Chapter 3: The Planning Process

The City of Dewey and Dewey Public Schools Multi-Hazard Mitigation Plan is a citywide effort to direct the multi-hazard planning, development, and mitigation activities of the City of Dewey. The City was responsible for overall coordination and management of the study.

Simply stated, a mitigation plan is the product of a rational thought process that reviews the hazards, measures their impacts on the community, identifies alternative mitigation measures, and selects and designs those that will work best for the community.

This plan addresses the following hazards:

- Floods
- Tornadoes
- High Winds
- Lightning
- Hailstorms
- Severe Winter Storms
- Extreme Heat
- Drought
- Expansive Soils
- Urban Fires
- Wildfires
- Earthquakes
- Fixed Site Hazardous Materials Events
- Dam Failures
- Transportation Hazards

The planning for the City of Dewey and Dewey Public Schools followed a ten-step process, based on the guidance and requirements of FEMA. The ten steps are shown in the graphic to the right, and described below.
3.1 Step One: Organize to Prepare the Plan

(September 2005 – December 2005)

Citizens, community leaders, government staff personnel, and professionals active in disasters provided important input into the development of the plan and recommended goals and objectives, mitigation measures, and priorities for actions.

The planning process was formally created by a resolution of the governing body of Dewey. The resolution designated the Dewey Planning Commission to serve as the Dewey Citizens’ Advisory Committee (DCAC) to oversee the planning effort.

The DCAC members are as follows:

City of Dewey Citizens’ Advisory Committee

Karen Boyd
Realtor, McAnaw and Company
Certified realtor and board member of Family Crisis and Counseling. Also a member of the Citizens Advisory Panel (ConocoPhillips Petroleum) and National Association of Realtors.

Jim Eppler
Mayor, Retired
Jim Eppler is a long time citizen of Dewey. Served as the Mayor of Dewey for 12 years. Also served as a Dewey Volunteer fireman for 21.5 years (retired as Fire Chief), Washington County Deputy Sheriff for 3 years and Undersheriff for 8 years. Served as Dewey PD officer for 4 years and Dewey civil defense director for 15 years. Past president of the Oklahoma State Firefighters association.
Craig Epps  
*VP, Arvest Bank*  
Member of the Dewey Civic Association. Retired from Dewey Fire Department and former Civil Defense Director.

Kay Martin  
*Citizen*  
Retired from Bartlesville Association of REALTORS in 2001 where she served as Executive VP for 18 years. Currently involved as Board Member and Director of 3 non-profit agencies serving Washington and Nowata Counties. Serving a second term as representative for the City of Dewey on the Bartlesville Area Water Resources Committee.

Tom Upton  
*Citizen, Retired Phillips Petroleum Co.*  
Member of Dewey City Council and Deacon with First Baptist Church, Bartlesville. Certified with Phillips Petroleum in Hazmat Team and Fire Training.

Dewey Technical Advisory Committee

Supporting the DCAC is the Dewey Technical Advisory Committee (DTAC), which includes representatives of departments that have roles in hazards planning, response, protection, and mitigation. The DTAC met periodically during the year’s planning process and attended meetings of the DCAC. The DTAC consists of the following staff and consultants:

Bill Breshears  
*Police Chief/City Manager*  
*Primary Project Manager*  
Bill started his Law Enforcement profession at age 21 with the Washington County Sheriffs Department. Bill later was hired by the Dewey Police Department. He has been involved in several Law Enforcement Associations.
Sgt. Tim Stringer  
*Police Department*  
*Secondary Project Manager*

Hired with the Dewey Police Department in 1995, Tim worked his way up and currently holds the position of Sergeant and Field Training Officer. He served with the Army for 15 years as well as served in Desert Storm.

---

Kary Cox  
*Bartlesville/Washington County Emergency Manager*

Kary is active in and former President of Oklahoma Emergency Manager’s Association (OEMA).

---

Earl James  
*Chief, Fire Department*  
*Asst. Mgr, Chevalley Moving & Storage*

Industrial Arts Major, Northeastern State University. Nineteen year veteran of Dewey FD, Chief for 6-7 years.

---

Robert Jordan  
*City Building Inspector*

Former Vice-Mayor and council member for 15 years with the City of Dewey, Mr. Jordan oversees building projects for the City. He retired from Reda Pump after 31 years of service in maintenance and currently operates his own business.

---

Chuck Kerns  
*American Red Cross*

Graduate of Dewey HS and longtime Dewey resident, now serves as Programs Services Coordinator for Red Cross, overseeing the Health/Safety and Disaster Services programs. He is a National Registry EMT-Basic and Disaster Svcs Human Resources member for Red Cross, responding to national disasters. He is also a disaster Reserve and CERT member with Emergency Management.
Jinny Kujath  
*Animal Control & Code Enforcement*
Certified Animal Control and Code Enforcement officer and instrumental in starting the first Animal Control Facility for the City of Dewey.

Paul Smith  
*Superintendent, Dewey Public Schools*
BS, Education and MS, Guidance & Counselling, East Central Oklahoma University. Board member/Secretary for Bison Federal Credit Union and Board Member for Washington County Child Care Authority. Resident of Dewey for twenty-five years.

Pam Tate  
*Floodplain Administrator*
Pam is a long time resident of Washington County as well as being a part of a long time family owned business. Pam holds a Certificate of Accreditation and is the cities Floodplain Administrator.

David Williams  
*Superintendent, Public Works*
Worked for the City of Dewey since 1995. David enjoys fishing and hunting as well as his children and grandchildren. He has been married to his loving wife for 35 years.
The DTAC and DCAC met monthly at the Dewey Schools Administration Building during the planning process to review progress, identify issues, receive task assignments, and advise the consultants. A list of DCAC meetings, DTAC meetings, and meetings and dates with governing bodies is shown in Table 3-1, below. Refer to Appendix C for meeting agendas.

**Table 3–1: Dewey Citizens Advisory Committee and Technical Advisory Committee Meetings and Activities**

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 26, 2005</td>
<td>Dewey Hazard Mitigation Plan Obligation Date</td>
</tr>
<tr>
<td>Oct. 4, 2005</td>
<td>Initial meeting between Project Manager and Consultants</td>
</tr>
<tr>
<td>Nov. 11, 2005</td>
<td>City of Dewey approves and executes Agreement with R. D. Flanagan &amp; Associates, Planning Consultants, to assist the City of Dewey and Dewey Public Schools in the development of a Multi-Hazard Mitigation Plan. Preliminary overview of introductory packet given to the DTAC.</td>
</tr>
<tr>
<td>Nov. 28, 2005</td>
<td>Project Start Date</td>
</tr>
<tr>
<td>Dec. 20, 2005</td>
<td>Citizens Advisory Committee (CAC) Meeting at City Hall; Initial Orientation.</td>
</tr>
<tr>
<td>Jan 18, 2006</td>
<td>Technical Advisory Committee (TAC) Meeting at City Hall; Initial Orientation.</td>
</tr>
<tr>
<td>March 22, 2006</td>
<td>TAC/CAC Meeting, School Admin. Bldg.; Overview of Chapter 1 with DTAC/CAC.</td>
</tr>
<tr>
<td>April 26, 2006</td>
<td>TAC/CAC Meeting, School Admin. Bldg.; Overview of Firewise &amp; Business Continuity. Reviewed Chapter 1 &amp; introduced the Executive Summary, Acknowledgements and generic Chapter 4. Introduction to Floods, Tornadoes, Lightning.</td>
</tr>
<tr>
<td>May 24, 2006</td>
<td>TAC/CAC Meeting, School Admin. Bldg. Winter Storms;</td>
</tr>
<tr>
<td>Date</td>
<td>Activity</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Jan 16, 2007</td>
<td>Public Meeting: Review Hazards, solicit Public Input.</td>
</tr>
<tr>
<td>Jan 31, 2007</td>
<td>DTAC/CAC Meeting; Introduction to Goals &amp; Objectives.</td>
</tr>
<tr>
<td>Feb. 28, 2007</td>
<td>DTAC/CAC Meeting; Identify Goals and Objectives for Hazards; Review Possible Mitigation Measures; discuss Screening and Prioritization.</td>
</tr>
<tr>
<td>March 2007</td>
<td>DTAC/CAC Meeting; Review Power Point Presentation summarizing Hazards Analysis; Review Screening of Mitigation Measures.</td>
</tr>
<tr>
<td>April 25, 2007</td>
<td>DTAC/CAC Meeting; Review Mitigation Measures Voting List; preliminary ranking of Mitigation Measures, relationship to Goals and Objectives.</td>
</tr>
<tr>
<td>May 23, 2007</td>
<td>DTAC/CAC Meeting; Prioritize Mitigation Measures; select Action Plan Measures; discuss Benefit/Costs, STAPLEE Criteria Evaluation.</td>
</tr>
<tr>
<td>June 27, 2007</td>
<td>DTAC/CAC Meeting; Finalize Chapter 6-Action Plan.</td>
</tr>
<tr>
<td>July 18, 2007</td>
<td>DTAC/CAC Meeting; Review Draft HM Plan, Power Point Presentation and Summary document to be presented to City Council and School Board in Public Meetings.</td>
</tr>
<tr>
<td>August 6, 2007</td>
<td>Dewey Public Schools Board and Dewey City Council Public Meetings: Review Draft Dewey Hazard Mitigation Plan, solicit Citizen input. School Board and City Council approves Draft HM Plan to be submitted to State and FEMA.</td>
</tr>
</tbody>
</table>

### 3.2 Step Two: Involve the Public

*October 2005 – Ongoing*

In addition to the DCAC, the management team of DTAC undertook many projects to inform the public of this effort and to solicit their input. All meetings of the DCAC were publicly posted as required by ordinances and rules of the jurisdiction. Public meetings were held at the beginning of the planning process. Workshops were held to review the hazards and to develop and identify mitigation measures for each natural and technological hazard.

### 3.3 Step Three: Coordinate with Other Agencies and Organizations

*October 2005 – December 2005*

Many public agencies, private organizations, and businesses contend with natural hazards. Management team members contacted them to collect their data on the hazards and determine how their programs can best support the Dewey Multi-Hazard Mitigation planning program. A list of agencies contacted and a sample letter are included below.
The Emergency Operations Plan is administered under the Dewey Emergency Management Agency. The Public Works and Planning Departments play a key role during most emergencies.

**Federal**
- Federal Emergency Management Agency (FEMA)
- US Army Corps of Engineers
- National Weather Service (NWS)
- Natural Resource Conservation Service (NRCS)
- US Fish and Wildlife Service
- US Geological Survey

**National Non-Profit**
- American Red Cross, Washington County Chapter

**State**
- Oklahoma Department of Emergency Management
- Oklahoma Water Resources Board
  - State National Flood Insurance Program (NFIP) Coordinator
  - State Dam Safety Coordinator
- Oklahoma Conservation Commission
- Oklahoma Department of Wildlife Conservation
- Oklahoma Department of Labor
- Oklahoma Geological Survey
- Oklahoma Department of Environmental Quality

**Regional**
- Grand Gateway Economic Development Association (GGEDA)

**County**
- Washington County
- Washington County Assessor
- Washington City/County Health Department
- Area Emergency Management Agency
- Local Emergency Planning Committee

**Local**
- Office of the City Manager
- Department of Public Works
- Police Department
- Fire Department
Mr. Kary Cox, CEM  
Emergency Manager  
Washington County Emergency Management  
PO Box 1155  
Bartlesville, OK 74005

Subject: City of Dewey, Oklahoma Multi-Hazard Mitigation Plan

Dear Mr. Cox:

The Oklahoma Department of Emergency Management and the Federal Emergency Management Agency have awarded the City of Dewey and Dewey Public Schools a Pre-Disaster Mitigation (PDM) competitive grant to develop a Multi-Hazard Mitigation Plan for their jurisdictions.

The planning process began August 26, 2005, and is expected to be completed by August 25, 2008. A Hazard Mitigation Citizens Advisory Committee and a Staff Technical Advisory Committee have been appointed by the City of Dewey to oversee the planning process.

You are invited to participate in the planning process, provide input, and receive any data produced during the planning process. A preliminary schedule of the planning process is included as an attachment. We, or our consultants, will contact your agency to solicit information and studies, which may be relevant to the development of our multi-hazard mitigation plan.

If you have any questions, or if we can be of further service to you, please contact the Hazard Mitigation Coordinator, Mr. Bill Breshears at (918) 534-1933.

Sincerely,

Bill Breshears  
Chief of Police  
City of Dewey
3.4 Step Four: Assess the Hazard

(January 2006 – July 2006)
The management team collected data on the hazards from available sources. Hazard assessment is included in Chapter 5 and Appendix C, with the discussion of each hazard.

Table 3–2: How and Why Hazards Were Identified

<table>
<thead>
<tr>
<th>Hazard</th>
<th>How Identified</th>
<th>Why Identified</th>
</tr>
</thead>
</table>
| Dam Failures   | • Input from US Army Corps of Engineers (USACE)  
                         • Input from Oklahoma Water Resources Board, (OWRB), Dam Safety Division | • Past flooding from dam releases  
                                                                                      • Numerous properties in the area at risk from Caney River high-hazard dams  
                                                                                      • Warning systems need to be updated and refined  
                                                                                      • Various dam release rates should be GIS mapped, and properties at risk identified |
| Drought        | • Historical vulnerability to drought, the "Dust Bowl" era  
                         • Recent (2002) drought and water shortages in Bartlesville, the source of Dewey's water  
                         • Widespread Oklahoma drought of 2005-2006. | • Continuing mid-west and western drought and impacts on Oklahoma communities, including Bartlesville  
                                                                                      • Acute awareness of Oklahoma's population to the severe results of drought  
                                                                                      • Need to ensure adequate long-term-water resources for Dewey |
| Earthquakes    | • Historic records of area earthquakes  
                         • Input from Oklahoma Geological Survey  
                         • Input from USGS | • While Washington County has experienced no earthquakes in recent years, it is in a "moderate risk" earthquake zone due to proximity to the New Madrid Fault in Missouri |
| Expansive Soils| • Input from City Building Inspections Department  
                         • Review of Natural Resource Conservation Service data  
                         • Input from Oklahoma Department of Transportation | • Expansive soils are prevalent in the City of Dewey  
                                                                                      • Damage to buildings from expansive soils can be mitigated with public information and building code provisions |
| Extreme Heat   | • Review of number of heat-related deaths and injuries  
                         • Review of data from National Climatic Data Center and National Center for Disease Control | • High percentage of poor and elderly population at risk  
                                                                                      • 44 heat-related deaths in Oklahoma in the last 5 years |
| Floods         | • Review of FEMA and City floodplain maps  
                         • Buildings in the floodplains  
                         • Historical floods and damages | • 19 structures are located in Dewey's 100-year floodplains  
                                                                                      • Over $3 million of property at risk  
                                                                                      • Two flood events in the last 10 years with over $25,000 damage, plus three countywide flood events. |
<p>| Hailstorms     | • National Climatic Data Center and State Disaster Declarations | • Eight significant Hail events in Dewey over the last 10 years |</p>
<table>
<thead>
<tr>
<th>Hazard</th>
<th>How Identified</th>
<th>Why Identified</th>
</tr>
</thead>
</table>
| **Fixed Site Hazardous Materials Events** | • Input from Local Emergency Planning Committee (LEPC)  
• Input from Oklahoma Dept. of Environmental Quality  
• Input from Emergency First Responders (Dewey Fire and Police Departments) | • There are 2 hazardous materials sites within the community  
• Chemicals housed within these sites include Sulfuric Acid |
| **High Winds**                 | • National Weather Service data  
• Loss information provided by national insurance companies | • 18 high wind and storm-related events in Dewey in the last 10 years with over $47,000 in damage |
| **Lightning**                  | • National Climatic Data Center information and statistics | • Oklahoma ranks 15th in the nation in lightning related casualties with 88 deaths and 243 injuries over 36 years |
| **Severe Winter Storms**       | • Review of past disaster declarations  
• Input from Washington County Emergency Management Agency and Dewey Emergency Management  
• Input from area utility companies | • Severe winter storms are an annual event in the Dewey area  
• Can cause people to use unsafe alternative heating sources  
• May cause massive public utility outages and wide-spread economic disruption  
• Three winter storm-related Federal Disaster Declarations in the past 3 years, requiring over $330 million in Federal assistance in the state and $1.7 million in Washington County. |
| **Tornadoes**                  | • Review of recent disaster declarations  
• Input from Emergency Manager  
• Consensus of DCAC  
• Review of data from the National Climatic Data Center | • Dewey is located in “Tornado Alley” and has been struck by tornadoes on three occasions, and suffered two near misses  
• An average of 52 tornadoes per year strike Oklahoma  
• Tornado near Dewey in 2003 caused an estimated $1.7 million dollars worth of damage  
• Oklahoma City tornado of 1999 killed 42 people and destroyed 899 buildings  
• All citizens and buildings are at risk |
| **Urban Fires**                | • Input from State Fire Marshal  
• Input from local Fire Department | • Older, deteriorating frame homes in Dewey with substandard heating create a significant risk  
• Single family fires are the most common disaster causing loss of life and property |
| **Wildfires**                  | • Input from area Fire Depts.  
• Input from surrounding county & community fire departments  
• Input from State Fire Marshal | • Fires of the urban/rural interface threaten Dewey properties  
• A significant portion of Dewey’s perimeter is exposed and vulnerable to wildfires |
### Hazard Identification

<table>
<thead>
<tr>
<th>Hazard</th>
<th>How Identified</th>
<th>Why Identified</th>
</tr>
</thead>
</table>
| Transportation | • Input from Oklahoma Department of Transportation  
• Input from Bureau of Transportation Statistics  
• Input from Federal Motor Carrier Safety Administration  
• Input from National Transportation Safety Board (NTSB) database | • Population and property in transportation corridors are vulnerable to incidents  
• Hazardous material incidents are common in transportation incidents  
• Pipelines transporting hazardous chemicals are in the Dewey area  
• Plane crashes can occur at any location near airports or other air corridors.  
• Dewey bisected by US Hwy 75 |

### Step Five: Assess the Problem

*(August 2006 – October 2006)*

The hazard data was analyzed in light of what it means to public safety, health, buildings, transportation, infrastructure, critical facilities, and the economy. Some of the work for Steps 4 and 5 had been initiated by Grand Gateway Economic Development Association. They prepared several analyses using their geographic information system. The discussion of the problem assessment is addressed for each hazard in Chapter 4.

#### Damage Estimation Methodology

The following methodologies were used in the development of damage cost estimated for buildings and contents for flooding and tornado/high wind damage, used in the *City of Dewey’s Multi-Hazard Mitigation Plan*:

**HAZUS Damage Estimation Model:** FEMA’s HAZUS Damage Estimation Models were used to calculate damages from Flooding and Earthquakes.

**Structure Value:** Value of buildings within the City of Dewey and Dewey Public Schools was obtained from the Washington County Assessor’s office.

For critical facilities, non-profit properties with structural improvements, such as churches, which are tax exempt and where no county assessor valuation was available, the buildings’ footprints were measured using aerial photography, GIS, and field investigation to determine size, in square feet. The value of structure was obtained by calculating the square footage times the value per square foot obtained by using FEMA publication, *State and Local Mitigation Planning: Understanding Your Risks: Identifying Hazards and Estimating Losses*, August 2001, “Average Building Replacement Value per square foot,” p. 3-10, source: HAZUS

**Contents Value:** Value of contents for all buildings was estimated using “Contents Value as Percentage of Building Replacement Value” table, page 3-11, *Understanding Your Risks*.

**Depth of Damage:** In addition to the HAZUS Model, flooding damage estimates for building and contents were confirmed using actual structures’ estimated flood depth, determined by aerial topographic mapping, and field investigations. Maps of the floodplains are included in Chapter 4.
Flood damage curves, for structures (single-family, multi-family, office, commercial, industrial), and contents were estimated using Table A-3, Damage Factors, Economics Branch, Tulsa District, U.S. Army Corps of Engineers.

Flood depth of damage curve estimates were used for riverine flooding and dam failures (Chapter 4).

**Tornado Damage:** Damage estimates for the tornado scenario were based on:

2. Contents: FEMA’s Contents Value, Understanding Your Risks.
3. Damage to structure: based on percent damage experienced during typical events, using the Fujita Scale, damage characteristics, Table 4-1.

Damage estimates were based on a “worst case” scenario, assuming about 25% of the buildings in the tornado path would experience substantial damage or total destruction; 35% would suffer 50% damage, and 40% would suffer slight to moderate or average 25% damage.

Estimation of the value of tax-exempt structures, for which no county assessor valuation is available, was done using the same methodology as for flood damaged structures, described above—that is, using FEMA publication, *State and Local Mitigation Planning: Understanding Your Risks: Identifying Hazards and Estimating Losses*, August 2001, “Average Building Replacement Value per square foot,” p. 3-10.

### 3.6 Step Six: Set Goals

*(October 2006 – November 2006)*

Project and community hazard mitigation goals and objectives for the City of Dewey and Dewey Public Schools were developed by the DCAC to guide the development of the plan. The hazard mitigation goals are listed in Chapter 5.

### 3.7 Step Seven: Review Possible Activities

*(December 2006 – January 2007)*

Wide varieties of measures that can affect hazards or the damage from hazards were examined. The mitigation activities were organized under the following six categories. A more detailed description of each category is located in “Appendix B: Mitigation Strategies.”

1. **Public Information and Education**—Outreach projects and technical assistance
2. **Preventive Activities**—Zoning, building codes, stormwater ordinances
3. **Structural Projects**—Levees, reservoirs, channel improvements
4. **Property Protection**—Acquisition, retrofitting, insurance
5. **Emergency Services**—Warning, sandbagging, evacuation
6. **Natural Resource Protection**—Wetlands and floodplain protection, natural and beneficial uses of the floodplain, and best management practices

The DTAC, after reviewing the potential mitigation activities, screened and selected the measures they felt were applicable, feasible, cost effective, and politically acceptable to
their community. These measures, specifically identified as potentially benefiting the community, were combined into a new, more community specific list for review.

To prioritize the list of possible mitigation measures, consisting of over 50 identified mitigation measures, the DCAC members were given twenty votes each to select the individual measures they felt would best benefit the community’s efforts to reduce or eliminate the adverse impacts of hazards on lives and property. The votes were tallied, and the Mitigation Measures were ranked in descending order. The Mitigation Measures selected and prioritized by the voting process, best reflected the values and goals of the community. Mitigation priorities generally reflected the disaster and damage experience of the community.

The true challenge is to identify mitigation strategies and measures that represent the goals and political will of the community. Table 6-1, *Multi-Hazard Mitigation Measures, By Priority and Hazard* is the comprehensive list of Mitigation Measures receiving at least one vote from the 20-vote selection process described above. After confirming the outcome with each advisory committee, the top ten priority measures became the focus for the next phase of the plan, the “Action Plan”.

### 3.8 Step Eight: Draft an Action Plan

*(January 2007 – December 2007)*

The top 10 high-priority Mitigation Measures constituted the Action Plan, and each Measure was further detailed to identify:

- A brief description of the Mitigation Measure (Action Plan Item)
- The lead agency responsible for implementation
- Anticipated time schedule for completion
- Estimated project cost
- Possible sources of funding, and
- The Work Product, or Expected outcome

The Action Plan items should be developed in enough specificity to respond to a Notice of Intent/Interest (NOI) from the State when HMGP Funds become available, or to provide basic information to begin to put together a Pre-Disaster Mitigation Grant Application. After developing the Action Plan, the Draft Final Plan will be submitted to Oklahoma Department of Emergency Management for review who, upon completion of review and any possible revisions, will submit the Draft Final Plan to FEMA for review.

### 3.9 Step Nine: Adopt the Plan

*(October 2007)*

The DCAC approved the final plan, adopted it as an amendment to the comprehensive plan, and submitted it to, and was approved and adopted by the Dewey City Council and the Dewey Public Schools Board.
3.10 Step Ten: Implement, Evaluate, and Revise

(November 2007 – Ongoing)
Adoption of the City of Dewey and Dewey Public Schools Multi-Hazard Mitigation Plan is only the beginning of this effort. Community offices, other agencies, and private partners will proceed with implementation. The DCAC will monitor progress, evaluate the activities, and periodically recommend revisions to the Plan and action items, a minimum of every five years, as required by FEMA. The Dewey Hazard Mitigation Plan will be updated and sent to FEMA prior to the expiration of the 5-year approval period.