University of Central Arkansas

Hazard Identification Vulnerability Risk Analysis

January 3, 2011
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1.0 INTRODUCTION

The emergency management program, of the University of Central Arkansas, is predicated upon an *"all hazards"* approach to emergency management. Hazards exist which are specific to the university, and create a conditions whereby the students, staff, and faculty may be vulnerable to the impacts of those specific hazards. This analysis considers both external and internal hazards, and assesses the impact of those hazards. The approach to Hazard Identification Vulnerability Risk Analysis is a four step process:

1. Community Profile
2. Hazard Identification
3. Rapid Risk Assessment (RRA)
4. Detail Vulnerability Risk Analysis

Reference for the analysis has been drawn from the *National Fire Protection Association,* (NFPA) Standard 1600, Chapter five (5).

It should be noted that this is a living document. Hazards continually change, as hazards are mitigated, or emerge, they are reevaluated for their potential impact on the University of Central Arkansas. This analysis will be revisited semi-annually for 2 years beginning in 2011, and annually after 2013.

1.1 Hazards defined

Hazards considered in this analysis are from three areas, in accordance with NFPA 1600 and are: Natural hazards, man-caused hazards, and technical hazards. Natural hazards comprise of those hazards that occur naturally in the environment, and are categorized as meteorological, geological, biological hazards. Man caused hazards are those events which have been created by man, and are either accidental or intentional. Technical hazards are those hazards which are caused through causation of events, or technical failure, and are identified as being either caused accidental or intentional.

1.2 Risk defined

Hazards become risk when a "hazard agent" interacts with vulnerability. For example, tornados are naturally occurring events, and if they do not come in contact with a population, or infrastructure, pose no risk to either. It is when the path of the tornado intersects with population, or infrastructure, that we see the hazard agent (extremely fast cyclonic winds) interact with trees, cars, signs, building material, and etc to cause flying debris which may cause massive damage. Risk is the product of probability and severity, measured against the vulnerability.

2.0 METHODOLOGY

When considering the affects of a specific hazard; the hazard is evaluated across the range of its potential. Some hazards are merely a nuisance which affects productivity, whereas the same hazard multiplied by magnitude become catastrophic, or "Acts of God." The number of occurrences complied are used in descriptive statistical analysis, and provide the quantitative perspective of the data set by way of Mean, Mode, and Range.

Initially, hazards are determined by the "Rapid Risk Assessment" (RRA). Hazards are then discriminated by their RRA. Hazards with an RRA's greater than 50 are identified for a detailed quantitative risk analysis. Hazards that are on the borderline, between significance, are considered for detailed quantitative analysis at the discretion of the emergency manager.

2.1 HIVRA Process

The Hazard Identification Vulnerability/Risk Analysis (HIVRA) is a process where risk is evaluated by its probability, and severity, less its mitigation. In other words, Risk is a product equal to probability multiplied by severity minus mitigation $R= (PxS)-M$. Hazards typically are by local phenomena, and become risk as population, infrastructure, and operations become vulnerable to the hazard. Therefore, HIVRA is relevant to a specific location, under specific conditions. The HIVRA will identify the profile properties Faulkner County, City of Conway, and the University of Central Arkansas. The vulnerability will be assessed against the risk to determine potential impact. The highest order of risk will be those that have the highest probability and severity, and will receive priority planning and mitigation emphasis.

2.2 Risk Options

Identified risk can be addressed through various methods, including but not limited to; risk avoidance, risk transfer, risk mitigation, and risk acceptance. Risk avoidance is the preclusion of hazards that may exploit vulnerability. Risk transfer is the shifting of liability from one institution to another, typically through the purchase of insurance or bonds. Risk mitigation is those activities which by design lesson the severity of a risk, such as: preplanning, training, engineering, and preparedness activities. Risk acceptances is made after an assessment of the risk, and is deemed to be cost effective, not probable, or in the interest of the entity accepting the risk.

3.0 JURISDICTIONAL PROFILES

The University of Central Arkansas resides in the city of Conway, county of Faulkner, the State of Arkansas. This region of Arkansas is one of the fastest growing areas in the state. It has been growing for over 20 years, and its growth is expected to continue. Between 1980 and 1990, Arkansas' population increased by 64.3 thousand persons, equivalent to a 0.28 percent average annual growth[1]. Since the 1990 Census, Arkansas' population has experienced a more

[1] http://www.aiea.ualr.edu/research/demographic/downloads/popjob.pdf , accessed November 2010

pronounced average annual increase of 0.93 percent than observed for the previous decade. Also, the absolute change in Arkansas' population between 1990 and 1998 was almost three times the absolute increase calculated for 1980 to 1990. The most significant positive change in Arkansas' population occurred in the middle of this decade (1992-1996) with a decline in growth rates observed in more recent years. Compared to the U.S. population, Arkansas also witnessed higher growth rates during the 1992 to 1996 time period. Over the 1980 to 1998 time period, the majority of counties in the northwestern and central sections of the state gained population, whereas the eastern and southern parts experienced population decline. Between 1980 and 1998, Benton followed by Washington and Faulkner Counties witnessed the most significant absolute gain of more than 30 thousand persons.

Since 1980, Arkansas has been approved for 32 Presidential Disaster Declarations[2]. Since 2000, Faulkner County has been presidentially declared a disaster 8 times. Disaster declarations are not automatic. The county must declare a state of disaster to the state of Arkansas, and it must exceed the county's capability to respond. The Stafford Act authorities establish a cost sharing calculus to establish federal aid eligibility at a percentage of 25/75. The state must carry 25% of the associated cost.

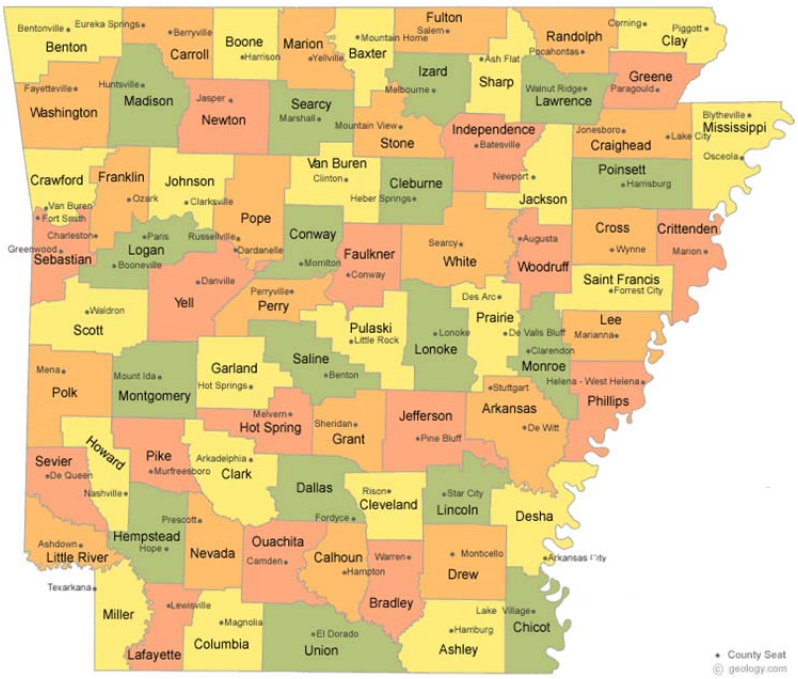
3.1 Faulkner County

3.1.1 Demographics

a. Location: Faulkner County is located due North by Northwest of Little rock approximately 20 miles, and adjoins North of Pulaski County, South of Van Buren and Cleburne County, West of White and Lonoke County, East of Perry and Conway County.

Figure 3.1.1.a Arkansas County Map (Geology.com, accessed 3 January, 2011)

[2] http://www.fema.gov/news/disasters_state.fema?id=5, accessed November 2010
[3] http://quickfacts.census.gov/qfd/states/05/05045.html
[4] http://en.wikipedia.org/wiki/Faulkner_County,_Arkansas



b. Population: 2009 estimates indicate that Faulkner County has a population of 109,386[3], which represents a 27% growth from the 2000 census data of 86,014.[4]

c. Political: Faulkner County was formed on April 12, 1873, from parts of Conway and Pulaski Counties and was named for Col. Sanford C. Faulkner. The Senior Executive of Faulkner County is the County Judge who is elected for a 2 year term.

"Local governments in Arkansas reside under Dillon's law, which means that they have only those powers granted to them by the state, through state constitutional or statutory law. Local governments in Arkansas are molded and shaped by state law and, therefore, have no inherent powers and derive their whole authority from the state. Counties are essentially subdivisions of the state government. The Arkansas General Assembly controls them to the extent it desires, except as forbidden by state constitutional law. According to the Arkansas Supreme Court, a county is a political subdivision of the state established for a more convenient administration of justice and for purposes of providing services for the state."[5] The current residing County Judge for Faulkner County is Mr. Preston Scroggins.

Within a county the legislative body is the Quorum Court, which is comprised of elected members from each district. Faulkner County has 13

[5] http://encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?entryID=5720

Justices of the Peace who are the members of the Quorum Court. The following are the members of the Faulkner County Quorum Court:

Justice of the Peace	Mark Bailey
Justice of the Peace	Jimmy Bryant
Justice of the Peace	Steve Goode
Justice of the Peace	Randy Ingram
Justice of the Peace	Dianna Kellar
Justice of the Peace	Ancil Lea
Justice of the Peace	Barbara Mathes
Justice of the Peace	Lauralee Wilcox McCool
Justice of the Peace	Jerry B. Park
Justice of the Peace	Linda Jones Paxton
Justice of the Peace	Jerry Roberts
Justice of the Peace	Dan Thessing
Justice of the Peace	Johnnie Wells

d. Emergency Management: The Director of Emergency Management for Faulkner County is Ms. Shelia Maxwell. The Office of Emergency Management contact information is as follows:

#57 Acklin Gap Road
Conway, AR 72032
501-450-4935
1-800-869-8412
501-336-0759 Fax

Mailing Address:
Faulkner County OEM/911
801 Locust Street
Conway, AR 72034

Hours: Monday-Friday 8:00 to 4:30
Closed Holidays

3.1.2. Critical Infrastructure:

a. Communication: Communication for the county is maintained through 911 (emergency) dispatch center, located West of Hogan Road, Conway, Arkansas. The towers for the county are located on the Round Mountain and also in Guy, Arkansas.

b. Transportation: Interstate 40, Union Pacific railway, and barge traffic along the Arkansas River. Millions of tons of HAZMAT are transported along the various intermodal means of transportation annually. It is reported that in 2009, Arkansas ranked 32nd in the nation for HAZMAT incidents, with147 being reported.[5] Shelia Maxwell stated that Faulkner County has approximately 30-50 HAZMAT incidents annually excluding those incidents that occur in the city of Conway. http://www.statemaster.com/graph/hea_haz_mat_inc_tot_num-hazardous-materials-incidents-total-number, accessed November 2010.

Medical Facilities: Conway Regional Medical Center (Hospital): Conway Regional Health System provides complete health care services to the growing communities of north Central Arkansas including Faulkner, Conway, Perry, Van Buren and Cleburne counties. Conway Regional is a 146-bed not-for-profit acute care medical center. The Emergency Room Staffs two full time physicians, as well as 4 full time Registered Nurses during non-disaster operations. The Emergency Room has 16 treatment rooms.

Conway Regional is a member of the Medical Emergency Management Regional Board, and has MOU's for Mutual Aide with all hospitals in Pulaski and Saline Counties. Regionally, hospital in-patient surge due to disaster is pushed forward to the larger hospitals in the region. Conway regional has a 96 hour sustainability requirement.[6],[7]

Additional components of the Conway Regional Health System include:

- **Conway Regional Imaging Center** - an all-digital outpatient imaging center offering the latest in imaging services such as MRI and PET/CT scans. The Center also includes outpatient laboratory services for the convenience of our patients.
- **Conway Regional Rehabilitation Hospital** - a post acute care hospital for patients recovering from hip and knee surgeries, stroke, brain injury, spinal cord injury, amputation, major multiple trauma, congenital deformities, burns and numerous other conditions.
- **Four Primary Care Clinics** - Reddy Medical Clinic in Clinton, Mayflower Medical Clinic in Mayflower, Greenbrier Family Medicine in Greenbrier and Conway Medical Group in Conway.

[6] http://www.conwayregional.org/body.cfm?id=9
[7] Charley Haling, Emergency Manager, Conway Regional (501) 450-2388

- **Conway Regional Health & Fitness Center** - one of the largest hospital-owned fitness centers in the nation with more than 70,000 square feet and 7,000 members.
- **Conway Regional Wound Healing Center** - featuring the latest in technology for healing hard to heal wounds including Hyperbaric Oxygen Therapy.
- **Conway Regional Therapy Centers** - specializing in physical, occupational, speech therapies, in addition to cardiovascular and pelvic floor rehabilitation with locations in Conway and Greenbrier
- **Conway Regional Home Care** - offering Life Line and Well @ Home programs for those in need of home health services.

The Emergency Manager for Conway Regional is Charlie Hamling.

c. Industry: The industrial center for Faulkner County lies within the City of Conway. The unincorporated parts of the county are primarily rural farmlands.

3.1.3 Historical Sites of Significance: There are 50 buildings of historical significance in Faulkner County on the National Register of Historic Sites. See Appendix D for details.

3.1.4 Specific Hazards: Faulkner County has been declared a Presidential Disaster eight times since 1980. The region is prone to flooding along the Arkansas River and its' tributaries. The county is also prone to extreme weather tornados, ice storms, earthquakes, and severe straight line winds.

The County Emergency Management Coordinator has identified approximately 50 HAZMAT incidents through 2010. HAZMAT transportation across the southern regions of the county provides opportunity for release via a vehicular accident, train derailment, or barge accident. Proximity of the University of Central Arkansas to these transportation lanes are of primary concern.

Historically, tornados have inflicted severe losses in Faulkner County. Between 1952 and 1988, there have been 28 tornados, with the bulk of them being F-3; with one EF-4 which injured in excess of 200 people and killed 6 in 1965.[8] Data from 1952 to 1988 show tornado related fatalities and injuries. Data shows no reported tornados for Falkner County between 1988 and 1999, and 21 tornados have occurred between 1999 and 2009.[9] Data collected from 1989 to 2009 does not report fatalities or injured.

[8] http://www.tornadoproject.com/alltorns/artorn.htm
[9] http://www.tornadohistoryproject.com

Figure 3.1.4.a Tornados in Faulkner County 1952 to 1988

Date	Hour	Dead	Injured	F-Scale
21-Mar-52	1700	0	6	F2
28-Jan-56	2130	0	12	F3
13-May-57	1250	1	18	F3
13-Jun-57	1825	0	0	F2
13-Jun-57	1830	0	0	F2
14-Mar-59	2115	0	0	F3
14-Jan-60	1215	0	0	F1
5-May-60	400	0	0	F2
6-May-60	100	0	6	F3
12-Mar-61	1810	0	12	F2
5-May-61	2230	0	3	F1
14-Feb-62	2200	0	0	F1
10-Apr-65	1826	6	200	F4
28-Jul-65	2000	0	0	F1
19-Apr-68	1800	0	0	F2
6-Oct-69	1840	0	1	F2
30-Apr-70	1850	0	0	F2
6-Oct-70	1615	0	0	F2
24-Nov-73	1930	0	0	F2
22-Feb-75	1502	0	0	F2
11-Apr-79	1415	0	0	F2
7-Apr-80	1830	0	15	F2
2-Apr-82	1900	2	37	F3
2-Dec-82	1550	0	1	F3
2-Dec-82	1710	0	0	F3
23-Dec-82	2000	0	2	F2
24-Dec-82	1630	1	7	F3
15-Nov-88	1948	0	0	F3
		10	320	

Figure 3.1.4.b Tornados in Faulkner County 1989 to 2009

Date	Hour	Dead	Injured	F-Scale
21-Jan-99	1557			F2
21-Jan-99	1649			F1
13-Feb-00	1652			F0
26-Feb-00	316			F1

20-May-01	2242	F1
30-May-01	612	F1
18-Dec-02	1535	F3
18-Dec-02	1550	F1
4-May-03	1834	F2
4-May-03	1850	F1
4-May-03	1852	F3
16-May-03	1506	F1
16-May-03	1517	F1
16-May-03	1525	F1
24-Sep-05	1718	F1
27-Nov-05	1834	F2
27-Nov-05	1859	F1
27-Nov-05	1911	F0
5-Feb-08	1905	F1
21-Jul-09	1512	F0
21-Jul-09	1534	F0

Historically, flooding has been a problem for the southern portion of Faulkner County. The County has been presidentially declared a disaster numerous times. In 2008, the Faulkner County adopted a restrictive construction ordinance to mitigate the effects of flood losses.

Faulkner County is affected by two seismic zones: New Madrid Seismic Zone and the Enola Swarm. Estimates in 2009 conducted by the University of Arkansas Little Rock, and Arkansas Tech University, estimate that the maximum MMI for an Enola event is MMI VI (6). The cause and nature of the Enola Swarm seismic zone is not fully understood at this time. Enola, Arkansas is one of the most seismically active areas in the nation, with thousands of events recorded annually. Although most all seismic events are register less than 2.0, with an MMI of 1; the Enola Swarm has the potential to affect the greater portion of central Faulkner County.

It is unknown what the effect of a New Madrid Seismic Zone (NMSZ) event would have on the Enola region. 2009 estimates by FEMA, and the USGS, state that a NMSZ event centered 35 miles west by northwest of Memphis, Tennessee would have catastrophic implications for Eastern and central Arkansas. An earthquake with a MMI of VIII (8), or above, would inundate the Central Arkansas region with refugees, as well as being a felt event, with minor structural damage. HAZUS models indicate that a NMSZ MMI VIII event located at the projected area would produce a MMI VI event for Faulkner County.

3.1.5 Vulnerabilities: Faulkner County north of Greenbrier, and East of Conway, is sparsely populated with small towns and farms. It is a rural community that is dependent upon volunteer firefighters to address response and rescue operations.

The largest vulnerabilities within Faulkner County are found within the southern portions of the county where the population is concentrated.

The industrial region of Faulkner County is in Conway, as well as transportation corridors which are found on the south and southwest sides of the county.

Specific vulnerability is found in three principle areas:

1. Population – Southern Faulkner County has developed into a densely population area comprising approximately 90% of the population of the County. Residential construction on the southwest side of the county which uses light to medium material; multistory structures with gabled roofing. Not only are the structures vulnerable to extreme weather, but the population that resides with are as well.

2. Infrastructure – Transportation corridors, communication, and industrial facilities are primarily in the Southwest side of Faulkner County.

   Interstate forty (I-40) is an interstate commerce route that traverses the state from East to West. I-40 is the busiest east west commerce route with millions of tons of commerce being transported along the corridor. It also has the highest occurrences of drug transport east and west, based on statistics for drug related traffic stops. Millions of tons of hazardous materials are transported along this corridor annually. Its proximity to the County's population center lends to the enhancement of risk potential. I-40 is a primary commerce route therefore, if traffic is halted through a loss of infrastructure the effects on commerce and transportation would be felt in the industry: Alternate routes are available.

   The Union Pacific Rail System traverses the South-West side of Faulkner County. It is a primary transportation corridor for goods. Millions of tons of hazardous material are transported on the railways annually. The proximity to the population center of the county exacerbates the risk potential to the county. Vulnerability is seen to both the population, because of the HAZMAT potential, but also the loss of the railway would affect commerce through delays.

3. The industrial center for Faulkner County is in the City of Conway, and will be examined in detail in section 3.2.2 (d).

3.1.6 Response Resources: The primary resources availability provided to the county is through the State and the City of Conway. The County has limited full time response capability; therefore, aid will come from State, City, or Volunteer Firefighting resources.

The population center for the county is primarily in the southern half of the county, with the City of Conway comprising a majority of the population. Although Conway is well prepared for response the City has grown quickly over the last 20 years, and in a catastrophic incident those assets will be stretched thin quickly.

Conway Regional is the only Hospital in the area and has a 16 treatment room capability, and only 146 beds. During a disaster, the surge capacity will be reached very quickly, with the hospital needing to move patients to a larger MRC.

Emergency Medical Service (Ambulance) is serviced by Metropolitan Emergency Medical Service (MEMS). Faulkner County including Conway there are 5 ambulance crews on duty. In the Conway region MEMS typically has 3 ambulance crews on duty at any given time. Given the population of the County, and City this is capability will reach maximum overload quickly. MEMS has response capability and plans to bring crews in from surrounding areas. This problem is highlighted by the fact that Russellville, which is approximately half the size of Conway, has 4 crews on duty at all times.

3.1.7 Mutual Aid Agreements: Faulkner County has active mutual aid agreements with all adjoining counties, and is covered under the Arkansas State agreement.

3.2 City of Conway

3.2.1 Demographics

a. Location: The City of Conway lies approximately 30 miles North by North-West of North Little Rock in Faulkner County, Arkansas. Its geographic area is approximately 40 square miles. Conway is located in central Arkansas at Latitude 35°05'25" North and Longitude 92°26'49" West. The official Conway elevation measured at Cantrell Field Conway Municipal Airport is 320.6 feet. Conway lies north of Round Mountain, elevation 560 feet; and south of the Cadron Ridge, elevation 550 feet. The Arkansas River bounds Conway on the west and Lake Conway, an Arkansas Game and Fish reservoir, lies to the south-east of Conway. City-owned Beaverfork Lake lies northeast of Conway.[10]

b. Population: As of the census of 2000, there were 43,167 people, 16,039 households, and 10,168 families residing in the city. The population density was 1,231.7 people per square mile (475.5/km²). There were 17,289 housing units at an average density of 493.3/sq mi (190.5/km²). The racial makeup of the city was 84.0% White, 12.1% Black or African American, 0.36% Native American, 1.25% Asian, 0.03% Pacific Islander,

[10] http://www.cityofconway.org/about.html

0.98% from other races, and 1.23% from two or more races. 3.47% of the population was Hispanic or Latino of any race.

There were 16,039 households out of which 33.0% had children under the age of 18 living with them, 49.0% were married couples living together, 11.2% had a female householder with no husband present, and 36.6% were non-families. 26.1% of all households were made up of individuals and 7.2% had someone living alone who was 65 years of age or older. The average household size was 2.44 and the average family size was 2.99.

In the city the population was spread out with 23.3% under the age of 18, 22.4% from 18 to 24, 29.2% from 25 to 44, 16.1% from 45 to 64, and 9.0% who were 65 years of age or older. The median age was 27 years. For every 100 females there are 90.6 males. For every 100 females age 18 and over, there were 87.2 males.

The median income for a household in the city was $37,063, and the median income for a family was $47,912. Males had a median income of $35,021 versus $25,418 for females. The per capita income for the city was $18,509. About 9.3% of families and 16.3% of the population were below the poverty line, including 15.0% of those under age 18 and 10.8% of those age 65 or over.

In November and December 2005, the city of Conway commissioned a special census to update its demographic records. The certified results of this Special Census put Conway's population at 52,430. According to the U.S. Census Bureau's 2009 Population Estimates, Conway's population is estimated to be 59,511 as of 2009.[11]

d. Political: Conway is the County Seat for Faulkner County. The city government is constructed with a Mayor who is the Chief Executive Officer of the City, and a City Council of eight members. The Mayor of Conway is Tab Townsell.

e. The Emergency Manager for the city is:

Fire Chief Bart Castleberry
1401 Caldwell St.
Conway, AR 72032
(501) 450-6147

3.2.2. Critical Infrastructure:

a. Communication: Communication for the city is maintained through 911 (emergency) dispatch center, located West of Hogan Road,

[11] http://en.wikipedia.org/wiki/Conway,_Arkansas

Conway, Arkansas. Conway provides emergency-911 coverage for the county as well, and serves as host for the 911 communication radio system. The communications tower for the city is located at the VFW on the water tower.

Conway also hosts optical fiber between LSU, UALR, UCA, ATU, and UA for high speed internet connectivity. The cellular towers in Conway are located on the ridges both on the north and south side of town.

b. Transportation: Interstate 40, Union Pacific railway, and barge traffic along the Arkansas River. Millions of tons of HAZMAT are transported along the various intermodal means of transportation annually. It is reported that in 2009, Arkansas ranked 32nd in the nation for HAZMAT incidents, with147 being reported.[12] Shelia Maxwell stated that Faulkner County has approximately 30-50 HAZMAT incidents annually excluding those incidents that occur in the city of Conway.

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[12] http://www.statemaster.com/graph/hea_haz_mat_inc_tot_num-hazardous-materials-incidents-total-number, accessed November 2010.
[13] http://www.conwayregional.org/body.cfm?id=9
[14] Charley Haling, Emergency Manager, Conway Regional (501) 450-2388

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- **Conway Regional Therapy Centers** - specializing in physical, occupational, speech therapies, in addition to cardiovascular and pelvic floor rehabilitation with locations in Conway and Greenbrier
- **Conway Regional Home Care** - offering Life Line and Well @ Home programs for those in need of home health services.

The Emergency Manager for Conway Regional is Charlie Hamling.

d. Industry: Conway is home to one of the world's largest school bus manufacturers, IC Corporation. The Conway plant is one of only two IC manufacturing plants; the other is located in Tulsa, Oklahoma. IC Corporation is a wholly-owned subsidiary of Navistar International Corporation of Illinois. IC was previously known as American Transportation (AmTran) Corporation and Ward Body Works. The company was originally founded in 1933. IC has decided to close the plant and move all bus manufacturing to the Tulsa, OK plant.

R. D. “Bob” Nabholz founded Nabholz Construction in Conway in 1949. It currently employs over 800 people companywide and it has been listed by Engineering News Record (ENR) magazine as one of the Top 400 General Contractors every year since 1986, currently the company is ranked #161.

In 1965, Baldwin Piano Company began manufacturing upright pianos at a plant in Conway. Over the years, other piano models were added to the production line. By 1998, the company's 270 employees were manufacturing 2,200 grand pianos a year. Baldwin Piano was acquired by Gibson Instruments in 2003. Gibson has now closed the Baldwin factory.

The Conway Corporation handles the local cable TV, Internet, and telephone services, in addition to electricity and water for Conway.

Acxiom Corporation, a global interactive marketing services company that uses consumer data, analytics, information technology, data integration, and consulting solutions to help companies conduct direct marketing programs, was founded in 1969 in Conway and though it has its corporate headquarters in Little Rock, AR, a large presence in Conway still remains.

On June 19, 2008, Hewlett-Packard announced it would be opening a 150,000 sq ft (14,000 m^2) facility with 1200 employees in 2009. The building, which will be owned by the Conway Development Corporation and leased to HP, will be located in The Meadows Office and Technology Park, and is built by Nabholz Construction. The building will be LEED certified. [15] Proctor and Gamble owns a manufacturing plant along interstate 40, as well as Spirit Homes Manufacturing off of Dave Ward road.

3.2.3 Historical Sites of Significance: See the Historical Site Reference in Appendix D of this document.

3.2.4 Specific Hazards: The region is prone to flooding along the Arkansas River and its' tributaries. The county is also prone to extreme weather tornados, ice storms, earthquakes, and severe straight line winds.

The County Emergency Management Coordinator has identified approximately 50 HAZMAT incidents through 2010. HAZMAT transportation across the southern regions of the county provides opportunity for release via a vehicular accident, train derailment, or barge accident. Proximity of the University of Central Arkansas to these transportation lanes are of primary concern.

In addition to the meteorological hazards identified for Faulkner County the City of Conway has industrial hazards that must be considered. January 7, 2004, a chemical explosion rocked Conway at the Detco Industries Plant, located on Harkrider. Thousands of people were evacuated from nearby schools and businesses. Two people were hospitalized with severe burns.

The flight path for the Conway Regional Airport extends over the population center of the city. Two aviation accidents have been reported for the airport. The University of Central Arkansas lies on approach for the airport.

3.2.5 Vulnerabilities: Conway is the industrial region of Faulkner County. It is the point of intersection for the transportation corridors which are found within the city, and along the Arkansas River.

Specific vulnerability is found in three principle areas:

[15] http://en.wikipedia.org/wiki/Conway,_Arkansas

1. Population – Conway has developed into a densely population area comprising approximately 70% of the population of the County. Residential construction in the city uses light to medium material; many of which are multistory structures with gabled roofing. Not only are the structures vulnerable to extreme weather, but the population that resides with are as well. The city has three universities, which together concentrate a population greater than 20,000 people. The population density for Conway is approximately 1,200 people per square mile, with concentrations of people in excess of 4,000 people per square mile around the universities.

2. Infrastructure – Transportation corridors, communication, and industrial facilities are primarily in the Southwest side of Faulkner County.

   Interstate forty (I-40) bisects the center of Conway, and is an interstate commerce route that traverses the state from East to West. I-40 is the busiest east west commerce route with millions of tons of commerce being transported along the corridor. Millions of tons of hazardous materials are transported along this corridor annually. Its proximity to the City's population center lends to the enhancement of risk potential. I-40 is a primary commerce route therefore, if traffic is halted through a loss of infrastructure the effects on commerce and transportation would be felt in the industry: Alternate routes are available.

   The Union Pacific Rail System traverses the South-West side of Faulkner County. It is a primary transportation corridor for goods. Millions of tons of hazardous material are transported on the railways annually. The proximity to the population center of the county exacerbates the risk potential to the county. Vulnerability is seen to both the population, because of the HAZMAT potential, but also the loss of the railway would affect commerce through delays.

3. Industry: Conway has a robust manufacturing base. The industry that would be a concern for the area are those manufacturing companies that use hazardous material in the production of goods, such as petroleum products or other chemicals.

   - Virco
   - Detco
   - Oil Companies
   - Gas Exploration Companies
   - Food Processing Companies
   - Proctor and Gamble

3.2.6 Response Resources: The City has three ambulance crews available on call. It also has six full time fire stations.

3.2.7 Mutual Aid Agreements: The City of Conway has mutual aid agreements with all surrounding cities, the county, and the state.

3.3 University of Central Arkansas

3.3.1 Demographics

a. Location: The University of Central Arkansas is located at 201 South Donaghey, Conway, Arkansas 72035. The area occupied by the University is approximately one square mile.

b. Population: The University has a diverse population of 12, 974 students and approximately 2,000 staff and faculty.

Table 3.3.1.a University of Central Arkansas Enrollment Population

	Men	Women	Total
Non Resident Alien	296	281	577
Black Non-Hispanic	683	1,131	1,814
Hispanic	104	126	230
Asian/Pacific Islander	104	123	227
American Indian/Alaskan Native	37	56	93
White Non-Hispanic	3,785	5,703	9,488
Race Unknown	200	345	545
Total	**5,209**	**7,765**	**12,974**

90% of all incoming freshmen live on campus.

3.3.2. Critical Infrastructure:

a. Communication: The City of Conway maintains the communication system for emergency response. It is connected by aerially hung fiber optics to the emergency-911 dispatch center off of Hogan road in Conway. The signal is then retransmitted to the communication tower by the VFW, which is on the city water tower. The weakness in the system is the aerially hung fiber which is susceptible to extreme weather, a loss of continuity via a severed cable, or a loss of transmission (TX/RX). The University has several back-up systems to mitigate the loss of primary transmission.

The Old Main building host communication transmission equipment, as well as the telephone system for the University. This building does not have redundant generated or auxiliary power. Therefore, a loss of power to the University will affect land line communications.

b. Transportation: The proximity of Interstate 40, which is used for commercial transportation, as well as HAZMAT transportation, is approximately 2 miles from the main campus. I-40 passes within 3 miles to the North, and 2 miles to the East.

The Union Pacific railway is approximately 1 mile east, and 1.5 miles north of campus.

The Arkansas River is approximately 5 miles west and south of campus, and is a transportation route used to transport bulk materials. The river traverses the state from the southeast to the northwest, and is a primary waterway to the Mississippi River. Millions of tons of HAZMAT are transported along the various intermodal means of transportation annually.

The primary evacuation route for the University would be along Dave Ward Road, which extends east to west. Dave Ward is a four lane divided road, which provides egress to I-40 to the east, and Perry County to the west. There does not exist an adequate evacuation route to the north or south. Most roads in Conway are narrow two lane roads which are easily congested.

c. Infrastructure: The majority of the buildings located on the University of Central Arkansas is of "moderate to heavy" construction; constructed of reinforced masonry and concrete. The Achilles Heel of the architecture is the vaulted and large windows which are susceptible to flying debris.

The University has trained staff (Physical Plant) to provide maintenance and response to building, or infrastructure, needs. The physical plant itself is a structure that is approximately 250 feet square, and is composed of primarily light materials. The construction materials used in the construction of the Physical Plant is vulnerable to severe weather hazards.

The residential halls are located on the exterior portion of the campus to the south and west of center. Each building can house upwards to 300 students.

Two buildings on campus host hazardous material, which will be addressed in the analysis.

d. Medical Facilities: Conway Regional Medical facilities are one half mile from campus, and have emergency medical care facilities. The University also has a student health center which has one doctor and several nurses on staff. The student health center is trained in triage and is part of the emergency management plan for the University.

3.3.3 Historical Sites of Significance: See Appendix D.

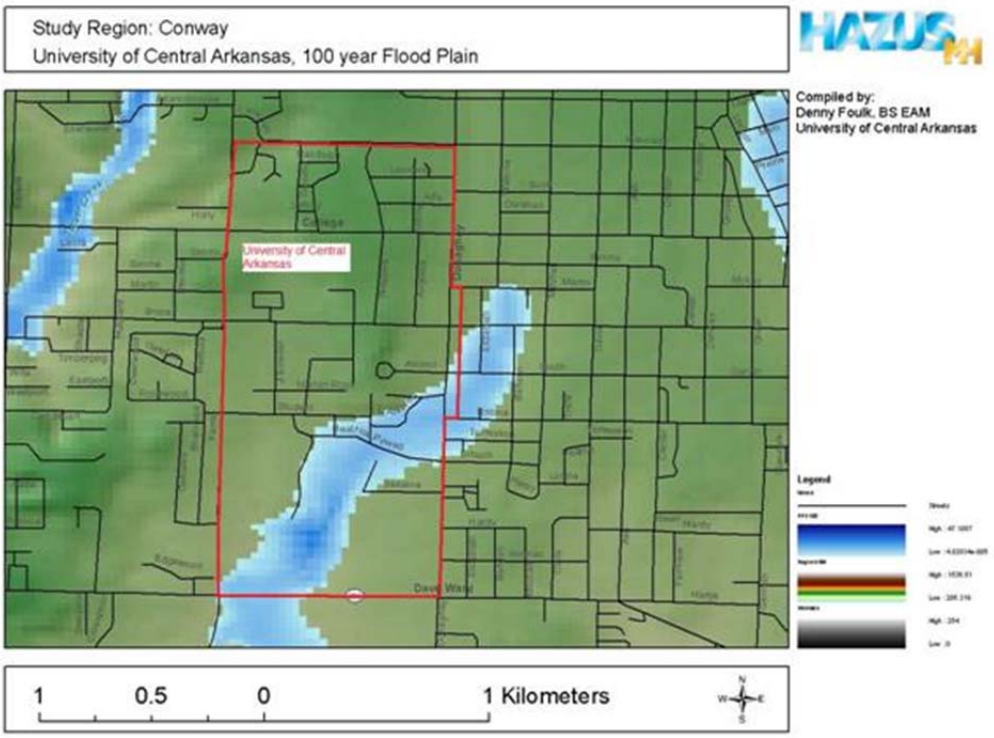
3.3.4 Specific Hazards: The University of Central Arkansas is prone to all of the hazards listed for both the city and county, as well as specific hazards listed herein.

The University is host to a robust chemistry lab with chemical storage facilities on the top floor of the Laney Hall building. This storage facility contains bulk storage for chemicals used during the semester. Flammable or explosive chemicals are stored separately within the same facility. The facility has controlled access through access cards and key pad input. An inventory list of quantity and location is maintained by the Chemistry Department Head. The building's fire, warning, and evacuation plan needs review.

The University of Central Arkansas also has a dynamic physics lab which provides students the opportunity to explore the properties and affect of nuclear material. This section of the analysis will be provided separately.

The 100 year flood plain extends across the east by southeast, to the southwest quadrant of campus. The flood plain affects the College of Business, Reynolds Performance Hall, Physical Plant, and parking areas on the south side of main campus. Estimates created by HAZUS indicate that water depth on the south side of campus by Dave Ward road could exceed 15 feet.

Figure 3.3.4.a 100 year Flood Plain for the University of Central Arkansas



Mitigation measures have been applied to the area around Donaghey and the College of Business, although shallow flooding is expected to extend east of Donaghey and south of the College of Business. Drainage issues due to slope may also exacerbate a flood event.

Active shooter events are a concern for the University. In October 2008, non students entered campus and shot two students.

The University of Central Arkansas is resides in the approach flight path of the Conway Regional Airport. There have been multiple incidents of small aircraft accidents on approach to the airport.

Hazardous materials transported along interstate 40, the Union Pacific Railway, and barge traffic along the Arkansas River has the ability to affect the university's population. In 2004, the Detco Corporation had a chemical explosion which nearly caused the evacuation of the campus. Also, hazardous material spills due to accidents on I-40 have occurred, and have the potential to affect the campus population. The volume of hazardous material transported on I-40 is dwarf in comparison to the volume of hazardous material transported on the Union Pacific Railway. The Union Pacific is only 1 mile from campus and has the ability to affect the campus population.

Seismic events from the Enola Swarm and the NMSZ could affect infrastructure that supports the campus.

3.3.5 Vulnerabilities: Due to the concentration of population on campus the population is vulnerable to a variety of hazards. Currently, the inadequacies of special population warning systems make those who are mobility or functionally impaired susceptible to hazards.

The aerially hung fiber cable that supports the emergency communication systems is susceptible to outage due to severe weather.

Conway Corp is the provider of utility power, gas, and water to the University. Insufficient auxiliary (generated) backup power may lead to power and communication outage, which may affect the Universities ability to conduct business, and on campus classes. Interruption of water due to geological disaster may interrupt the University's ability to conduct on campus classes and has potential to displace the population.

Laney Hall is susceptible to a chemical spill and/or fire.

Several areas on campus are vulnerable to theft such as the residential halls, Lewis Science Center, and common areas of the university.

The Pepsi Building and the Physical plant are the two most vulnerable structures to meso-cyclonic events (tornados). The glass portions of the buildings on campus are also vulnerable. The surface areas on the exterior walls are vulnerable to light to moderate damage. The gabled roofs of many of the building would be susceptible to moderate to heavy damage in a tornado event.

3.3.6 Response Resources: The University of Central Arkansas has a well trained, state certified, 25 person police department, as well as seven (7) response vehicles. The department also operates a fully integrated emergency 911communication dispatch with communication to all county and state response agencies. There are three distinct sections within the police department response capability: Patrol, Investigation, and Communications. The police department also has a section dedicated to community outreach and public information, as well as an emergency management. Each member of the police department is NIMS certified.

The University Student Health Center is part of the university's response system, and provides triage and transport support for the university during disaster.

The University is in the process of identifying, organizing, and certifying a Civilian Emergency Response Team (CERT) for disaster response.

4.0 Rapid Risk Assessment / Hazard Identification

Hazards are divided by the principle domains of Natural Hazards, Man-Caused Hazards, and Technical Hazards.

4.1 Natural Hazards

RAPID RISK ASSESSMENT TOOL
Natural Hazards

EVENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)						RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED-NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interruption of services*	*Preplanning*	*Time, effectiveness, resources*	*Community/ Mutual Aid staff and supplies*	*Relative threat**

University of Central Arkansas
Hazard Identification Vulnerability Risk Analysis

SCORE	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 - 100%*
METEOROLOGICAL HAZARDS								
Tornado	2	3	3	3	2	2	2	**56%**
Severe Thunderstorm	3	1	1	1	3	1	1	**44%**
Snow Fall	2	2	0	1	1	0	2	**22%**
Blizzard	1	3	1	3	3	0	3	**24%**
Severe Winter Weather	3	2	1	3	3	1	3	**72%**
Temperature Extremes	3	1	1	1	3	0	0	**33%**
Drought	2	1	1	1	0	0	0	**11%**
GEOLOGICAL HAZARDS								
Earthquake	2	1	1	1	3	0	2	**30%**
HYDROLOGICAL HAZARDS								
Dam Inundation	1	1	1	1	0	0	0	**6%**
Flood, Riverine	**2**	2	1	1	3	3	3	**48%**
Flood, Shallow	3	1	2	1	3	3	3	**72%**
BIOLOGICAL HAZARDS								
Pandemic	**2**	**2**	**0**	**3**	**2**	**3**	**3**	**48%**
MERSA	3	2	0	1	2	2	0	**44%**
Epidemic	2	2	0	2	2	2	2	**37%**
AVERAGE SCORE	**1.94**	**1.50**	**0.81**	**1.44**	**1.94**	**1.06**	**1.50**	**30%**

**Threat increases with percentage.*

RISK = PROBABILITY * SEVERITY		
0.30	**0.65**	**0.46**

Natural hazards that exceeded 50 percent will receive detailed analysis and are as follows:

- Tornados 56
- Severe Winter WX 72
- Shallow Flooding 72

4.2 Technical Hazards

RAPID RISK ASSESSMENT TOOL
Technical Hazards

EVENT	PROBABILITY	SEVERITY			MITIGATION			RISK
		HUMAN IMPACT	PROPERTY IMPACT	BUSINESS IMPACT	PREPARED -NESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	

University of Central Arkansas
Hazard Identification Vulnerability Risk Analysis

	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interruption of services*	*Preplanning*	*Time, effectiveness, resources*	*Community/ Mutual Aid staff and supplies*	*Relative threat**
SCORE	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 - 100%*
Natural Gas Failure	1	1	0	3	0	3	3	**19%**
Water Failure	1	1	0	3	0	3	3	**19%**
Communication Failure	2	2	1	3	2	1	3	**44%**
Information Systems	2	2	2	3	2	2	2	**48%**
Data Loss	2	0	2	3	1	1	1	**30%**
System Loss	2	0	2	3	2	2	2	**41%**
Online Course Deliverability	2	0	0	3	3	1	1	**30%**
Fire, Internal	1	3	3	3	2	1	1	**24%**
Hazmat	3	2	0	2	3	2	2	**61%**
Chemical	3	3	2	2	2	2	3	**78%**
Radiological	2	3	3	3	3	3	3	**67%**
Loss of Infrastructure	2	3	3	2	2	2	2	**52%**
AVERAGE SCORE	**1.21**	**1.05**	**0.95**	**1.74**	**1.16**	**1.21**	**1.37**	**17%**

**Threat increases with percentage.*

RISK = PROBABILITY * SEVERITY		
0.17	**0.40**	**0.42**

Technical hazards that exceeded 50 percent will receive detailed analysis and are as follows:

- HAZMAT 61
- Chemical 78
- Radiological 67
- Structural Damage 52

4.3 Man-Caused Hazards

RAPID RISK ASSESSMENT TOOL
Man-Caused (made) Hazards

EVENT	**PROBABILITY**	**SEVERITY**			**MITIGATION**			**RISK**
		HUMAN IMPACT	**PROPERTY IMPACT**	**BUSINESS IMPACT**	**PREPARED-NESS**	**INTERNAL RESPONSE**	**EXTERNAL RESPONSE**	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Interruption of services*	*Preplanning*	*Time, effectiveness, resources*	*Community/ Mutual Aid staff and supplies*	*Relative threat**

University of Central Arkansas
Hazard Identification Vulnerability Risk Analysis

SCORE	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 - 100%*
Sporting Event Incident	2	2	1	1	3	1	2	**37%**
Violence / Crime	3	3	2	2	2	1	1	**61%**
Terrorism	1	3	3	3	3	2	2	**30%**
Biological	1	3	1	3	2	2	2	**24%**
Explosive Device	1	3	3	3	2	2	2	**28%**
Nuclear Security	2	3	3	3	3	3	3	**67%**
CBRNE	2	3	3	3	3	3	3	**67%**
Active Shooter	2	3	3	3	1	1	1	**44%**
VIP Situation	2	1	1	3	3	1	1	**37%**
Hostage Situation	2	3	1	3	3	3	3	**59%**
Civil Disturbance (Riot, fight, etc)	2	2	1	2	3	2	2	**44%**
Labor Action	1	0	0	3	3	3	3	**22%**
Bomb Threat	2	1	1	2	2	2	2	**37%**
AVERAGE	**2.30**	**3.00**	**2.30**	**3.40**	**3.30**	**2.60**	**2.70**	**74%**

**Threat increases with percentage.*

RISK = PROBABILITY * SEVERITY
0.74 0.77 0.96

Man Caused (made) hazards that exceeded 50 percent will receive detailed analysis and are as follows:

- Violence/crime 61
- Nuclear Security 67
- CBRNE 67
- Hostage situation 59

4.4 Aggregate totals

Rapid Risk Assessment

Hazard Type	Hazard Sub-Type	Hazard	Rapid Risk Assessment
Technical Hazard	Hazardous Material	Chemical	78

Natural Hazard	Meteorological	Severe Winter WX	72
Natural Hazard	Hydrological	Flood, Shallow	72
Technical Hazard	Hazardous Material	Radiological	67
Man Made Hazard	Terrorism	Nuclear Security	67
Man Made Hazard	Terrorism	CBRNE	67
Technical Hazard	Hazardous Material	HAZMAT	61
Man Made Hazard	Violent Crime	Violence/Crime	61
Natural Hazard	Meteorological	Tornado	56
Technical Hazard	Infrastructure	Loss of Infrastructure	52
Natural Hazard	Hydrological	Flood, Riverine	48
Natural Hazard	Biological	Pandemic	48

5.0 Detailed - Hazard Identification Vulnerability Risk Analysis

The detailed quantitative HIVRA worksheet will be maintained in electronic media format with this document for future reference. An example copy of the worksheet is contained in Appendix A: Source Support Documentation.

5.1 Natural Hazards

Natural hazards are those hazards that are biological, meteorological, geological, or hydrological. These hazards are naturally occurring in the environment, as opposed to an intentional use, or exploitation, of a hazard. This section considers the naturally occurring hazards that have the highest probability and severity if applied to the vulnerabilities of the University of Central Arkansas.

5.1.1 Tornado

Tornados can occur anytime in Arkansas. Mesocyclonic (tornados) storms have been known to occur in December through February, as well during the spring. They are formed when a cold air-mass collides with tropical maritime air-mass and is separated by an area of dry air (dry line).

Super-cell convergence creates an up welling of air from the surface to form the super-cell cloud formation. Divergence occurs at the planetary boundary level. It is believed that the circulation created by convergence and divergence is the foundation of tornado formation.

Arkansas has a high incident of tornados due to its proximity to tropical maritime air-masses (Gulf coast), and continental polar air-mass (great planes north). Typically, the storms that effect Arkansas form in Texas, and move northeast into Arkansas. Cold fronts move into warm moist air to form thunderstorms.

Since 1952, there have been 49 tornados in Faulkner County. On average that is approximately one a year, but there was an eleven (11) year period when no tornados were reported (1988-1999). Conway has had twelve (12) tornados within five (5) miles of downtown. Of those tornados that have impacted Conway, two (2) have been EF3 (Enhanced Fujita), and one (1) was an EF4 which touched down within a mile of campus in 1967. A total of 10 people have been killed due to tornados in Conway, with over 272 injured. Tornados vary in size and intensity, as displayed by the following scale:

Fujita Scale, (www.spc.noaa.gov, accessed in January, 2011)

FUJITA SCALE			DERIVED EF SCALE		**OPERATIONAL EF SCALE**	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	**EF Number**	**3 Second Gust (mph)**
0	40-72	45-78	0	65-85	**0**	**65-85**
1	73-112	79-117	1	86-109	**1**	**86-110**
2	113-157	118-161	2	110-137	**2**	**111-135**
3	158-207	162-209	3	138-167	**3**	**136-165**

4	208-260	210-261	4	168-199	**4**	**166-200**
5	261-318	262-317	5	200-234	**5**	**Over 200**

5.1.1.1 Hazard Agent: In consideration of tornados, the hazard agent is typically flying debris. Tornados have been known to uplift and carry the contents of a house, motor vehicle, livestock, and trees for miles before being deposited back on the earth. Locomotives have been reported to be derailed by the winds of a tornado. The debris that is generated rotates within the cyclone until it rotates to the exterior edges and is deposited in the debris field of the tornado. Structures impacted by flying debris are derogated, and people and animals are injured or killed by debris.

Buildings that are derogated often lose structural integrity and fail to the high winds. Gabled roofs are most susceptible to structural failure, followed by walls. Reinforced concrete structures have the highest level of survival during a tornado.

5.1.1.2 Hazard Characteristics: Meteorological science uses a variety of methodologies to predict severe tornadic probability: Air mass charts, pressure charts, radar, and satellite imagery. The most probable tornado based upon historic reference for this region is an EF 3 or less.

Our typical storm will approach from the southwest, but may occur in any direction. Typical advance notification of probability is 24 to 48 hours from the Severe weather Projection Center out of Norman, Oklahoma. An approaching storm and have a lead time of minutes to several hours.

If you are in the path of a tornado you can expect flying debris, extreme high wind velocity, derogation of well constructed buildings (brick, masonry), and the total loss of light to medium constructed buildings (lumber and tin).

5.1.1.3 Hazard Impacts: Typical tornados down power lines, disrupt communications (loss of power, and infrastructure), physical structural damage, loss of life, and severe injury.

The University of Central Arkansas can expect the loss of lightly constructed buildings, and structural damage to heavily constructed buildings. We can expect injury and loss of life to those exposed to the cyclonic debris. The University can expect loss of power for six (6) hours to several days. It is expected that the University will lose aerially strung fiber communication cable and the loss/derogation of communication systems (Phone, 911 Emergency Dispatch).

The debris field often extends over roadways, consequently, blocking access to affected areas by responders. It is not uncommon to have parts of homes, trees, and trucks blocking roads.

Response to the University of Central Arkansas will be dependent upon the scope of the disaster. If confined within the boundaries of the jurisdiction (campus) response will be quick and comprehensive. If it extends into the interior portions of Conway, then the University can expect extended periods without emergency response from Conway, until mutual aid arrives.

The impacts on the human body are often severed arms, legs, and dismembering. People are often crushed by the collapse of buildings, roofs, or struck by debris. It is also common for those caught in a tornado to be carried away.

5.1.1.4 Probability: 80, tornados occur often, although they are typically local phenomena. The width of a tornado can be a narrow as a hundred feet, or as wide as a mile. Therefore, direct impact of a tornado is relatively rare, but the area has historical precedent based upon historical data.

5.1.1.5 Historical Relevance: For additional information reference: www.tornadohistoryproject.com. There have been forty-nine tornados since 1952, twelve within Conway.

5.1.1.6 Exacerbating Factors: The time of day, either exacerbates or mitigates the impact of a tornado occurring on the campus of the University of Central Arkansas. If the occurrence is in the evening, there is less of a population to be affected. If the occurrence happens in the middle of the day more students, staff, and faculty will be affected. Impact to the buildings is affected by path; a southern route would be more detrimental to the university with the potential loss of the physical plant.

5.1.1.7 Mitigating Factors: Mitigating factors are those factors that lesson the severity of a risk.

a. Resources: The University of Central Arkansas has a robust police department with twenty-five (25) certified officers and seven patrol vehicles. The University is in the process of developing a Civilian Emergency Response Team (CERT) for the campus. The University has a Student Health Center (SHC) that can be used for medical triage, and minor treatment. The University has trained personnel to address structural and utility issues in the Physical Plant.

b. Preparedness: The University lacks Continuity of Operations Planning (COOP). The University is integrating all Emergency Operations Planning through the county and state for a comprehensive approach to emergency management. The University will establish mutual aid agreements with the City, County, State, and Health Care by end of month April, 2011.
c. Training: All hazards emergency management training for the university staff is on-going. The Physical Plant will be receiving building evaluation training in 2011.
d. Exercises: Natural Disaster 2011.

5.1.1.8 Quantitative Analysis: Quantitative analysis is used to determine not only the most probably and severe hazard impact upon the institution, but provide a baseline for comparison against other hazards.

Risk Range: 27.2 - 62
Minimum: 27.2
Mid-Point: 52.6
Maximum: 62

5.1.1.9 Summary: Any size tornado that directly impacts the University will have severe consequences, but the most probable and severe tornado that will occur will be a high side EF 2 or EF 3 that occurs in the mid-afternoon: **The mitigated risk index is 52.6**.[16],[17],[18],[19]

5.1.2 Shallow Flooding: Shallow flooding can occur anytime of the year, but typically occurs in the spring. There are many types of flooding, examples include: Coastal, riverine, dam failure, inundation, and shallow. Shallow flooding occurs usually after protracted periods of precipitation. Typically, it is flooding that occurs outside of normal steams or bodies of water. Shallow flooding is a form of inundation whereby the earth is saturated and water pools on the surface faster than it can drain or absorb.

5.1.2.1 Hazard Agent: If shallow flooding occurs in residential areas homes are often inundated with water. It is reported that flooding as shallow as 1 – 3 inches can cause mold, ruin floors, walls, drywall, and cause structural derogation.

Roads covered by shallow flooding can lead to death or serious injury. Both the County and City have been affected by the adverse affects of poor drainage. Persons often enter areas affected by shallow flooding

[16] www.tornadohistoryproject.com
[17] http://spc.noaa.gov
[18] http://www.fema.gov/hazard/tornado/index.shtm
[19] http://www.nssl.noaa.gov/edu/safety/tornadoguide.html

unaware of hazards beneath the surface, such as: roadways washed away, drainage areas, and under the surface debris.

Vehicles travelling on roadways affected by shallow flooding can hydroplane on water as shallow as one (1) inch. The swiftness of the water can also displace vehicles downstream with as little as six (6) inches of water.

People are often trapped in vehicles, or slip in fast current, which can lead to death or injury.

5.1.2.2 Hazard Characteristics: Shallow flooding often occurs after prolong rain. Its duration can be measured in several hours or even weeks. The soil once saturated cannot absorb the moisture fast enough to prevent flooding, and drainage is often poor.

5.1.2.3 Hazard Impacts: Structural damage, loss of business, personnel loss or injury is the impact of shallow flooding.

5.1.2.4 Probability: 70; A one hundred year flood occurrence is 2% for any given year. A five hundred year flood is .05% for any given year.

5.1.2.5 Historical Relevance: Shallow flooding is a natural occurrence in both Conway and Faulkner County. The University has a one hundred year floodplain that extends across the campus from Donaghey to the north of the Business College to Dave Ward Rd and Farris. HAZUS software indicates that water depth in that area can exceed 15 feet during a 100 year flood. Historical reports indicate that pooled water has exceeded 6 inches on campus during heavy rain on many occurrences.[20] [21]

5.1.2.6 Exacerbating Factors: An uninformed public.

5.1.2.7 Mitigating Factors:

a. Resources: The physical plant has resource to block off hazardous areas affected by shallow flooding.

b. Preparedness: No preparedness plans exist to address this hazard at this time.

5.1.2.8 Quantitative Analysis: Quantitative analysis is used to determine not only the most probably and severe hazard impact upon the institution, but provide a baseline for comparison against other hazards.

Risk Range: 18.9 – 49.7
Minimum: 18.9

[20] http://www.logcabin.net
[21] FEMA, HAZUS flood assessment conducted 4/2010

Mid-Point: 34.3
Maximum: 49.7

5.1.2.9 Summary: Flooding claims the lives of dozens of Arkansan every year. This region due to the high water table, low elevation, and frequency of heavy rain in the spring is subjected to shallow flooding. An uninformed public is often the victim of the hazards associated with shallow flooding. Shallow flooding has the potential to cause costly structural damage which has the ability to affect this institution's ability to conduct business. **The mitigated risk index is 34.3.**

5.1.3 Severe Winter Weather: Severe winter weather (WX) occurs between the months of November to April. In central Arkansas the heaviest snows typically occur after New Years from January to March, but seldom exceed 5.9 inches on average.[22] The heaviest snow on record was in 1921 with 19 inches, that year also produced the single day heaviest snowfall of 12 inches. Typically, snow is not a problem in Central Arkansas, but severe winter weather that produce ice storms often inflict disastrous consequence.

Ice Storms have created disasters in the state 31 times since 1950, with 10 of the 31 affecting central Arkansas. Since 2000 winter weather has produced significant ice storms in 2000, 2003, 2007, 2009, and 2010.

5.1.3.1 Hazard Agent: Frozen precipitation that impedes transportation is a principle hazard agent, as well as frozen precipitation that collects on power lines causing power outages over regional areas.

5.1.3.2 Hazard Characteristics: The typical Arkansas ice storm affects a wide area of the central Arkansas region. Power outages that occur can cripple power distribution across the region, leaving many without power for extended periods. The storms have a duration of days and sometimes weeks. Their speed of onset is hours. Advance notification is usually 24 to 48 hours.

5.1.3.3 Hazard Impacts: Impacts to the University associated with severe winter weather are power disruption, hazardous travel, deaths, injury, and possible legal liability due to accidents. Hazardous or severe winter weather is called deceptive killers.[23] On Average national 59 deaths occur annually due to severe cold or winter weather.[24]
Protracted power disruption can affect the University's ability to conduct class, as well as day to day business. The University can expect personal absence, and risk liability of those injured while conducting University business.

[22] USDA Climatology report for Faulkner County.
[23] http://www.fema.gov/news/newsrelease.fema?id=46834
[24] http://www.weather.gov/os/hazstats/images/67-years.pdf

5.1.3.4 Probability: 80.

5.1.3.5 Historical Relevance: Multiple references exist through NOAA, Log Cabin Democrat, and FEMA.

5.1.3.6 Exacerbating Factors: Hazardous transportation and loss of power.

5.1.3.7 Mitigating Factors:

a. Resources: Physical plant, Conway Corporation
b. Preparedness: Inclement weather policy and advance weather notification.
c. Response: N/A
d. Training: N/A

5.1.3.8 Quantitative Analysis: Quantitative analysis is used to determine not only the most probably and severe hazard impact upon the institution, but provide a baseline for comparison against other hazards.

Risk Range: 15.4 to 45.8
Minimum: 15.4
Mid-Point: 38.6
Maximum: 45.8

5.1.3.9 Summary: Most deaths and injury associated with severe winter weather can be wholly avoided. The most probable risk to the University associated with severe winter weather is protracted power loss that extends past the melting of the ice. **The mitigated risk index is 38.6.**

5.2 Technical Hazards: Technical hazards are those hazards that occur due to a failure in technology. Typical technical hazards are computer failure, power distribution failure, and hazardous material release due to accidents. Technical hazards like most hazards typically have cascading effects, which cause multiple failures in an asymmetrical environment.

5.2.1 HAZMAT – Chemical: Accidental release of hazardous material due to accidents occurs on a frequent basis. The Faulkner County Office of Emergency Management reports that in 2010 it responded to approximately 50 reportable HAZMAT incidents in the county, excluding the City of Conway.[25] The typical HAZMAT incident is caused by transportation accidents. The City of Conway has 3 primary transportation routes that are used in the transportation of hazardous materials: Interstate 40, Union Pacific Railway, and barge traffic on the Arkansas River. This does not take account of other federal and state highways that intersect through Conway. Interstate 40 is approximately 2 miles from campus. The Union Pacific Railway is approximately 1 mile. Both transportation corridors

[25] Personal interview with Shelia Maxwell, Director, Faulkner County OEM, November 2010.

parallel each other east of campus and curve to the north of campus. The Arkansas River is approximately 5 miles west of campus. Multiple forms of acids, corrosives, explosives, petroleum, and nitrates which are in three various states of mater: Solid, gas, and liquid are transported along these corridors.

Industry also plays a role in the estimation of probable risk. In 2004 the Detco Corporation had a chemical explosion off of Harkrider and Bruce. The resulting explosion nearly caused the evacuation of the University's campus.

The campus also has a large stock of hazardous material located in top floor of Laney Hall, as well as each lab in the building, and the Physical Plant.

5.2.1.1 Hazard Agent: The hazard agent for hazardous material varies based upon the compound and the interactive agent. Typical hazard agents are reactions resulting in respiratory irritation, respiratory arrest, asphyxiation, chemical burns, fire, explosion, and affects on the environment.

5.2.1.2 Hazard Characteristics: The characteristics vary based on the compound, but most aerially disbursed material can be modeled using Aerial Locations of Hazardous Atmospheres (ALOHA) software and Geospatial Information Systems (GIS).

5.2.1.3 Hazard Impacts: The impact of hazardous material varies based on the material. Hazardous material has a human cost of death, or injury, it also may cause environmental damage, and contaminate an extended area in or about the University. There is a possibility of explosion and/or fire associated with a hazardous material release.

5.2.1.4 Probability: 80

5.2.1.5 Historical Relevance: Locally, relevance can be extrapolated from the Detco chemical explosion (2004), I-40 and exit 127 HAZMAT release (2007), and the Am-Tran Paint Bay fire. Nationally, relevance can be drawn from the Houston Chemical explosion, and multitudes of other examples.

5.2.1.6 Exacerbating Factors: Type of HAZMAT. The time of day, and season, as well as atmospheric conditions are considered in determining the extent of the risk.

5.2.1.7 Mitigating Factors: Type of HAZMAT. The time of day, and season, as well as atmospheric conditions are considered in determining the extent of the risk. The size of the release is also calculated in ALOHA models.

a. Resources: GIS, ALOHA, a trained Emergency Manager versed in GIS, ALOHA, and HAZMAT. The Conway Fire Department with a HAZMAT response team.
b. Preparedness: Evacuation and shelter in place protocols do not exist at this time.
c. Response: All response will be directed to Conway Fire Department.
d. Training: HAZMAT Operations Certified.

5.2.1.8 Quantitative Analysis: Quantitative analysis is used to determine not only the most probably and severe hazard impact upon the institution, but provide a baseline for comparison against other hazards.

Range: 21 to 47.32
Minimum: 21
Mid-Point: 34.35
Maximum: 47.32

5.2.1.9 Summary: Hazardous material releases have varying degrees of impact upon the University, and are dependent upon the amount that is released, the proximity to the University, the type of compound, and atmospheric conditions. The mitigated risk index is low, and is a result of the probability. When considering this risk, the proximity to the hazard agent, as well as the number of occurrences that affected or had the ability to impact the university was the primary determining factor. The risk index would be considerably higher if considering the number of contacts untrained personnel may have with chemicals in university labs. **The mitigated risk index is 34.35**

5.2.2 HAZMAT – Radiological: The University of Central Arkansas has a Neutron Howitzer that is used to create radioactive source material for experimental use. The device uses a beryllium (Be) and plutonium (Pu) radiation source. The beryllium interacts with the plutonium to limit Gamma Radiation, but allows Alpha Radiation. The alpha radiation is limited by its short wave length and cannot pass through the water barrier.

Harvard University reports that, "A Pu-Be neutron source has the advantages of high neutron yield, low gamma-ray intensity, and very long half-life. The neutron spectrum from such a source, composed of 13 g of plutonium and 7 g of beryllium as $PuBe_{13}$ (density 3.7 g/cc), was measured by means of proton recoils in nuclear research emulsions. The data obtained from 2057 observations indicate the neutrons have a maximum energy of approximately 10.5 Mev with broad intensity maxima at 4.0, 7.2, and 9.7 Mev. The observed spectrum shows marked similarities with published data on neutrons from Po-Be and Ra-Be sources. A comparison is made between the present data and previously reported energy

levels in the residual carbon nucleus. The absolute yield of neutrons above 0.5-Mev energy is 1.2×10^6 neutrons/sec.[26]

5.2.2.1 Hazard Agent: Alpha radiation, limited amounts of Gamma radiation and fire which creates vaporized or aromatized BePU.

5.2.2.2 Hazard Characteristics: Beryllium is the chemical element in the periodic table that has the symbol Be and atomic number 4. A toxic bivalent element, beryllium is a steel grey, strong, light-weight yet brittle, alkaline earth metal, that is primarily used as a hardening agent in alloys (most notably, beryllium copper). Beryllium - Notable characteristics. Beryllium has one of the highest melting points of the light metals. The modulus of elasticity of beryllium is approximately 1/3 greater than that of steel.[27]

"Plutonium, like most metals, has a bright silvery appearance at first, much like nickel, but it oxidizes very quickly to a dull gray, although yellow and olive green are also reported. At room temperature plutonium is in its "α form" (*alpha*). This, the most common structural form of the element (allotrope), is about as hard and brittle as grey cast iron unless it is alloyed with other metals to make it soft and ductile. Unlike most metals, it is not a good conductor of heat or electricity. It has a low melting point (640 °C) and an unusually high boiling point (3,327 °C).

Alpha particle emission, which is the release of high-energy helium nuclei, is the most common form of radiation given off by plutonium. A typical nuclear weapon core of 5 kg contains about 12.5×10^{24} atoms. With a half life of 24,100 years, about 11.5×10^{12} of its atoms decay each second by emitting a 5.157 MeV alpha particle. This amounts to 9.68 watts of energy. Heat produced by the deceleration of these alpha particles make it warm to the touch.

Resistivity is a measure of how strongly a material opposes the flow of electric current. The resistivity of plutonium at room temperature is very high for a metal, and it gets even higher with lower temperatures, which is unusual for metals. This trend continues down to 100 K, below which resistivity rapidly decreases for fresh samples. Resistivity then begins to increase with time at around 20 K due to radiation damage, with the rate dictated by the isotopic composition of the sample.

[26] http://adsabs.harvard.edu/abs/1955PhRv...98..740S
[27] http://www.experiencefestival.com/beryllium_-_notable_characteristics

Because of self-irradiation, a sample of plutonium fatigues throughout its crystal structure, meaning the ordered arrangement of its atoms becomes disrupted by radiation with time. However, self-irradiation can also lead to annealing which counteracts some of the fatigue effects as temperature increases above 100 K.

Unlike most materials, plutonium *increases* in density when it melts, by 2.5%, but the liquid metal exhibits a linear decrease in density with temperature. Near the melting point, the liquid plutonium has also very high viscosity and surface tension as compared to other metals."[28]

5.2.2.3 Hazard Impacts: Alpha particle exposure is limited due to its inability to penetrate skin tissue, but if ingested or inhaled BePu can have adverse health consequence.

Beryllium, some of its alloys, and a variety of its compounds have induced malignant tumors of the lung and osteogenic sarcoma in experimental animals. Three animal species, monkeys, rabbits, and rats, have been shown to be susceptible. Beryllium induces morphological transformation in mammalian cells and enhances viral transformation of mammalian cells. It has been shown to decrease fidelity of DNA synthesis. It has been recognized that exposure to compounds of this metal will, in some individuals, result in a chronic granulomatous disease of the lung. A series of overlapping recent human epidemiological studies have been suggestive of an increase in the incidence of lung cancer in populations occupationally exposed to beryllium. Such studies, together with animal and in vitro studies, argue for the strong presumption of a carcinogenic hazard to man in occupational beryllium exposures.[29]

The EPA states the following, " All kinds of ionizing radiation can cause cancer and other health effects. The main difference in the ability of alpha and beta particles and gamma and x-rays to cause health effects is the amount of energy they can deposit in a given space. Their energy determines how far they can penetrate into tissue. It also determines how much energy they are able to transmit directly or indirectly to tissues and the resulting damage.

Although an alpha particle and a gamma ray may have the same amount of energy, inside the body the alpha particle will deposit all of its energy in a very small volume of tissue. The gamma radiation will spread energy over

[28] http://en.wikipedia.org/wiki/Plutonium
[29] http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1568815/

a much larger volume. This occurs because alpha particles have a mass that carries the energy, while gamma rays do not.

In general, the amount and duration of radiation exposure affects the severity or type of health effect. There are two broad categories of health effects: stochastic and non-stochastic.

Stochastic effects are associated with long-term, low-level (chronic) exposure to radiation. ("Stochastic" refers to the likelihood that something will happen.) Increased levels of exposure make these health effects more likely to occur, but do not influence the type or severity of the effect.

Cancer is considered by most people the primary health effect from radiation exposure. Simply put, cancer is the uncontrolled growth of cells. Ordinarily, natural processes control the rate at which cells grow and replace themselves. They also control the body's processes for repairing or replacing damaged tissue. Damage occurring at the cellular or molecular level, can disrupt the control processes, permitting the uncontrolled growth of cells--cancer. This is why ionizing radiation's ability to break chemical bonds in atoms and molecules makes it such a potent carcinogen.

Other stochastic effects also occur. Radiation can cause changes in DNA, the "blueprints" that ensure cell repair and replacement produces a perfect copy of the original cell. Changes in DNA are called mutations.

Sometimes the body fails to repair these mutations or even creates mutations during repair. The mutations can be teratogenic or genetic. Teratogenic mutations are caused by exposure of the fetus in the uterus and affect only the individual who was exposed. Genetic mutations are passed on to offspring.

Non-stochastic effects appear in cases of exposure to high levels of radiation, and become more severe as the exposure increases. Short-term, high-level exposure is referred to as 'acute' exposure.

Many non-cancerous health effects of radiation are non-stochastic. Unlike cancer, health effects from 'acute' exposure to radiation usually appear quickly. Acute health effects include burns and radiation sickness. Radiation sickness is also called 'radiation poisoning.' It can cause premature aging or even death. If the dose is fatal, death usually occurs

within two months. The symptoms of radiation sickness include: nausea, weakness, hair loss, skin burns or diminished organ function.

Medical patients receiving radiation treatments often experience acute effects, because they are receiving relatively high "bursts" of radiation during treatment." [30]

Exposure table produced by the EPA (www.epa.gov/rpdweb00/understand/health_effects.html accessed in January 2011)

Exposure (rem)	Health Effect	Time to Onset (without treatment)
5-10	changes in blood chemistry	
50	Nausea	hours
55	Fatigue	
70	Vomiting	
75	hair loss	2-3 weeks
90	Diarrhea	
100	Hemorrhage	
400	possible death	within 2 months
1,000	destruction of intestinal lining	
	internal bleeding	
	and death	1-2 weeks
2,000	damage to central nervous system	
	loss of consciousness;	minutes
	and death	hours to days

5.2.2.4 Probability: 40

5.2.2.5 Historical Relevance: There are a small number of reported university radiation accidents that have resulted in severe exposure. Most notably, was the recent accident in India, at the Delhi University, in 2010.

[30] http://www.epa.gov/rpdweb00/understand/health_effects.html

It is believed that most accidents go unreported. There is a higher incident of accidental exposure during medical use of radioactive products.

5.2.2.6 Exacerbating Factors: Radiation and beryllium toxicity exposure is exacerbated by repeated exposure to a radioactive source, enclosed or confined areas, lack of trained personnel, and a lack of protocol.

5.2.2.7 Mitigating Factors:

a. Resources: NRC, EPA, AHD, Conway HAZMAT, and CBRNE Response.
b. Preparedness: The department has protocols in place, as well as contact information.
c. Response: The primary response agency is the NRC, EPA, and the Arkansas Department of Health.
d. Training: Responsible persons are properly trained.
e. Exercises: None

5.2.2.8 Quantitative Analysis: Quantitative analysis is used to determine not only the most probably and severe hazard impact upon the institution, but provide a baseline for comparison against other hazards.

Risk Range: 14.8 to 29.6
Minimum: 14.8
Mid-Point: 22.2
Maximum: 29.6

5.2.2.9 Summary: The serious effects of the toxic and radioactive characteristics, or properties, of BePu are mitigated by the low probability of accidental exposure. Good protocols, use of best practices, properly trained personnel, as well as sound physical security are strong mitigation factors when considering the overall risk. **The mitigated risk index is 22.2.**

5.2.3 Loss of Infrastructure (Buildings, utility, connectivity) Loss of infrastructure can occur due to natural, man-caused, or technical hazards, and is typically the result of cascading asymmetric failure. The implication of this hazard is the inability to conduct business, as well as the inability to deliver classes to students. The hazard can be mitigated through effective planning.

5.2.3.1 Hazard Agent: The hazard agent is the loss of business, or damage to the university's reputation, both of which have financial implications.

5.2.3.2 Hazard Characteristics: Inability to conduct business due to the loss of critical infrastructure.

5.2.3.3 Hazard Impacts: Loss of the ability to conduct day to day business, loss of finance, loss of enrollment, possible loss of reputation.

5.2.3.4 Probability: 60: The probability is affected by the number of hazards that can effect and create the loss of infrastructure.

5.2.3.5 Historical Relevance: There are multiple references to the loss of various universities' infrastructure. The Conway area has a history of tornadic activity, shallow flooding, as well as severe winter weather.

5.2.3.6 Exacerbating Factors: Cost and time of recovery. Extensive time to recovery could potentially adversely affect the university's ability to conduct business, teach classes, or disperse funds.

5.2.3.7 Mitigating Factors:

a. Resources: Facilities

b. Preparedness: The University does not have a COOP in place at this time, but has well trained and equipped personnel.

5.2.3.8 Quantitative Analysis: Quantitative analysis is used to determine not only the most probably and severe hazard impact upon the institution, but provide a baseline for comparison against other hazards.

Risk Range: 24.75 to 50.4
Minimum: 24.75
Mid-Point: 37. 58
Maximum: 50.4

5.2.3.9 Summary: Probability is lower due to no notable historical reference. **The total mitigated risk index is 37.58**

5.3 Man-Caused (Made): Man-made hazards are those hazards which are created, either intentionally or unintentionally by man.

5.3.1 Nuclear Security This analysis will be maintained separate from this document and is not subject to FIOA request.

Hazard Agent:
Hazard Characteristics:
Hazard Impacts:
Probability:
Historical Relevance:
Exacerbating Factors:
Mitigating Factors:
Resources:
Preparedness:

Response:
Training:
Exercises:

Quantitative Analysis: Quantitative analysis is used to determine not only the most probably and severe hazard impact upon the institution, but provide a baseline for comparison against other hazards.

Range:
Minimum:
Mid-Point:
Maximum:

Summary:

5.3.2 CBRNE: Chemical, Biological, Radiological, Nuclear, and Explosive hazards are those hazards that are exploited by terrorist, or people with nefarious intention.

5.3.2.1 Hazard Agent: Chemical, Biological, Radiological, Nuclear, and/or Explosive materials.

5.3.2.2 Hazard Characteristics: CBRNE is typically used in conjunction with terrorism or unconventional warfare. Chemicals used in typically are easily obtain and are toxic hazardous materials. Biological material is typically anthrax, small pox, or some contagious biological strain used to debilitate or kill a large population. Biological weapons have been outlawed through treaties. Radiological weapons are weapons that use radioactive material to contaminate a given area. Nuclear weapons produce highly radioactive particles, and are very high yield weapons that use either plutonium (Pu) or Uranium (Ur) as a catalyst to create fission. The resulting reaction can affect a wide region. Explosives used in CBRNE are usually high yield explosive, such as those used in Improvised Explosive Devices (IED).

Dr. Heyer states, “Terrorists potentially have a wide range of available weapons, ranging from very simple to exceedingly complex. With knowledge, preparation and training, first responders can safely deal with the consequences of each.

In general, terrorist weapons can be categorized into four major types. It is important to remember that different types of weapons can be combined or used sequentially. Terrorist weapons are often referred to as weapons of mass destruction (WMD) because of the ability to kill large numbers of people.

The four categories of weapons are:

1. Conventional Weapons & Explosives.
2. Nuclear and Radioactive Weapons.
3. Chemical Weapons.
4. Biological Weapons."[31]

CBRNE incidents are defined as deliberate or unintentional events with the potential to produce catastrophic loss of life or property or strike terror in the affected population. The incident may involve the release of biological, chemical or radioactive/nuclear agents into the air through several different means. It may also involve the use of explosive devices which may cause fire and damage through the explosive itself, or may also constructed to bring more damage by releasing CBRN agents into the air.

While WMD incidents may involve mass casualties and damage to buildings or other types of property, they differ in many ways from other types of incidents.[32]

5.3.2.3 Hazard Impacts: Situation may not be recognizable until there are multiple casualties. There may be multiple events. Responders are placed at a higher risk of becoming casualties. The location of the incident will be treated as a crime scene. Contamination of critical facilities and large geographic areas may result. Scope of the incident may expand geometrically and may affect mutual aid jurisdictions

There will be a stronger reaction from the public than with other types of incidents. Time is working against responding elements Support facilities are at risk as targets. Specialized State and local response capabilities may be overwhelmed. [33] CBRNE events have the potential to cause mass casualties, destroy critical infrastructure, and are a principle tool used by terrorist. The purpose of terrorist is not to kill, that is the by-product, and their purpose is to draw attention to themselves or their cause.

5.3.2.4 Probability: 70: The probability reflects National Assessments

5.3.2.5 Historical Relevance: Anthrax mailing following 9/11. IED bombings used by terror organizations globally. The attempted bombing of World Trade Center, and Times Square. The Murrah Federal building bombing. Intelligence estimate that

[31] http://www.disasters.org/dera/library/Heyer%20WMD.pdf
[32] www.au.af.mil/au/awc/awcgate/fhwa/basics_terrorism.ppt
[33] www.fema.gov/rrr/conplan/conpln3b.shtm

reflect terror organizations attempts to acquire nuclear material. The 1995 terror attack on Tokyo subway system using sarin gas.

5.3.2.6 Exacerbating Factors: Large gathering of people. Media sensationalism of the event. Sporting events where large number of people gather, with limited egress.

5.3.2.7 Mitigating Factors:

a. Resources: 20th SUPCOM CBRNE Response, Local law enforcement, Conway HAZMAT response, Conway Bomb Squad.

b. Preparedness: Evacuation and warning systems

c. Response: The University PD can respond with law enforcement, but the response will be turned over to specialized CBRNE response units.

5.3.2.8 Quantitative Analysis: Quantitative analysis is used to determine not only the most probably and severe hazard impact upon the institution, but provide a baseline for comparison against other hazards. This analysis is based upon national assessments.

Risk Range: 37.1 to 52.5
Minimum: 37.1
Mid-Point: 44.8
Maximum: 52.5

5.3.2.9 Summary: Terrorism can happen anyplace and at anytime. Terrorist chose targets based upon vulnerability and the ability to gain the desired outcome. Terrorism applied to the heartland creates the desired effects. **The total mitigated risk index is 44.8.**

5.3.3 Violence/Crime/Active Shooter: The University of Central Arkansas has an outstanding violent crime statistic of **1.3%.** Unfortunately, violence can occur at any campus, at any time. The University in 2008 suffered from an active shooter event that left two students dead. In 2010 there were several university shooting incidents.

5.3.3.1 Hazard Agent: People

5.3.3.2 Hazard Characteristics: Gunmen take hostages or shoot at population.

5.3.3.3 Hazard Impacts: Killed or injured. The manner in which the institution handles the incident will depend how the public views the institution; loss of reputation may occur.

5.3.3.4 Probability: 80

5.3.3.5 Historical Relevance: UCA 2008

5.3.3.6 Exacerbating Factors: Population

5.3.3.7 Mitigating Factors:

a. Resources: UCA Police Department
b. Preparedness: Training and protocol
c. Response: UCA PD and local law enforcement
d. Training: Active Shooter training
e. Exercises: Active Shooter 2010

5.3.3.8 Quantitative Analysis: Quantitative analysis is used to determine not only the most probably and severe hazard impact upon the institution, but provide a baseline for comparison against other hazards.

Risk Range: 26.8 to 45.6
Minimum: 26.8
Mid-Point: 36.2
Maximum: 45.6

5.3.3.9 Summary: As long as there have been people there have been violence, crime, and those willing to take the life of another. It is very much a part of the human dimension. **The mitigated risk index is 36.2**

6.0 Summary

Hazard	Min	MP	Max	RI
Tornado	27.2	52.6	62	52.6
Shallow Flooding	18.9	34.3	49.7	34.3
Severe Winter Weather	15.4	38.6	45.8	38.6
HAZMAT-CHEM	21	34.35	47.32	34.35
HAZMAT-RAD	14.8	22.2	29.6	22.2
Loss of Infrastructure	24.75	37.58	50.4	37.58
CBRNE	37.1	44.8	52.5	44.8
Nuclear Security				

Appendix A: NFPA 1600, Chapter 5

Chapter 5 Program Elements

5.1* General.

5.1.1 The program shall include the elements given in Sections 5.2 through 5.16, the scope of which shall be determined by the impact of the hazards affecting the entity.

5.1.2* The program elements shall be applicable to prevention, mitigation, preparedness, response, and recovery.

5.2 Laws and Authorities.

5.2.1* The program shall comply with applicable legislation, policies, regulatory requirements, and directives.

5.2.2* The entity shall implement a strategy for addressing the need for revisions to legislation, regulations, directives, policies, and industry codes of practice.

5.3* Risk Assessment.

5.3.1* The entity shall identify hazards, monitor those hazards, the likelihood of their occurrence, and the vulnerability of people, property, the environment, and the entity itself to those hazards.

5.3.2* Hazards to be evaluated shall include the following:

(1) Natural hazards (geological, meteorological, and biological)

(2) Human-caused events (accidental and intentional)

(3) Technological-caused events

5.3.3* The entity shall conduct an impact analysis to determine potential detrimental impacts of the hazards on the following:

(1) Health and safety of persons in the affected area at the time of the incident (injury and death)

(2) Health and safety of personnel responding to the incident

(3)*Continuity of operations
(4) Property, facilities, and infrastructure
(5) Delivery of services
(6) The environment
(7)*Economic and financial condition
(8) Regulatory and contractual obligations
(9) Reputation of or confidence in the entity
(10)*Regional, national, and international considerations

5.4 Incident Prevention.

5.4.1* The entity shall develop a strategy to prevent an incident that threatens people, property, and the environment.

5.4.2* The prevention strategy shall be based on the information obtained from Section 5.3 and shall be kept current using the techniques of information collection and intelligence.

5.4.3 The entity shall have a system to monitor the identified hazards and adjust the level of preventative measures to be commensurate with the risk.

5.5 Mitigation.

5.5.1* The entity shall develop and implement a mitigation strategy that includes measures to be taken to limit or control the consequences, extent, or severity of an incident that cannot be reasonably prevented.

5.5.2* The mitigation strategy shall be based on the results of hazard identification and risk assessment, impact analysis, program constraints, operational experience, and cost-benefit analysis.

5.5.3 The mitigation strategy shall include interim and longterm actions to reduce vulnerability.

5.6* Resource Management and Logistics.

5.6.1 The entity shall establish resource management objectives consistent with the overall program goals and objectives as identified in Section 4.1 for the hazards as identified in Section 5.3.

5.6.2 The entity shall establish procedures to locate, acquire, store, distribute, maintain, test, and account for services, personnel, resources, materials, and facilities procured or donated to support the program.

5.6.3 The resource management objectives established shall include the following:
(1) Personnel, equipment, training, facilities, funding, expert knowledge, materials, technology, information, intelligence, and the time frames within which they will be needed
(2) Quantity, response time, capability, limitations, cost, and liability connected with using the involved resources
(3) Resources and any needed partnership arrangements essential to the program

5.6.4 Resource management shall include the following tasks:
(1) Establishing processes for describing, inventorying, requesting, and tracking resources
(2) Activating these processes prior to and during an incident
(3) Dispatching resources prior to and during an incident
(4) Deactivating or recalling resources during or after incidents
(5) Contingency planning for shortfalls of resources

5.6.5 An assessment shall be conducted to identify the resource

capability shortfalls and the steps necessary to overcome any shortfalls.

5.6.6 A current inventory of internal and external resources shall be maintained.

5.6.7 Donations of goods, services, personnel, and facilities, solicited and unsolicited, and the management thereof, shall be addressed.

5.7* Mutual Aid/Assistance.

5.7.1 The need for mutual aid/assistance shall be determined.

5.7.2 If mutual aid/assistance is needed, agreements shall be established.

5.7.3 Mutual aid/assistance agreements shall be referenced in the program plan.

5.8 Planning.

5.8.1 Planning Process.

5.8.1.1 The program shall follow a planning process that develops plans for the strategy, prevention, mitigation, emergency operations/response, business continuity, and recovery.

5.8.1.2 The entity shall engage in the planning process on a regularly scheduled basis or when the situation has changed to put the accuracy of the existing plan into question.

5.8.1.3 Where applicable, the entity shall include key stakeholders in the planning process.

5.8.2 Common Plan Elements.

5.8.2.1 Plans shall have clearly stated objectives.

5.8.2.2 Plans shall identify functional roles and responsibilities of internal and external agencies, organizations, departments, and positions.

5.8.2.3 Plans shall identify lines of authority for these agencies, organizations, departments, and positions.

5.8.2.4 Plans shall identify logistics support and resource requirements.

5.8.2.5 Plans shall identify the process for managing an incident.

5.8.2.6 Plans shall identify the process for managing the communication and flow of information, both internally and externally.

5.8.3 Plans.

5.8.3.1* The program shall include a strategic plan, an emergency operations/response plan, a prevention plan, a mitigation plan, a recovery plan, and a continuity plan.

5.8.3.2* The plans developed shall be either individual or integrated into a single plan document, or a combination of the two.

5.8.3.3* The strategic plan shall define the vision, mission, goals, and objectives of the program. *(See Section 4.1.)*

5.8.3.4* The emergency operations/response plan shall assign responsibilities for carrying out specific actions in an emergency.

5.8.3.5 The prevention plan shall establish interim and longterm actions to eliminate hazards that impact the entity.

5.8.3.6 The mitigation plan shall establish interim and longterm actions to reduce the impact of hazards that cannot be eliminated.

5.8.3.7* The recovery plan shall provide for short-term and long-term priorities for restoration of functions, services, resources, facilities, programs, and infrastructure.

5.8.3.8* The continuity plan shall identify stakeholders that need to be notified, the critical and time-sensitive applications, alternative work sites, vital records, contact lists, processes, and functions that shall be maintained, as well as the personnel, procedures, and resources that are needed while the entity is recovering.

5.8.3.9 The entity shall make appropriate sections of the plans available to those assigned specific tasks and responsibilities therein and to other stakeholders as required.

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5.9 Incident Management.

5.9.1* The entity shall develop an incident management system to direct, control, and coordinate response and recovery operations.

5.9.2* The incident management system shall describe specific organizational roles, titles, and responsibilities for each incident management function.

5.9.3 The entity shall establish applicable procedures and policies for coordinating response, continuity, and recovery activities with stakeholders directly involved in response, continuity, and recovery operations.

5.9.4 The entity shall establish applicable procedures and policies for coordinating response, continuity, and recovery activities with appropriate authorities and resources, including activation and deactivation of plans, while ensuring compliance with applicable statutes or regulations.

5.9.5* Emergency operations/response shall be guided by an incident action plan or management by objectives.

5.10 Communications and Warning.

5.10.1 Communications systems shall be established and regularly tested to support the program.

5.10.2 Communication procedures shall be established by the entity and regularly exercised to support the program.

5.10.3* The entity shall develop and maintain the capability to alert officials and emergency response personnel.

5.10.4 Emergency communications and warning protocols, systems, processes, and procedures shall be developed, periodically tested, and used to alert people potentially impacted by an actual or impending emergency.

5.10.5 The entity shall determine communication needs, provide capabilities to execute plans, and review and address the interoperability of multiple responding organizations.

5.11* Operational Procedures.

5.11.1 The entity shall develop, coordinate, and implement operational procedures to support the program and execute its plans.

5.11.2* Procedures shall be established and implemented for response to and recovery from the consequences of those hazards identified in Section 5.3 and shall address health and safety, incident stabilization, operational/business continuity, property conservation, and protection of the environment under

the jurisdiction of the entity.
5.11.3 Procedures, including life safety, incident stabilization, operational/business continuity, and property conservation, shall be established and implemented for response to, and recovery from, the consequences of those hazards identified in Section 5.3.
5.11.4* Procedures shall be in place to conduct a situation analysis that includes a needs assessment, damage assessment, and the identification of resources needed to support response and recovery operations.
5.11.5 Procedures shall allow for concurrent recovery and mitigation activities during emergency response.
5.11.6 Procedures shall be established for succession of management/government as required in 5.8.3.8.

5.12 Facilities.

5.12.1* The entity shall establish a primary and an alternate emergency operations center, physical or virtual, capable of managing continuity, response, and recovery operations.
5.12.2 Facilities capable of supporting continuity, response, and recovery operations shall be identified.

5.13 Training.

5.13.1 The entity shall develop and implement a training/ educational curriculum to support the program.
5.13.2 The objective of the training shall be to create awareness and enhance the skills required to develop, implement, maintain, and execute the program.
5.13.3 Frequency and scope of training shall be identified.
5.13.4 Personnel shall be trained in the entity's incident management system.
5.13.5 Training records shall be maintained.
5.13.6 The training and education curriculum shall comply with all applicable regulatory requirements.

5.14 Exercises, Evaluations, and Corrective Actions.

5.14.1 The entity shall evaluate program plans, procedures, and capabilities through periodic reviews, testing, and exercises.
5.14.2 Additional reviews shall be based on post-incident analyses and reports, lessons learned, and performance evaluations.
5.14.3* Exercises shall be designed to test individual essential elements, interrelated elements, or the entire plan(s).
5.14.4* Procedures shall be established to take corrective action on any deficiency identified.

5.15 Crisis Communication and Public Information.

5.15.1* The entity shall develop procedures to disseminate and respond to requests for pre-incident, incident, and postincident information, as well as to provide information to internal and external audiences, including the media, and deal with their inquiries.
5.15.2* The entity shall establish and maintain an emergency public information capability that includes the following:
(1) A central contact facility for the media
(2) A system for gathering, monitoring, and disseminating emergency information
(3) Pre-scripted information bulletins

(4) A method to coordinate and clear information for release
(5) The capability of communicating with special needs populations
(6) Protective action guidelines/recommendations (e.g., shelter-in-place or evacuation)

5.15.3 Where the public is potentially impacted by a hazard, a public awareness program shall be implemented.

5.15.4 The entity shall develop procedures to advise the public, through authorized agencies, of threats to people, property, and the environment.

5.16* Finance and Administration.

5.16.1* The entity shall develop financial and administrative procedures to support the program before, during, and after an emergency or a disaster.

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5.16.2 Procedures shall be created and maintained for expediting fiscal decisions in accordance with established authorization levels and fiscal policy.

5.16.3 The procedures shall include the following:
(1) Establishment and definition of responsibilities for the program finance authority, including its reporting relationships to the program coordinator
(2) Program procurement procedures
(3) Payroll
(4) Accounting systems to track and document costs
(5)*Management of funding from external sources

Appendix B: Emergency Management Accreditation Program (EMAP), Chapter 4.3

4.3: Hazard Identification, Risk Assessment and Consequence Analysis

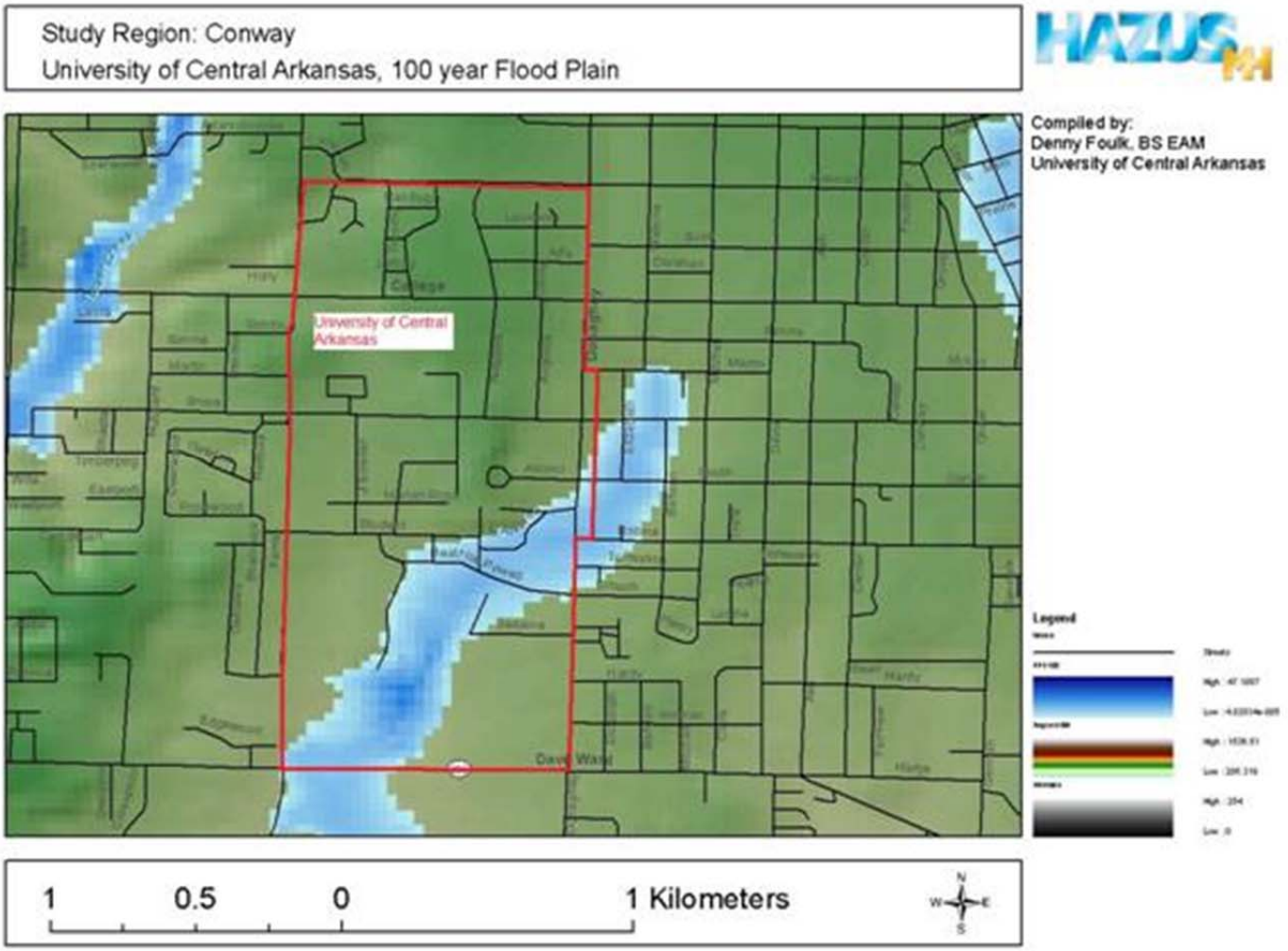
Overview

An accredited Emergency Management Program should have a Hazard Identification, Risk Assessment (HIRA) and Consequence Analysis. The chapter includes responsibilities and activities associated with the identification of hazards and assessment of risks to persons, public and private property and structures.

4.3.1 The Emergency Management Program shall identify the natural and human-caused hazards that potentially impact the jurisdiction using a broad range of sources. The Emergency Management Program shall assess the risk and vulnerability of people, property, the environment, and its own operations from these hazards. 6 *Emergency Management Standard*, September 2010

4.3.2 The Emergency Management Program shall conduct a consequence analysis for the hazards identified in 4.3.1 to consider the impact on the public; responders; continuity of operations including continued delivery of services; property, facilities, and, infrastructure; the environment; the economic condition of the jurisdiction and public confidence in the jurisdiction's governance.

Appendix C: Flood Plain Map



Appendix D: Historical Sites

Blessing Farmstead (added 1990 - **Building** - #90001369)
N of Enola, Barney

Historic Significance:	Architecture/Engineering, Information Potential
Architect, builder, or engineer:	Blessing,Andrew Jackson
Architectural Style:	Other
Area of Significance:	Architecture, Agriculture, Historic - Non-Aboriginal
Cultural Affiliation:	European
Period of Significance:	1850-1874, 1875-1899, 1900-1924, 1925-1949
Owner:	**Private**
Historic Function:	Agriculture/Subsistence, Domestic
Historic Sub-function:	Processing, Single Dwelling
Current Function:	Vacant/Not In Use

Brown House ** (added 1982 - **Building** - #82000811)
1604 Caldwell St., Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Thompson,Charles L.
Architectural Style:	Colonial Revival
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Cadron Settlement ** (added 1974 - **Site** - #74000475)
Also known as **Cedar Park**
Address Restricted, Conway

Historic Significance:	Event, Information Potential
Area of Significance:	Communications, Prehistoric, Historic - Non-Aboriginal, Transportation, Politics/Government, Historic - Aboriginal, Commerce
Cultural Affiliation:	French, Cherokees
Period of Significance:	1000-500 AD, 1750-1799, 1800-1824
Owner:	**Private** , **Federal**
Historic Function:	Domestic
Historic Sub-function:	Camp
Current Function:	Commerce/Trade, Landscape
Current Sub-function:	Park

Church of Christ (added 2005 - **Building** - #05000040)
Also known as **FA1260**
AR 310, guy

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas
Architectural Style:	Bungalow/Craftsman

Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Religion
Historic Sub-function:	Religious Structure
Current Function:	Religion
Current Sub-function:	Religious Structure

Conway Confederate Monument ** (added 1996 - **Object** - #96000455)
Also known as **FA0876S**
SW jct. of Courthouse Lawn, E of jct. of Robinson Ave. and Center St., Conway

Historic Significance:	Event
Area of Significance:	Social History
Period of Significance:	1925-1949
Owner:	**Local Gov't**
Historic Function:	Recreation And Culture
Historic Sub-function:	Monument/Marker
Current Function:	Recreation And Culture
Current Sub-function:	Monument/Marker

Conway Theater (added 1978 - **Building** - #78003479)
Front St., Conway

Owner:	**Private**

Crownover--Brown, Earl and Oza, House (added 2006 - **Building** - #06000088)
133 S. Broadway, Damascus

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas, Sr.
Architectural Style:	Other, Late 19th And 20th Century Revivals
Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Dunaway, O. L., House (added 1996 - **Building** - #96000797)
Also known as **FA0407**
920 Center St., Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Unknown
Architectural Style:	Other
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Secondary Structure, Single Dwelling
Current Function:	Domestic

Current Sub-function:	Secondary Structure, Single Dwelling

Ealy, Richard and Mettie, House (added 2005 - **Building** - #05001069)
Also known as **FA1240**
280 Solomon Grove Rd., Twin Groves

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas Sr.
Architectural Style:	Bungalow/Craftsman
Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Farmers State Bank ** (added 1982 - **Building** - #82000812)
1001 Front St., Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Thompson & Harding
Architectural Style:	Classical Revival
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Commerce/Trade
Historic Sub-function:	Financial Institution
Current Function:	Commerce/Trade
Current Sub-function:	Financial Institution

Faulkner County Courthouse (added 1995 - **Building** - #95001381)
801 Locust St., Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Wittenberg and Delony
Architectural Style:	Colonial Revival, Art Deco
Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Local Gov't**
Historic Function:	Government
Historic Sub-function:	Courthouse
Current Function:	Government
Current Sub-function:	Courthouse

Faulkner County Jail (added 1978 - **Building** - #78000585)
Also known as **Faulkner County Library**
Courthouse Sq., Conway

Historic Significance:	Event, Architecture/Engineering
Architect, builder, or engineer:	Miller,A.N.
Architectural Style:	No Style Listed
Area of Significance:	Architecture, Social History, Education, Politics/Government, Law

Period of Significance:	1875-1899
Owner:	**Local Gov't**
Historic Function:	Government
Historic Sub-function:	Correctional Facility
Current Function:	Education
Current Sub-function:	Library

First Baptist Church ** (added 2002 - **Building** - #82000813)
Davis and Robinson Sts., Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Thompson,Charles L.
Architectural Style:	Classical Revival
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Religion
Historic Sub-function:	Religious Structure
Current Function:	Religion
Current Sub-function:	Religious Structure

First United Methodist Church (added 1992 - **Building** - #92001623)
Jct. of Prince and Clifton Sts., NW corner, Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Kramer,George W.
Architectural Style:	Classical Revival
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Religion
Historic Sub-function:	Religious Structure
Current Function:	Religion
Current Sub-function:	Religious Structure

Frauenthal & Schwarz Building (added 1992 - **Building** - #92000956)
Also known as **Front Street Mall**
824 Front St., Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Sanders & Ginocchio
Architectural Style:	Late 19th And 20th Century Revivals, Chicago, Other
Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Commerce/Trade
Historic Sub-function:	Department Store
Current Function:	Commerce/Trade
Current Sub-function:	Department Store

Fraunthal House ** (added 1982 - **Building** - #82000814)
631 Western, Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Thompson,Charles L.
Architectural Style:	Other, Colonial Revival
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Galloway Hall ** (added 1982 - **Building** - #82000953)
Hendrix College campus, Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Thompson,Charles
Architectural Style:	Tudor Revival
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Education
Historic Sub-function:	Educational Related Housing
Current Function:	Education
Current Sub-function:	Educational Related Housing

Garrison, Dennis and Christine, House (added 2005 - **Building** - #05001070)
Also known as **FA1284**
105 Garrison Rd., Greenbrier

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas Sr.
Architectural Style:	Bungalow/Craftsman
Area of Significance:	Architecture
Period of Significance:	1950-1974
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Greeson--Cone House (added 1995 - **Building** - #95001094)
928 Center St., Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Unknown
Architectural Style:	Bungalow/Craftsman
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic

Current Sub-function: Single Dwelling

Guy High School Gymnasium (added 1992 - **Building** - #92001196)
Also known as **FA0865**
AR 25, Guy

Historic Significance: Event
Area of Significance: Social History, Education
Period of Significance: 1925-1949
Owner: **Local Gov't**
Historic Function: Education, Recreation And Culture
Historic Sub-function: School, Sport Facility
Current Function: Education, Recreation And Culture
Current Sub-function: School, Sport Facility

Guy Home Economics Building (added 1992 - **Building** - #92001197)
Also known as **FA0860**
AR 25, Guy

Historic Significance: Event
Area of Significance: Social History, Education
Period of Significance: 1925-1949
Owner: **Local Gov't**
Historic Function: Education
Historic Sub-function: School
Current Function: Education
Current Sub-function: School

Hall, Charlie, House (added 2005 - **Building** - #05000492)
Also known as **FA1255**
221 Old US 65, Twin Groves

Historic Significance: Architecture/Engineering
Architect, builder, or engineer: Owens, Silas Sr.
Architectural Style: Other, Late 19th And 20th Century Revivals
Area of Significance: Architecture
Period of Significance: 1925-1949
Owner: **Private**
Historic Function: Domestic
Historic Sub-function: Single Dwelling
Current Function: Domestic
Current Sub-function: Single Dwelling

Halter, Frank U., House (added 1980 - **Building** - #80000776)
1355 College Ave., Conway

Historic Significance: Architecture/Engineering
Architect, builder, or engineer: Halter,Frank U.
Architectural Style: Queen Anne, Colonial Revival
Area of Significance: Architecture
Period of Significance: 1900-1924
Owner: **Private**
Historic Function: Domestic

Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Harton House (added 1979 - **Building** - #79000438)
1821 Robinson Ave., Conway

Historic Significance:	Architecture/Engineering, Person
Architect, builder, or engineer:	Rice,George, Harton,Florrie
Architectural Style:	Queen Anne, Other
Historic Person:	Harton,D.O.
Significant Year:	1890
Area of Significance:	Architecture, Social History, Commerce
Period of Significance:	1875-1899
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Harton, D. O., House (added 1996 - **Building** - #96000796)
Also known as **FA0442**
607 Davis St., Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Harton, Daniel Osbon
Architectural Style:	Other
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Hiegel, Michael M., House (added 1998 - **Building** - #98000912)
Also known as **FA0571**
504 Second St., Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Hiegel Lumber Compnay, et al., Hiegel, Michael M.,
Architectural Style:	Tudor Revival, Bungalow/Craftsman
Area of Significance:	Architecture
Period of Significance:	1900-1924, 1925-1949
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Multiple Dwelling, Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Hooten, E.E., House (added 2005 - **Building** - #05000039)
Also known as **FA1323**

400 AR 25 N, Guy

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas Sr.
Architectural Style:	Bungalow/Craftsman
Area of Significance:	Architecture
Period of Significance:	1925-1949, 1950-1974
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Vacant/Not In Use

Langley, Farris and Evelyn, House (added 2005 - **Building** - #05000493)
Also known as **FA1242**
12 Langley Ln., Rebublican

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Palmer, Albert, Owens, Silas Sr.
Architectural Style:	Other, Modern Movement
Area of Significance:	Architecture
Period of Significance:	1950-1974
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Lee Service Station (added 2005 - **Building** - #05000044)
Also known as **FA1274**
28 South Broadway, Damascus

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas
Architectural Style:	Bungalow/Craftsman
Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Commerce/Trade
Historic Sub-function:	Business
Current Function:	Vacant/Not In Use

Liberty School Cafeteria (added 1992 - **Building** - #92001195)
Also known as **FA0863**
AR 36 N of jct. with US 64, Hamlet

Historic Significance:	Event
Area of Significance:	Social History, Education
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Education
Historic Sub-function:	School
Current Function:	Commerce/Trade

Current Sub-function:	Specialty Store

Little, J.E., House (added 1999 - **Building** - #98001631)
427 Western Ave., Conway

Historic Significance:	Person, Architecture/Engineering
Architectural Style:	Classical Revival, Bungalow/Craftsman
Historic Person:	Little, John Elijah
Significant Year:	1919
Area of Significance:	Agriculture, Architecture
Period of Significance:	1900-1924, 1925-1949
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Main Hall, Central College ** (added 1986 - **Building** - #75000385)
Also known as **Old Main (Central Baptist College)**
1509 College Ave., Conway

Historic Significance:	Event, Architecture/Engineering
Architect, builder, or engineer:	Pence,John H.
Architectural Style:	No Style Listed
Area of Significance:	Architecture, Social History, Religion, Education
Period of Significance:	1875-1899
Owner:	**Private**
Historic Function:	Education
Historic Sub-function:	College
Current Function:	Education
Current Sub-function:	College

Martin Hall ** (added 1982 - **Building** - #82000815)
Hendrix College campus, Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Thompson & Housing
Architectural Style:	Late Gothic Revival, Other
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Education
Historic Sub-function:	Educational Related Housing
Current Function:	Education
Current Sub-function:	Educational Related Housing

Merritt House (added 2005 - **Building** - #05001071)
Also known as **FA1317**
139 N. Broadview, Greenbrier

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas Sr.
Architectural Style:	Bungalow/Craftsman

Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Merritt, S.D., House (added 2005 - **Building** - #05000038)
Also known as **Site #FA1259**
45 AR 25 N, Greenbrier

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas Sr., Owens, Silas Jr.
Architectural Style:	Modern Movement, Other
Area of Significance:	Architecture
Period of Significance:	1950-1974
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Military Road--Cadron Segment ** (added 2004 - **Structure** - #03001490)
Also known as **FA0521**
Address Restricted, Conway

Historic Significance:	Event
Area of Significance:	Transportation, Exploration/Settlement, Native American
Period of Significance:	1825-1849
Owner:	**Private**
Historic Function:	Transportation
Historic Sub-function:	Pedestrian Related, Road-Related
Current Function:	Transportation
Current Sub-function:	Road-Related

Owens, Silas, Sr., House (added 2005 - **Building** - #05000045)
Also known as **FA1258**
157 Solomon Grove Rd., Twin Groves

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas Sr.
Architectural Style:	No Style Listed
Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Patton House (added 1993 - **Building** - #93001026)

AR 25, Wooster

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Ball, Jim
Architectural Style:	Bungalow/Craftsman
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Secondary Structure, Single Dwelling
Current Function:	Domestic
Current Sub-function:	Hotel

President's House ** (added 1982 - **Building** - #82000816)
Hendrix College campus, Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Thompson,Charles L.
Architectural Style:	Bungalow/Craftsman
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	College, Single Dwelling

Quattlebaum--Pelletier House (added 2005 - **Building** - #05000494)
Also known as **FA1316**
43 Ozark, Twin Groves

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas Sr.
Architectural Style:	Other, Late 19th And 20th Century Revivals
Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Robins, Frank E., House (added 1994 - **Building** - #94000497)
567 Locust St., Conway

Historic Significance:	Person, Architecture/Engineering
Architect, builder, or engineer:	Unknown
Architectural Style:	Colonial Revival
Historic Person:	robins, Frank E.
Significant Year:	1922
Area of Significance:	Communications, Architecture
Period of Significance:	1900-1924, 1925-1949

Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Robins, Reuben W., House (added 2005 - **Building** - #05001072)
Also known as **FA0323**
508 Locust St., Conway

Historic Significance:	Person, Architecture/Engineering
Architectural Style:	Mission/Spanish Revival
Historic Person:	Robins, Reuben W.
Significant Year:	1949, 1928
Area of Significance:	Commerce, Architecture, Transportation
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Robinson Historic District (added 2001 - **District** - #00001645)
Roughly bounded by Cross, Prince, Faulkner,and Watkins Sts., and Robinson Ave., Conway

Historic Significance:	Event, Architecture/Engineering
Architect, builder, or engineer:	Thompson, Charles L.
Architectural Style:	Queen Anne, Colonial Revival
Area of Significance:	Community Planning And Development, Architecture
Period of Significance:	1875-1899, 1900-1924, 1925-1949, 1950-1974
Owner:	**Private**
Historic Function:	Domestic, Religion
Historic Sub-function:	Multiple Dwelling, Religious Structure, Single Dwelling
Current Function:	Domestic, Religion
Current Sub-function:	Multiple Dwelling, Religious Structure, Single Dwelling

Salter, James and Jewell, House (added 2005 - **Building** - #05000495)
Also known as **FA1256**
159 S. Broadview, Greenbrier

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas Sr.
Architectural Style:	Other, Late 19th And 20th Century Revivals
Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Sellers House (added 2005 - **Building** - #05000042)

Also known as **FA1304**
89 Acklin Gap Rd., Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas Sr.
Architectural Style:	Bungalow/Craftsman
Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Smith, S. G., House ** (added 1982 - **Building** - #82000853)
1837 Caldwell St., Conway

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Thompson & Harding
Architectural Style:	Colonial Revival
Area of Significance:	Architecture
Period of Significance:	1900-1924
Owner:	**Private**
Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Solomon Grove Smith--Hughes Building (added 1994 - **Building** - #94001461)
Also known as **FA 0868**
S of Co. Rd. 29, Twin Groves

Historic Significance:	Event, Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas, Sr.
Architectural Style:	No Style Listed
Area of Significance:	Black, Education, Architecture
Period of Significance:	1925-1949
Owner:	**Local Gov't**
Historic Function:	Education
Historic Sub-function:	School
Current Function:	Vacant/Not In Use

Spears House (added 2005 - **Building** - #05000043)
Also known as **FA1253**
1235 AR 65 N, Greenbrier

Historic Significance:	Architecture/Engineering
Architect, builder, or engineer:	Owens, Silas
Architectural Style:	Bungalow/Craftsman
Area of Significance:	Architecture
Period of Significance:	1925-1949
Owner:	**Private**

Historic Function:	Domestic
Historic Sub-function:	Single Dwelling
Current Function:	Domestic
Current Sub-function:	Single Dwelling

Springfield Bridge ** (added 1988 - **Structure** - #88000660)
Also known as **FAO852**
CR 222 at Cadron Creek, Springfield

Historic Significance:	Event, Architecture/Engineering
Architect, builder, or engineer:	King Iron Bridge Manufactory & Iron, King,Zenas
Architectural Style:	Other
Area of Significance:	Engineering, Transportation
Period of Significance:	1850-1874, 1875-1899, 1900-1924
Owner:	**Local Gov't**
Historic Function:	Transportation
Historic Sub-function:	Road-Related
Current Function:	Transportation
Current Sub-function:	Road-Related

Titan II ICBM Launch Complex 373-1 Site *** (added 1998 - **Site** - #98001435)
Also known as **FA1219**
SE of jct. of AR 36 and AR 310, Mount Vernon

Historic Significance:	Event
Area of Significance:	Military
Period of Significance:	1950-1974, 1975-2000
Owner:	**Private**
Historic Function:	Defense
Historic Sub-function:	Military Facility
Current Function:	Agriculture/Subsistence
Current Sub-function:	Agricultural Fields