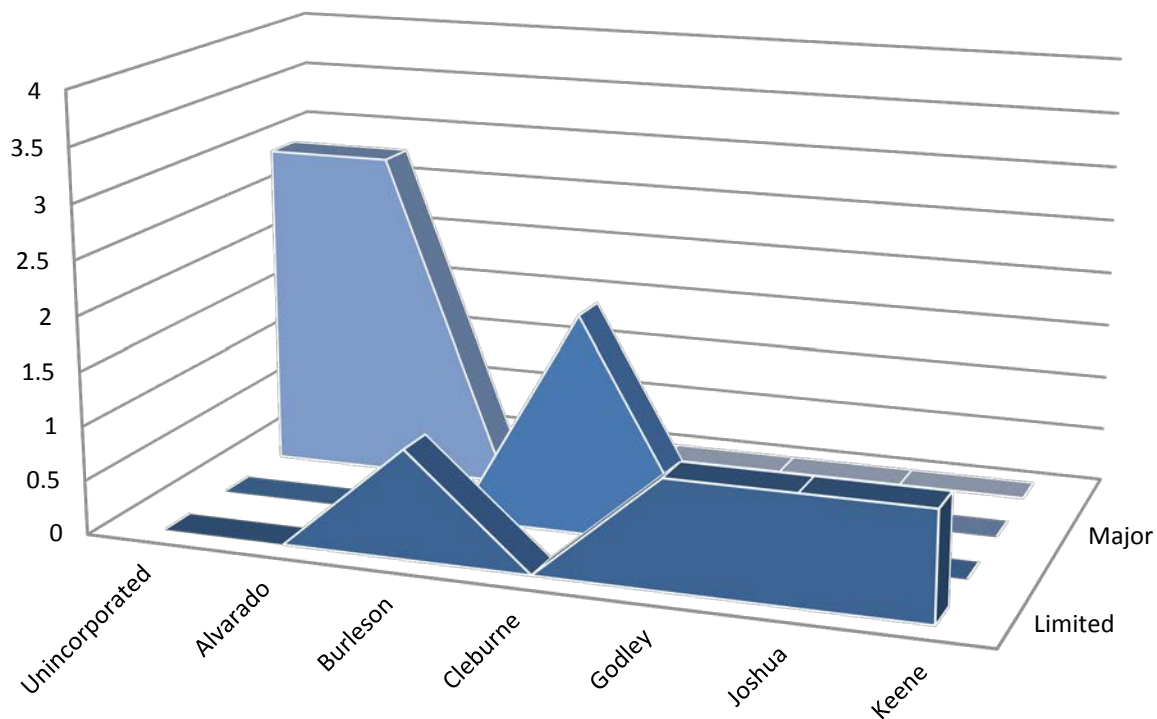
Flooding Impact



	Unincorporated	Alvarado	Burleson	Cleburne	Godley	Joshua	Keene
■ Limited	1	1	1	1	1	1	1
■ Minor							
■ Major							
■ Substantial							

Dam Failure There is no historical data on dam failure in Johnson County, or in the state of Texas. However, there are 4 “high hazard” dams in the participating jurisdictions or at the responsibility of participating jurisdictions. Dams are located near residential areas and unincorporated areas. It is expected that a dam failure would cause a significant cascading effect of flooding through inundation zones, water supply disruption, and critical infrastructure failure.

Dam Failure Impact



	Unincorporated	Alvarado	Burleson	Cleburne	Godley	Joshua	Keene
■ Limited			1		1	1	1
■ Minor				2			
■ Major	3	3					
■ Substantial							

3.6 Structures, Losses, and Trends

In order to better understand and mitigate vulnerabilities to natural hazards an overview assessment of the types of structures in the planning areas has been conducted. This overview shows those structures which are either in a greater vulnerability area (i.e. 100 yr flood zone) or those who are traditionally known to not withstand natural hazards, which incorporate severe weather elements such as strong wind, hail, severe rains, and lightning. This section details vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the planning area, and estimates the potential dollar losses to those vulnerable structures.

Planning Methodology for Structure Vulnerability Assessment. To determine structure vulnerability, in terms of types and numbers, parcel data was used from the Johnson County Appraisal District to determine the total land and structure values. This was then broken out into the categories and sub-categories of residential, commercial and utilities, and infrastructure to differentiate between the types of structures and the different vulnerabilities each type presented. The parcel data was mapped using GIS layers and overlays consisting of FEMA DFIRMS, critical infrastructure, and land use maps to provide information regarding targeted hazard vulnerabilities.

For planning purposes, the parcel data used represents the average number of specific types of structures within those parcels. The value for each of the types of structures represented within the specific parcel is aggregated structure value for the specific structure type based on Appraisal District Data. Parcels which intersect the floodplain are considered to have a vulnerability assessment of impacted, regardless of whether the entire parcel was encompassed by the floodplain.

The chart below shows the total number of parcels and their values for each jurisdiction, as well as the overall totals.

	Total Parcels	Est. Value
County	38,188	\$1,025,939,409
Alvarado	1,903	\$52,524,272
Burleson	12,162	\$377,674,445
Cleburne	493	\$11,028,836
Godley	2,585	\$75,980,393
Joshua	2,094	\$48,953,218
Keene	12,846	\$451,666,620
Total	70,271	\$2,043,767,193

Hazard Specific Structure Vulnerability The hazards identified within the Johnson County Hazard Mitigation Action Plan affect structures to different extents based on previous occurrence and event data and forecast for the future, as well as extent and impact forecasted for future events. Hazards that affect the entire planning area and those structures throughout the planning area are detailed below.

As in section 3.1 hazards will continue to be divided by those which have the potential to affect the entire planning area equally and those which occur in geographical specific locations.

The following hazards have the potential to affect the entire planning area equally thus will rely on the structure value chart from page 3-111. Full descriptions of the scales can be seen on pages 3-85 to 3-86. The rankings on this page are the overall average for the County as a whole.

Tornado Based on the historical data for the 16 tornado events in Johnson County that caused a total of \$25,975,000 in structure damage and \$2,000 in crop damage; forecasts, based on previous event occurrences, ranging from likely to highly likely; and the extent of a tornado hazard in the planning area being assessed as overall medium, the estimated structure damage within the planning area is an average per year of \$2,361,363, affecting all structure types. Residential structures, especially manufactured and single family homes, are particularly vulnerable to the effects of tornadoes.

Medium

- EF1-EF2
- There will be a range of moderate to considerable damage. Roofs will be severely stripped, manufactured homes overturned, and cars lifted off of the ground

Hail Based on the previous 68 recorded hail events in Johnson County that caused a total of \$1,099,000 in structure damage; forecasts, based on previous event occurrences, ranging from likely to highly likely; and the extent of hail in the planning area being assessed overall as medium, the estimated structure damage within the planning area is an average per year is \$99,909, affecting all structure types, especially manufactured and single family homes.

Medium

- 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

High Winds Based on the historical data for the 94 wind events in Johnson County that caused a total of \$7,064,000 in structure damage; forecasts, based on previous event occurrences, ranging from likely to highly likely; and the extent of high winds in the planning area being assessed as overall medium, the estimated structure damage within the planning area is an average per year of \$642,181, affecting all structure types. Residential structures, especially manufactured and single family homes, are particularly vulnerable to the effects of high wind.

Medium

- Force: 4-6
- Knots: 11-27
- Dust, leaves, and loose paper lifted. Small to Large branches moving. Branches have the potential to damage structures.

Winter Storm Based on the historical data for the 11 winter storm events in Johnson County that caused a total \$682,000 in structure and property damage; forecasts, based on previous event occurrences, rated as occasional; the extent of winter storms hazard in the planning area being assessed as low, the estimated property damage per year being \$62,000, affecting all structure types. Residential structures, especially manufactured and single-family homes, are particularly vulnerable to winter storms. Due to the rarity of winter storm events, roughly one per year, many homeowners do not have sufficient tree limb maintenance plans in place.

Low

- Temperatures 40F- 35F
- Wind Chill 36F-17F
- Vulnerable populations and agriculture at risk to lower temperatures and wind chill.

Extreme Heat Extreme heat would have the same effect as drought. However, if both were occur in conjunction, the effect would be magnified and would cause greater damage.

Medium

- Heat Index 105F-129F
- Cascading effect to technological hazards such as power outtages, road hazards, and potential train derailments

Drought Based on the historical data of the 27 drought events in Johnson County that caused a total of \$141,000 in crop damage; forecasts, based on previous event occurrences, ranging from likely to highly likely; the extent of drought has been rated overall as medium. The structure types most vulnerable to drought are infrastructure and all types of buildings (commercial, residential, and utility). Based on the assessment, the next drought event is projected to occur in the next 1-3 years.

Medium

- PDSI 0.49 to -2.99
- Near normal conditions to moderate drought

Lightning Based on the historical data of the 6 lightning events in Johnson County that caused a total of \$367,000 in property damage; forecasts, based on previous event occurrences, ranging from occasional to likely; the extent of lightning has been rated overall as low. The structure types most vulnerable to lightning are infrastructure and all types of buildings (commercial, residential, and utilities). Based on the assessment, the next lightning event is projected to occur in the three to five years.

Low

- 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.

The following hazards are considered to be geographically defined. These hazards only affect certain areas within the planning area and those structures in that geographically defined area are detailed below. There are three hazards which are evaluated as geographically specific. Wildland fire, dam failure, and flooding. For wildland fire and dam failure the following charts may be used to estimate structure values which could be vulnerable. Further discussion is provided in the following hazard descriptions.

Wildland Fire Based on the historical data for the 7 wildland fire events in Johnson County that have caused a total of \$1,449,000 in structure damage; forecasts, based on previous event occurrences, ranging from unlikely to highly likely; and that the extent of a wildland fire event in the planning area has been assessed as overall high, the estimated damage to structures within the planning area is minimal. Based on the Fire Danger chart description of High, or Code Red/Class 3, potential fires are likely to become serious and control is difficult. This is especially true if the fire is started in a wildland or open space area. Wildland fire danger becomes a higher vulnerability when combined with the high wind hazard and would be much more likely to move into areas where it would affect residential structures, especially manufactured and single family homes if not prevented or stopped in time. The estimated structure damage within the planning area is an average per year of \$131,727, affecting all structure types.

High

- Class 3-Class 5
- Color Codes: Yellow, Orange, and Red
- Fires will start easily, spread at a rapid rate, and can result in extensive property damage

Dam Failure Based on the fact that there is no historical data in Johnson County of a dam failure or in the State of Texas, the future occurrence prediction is unlikely. However, there are 4 identified high hazard dams in participating jurisdictions or at the responsibility of the participating jurisdictions. Dams are located within residential areas and unincorporated areas. It is expected that a significant dam failure would cause a cascading effect of flooding through inundation zones, water supply disruption, and critical infrastructures. The overall anticipated average for extent is low meaning that less than 20% of the structures are in the inundation zone. Thus the structures have been identified in values of 5%, 10%, and 15% for planning purposes.

Low

- Less than 20% of city structures are in the inundation zone.
- Less than 20% of the city's critical infrastructure in the inundation zone

Flooding Based on the historical data for the 25 flood events in Johnson County that caused a total of \$679,000 in structure damage; forecasts, based on previous event occurrences, ranging from occasional to likely; and the extent of flooding in the planning area has been assessed as overall medium, the estimated structure damage within the planning area is an average per year of \$61,727, affecting all structure types.

Medium

- 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.

The following charts are an estimate based off the 2012 Johnson County Appraisal District parcel data depicting the types of structures and their costs which are within the 100 year and 500 year zones.

Single Family Homes This section details vulnerability in terms of types and numbers located in the planning area, and estimates the potential dollar losses to those vulnerable structures within each jurisdiction of the Johnson County HazMAP

Johnson County Flood Vulnerability: Single Family Homes

	Single Family Homes	Est. Value
County	1,638	\$263,463,938
Alvarado	39	\$1,383,414
Burleson	429	\$55,072,174
Cleburne	771	\$66,893,143
Godley	39	\$1,048,954
Joshua	143	\$18,820,354
Keene	35	\$3,431,923
Total	3,094	\$410,113,900

Manufactured Homes This section details vulnerability in terms of the types and numbers located in the planning area, and estimates the potential dollar losses to those vulnerable structures within each jurisdiction of the Johnson County HazMAP.

Johnson County Flood Vulnerability: Manufactured Homes

	Manufactured Homes	Est. Value
County	874	\$58,283,043
Alvarado	7	\$206,637
Burleson	26	\$1,836,875
Cleburne	13	\$659,572
Godley	6	\$77,375
Joshua	18	\$1,004,028
Keene	6	\$681,266
Total	950	\$62,748,796

Multi-Family Homes This section details vulnerability in terms of the types and numbers located in the planning area, and estimates the potential dollar losses to those vulnerable structures within each jurisdiction of the Johnson County HazMAP

Johnson County Flood Vulnerability: Multi-Family Homes		
	Multi-Family Homes	Est. Value
County	7	\$925,142
Alvarado	1	\$73,181
Burleson	24	\$8,797,792
Cleburne	37	\$12,576,435
Godley	3	\$850,758
Joshua	0	\$0
Keene	17	\$2,559,962
Total	89	\$25,783,270

Commercial and Utilities Facilities This section details vulnerability in terms of the types and numbers located in the planning area, and estimates the potential dollar losses to those vulnerable structures within each jurisdiction of the Johnson County HazMAP

Johnson County Flood Vulnerability: Commercial & Utilities Facilities		
	Commercial & Utilities Facilities	Est. Value
County	151	\$89,928,039
Alvarado	36	\$2,378,071
Burleson	175	\$279,240,136
Cleburne	305	\$130,311,891
Godley	20	\$1,455,050
Joshua	29	\$7,235,612
Keene	31	\$20,010,423
Total	747	\$530,559,222

Development Trends Map Series H provides a detailed overview of the locations of critical infrastructure, residential, commercial, and undeveloped land as well as fire stations, police stations, emergency operations centers, and hospitals. The Johnson County Hazard Mitigation Action Plan has city zoning ordinances which establish a land development trend of building outside of the flood plains. Mitigation measures and the Johnson County Hazard Mitigation Action Plan will continue to be used and assessed in future city plan development.

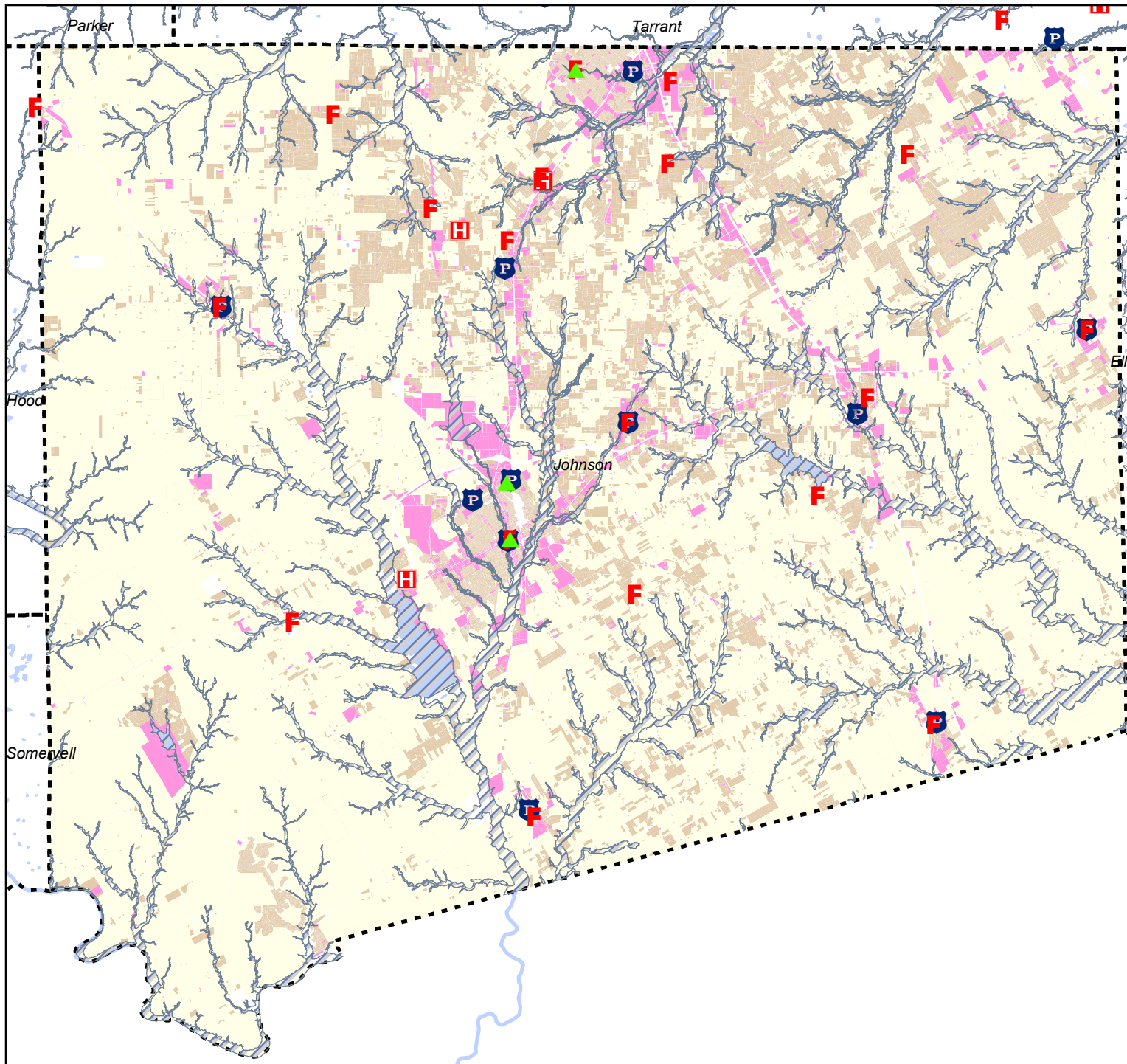
Map Series H

Development Trends

Map H.1 Johnson County
Map H.2 City of Alvarado
Map H.3 City of Burleson
Map H.4 City of Cleburne
Map H.5 City of Godley
Map H.6 City of Joshua
Map H.7 City of Keene



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Map H.1

Johnson County

- Emergency Management
- Fire
- Police
- Hospital

FEMA DFIRM FLOOD ZONES 2012

ZONE

- 100 Year
- 100 Year (Detail)
- 500 Year
- Undeveloped
- Commercial/Utility
- Residential

0 1 2 4 Miles



Emergency Preparedness







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Map H.2

City of Alvarado

-  Emergency Management
-  Fire
-  Police
-  Hospital

FEMA DFIRM FLOOD ZONES 2012

ZONE

-  100 Year
-  100 Year (Detail)
-  500 Year
-  Undeveloped
-  Commercial/Utility
-  Residential

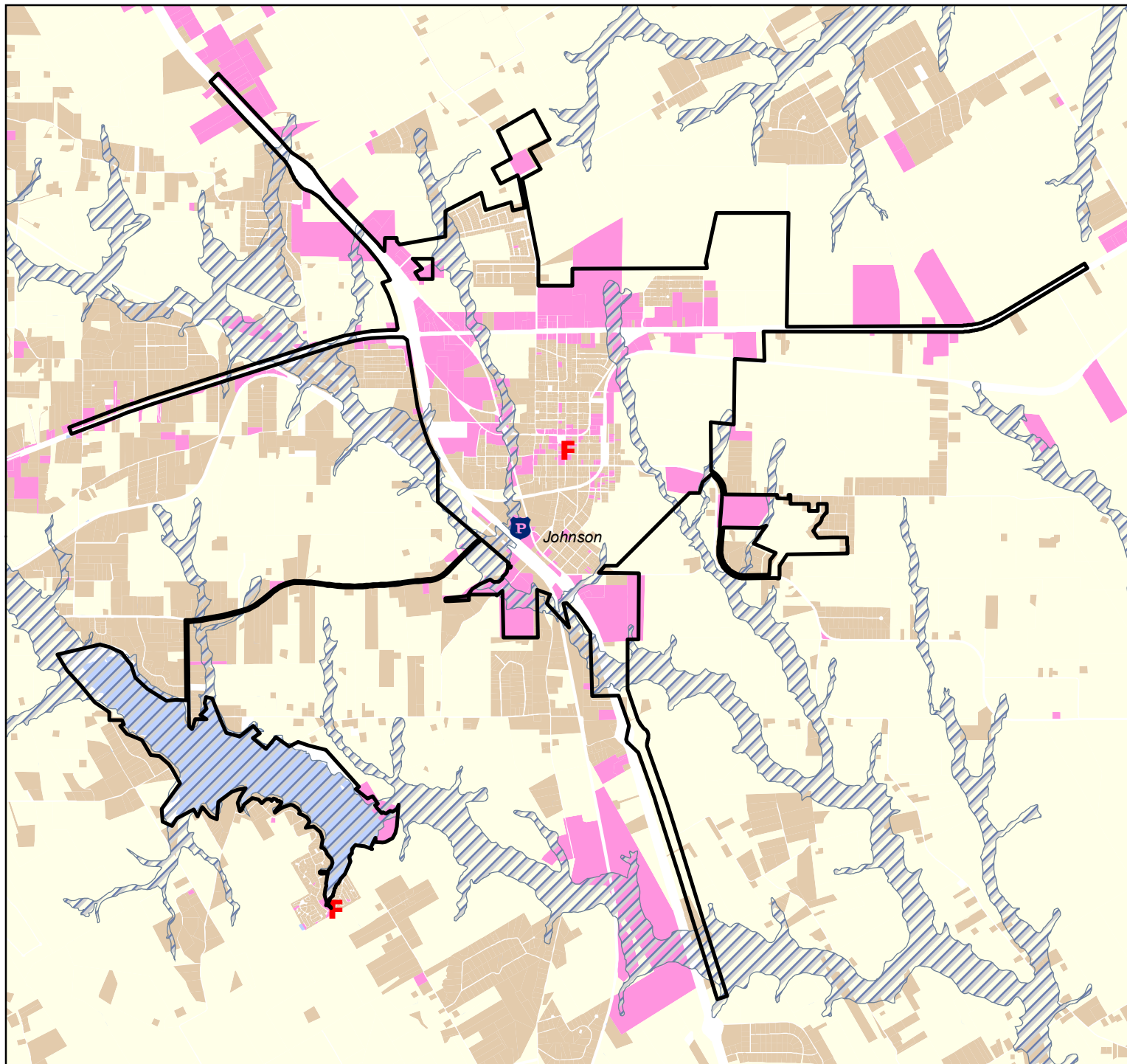
0 0.25 0.5 1 Miles



Emergency Preparedness

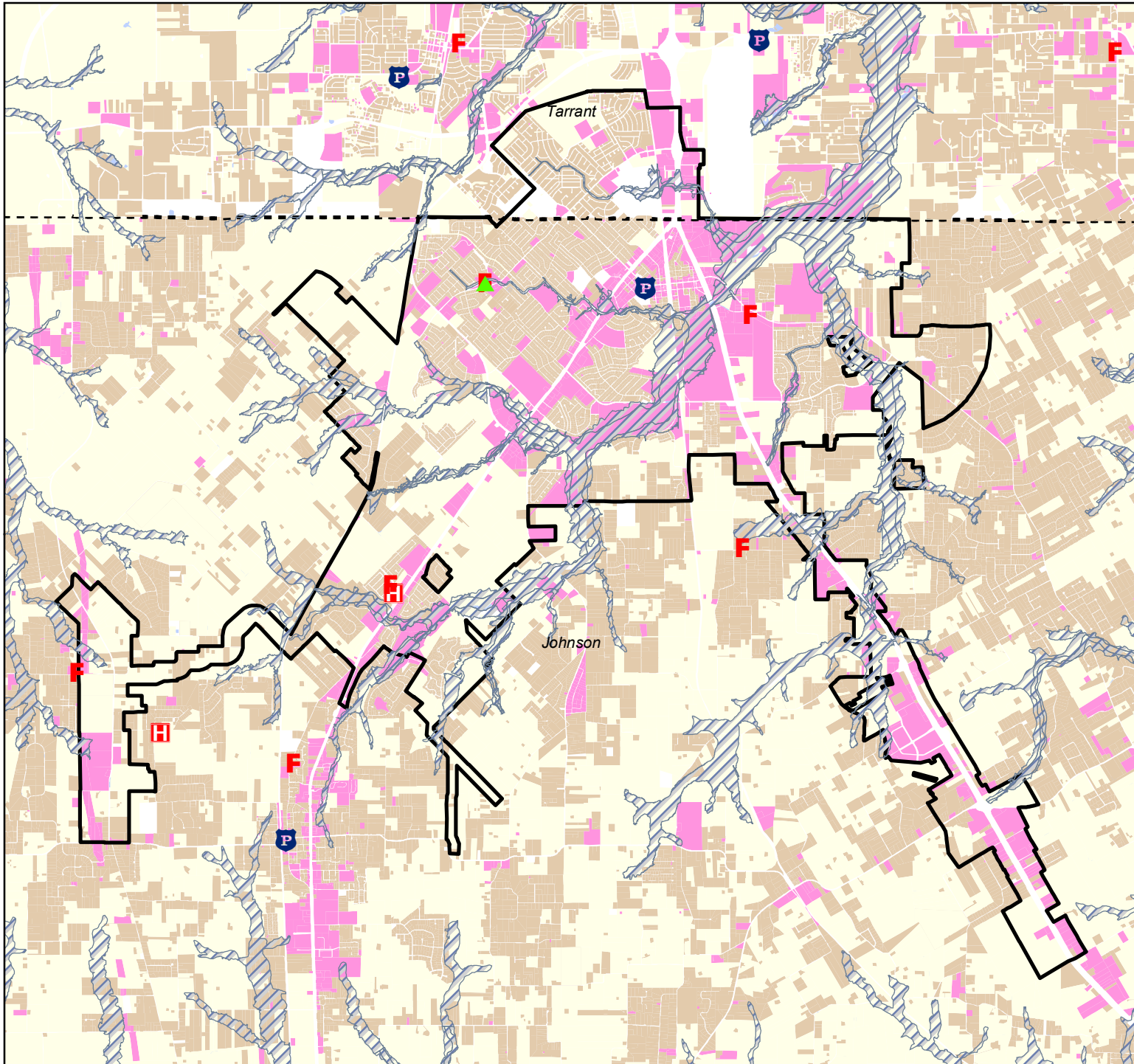


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Map H.3

City of Burleson

-  Emergency Management
-  Fire
-  Police
-  Hospital

FEMA DFIRM FLOOD ZONES 2012

ZONE

-  100 Year
-  100 Year (Detail)
-  500 Year
-  Undeveloped
-  Commercial/Utility
-  Residential

0 0.45 0.9 1.8 Miles



Emergency Preparedness



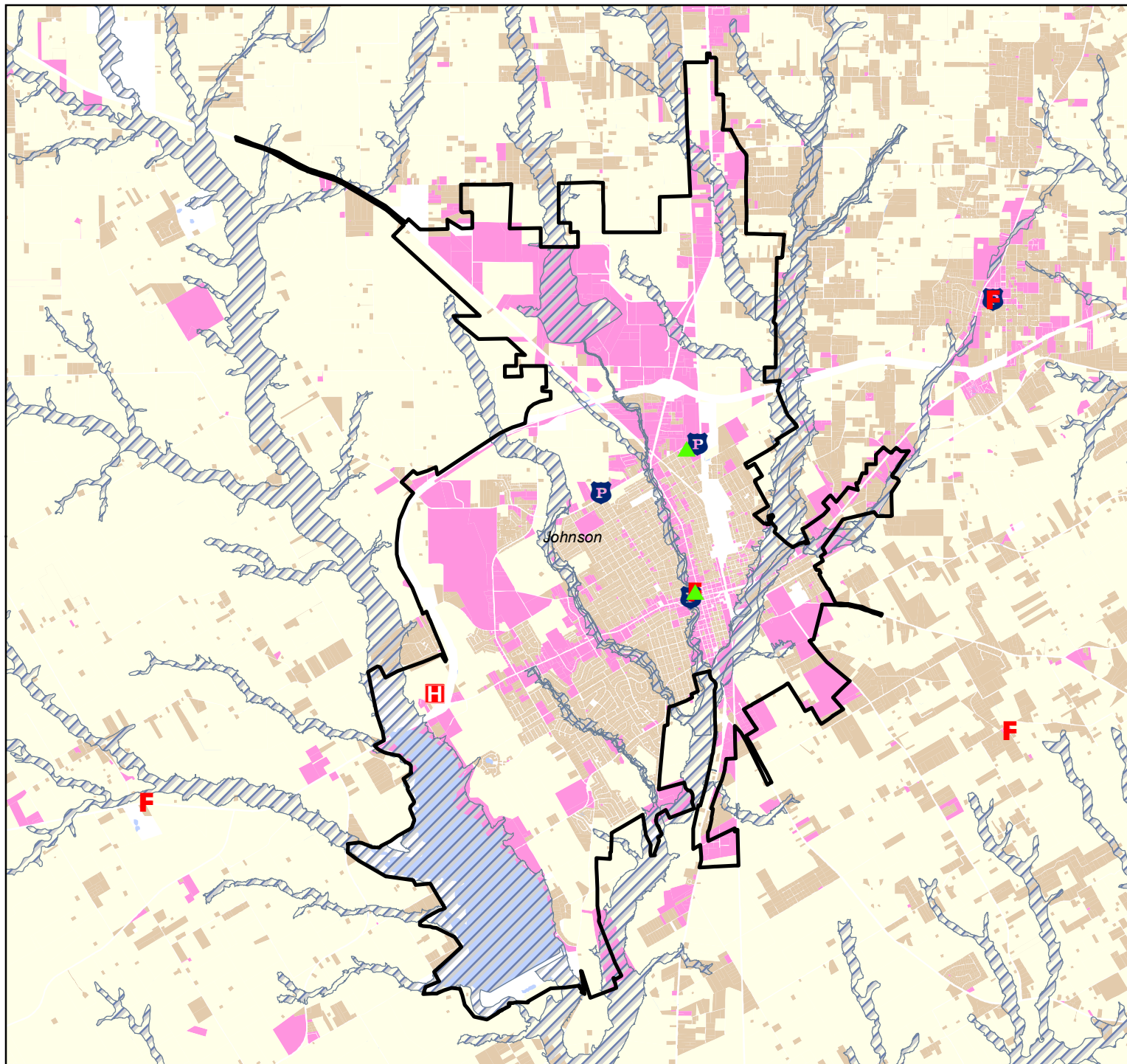
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Map H.4

City of Cleburne



- Emergency Management
 - Fire
 - Police
 - Hospital
- FEMA DFIRM FLOOD ZONES 2012**

ZONE

- 100 Year
- 100 Year (Detail)
- 500 Year
- Undeveloped
- Commercial/Utility
- Residential

0 0.5 1 2 Miles



Emergency Preparedness



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Map H.5

City of Godley

▲ Emergency Management
F Fire
P Police
H Hospital
FEMA DFIRM FLOOD ZONES 2012

ZONE

- 100 Year
- 100 Year (Detail)
- 500 Year
- Undeveloped
- Commercial/Utility
- Residential

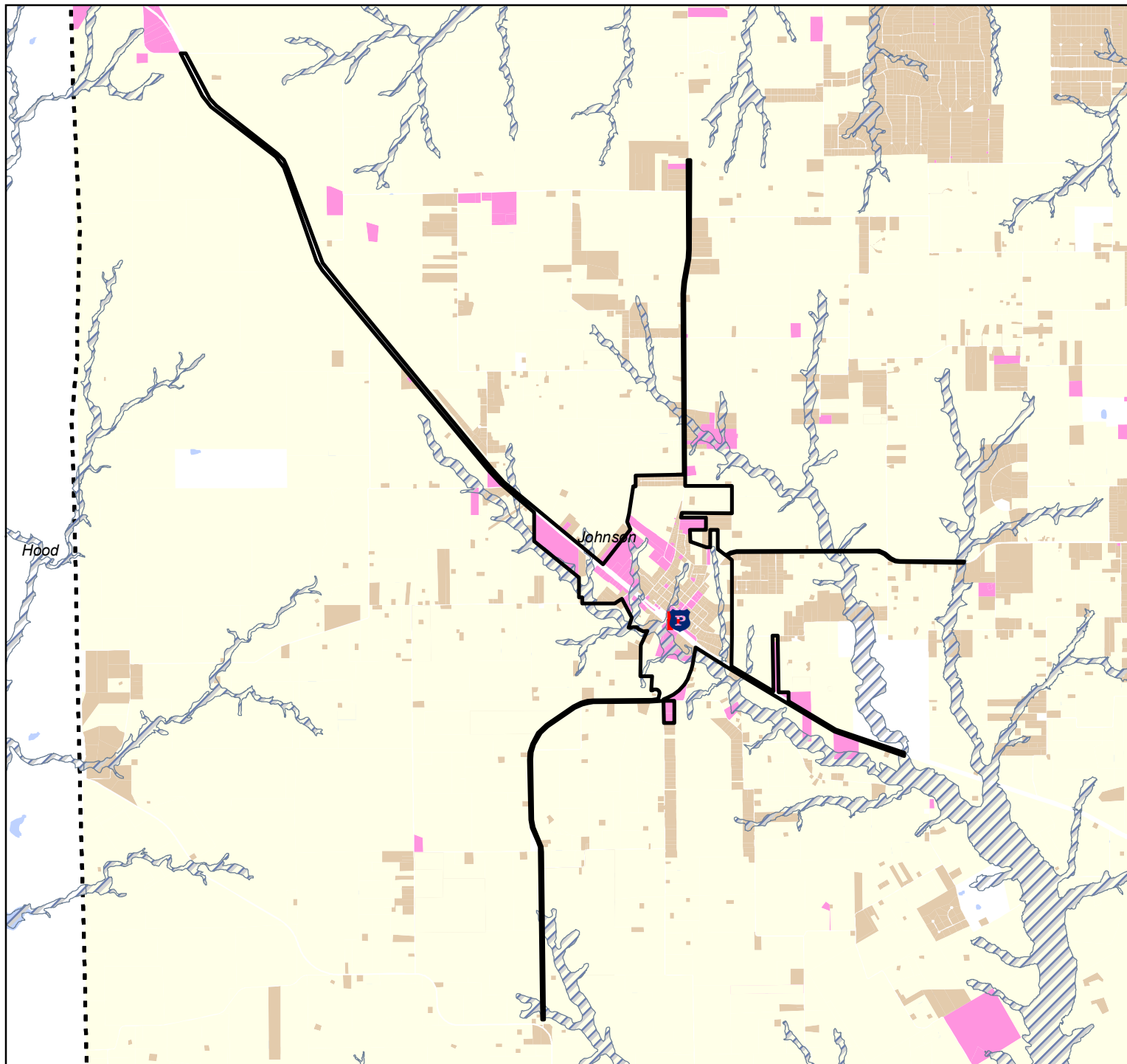
0 0.25 0.5 1 Miles



Emergency Preparedness



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Map H.6

City of Joshua

Emergency Management
F Fire
P Police
H Hospital
FEMA DFIRM FLOOD ZONES 2012

ZONE

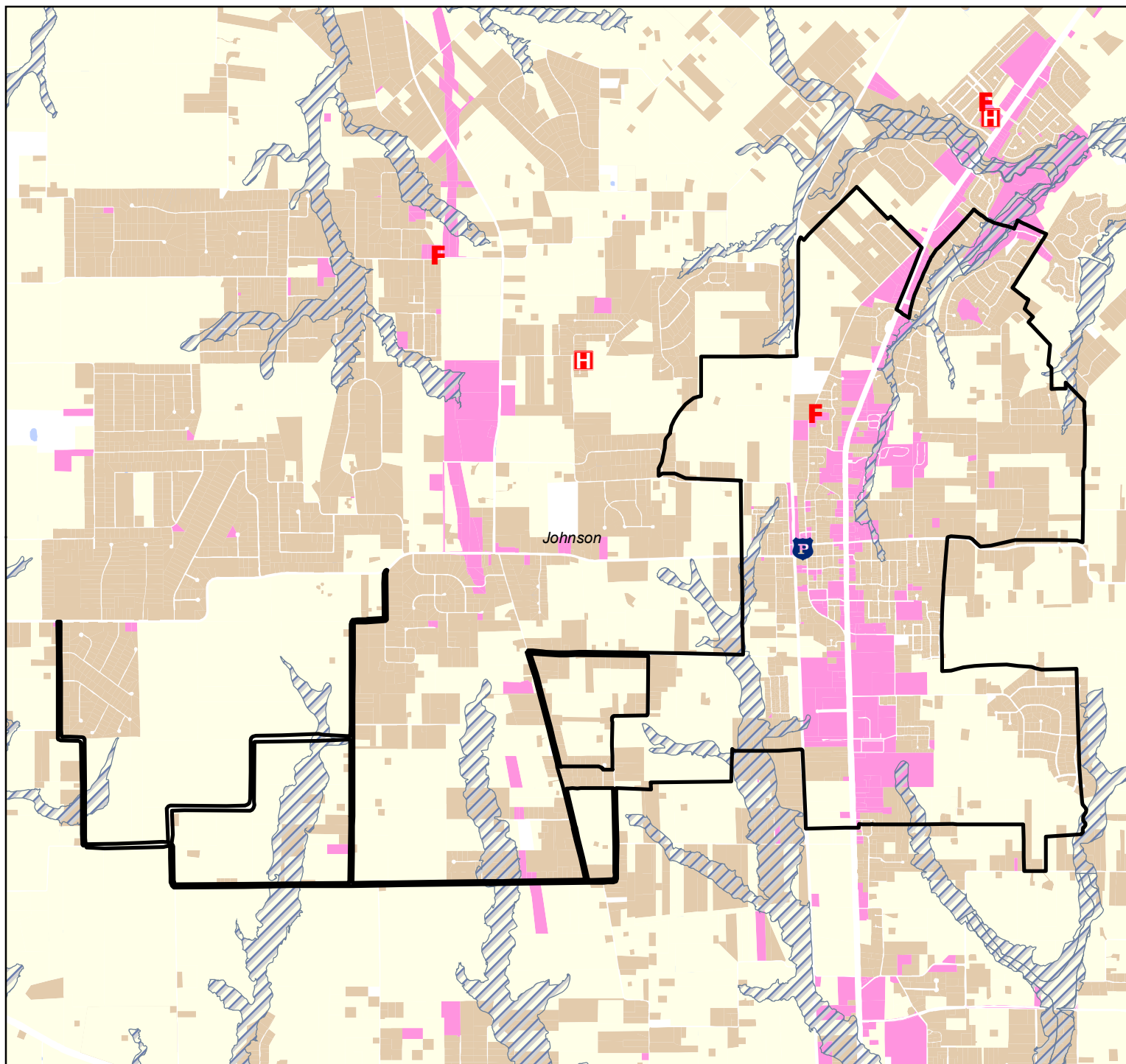
- 100 Year
- 100 Year (Detail)
- 500 Year
- Undeveloped
- Commercial/Utility
- Residential

0 0.25 0.5 1 Miles



Emergency Preparedness

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Map H.7

City of Keene

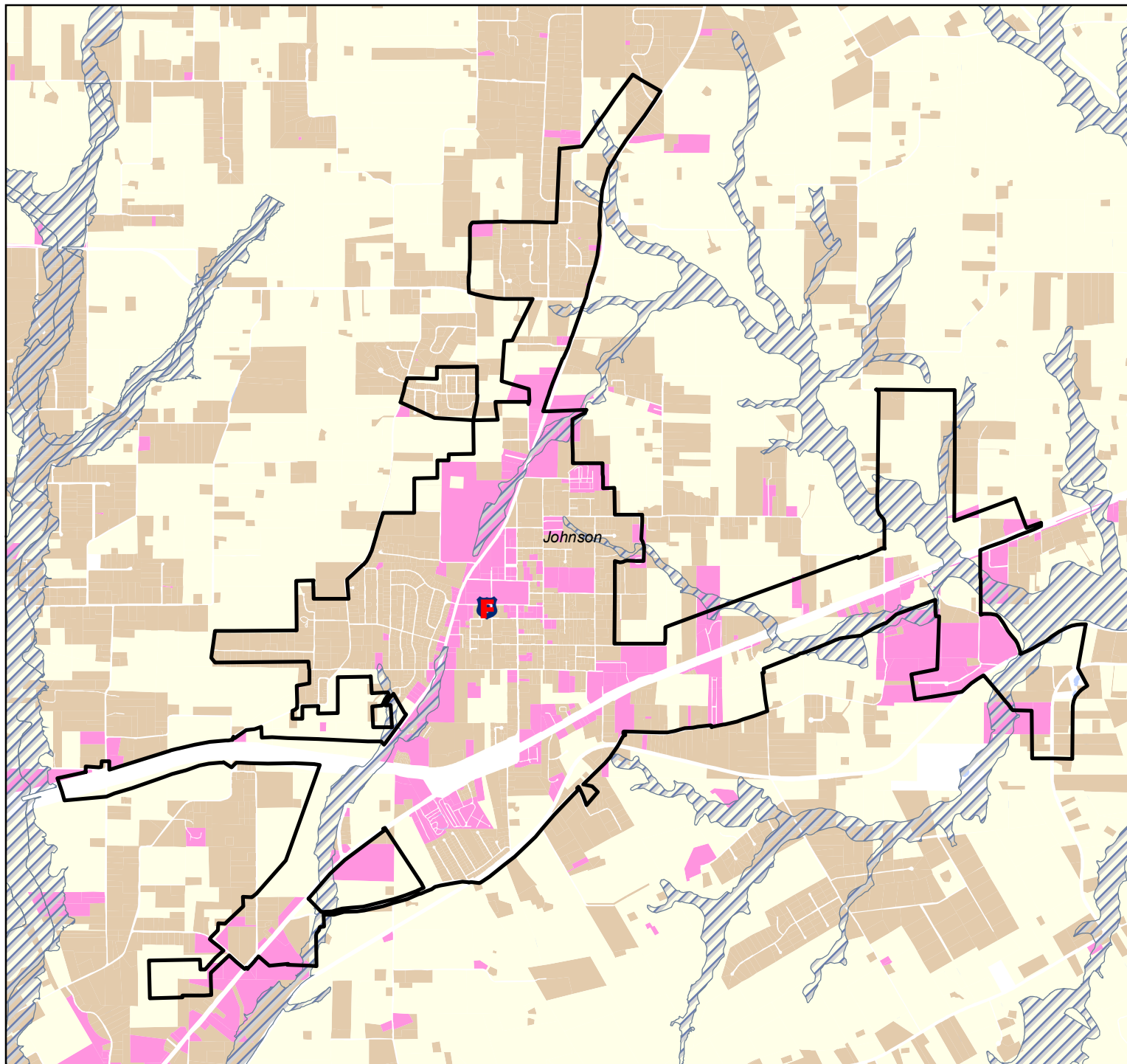
- Emergency Management
 - Fire
 - Police
 - Hospital
- FEMA DFIRM FLOOD ZONES 2012**
- ZONE**
- 100 Year
 - 100 Year (Detail)
 - 500 Year
 - Undeveloped
 - Commercial/Utility
 - Residential

0 0.2 0.4 0.8 Miles



Emergency Preparedness

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3.7 Repetitive Loss Properties

Vulnerability of Repetitive Loss Properties The National Flood Insurance Reform Act of 2004 recognized repetitive loss as a significant problem and defined severe repetitive loss as:

Four or more paid flood losses of more than \$1,000 each; or

Two paid flood losses within a 10-year period that, in the aggregate, equal or exceed the current value of the insured property; or

Three or more paid losses that, in the aggregate, equal or exceed the current value of the insured property.

The loss history includes all flood claims paid on an insured property, regardless of any change of ownership, since the building's construction or back to 1978 if the building was constructed prior to 1978. The following chart lists all losses for the Johnson County planning area and was utilized in identifying Repetitive Loss property based on the FEMA screening criteria.

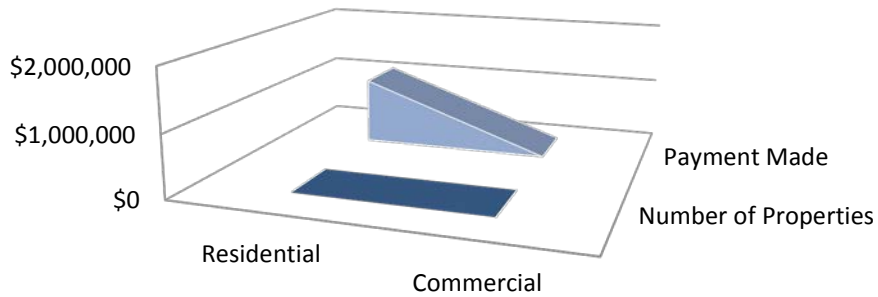
Texas Loss Statistics from January 1, 1978 through report September 9, 2013

Community Name	Total Payments	Closed Losses	Open Losses	CWOP Losses	Total Losses
Johnson County	\$574,305	27	0	0	27
City of Alvarado	\$0	0	0	0	0
City of Burleson	\$245,041	12	0	0	12
City of Cleburne	\$225,196	21	0	0	21
City of Godley	\$0	0	0	0	0
City of Joshua	\$0	0	0	0	0
City of Keene	\$35,031	2	0	0	2

Types and Numbers of Repetitive Loss Properties The National Flood Insurance Program structures that have been repetitively damaged in floods have been assessed within Johnson County HazMAP, and provide a basis for addressing overall participating jurisdiction vulnerability in the terms of types and numbers of repetitive loss properties located within the identified hazard areas.

The following chart provides an overview for the entire planning area and subsequent charts provide specific information for types and numbers of repetitive loss properties.

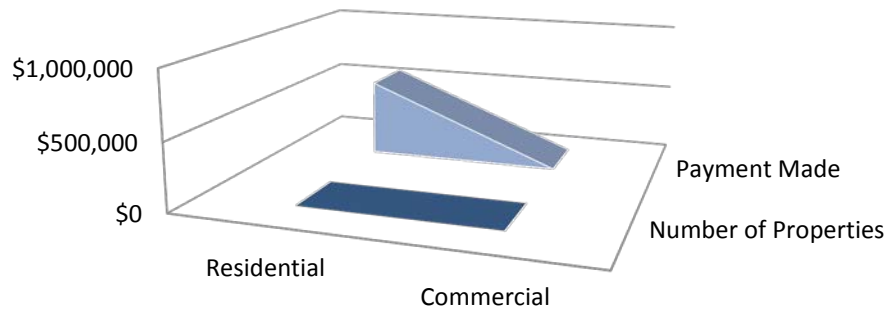
Johnson County HazMAP Total Repetitive Loss Payments



	Residential	Commercial
■ Number of Properties	26	0
■ Payment Made	\$1,079,572.00	\$0.00

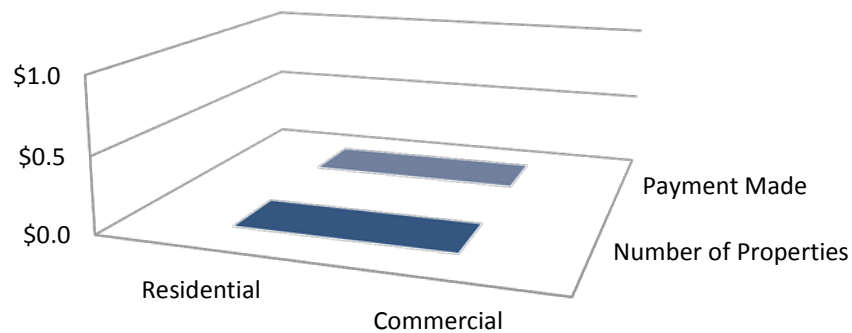
Jurisdiction Repetitive Loss Properties The following tables demonstrate the number and type of structures for each jurisdiction which are known to be repetitive loss properties as defined by FEMA in the Johnson County Hazard Mitigation Action Plan.

Unincorporated County Repetitive Loss Payments



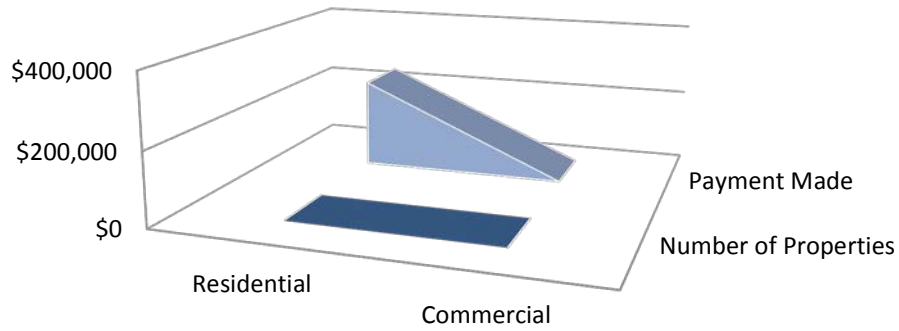
	Residential	Commercial
■ Number of Properties	11	0
■ Payment Made	\$574,305.00	\$0.00

City of Alvarado Repetitive Loss Payments



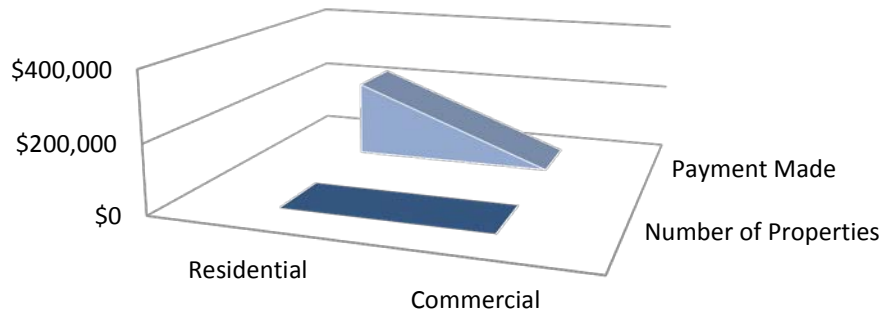
	Residential	Commercial
■ Number of Properties	0	0
■ Payment Made	\$0.00	\$0.00

City of Burleson Repetitive Loss Payments



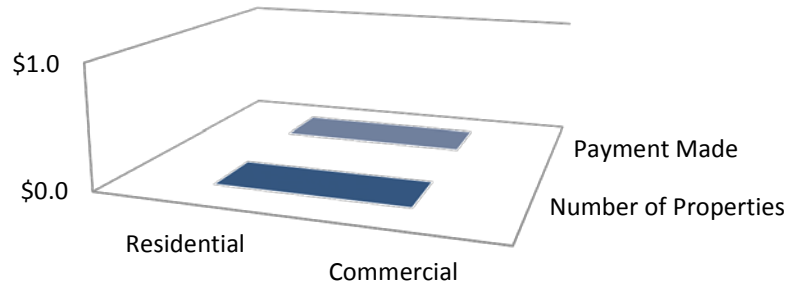
	Residential	Commercial
■ Number of Properties	6	0
■ Payment Made	\$245,041.00	\$0.00

City of Cleburne Repetitive Loss Payments



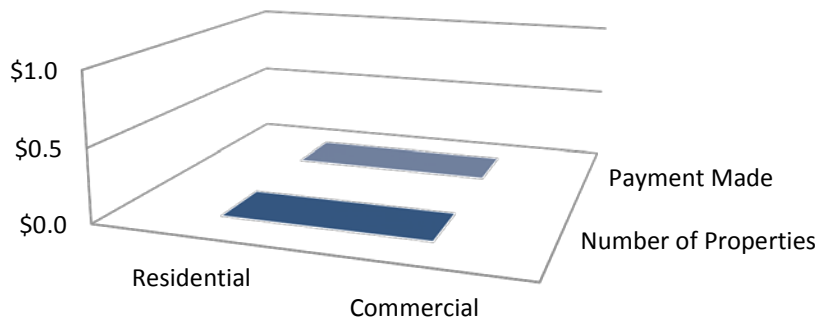
	Residential	Commercial
■ Number of Properties	8	0
■ Payment Made	\$225,196.00	\$0.00

City of Godley Repetitive Loss Payments



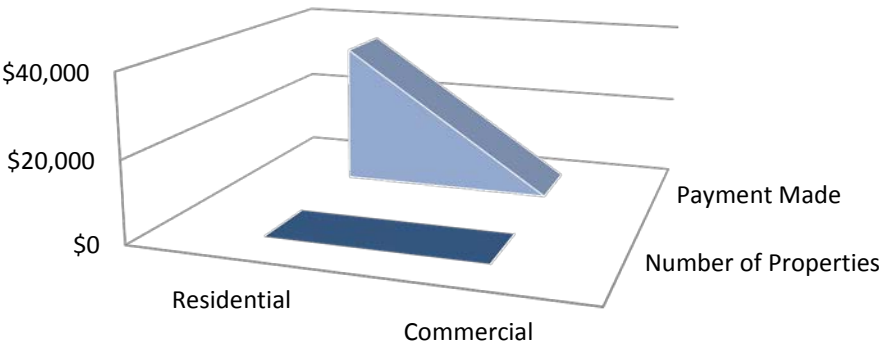
	Residential	Commercial
■ Number of Properties	0	0
■ Payment Made	\$0.00	\$0.00

City of Joshua Repetitive Loss Payments



	Residential	Commercial
■ Number of Properties	0	0
■ Payment Made	\$0.00	\$0.00

City of Keene Repetitive Loss Payments



	Residential	Commercial
■ Number of Properties	1	0
■ Payment Made	\$35,031.00	\$0.00

Chapter Four: Mitigation Goals and Action Items

Chapter Four of the Johnson County Hazard Mitigation Action Plan (HazMAP) describes each participating jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand and improve on these existing tools. By participating in the HazMAP, each jurisdiction currently has the necessary authorities, policies, programs, and resources to fulfil the requirements of the plan. By participating in the plan, each jurisdiction has both the ability and willingness to expand and improve on the existing policies and programs.

Hazard mitigation goals are outlined for the Hazard Mitigation Action Plan, and objectives are quantified through individual jurisdiction action items through which each participating jurisdiction plans to accomplish those objectives and reach goal completion. By participating in the plan, each jurisdiction will integrate the requirements of the plan into other planning mechanisms, including but not limited to comprehensive or capital improvement plans, whenever appropriate, as dictated by local policies and procedures.

The chapter identifies specific and identifiable action items for each participating jurisdiction, laying out each action item and how it will be implemented and administered, to include the responsible department, existing and potential funding sources, and the timeframe in which each item will be completed. The action items also present a cost benefit review statement and demonstrate the priority of emphasis on each action item by that particular jurisdiction.

4.1 Goals

4-3

The hazard mitigation goals describe the overall purpose of the Hazard Mitigation Action Plan, 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.

4.2 Action Items

4-5

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

Unincorporated Johnson County Action Items

Section 4.2.A

City of Alvarado Action Items

Section 4.2.B

City of Burleson Action Items

Section 4.2.C

City of Cleburne Action Items

Section 4.2.D

City of Godley County Action Items

Section 4.2.E

City of Joshua Action Items

Section 4.2.F

City of Keene Action Items

Section 4.2.G

4.3 National Flood Insurance Program (NFIP) Compliance

4-51

Chapter Four of the Johnson County Hazard Mitigation Action Plan also describes each participating jurisdiction's participation in the National Flood Insurance Program (NFIP), and identifies, analyzes, and prioritizes those action items which are related to continued compliance with the NFIP.

4.4 Capabilities Assessment

4-61

The Capability Assessment examines the ability of Johnson County and participating jurisdictions to implement and manage a comprehensive mitigation strategy.



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4.1 Goals

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

Goal 1 Reduce or eliminate loss of life and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event

Objective 1-B Expand and coordinate Early Warning Systems currently in use

Objective 1-C Reduce or eliminate loss of life and property damage from tornadoes through the construction and use of safe rooms or shelter areas

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects

Goal 3 Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones within Johnson County

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop Public Education Campaigns to educate the public on what actions they can take to mitigate the effects of loss of life or property damage resulting from all natural hazards

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program



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4.2 Action Items

Each participating jurisdiction's Hazard Mitigation Team (HMT) in the Johnson County Hazard Mitigation Action plan 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 Hazard Mitigation Action Plan. The mitigation strategy address 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. Action Item Title
2. Hazard(s) Addressed
3. Goal/Objective
4. Priority
5. Estimated Cost
6. Potential Funding Sources
7. Lead Agency/Department Responsible
8. Implementation Schedule
9. Effect on New Buildings
10. Effect on Existing Buildings
11. Cost Effectiveness
12. Discussion


Hazard Mitigation 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.

Cost Benefit Review As specified by C.F.R. §201.6(c)(3)(iii), the prioritization also includes a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed project and their associated costs for each jurisdiction.

The comprehensive range of specific mitigation actions and projects being considered in the Johnson County HazMAP have been determined by each of the Hazard Mitigation Teams. As a part of the prioritization process, there is an emphasis on the use of a cost-benefit review to maximize benefits. 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 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. 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.

See the following Table listings for the detailed action item descriptions.



Unincorporated Johnson County Action Items
City of Alvarado Action Items
City of Burleson Action Items
City of Cleburne Action Items
City of Godley County Action Items
City of Joshua Action Items
City of Keene Action Items

Section 4.2.A
Section 4.2.B
Section 4.2.C
Section 4.2.D
Section 4.2.E
Section 4.2.F
Section 4.2.G

Section 4.2.A – Unincorporated Johnson County Action Items

Johnson County Action Item	Purchase and Distribute NOAA All-Hazard Radios to Provide the Residents and Commercial Businesses.
Hazard(s) Addressed	Dam Failure, Flooding, Hail, High Winds, Tornado, Wildfire, Winter Storm, Lightning
Goal/Objective	1-A, 1-B
Priority	High
Estimated cost	\$20,000
Potential Funding sources	General Fund, HMGP, PDM, Resident Cost-Share
Potential Matching Sources	Local Funds, Donations, In-Kind, Resident Cost-Share
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	1 To 2 Years
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Potential to save lives.
Discussion	Providing residents with all-hazard radios allows them to protect life and property by receiving early warnings faster.

Johnson County Action Item	Purchase and Install a CASA Weather Radar System.
Hazard(s) Addressed	Hail, Tornadoes, High Wind, Wildfire, Flooding, Winter Storms
Goal/Objective	1-A, 1-B
Priority	High
Estimated cost	\$2.5 Million
Potential Funding sources	Local Funding, Public/Private Partnerships
Potential Matching Sources	Local Funds, Donations, In-kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	6 Months – 18 Months
Effect on New Building	N/A
Effect on Existing buildings	N/A
Cost Effectiveness	Increase response decisions by 100%.
Discussion	CASA WX Radar provides the most detailed information available about storms and strong winds. This enhanced view would help persons in public safety and citizens prepare for and respond to, storms and strong winds, more efficiently.

Johnson County Action Item	Implement Individual Tornado Safe Room Rebate Program.
Hazard(s) Addressed	High Wind, Tornadoes
Goal/Objective	1-C, 2-D
Priority	High
Estimated cost	\$250,000
Potential Funding sources	HMGP, PDM, Local Funding
Potential Matching Sources	Local Funds, Donations, In-Kind, Resident Match
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	12 Months – 24 Months
Effect on New Building	N/A
Effect on Existing buildings	Some Buildings Modified For Shelter Retrofit.
Cost Effectiveness	Moderate
Discussion	Residential safe room shelters have the potential to decrease personal injuries and death during severe weather, tornado, or high wind events.

Johnson County Action Item	Mitigate effects of extreme heat through installation of covered patios in public parks
Hazard(s) Addressed	Extreme Heat
Goal/Objective	3-C
Priority	Low
Estimated cost	\$25,000
Potential Funding sources	HMGP
Potential Matching Sources	Local funds, donations, In-kind
Lead Agency / Department Responsible	Public Works
Implementation Schedule	6 months – 12 months
Effect on New Building	n/a
Effect on Existing buildings	n/a
Cost Effectiveness	Low
Discussion	Covered patios in park areas would provide cover/protection, from the sun, for residents that are outside during extreme heat days.



Johnson County Action Item	Identify, Equip and Open Heating and Cooling Centers Across Johnson County to Prevent Special Populations from Temperature Injury
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	3-C
Priority	Medium
Estimated cost	TBD
Potential Funding sources	HMGP, Municipal Funds
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	6 Months – 12 Months
Effect on New Building	N/A
Effect on Existing buildings	N/A
Cost Effectiveness	Low
Discussion	Heating and Cooling centers would be identified and equipped with appropriate systems. The centers would be open to the public during extreme heat and winter storm events.

Johnson County Action Item	Develop an Emergency Plan for Drought.
Hazard(s) Addressed	Drought
Goal/Objective	2A, 2B, 2C
Priority	Medium
Estimated Cost	15,000
Potential Funding Sources	HMGP, PDM, Local Funding
Potential Matching Sources	Local Funds, In-Kind
Lead Department	Emergency Management
Implementation Schedule	12 Months – 24 Months
Effect on Old Buildings	n/a
Effect on New Buildings	Include water conservation measures identified in plan: construction considerations, plumbing, fixtures
Cost Effectiveness	Moderate
Discussion	Plan will identify measures to help reduce impacts of drought on people and property through: early warning, crop irrigation, water conservation, identification of/access to alternate water supplies, and/or others as research warrants.

Johnson County Action Item	Develop Community Wildfire Protection Plan (CWPP) and Implement Fuels Reduction Programs.
Hazard(s) Addressed	Wildfire, Drought
Goal/Objective	3-C, 4-A, 4-B, 4-C
Priority	Medium
Estimated cost	\$35,000
Potential Funding sources	HMGP, Community Match
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	18 months – 48 months
Effect on New Building	n/a
Effect on Existing buildings	n/a
Cost Effectiveness	High
Discussion	CWPP would help reduce the impact of wildfires through strategic fuel reduction projects, as well as educate the public on defensible space.

Johnson County Action Item	Hire Consultant to Complete Inundation Studies of All High and Moderate Hazard Dams Within the County.
Hazard(s) Addressed	Dam Failure
Goal/Objective	3-A, 3-C
Priority	Medium
Estimated cost	\$75,000
Potential Funding sources	HMGP, Watershed Authorities, Dam Sponsors
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Public Works
Implementation Schedule	12 Months – 18 Months
Effect on New Building	n/a
Effect on Existing buildings	n/a
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify, through inundation studies, what property, utility or infrastructure would be impacted by dam failure.

Johnson County Action Item	Adopt Debris Management and Flood Abatement Ordinances to Prevent Buildup of Debris and Materials that Could Cause Flooding.
Hazard(s) Addressed	Flooding, Dam Failure
Goal/Objective	2-E, 3-C
Priority	Low
Estimated Cost	Undetermined
Potential Funding Sources	Local Funds
Potential Matching Sources	Impact Fees
Lead Department	Public Works
Implementation Schedule	36 Months After Funding
Effect on Old Buildings	Reduce the possible damage from flooding
Effect on New Buildings	No new construction would be permitted in flood plains or flood prone areas.
Cost Effectiveness	Undetermined at this time.
Discussion	Johnson county needs to maintain waterways in order to prevent buildup of debris and materials that could cause flooding. The county would adopt ordinances incentivizing property owners adjacent to the creek to maintain the water way clear of debris and vegetation.

Johnson County Action Item	Develop and Implement Comprehensive Public Education Program for Natural Hazards.
Hazard(s) Addressed	Drought, Extreme Heat, Flooding, Hail, High Winds, Tornado, Wildland Fire, Winter Storms, Dam Failure, Lightning
Goal/Hazard	4-A, 4-B, 4-C
Priority	Medium
Estimated cost	\$2000.00
Potential Funding sources	General Funds, HMPG
Potential Matching sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	As Funding Is Available
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Low compared to life safety benefits.
Discussion	Johnson County will distribute public education literature, based on the hazards in this plan, to increase public awareness and education for all hazards and provide mitigation actions for each.



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Section 4.2.B – Alvarado Action Items

City of Alvarado Action Item	Expand and Coordinate Early Warning Systems to New Developments and Populations
Hazard(s) Addressed	Dam Failure, Flooding, Hail, High Winds, Tornado, Wildfire
Goal/Objective	1-A, 1-B
Priority	Low
Estimated Cost	\$55,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Department	Emergency Management
Implementation Schedule	36 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Cost is outweighed by the benefits of Early Warning Systems
Discussion	Adding two out-door warning sirens to the system in place would help increase the coverage area to all parts of the city. Early warnings have been shown to help save lives and property from severe weather events. Upgrading the Connect CTY system in place to add an automatic call feature would save valuable time in getting out early mass call warnings to citizens.

City of Alvarado Action Item	Purchase and Install A CASA WX Radar System.
Hazard(s) Addressed	Dam Failure, Flooding, Hail, High Winds, Tornado, Winter Storm
Goal/Objective	1-A, 1-B, 2-E
Priority	Low
Estimated Cost	\$2.5 Million
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Department	Emergency Management
Implementation Schedule	24 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	The cost of this project is low compared to the potential benefits.
Discussion	The Collaborative Adaptive Sensing of the Atmosphere (CASA WX) project is a multi-sector partnership dedicated to engineering revolutionary weather-sensing networks. The CASA WX radars provide jurisdictions more accurate weather data and geographically specific weather data culled from the most active levels of the atmosphere. This data could save lives by providing the public more time to react and prepare appropriately as severe weather affects their location. The more accurate data will also provide a better means to analyze severe weather post event which can also help in the assessment of damage after a severe weather event.

City of Alvarado Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1-C
Priority	Low
Estimated Cost	\$150,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Homeowner Match
Lead Department	Emergency Management
Implementation Schedule	12 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Low compared to potential benefits.
Discussion	By installing safe rooms throughout the community the vulnerability of citizens to tornadoes, hail, and high winds would be reduced.

City of Alvarado Action Item	Purchase NOAA Weather Radios for Distribution to Residents
Hazard(s) Addressed	Dam Failure, Extreme Heat, Flooding, Hail, High Winds, Tornado, Wildfire, Winter Storm, Lightning, Drought
Goal/Objective	1-A
Priority	Low
Estimated Cost	\$100,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local Funds, Cost Share
Lead Department	Emergency Management
Implementation Schedule	12 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning systems save lives, justifying costs.
Discussion	NOAA Weather Alert Radios are a proven means to alert and warn citizens about severe weather and civil emergencies. It is impossible to quantify the value of a human life and difficult to quantify the value of an injury. The city believes that the value of a single life saved or injury avoided will offset the cost of this project. An added benefit of this project would be to raise awareness of NOAA Weather Alert Radios and severe weather safety throughout the area, thus providing benefits even to citizens who do not participate in this program.

City of Alvarado Action Item	Adopt Codes Requiring Hail Resistant Roofing on All New Construction and Roof Replacements
Hazard(s) Addressed	Hail
Goal/Objective	2-C
Priority	Low
Estimated Cost	None
Potential Funding Sources	None
Potential Matching Sources	None
Lead Department	Code Services
Implementation Schedule	12 Months
Effect on New Buildings	This action will potentially decrease the damage caused by most hailstorms in new buildings.
Effect on Old Buildings	This action will potentially decrease the damage caused by most hailstorms in existing buildings.
Cost Effectiveness	Costs nothing and significantly decreases the susceptibility of structures to roof damage.
Discussion	Improving Building Codes has proven to be an effective means to achieve improved building design. Requiring hail resistant roofing will benefit citizens through reduced damage, business through reduced damage to their buildings and reduced claims against insurance companies, and government through reduced request for assistance.

City of Alvarado Action Item	Educate Builders and Residents About "Hail Resistant" Roofing In New Construction and Roof Replacements
Hazard(s) Addressed	Hail
Goal/Objective	4-A
Priority	Low
Estimated Cost	\$2,000
Potential Funding Sources	HMGP
Potential Matching Sources	General Fund
Lead Department	Emergency Management
Implementation Schedule	12 Months
Effect on New Buildings	Potentially can reduce damage caused by hail storms.
Effect on Old Buildings	Potentially can reduce damage caused by hail storms.
Cost Effectiveness	High cost but will provide great benefit to the community.
Discussion	Public education has proven to be a low cost effective means to achieve changes in public behavior. Hail resistant roofing can benefit citizens through reduced damage, business through reduced damage to their buildings and reduced claims against insurance companies, and government through reduced request for assistance. This project will also provide mitigation actions for hail. This project will provide written materials to be provided to the public and builders.

City of Alvarado Action Item	Educate Builders and Residents About Mitigating Wind Damage
Hazard(s) Addressed	High Winds
Goal/Objective	4-B
Priority	Low
Estimated Cost	\$1500
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Code Services
Implementation Schedule	12 Months
Effect on New Buildings	This action will potentially decrease the damage caused by high winds in new buildings.
Effect on Old Buildings	This action will potentially decrease the damage caused by high winds in existing buildings.
Cost Effectiveness	Cost Effective
Discussion	Public Education has proven to be an effective way to change behavior. Educating the public and builders on the benefits of wind resistant construction will benefit citizens through reduced damage, business through reduced damage to their buildings and reduced claims against insurance companies, and government through reduced request for assistance. This project will also provide mitigation actions for high winds. This project will provide written materials to be provided to the public and builders.

City of Alvarado Action Item	Develop and Implement Public Education Concerning Winter Storm Mitigation
Hazard(s) Addressed	Winter Storms
Goal/Objective	4-A
Priority	Low
Estimated Cost	\$2,000
Potential Funding Sources	HMGP
Potential Matching Sources	General Fund, In-Kind
Lead Department	Emergency Management
Implementation Schedule	Immediately
Effect on New Buildings	This action will provide information concerning severe winter storm mitigation that can be incorporated into new buildings.
Effect on Old Buildings	This action will provide information concerning severe winter storm mitigation that can be incorporated into existing buildings.
Cost Effectiveness	The low cost is effective when compared to benefits provided to citizens.
Discussion	Winter weather preparedness has not been emphasized in Alvarado as much as severe thunderstorms. This new action will provide winter storm mitigation information to citizens during the fall months including mitigation actions.



City of Alvarado Action Item	Develop and Implement Public Education Programs on the Dangers of Excessive Heat
Hazard(s) Addressed	Extreme Heat
Goal/Objective	3-C
Priority	Low
Estimated Cost	\$3,000
Potential Funding Sources	HMGP
Potential Matching Sources	General Fund
Lead Department	Emergency Management
Implementation Schedule	12 Months
Effect on New Buildings	None
Effect on Old Buildings	None
Cost Effectiveness	Public education programs can provide significant results for relatively low costs.
Discussion	This action would provide public education materials to citizens discussing the dangers of extreme heat and provide mitigation actions.

City of Alvarado Action Item	Improve Water Supply and Delivery Systems to Save Water by Designing Water Delivery Systems to Accommodate Drought Events and Developing New or Upgrading Existing Water Delivery Systems to Eliminate Breaks and Leaks
Hazard(s) Addressed	Drought, Extreme Heat
Goal/Objective	2-B
Priority	Medium
Estimated Cost	\$2.4 Million
Potential Funding Sources	Hazard Mitigation Grant Program; Texas Water Development Board Grant Program
Potential Matching Sources	Certificate Of Obligation Bonds; Water Usage Fees
Lead Department	Public Works
Implementation Schedule	60 Months
Effect on New Buildings	This action will allow for additional new building construction by providing adequate water supplies for sanitation, drinking and fire protection during drought conditions.
Effect on Old Buildings	This action will provide existing buildings adequate water supplies for sanitation, drinking and fire protection during drought conditions.
Cost Effectiveness	Very high cost with long term benefit for the community.
Discussion	To ensure adequate water supply during drought conditions in the city, an additional deep water well, storage facility and all connecting equipment is needed.

City of Alvarado Action Item	Design and Implement Specific Water Conservation Public Education Efforts to Complement Existing Programs
Hazard(s) Addressed	Drought
Goal/Objective	4-A
Priority	Low
Estimated Cost	\$1,000
Potential Funding Sources	Normal Budgeting Process
Potential Matching Sources	Impact Fees
Lead Department	Public Works
Implementation Schedule	12 Months
Effect on New Buildings	This action will publicize water conservation efforts that can be incorporated into new construction.
Effect on Old Buildings	This action will publicize water conservation efforts that can be incorporated into new construction.
Cost Effectiveness	Public education programs can provide significant results for relatively low costs.
Discussion	Most cities in the area have existing water conservation programs designed to educate the public and businesses on ways to conserve water and provide mitigation actions. This action will develop a specific program that will complement existing programs in the City of Alvarado. Jurisdictional public education efforts have been very successful in attracting the attention of local citizens.

City of Alvarado Action Item	Increase Public Education on How to Reduce The Risks from Wildfires
Hazard(s) Addressed	Wildland Fire
Goal/Objective	4-A, 4-B
Priority	Low
Estimated Cost	\$3,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Department	Fire Department
Implementation Schedule	12 Months
Effect on Old Buildings	This action will reduce the effects of wildfire on existing buildings through increased use of wildfire mitigation measures.
Effect on New Buildings	This action will reduce the effects of wildfire on new buildings through increased use of wildfire mitigation measures.
Cost Effectiveness	Public education has high rewards from low costs.
Discussion	This action would provide public education materials to citizens discussing the dangers of wildfire and various mitigation measure available. Wildfire mitigation measures are not widely known in urban areas. This action would increase citizens' knowledge of wildfire mitigation measures and help reduce casualties and damages from wildfires and provide mitigation actions.

City of Alvarado Action Item	Partner with the Texas Fire Service in Creating “Firewise” Communities in Alvarado
Hazard(s) Addressed	Wildland Fire
Goal/Objective	2-B, 4-A, 4-B
Priority	Low
Estimated Cost	\$130,000
Potential Funding Sources	HMGP, PDM, Texas Forest Service Grants
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Department	Fire Department
Implementation Schedule	24 months
Effect on New Buildings	This action will reduce the effects of wildfire on new buildings through increased use of wildfire mitigation measures.
Effect on Old Buildings	This action will reduce the effects of wildfire on existing buildings through increased use of wildfire mitigation measures.
Cost Effectiveness	Program cost is low compared to benefits.
Discussion	Creating “Firewise” Communities will provide a wider buffer between residential and commercial properties and the wild land environment. This project will fund one full time position for a period of 24 months to assist the community in planning and accomplishing the required measures to achieve the “Firewise Community” designation.

City of Alvarado Action Item	Adopt Debris Management and Flood Abatement Ordinances to Prevent Buildup of Debris and Materials That Could Cause Flooding
Hazard(s) Addressed	Flooding, Dam Failure
Goal/Objective	2-E, 3-C
Priority	Low
Estimated Cost	Undetermined
Potential Funding Sources	Local Funds
Potential Matching Sources	Impact Fees
Lead Department	Public Works
Implementation Schedule	36 months after funding
Effect on Old Buildings	Reduce the possible damage from flooding.
Effect on New Buildings	No new construction would be permitted in flood plains or flood prone areas.
Cost Effectiveness	Undetermined at this time.
Discussion	The City of Alvarado needs to maintain waterways in order to prevent buildup of debris and materials that could cause flooding. The city would adopt ordinances requiring property owners adjacent to the creek to maintain the water way clear of debris and vegetation.

City of Alvarado Action Item	Raise the Road Level of Atchley Street at Creek
Hazard(s) Addressed	Flooding
Goal/Objective	2-B
Priority	Low
Estimated Cost	Undetermined
Potential Funding Sources	HMPG
Potential Matching Sources	Other State Grants
Lead Department	Public Works
Implementation Schedule	12 Months
Effect on New Buildings	None
Effect on Old Buildings	None
Cost Effectiveness	High initial cost, but would ultimately save money, time, and possibly lives.
Discussion	This project would raise the road level to eliminate a low water crossing and stretch of road that floods periodically. The project would reduce the danger to life and property from flash flooding, as well as the need to repair pavement damage from flooding events.

City of Alvarado Action Item	Incorporate Flood Mitigation Into Local Planning
Hazard(s) Addressed	Flooding, Dam Failure
Goal/Objective	3-C
Priority	High
Estimated Cost	None
Potential Funding Sources	General Fund
Potential Matching Sources	Impact Fees
Lead Department	Planning
Implementation Schedule	Immediately
Effect on New Buildings	Prevents new buildings from being constructed in the flood plain.
Effect on Old Buildings	None
Cost Effectiveness	Highly cost effective.
Discussion	By incorporating flood mitigation into local planning, the City can determine and enforce acceptable land uses to alleviate the risk of damage by limiting exposure in flood hazard areas.

City of Alvarado Action Item	Develop an Emergency Plan for Drought
Hazard(s) Addressed	Drought
Goal/Objective	2A, 2B, 2C
Priority	Medium
Estimated Cost	15,000
Potential Funding Sources	HMGP, PDM, Local funding
Potential Matching Sources	Local Funds, In-Kind
Lead Department	Emergency Management
Implementation Schedule	12 Months – 24 Months
Effect on Old Buildings	N/A
Effect on New Buildings	Include water conservation measures identified in plan: construction considerations, plumbing, fixtures.
Cost Effectiveness	Moderate
Discussion	Plan will identify measures to help reduce impacts of drought on people and property through: early warning, crop irrigation, water conservation, identification of/access to alternate water supplies, and/or others as research warrants.

City of Alvarado Action Item	Develop and Implement Public Education Programs on The Dangers of Severe Thunderstorms
Hazard(s) Addressed	Lightning, High Winds, Tornadoes, Flooding
Goal/Objective	3-C
Priority	Low
Estimated Cost	\$3,000
Potential Funding Sources	Local Funds
Potential Matching Sources	General Fund
Lead Department	Emergency Management
Implementation Schedule	12 Months
Effect on New Buildings	None
Effect on Old Buildings	None
Cost Effectiveness	Public education programs can provide significant results for relatively low costs.
Discussion	This action would provide public education materials to citizens discussing the dangers of severe weather and provide mitigation actions for each.

City of Alvarado Action Item	Hire Consultant to Complete Inundation Studies of All High and Moderate Hazard Dams that Threaten the City.
Hazard(s) Addressed	Dam Failure
Goal/Objective	3-A, 3-C
Priority	Medium
Estimated cost	\$75,000
Potential Funding sources	HMGP, Watershed Authorities, Dam Sponsors
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Public Works
Implementation Schedule	12 Months – 18 Months
Effect on New Building	n/a
Effect on Existing buildings	n/a
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify, through inundation studies, what property, utility or infrastructure would be impacted by dam failure.

Section 4.2.C – Burleson Action Items

City of Burleson Action Item	Develop and Implement Comprehensive Public Education Program for Natural Hazards.
Hazard(s) Addressed	Drought, Extreme Heat, Flooding, Hail, High Winds, Tornado, Wildland Fire, Winter Storms, Dam Failure, Lightning
Goal/Hazard	4-A, 4-B, 4-C
Priority	Medium
Estimated cost	\$2000.00
Potential Funding sources	General Funds, HMPG
Potential Matching sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	As Funding Is Available
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Low compared to life safety benefits.
Discussion	The City of Burleson will distribute public education literature, based on the hazards in this plan, to increase public awareness and education for all hazards and provide mitigation actions for each.

City of Burleson Action Item	Purchase NOAA Weather Radios for Distribution to Residents
Hazard(s) Addressed	Dam Failure, Extreme Heat, Flooding, Hail, High Winds , Tornado, Wildfire, Winter Storm, Lightning, Drought
Goal/Objective	1-A
Priority	Low
Estimated cost	\$100,000
Potential Funding sources	HMGP, PDM
Potential Matching sources	Local Funds, Cost Share
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	12 Months
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Early warning systems save lives, justifying costs.
Discussion	NOAA Weather Alert Radios are a proven means to alert and warn citizens about severe weather and civil emergencies. It is impossible to quantify the value of a human life and difficult to quantify the value of an injury. The city believes that the value of a single life saved or injury avoided will offset the cost of this project. An added benefit of this project would be to raise awareness of NOAA Weather Alert Radios and severe weather safety throughout the area, thus providing benefits even to citizens who do not participate in this program.

City of Burleson Action Item	Purchase and install CASA WX Weather Radar
Hazard(s) Addressed	Flooding, Hail, High Winds, Tornado, Extreme Heat, Winter Storm
Goal/Objective	1-A, 1-B
Priority	High
Estimated cost	\$2.5 Million
Potential Funding sources	General Fund, Private Donations, User Fees
Potential Matching sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	< 2 Years
Effect on New Building	None
Effect on Existing Buildings	None
Cost Effectiveness	Low compared to life saving benefits.
Discussion	The Collaborative Adaptive Sensing of the Atmosphere (CASA WX) project is a multi-sector partnership dedicated to engineering revolutionary weather-sensing networks. The CASA WX radars provide jurisdictions more accurate weather data and geographically specific weather data culled from the most active levels of the atmosphere. This data could save lives by providing the public more time to react and prepare appropriately as severe weather affects their location. The more accurate data will also provide a better means to analyze severe weather post event which can also help in the assessment of damage after a severe weather event.

City of Burleson Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Winds, Tornado
Goal/Objective	1-C
Priority	High
Estimated cost	\$200,000
Potential Funding sources	HMPG, PDM, and Private Funds
Potential Matching sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	12 Months
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Safe room will add value to residence.
Discussion	By installing safe rooms throughout the community the vulnerability of citizens to tornadoes, hail, and high winds would be reduced.

City of Burleson Action Item	Purchase and Install Outdoor Warning Sirens to Encompass New Developments and Populations
Hazard(s) Addressed	Flooding, Hail, High Winds, Tornado, Wildfire, Winter Storm
Goal/Objective	1-A, 1-B
Priority	High
Estimated cost	\$80,000
Potential Funding sources	General Fund, HMGP, PDM
Potential Matching sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	1 to 2 years
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Potential to save lives.
Discussion	With Burleson's population growing, it is important that its new residents be protected from natural hazards. Installing outdoor warning sirens in these new locations would ensure that life and property is protected.

City of Burleson Action Item	Develop Annual Program for Inspection, Prevention, and Trimming of Tree Limbs Next to High Voltage Power Lines
Hazard(s) Addressed	Wildland Fires, Winter Storm, High Winds, Tornado, Lightning
Goal/Objective	2-B, 2-C
Priority	Medium
Estimated cost	\$2000.00 Annually
Potential Funding sources	General Funds, HMPG
Potential Matching sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Street Department / Parks & Rec.
Implementation Schedule	As funding is available
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Low compared to mitigation benefits.
Discussion	New program to keep power lines clear of tree branches. Tree limbs can cause damage to power lines during high wind, Winter Storm, Wildland Fire, Lightning, and Tornado events. This program would identify new ways to keep tree limbs clear of power lines.

City of Burleson Action Item	Require Underground High Voltage Power Lines for New Developments
Hazard(s) Addressed	Wildland Fires, Winter Storm, High Winds, Tornado
Goal/Objective	2-B, 2-C, 3-C
Priority	Medium
Estimated cost	None
Potential Funding sources	General Funds, HMPG
Potential Matching sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Engineering/ P&Z
Implementation Schedule	3-6 months
Effect on New Building	Less hazards from overhead power lines.
Effect on Existing buildings	None
Cost Effectiveness	Low compared to mitigation benefits.
Discussion	The City of Burleson can create safer and more sustainable infrastructure by requiring buried power lines.

City of Burleson Action Item	Adopt, Implement, and Enforce Debris Management and Flood Abatement Ordinances to Prevent Buildup Of Debris and Materials That Could Cause Flooding
Hazard(s) Addressed	Flooding, Dam Failure
Goal/Adjective	2-E, 3-C
Priority	Low
Estimated cost	Undetermined
Potential Funding sources	Local Funds
Potential Matching sources	Impact Fees
Lead Agency / Department Responsible	Public Works
Implementation Schedule	36 Months After Funding
Effect on New Building	Reduce the possible damage from flooding.
Effect on Existing buildings	No new construction would be permitted in flood plains or flood-prone areas.
Cost Effectiveness	Undetermined at this time.
Discussion	The City of Burleson needs to maintain waterways in order to prevent buildup of debris and materials that could cause flooding. The city would adopt ordinances requiring property owners adjacent to the creek to maintain the water way clear of debris and vegetation.



City of Burleson Action Item	Identify and Implement Capital Improvements to Municipal Utility Distribution System
Hazard(s) Addressed	Winter Storms, Wildland Fire, Flooding, Dam Failure, Drought, High Winds, Extreme Heat, Lightning
Goal/Objective	2-E
Priority	Medium
Estimated cost	\$2,000,000
Potential Funding sources	Utility Cost-Share, HMPG
Potential Matching sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Public Works
Implementation Schedule	5 years
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Project is intended to ensure continuous delivery and functionality of municipal utility services during hazardous events, protecting lives and property.
Discussion	Improve capacity and reliability of utility distribution system. These actions will ensure that services such as water, electricity, and sewer are available to residents during hazard events. Winter storms, Lightning, wildland fire, and high winds can compromise above-ground electrical distribution systems. Extreme Heat and drought can place greater strain on water distribution systems through increased demand on water usage. Flooding and dam failure can greatly impact the ability of municipal drainage systems to effectively divert excess water to areas designed to contain it.

City of Burleson Action Item	Hire Consultant to Complete Inundation Studies of All High and Moderate Hazard Dams that Threaten the City.
Hazard(s) Addressed	Dam Failure
Goal/Objective	3-A, 3-C
Priority	Medium
Estimated cost	\$75,000
Potential Funding sources	HMGP, Watershed Authorities, Dam Sponsors
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Public Works
Implementation Schedule	12 Months – 18 Months
Effect on New Building	n/a
Effect on Existing buildings	n/a
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify, through inundation studies, what property, utility or infrastructure would be impacted by dam failure.

City of Burleson Action Item	Increase Conservation of Water by Developing and Implementing Drought Contingency Plan
Hazard(s) Addressed	Drought
Goal/Objective	2-C, 4-A
Priority	Medium
Estimated Cost	\$5,000.00
Potential Funding Sources	General Funds, HMPG
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Department	Water Department
Implementation Schedule	6 Months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Low compared to benefits.
Discussion	The City of Burleson will be better prepared for long periods of drought with a comprehensive contingency plan.

Section 4.2.D – Cleburne Action Items

City of Cleburne Action Item	Implement Codes for Underground High Voltage Power Lines for New Developments
Hazard(s) Addressed	Wildland Fires, Winter Storm, High Winds, Tornado, Lightning
Goal/Objective	2-B, 2-C, 3-C
Priority	Medium
Estimated cost	\$250,000
Potential Funding sources	Private Funds
Potential Match Sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Public Works
Implementation Schedule	3 years
Effect on New Building	Project reduces power outages.
Effect on Existing buildings	None
Cost Effectiveness	Long term reliability of power grid.
Discussion	Underground utilities reduce the chance of power outages due to wind, fire, and ice.

City of Cleburne Action Item	Develop Program for Inspection And Trimming of Tree Limbs Next to High Voltage Power Lines
Hazard(s) Addressed	Wildland Fires, Winter Storm, High Winds, Tornado, Lightning
Goal/Objective	2-B, 2-C
Priority	Medium
Estimated cost	\$50,000
Potential Funding sources	Enterprise Funds, Private Funds
Potential Match Sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Public Works
Implementation Schedule	As Funding Is Available.
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Program would preserve infrastructure, saving money.
Discussion	Removing limbs from power lines reduces power outages and needed repairs from severe weather, ice, or wildland fire events. Reduces hazards to public and utility workers.

City of Cleburne Action Item	Develop and Implement Comprehensive Public Education Program for Natural Hazards
Hazard(s) Addressed	Drought, Extreme Heat, Flooding, Hail, High Winds, Tornado, Wildland Fire, Winter Storms, Dam Failure, Lightning
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated cost	\$2000.00
Potential Funding sources	General Funds, HMPG
Potential Match Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	As Funding Is Available
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Low compared to life safety benefits.
Discussion	The City of Cleburne will distribute public education literature, based on the hazards in this plan, to increase public awareness, and education for all hazards. and mitigation projects for each.

City of Cleburne Action Item	Increase Conservation of Water By Developing and Implementing Drought Contingency Plan
Hazard(s) Addressed	Drought, Extreme Heat
Goal/Objective	2-C, 4-A
Priority	Medium
Estimated cost	\$50,000
Potential Funding sources	Enterprise Fund, HMPG
Potential Match Sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Public Works
Implementation Schedule	1 year
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Protects city from effects of drought.
Discussion	A contingency plan would result in conservation of water resources.

City of Cleburne Action Item	Establish a Secondary Water Supply from Lake Whitney to Lake Pat Cleburne
Hazard(s) Addressed	Drought, Extreme Heat
Goals/Objectives	3-C, 2-D
Priority	High
Estimated cost	\$10,000,000
Potential Funding sources	Enterprise Fund, HMPG, Bonds
Potential Match Sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Public Works
Implementation Schedule	5 years
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Critical to growth of city.
Discussion	The goal is to install a pipeline from Lake Whitney to Lake Pat Cleburne to supplement the City of Cleburne's water supply. Water rights for Lake Whitney have been obtained.

City of Cleburne Action Item	Administer Grant Programs to Install Safe Rooms to Reduce the Injuries and Deaths to Citizens Associated with High Winds and Debris from a Tornado or Severe Weather Event
Hazard(s) Addressed	High Winds, Tornado
Goal/Objective	1-C
Priority	Medium
Estimated cost	\$200,000
Potential Funding sources	HMPG, PDM, And Private Funds
Potential Match Sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	Ongoing
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Safe room will add value to residence.
Discussion	By installing safe rooms throughout the community the vulnerability of citizens to tornadoes, hail, and high winds would be reduced.

City of Cleburne Action Item	Purchase and Install CASA WX Weather Radar in Johnson County.
Hazard(s) Addressed	Flooding, Hail, High Winds, Tornado, Extreme Heat, Winter Storm
Goal/Objective	1-A, 1-B
Priority	High
Estimated cost	\$2.5 Million
Potential Funding sources	General Fund, Private Donations, User Fees
Potential Match Sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	1 Year
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Low compared to life saving benefits.
Discussion	The Collaborative Adaptive Sensing of the Atmosphere (CASA WX) project is a multi-sector partnership dedicated to engineering revolutionary weather-sensing networks. The CASA WX radars provide jurisdictions more accurate weather data and geographically specific weather data culled from the most active levels of the atmosphere. This data could save lives by providing the public more time to react and prepare appropriately as severe weather affects their location. The more accurate data will also provide a better means to analyze severe weather post event which can also help in the assessment of damage after a severe weather event.

City of Cleburne Action Item	Mitigate the Effects of Severe Weather to Citizens Through Early Warning Systems.
Hazard(s) Addressed	Dam Failure, Flooding, Hail, High Winds, Tornado, Lightning
Goal/Objective	1-A, 1-B
Priority	High
Estimated cost	\$80,000
Potential Funding sources	General Fund, HMGP, PDM
Potential Match Sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	2 years
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Potential to save lives.
Discussion	Provide early warning through increasing density of Outdoor Warning Sirens, weather radios, and programs to encourage enrollment in cities telephone notification system.

City of Cleburne Action Item	Identify and Implement Capital Improvements to Municipal Utility Distribution System.
Hazard(s) Addressed	Flooding
Goal/Objective	2-E
Priority	Medium
Estimated cost	\$2,000,000
Potential Funding sources	Drainage Utility, HMPG
Potential Match Sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Public Works
Implementation Schedule	5 years
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Project is intended to ensure continuous delivery and functionality of municipal utility services during hazardous events, protecting lives and property.
Discussion	Improve capacity and reliability of utility distribution system. These actions will ensure that services such as water, electricity, and sewer are available to residents during hazard events. Winter storms, wildland fire, and high winds can compromise above-ground electrical distribution systems. Extreme Heat and drought can place greater strain on water distribution systems through increased demand on water usage. Flooding and dam failure can greatly impact the ability of municipal drainage systems to effectively divert excess water to areas designed to contain it.

City of Cleburne Action Item	Develop a Flood Threat Recognition System.
Hazard(s) Addressed	Flooding, Dam Failure
Goal/Objective	1-A, 1-B
Priority	Medium
Estimated cost	\$30,000
Potential Funding sources	General Fund, HMGP
Potential Match Sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	2 years
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Increase early warning and life safety.
Discussion	Develop an early warning system for Buffalo and Meaner Creek which would remotely alert at the site when the water reaches a dangerous level.

City of Cleburne Action Item	Adopt Debris Management and Flood Abatement Ordinances to Prevent Buildup of Debris and Materials That Could Cause Flooding.
Hazard(s) Addressed	Flooding, Dam Failure
Goal/Objective	2-E, 3-C
Priority	Low
Estimated cost	Undetermined
Potential Funding sources	Local Funds
Potential Match Sources	Impact Fees
Lead Agency / Department Responsible	Public Works
Implementation Schedule	36 Months After Funding
Effect on New Building	Reduce the possible damage from flooding.
Effect on Existing buildings	No new construction would be permitted in flood plains or flood-prone areas.
Cost Effectiveness	Undetermined at this time.
Discussion	The City of Burleson needs to maintain waterways in order to prevent buildup of debris and materials that could cause flooding. The city would adopt ordinances requiring property owners adjacent to the creek to maintain the water way clear of debris and vegetation.

City of Cleburne Action Item	Hire Consultant to Complete Inundation Studies of All High and Moderate Hazard Dams that Threaten the City.
Hazard(s) Addressed	Dam Failure
Goal/Objective	3-A, 3-C
Priority	Medium
Estimated cost	\$75,000
Potential Funding sources	HMGP, Watershed Authorities, Dam Sponsors
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Public Works
Implementation Schedule	12 Months – 18 Months
Effect on New Building	n/a
Effect on Existing buildings	n/a
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify, through inundation studies, what property, utility or infrastructure would be impacted by dam failure.

4.2.E – Godley Action Items

City of Godley Action Item	Purchase NOAA Weather Radios for Distribution to Vulnerable Populations
Hazard(s) Addressed	Dam Failure, Extreme Heat, Flooding, Hail, High Winds, Tornado, Wildfire, Winter Storm, Lightning, Drought
Goal/Objective	1-A
Priority	Low
Estimated Cost	\$100,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local Funds, Cost Share
Lead Department	Emergency Management
Implementation Schedule	12 Months
Effect on New Buildings	None
Effect on Existing Buildings	None
Cost Effectiveness	Early warning systems save lives, justifying costs.
Discussion	This project would be to purchase and distribute NOAA weather radios to vulnerable populations within the City of Godley. NOAA Weather Alert Radios are a proven means to alert and warn citizens about severe weather and civil emergencies.

City of Godley Action Item	Purchase and Install a CASA WX Radar System
Hazard(s) Addressed	Flooding, High Winds, Tornado, Hail, Winter Storm
Goal/Observation	1-A, 1-B
Priority	High
Estimated Cost	2.5 Million
Potential Funding Sources	HMGP, PDM, Local funds
Potential Matching Sources	Donation, In-Kind, Sponsorships
Lead Department	Emergency Management
Implementation Schedule	1 year
Effect on New Buildings	None
Effect on Existing Buildings	None
Cost Effectiveness	Relatively low cost for wide area warning value.
Discussion	The Collaborative Adaptive Sensing of the Atmosphere (CASA WX) project is a multi-sector partnership dedicated to engineering revolutionary weather-sensing networks. The CASA radars provide jurisdictions more accurate weather data and geographically specific weather data culled from the most active levels of the atmosphere. This data could save lives by providing the public more time to react and prepare appropriately as severe weather affects their location. The more accurate data will also provide a better means to analyze severe weather post event which can also help in the assessment of damage after a severe weather event.

City of Godley Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Winds, Tornado
Goal/Objective	1-C, 3-C, 4-A, 4-B, 4-C
Priority	High
Estimated Cost	\$20,000.00
Potential Funding Sources	HMPG, PDM, Private Funds
Potential Matching Sources	Donations
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on New Buildings	None
Effect on Existing Buildings	None
Cost Effectiveness	Increase number of hardened structures to withstand severe weather.
Discussion	By installing safe rooms throughout the community the vulnerability of citizens to tornados, hail, and high winds will be reduced.

City of Godley Action Item	Develop, Implement, and Enforce Water Restriction Ordinances
Hazard(s) Addressed	Drought, Extreme Heat, Wildland Fire
Goal/Objective	1-A, 1-B, 2-C, 3-C, 4-A-C
Priority	Medium
Estimated Cost	Limited To Staff Time
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Public Works
Implementation Schedule	Immediately
Effect on New Buildings	None
Effect on Existing Buildings	None
Cost Effectiveness	Use existing staff budgeted time to communicate water use restrictions.
Discussion	Seeking compliance will reduce water usage and make more available to respond to emergencies.

City of Godley Action Item	Create and Implement a Natural Hazard Public Education Program for Residents
Hazard(s) Addressed	Dam failure, Drought, Extreme Heat, Flooding, Hail, High Winds, Tornado, Wildland Fire, Winter Storms, Lightning
Goal/Objective	4-A
Priority	Medium
Estimated Cost	\$1,000
Potential Funding Sources	HMGP, PDM, General Fund, Fire Department Budget
Potential Matching Sources	Local Funds, In-Kind, Donations
Lead Department	Emergency Management
Implementation Schedule	Within One Year
Effect on New Buildings	None
Effect on Existing Buildings	None
Cost Effectiveness	Public education has a very high rate of return for a low cost.
Discussion	Using the Johnson County Hazard Mitigation Action Plan, create a public education program that allows citizens to become aware of the natural hazards in The City of Godley, and identifies mitigation projects for each.

City of Godley Action Item	Identify and Implement Capital Improvements to Municipal Utility Distribution System
Hazard(s) Addressed	Winter Storms, Wildland Fire, Flooding, Dam Failure, Drought, High Winds, Extreme Heat, Lightning
Goal/Objective	2-E
Priority	Medium
Estimated cost	\$2,000,000
Potential Funding sources	Utility Cost-Share, HMPG
Potential Matching sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Public Works
Implementation Schedule	5 years
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Project is intended to ensure continuous delivery and functionality of municipal utility services during hazardous events, protecting lives and property.
Discussion	Improve capacity and reliability of utility distribution system. These actions will ensure that services such as water, electricity, and sewer are available to residents during hazard events. Winter storms, lightning, wildland fire, and high winds can compromise above-ground electrical distribution systems. Extreme Heat and drought can place greater strain on water distribution systems through increased demand on water usage. Flooding and dam failure can greatly impact the ability of municipal drainage systems to effectively divert excess water to areas designed to contain it.

City of Godley Action Item	Hire Consultant to Complete Inundation Studies of All High and Moderate Hazard Dams that Threaten the City.
Hazard(s) Addressed	Dam Failure
Goal/Objective	3-A, 3-C
Priority	Medium
Estimated cost	\$75,000
Potential Funding sources	HMGP, Watershed Authorities, Dam Sponsors
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Public Works
Implementation Schedule	12 Months – 18 Months
Effect on New Building	n/a
Effect on Existing buildings	n/a
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify, through inundation studies, what property, utility or infrastructure would be impacted by dam failure.

4.2.F – Joshua Action Items

City of Joshua Action Item	Mitigate the Effects of Severe Weather to Citizens Through Early Warning Systems
Hazard(s) Addressed	Dam Failure, Flooding, Hail, High Winds, Tornado, Wildfire, Winter Storm, Lightning, Drought, Extreme Heat
Goal/Objective	1-A, 1-B
Priority	High
Estimated cost	\$20,000
Potential Funding sources	General Fund, HMGP, PDM
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	1 to 2 years
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Potential to save lives.
Discussion	Provide early warning through distributing NOAA weather radios to vulnerable populations.

City of Joshua Action Item	Installation and Maintenance of a CASA WX Weather Radar System
Hazard(s) Addressed	Dam Failure, Hail, Tornadoes, High Wind, Wildfire, Flooding
Goal/Objective	1-A, 1-B
Priority	High
Estimated cost	\$50,000
Potential Funding sources	HMGP, Local Funding, PDM
Potential Matching Sources	Local Funds, Donations, In-Kind, User Fees
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	6 months – 18 months
Effect on New Building	n/a
Effect on Existing buildings	n/a
Cost Effectiveness	Project will increase response decisions by 100%.
Discussion	CASA WX Radar provides the most detailed information available about storms and wind allowing public safety and citizens to prepare and respond more efficiently.

City of Joshua Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornadoes
Goal/Objective	1-C, 2-D
Priority	High
Estimated cost	\$250,000
Potential Funding sources	HMGP, PDM, General Fund
Potential Matching Sources	Local Funds, Donations, In-Kind, Resident Cost-Share
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	12 months – 24 months
Effect on New Building	N/A
Effect on Existing buildings	Some buildings modified for shelter retrofit.
Cost Effectiveness	Moderate
Discussion	Residential safe room shelters potentially decrease personal injuries and death during tornado or high wind events.

City of Joshua Action Item	Adopt Debris Management and Flood Abatement Ordinances to Prevent Buildup of Debris and Materials that Could Cause Flooding
Hazard(s) Addressed	Flooding, Dam Failure
Goal/Objective	2-E, 3-C
Priority	Low
Estimated cost	Undetermined
Potential Funding sources	Local funds
Potential Matching Sources	Impact Fees
Lead Agency / Department Responsible	Public Works
Implementation Schedule	36 Months After Funding
Effect on New Building	Reduces the possible damage from flooding.
Effect on Existing buildings	No new construction would be permitted in flood plains or flood-prone areas.
Cost Effectiveness	Undetermined at this time.
Discussion	The City of Joshua needs to maintain waterways in order to prevent buildup of debris and materials that could cause flooding. The city would adopt ordinances requiring property owners adjacent to the creek to maintain the water way clear of debris and vegetation.

City of Joshua Action Item	Mitigate Effects of Extreme Heat Through Installation of Covered Patios in Public Parks
Hazard(s) Addressed	Extreme Heat
Goal/Objective	3-C
Priority	Low
Estimated cost	\$25,000
Potential Funding sources	HMGP, PDM, General Fund
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Public Works
Implementation Schedule	6 months – 12 months
Effect on New Building	N/A
Effect on Existing buildings	N/A
Cost Effectiveness	Low
Discussion	Covered patios in park areas would allow residents to temporarily be outside protected from the sun during extreme heat days.

City of Joshua Action Item	Develop Community Wildfire Protection Plan (CWPP) and Implement Fuels Reduction Programs
Hazard(s) Addressed	Wildfire
Goal/Objective	3-C, 4-A, 4-B, 4-C
Priority	Medium
Estimated cost	\$35,000
Potential Funding sources	HMGP, PDM, Other State/Federal Grants, General Fund
Potential Matching Sources	Local Funds, Donations, In-Kind, Community Cost-Share
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	18 months – 48 months
Effect on New Building	N/A
Effect on Existing buildings	N/A
Cost Effectiveness	High
Discussion	CWPP would reduce the impact of wildfires through strategic fuel reduction projects and educate the public on defensible space.

City of Joshua Action Item	Hire Consultant to Complete Inundation Studies of all High and Moderate Hazard Dams Within the City.
Hazard(s) Addressed	Dam Failure
Goal/Objective	3-A, 3-C
Priority	Medium
Estimated cost	\$75,000
Potential Funding sources	HMGP, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Funds, Donations, In-Kind, User Fees
Lead Agency / Department Responsible	Public Works
Implementation Schedule	12 months – 18 months
Effect on New Building	N/A
Effect on Existing buildings	N/A
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify through inundation studies what property, utility or infrastructure would be impacted by dam failure.

City of Joshua Action Item	Identify and Implement Capital Improvements to Municipal Utility Distribution System
Hazard(s) Addressed	Winter Storms, Wildland Fire, Flooding, Dam Failure, Drought, High Winds, Extreme Heat, Lightning
Goal/Objective	2-E
Priority	Medium
Estimated cost	\$2,000,000
Potential Funding sources	Utility Cost-Share, HMPG
Potential Matching sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Public Works
Implementation Schedule	5 years
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Project is intended to ensure continuous delivery and functionality of municipal utility services during hazardous events, protecting lives and property.
Discussion	Improve capacity and reliability of utility distribution system. These actions will ensure that services such as water, electricity, and sewer are available to residents during hazard events. Winter Storms, Lightning, Wildland Fire, and High Winds can compromise above-ground electrical distribution systems. Extreme Heat and Drought can place greater strain on water distribution systems through increased demand on water usage. Flooding and Dam Failure can greatly impact the ability of municipal drainage systems to effectively divert excess water to areas designed to contain it.

City of Joshua Action Item	Create and Implement a Natural Hazard Public Education Program for Residents
Hazard(s) Addressed	Dam failure, Drought, Extreme Heat, Flooding, Hail, High Winds, Tornado, Wildland Fire, Winter Storms, Lightning
Goal/Objective	4-A
Priority	Medium
Estimated Cost	\$1,000
Potential Funding Sources	HMGP, PDM, General Fund, Fire Department Budget
Potential Matching Sources	Local Funds, In-Kind, Donations
Lead Department	Emergency Management
Implementation Schedule	Within One Year
Effect on New Buildings	None
Effect on Existing Buildings	None
Cost Effectiveness	Public education has a very high rate of return for a low cost.
Discussion	Using the Johnson County Hazard Mitigation Action Plan, create a public education program that allows citizens to become aware of the natural hazards in The City of Joshua, and identify mitigation projects for each.



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4.2.G – Keene Action Items

City of Keene Action Item	Develop and Implement Comprehensive Public Education Program for Natural Hazards
Hazard(s) Addressed	Extreme Heat, Flooding, Hail, High Winds, Tornado, Wildland Fire, Winter Storms, Dam Failure, Drought, Lightning
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated cost	\$2,000.00
Potential Funding sources	General Funds, HMPG
Potential Match Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	As funding is available.
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Low compared to life safety benefits.
Discussion	The City of Keene will distribute public education literature, based on the hazards in this plan, to increase public awareness and education for all hazards. Distributed materials will include information on mitigation projects.

City of Keene Action Item	Mitigate the Effects of Severe Weather to Citizens Through Early Warning Systems
Hazard(s) Addressed	Dam Failure, Flooding, Hail, High Winds, Tornado, Wildfire, Winter Storm, Lightning, Drought, Extreme Heat
Goal/Objective	1-A, 1-B
Priority	High
Estimated cost	\$20,000
Potential Funding Sources	General Fund, HMGP, PDM
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	1 to 2 years
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Potential to save lives.
Discussion	Provide early warning through distributing NOAA weather radios to vulnerable populations.

City of Keene Action Item	Purchase and Installation of a CASA WX Weather Radar system.
Hazard(s) Addressed	Dam Failure, Hail, Tornadoes, High Wind, Wildfire, Flooding
Goal/Objective	1-A, 1-B
Priority	High
Estimated cost	\$50,000
Potential Funding sources	HMGP, Local Funding
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	6 months – 18 months
Effect on New Building	n/a
Effect on Existing buildings	n/a
Cost Effectiveness	Project will increase response decisions by 100%.
Discussion	CASA WX Radar provides the most detailed information available about storms and wind allowing public safety and citizens to prepare and respond more efficiently.

City of Keene Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornadoes
Goal/Objective	1-C, 2-D
Priority	High
Estimated cost	\$250,000
Potential Funding sources	HMGP, PHMGP, Resident Match
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	12 months – 24 months
Effect on New Building	N/A
Effect on Existing buildings	Some buildings modified for shelter retrofit.
Cost Effectiveness	Moderate
Discussion	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.

City of Keene Action Item	Adopt Debris Management And Flood Abatement Ordinances to Prevent Buildup of Debris and Materials that Could Cause Flooding
Hazard(s) Addressed	Flooding, Dam Failure
Goal/Objective	2-E, 3-C
Priority	Low
Estimated cost	Undetermined
Potential Funding sources	Local funds
Potential Matching Sources	Impact Fees
Lead Agency / Department Responsible	Public Works
Implementation Schedule	36 Months After Funding
Effect on New Building	Reduce the possible damage from flooding.
Effect on Existing buildings	No new construction would be permitted in flood plains or flood-prone areas.
Cost Effectiveness	Undetermined at this time.
Discussion	The City of Keene needs to maintain waterways in order to prevent buildup of debris and materials that could cause flooding. The city would adopt ordinances requiring property owners adjacent to the creek to maintain the water way clear of debris and vegetation.

City of Keene Action Item	Mitigate Effects of Extreme Heat Through Installation of Covered Patios in Public Parks
Hazard(s) Addressed	Extreme Heat
Goal/Objective	3-C
Priority	Low
Estimated cost	\$25,000
Potential Funding sources	HMGP
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Public Works
Implementation Schedule	6 months – 12 months
Effect on New Building	N/A
Effect on Existing buildings	N/A
Cost Effectiveness	Low
Discussion	Covered patios in park areas would allow residents to temporarily be outside protected from the sun during extreme heat days.

City of Keene Action Item	Create Temporary Public Cooling Centers to Mitigate Effects of Extreme Heat
Hazard(s) Addressed	Extreme Heat
Goal/Objective	3-C
Priority	Medium
Estimated cost	To Be Determined
Potential Funding sources	HMGP, Municipal Funds
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	6 months – 12 months
Effect on New Building	N/A
Effect on Existing buildings	N/A
Cost Effectiveness	Low
Discussion	Cooling centers would be identified and equipped with appropriate cooling systems and be opened to the public during extreme heat events.

City of Keene Action Item	Develop Community Wildfire Protection Plan (CWPP) and Implement Fuels Reduction Programs
Hazard(s) Addressed	Wildfire
Goal/Objective	3-C, 4-A, 4-B, 4-C
Priority	Medium
Estimated cost	\$35,000
Potential Funding sources	HMGP, Community Match
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Emergency Management
Implementation Schedule	18 months – 48 months
Effect on New Building	N/A
Effect on Existing buildings	N/A
Cost Effectiveness	High
Discussion	CWPP would reduce the impact of wildfires through strategic fuel reduction projects and educate the public on defensible space.



City of Keene Action Item	Identify and Implement Capital Improvements to Municipal Utility Distribution System
Hazard(s) Addressed	Winter Storms, Wildland Fire, Flooding, Dam Failure, Drought, High Winds, Extreme Heat, Lightning
Goal/Objective	2-E
Priority	Medium
Estimated cost	\$2,000,000
Potential Funding sources	Utility Cost-Share, HMPG
Potential Matching sources	Local Funds, Donations, In-Kind Match
Lead Agency / Department Responsible	Public Works
Implementation Schedule	5 years
Effect on New Building	None
Effect on Existing buildings	None
Cost Effectiveness	Project is intended to ensure continuous delivery and functionality of municipal utility services during hazardous events, protecting lives and property.
Discussion	Improve capacity and reliability of utility distribution system. These actions will ensure that services such as water, electricity, and sewer are available to residents during hazard events. Winter storms, lightning, wildland fire, and high winds can compromise above-ground electrical distribution systems. Extreme Heat and drought can place greater strain on water distribution systems through increased demand on water usage. Flooding and dam failure can greatly impact the ability of municipal drainage systems to effectively divert excess water to areas designed to contain it.

City of Keene Action Item	Hire Consultant to Complete Inundation Studies of all High and Moderate Hazard Dams Within the County
Hazard(s) Addressed	Dam Failure
Goal/Objective	3-A, 3-C
Priority	Medium
Estimated cost	\$75,000
Potential Funding sources	HMGP, Watershed Authorities, Dam Sponsors
Potential Matching Sources	Local Funds, Donations, In-Kind
Lead Agency / Department Responsible	Public Works
Implementation Schedule	12 months – 18 months
Effect on New Building	N/A
Effect on Existing buildings	N/A
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify through inundation studies what property, utility or infrastructure would be impacted by dam failure.



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4.3 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

Jurisdiction Participation Johnson 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.

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
480397#	ALVARADO, CITY OF	JOHNSON COUNTY	08/09/74	05/04/82	12/04/12	05/04/82	No
485459#	BURLESON, CITY OF	TARRANT COUNTY/ JOHNSON COUNTY		11/02/73	12/04/12	11/02/73	No
485462#	CLEBURNE, CITY OF	JOHNSON COUNTY		7/13/1972	12/4/2012	6/23/1972	No
480880#	GODLEY, CITY OF	JOHNSON COUNTY	8/22/1975	9/27/1991	12/4/2012	2/18/2011	No
480879#	JOHNSON COUNTY*	JOHNSON COUNTY	5/17/1977	9/27/1991	12/4/2012	9/27/1991	No
480882#	JOSHUA, CITY OF	JOHNSON COUNTY	6/27/1975	9/27/1991	12/4/2012	9/27/1991	No
481107#	KEENE, CITY OF	JOHNSON COUNTY	6/4/1976	9/27/1991	12/4/2012	2/21/2001	No

* - Indicates unincorporated county

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

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 Johnson 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	Community Floodplain Manager	NFIP Activity	Activity Description	Enforcement
Johnson County	Director of Public Works	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the Department of Public Works. Johnson County requires 3 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Order	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with County flood damage prevention order shall result in fines up to \$500 per violation plus court costs.
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Participate with FEMA in identifying Special Flood Hazard Areas for	Johnson County participates in Risk Assessment, Mapping and	

Jurisdiction	Community Floodplain Manager	NFIP Activity	Activity Description	Enforcement
		future FIRM maps	Planning Partners (RAMPP) meetings held by FEMA and/or their contractors to better identify areas that are flood prone that are not shown on current Flood Insurance Rate Maps.	
		Take action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	County Road Operations department installs signs at low water crossings that indicate "When flooded turn around don't drown".	
		Future Mitigation Projects	Johnson County will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	
Alvarado	City Manager	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the Department of Public Works. Johnson County requires 3 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Order	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$500 per violation plus court costs.
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Future Mitigation Projects	Alvarado will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	

Jurisdiction	Community Floodplain Manager	NFIP Activity	Activity Description	Enforcement
Burleson	Director of Engineering Services	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the Engineering Services Department. The City of Burleson requires for both residential and non-residential structures shall have the lowest floors (including the basement) elevated to at least three (3) feet above the base flood elevation as designated by the FIRM or two (2) feet above the ultimate (fully-developed) water surface elevation as determined by a flood study prepared by a licensed engineer, whichever is higher. This applies for both new construction and substantial improvement to any structure.	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$500 per violation plus all costs and expenses involved in the case.
		Floodplain development permits	Permits are required for any development in a floodplain. Development is defined as any manmade change in improved and unimproved real estate including, but not limited to, buildings, or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.	
		Participate with FEMA in identifying Special Flood Hazard Areas for future FIRM maps	The City of Burleson participates in Risk Assessment, Mapping and Planning Partners (RAMPP) meetings held by FEMA and/or their contractors to better identify areas	

Jurisdiction	Community Floodplain Manager	NFIP Activity	Activity Description	Enforcement
			that are flood prone that are not shown on current Flood Insurance Rate Maps.	
		Take action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	The City of Burleson Public Works Department installs signs at low water crossings that indicate at known areas of flooding as well as have several crossings identified that are closed during significant rain events.	
		Future Mitigation Projects	The City of Burleson continues to monitor areas that are prone to flooding as well as potential areas as development activity continues to increase within the City.	
Cleburne	City Engineer	Complete and maintain FEMA elevation certificates on all new and substantially improved buildings in our Special Flood Hazard Area	Permits are issued through the City of Cleburne Public Works Division. The City of Cleburne requires 2 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the City of Cleburne Floodplain Management Ordinance (Chapter 151).	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention ordinance shall result in fines up to \$500 per violation plus court costs.
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Drainage maintenance program	The City of Cleburne Public Works Division inspects, cleans, and makes needed repair to the drainage system.	

Jurisdiction	Community Floodplain Manager	NFIP Activity	Activity Description	Enforcement
		Take action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	The city installs, maintains, and operates low water crossing gates at identified flood hazard areas. Firefighters are trained in water rescue. The city maintains an evacuation annex as part of its Emergency Response Plan (ERP).	
		Community Outreach	The City of Cleburne provides flood insurance information, liaison with insurance companies about elevation certificates, and annual outreach to properties located in the Special Flood Hazard Area. Review and update information provided on our flood protection website.	
Godley	City Administrator	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the City Secretary. Godley requires new construction and substantial improvement of any residential structure shall be constructed so the lowest floor is two feet above the highest adjacent exterior grade. A registered professional engineer, architect, or land surveyor shall submit a certification to the Floodplain Administrator that the standard is satisfied.	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$500 per violation plus court costs.
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Participate with	City of Godley	

Jurisdiction	Community Floodplain Manager	NFIP Activity	Activity Description	Enforcement
		FEMA in identifying Special Flood Hazard Areas for future FIRM maps	participates in Risk Assessment, Mapping and Planning Partners (RAMPP) meetings held by FEMA and/or their contractors to better identify areas that are flood prone that are not shown on current Flood Insurance Rate Maps.	
		Take action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	The Public Works department will erect signs at low water crossings that indicate "When flooded turn around don't drown".	
		Future Mitigation Projects	The City of Godley will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	
Joshua	City Manager	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the City Secretary. Joshua requires new construction and substantial improvement of any residential structure shall be constructed so the lowest floor is two feet above the highest adjacent exterior grade. A registered professional engineer, architect, or land surveyor shall submit a certification to the Floodplain Administrator that the standard is satisfied.	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$500 per violation plus court costs.

Jurisdiction	Community Floodplain Manager	NFIP Activity	Activity Description	Enforcement
		Take action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	The City of Joshua Public Works Department installs road closed signs and barricades at low water crossings during flooding events. The City of Joshua Fire Department has trained Swiftwater Rescue Technicians equipped to respond to flooding emergencies to perform rescues when needed.	
		Future Mitigation Projects	The City of Joshua will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Future Mitigation Projects	The City of Joshua will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	
Keene	Floodplain Manager	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the City Secretary. Keene requires new construction and substantial improvement of any residential structure shall be constructed so the lowest floor is two feet above the highest adjacent exterior grade. A registered professional engineer, architect, or land surveyor shall submit a certification to the Floodplain	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$500 per violation plus court costs.

Jurisdiction	Community Floodplain Manager	NFIP Activity	Activity Description	Enforcement
			Administrator that the standard is satisfied.	
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Future Mitigation Projects	The City of Keene will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	



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4.4 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 county in Texas 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 run by elected officials, others are run by individuals employed by County administration. They include such departments as public health and human services, personnel and budget, and in some counties, public transportation, and emergency medical services.

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
Johnson County	County Judge	The County Commissioner's Court, including the County Judge and County Commissioners, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. Ability to implement and approve mitigation actions and integrate mitigation into existing policies and programs is a function of this group. As the governing body, the Commissioner's Court has the authority to expand and/or improve mitigation capabilities through hiring additional staff, implementing new taxes, increasing the County budget, and changing policies and programs. A summary of Johnson County's legal and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities can be found in Appendix B, Tables 4.1, 4.2, and 4.3.
City of Alvarado	City Manager	The City of Alvarado is served by the offices of mayor, mayor pro-tem, councilpersons, the city manager, and the city secretary. The city council, consisting of the mayor, mayor pro-tem and councilpersons, reviews and amends the city budget annually, has the power to pass new laws and create codes and ordinances, and generally determines the ability of the city to implement hazard mitigation actions and integrate mitigation actions into other policies and programs. As the governing body, the City Council has the authority to expand and/or improve mitigation capabilities through hiring additional staff, implementing new taxes, increasing the City budget, adopting new ordinances and regulations, and changing policies and programs. A summary of Alvarado's legal and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities can be found in Appendix B, Tables 4.1, 4.2, and 4.3.


Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Burleson	City Manager	The City of Burleson is served by the offices of mayor, mayor pro-tem, councilpersons, the city manager, and the city secretary. The city council, consisting of the mayor, mayor pro-tem and councilpersons, reviews and amends the city budget annually, has the power to pass new laws and create codes and ordinances, and generally determines the ability of the city to implement hazard mitigation actions and integrate mitigation actions into other policies and programs. As the governing body, the City Council has the authority to expand and/or improve mitigation capabilities through hiring additional staff, implementing new taxes, increasing their budget, and changing policies and programs. A summary of Burleson's legal and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities can be found in Appendix B, Tables 4.1, 4.2, and 4.3.
City of Cleburne	City Manager	The City of Cleburne is served by the offices of mayor, mayor pro-tem, councilpersons, the city manager, and the city secretary. The city council, consisting of the mayor, mayor pro-tem and councilpersons, reviews and amends the city budget annually, has the power to pass new laws and create codes and ordinances, and generally determines the ability of the city to implement hazard mitigation actions and integrate mitigation actions into other policies and programs. As the governing body, the City Council has the authority to expand and/or improve mitigation capabilities through hiring additional staff, implementing new taxes, increasing the City budget, adopting new ordinances and regulations, and changing policies and programs. A summary of Cleburne's legal and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities can be found in Appendix B, Tables 4.1, 4.2, and 4.3.
City of Godley	Mayor	The city council, including the mayor, mayor pro-tem, and council members, along with the city attorney reviews and amends the city budget annually, has the power to pass new laws and create codes and ordinances, and generally determines the ability of the city to implement hazard mitigation actions and integrate mitigation actions into other policies and programs. As the governing body, the City Council has the authority to expand and/or improve mitigation capabilities through hiring additional staff, implementing new taxes, increasing the City budget, adopting new ordinances and regulations, and changing policies and programs. A summary of Godley's legal and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities can be found in Appendix B, Tables 4.1, 4.2, and 4.3.

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
Joshua	City Manager	The City of Joshua is served by the offices of mayor, mayor pro-tem, councilpersons, the city manager, and the city secretary. The city council, consisting of the mayor, mayor pro-tem and councilpersons, reviews and amends the city budget annually, has the power to pass new laws and create codes and ordinances, and generally determines the ability of the city to implement hazard mitigation actions and integrate mitigation actions into other policies and programs. As the governing body, the City Council has the authority to expand and/or improve mitigation capabilities through hiring additional staff, implementing new taxes, increasing the City budget, adopting new ordinances and regulations, and changing policies and programs. A summary of Joshua's legal and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities can be found in Appendix B, Tables 4.1, 4.2, and 4.3.
Keene	City Manager	The City of Keene is served by the offices of mayor, mayor pro-tem, councilpersons, the city manager, and the city secretary. The city council, consisting of the mayor, mayor pro-tem and councilpersons, reviews and amends the city budget annually, has the power to pass new laws and create codes and ordinances, and generally determines the ability of the city to implement hazard mitigation actions and integrate mitigation actions into other policies and programs. As the governing body, the City Council has the authority to expand and/or improve mitigation capabilities through hiring additional staff, implementing new taxes, increasing the City budget, adopting new ordinances and regulations, and changing policies and programs. A summary of Keene's legal and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities can be found in Appendix B, Tables 4.1, 4.2, and 4.3.

The capability assessment examines the ability of Johnson 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 Johnson 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.

Johnson 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.

In Appendix B, 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 Johnson 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 quantify Johnson 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, Johnson County and its jurisdictions have 72% of legal and regulatory capabilities, 69% of administrative and technical capabilities, and 66% of fiscal capabilities.

Chapter Five: Plan Maintenance Process

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

5.1 Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), Johnson County has developed a plan maintenance process which is described in the following paragraphs. Johnson 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 Johnson County Commissioners Court, and formal adoption of the plan by City Council by each participating jurisdiction, the actions outlined in the Johnson County Hazard Mitigation Plan would be implemented by the county and participating jurisdictions as described throughout this document.

The Johnson County Emergency Management Coordinator will be responsible for ensuring the mitigation action items and implementation are monitored, evaluated, and reviewed biannually by emailing all the participating jurisdictions for updates on their individual action items. The progress of the action items will be tracked electronically as “in progress”, “deferred” or “completed”. This implementation will be included in the Mitigation Strategies for the 5 year update of the plan.

The Johnson 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, Johnson 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:

Jurisdiction	Personnel	Activity Description	Time
Johnson County	Emergency Management Coordinator	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
		Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
		Update Plan	Once every 5 years
Alvarado	Emergency Management	Monitoring Plan : Track implementation and action items,	Biannually

Jurisdiction	Personnel	Activity Description	Time
	Coordinator	changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	
		Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
		Update Plan	Once every 5 years
Burleson	Emergency Management Coordinator	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
		Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
		Update Plan	Once every 5 years
Cleburne	Emergency Management Coordinator	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
		Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
		Update Plan	Once every 5 years
Godley	Mayor	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
		Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
		Update Plan	Once every 5 years
Joshua	Fire Chief	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually

Jurisdiction	Personnel	Activity Description	Time
Keene	Fire Chief	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
		Update Plan	Once every 5 years
		Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
		Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
		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 Johnson County Commissioner's Court and the respective incorporated cities', included in the Johnson 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.

5.2 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 assessments for each jurisdiction were carefully reviewed and considered when developing the mitigation actions for this plan. The Hazard Mitigation Planning Team established a process in which the requirements of this plan will continue to be identified and incorporated into regional and local planning mechanisms.

During meetings to create, adopt, update, or otherwise change any plan that has an effect on vulnerability to natural hazards, Johnson County and all participating jurisdictions will provide a copy of the most recent version of the Hazard Mitigation Action Plan (HazMAP) to appropriate parties. It will be recommended that the goals and strategies of new and updated planning documents are consistent with and support the goals of the Johnson County HazMAP as applicable. Provided there is sufficient political, fiscal, and administrative capability (Appendix B), requirements and actions detailed in the HazMAP will be integrated into the appropriate plans, such as identified below, whenever appropriate.

The acting emergency management coordinator, in coordination with responsible plan personnel identified below, will recommend HazMAP components applicable to new or existing plans be integrated into the appropriate new or existing plan. Formal integration will be completed through

the Johnson County Commissioner's Court, or City Council for participating municipalities, following presentation of recommended integrations, discussion and vote to approve.

The table below describes existing plans, personnel responsible for plan oversight, integration or review schedules, and applications for integration (see pp. 4-59 to 4-62 for formal process authority).

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
Johnson County	County Commissioners	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Coordinator	Emergency Action Plan updates	Every Five Years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain Ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	County Commissioners	Capital Improvement Plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, County Commissioners	Drought Contingency Plan	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Public Works Director, County Commissioners	Natural Resource Conservation Plan	Annually	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.
Alvarado	City Council, City Manager	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Coordinator	Emergency Action Plan updates	Every Five Years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain Ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, City Manager	Capital Improvement Plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.

Johnson County Hazard Mitigation Action Plan

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
	Public Works Director	Drought Contingency Plan	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Public Works Director, City Council	Natural Resource Conservation Plan	Annually	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.
Burleson	City Council, City Manager	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Coordinator	Emergency Action Plan updates	Every five years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, City Manager	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director	Drought Contingency plans	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
Cleburne	City Council, City Manager	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Coordinator	Emergency Action Plan updates	Annually	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, City Manager	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director	Drought Contingency plans	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
Godley	City Council	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Mayor	Emergency Action Plan updates	Every Five Years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director	Drought Contingency plans	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
	City Council	Natural Resource Conservation Plan	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
Joshua	City Council, City Manager	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Fire Chief/Emergency Manager	Emergency Action Plan updates	Every Five Years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain Ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, City Manager	Capital Improvement Plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director	Drought Contingency Plan	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Public Works Director	Natural Resource Conservation Plan	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
Keene	City Council, City Manager	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Fire Chief/Emergency Manager	Emergency Action Plan updates	Every Five Years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain Ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, City Manager	Capital Improvement Plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director	Drought Contingency Plan	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Public Works Director	Natural Resource Conservation Plan	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Johnson County Hazard Mitigation Planning Team considers this HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

5.3 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 Johnson 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 Johnson County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.



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Appendix A: Planning and Public Meeting Documentation



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MEETING SIGN-IN SHEET

Meeting:	Johnson County Local Mitigation Strategy (JOLMS) Working Group Meeting			Meeting Date:	June 7, 2012
Facilitator:	Francisco San Miguel / Michael Gaciri , NCTCOG			Place/Room:	810 E. Kilpatrick Street Cleburne, TX
Name	Title	Company	Phone	E-Mail	
DANNO DISNEYSON	Food/Beverage manager	Johnson county Public works	817 536 - 6380	dannod@johnsoncountytexas.org	
Gary A. Wisdom	Fire Chief	City of Burleson	817 426-9171	gwisdom@burleson.tx.us	
Rey Gonzales	Asst Public Works Dir.	City of Burleson	817-426-9838	rgonzales@burleson.tx.us	
Randy Jenkins	EMC	Cleburne	817-645-0966	randy.jenkins@clebu	
Matt Gillin	Fire Chief	Keene	817-556-2474	firechief@keene-tx.com	
Keith J. Ijgc	EMC	City of Keene	817-996-5632	keith@ijgc-keene-tx.com	
JACK SNOW	EMC	Johnson County	817-240-1212	jack@johnsoncountytexas.org	
DOUGNEY CORTES	CITY ENGINEER	Cleburne	817-645-0942	courtesy.cortes@cleburne.org	
David Esquivel	City of Cleburne	Dir. of PWS	817-645-0901	david.esquivel@cleburne.org	
Wayne Baker	CITY OF JOSHUA	FIRE CHIEF	817-648-8865	wbaker@cityofjoshua-tx.org	

MEETING SIGN-IN SHEET

[illegible]

MEETING SIGN-IN SHEET

[illegible]

Agenda

1. Inform City Mgt of Project
2. Start Process To Pick/Choose HMT Members
3. Assign Hazard Mitigation Coordinator (HMC)
4. Give Inter-Local Agreement To City Secretary
 1. Will Contact School EMC's When They Return
 2. Appoint Keith Tilge HMC.

MEETING SIGN-IN SHEET

[illegible]

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1.5 Acres

[illegible]

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[illegible]

Burleson Hazard Analysis Meeting

11/16/2012 9:00am

Francisco San Miguel

810 E. Kilpatrick Cleburne, TX

E-Mail

gwis don I burlesouts. com

rgonzales@barlesintx.com

SBatly © burlesontx.com

francmigue@nctos.org

[illegible]

Godley

psanmiguel@nctcos.org

MEETING SIGN-IN SHEET

[illegible]

MEETING SIGN-IN SHEET

Meeting:		Johnson County Hazard Analysis Working Group- PUBLIC MEETING		Meeting Date:		12/11/12 10:00am
Facilitator:		Francisco San Miguel, NCTCOG		Place/Room:		810 E. Kilpatrick Cleburne, TX
Name	Title	Company	Phone	E-Mail		
Snake Snow	EMC	Johnson County	817-240-1212	jack@johnsoncountytx.org		
DAVID DISHERD	INSPECTOR	Johnson County	917-201-6919	DAVID@JOHNSONCOUNTYTX.ORG		
DAVID J. WALLIS	MANOR	GOBLEY	817.487.3676	DAVID.J.WALLIS@GOBLEYTX.GOV		
WAYNE BAKER	FIRE CHIEF	JOHNSON	817-648-8865	WBAKER@CITYOFJOHNSONTX.TX		
Matt Gillis	Fire Chief	Keene	817-648-7538	firechief@keenetx.com		
RICHARD WILKINS	FIRE CHIEF/EMC	ALVARADO	817-538-2313	DAVID@ALVARADOTX.GOV		
Randy Jenkins	EMC	Cleburne	817-645-0964	randy.jenkins@cleburne.net		
Alinda Davis	clerk	Alvarado	817-390-3351	dave@alvaradotx.org		
Keith J. Ipe	EMC	Keene	817-641-3536	keith.j.ipe@keenetx.com		
Gary Wisdom	Fire Chief	Burleson	817-426-9171	gwisdom@burlesontx.com		
Brent Battle	Bat. Chief	Burleson	817-426-9170	bbattle@burlesontx.com		

MEETING SIGN-IN SHEET

[illegible]

MEETING SIGN-IN SHEET

Meeting:	Johnson County HazMAP Meeting		Meeting Date:	7/23/2013
Facilitator:	Nicholas F. LaGrassa, NCTCOG		Place/Room:	Johnson County EOC
Name	Title	Company	Phone	E-Mail
Clint Davis	City Manager	City of Alvarado	817-790-3351	davis@cityofalvarado.org
Randy Jenkins	EMC	City of Cleburne	817-645-0964	randy.jenkins@cleburne.net
Keith Tilge	ED Director	City of Keene	817-970-0395	keith.tilge@keene.tx.com
Matt Gillin	Fire Chief	City of Keene	817-822-0357	firechief@keene.tx.com
Wayne Baver	Fire Chief	City of Joshua	817-558-7447	wbaver@cityofjoshua.tx.us
Jack Tidwell	MSR of Env & Dev	NCTCOG	817-695-9220	jt Tidwell@nctcos.org
Gary A. Wisdom	Fire Chief	Burleson	817-426-9170	gwisdom@burleson.tx.com
Brent G. Buhl	Bar Chief	Burleson	817-426-9173	Bbuhl@burleson.tx.com
Indy Thayer	EP Director	NCTCOG	817-608-2322	mtthayer@nctcos.org
Jamie Moore	EMC	Johnson County	817-933-6261	jmoore@johnsoncounty.tx.us
Courtney Coates	Cleburne City Engineer	Cleburne City Engineer	817-645-0942	courtney.coates@cleburne.net
Erik Dumas	P.W. Director	Johnson County	817-556-6380	sdumase@johnsoncounty.tx.us
Nicholas LaGrassa	EP Program Assistant	NCTCOG	817-608-2323	nlaGrassa@nctcos.org

The following documents present proof of the public Local Emergency Preparedness Council (LEPC) meeting held on August 28th, 2013 where discussion on the Johnson County Hazard Mitigation Action Plan was held.

1. The public notice, posted at Burleson City Hall on August 21, 2013
2. The agenda for the LEPC Meeting where the Hazard Mitigation Action Plan was discussed
3. The list of LEPC members that documents who was in attendance for the August LEPC meeting.

NOTICE OF MEETING
JOHNSON COUNTY
LOCAL EMERGENCY PLANNING COMMITTEE

Notice is hereby given that a REGULAR MEETING of the above named will be held on Wednesday August 28th, 2013 from 12:00 PM to 1 PM, at Texas Health Harris Methodist in Cleburne Tx.

At which time the following subjects will be discussed, to-wit:

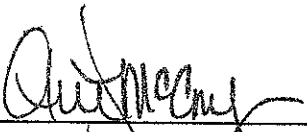
Refer to attached agenda

I, the undersigned authority, do hereby certify that the above Notice of Meeting of the governing body of the above named is a true and correct copy of said Notice and that I posted a true and correct copy of said Notice, at the following,

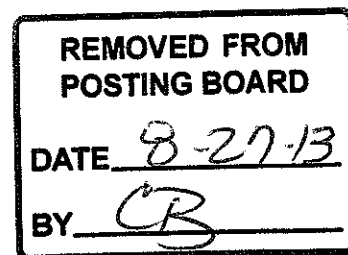
On the bulletin board at City Hall, 141 W. Renfro St. Burleson, Texas, a place convenient and readily accessible to the general public at all times, and said Notice was posted on Wednesday, August 21st, 2013 by 5:00 PM.

CERTIFICATION

This is to certify that this notice was posted on the bulletin board of City Hall of the City of Burleson, 141 W. Renfro St. Burleson, Texas at 5:00 pm this 21st day of August 2013.



Amanda McCrory, City Secretary



JOHNSON COUNTY LEPC
AGENDA
August 28, 2013
Texas Health Harris Methodist Hospital Cleburne
12:00 PM TO 1:00 PM

I. Call meeting to order

II. Approval of minutes from May 8, 2013 meeting

III. Treasurer's Report

IV. President's Report (Discussion)

V. Agenda Items

A. Hazardous Mitigation Action Plan Discussion

VI. Unfinished Business

VII. New Business (Discussion)

IX. Set Next Meeting: November 13th, 2013

Texas Health Harris Methodist Hospital Cleburne
12:00 PM to 1:00 PM

X. Announcements

XI. Adjournment

2013 JOHNSON COUNTY LEPC MEMBERSHIP

January 1, 2013

2013 Attendance

Name	Title	E-Mail	Employer	Phone#	Catergory	Jan	Mar	May	Jul	Aug	Nov
ADAMS, RICK										X	
AMOS, GERALD	LEAD PRODUCTION TECH	gerald.amos@airliquide.com	AIR LIQUIDE AMERICA	817-559-4988	FACILITY OPERATOR	N/A			N/A		
BAKER, WAYNE	FIRE CHIEF	wbaker@cityofjoshuatx.us	JOSHUA CITY OF	817-648-8865	FIRE-FIGHTING	N/A	X	X	N/A		
BASS, MICHAEL	ENVIRONMENTAL INV.	CHAE.L.BASS@TCEQ.TEXAS.G	TCEQ	817-588-5869	STATE GOVERNMENT	N/A	X		N/A		
BATLA, BRENT	BATTALION CHIEF	batla@trainingdivision.com	BURLESON, CITY OF	817-933-6967	EMERGENCY MGMT.	N/A	X		N/A		
BENCH, DARREN						N/A		X	N/A		
BOOTH, JOE	O & M MANAGER	joebooth@brazoselectric.com	BRAZOS ELECTRIC	817-641-5041	FACILITY OPERATOR	N/A			N/A		
BRAINARD, JEFF	SERGEANT	ERY.BRAINARD@MTCTRAINS.COM		972-3663334		N/A	X		N/A		
BUSH, KEN	ASSISTANT EMC	kbush@johnsoncountytexas.org	JOHNSON COUNTY EM	817-556-3645	EMERGENCY MGMT.	N/A	X		N/A		
BUTLER, DAVID		dbutler@burlesontx.com	BURLESON, CITY OF	817-447-5400	LOCAL GOVERNMENT	N/A			N/A		
CAMP, SHEILA	OFFICE COORDINATOR		AIR LIQUIDE AMERICA	817-517-6430	FACILITY OPERATOR	N/A			N/A		
COOPER, JERRELL	TCEQ					N/A			N/A	X	
CRAIG, DANE	OWNER/OPERATOR	dane@dakotadistributing.com	DAKOTAL DISTRIBUTING	817-453-7776	PRIVATE ENTERPRISE	N/A			N/A		
CUMMINS, MARK	OWNER / FF	cumminsfoam@yahoo.com	CAFS COMPANY/JOSHUA	817-996-0950	PRIVATE ENTERPRISE	N/A			N/A		
CURFMAN, SUE	EMERG MAN COORD	suecurfman@texashealth.org	TEXAS HEALTH FW	817-250-3433	HOSPITAL	N/A	X		N/A		
CURRY, CARL	PLANT MANAGER	ccurry@brazoselectric.com	BRAZOS ELECTRIC	817-641-5041	FACILITY OPERATOR	N/A			N/A		
DAVIS, ZACH	COUNTY EXTENSION AGENT	ztdavis@ag.tamu.edu	JOHNSON COUNTY	817-556-6370	LOCAL GOVERNMENT	N/A			N/A		
EVERLY, AMANDA	NCTCOG					N/A	X		N/A		
FUCHS, VICTOR	OE COORDINATOR	victor.fuchs@halliburton.com	JRC / HALLIBURTON	817-761-2170	FACILITY OPERATOR	N/A			N/A		
GILBERT, MIKE		gilbert@johnsoncountytexas.org	JOHNSON CO. SHERIFF	817-558-0024	LAW ENFORCEMENT	N/A			N/A		
GILLIN, MATT	FIRE CHIEF	mgillin@keenebroadband.com	KEENE FIRE DEPARTMENT	817-556-2474	FIRE-FIGHTING	N/A			N/A		
GUERRERO, VERONICA	ENVIRONMENTAL INV.	VICA.GUERRERO@TCEQ.TEXAS	TCEQ	817-558-5891	STATE GOVERNMENT	N/A	X		N/A		
HARBORTH, DARRELL	ASSET PROTECTION	dkharbo@wal-mart.com	WAL-MART DISTRIBUTION	817-202-3007	FACILITY OPERATOR	N/A			N/A		
HARRIS, KATRICE	CHEM STEWARDS COORD	kharris@sacheminc.com	SACHEM INC.	817-202-3228	FACILITY OPERATOR	N/A	X	X	N/A	X	
HAVELKA, MICHELLE	ER COODINATOR	michelle.havelka@tceq.texas.gov	TCEQ	817-588-5837	STATE GOVERNMENT	N/A		X	N/A		
HAWKES, VINCENT	OPERATIONS SUPERVISOR	vihawkes@brazoselectric.com	BRAZOS ELECTRIC	817-641-5041	FACILITY OPERATOR	N/A			N/A		
HOLT, NANCY	DIRECTOR	cleburnesarmy@sbcglobal.net	SALVATION ARMY	817-558-1296	VOLUNTEER ORG	N/A			N/A		
HOUSTON, KENDRA	ENVIRONMENTAL INV.	DRA.HOUSTON@TCEQ.TEXAS	TCEQ	817-588-5817	STATE GOVERNMENT	N/A	X		N/A		

HOWE, JOE	TRAINING SUPERVISOR	jhowe@sachemusa.com	SACHEM INC.	817-202-3266	FACILITY OPERATOR	N/A			N/A		
HUNT, LOUIS		lhunt@sacheminc.com	SACHEM INC.	817-202-3211	FACILITY OPERATOR	N/A	X		N/A		
JA..., EDDIE	TEXAS HEALTH					N/A			N/A	X	
JENKINS, RANDY	ASST. FIRE CHIEF / EMC	randy.jenkins@cleburne.net	CLEBURNE, CITY OF	817-645-0964	EMERGENCY MGMT.	N/A	X	X	N/A	X	
JOHNSTON, MIKE	DIRECTOR	mjohnston@johnsoncountyfire.org	Johnson County ESD	817-556-2212	JCESD	N/A			N/A		
JONES, EDDIE						N/A		X	N/A		
KNOLL, JOE	DEPOT MANAGER	joe.knoll@airliquide.com	AIR LIQUIDE AMERICA	972-827-6825	FACILITY OPERATOR	N/A			N/A		
LAGRASSA, NICHOLA	NCTCOG	nlagrassa@nctcog.org				N/A			N/A	X	
LAFOSSE, LISA	OWNER / FF	lisa@cafco.com	CAFS COMPANY/JOSHUA	817-584-4500	PRIVATE ENTERPRIZE	N/A			N/A		
LITTLE, GARY	REGIONAL OPS. MANAGER	glittle@dxgroup.com	DPC INDUSTRIES INC.	817-641-4712	FACILITY OPERATOR	N/A		X	N/A	X	
LUDWIG, MERISSA	INVESTIGATOR	merissa.ludwig@tceq.texas.gov	TCEQ	817-588-5800	STATE GOVERNMENT	N/A			N/A		
LUTZ, JENNIFER	TECHNICAL SALES	jlutz@setenv.com	SET ENVIRONMENTAL	214-437-1111	PRIVATE ENTERPRIZE	N/A			N/A		
MARVIN CLOUD		HARRIS METHODIST - CLEBURN		817-556-4263	HOSPITAL	N/A			N/A		
MAXON, RAY	GENERAL MANAGER	raymaxon@hotmail.com	HMER ONE INC.	817-8961202	PRIVATE ENTERPRIZE	N/A			N/A		
MCQUISTON, DANIEL	OPERATIONS SUPERVISOR	daniel.mcquiston@airliquide.com	AIR LIQUIDE AMERICA	817-776-3896	FACILITY OPERATOR	N/A			N/A		
MEARS, GARY	PRODUCTION SUPERVISOR	gmears@sachemusa.com	SACHEM INC.	817-202-3226	FACILITY OPERATOR	N/A			N/A		
MOORE, JAIME	EMC		JOHNSON COUNTY	817-556-6346	EMERGENCY MGMT.	N/A	X		N/A	X	
NELSON, ADAM	OPERATIONS MANAGER	adam@dakotadistributing.com	DAKOTAL DISTRIBUTING	817-453-7776	PRIVATE ENTERPRIZE	N/A		X	N/A		
NICHOLS, DANNY	MAINTENANCE MANAGER	dnichols@brazoselectric.com	BRAZOS ELECTRIC	817-641-5041	FACILITY OPERATOR	N/A			N/A		
NICHOLS, MANDY						N/A		X	N/A		
OSBORNE, TOMMY	BUSINESS DEVELOPMENT	tommyo@ecesi.com	EAGLE SWS	817-847-1333	PRIVATE ENTERPRIZE	N/A			N/A		
PATTERSON, BARB	TEXAS HEALTH					N/A		X	N/A	X	
PAKELTIS, JEFF	PLANT MANAGER	jpakeltis@sacheminc.com	SACHEM INC.	817-202-3224	FACILITY OPERATOR	N/A	X	X	N/A	X	
PEACOCK, MIKE	DIR. OF OPERATIONS	dioperations@cityofjoshuatx.us	JOSHUA CITY OF	817-558-7447	EMERGENCY MGMT.	N/A			N/A		
PRICHARD, GREG		gprichard@dxgroup.com	DPC INDUSTRIES INC.		FACILITY OPERATOR	N/A		X	N/A		
ROEBUCK, KYLE	PLANT ENGINEER	kyle.roebuck@airliquide.com	AIR LIQUIDE AMERICA	817-517-6430	FACILITY OPERATOR	N/A			N/A		
SAIN, STACY	TAS	ssain@taslp.com								X	
SCHNEIDER, CHRIS	COUNTY EXTENSION AGENT	c-schneider@tamu.edu	JOHNSON COUNTY	817-556-6370	LOCAL GOVERNMENT	N/A			N/A		
SHUFELT, DOROTHY						N/A	X		N/A		
SHUFELT, RICHARD	RISK MANAGER	richard.shufelt@mtctrains.com	SANDERS ESTES - MTC	972-366-3334	STATE GOVERNMENT	N/A	X		N/A	X	
SINGLETON, STACY	FIRE MARSHAL	ssingleton@burllesontx.com	BURLESON, CITY OF	817-447-5400	EMERGENCY MGMT.	N/A			N/A		
SOUTHARD, JOHN	AP AREA MANAGER	jgsouth@walmart.com	WALMART DISTRIBUTION	817-202-3009	FACILITY OPERATOR	N/A			N/A		
STACY SAIN	CUSTOMER RELATIONS	ssain@taslp.com	TAS ENVIRONMENTAL	817-535-7222	PRIVATE ENTERPRIZE	N/A			N/A		
STARK, DENNIS		dennis.stark@airliquide.com	AIR LIQUIDE AMERICA	817-517-6430	FACILITY OPERATOR	N/A		X	N/A		

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Appendix B: Capabilities Assessment



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Appendix B: Capabilities Assessment

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
Johnson County	N	N	N	Y	N	Y	Y	Y	Y	Y	N	N	Y	N	50%
Alvarado	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	N	N	71%
Burleson	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	93%
Cleburne	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	86%
Godley	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	64%
Joshua	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	N	71%
Keene	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	N	71%
Average % Yes Capabilities – 72%															
<div> <div>Y- Yes</div> <div>N- No</div> </div>															

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
Johnson County	Y	Y	Y	Y	N	Y	N	N	Y	N	60%
Alvarado	N	N	N	Y	N	Y	N	N	Y	N	30%
Burleson	Y	Y	Y	Y	N	Y	Y	N	Y	Y	80%
Cleburne	Y	Y	Y	Y	N	Y	Y	N	Y	Y	80%
Godley	Y	Y	Y	N	N	Y	Y	N	Y	Y	70%
Joshua	Y	Y	Y	Y	N	Y	Y	N	Y	Y	80%
Keene	Y	Y	Y	Y	N	Y	Y	N	Y	Y	80%
Average % Yes Capabilities – 69%											
<div> <div>Y- Yes</div> <div>N- No</div> </div>											

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
Johnson County	N	Y	Y	N	N	Y	Y	Y	Y	N	60%
Alvarado	Y	Y	Y	Y	N	Y	Y	Y	Y	N	80%
Burleson	N	Y	Y	Y	Y	Y	Y	Y	N	N	70%
Cleburne	N	Y	Y	Y	Y	Y	Y	N	Y	N	70%
Godley	Y	Y	Y	Y	Y	Y	N	N	N	N	60%
Joshua	N	Y	Y	N	Y	Y	Y	N	N	N	50%
Keene	Y	Y	Y	Y	Y	Y	Y	N	N	N	70%
Average % Yes Capabilities – 66%											
<div> <div>Y- Yes</div> <div>N- No</div> </div>											

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