



FRANKLIN COUNTY MULTI-HAZARD MITIGATION PLAN



FEMA



Meeting 2
September 23, 2021
10:00 AM



Agenda

1. Welcome and Introductions
2. Multi-Hazard Mitigation Planning Updates
Tyler Carpenter, Environmental Planning Director, Greater Egypt
3. Hazard Ranking Review
Kelsey Bowe, Environmental Planner, Greater Egypt
4. Franklin County Hazard Modeling
5. Introduction to Mitigation Strategies
6. Mitigation Strategies Exercise
7. Adjourn

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Match Requirements

- 75% Federal Dollars for Planning
- 25% Local Match Needed
- Match is Met by Your Participation
 - Meeting Attendance
 - Outside Work on Plan
 - Travel
 - Other Costs
- Current Match: 34% (\$2,800/8,333)
- MHMP Match Survey

MHMP-Salary and Benefit Request

As you are aware, Greater Egypt has contracted with Franklin County to assist with the completion of the 5-year update to the Multi-Hazard Mitigation Plan. As a federally-funded project, 25% of the cost of the update must be met by Franklin County and other local agencies that participate in the plan update. The match is met through in-kind support or "sweat equity" by the representatives of the participating agencies who attend meetings and take part in the update process. IEMA and FEMA require the actual salary and benefit rates to be used to calculate the cost.

We respectfully request that you provide the names and compensation information for the employees and representatives of your agency who have attended meetings so far, or who have not attended meetings but will eventually be involved in the update process. Please provide this information in the Salary and Benefit Request. This information will remain in strict confidence and will only be utilized to complete the required reports for the IEMA grant manager in Springfield.

For questions regarding this request, feel free to contact Greater Egypt at 618-997-9351.

* Required

First Name *

Your answer

Last Name *

Your answer

Position title: *

Your answer



Responsibilities of Planning Partners

- ~~• Represent an authorized jurisdiction in the county~~
- ~~• Attend two meetings during planning process~~
- ~~• Complete Hazard Ranking exercise for your jurisdiction~~
- Propose two mitigation strategies for each hazard
- Assist with meeting match requirements through participation
- Assist with data collection for hazard modeling



Hazard Ranking Review

Hazard	Avg Risk Index	No. Lists Included	Total No. Lists	% Importance	Weighted Risk Index
Tornado	14.08	13	14	0.929	13.07
Earthquake	12.77	13	14	0.929	11.86
Epidemic	19.33	6	14	0.429	8.29
HazMat	9.38	8	14	0.571	5.36
Winter Storm	5.08	13	14	0.929	4.71
Ground Failure	5.73	11	14	0.786	4.5
Thunderstorm	6.11	9	14	0.643	3.93
Flooding	4.9	10	14	0.714	3.5
Dam failure	5	9	14	0.643	3.21
Extreme heat	5	8	14	0.571	2.86
Terrorism	4.6	5	14	0.357	1.64
Wildfire	5.33	3	14	0.214	1.14
Cyber Attack	12	1	14	0.071	0.86



Hazard Ranking Review

Hazard	Avg Risk Index	No. Lists Included	Total No. Lists	% Importance	Weighted Risk Index
Meteor	4.5	2	14	0.143	0.64
Utility Disruption	6	1	14	0.071	0.43
Power Outage	2	2	14	0.143	0.29
Infestation	4	1	14	0.071	0.29
Landslide	1.5	2	14	0.143	0.21
Invasive Species	3	1	14	0.071	0.21



Hazard Ranking Review

- Vote on final hazard ranking
- Last chance to add or remove any hazards for the Plan
 1. Tornado/derecho
 2. Earthquake
 3. Disease outbreak/epidemic
 4. HazMat release
 5. Severe winter weather
 6. Ground failure (mine subsidence)
 7. Severe thunderstorms
 8. Flooding
 9. Dam failure
 10. Drought/extreme heat
 11. Terrorism
 12. Wildfire
 13. Cyber attack
 14. Meteor
 15. Utility disruptions/power outage
 16. Landslide
 17. Invasive species/ infestations



Hazard Modeling

- Earthquakes: Hazus 5.0 (FEMA software)
 - County can decide magnitude and epicenter location
- Hazardous Material Release: Aloha (EPA software)
 - *Aloha can only model 1 chemical at a time
 - Each county must decide which chemical(s) they want to model
- Tornadoes: ArcGIS
 - Any EF rating and path direction can be modeled
- Floods: Hazus 5.0
 - Floods will be modeled on a case by case basis if the county does not rank the hazard in the top 4
- Heat: Google Earth Engine
 - Land surface temps can be mapped from LandSat8 data for a desired date range

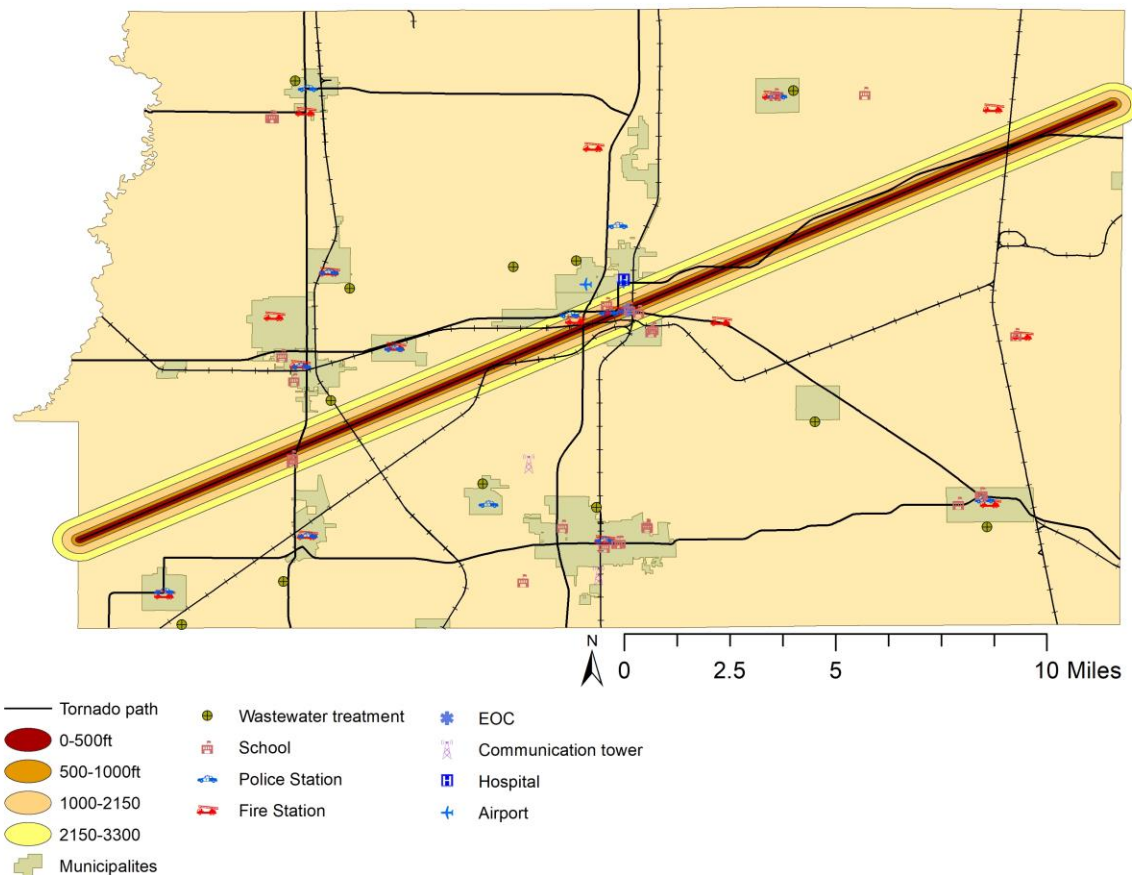
**Greater Egypt will not model pandemics/disease outbreak. Detailed information and maps of positivity rates for Covid19 are widely available from the CDC and Illinois Department of Public Health*

Reminder – Hazus Datasets: Last Chance to Update

- **Updating is optional**
 - Can make models more accurate
 - May be useful in determining mitigation strategies
 - Anything built after 2010 is likely not included in current datasets
- **Features of the datasets that are estimated (from aggregated census and homeland infrastructure data):**
 - Building & foundation type
 - Square footage
 - Replacement value
 - Number of stories
- **Potentially important structures currently not included in models:**
 - Nursing homes or other live-in care facilities
 - Urgent care clinics
 - City halls, courthouses
 - Dams & levees
 - Military buildings

Example Tornado Path

- Model EF4 tornado
 - Average path length: 32 miles
 - (path on right is 27 miles)
 - Average path width: 3271 feet
 - Based on all U.S. tornadoes reported from 2007-2013
- Assessor's/parcel data required for detailed estimates of damage





Historic Tornadoes – Franklin County

Date	Location	Rating	Deaths	Injuries	Property Damage
12/18/1957	Not listed	F4	0	10	\$2.500M
2/9/1960	Not listed	F2	0	0	\$2550.00K
4/27/1971	Not listed	F3	1	20	\$2.500M
4/27/1994	West Frankfort	F1	0	1	\$500.00K
4/19/1996	Mulkeytown	F1	0	0	\$20.00K
11/10/2002	Royaltown	F0	0	0	\$1.00K
6/8/2009	Mulkeytown	EF1	0	0	\$6.00K
4/19/2011	Royatown	EF1	0	0	\$80.00K
4/19/2011	Benton	EF1	0	0	\$10.00K
6/19/2015	Ezra	EF1	0	0	\$500.00K
2/28/2017	Mulkeytown	EF3	0	0	\$800.00K

- **EF4 and EF5 tornadoes are rare**

- (average of 8/ year and 1/year for the entire United States) – but devastating when they do occur (Elsner et. al 2014)
- 24 EF4/EF5 tornadoes in IL since 1950

- **The Marion Tornado of 1982 (Williamson County) killed 10 and injured nearly 200**

- Path length 17mi and width 400ft (NOAA Storm events database)

Historic Tornadoes – Franklin County

- Tri-State Tornado of 1925
- 625 deaths and 2,000+ injured
- 15,000 homes destroyed



FRANKLIN COUNTY HISTORICAL SOCIETY
A downed water town is seen at the
Orient Mine after the Tri-State Tornado.

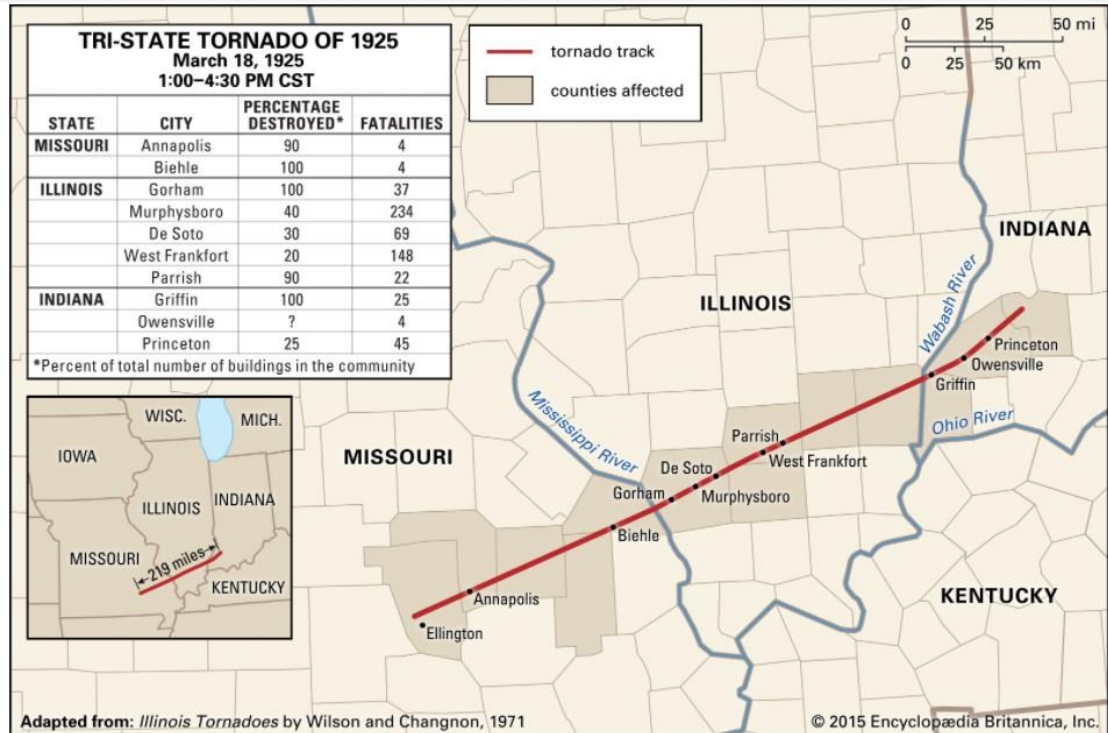


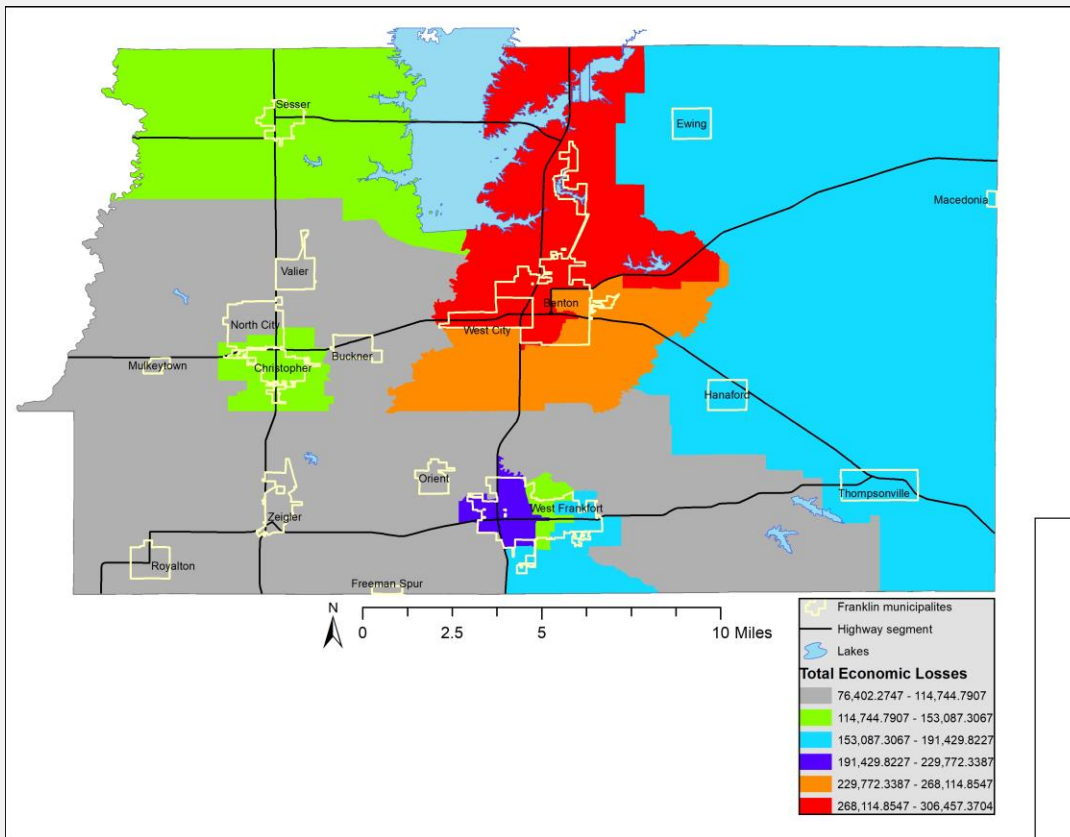
Photo obtained from The Southern Illinoisian, 3.18.2012



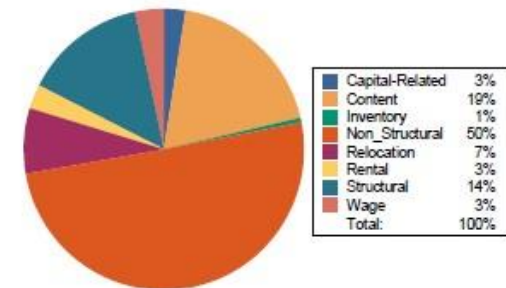
Earthquake Preliminary Models

- Arbitrary Earthquake Model (Hazus 5.0)
- Epicenter: Benton, IL
 - Most populous city chosen to estimate damages in a worst case scenario
- Magnitude: 6
 - Any higher magnitudes are extremely unlikely
- Depth: 10km
 - This is the average, or “fixed depth” of earthquakes as determined by USGS
- Attenuation Function: CEUS 2008
 - The rate of loss in energy from the epicenter
 - CEUS 2008 was designed for the Eastern/Central United States

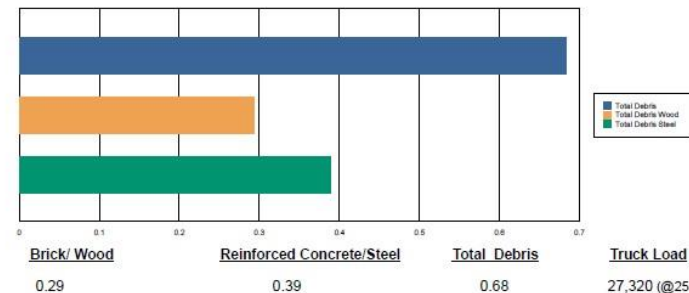
Earthquake Preliminary Models



Earthquake Losses by Loss Type (\$ millions)



Earthquake Debris (millions of tons)



Damage Categories by General Occupancy Type

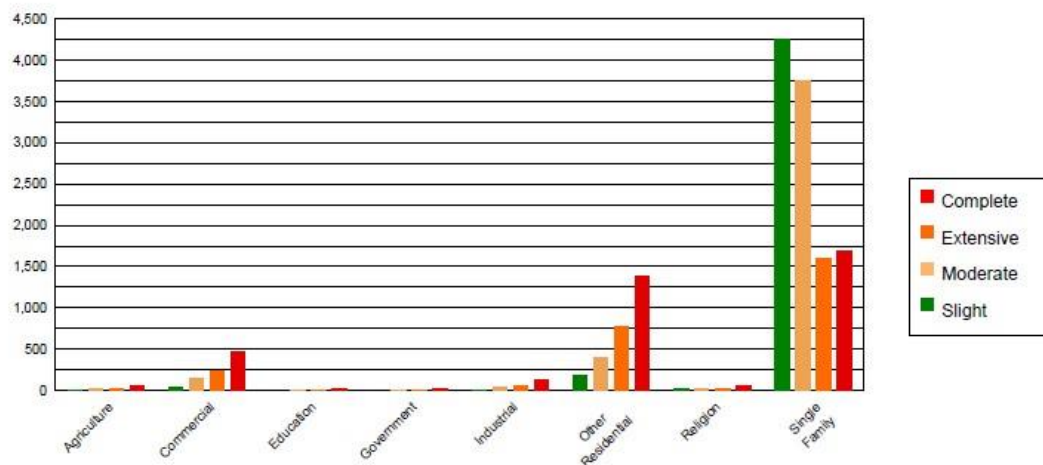
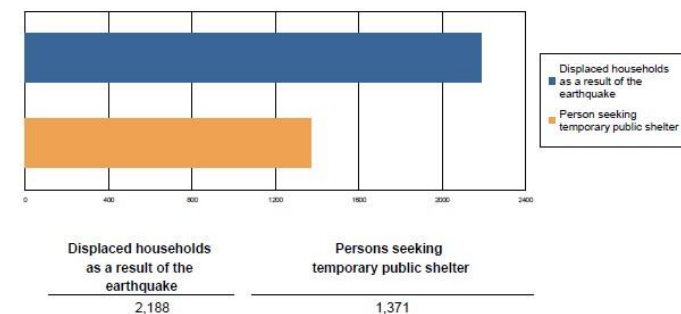


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	2.10	0.06	4.69	0.10	17.90	0.41	30.71	1.12	63.60	1.67
Commercial	12.99	0.38	35.14	0.78	147.86	3.37	235.15	8.57	467.86	12.25
Education	0.75	0.02	1.64	0.04	5.70	0.13	9.47	0.35	17.43	0.46
Government	0.66	0.02	1.56	0.03	6.35	0.14	12.14	0.44	23.30	0.61
Industrial	3.28	0.10	8.11	0.18	34.01	0.78	58.01	2.11	124.59	3.26
Other Residential	97.87	2.85	183.62	4.07	401.23	9.15	773.57	28.20	1379.72	36.13
Religion	12.87	0.38	17.80	0.39	23.70	0.54	24.06	0.88	48.58	1.27
Single Family	3299.34	96.19	4257.80	94.40	3749.74	85.48	1600.26	58.33	1693.85	44.35
Total	3,430		4,510		4,386		2,743		3,819	

Displaced Households/ Persons Seeking Short Term Public Shelter



Injury Estimations

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	13.76	4.20	0.65	1.28
	Commuting	0.03	0.05	0.07	0.01
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.00	0.00	0.00	0.00
	Industrial	18.97	5.84	0.90	1.76
	Other-Residential	231.36	62.44	6.62	12.26
	Single Family	545.22	160.13	24.81	48.94
	Total	809	233	33	64
2 PM	Commercial	873.02	267.14	41.68	81.26
	Commuting	0.26	0.42	0.62	0.12
	Educational	313.99	98.88	16.38	31.95
	Hotels	0.00	0.00	0.00	0.00
	Industrial	140.26	43.23	6.67	12.95
	Other-Residential	58.75	16.16	1.83	3.34
	Single Family	149.97	45.31	7.29	13.72
	Total	1,536	471	74	143
5 PM	Commercial	621.14	190.49	29.92	57.66
	Commuting	4.05	6.60	9.69	1.95
	Educational	18.55	5.84	0.97	1.89
	Hotels	0.00	0.00	0.00	0.00
	Industrial	87.66	27.02	4.17	8.09
	Other-Residential	86.00	23.56	2.63	4.79
	Single Family	220.18	66.52	10.70	20.14
	Total	1,038	320	58	95

Level 1: Treatable with basic first aid
 Level 2: Hospitalization, not life threatening
 Level 3: Hospitalization, life threatening unless treated quickly
 Level 4: killed by earthquake

2 AM: Population at home
 2 PM: Population at work/school
 5 PM: Population Commuting

*General trends of peak occupancy loads
 **This model does not estimate casualties of livestock or pets

Damages to essential and critical facilities

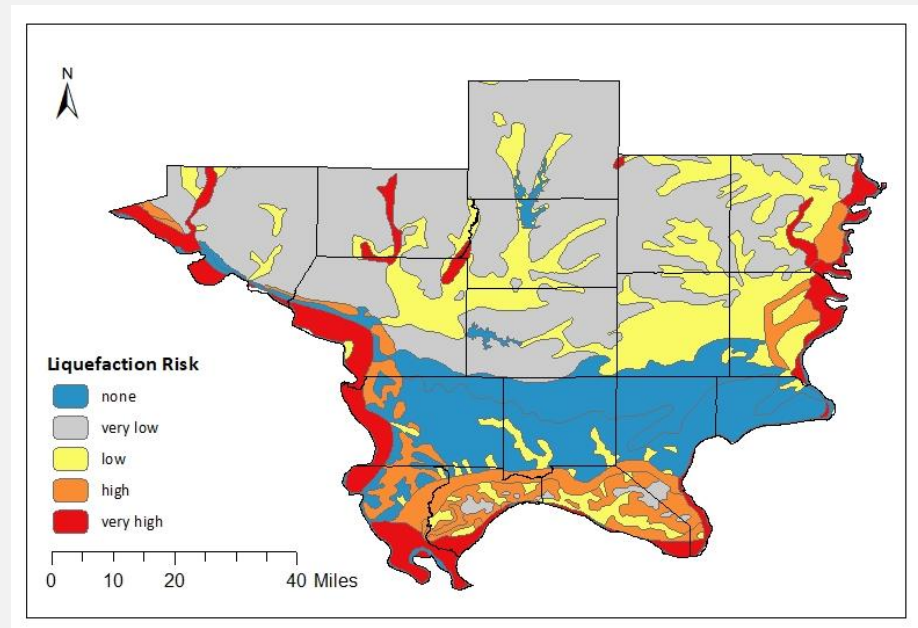
Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	1	1	1	0
Schools	26	25	14	0
EOCs	1	1	1	0
PoliceStations	14	14	8	0
FireStations	16	15	8	1

- Transportation system total losses: \$106.76 million
- Estimated moderate damage to 37 highway bridges and complete damage to 9, moderate damage to airport facilities but no runway damages
- Utility systems total losses: \$21.07 million
- Estimated moderate damage (57%) to the Rend Lake water facility, but no damage to water pipelines

Liquefaction Risk

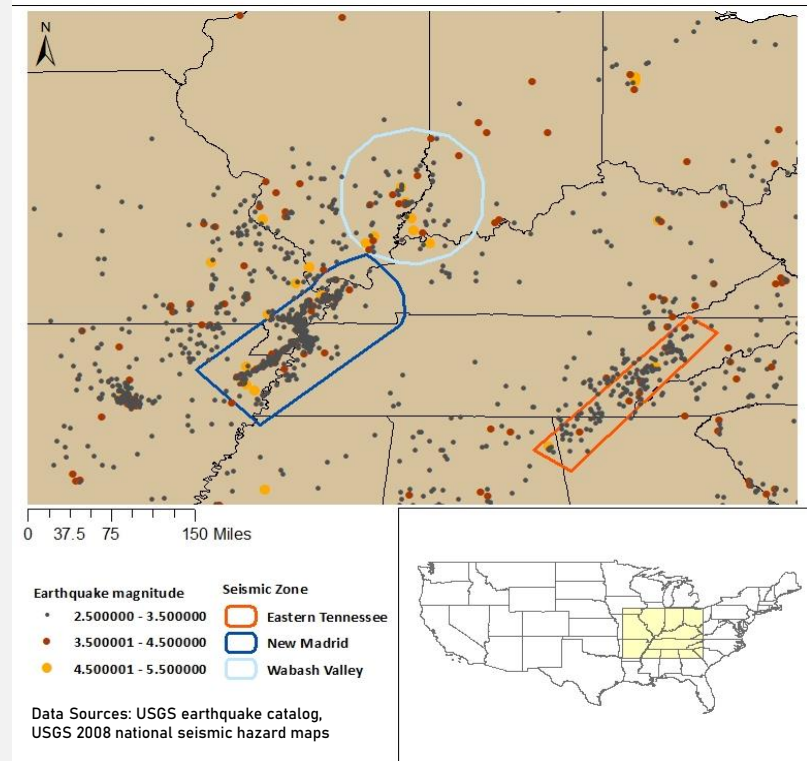
- Occurs when sandy soils behave like a liquid during ground shaking events
- Can cause severe damage to buildings and infrastructure



Data source: IL state geological survey

Historic Earthquakes – Franklin County

- The only recorded earthquake in Franklin County was a magnitude 3.1 that occurred NE of West Frankfort on Jan 23, 1991.
- Severe earthquakes (magnitude 7 or higher) within the New Madrid or Wabash Valley seismic zones may be felt hundreds of miles away from the epicenters



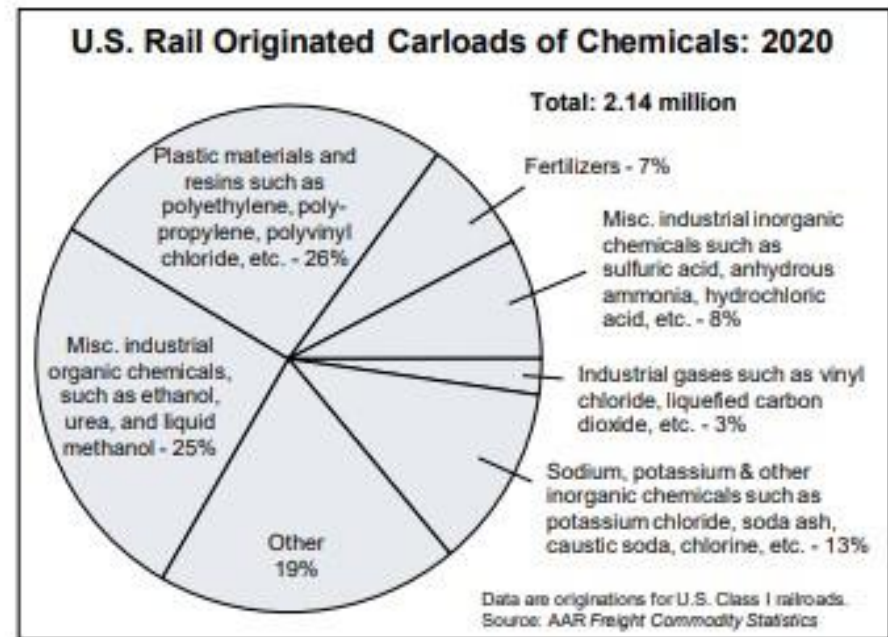


Historic Earthquakes – New Madrid

- December, January, February of 1811-1812
 - 3 large earthquakes, estimated magnitude 7, with hundreds of aftershocks
 - The February earthquake destroyed the town of New Madrid MO
 - Among the 5 worst earthquakes to ever occur in the lower 48 states
 - Earthquakes of this severity are estimated to occur only every ~500 years

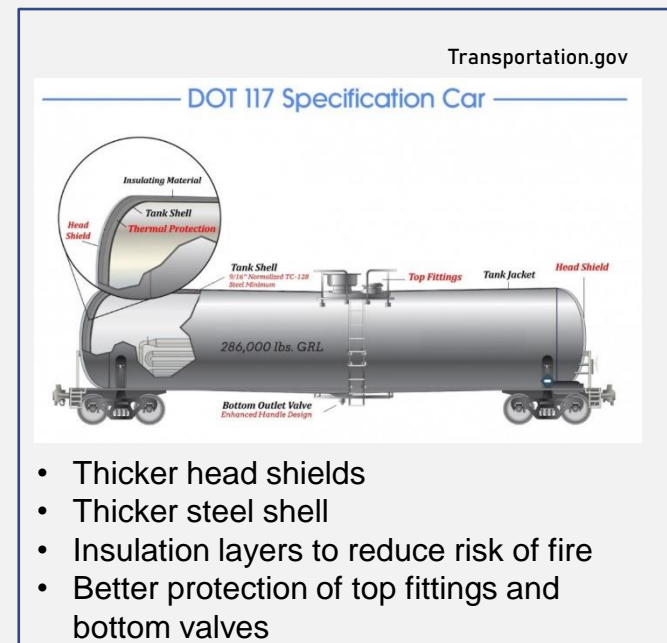
Hazardous Materials Model

- ALOHA – Areal Locations of Hazardous Atmospheres
- Models toxic cloud dispersal
- Estimates fires and explosions (depending on scenario)
- 1,000 hazardous chemicals to choose from
 - Cannot be modeled in combinations



Hazardous Materials Release – Historic Data

- 6 train derailments in Franklin County since 1972
 - Only 1 of which spilled hazardous materials
 - Aug 1994: 20,000 gallons of tetrachloroethylene spilled near Thompsonville
 - Railway safety has greatly improved over the last decade
- Other risk areas include highways, factories, warehouses, and mines
- 233 total IEMA reported incidents from 1987-2011
 - Majority of incidents were spills/leaks of gasoline, diesel fuel, or crude oil
- Extent and impacts depend on the material and amount released





Mitigation Strategies

The purpose of mitigation planning is for State, local, and Indian tribal governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources. (Stafford Act Title 44, Chapter 1, Part 201).



Mitigation Strategies

Hazard Mitigation is any sustained action taken to reduce or eliminate long-term risk to human life and property from a natural hazardous event.

Hazard Mitigation Planning is a 4 step process that requires community input

- Organize resources
 - Creation of planning team, securing IEMA funds for updating plan (early 2020)
- Assessing risks
 - Review of historical hazards, hazard ranking exercise (meeting 1)
- Developing a mitigation plan (we are here)
 - Final hazard ranking, mitigation strategies worksheet (meeting 2)
- Implementing the plan and monitoring progress
 - Adoption of Plan by each jurisdiction & count
 - Applying for grants and undergoing projects



Mitigation Strategies

Each Jurisdiction is required to come up with 2 mitigation strategies per hazard

This does not mean you are required to implement them

This is designed to be a brainstorming exercise, and the final list of strategies will be an outline for the County EMA and cities/villages or other jurisdictions to apply for grant funds later.

Any and all ideas are encouraged, the goal is to make Franklin County better prepared to endure and respond to hazards, and more resilient after one has occurred.



Mitigation Strategies Exercise

Example Mitigation Strategy: Hazard- Flooding

Mitigation Strategy: *Institute a buy-out plan for repetitive loss properties*

Check One:

☒ Proposed ☐ Ongoing

Priority Ranking:

☐ High ☒ Medium ☐ Low

Funding Source:

☒ Local ☐ State ☒ Federal ☐ Private

Responsible & Coordinating Agencies: *Franklin County EMA*

Comments: Franklin County will apply for FEMA HMA funds to acquire repetitive loss properties. The properties will be demolished and the land will be deed-restricted to remain as open space. The non-federal share of the grant will be sought from local funds.



Mitigation Strategies Exercise

- **Do NOT “open with google docs”, click the download icon in top right corner!**

drive.google.com/file/d/1NvTnLbuHMezXjPm6Xc9UZJrWid9n3gSw/view

Apps Gmail Greater Egypt RP&... Google Earth Engine USGS Current Cond... Sediment Monitor Hazard data GIS databases Southern Illinois Ne... Watershed Based Pl... Freshwater Networ... Reading list

Franklin Mitigation Strategies Exercise.pdf

Open with Google Docs

Franklin County Multi Hazard Mitigation Plan
Mitigation Strategies Exercise
Return to kelseybowe@greateregypt.org when completed

Name: _____
Title: _____
Jurisdiction: _____
Date: _____
Time spent on exercise: _____

The purpose of this worksheet is to develop effective mitigation strategies that reduce or eliminate long- term risk to life and property from a hazard event.

Each jurisdiction must come up with at least two mitigation strategies for each hazard identified for that jurisdiction.

A list of potential mitigation strategies is provided (see secondary attachment) to assist with the mitigation strategy selection process. This is not an exhaustive list. As such, you are also encouraged to develop mitigation strategies applicable to your region. Each strategy should include a priority ranking, responsible/coordinating agency, and comments.



Notice! Funding period for BRIC and FMA opens Sept 30th

- Building Resilient Infrastructure, Communities (BRIC)
 - \$1 billion available, competitive applications
 - Many projects types supported
 - Preference for underserved or at-risk communities; or those at high risk of climate change related disasters
- Flood Mitigation Assistance (FMA)
 - \$160 million available, competitive applications
 - Preference for underserved communities
 - Communities (and specific locations) seeking these funds MUST have current NFIP policies in place
- New application preferences part of President Biden's Justice40 Initiative
- See FEMA.gov or grants.gov for detailed NOFOs
- Contact Greater Egypt for assistance in applications
- Apps due no later than Jan 28, 2022



FEMA



Notice to county and city officials

- We are missing NFIP statistics for each county
- This is a FEMA requirement for Hazard Mitigation Planning
- Data request letter will be sent after meeting



Questions or Comments?

Thank you for attending!

Please remain in the zoom call to complete the exercise if time allows