

# Chapter 7: Action Plan

44 CFR Requirements met:

**Requirement §201.6(c)(3):** The plan **shall** include a mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

**Included in this Chapter:**

7.1 [Mitigation Measures](#)

**Requirement §201.6(c)(3)(ii):** [The mitigation strategy **shall** include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

**Requirement: §201.6(c)(3)(ii):** [The mitigation strategy] **must** also address the jurisdiction’s participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.

**Requirement: §201.6(c)(3)(iii):** [The mitigation strategy section **shall** include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

**Requirement §201.6(c)(3)(iv):** For multi-jurisdictional plans, there **must** be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

## 7.1 Recommended High Priority Action Plan

Washington County, the Cities of Bartlesville and Dewey, the Towns of Copan, Ochelata, Ramona, Vera and the Public School Districts of Bartlesville, Caney Valley, Copan, and Dewey have reviewed and analyzed the risk assessment studies for the natural hazards and hazardous material events that may impact them. The community Hazard Mitigation Advisory Committees prioritized the mitigation measures using the STAPLEE process (see Chapter 7), and developed an Action Plan for the highest priority measures.

### Statement of Mitigation Measures

Table 7-1 identifies the numbered mitigation measure listed in the following pages with the respective hazard or hazards the measures address. Certain Mitigation Measures are recommended for multiple hazards.

**Table 7–1: Mitigation Measures Identified for Each Hazard**

Hazard	Measures Addressing	Hazard	Measures Addressing
Severe Winter Storms	1,2,3,4,5,6,7,8,9,10,14,17,18,19,20,21,22,23,24,56,97	Urban Fires	1,2,3,4,5,19,20,21

Hazard	Measures Addressing	Hazard	Measures Addressing
High Wind Events	1,2,3,4,5,6,7,8,9,10,12,13,14,15,17,18,19,20,21,22,23,24,25,26,28,29,30,31,32,33,37,38,39,40,53,54,55,97,98	Floods	1,2,3,4,5,6,7,8,9,10,11,34,36,41,44,45,46,47,48,49,65,66,75,76,77,78,79,80,81,82,83,97,99
Tornadoes	1,2,3,4,5,6,8,9,7,8,9,10,12,13,14,15,17,18,19,20,21,22,23,24,25,26,28,29,30,31,32,33,34,37,38,39,53,54,97,98	Dam Failures	1,2,3,4,5,6,7,8,9,10,11,36,44,45,46,67,68,97,99
Lightning	1,2,3,4,5,6,8,9,57,58,69,90	Expansive Soils	1,2,3,4,11,16,26,27,42,84,92
Hail	1,2,3,4,5,6,8,9,12,13,40,55,59,91	Wildfires	1,2,3,4,5,6,7,8,9,11,35,43,64,85,86,87,88
Extreme Heat	1,2,3,4,5,6,7,8,9,60,61	Fixed Site Hazardous Materials	1,2,3,4,5,6,7,8,9,11,48,49,50,51,52,89,96,97
Drought	1,2,3,4,14,16,27,35,41,62,70,71,72,73,94,95	Transportation Hazards	1,2,3,4,5,6,7,8,9,11,50,51,52,93,97
Earthquakes	1,2,3,4,5,6,7,8,9,13,15,16,25,26,27,29,30,31,32,42		

The tables in this section indicate which jurisdictions are affected by the hazards addressed in the Mitigation Measures. For example, Mitigation Measures 1-4 apply to all hazards and all jurisdictions. In order to distinguish which hazards the jurisdiction is addressing in each respective Mitigation Measure, a matrix has been created. If the mitigation measure addresses only general hazards, a matrix will not be used because all participating jurisdiction are at risk. If the Mitigation Measure addresses a site site-specific hazard(s), only those jurisdictions at risk to one or more of the identified hazards will be checked in the matrix.

Mitigation Measure # 1-4 Community ⇒ Hazard ↓	Unincorporated Washington County	City of Bartlesville	Town of Copan	City of Dewey	Town of Ochelata	Town of Ramona	Town of Vera	Bartlesville Public Schools	Caney Valley Public Schools	Copan Public Schools	Dewey Public Schools
Severe Winter Storms	X	X	X	X	X	X	X	X	X	X	X
High Winds	X	X	X	X	X	X	X	X	X	X	X
Tornadoes	X	X	X	X	X	X	X	X	X	X	X
Lightning	X	X	X	X	X	X	X	X	X	X	X
Hail	X	X	X	X	X	X	X	X	X	X	X
Extreme Heat	X	X	X	X	X	X	X	X	X	X	X
Drought	X	X	X	X	X	X	X	X	X	X	X
Earthquakes	X	X	X	X	X	X	X	X	X	X	X
Urban Fires	X	X	X	X	X	X	X	X	X	X	X
Floods	X	X	X	X	X	X	X	X			
Dam Failures	X	X	X	X		X	X	X	X		
Expansive Soils	X	X	X	X	X	X	X	X	X	X	X
Wildfires	X	X	X	X	X	X	X	X	X	X	

Mitigation Measure # 1-4 Community ⇒ Hazard ↓	Unincorporated Washington County	City of Bartlesville	Town of Copan	City of Dewey	Town of Ochelata	Town of Ramona	Town of Vera	Bartlesville Public Schools	Caney Valley Public Schools	Copan Public Schools	Dewey Public Schools
Fixed-Site HazMat	X	X	X	X							X
Transportation HazMat	X	X	X	X	X	X	X	X	X	X	X

**1. Develop an All-Hazard Public Information, Education, and Awareness Program.**

Lead: County Emergency Management, Local Emergency Management, Schools Emergency Management

Time Schedule: 2016-Ongoing

Estimated Cost: \$ 14,500

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: An All-Hazards Public Information and Education Strategy to inform the public of the imminent natural and man-made hazards, and actions the public can take to protect themselves and their property from damage and destruction, and themselves from injury and death.

**2. Educate the public on the importance of a Family Disaster Plan and Supply Kit.**

Lead: City Manager/County Emergency Manager/Superintendent

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: An informed public that understands the importance of having a Family Disaster Plan and an emergency supply kit.

**3. Develop and Distribute a Family Emergency Preparedness Guide to all families.**

Lead: City Manager/County Emergency Manager/Superintendent

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: An informed public about preparedness, response, mitigation and recovery activities and actions that can be taken by families, students and citizens to better protect themselves from disasters.

**4. Develop distribution centers in local libraries, government facilities, schools, and other public buildings where information and safety guidance on natural and man-made hazards can be provided to citizens.**

Lead: Mayors, City Managers, Superintendents

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Centralized, public distribution centers for materials pertaining to hazards and hazard mitigation. The end goal is to increase the public’s awareness and preparedness for hazards.

Mitigation Measure # 5-8 Community ⇒ Hazard ↓	Unincorporated Washington County	City of Bartlesville	Town of Copan	City of Dewey	Town of Ochelata	Town of Ramona	Town of Vera	Bartlesville Public Schools	Caney Valley Public Schools	Copan Public Schools	Dewey Public Schools
Severe Winter Storms	X	X	X	X	X	X	X	X	X	X	X
High Winds	X	X	X	X	X	X	X	X	X	X	X
Tornadoes	X	X	X	X	X	X	X	X	X	X	X
Lightning	X	X	X	X	X	X	X	X	X	X	X
Hail	X	X	X	X	X	X	X	X	X	X	X
Extreme Heat	X	X	X	X	X	X	X	X	X	X	X
Drought	X	X	X	X	X	X	X	X	X	X	X
Earthquakes	X	X	X	X	X	X	X	X	X	X	X
Urban Fires	X	X	X	X	X	X	X	X	X	X	X
Floods	X	X	X	X	X	X	X	X			
Dam Failures	X	X	X	X		X	X	X	X		
Wildfires	X	X	X	X	X	X	X	X	X	X	
Fixed-Site HazMat	X	X	X	X							X
Transportation HazMat	X	X	X	X	X	X	X	X	X	X	X

**5. Develop an inventory, registry and database of Special Needs Populations (elderly, poor, deaf, blind, etc.) that may require special assistance, that tie in with 9-1-1, GIS Systems, etc., so that vulnerable populations within the community can be checked on, notified, or evacuated effectively in the event of disasters.**

Lead: Community; Oklahoma Department of Human Services; County Health Department; Superintendent

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Identification and location of most vulnerable populations and incorporation of response plan with existing emergency response providers' response operations.

**6. Improve city and countywide communications systems between the EOC and incorporated communities**

Lead: Community Managers, Emergency Managers

Time Schedule: 2016-Ongoing

Estimated Cost: Unknown

Source of Funding: Local

Work Product/Expected Outcome: Improved communications and chain of command functions during emergencies when the EOC is activated.

**7. Install a Mass Emergency Telephone Communications System for mass call-outs to targeted areas of the community for emergency notification and/or information.**

Lead: County Emergency Management, Local Emergency Management, Schools Emergency Management

Time Schedule: 2016-Ongoing

Estimated Cost: \$ 14,500

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: An All-Hazards Public Information and Education Strategy to inform the public of the imminent natural and man-made hazards, and actions the public can take to protect themselves and their property from damage and destruction, and themselves from injury and death.

**8. Include Special Assistance Measures in the Bartlesville Public Schools' Emergency Operations Procedures for Special Needs Populations (poor, deaf, blind, etc.) that may require special assistance, that tie in with 9-1-1, GIS Systems, etc., so that vulnerable populations within the community can be checked on, notified, relocated to an appropriate shelter, or educated effectively in the event of disasters.**

Lead: City Manager/County Emergency Manager/Superintendent

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Procedures and guidance in County, Community and Schools' Emergency Operations Procedures for vulnerable at-risk populations within the community.

Mitigation Measure # 9 Community → Hazard ↓	Unincorporated Washington County	City of Bartlesville	Town of Copan	City of Dewey	Town of Ochelata	Town of Ramona	Town of Vera
	Severe Winter Storms	X	X	X	X	X	X
High Winds	X	X	X	X	X	X	X
Tornadoes	X	X	X	X	X	X	X
Lightning	X	X	X	X	X	X	X
Hail	X	X	X	X	X	X	X
Extreme Heat	X	X	X	X	X	X	X
Earthquakes	X	X	X	X	X	X	X
Urban Fires	X	X	X	X	X	X	X
Floods	X	X	X	X	X	X	X
Dam Failures	X	X	X	X		X	X
Wildfires	X	X	X	X	X	X	X
Fixed-Site HazMat	X	X	X	X			
Transportation HazMat	X	X	X	X	X	X	X

**9. Maintain well trained and well equipped First Responders.**

Lead: City Manager, Emergency Managers, Fire Chiefs, Police Chiefs, County Sheriff

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local/General Funds, Grants

Work Product/Expected Outcome: Well trained first responders with the necessary equipment to respond to emergencies and disasters.

Mitigation Measure # 10 Community → Hazard ↓	Unincorporated Washington County	City of Bartlesville	Town of Copan	City of Dewey	Town of Ochelata	Town of Ramona	Town of Vera	Bartlesville Public Schools	Caney Valley Public Schools	Copan Public Schools	Dewey Public Schools
	Severe Winter Storms	X	X	X	X	X	X	X	X	X	X
High Winds	X	X	X	X	X	X	X	X	X	X	X
Tornadoes	X	X	X	X	X	X	X	X	X	X	X
Hail	X	X	X	X	X	X	X	X	X	X	X

Mitigation Measure # 10 Community ⇒ Hazard ↓	Unincorporated Washington County	City of Bartlesville	Town of Copan	City of Dewey	Town of Ochelata	Town of Ramona	Town of Vera	Bartlesville Public Schools	Caney Valley Public Schools	Copan Public Schools	Dewey Public Schools
Earthquakes	X	X	X	X	X	X	X	X	X	X	X
Dam Failures	X	X	X	X		X	X	X	X		

**10. Develop / Review / Update the Debris Management Plan.**

Lead: Community Managers/Public Works

Time Schedule: 2016-2018

Estimated Cost: \$ 18,500

Source of Funding: Local Budget

Work Product/Expected Outcome: Promote faster ability to respond and recover from disasters, and promote better health outcomes by efficiently removing debris from areas affected by disaster events.

- 1) Identify locations clean-up crews can deposit debris before a final disposal. Public safety and efficiency in relocating debris piles should be considered; 2) Assess priorities for clearing routes involving critical structures or facilities.

Mitigation Measure # 11 Community ⇒ Hazard ↓	Unincorporated Washington County	City of Bartlesville	Town of Copan	City of Dewey	Town of Ochelata	Town of Ramona	Town of Vera	Bartlesville Public Schools	Caney Valley Public Schools	Copan Public Schools	Dewey Public Schools
Floods	X	X	X	X	X	X	X	X			
Dam Failures	X	X	X	X		X	X	X	X		
Expansive Soils	X	X	X	X	X	X	X	X	X	X	X
Wildfires	X	X	X	X	X	X	X	X	X	X	
Fixed-Site HazMat	X	X	X	X							X
Transportation HazMat	X	X	X	X	X	X	X	X	X	X	X

**11. Map appropriate areas which impact Disaster Mitigation and Disaster Recovery.**

Lead: City Manager, Emergency Management, GIS, Superintendent

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local/General budget

Work Product/Expected Outcome: Accurate mapping of areas likely to be impacted by disasters, such as floodplains, dam failure areas, flooded roads, schools, nursing homes, hazardous materials sites, etc.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**Severe Winter Storms, High Winds, Tornadoes, Hailstorms**

**12. Develop public information and education programs and provide materials about construction methods and mitigation measures that protect a building's roof, outside openings, and the building envelope for overall structural resistance to tornadoes, high winds, and hail.**

Lead: Emergency Management/Superintendent

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local and FEMA HMGP/PDM.

Work Product/Expected Outcome: Public information and education materials and outreach that increase the awareness of and use of hazard mitigation construction technologies in future developments and renovations. This will decrease the adverse impact of future disaster events.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**High Winds, Tornadoes, Hailstorms, Earthquakes**

**13. When replaced, install Break/Shatter Resistant Glass in Government Offices and Critical Facilities.**

Lead: City Manager, Building Managers

Time Schedule: 2016-Ongoing

Estimated Cost: To be determined

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP.

Work Product/Expected Outcome: Impact-, break- and shatter-resistant windows and frames in Government Offices and administrative buildings that protect staff, and First Responders from broken glass and projectiles resulting from tornadoes, high winds, and earthquakes.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera, Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

**Severe Winter Storms, High Winds, Tornadoes**

**14. Provide routine trimming of trees to reduce power outages during storms.**

Lead: Power companies, Grounds and Maintenance, Property owners

Time Schedule: 2016-Ongoing



Estimated Cost: Undetermined

Source of Funding: Local, Private Funds

Work Product/Expected Outcome: Decrease occurrences or duration of power outages during various hazardous weather events due to trees damaging power lines.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera, Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

### **High Winds, Tornadoes, Earthquakes**

#### **15. Educate residents, building professionals and Safe Room vendors on the ICC/NSSA "Standard for the Design and Construction of Storm Shelters" and consider incorporating into current regulatory measures.**

Lead: Community Managers, Councils, Superintendents

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: An educated citizenry and professional building and design community as to the advantages and requirements of the ICC/NSSA "Standards for the Design and Construction of Storm Shelters," and the adoption of an ordinance requiring that all safe rooms comply with the ICC/NSSA standards.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera, Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

### **Drought, Earthquakes, Expansive Soils**

#### **16. Inform/educate the public of landscaping measures, such as xeriscaping, drainage systems or ground sloping, that can mitigate foundation damage**

Lead: Public Works, Engineering

Time Schedule: 2016-Ongoing

Estimated Cost: \$5,000/year

Source of Funding: Local/General budget

Work Product/Expected Outcome: A better educated public, construction and landscape industry on measures that can mitigate damages due to Expansive Soils and Drought.

## Severe Winter Storms, High Winds, Tornadoes

**17. Develop an Emergency Back-up Generator Hazard Mitigation Plan Annex to the Multi-Hazard Mitigation Plan for the community, assessing and prioritizing generator needs for critical facilities, both public and private. Assessment should include emergency generator needs, costs of installation for pads/transfer panels only, or for complete generator assembly installation.**

Lead: County Emergency Management

Time Schedule: 2016-Ongoing

Estimated Cost: \$25,500

Source of Funding: Local budgets.

Work Product/Expected Outcome: An Emergency Back-up Generator Hazard Mitigation Plan Annex that inventories Critical Facilities, including City Hall, Police Station, Public Works, County EMS, Nursing Homes, Early Childhood Centers, Community Emergency Shelters; sets priorities, evaluates current electrical usage, emergency electrical load/needs, fuel sources (natural gas/diesel/propane), pad location, wiring, transfer switches, contract or on-site, and generator type and size.

**18. Develop an Emergency Back-up Generator Hazard Mitigation Plan for school campus facilities that should remain operational during power outages. Assessment should include emergency generator needs, costs of installation for pads/transfer panels only, or for complete generator assembly installation.**

Lead: City Manager/County Emergency Manager/Superintendent

Time Schedule: 2016-Ongoing

Estimated Cost: \$12,800

Source of Funding: School general budgets.

Work Product/Expected Outcome: An Emergency Back-up Generator Hazard Mitigation Plan Annex that inventories facilities in schools that must remain operational during power outages, sets priorities, evaluates current electrical usage, emergency electrical load/needs, fuel sources (natural gas/diesel/propane), pad location, wiring, transfer switches, contract or on-site, and generator type and size.

**19. Obtain emergency generators for continuity of government/use during disaster power outages for critical facilities including Emergency Operations Centers, City Hall, Dispatch, Police, Fire, Community Centers used for emergency housing during disasters, critical facilities, lift stations, water treatment plants, and community medical facilities, as identified in the Emergency Back-up Generator Hazard Mitigation Plan Annex.**

Lead: City Managers, Emergency Managers, Medical Directors

Time Schedule: 2016-Ongoing

Estimated Cost: To be determined, based on the Emergency Back-up Generator Plan.

Sources of Funding: Local, FEMA HMGP/PDM

Work Products/Expected Outcome: Provision of sufficient generators or access to generators during a disaster that will provide sufficient power for critical community functions and continuity of government, and will aid in the response and recovery efforts after a disaster event.

**20. Identify and encourage Private Critical Facilities (Financial Institutions, Designated/Potential Community Emergency Shelters, etc.) to have generator pad, wiring/transfer switches and Emergency Back-Up Generators, or Reliable Contracts to provide Back-Up Generators.**

Lead: City Manager, Emergency Manager

Time Schedule: 2016-2017

Estimated Cost: Undetermined

Source of Funding: Local/General budget.

Work Product/Expected Outcome: Private critical facilities (financial institutions, designated/potential community emergency shelters, etc.) have generator pads, wiring and transfer switches, and emergency back-up generators, or reliable contracts for the provision of back-up generators, to provide important community services in the event of power failure.

**21. Adopt an Ordinance requiring generator pad and wiring/transfer switches for Elder Care Facilities and Nursing Homes, to accommodate Emergency Back-Up Generators in the event of prolonged power outages.**

Lead: Community Manager

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local/General budget.

Work Product/Expected Outcome: Adoption of an Ordinance requiring generator pad and wiring/transfer switches for Elder Care Facilities and Nursing Homes, to accommodate Emergency Back-Up Generators in the event of prolonged power outages.

**22. Identify and/or encourage key important private service facilities (gas stations, convenience stores, etc.) to have wiring/transfer switches and emergency back-up generators installed, or reliable contracts for the provision of back-up generators, in the event of disasters or power outages.**

Lead: Community Manager

Time Schedule: 2016-2017

Estimated Cost: Undetermined

Source of Funding: Local/General budget.

Work Product/Expected Outcome: Key important private service facilities (gas stations, convenience stores, etc.) have wiring, transfer switches and emergency back-up generators, or reliable contracts for the provision of back-up generators, to ensure continued operation of essential services in times of emergency, disaster, or power outage.

**23. Develop Memorandums of Understanding (MOUs) with private sector gasoline service facilities to provide priority fuel to emergency/critical vehicles (government, Police, Fire, ambulance, etc.) in times of emergency or power outage.**

Lead: Community Manager

Time Schedule: 2016

Estimated Cost: None anticipated

Source of Funding: None anticipated

Work Product/Expected Outcome: Memorandums of understanding (MOUs) with private sector gasoline service facilities to provide priority fuel to emergency/critical vehicles (government, Police, Fire, ambulance, etc.) in times of emergency or power outage, so that emergency and First Responder personnel can meet the needs of the community.

**24. Based on the results of the Emergency Back-up Generator Hazard Mitigation Plan Annex, provide wiring and transfer switches to accommodate emergency generators during disaster power outages for critical facilities including Emergency Operations Centers, City Hall, Dispatch, Police, Fire, Community Centers used for emergency housing during disasters, critical facilities, lift stations, water treatment plants, and community medical facilities.**

Lead: Department of Public Works

Time Schedule: 2016-Ongoing

Estimated Cost: To be determined based on the results of the Generator Analysis and Plan.

Sources of Funding: Local, FEMA HMGP/PDM

Work Products/Expected Outcome: Provision of sufficient generators or access to generators during a disaster that will provide sufficient power for critical community functions and continuity of vital government services. This will aid in the response and recovery efforts after a disaster event.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**High Winds, Tornados, Earthquakes**

**25. Train/Educate builders, developers, architects and engineers in techniques of disaster resistant homebuilding, such as the Fortified Home standards developed by the Institute for Business & Home Safety (IBHS), the Blueprint for Safety guidelines developed by the Federal Alliance for Safe Homes (FLASH).**

Lead: City Manager, Emergency Management, Chief Building Official.

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Increase the hardiness of new facilities and buildings throughout the jurisdiction in order to decrease the communities overall risk to natural hazards.

**26. Adopt building codes / incentives leading to construction that is more resistant to high winds, tornadoes, earthquakes and expansive soils.**

Lead: Community Councils, Code Enforcement, Building Supervisors

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Increased code requirements will increase the resilience of all future structures to withstand high winds, tornadoes, earthquakes, and expansive Soils.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**Drought, Earthquakes, Expansive Soils**

**27. Implement an administrative procedure/ordinance to require permits and record damages for foundation repair and mitigate against future expansive soils damages.**

Lead: County Commissioners/City Managers/Town Managers/  
Superintendents/County and community building officials

Time Schedule: 2016-Ongoing

Estimated Cost: To be determined

Source of Funding: Local/General Budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: An accurate data base as to the causes, location of causal geography, types of vulnerable construction, frequency of occurrence, cost of repair.

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**Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

**Severe Winter Storms, High Winds, Tornadoes**

**28. Obtain emergency generators for continuity of Educational operation/use during disaster power outages for critical facilities including Education Service Center, Emergency Operations Center, Dispatch, Campus Police, Transportation Centers, as identified in the Emergency Back-up Generator Hazard Mitigation Plan Annex.**

Lead: Superintendents

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Critical school facilities remain operational during power outages during and after a disaster event.

**High Winds, Tornados, Earthquakes**

**29. Inspect schools for tornado, high wind, and earthquake vulnerability, taking into account year of construction, building codes and construction practices at time of construction, and materials of which the building was constructed.**

Lead: County Emergency Management, Local Emergency Management, Schools Emergency Management

Time Schedule: 2016-Ongoing

Estimated Cost: \$22,500

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP, ODEM

Work Product/Expected Outcome: An inventory and analysis of the Safest Places in the school building to shelter in the event of a disaster event.

**30. Perform assessment of Safest Place in each school for staff and students to shelter, taking into account glass shards, large objects such as vending machines that may become mobile, and wind tunnel effects of hallways.**

Lead: County Emergency Management, Local Emergency Management, Schools Emergency Management

Time Schedule: 2016-Ongoing

Estimated Cost: \$ 14,500

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP, ODEM

Work Product/Expected Outcome: An inventory, analysis and existing facilities' plan for the sheltering of staff and students in the Safest Places in the school building in the event of a disaster event.

**31. When replaced, install Break/Shatter Resistant Glass in Schools.**

Lead: Superintendent

Time Schedule: 2016-Ongoing

Estimated Cost: To be determined

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP, ODEM.

Work Product/Expected Outcome: Impact-, break- and shatter-resistant windows and frames in school administrative buildings and class rooms that protect staff and students from broken glass and projectiles resulting from tornadoes, high winds, and earthquakes.

**32. Perform tornado, high wind, and earthquake evaluations of schools to determine the best ways to retrofit or remodel buildings to make them more disaster resistant.**

Lead: Superintendent

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Identification of cost-effective projects that can be undertaken to increase the safety of school staff and students.

**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera, Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

### High Winds, Tornados

**33. Construct a storm safe room structure to house the County Emergency Operations Center. Assess the need for and, if appropriate, provide new fire stations, police stations, 911 centers and School EOCs that are storm safe and hardened against all hazards.**

Lead: County Emergency Management, Local Emergency Management, Schools Emergency Management

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Hardened Emergency Management and First Responder Critical Facilities that will protect essential emergency personnel, allowing them to respond to the needs of the citizens during a disaster event.

Mitigation Measure # 34 Community ⇒ Hazard ↓	Unincorporated Washington County	City of Bartlesville	Town of Copan	City of Dewey	Town of Ochelata	Town of Ramona	Town of Vera	Bartlesville Public Schools	Caney Valley Public Schools	Copan Public Schools	Dewey Public Schools
Tornadoes	X	X	X	X	X	X	X	X	X	X	X
Floods	X	X	X	X	X	X	X	X			

**34. Evaluate, upgrade and maintain community-wide outdoor omni-directional voice/siren warning systems for new and developing areas.**

Lead: Emergency Management

Time Schedule: 2016-Ongoing

Estimated Cost: \$75,000

Source of Funding: Local and FEMA HMGP/PDM.

Work Product/Expected Outcome: 1) Identify newly developed, or newly developing area/locations where warning siren coverage is less than adequate; 2) Routinely test sirens for operational adequacy and maintenance/system requirements.

Mitigation Measure # 35 Community ⇒ Hazard ↓	Unincorporated Washington County	City of Bartlesville	Town of Copan	City of Dewey	Town of Ochelata	Town of Ramona	Town of Vera	Bartlesville Public Schools	Caney Valley Public Schools	Copan Public Schools	Dewey Public Schools
Drought	X	X	X	X	X	X	X	X	X	X	X
Wildfires	X	X	X	X	X	X	X	X	X	X	

**35. Educate the public on land management techniques to mitigate drought and wildfires.**

Lead: Public Works, Fire Chiefs and Fire Departments  
 Time Schedule: Ongoing  
 Estimated Cost: Undetermined  
 Source of Funding: Local, State

Work Product/Expected Outcome: A Public Information and Education Program to inform the public of individual actions that can be taken to lessen or mitigate the adverse impacts of prolonged heat and drought, and resultant wild fire hazards.

Mitigation Measure # 36 Community ⇒ Hazard ↓	Unincorporated Washington County	City of Bartlesville	Town of Copan	City of Dewey	Town of Ramona	Town of Vera	Bartlesville Public Schools	Caney Valley Public Schools
Floods	X	X	X	X	X	X	X	
Dam Failures	X	X	X	X	X	X	X	X

**36. Improve Warning Systems and Evacuation Plans for populations in the Caney River, and downstream from High Hazard Dams (Hulah & Copan) failure areas.**

Lead: County Emergency Management/Community Emergency Management/Corps of Engineers/Superintendents  
 Time Schedule: 2016-Ongoing  
 Estimated Cost: \$25,000  
 Source of Funding: Local, USACE, OWRB, ODEM



Work Product/Expected Outcome: Improvement in the Warning Systems, Evacuation Plans and the Public Information and Education programs for vulnerable populations located downstream in potential dam failure areas.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**High Winds, Tornadoes**

**37. Obtain grants for installation of storm shelters/safe rooms in mobile home parks.**

Lead: City Managers/County Emergency Manager  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP, HUD, CDBG

Work Product/Expected Outcome: With the cooperation of owners of Mobile Home Parks, install NSSA approved storm shelters in the Mobile Home Parks for the most vulnerable high wind and tornado populations.

**38. Develop an Individual Safe Room Program for vulnerable populations that will withstand hazards, including home owners, special needs populations, elderly, mobile home residents, etc.**

Lead: City Manager, Emergency Manager , Grant Management  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local, FEMA Grants, Other Grants

Work Product/Expected Outcome: Increase the likelihood for local residents to install safe rooms or certified storm shelters by offering incentives or financial assistance through grant programs, such as the Sooner Safe program.

**39. Utilize GIS and GPS technologies to record and maintain information on the location of public infrastructure, private safe rooms, underground storm shelters, and private water wells.**

Lead: Community Manager/Public Works  
Time Schedule: 2016-Ongoing  
Estimated Cost: Unknown  
Source of Funding: Local Budget

Work Product/Expected Outcome: A database of locations can be utilized to accurately increase emergency response to potentially trapped populations during disaster emergencies.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

### **High Winds, Hail**

#### **40. Work with insurance companies to provide a public information program that communicates the advantages and costs of hail-resistant roofing**

Lead: City Managers, Public Information & Education Officers, State Insurance Commissioner's Office

Time Schedule: Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: A better informed public about the cost-effective advantages of wind and hail-resistant roofing.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

### **Flood, Drought**

#### **41. Install rainfall & stream gauges**

Lead: Public Works

Time Schedule: Ongoing

Estimated Cost: Undetermined

Source of Funding: Local, OWRB

Work Product/Expected Outcome: Strategically places rain and stream gauges to accurately measure rainfall amounts and stream heights during rainfall and flooding events.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

### **Earthquakes, Expansive Soils**

#### **42. Educate builders on appropriate foundation types for soils with different degrees of shrink-swell potential. For example, using "post-tensioned slab-on-grade" or "drilled pier" vs. standard "slab-on-grade" or "wall-on-grade" foundations**

Lead: County and community building officials

Time Schedule: 2016-Ongoing

Estimated Cost: To be determined

Source of Funding: Local/General Budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Homes and buildings that have the appropriate foundation, depending on the soils type, to withstand the damaging expansive/contractive characteristics of the site's soils.

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Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera

### Urban Fires, Wildfires

#### **43. Adopt more stringent building codes for fire-resistant roofing and siding and other construction materials**

Lead: City Managers, Fire Chiefs, Building Officials

Time Schedule: Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Increased use of cost-effective fire-resistant roofing, siding and construction materials.

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Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera

### Floods, Dam Failures

#### **44. Prepare a Comprehensive basin-wide Flood & Drainage Annex to the Hazard Mitigation plan-for all watersheds in the jurisdiction. The Annex should identify all flooding problems within the jurisdiction, and recommend the most cost-effective and politically acceptable solutions.**

Lead: Public Works, Floodplain Manager, Emergency Management.

Time Schedule: Ongoing

Estimated Cost: \$15,000 per square mile.

Source of Funding: Local, FMA, HMGP

Work Product/Expected Outcome: A comprehensive inventory, analysis and mitigation recommendations for flood hazard and damage mitigation for every drainage basin within the jurisdiction.

#### **45. Inform floodplain residents of the availability of flood insurance to eligible National Flood Insurance Program communities**

Lead: County Floodplain Manager/Community Floodplain Managers

Time Schedule: 2016-Ongoing

Estimated Cost: To be determined

Source of Funding: Local/General Budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Annual notification of residents, owners and tenants of buildings located in flood hazard areas of their location, and mitigation measures available to them, including flood insurance for structure and contents.

**46. Implement structural and non-structural flood mitigation measures for flood-prone properties, as recommended in the Flood Mitigation Assistance Plan**

Lead: Public Works

Time Schedule: Ongoing

Estimated Cost: To be determined by the Master Drainage Plans

Source of Funding: Local, FMA, PDM, HMGP

Work Product/Expected Outcome: Mitigation of flood damages through implementation of the structural and non-structural recommendations of the Master Drainage Plans.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**Floods**

**47. Perform the FEMA Full Riverine Module for Benefit/Cost Analysis for Acquisition of 100-Year floodplain buildings with first finished floor below the Base Flood Elevation (BFE), to confirm potential candidates for acquisition and removal from the floodplain**

Lead: Floodplain Managers

Time Schedule: ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: A prioritized database of floodplain properties located in the NFIP/FIRM floodplain identified by the Master Drainage Plan for acquisition and removal as the most cost-effective solution to the flooding problem.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**Floods, Fixed Site HazMat**

**48. Label storm sewer drains to warn citizens against dumping chemicals and automotive fluids into the storm sewer drains (e.g. "Drains to streams" with fish logos) Blue Thumb Program**

Lead: Public Works, Floodplain Managers

Time Schedule: Ongoing

Estimated Cost: Undetermined

Source of Funding: Local, EPA

Work Product/Expected Outcome: Reminder to citizens that stormsewers, inlets, catch basins drain to streams and rivers, and can adversely effect the streams' habitat, flora and fauna.

**49. Implement Blue Thumb program to clean local streams of debris and waste**

Lead: Public Works, Floodplain Managers

Time Schedule: Ongoing

Estimated Cost: Undetermined

Source of Funding: Local, EPA

Work Product/Expected Outcome: Implementation of a public information and education and maintenance program to keep the drainage ways and streams free of debris and waste.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**Fixed Site HazMat, Transportation HazMat**

**50. Ensure that fire departments have appropriate clothing, equipment, and training to handle hazardous chemical incidents**

Lead: Fire Departments/County Emergency Management/Community Emergency Management

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local, State Fire Grants

Work Product/Expected Outcome: Well equipped Fire Department personnel to respond to, and deal with fixed-site and transportation hazardous materials events.

**51. Provide remote access to hazardous chemical databases and reference materials to all fire departments**

Lead: Fire Departments/County Emergency Management/Community Emergency Management

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local, LEPC

Work Product/Expected Outcome: Reference materials, electronic access to a hazardous materials data base, showing the building plan, location of hazardous materials, types, characteristics and amount of chemicals, and actions to be taken in response, security, and recovery.

**52. Develop and reinforce hazardous materials emergency equipment and response teams**

Lead: Fire Departments, Emergency Managers

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Well trained and equipped Emergency Response Teams.

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**City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

### **High Winds, Tornadoes**

**53. Adopt an ordinance requiring registration of Safe Rooms, and create a data base and GIS (lat/long) map to locate Safe Rooms in the event of a disaster.**

Lead: Emergency Management, Information Technology/GIS

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Adoption of an ordinance creating a GIS database, and requirement of registration of locations for First Responders to check for individuals trapped in safe rooms following severe events.

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**Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

### **High Winds, Tornadoes**

**54. Install Safe-Rooms in new schools and retrofit/construct safe rooms at existing Schools.**

Lead: County Emergency Manager/Superintendent

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Construction of NSSA compliant Safe Rooms in all new schools, and existing schools.

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**Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

### **High Winds, Hail**

**55. Install hail/shatter-resistant roofing, doors, and windows for future school repairs and improvements.**

Lead: Superintendent

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local, HMGP, PDM

Work Product/Expected Outcome: When damaged or replaced, newly installed roofing, doors and windows are resistant to high winds, debris and hail damage.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera, Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

### **Severe Winter Storms**

**56. Educate the public on the dangers of carbon monoxide poisoning and the use of appropriate heating systems during power outages.**

Lead: City Manager/County Emergency Manager/Superintendent  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: An informed public that understands the dangers and sources of carbon monoxide poisoning and dangers of improper heating devices during power outages.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera, Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

### **Lightning**

**57. Provide lightning warning systems for Community public outdoor sports areas, pools, golf courses, and parks.**

Lead: County Emergency Manager/Community Emergency Manager/ Parks & Recreation Departments  
Time Schedule: 2016-Ongoing  
Estimated Cost: To be determined  
Source of Funding: Local/General Budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Lightning sensing and warning systems to warn the outdoor, recreating public of impending lightning hazards.

**58. Provide surge protection and lightning protection for computer-reliant critical facilities (e.g. 911 Center, EOC, police stations, fire stations, schools, water/wastewater treatment plant and public works buildings)**

Lead: County Commissioners/City Managers/Town Managers/Superintendents  
Time Schedule: 2016-Ongoing  
Estimated Cost: To be determined  
Source of Funding: Local/General Budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Critical continuity of government computer-reliant facilities are protected from lightning and power surges which could harm or destroy computer systems and data bases.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera, Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

## **Hail**

### **59. Provide covered shelters for Community government and school first response/government vehicles to protect against hail damage.**

Lead: City Managers, Police and Fire Chiefs, Emergency Managers, School Superintendents

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Critical First Response vehicles of the government and schools protected from hail damage, operational and ready to respond in the event of a emergency/disaster event.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera, Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

## **Extreme Heat**

### **60. Develop a Heat Emergency Action Plan/Heat Emergency Annex to the Emergency Operations Plan for each jurisdiction**

Lead: Emergency Managers, School Superintendents

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Development of a Heat Emergency Action Plan and Annex to the County, communities' and schools' Emergency Operations Plans.

### **61. Educate school staff & employees, students and other at-risk populations on the signs and symptoms of heat-related illness and steps that are available to prevent or respond to such illnesses.**

Lead: School Superintendents, Athletic Directors, Playground Supervisors

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local



Work Product/Expected Outcome: A well educated and aware school personnel of the dangers, signs and symptoms of at-risk staff and student populations to heat-related dangers and illness, especially summer sports participants.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera, Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

## **Drought**

### **62. Develop a public information program designed to communicate the potential severity of a drought, and the appropriate responses by the local population, including voluntary water conservation measures the public can take.**

Lead: Community Managers, Emergency Managers, Water Districts  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local

Work Product/Expected Outcome: An educated public and staff about responsible voluntary measures that can/should be taken to conserve water during a drought or water shortage.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera, Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

## **Urban Fires**

### **63. Encourage homeowners' participation in EDITH (Exit Drills in the Homes) Programs**

Lead: Fire Departments  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local

Work Product/Expected Outcome: A program to encourage and educate the public, and encourage their participation in fire and home evacuation drills.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera, Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools**

## **Wildfires**

### **64. Provide and maintain defensible space around structures vulnerable to wildfires**

Lead: Fire Departments  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local, FireWise

Work Product/Expected Outcome: Defensible, debris free areas around structures to reduce the vulnerability to wild fires.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera, Bartlesville Public Schools**

**Floods**

**65. Begin or continue compliance with, and participation in the National Flood Insurance Program (NFIP) and the Community Rating System (CRS)**

Lead: County Floodplain Manager/Community Floodplain Managers

Time Schedule: 2016-Ongoing

Estimated Cost: To be determined

Source of Funding: Local, FEMA Grants, Other Grants

Work Product/Expected Outcome: All jurisdictions to comply with the requirements of local ordinances and the National Flood Insurance Program (NFIP), and, where applicable, the requirements of the Community Rating System (CRS).

**66. Measure first finished floor above ground surface elevations of all buildings located in the floodplain (SFHA). Reconcile addresses, take pictures, determine depth of flooding, create and enter data into a database**

Lead: Floodplain Managers

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: A comprehensive electronic and GIS floodplain data base that contains necessary maps, addresses, pictures and cost, flood elevation, first finished floor elevation data, flood events and damages, and insurance claims about structures located in the regulatory floodplains.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ramona, Town of Vera, Bartlesville Public Schools, Caney Valley Public Schools**

**Dam Failures**

**67. Obtain further information regarding the risk of Dam Failure in Washington County**

Lead: County Emergency Management/Community Emergency Management/Corps of Engineers

Time Schedule: 2016-Ongoing

Estimated Cost: To be determined

Source of Funding: Local, OWRB

Work Product/Expected Outcome: Updated and accurate information about High Hazard Dams in Washington County, and identification of the properties and populations at risk in the event of emergency releases or dam failure.

**68. Develop and incorporate warning and evacuation plans and systems for areas at risk from dam failure or large release flooding**

Lead: Emergency Managers  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local, State ODEM, OWRB

Work Product/Expected Outcome: Updated, detailed emergency warning and evacuation plans and systems to warn and evacuate vulnerable populations in the event of a potential release or dam failure.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**Lightning**

**69. Educate the Public, and encourage the Utility Companies to provide information to their clients on Whole House Surge and Lightning Protection**

Lead: County Commissioners/City Managers/Town Managers/  
Superintendents  
Time Schedule: 2016-Ongoing  
Estimated Cost: To be determined  
Source of Funding: Local/General Budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: With the assistance and cooperation of the utility companies/providers, an educated public on the availability and importance of Whole House/Structure Lightning and Surge Protection.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**Drought**

**70. Encourage residents to install rain-harvesting equipment for landscape irrigation**

Lead: Community Managers, Floodplain Managers, Water Department personnel, Landscape Architects  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local, Water Departments/Districts

Work Product/Expected Outcome: An informed and motivated citizenry about Low Impact Development initiatives, water barrels, rain gardens, etc., that conserve, mitigate urban runoff, and make wise use of treated, potable water.

**71. Implement recommendations of the Drought Committee in regards to secondary water supply sources and water restrictions**

Lead: Community Managers, Water Districts

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: A secondary water supply system, as recommended by the Drought Committee, and implementation of reasonable and effective restrictions on water use during shortages or drought.

## **72. Obtain additional water rights to Copan Lake, especially for emergency water supplies**

Lead: Community Managers, Water Districts, U.S. Army Corps of Engineers, OWRB

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local, State, Federal

Work Product/Expected Outcome: Additional water rights for the Washington County Water Districts to the water resources of Copan and Hula lakes.

## **73. Create an intake and pipeline system to Copan Lake for Water withdrawals**

Lead: City Manager, Water Districts, USACE

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local, Water Districts, USACE

Work Product/Expected Outcome: Additional water resources availability for Washington County water users.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

### **Urban Fires**

## **74. Engage in a program to provide citizens with extended life smoke detectors**

Lead: Fire Departments

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Provision of new extended life smoke detectors for Washington County families, businesses and schools.

## Floods

**75. Continue to Acquire and remove floodplain and (future) repetitive loss properties where the community's Repetitive Loss and Flood & Drainage Annex to the Multi-Hazard Mitigation Plan identify acquisition as the most cost-effective and desirable mitigation measure**

Lead: County Commissioners/City Managers/Town Managers/County Floodplain Manager/Community Floodplain Managers

Time Schedule: 2016-Ongoing

Estimated Cost: To be determined

Source of Funding: Local/General Budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Acquisition and removal of the most vulnerable floodplain structures from the flood-hazard areas, as identified by the NFIP Repetitive Loss program and the communities' Master Drainage Plans.

**76. Implement *Turn Around, Don't Drown* (TADD) signs at hazardous low water road crossings**

Lead: Community Managers, Floodplain Managers, Street and Road Departments.

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: identification of hazardous low water crossings and roadways likely to be inundated in the event of flooding, and installation of *Turn Around, Don't Drown* signs at critical crossings.

**77. Implement stricter barriers, regulations, enforcement, fines, payment for the costs of rescue for driving into high water.**

Lead: Community Managers, Police & Fire Departments

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Citizens ignoring minimum flood safety precautions, and driving into high waters, or refusing evacuation, fined to pay for the cost of their rescue

**78. Create and maintain habitat for flora and fauna in flood control projects; maintaining or developing wetlands may be an effective area to receive or reduce floodwaters**

Lead: Floodplain Managers, Landscape Architects, Public Works Maintenance Personnel

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Flora and fauna habitat and wetlands in stream drainage ways and storm water detention facilities to reduce/mitigate the adverse impacts of urban storm water runoff.

**79. Control erosion during development with vegetation or sediment capture; reducing sedimentation which may fill in channels and lakes, reduces their ability to carry or store floodwaters.**

Lead: Floodplain Managers, Public Works, Code Enforcement

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Effective code enforcement and erosion control measures which prevent sedimentation and fill of conveyance channels and floodplain detention pond storage.

**80. Maintain natural and beneficial functions of streams and floodplains.**

Lead: Community Managers, Floodplain Managers

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Floodplains, streams and drainage ways that perform their natural and beneficial functions, such as conveyance, flood water storage, wildlife and flora habitat, oxygen and CO2 exchange, climate moderation, etc.

**81. Provide erosion assistance on county roads that need riprap applied.**

Lead: County Commissioners, County Engineer

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: County roads vulnerable to storm water erosion are protected by application of rip-rap or other roadway erosion protection measures.

**82. Implement a building permit process for new construction as well as renovations of existing buildings that will include standards, such as the BOCA Building Codes, and that will discourage construction in flood prone areas**

Lead: Floodplain Managers, Chief Building Officials

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome:

**83. Obtain elevation certificates for pre-FIRM homes located in the floodplain**

Lead: Floodplain Manager

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: A comprehensive data base of Elevation Certificates, showing key information about floodplain structures, including First Finished Floor Elevation, Base Flood Elevation, Depth of Flooding, etc.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**Expansive Soils**

**84. Establish an administrative procedure or change in City codes that require builders to check for expansive soils when applying for permits for new residential construction permits, and for using foundations that mitigate expansive soil damages when in a moderate to high-risk area.**

Lead: County Commissioners/City Managers/Town Managers/  
Superintendents

Time Schedule: 2016-Ongoing

Estimated Cost: To be determined

Source of Funding: Local/General Budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Informed developers and home builders of the location of Expansive Soils, and encouragement to use appropriate foundations, such as pier or post-tension slabs, to mitigate against the damages of Expansive Soils and Earthquakes.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**Wildfire**

**85. Implement red cedar eradication program (NRCS to assist) to reduce red cedar trees and wild fire potential**

Lead: Community Managers, Fire Departments, Public Works, NRCS

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Elimination/reduction of invasive species of Red Cedars, which will reduce wildfire danger and excessive use of ground water.

**86. Ensure Fire Departments receive training and equipment necessary to control and mitigate wild fires**

Lead: Fire Chiefs  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local

Work Product/Expected Outcome: Well trained and equipped Fire Departments, able to respond to Washington County wildfires.

**87. Implement the Fire Wise program to provide Wildfire Protection by making the public aware of the need for defensible spaces**

Lead: Fire Chiefs  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local

Work Product/Expected Outcome: A well informed public located in the urban/wildland interface areas subject to wildfires, able to protect their homes by the creation of defensible spaces around the buildings.

**88. Develop a contingency plan for evacuating population endangered by wildfires**

Lead: Fire Departments, Emergency Management  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local

Work Product/Expected Outcome: A Public Information and Education, and a Plan for notification and evacuation for populations endangered and vulnerable to wildfires.

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**Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera**

**Fixed Site HazMat**

**89. Require inspectors to inspect for Hazardous Materials when issuing business licenses.**

Lead: City manager, Chief Building Official  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local

Work Product/Expected Outcome: Inspection of new business sites, and identification of on-site Hazardous Materials.



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**Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

## **Lightning**

### **90. Provide lightning warning systems for Public Schools outdoor sports areas and playgrounds.**

Lead: County Emergency Manager/Community Emergency Manager/ Parks Departments

Time Schedule: 2016-Ongoing

Estimated Cost: To be determined

Source of Funding: Local/General Budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: Lightning sensing and warning systems to warn the outdoor, recreating staff, students and spectators of impending lightning hazards.

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**Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

## **Hail**

### **91. Provide covered shelters at appropriate locations for Washington County Public Schools vehicles and equipment to protect against hail damage**

Lead: Superintendents

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Covered shelters to protect essential school vehicles and busses from damage by hail or wind-borne debris.

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**Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

## **Expansive Soils**

### **92. Establish an administrative procedure to check for expansive soils when considering new campus building construction and use foundations that mitigate expansive soil damages when in a moderate or high-risk area**

Lead: Superintendent, School Architects and Engineers

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Building and amenities' construction that are designed and built to withstand the shrinking and swelling of Expansive Soils beneath the floors and foundations of school buildings.

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**Bartlesville Public Schools, Caney Valley Public Schools, Copan Public Schools, Dewey Public Schools**

**Transportation HazMat**

**93. Assess risks and develop a plan for schools subject and vulnerable to hazardous materials incidents on major transportation routes through the community.**

Lead: Schools' Emergency Managers/Superintendents  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local/General budget, Federal Emergency Management Agency (FEMA) PDM and/or HMGP

Work Product/Expected Outcome: An informed school staff and students about the risks and hazards of hazardous materials transported on highway and railway transportation routes, prepare and practice appropriate evacuation and/or Shelter-in-Place plans.

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**City of Bartlesville**

**Drought**

**94. Increase use of Caney River water for municipal purposes**

Lead: City Manager  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local

Work Product/Expected Outcome: Increased water resources for the City of Bartlesville and Water Districts.

**95. Move the waste water treatment plant's discharge site upstream of the Caney River intake point to create an indirect potable water reuse system**

Lead: City Manager  
Time Schedule: 2016-Ongoing  
Estimated Cost: Undetermined  
Source of Funding: Local

Work Product/Expected Outcome: Increased water resources for the City of Bartlesville and Water Districts.

**Bartlesville Public Schools, Dewey Public Schools**

**Fixed Site HazMat**

**96. Identify Fixed Site Hazardous Materials locations near schools, run cameo program to determine evacuation areas, and determine whether to shelter in place or evacuation is the appropriate response.**

Lead: Emergency Managers, Superintendents, Fire Departments

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Cameo Program which identifies Hazardous Materials sites, types and amount of hazardous chemicals, appropriate response- evacuation or shelter-in-place- in the event of a Hazardous Materials accident.

Mitigation Measure # 97 Community ⇒ Hazard ↓	Unincorporated Washington County	City of Bartlesville	Town of Copan	City of Dewey	Town of Ochelata	Town of Ramona	Town of Vera	Bartlesville Public Schools	Caney Valley Public Schools	Copan Public Schools	Dewey Public Schools
Severe Winter Storms	X	X	X	X	X	X	X	X	X	X	X
High Winds	X	X	X	X	X	X	X	X	X	X	X
Tornadoes	X	X	X	X	X	X	X	X	X	X	X
Urban Fires	X	X	X	X	X	X	X	X	X	X	X
Floods	X	X	X	X	X	X	X	X			
Dam Failures	X	X	X	X		X	X	X	X		
Wildfires	X	X	X	X	X	X	X	X	X	X	
Fixed-Site HazMat	X	X	X	X							X
Transportation HazMat	X	X	X	X	X	X	X	X	X	X	X

**97. Develop a GIS database for fire hydrants, wildland fire response, emergency traffic routes, and other response assets/ resources.**

Lead: Emergency Management, IT

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: An interactive GIS map database showing the location of fire hydrants, water resource ponds, traffic routes, etc.

Unincorporated Washington County, City of Bartlesville, City of Dewey, Town of Copan, Town of Ochelata, Town of Ramona, Town of Vera

**High Winds, Tornadoes**

**98. Adopt an ordinance requiring new Mobile Home Parks to provide storm shelters/safe rooms for residents.**

Lead: Community Managers, Councils

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: Safe Rooms/storm shelters from High Winds and Tornadoes for vulnerable/at-risk residents of Manufactured Housing/Mobile Home Park communities.

Mitigation Measure # 99 Community → Hazard ↓	Unincorporated Washington County	City of Bartlesville	Town of Copan	City of Dewey	Town of Ochelata	Town of Ramona	Town of Vera	Bartlesville Public Schools
Floods	X	X	X	X	X	X	X	X
Dam Failures	X	X	X	X		X	X	X

**99. Educate Public Regarding Flood insurance and the National Flood Insurance Program (NFIP).**

Lead: Floodplain Managers

Time Schedule: 2016-Ongoing

Estimated Cost: Undetermined

Source of Funding: Local

Work Product/Expected Outcome: An informed citizenry about the availability of low-cost Flood Insurance for flood and water damage to structure and contents.