

Chapter 5: Orleans County Hazard Analysis

SECTION 5.1: PURPOSE

The purpose of the Hazard Analysis is twofold: 1.) Identify all natural, technological and human-caused hazards that might affect Orleans County and its municipalities, and 2.) Narrow the list to those hazard types that are most likely to occur and which present the greatest threat of potential impact.

SECTION 5.2: PROCESS

The Hazard Analysis was completed in several steps. The first step occurred on April 28, 2006 when the Orleans County All-Hazard Mitigation Planning Committee developed a ranking of potential hazard events using the Hazards New York (HAZNY) program. Following this meeting G/FLRPC staff prepared a HAZNY report, which was distributed to the Planning Committee at its June meeting. This document forms the basis of the hazard analysis presented in this chapter.

The second step involved collecting information on specific municipal hazard concerns. In late May 2006, at the Regional meetings, municipal officials were asked to comment on the county-wide hazard ranking and modify it to suit their local hazard concerns. This information was used to compile Table 5.4, which highlights the municipal hazard concerns.

The third step involved collecting information on hazard concerns as they related to specific county departments and agencies. This was done at two meetings, one in late May and the second in mid June. County officials were given the opportunity to comment on their concerns regarding the impact of hazard events on their organizations, and specify potential hazards that they would like to mitigate against.

The final step involved developing profiles for each potential hazard listed in the Orleans County Hazard Analysis Report. These profiles use the official New York State Emergency Management Office definitions for hazard events, examine previous hazard incidents through a brief historical review of major incidents, and provide a basic estimation of the probability of future events. These hazard profiles can be found in Chapter 6, *Review of Past Hazard Events*.

Subsection 5.2.A: HAZNY Event

On April 28th 2006 the Orleans County All-Hazard Mitigation Planning Committee, in conjunction with the Genesee/Finger Lakes Regional Planning Council, held a meeting at which the Planning Committee members carried out a hazard analysis review using the automated program Hazards New York (HAZNY). HAZNY was developed by the American Red Cross and the New York State Emergency Management Office. The results from this hazard assessment are presented in this chapter, and the full report is included at the end of the chapter.

HAZNY is an automated interactive spreadsheet that asks specific questions on potential hazards in a community and records and evaluates the responses to these questions. The program then calculates a score for each of the hazards analyzed, based on the responses to the questions. The program includes historical and expert data on selected hazards and is designed specifically for groups of stakeholders, rather than for individual use. This ranking of hazards provides the community with a factual basis for prioritizing the community's resources to prepare for, respond to, and mitigate against the hazards that pose the greatest risk to the community. Representatives from G/FLRPC facilitated the meetings and recorded the results. The participants were listed in Chapter 3, in table 3.4.

The five categories covered in the Hazard Analysis session are: Scope, Frequency, Impact, Duration, and Onset.

Scope indicates the size of an area that would be impacted by a potential hazard. For this hazard analysis category, HAZNY participants are asked if the hazard in question has the capability of triggering other hazards in a cascading effect. The area of the impact of the hazard itself and its cascading effects, where they exist, are analyzed.

Frequency predicts how often a hazard has occurred in the past and could occur in the future.

Impact analyzes how the hazard will impact the lives and safety of people, as well as possible damage to public and private property. Specifically, impact is concerned with the hazard’s ability to seriously injure or kill people, create private economic impact as well as impact on public facilities.

Onset inquires about warning time; that is, how much time is there between the initial recognition of the approaching hazard and when the hazard will impact the community in question.

Duration analyzes how long the expected hazard will remain active; that is, over what period of time does the hazard occur, or how long will it take the community to recover from the event.

The Planning Committee analyzed 32 hazards potentially affecting Orleans County. HAZNY rated each hazard based on the Planning Committee's assessment and assigned a numerical value. These values are categorized as follows:

- 321 to 400 HIGH HAZARD**
- 241 to 320 MODERATELY HIGH HAZARD**
- 161 to 240 MODERATELY LOW HAZARD**
- 44 to 160 LOW HAZARD**

The Planning Committee rated the 32 hazards as follows:

Table 5.1: Orleans County Hazard Rating

Hazard	Rating	Hazard	Rating
Terrorism	352	Explosion	234
Dam Failure	316	Severe Storms	234
Hazmat (Fixed Site)	315	Flood	233
Blight	295	Drought	232
Water Supply Contamination	292	Civil Unrest	230
Winter Storm (Severe)	290	Ice Jam	230
Utility Failure	287	Wildfire	230
Ice Storm	283	Air Contamination	224
Fire	282	Structural Collapse	219
Hazmat (In Transit)	272	Hurricane	204
Infestation	270	Epidemic	200
Earthquake	258	Landslide	194
Oil Spill	257	Radiological (In Transit)	176
Extreme Temperatures	246	Fuel Shortage	169
Transportation Accident	240	Radiological (Fixed Site)	155
Tornado	238	Food Shortage	124
Source: Orleans County HAZNY Report, 2006.			

High Hazards

There was one High Hazard identified: Terrorism.

Moderately High Hazards

Thirteen hazard types were identified as Moderately High Hazards: Dam Failure, Hazmat (Fixed Site), Blight, Water Supply Contamination, Winter Storm (Severe), Utility Failure, Ice Storm, Fire, Hazmat (In Transit), Infestation, Earthquake, Oil Spill, Extreme Temperatures.

Moderately Low Hazards

Sixteen hazard types were identified as Moderately Low Hazards: Transportation Accident, Tornado, Explosion, Severe Storms, Flood, Drought, Civil Unrest, Ice Jam, Wildfire, Air Contamination, Structural Collapse, Hurricane, Epidemic, Landslide, Radiological (In Transit), Fuel Shortage.

Although initially classified as Moderately Low Hazards, Floods and Severe Storms were reclassified as Moderately High Hazards by the Planning Committee during their review of the Hazard Analysis Report.

Low Hazards

There were two Low Hazards identified: Radiological (Fixed Site) and Food Shortage.

For ease of review, Tables 5.2 and 5.3 below separate the hazards listed in Table 5.1 into two categories, Natural Hazards and Technological/Human-Caused Hazards.

Table 5.2: Orleans County Natural Hazards

Natural Hazards	Rating
Blight	295
Winter Storm (Severe)	290
Ice Storm	283
Infestation	270
Earthquake	258
Extreme Temperatures	246
Tornado	238
<i>Severe Storms</i>	234
<i>Flood</i>	233
Drought	232
Ice Jam	230
Wildfire	230
Hurricane	204
Epidemic	200
Landslide	194
Source: Orleans County HAZNY Report, 2006.	

Severe Storms and Floods are italicized in this table to call attention to the fact that while they came out with a moderately low ranking in the HAZNY analysis, Planning Committee members thought they should be treated as moderately high hazards in the All-Hazard Mitigation Plan (see Subsection 5.5.B for further information).

Table 5.3: Orleans County Technological/ Human-Caused Hazards

Human-Caused/Technological Hazards	Rating
Terrorism	352
Dam Failure	316
Hazmat (Fixed Site)	315
Water Supply Contamination	292
Utility Failure	287
Fire	282
Hazmat (In Transit)	272
Oil Spill	257
Transportation Accident	240
Explosion	234
Civil Unrest	230
Air Contamination	224
Structural Collapse	219
Radiological (In Transit)	176
Fuel Shortage	169
Radiological (Fixed Site)	155
Food Shortage	124
Source: Orleans County HAZNY Report, 2006.	

Subsection 5.2.B: Planning Committee Review

The Planning Committee received the Hazard Analysis report at its June 23rd meeting. Committee members were asked to review the report and comment on the hazard ratings. Committee members initially expressed satisfaction with the report, but after further discussions, it was decided that Floods and Severe Storm events should be considered “Moderately High” hazards.

This was done because these two hazards have a longer history of recorded occurrences and are considered potentially more damaging than natural hazards such as Earthquakes, Extreme Temperatures, and Tornadoes, which outranked Floods and Severe Storms in the initial ranking.

Subsection 5.2.C: Natural Hazards

Blight and Infestation ranked high on the list due to the importance of agriculture to the Orleans County economy. Every year one or two crops usually suffers minor damage from blight or infestation, but these occurrences typically do not pose a major problem for farmers or result in serious economic losses. However, the possibility of a major blight or infestation event causing serious damage to area crops is an always present concern among area farmers and food processors.

A related hazard, Drought, is not considered a major threat because the County’s drinking water supplies are mostly drawn from Lake Ontario and because there is no historical precedent for severe drought events in the County.

Severe weather events such as Ice Storms, Winter Storms, and Severe Storms are considered the most potentially damaging natural hazards that could strike the County. Tornadoes and Extreme Temperature events are possible, but much less likely and historically have not resulted in significant damage/losses. Only one tornado is recorded to have struck the County since 1950. Historically, severe weather events have caused power outages, damaged buildings, knocked down tree limbs, and caused human injury/loss of life, especially through traffic accidents caused in part by poor road conditions. Ice Storms and Winter

Storms in particular have caused temporary hardships by disrupting normal transportation activities. However, these events are considered routine events for the winter months and the County is prepared to address them should they occur.

Flooding is another problem that, as mentioned above, was thought by the Planning Committee to reflect a repetitive and widespread threat to the County. Flooding events in Orleans County typically do not result in injury/loss of life or major property damage, but throughout the County there are numerous areas where flooding has been and continues to be a problem for residents, business owners, and farmers. During the hazard mitigation planning process the Orleans County Soil & Water Conservation District worked to identify, prioritize, and offer potential solutions for all flood hazard sites in the County. Please see Appendix D for a comprehensive list of flood problem sites in the County.

Earthquakes have affected the County in the past, but these events are very rare and have not caused serious property damage or injury/loss of life. While the County is located near active fault lines, past earthquakes have been focused in Genesee and Wyoming Counties to the south. Tremors felt in Orleans County have been minor events and have not caused serious problems for the County's inhabitants.

Wildfires are not considered a major countywide problem; only the towns of Shelby, Barre, and Clarendon identified wildfires as an issue. Wildfires have occurred in the low lying mucklands that make up large swaths of these towns, especially along the Genesee County line, but they have not caused major property damage or loss of life.

Landslides are not considered a major threat to the County. Most of the County is relatively flat or gently rolling terrain without steep slopes. Several ravines cut by streams are found in the northern part of the County, but the slopes along these ravines are protected by municipal ordinances that forbid the cutting of trees. Minor landslides have occurred along the lake shore, but these events are typically associated with routine erosion due to wave action and have not posed a threat to life and property.

Please refer to the hazard profiles in Chapter 6 for additional information on past hazard events, future probability, and past and potential hazard impacts.

Subsection 5.2.D: Human – Caused and Technological Hazards

The planning committee focused its discussions on natural hazards, but also considered the potential effects on the County of certain human-caused and technological hazards. Terrorism ranked high on the committee's list because of Orleans County's location on the U.S./Canadian border and the perceived vulnerability of the County's population.

Dam Failure ranks high because of three dams that, should they fail, could cause major property damage and loss of life. These dams are the Lyndonville Dam, the Glenwood Lake Dam, and the Lake Alice/Waterport Reservoir Dam. All of these structures date from the early 1900s and a dam safety assessment is needed to ensure their stability.

Hazardous Materials incidents, including oil spills, are considered an important hazard to mitigate against. Numerous minor hazmat spills occur each year and have the potential to cause serious air, land, and water pollution, including possible water supply contamination. Many of these incidents occur as a result of traffic accidents, equipment failure, and human error.

Several hazards, including Fires, Structural Collapse, and Civil Unrest, were not considered important enough to warrant serious attention in the Mitigation Strategy. Fires and Structural Collapse were determined to be a matter of upgrading routine code enforcement procedures and, at this time, not

essential for consideration in this all-hazard mitigation plan. Civil Unrest was considered a negligible threat; only the Village of Medina identified it as a possible, if remote, concern when festivals and other large public gatherings are underway.

Several potential hazards, including fuel shortage, food shortage, and radiological accidents were considered too negligible to effectively address within this plan.

The Planning Committee chose to concentrate on proposing projects that will improve the County's resilience to natural hazards instead of human-caused and technological hazards. However, the Planning Committee expects to include more projects aimed at improving the County's resilience to human-caused and technological hazards in future revisions of the All-Hazard Mitigation Plan.

Please refer to the hazard profiles in Chapter 6 for additional information on past hazard events, future probability, and past and potential hazard impacts.

Subsection 5.2.E: County Agency Review

On May 25, 2006 G/FLRPC staff met with a group of county agency officials to discuss, among other topics, the countywide hazard rating. County officials were asked to review the hazard rating and adjust it to reflect the concerns of their own departments and agencies. Like the Planning Committee, these officials thought that Floods and Severe Storms should be ranked higher, but otherwise agreed with the hazard rating and did not wish to alter it.

Subsection 5.2.F: Municipal Review

At the first round of Regional meetings in late May, municipal representatives were asked to review and discuss their perspective on the hazard ranking generated at the county level. Municipal representatives worked with each other and with County officials and G/FLRPC staff during the regional meetings to analyze the HAZNY ranking and determine how it related to hazard concerns in their own municipality. This analysis resulted in the municipal hazard priorities shown in Table 5.4.

On the whole, the municipal hazard priorities complement the countywide hazard priorities. Most municipalities agreed that key hazards to mitigate against include major weather related events, especially Severe Winter Storms and Ice Storms. Extreme Temperatures was selected by ten of the fourteen municipalities as a hazard priority, while Tornadoes and Hurricanes were not considered significant risks. Terrorism, Water Supply Contamination, Utility Failure, Fire, and HAZMAT incidents, both Fixed Site and In Transit, also figure prominently in the municipal hazard concerns. Like the Planning Committee and County officials, Blight and Infestation are two potential hazards that municipal officials consider important to prepare for due to the importance of agriculture for the county's economy.

The main differences between the county-wide hazard ranking and the municipal hazard rankings include Dam Failure, which is only an issue for those municipalities with dams and municipalities located downstream of dams, and Earthquakes, which are not recognized by seven of the fourteen municipalities as a high/moderately high hazard.

Municipal hazard priorities can be seen in Table 5.4. This table was created by marking, with an "x," hazards identified by municipal officials as being either "High" or "Moderately High" concerns for their municipalities.

Table 5.4: Orleans County Municipal Hazard Priorities

	Municipality	Albion, Town	Albion, Village	Barre, Town	Carlton, Town	Clarendon, Town	Gaines, Town	Holley, Village	Kendall, Town	Lyndonville, Village	Medina, Village	Murray, Town	Ridgeway, Town	Shelby, Town	Yates, Town
Hazard															
Terrorism		X	X		X	X	X	X		X	X	X	X	X	X
Dam Failure					X		X			X			X		X
Hazmat (Fixed Site)		X	X	X	X	X	X	X		X	X	X	X	X	X
Blight		X		X	X	X	X		X	X	X	X			
Water Supply Contamination		X	X	X	X	X	X	X		X	X	X	X		X
Winter Storm (Severe)		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Utility Failure		X		X	X	X	X	X	X	X	X	X	X	X	X
Ice Storm		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fire			X	X	X	X	X	X	X	X	X	X	X	X	
Hazmat (In Transit)		X	X	X	X	X	X	X		X	X	X	X	X	X
Infestation		X	X	X	X		X	X	X	X	X	X	X	X	
Earthquake						X	X	X		X	X		X	X	
Oil Spill			X	X	X		X	X	X	X	X	X	X	X	X
Extreme Temperatures				X	X		X	X	X	X			X	X	X
Transportation Accident			X		X						X		X	X	
Tornado				X										X	
Explosion				X							X			X	
Severe Storms				X										X	X
Flood				X			X		X					X	X
Drought					X				X						
Civil Unrest											X				
Ice Jam															X
Wildfire				X		X								X	
Air Contamination				X											X
Structural Collapse											X				
Hurricane															
Epidemic															
Landslide															
Radiological (In Transit)															
Fuel Shortage															
Radiological (Fixed Site)															
Food Shortage															
Hazards Not Recognized as a High Threat by Municipal Officials: Hurricane, Landslide, Radiological (In Transit), Fuel Shortage, Radiological (Fixed Site), Food Shortage															
Source: Municipal Committee Meetings, May 2006.															

Subsection 5.2.G: Review of Past Hazard Events

Past hazard events are profiled in tables found in the following chapter. The purpose of these historical hazard tables is to identify the significant hazard events that have occurred in Orleans County in the past. By studying these events, and in particular their causes, locations, extents, and impacts, the Planning Committee can gain valuable insight on the potential for a hazard event to occur in the future. Furthermore, understanding the impacts of past hazard events is useful for developing practical Mitigation Measures that aim to break historic cycles of hazard events.

ORLEANS COUNTY, NEW YORK

HAZARD ANALYSIS REPORT

Background

On April 28, 2006, the Orleans County All-Hazard Mitigation Planning Committee conducted a hazard analysis using the automated program, *HAZNY* (Hazards New York). *HAZNY* was developed by the American Red Cross and the New York State Emergency Management Office.

The results of this hazard analysis are presented in this report.

HAZNY and Orleans County

HAZNY is an automated interactive spreadsheet that asks specific questions on potential hazards in a community and records and evaluates the responses to these questions. *HAZNY* also includes historical and expert data on selected hazards. *HAZNY* is designed specifically for groups, rather than individual use. The hazard rating used for this report was generated by the Orleans County All-Hazard Mitigation Planning Committee, a group of county and municipal officials assembled to work on a countywide all-hazard mitigation plan. As a prelude to developing that plan, the Planning Committee met to consider and discuss the questions and issues raised by the *HAZNY* program. Representatives from the Genesee/Finger Lakes Regional Planning Council facilitated the meeting and recorded the results.

The Results

The Planning Committee analyzed 32 hazards potentially affecting Orleans County. *HAZNY* rated each hazard based on the Planning Committee's assessment and assigned a numerical value.

These values are categorized as follows:

321 to 400 HIGH HAZARD
241 to 320 MODERATELY HIGH HAZARD
161 to 240 MODERATELY LOW HAZARD
44 to 160 LOW HAZARD

The Planning Committee rated the 32 hazards as follows:

Hazard	Rating
TERRORISM	352
DAM FAILURE	316
HAZMAT (FIXED SITE)	315
BLIGHT	295

WATER SUPPLY CONTAMINATION	292
WINTER STORM (SEVERE)	290
UTILITY FAILURE	287
ICE STORM	283
FIRE	282
HAZMAT (IN TRANSIT)	272
INFESTATION	270
EARTHQUAKE	258
OIL SPILL	257
EXTREME TEMPERATURES	246
TRANSPORTATION ACCIDENT	240
TORNADO	238
EXPLOSION	234
SEVERE STORMS	234
FLOOD	233
DROUGHT	232
CIVIL UNREST	230
ICE JAM	230
WILDFIRE	230
AIR CONTAMINATION	224
STRUCTURAL COLLAPSE	219
HURRICANE	204
EPIDEMIC	200
LANDSLIDE	194
RADIOLOGICAL (IN TRANSIT)	176
FUEL SHORTAGE	169
RADIOLOGICAL (FIXED SITE)	155
FOOD SHORTAGE	124

High Hazards (1): TERRORISM.

Moderately High Hazards (13): DAM FAILURE, HAZMAT (FIXED SITE), BLIGHT, WATER SUPPLY CONTAMINATION, WINTER STORM (SEVERE), UTILITY FAILURE, ICE STORM, FIRE, HAZMAT (IN TRANSIT), INFESTATION, EARTHQUAKE, OIL SPILL, EXTREME TEMPERATURES.

Moderately Low Hazards (16): TRANSPORTATION ACCIDENT, TORNADO, EXPLOSION, SEVERE STORMS, FLOOD, DROUGHT, CIVIL UNREST, ICE JAM, WILDFIRE, AIR CONTAMINATION, STRUCTURAL COLLAPSE, HURRICANE, EPIDEMIC, LANDSLIDE, RADIOLOGICAL (IN TRANSIT), FUEL SHORTAGE.

Low Hazards (2): RADIOLOGICAL (FIXED SITE), FOOD SHORTAGE.

High Hazards (1)

Hazard(s) rated as high: TERRORISM.

TERRORISM: 352, High Hazard

DEFINITION: The threat or use of violence to achieve political/social ends usually associated with community disruption and/or multiple injuries or deaths.

Potential Impact: Throughout a Large Region

Cascade Effects: Highly Likely

Frequency: A Regular Event

Onset: No Warning

Hazard Duration: More Than One Week

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death to Large Numbers
- Severe Damage to Private Property
- Severe Structural Damage to Public Facilities

Moderately High Hazards (13)

Hazard(s) rated as moderately high: DAM FAILURE, HAZMAT (FIXED SITE), BLIGHT, WATER SUPPLY CONTAMINATION, WINTER STORM (SEVERE), UTILITY FAILURE, ICE STORM, FIRE, HAZMAT (IN TRANSIT), INFESTATION, EARTHQUAKE, OIL SPILL, EXTREME TEMPERATURES.

DAM FAILURE: 316, Moderately High Hazard

DEFINITION: Structural deterioration, either gradual or sudden, resulting in the facility's inability to control impounded water as designed, resulting in danger to people and/or property in the potential inundation area.

Potential Impact: Throughout a Large Region

Cascade Effects: Highly Likely

Frequency: An Infrequent Event

Onset: No Warning

Hazard Duration: More Than One Week

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death to Large Numbers
- Severe Damage to Private Property
- Severe Structural Damage to Public Facilities

HAZMAT (FIXED SITE): 315, Moderately High Hazard

DEFINITION: The uncontrolled release of material from a stationary facility, which when released can result in death or injury to people and/or damage to property and the environment through the material's flammability, toxicity, corrosiveness, chemical instability and/or combustibility.

Potential Impact: Single Location
Cascade Effects: Some Potential
Frequency: A Regular Event
Onset: No Warning
Hazard Duration: More Than One Week
Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death to Large Numbers
- Severe Damage to Private Property
- Severe Structural Damage to Public Facilities

BLIGHT: 295, Moderately High Hazard

DEFINITION: A disease of agricultural crops or non-agricultural plants resulting in withering, lack of growth, and death of its parts without rotting.

Potential Impact: Throughout a Large Region
Cascade Effects: Some Potential
Frequency: A Regular Event
Onset: No Warning
Hazard Duration: More Than One Week
Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death Unlikely
- Severe Damage to Private Property
- Little or No Structural Damage to Public Facilities

WATER SUPPLY CONTAMINATION: 292, Moderately High Hazard

DEFINITION: The contamination or potential contamination of surface or subsurface public water supply by chemical or biological materials that results in restricted or diminished ability to use the water source.

Potential Impact: Throughout a Large Region
Cascade Effects: Highly Likely
Frequency: A Rare Event
Onset: No Warning

Hazard Duration: More Than One Week

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death to Extremely Large Numbers
- Severe Damage to Private Property
- Severe Structural Damage to Public Facilities

WINTER STORM (SEVERE): 290, Moderately High Hazard

DEFINITION: A storm system that develops in late fall to early spring and deposits wintry precipitation, such as snow (including lake effect), sleet, or freezing rain, with a significant impact on transportation systems and public safety.

Potential Impact: Throughout a Large Region

Cascade Effects: Highly Likely

Frequency: A Frequent Event

Onset: One Day Warning

Hazard Duration: Two to Three Days

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Moderate Damage to Private Property
- Moderate Structural Damage to Public Facilities

UTILITY FAILURE: 287, Moderately High Hazard

DEFINITION: Loss of electric and/or natural gas supply, telephone service or public water supply as a result of an internal system failure and not by the effects of disaster agents.

Potential Impact: Throughout a Large Region

Cascade Effects: Highly Likely

Frequency: A Frequent Event

Onset: No Warning

Hazard Duration: One Day

Recovery Time: One to Two Days

Impact:

- Serious Injury or Death Unlikely
- Moderate Damage to Private Property
- Moderate Structural Damage to Public Facilities

ICE STORM: 283, Moderately High Hazard

DEFINITION: Freezing rain which accumulates in a substantial glaze layer of ice resulting in serious disruptions of normal transportation and possible downed power lines.

Potential Impact: Throughout a Large Region

Cascade Effects: Highly Likely

Frequency: A Regular Event

Onset: Several Hours Warning

Hazard Duration: Four days to One Week

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death Unlikely
- Moderate Damage to Private Property
- Severe Structural Damage to Public Facilities

FIRE: 282, Moderately High Hazard

DEFINITION: The uncontrolled burning in residential, commercial, industrial, institutional, or other structures in developed area.

Potential Impact: Single Location

Cascade Effects: Highly Likely

Frequency: A Frequent Event

Onset: No Warning

Hazard Duration: One Day

Recovery Time: One to Two Days

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Severe Damage to Private Property
- Moderate Structural Damage to Public Facilities

HAZMAT (IN TRANSIT): 272, Moderately High Hazard

DEFINITION: The uncontrolled release of materials during transport, which when released can result in death or injury to people and/or damage to property and the environment through the material's flammability, toxicity, corrosiveness, chemical instability and/or combustibility.

Potential Impact: Single Location

Cascade Effects: Highly Likely

Frequency: A Regular Event

Onset: No Warning

Hazard Duration: More Than One Week

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Moderate Damage to Private Property
- Moderate Structural Damage to Public Facilities

INFESTATION: 270, Moderately High Hazard

DEFINITION: An excessive population of insects, rodents, or other animals requiring control measures due to their potential to carry diseases, destroy crops, or harm the environment.

Potential Impact: Throughout a Large Region

Cascade Effects: Some Potential

Frequency: A Regular Event

Onset: No Warning

Hazard Duration: More Than One Week

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death Unlikely
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

EARTHQUAKE: 258, Moderately High Hazard

DEFINITION: A sudden motion of the ground caused by release of subterranean strain energy, due to plate tectonics, resulting in surface faulting (ground rupture), ground shaking, or ground failure (collapse).

Potential Impact: Throughout a Small Region

Cascade Effects: Highly Likely

Frequency: An Infrequent Event

Onset: No Warning

Hazard Duration: Less Than One Day

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Severe Damage to Private Property
- Severe Structural Damage to Public Facilities

OIL SPILL: 257, Moderately High Hazard

DEFINITION: The uncontrolled or accidental discharge of petroleum into water and/or onto land.

Potential Impact: Single Location
Cascade Effects: Some Potential
Frequency: A Frequent Event
Onset: No Warning
Hazard Duration: Less Than One Day
Recovery Time: More Than Two Weeks
Impact:

- Serious Injury or Death Unlikely
- Moderate Damage to Private Property
- Little or No Structural Damage to Public Facilities

EXTREME TEMPERATURES: 246, Moderately High Hazard

DEFINITION: Extended periods of excessive cold or hot weather with a serious impact on human and/or animal populations particularly elderly and/or persons with respiratory ailments.

Potential Impact: Throughout a Large Region
Cascade Effects: Some Potential
Frequency: A Regular Event
Onset: Several Days Warning
Hazard Duration: More Than One Week
Recovery Time: More Than Two Weeks
Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Moderate Damage to Private Property
- Moderate Structural Damage to Public Facilities

Moderately Low Hazards (16)

Hazard(s) rated as moderately low: TRANSPORTATION ACCIDENT, TORNADO, EXPLOSION, SEVERE STORMS, FLOOD, DROUGHT, CIVIL UNREST, ICE JAM, WILDFIRE, AIR CONTAMINATION, STRUCTURAL COLLAPSE, HURRICANE, EPIDEMIC, LANDSLIDE, RADIOLOGICAL (IN TRANSIT), FUEL SHORTAGE.

TRANSPORTATION ACCIDENT: 240, Moderately Low Hazard

DEFINITION: A mishap involving one or more conveyances on land, sea, and/or in the air which results in mass casualties and/or substantial loss of property.

Potential Impact: Single Location
Cascade Effects: Highly Likely
Frequency: A Regular Event
Onset: No Warning

Hazard Duration: Less Than One Day

Recovery Time: One to Two Days

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Severe Damage to Private Property
- Moderate Structural Damage to Public Facilities

TORNADO: 238, Moderately Low Hazard

DEFINITION: A local atmospheric storm, generally of short duration, formed by winds rotating at very high speeds, usually in a counterclockwise direction. The vortex, up to several hundred yards wide, is visible to the observer as a whirlpool-like column of winds rotating about a hollow cavity of funnel. Winds have been estimated to be as high as 400 mph.

Potential Impact: Throughout a Small Region

Cascade Effects: Highly Likely

Frequency: An Infrequent Event

Onset: Several Hours Warning

Hazard Duration: Less Than One Day

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Severe Damage to Private Property
- Severe Structural Damage to Public Facilities

EXPLOSION: 234, Moderately Low Hazard

DEFINITION: The threat or actual detonation of an explosive device or material with the potential of inflicting serious injury to people or damage to property.

Potential Impact: Single Location

Cascade Effects: Some Potential

Frequency: An Infrequent Event

Onset: No Warning

Hazard Duration: Two to Three Days

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Severe Damage to Private Property
- Moderate Structural Damage to Public Facilities

SEVERE STORMS: 234, Moderately Low Hazard

DEFINITION: This category includes hail storms, windstorms, and severe thunderstorms (with associated severe wind events such as derechos, gustnados, and downbursts). A severe thunderstorm produces tornados, hail 0.75 inches or more in diameter, or winds of 50 knots (58 mph) or more. Structural wind damage may imply the occurrence of a severe thunderstorm.

- Potential Impact:** Throughout a Large Region
Cascade Effects: Highly Likely
Frequency: A Regular Event
Onset: One Day Warning
Hazard Duration: Two to Three Days
Recovery Time: One to Two Days
Impact:
- Serious Injury or Death is Likely, but not in Large Numbers
 - Moderate Damage to Private Property
 - Moderate Structural Damage to Public Facilities

FLOOD: 233, Moderately Low Hazard

DEFINITION: Flooding is usually a natural, cyclic occurrence in existing waterbodies. When a waterbody overflows its 'normal' banks, a potentially violent and/or destructive waterway can form. A flash flood is a sudden transformation of a small stream into a violent waterway after heavy rain and/or rapid snowmelt.

- Potential Impact:** Throughout a Small Region
Cascade Effects: Highly Likely
Frequency: A Regular Event
Onset: One Day Warning
Hazard Duration: Two to Three Days
Recovery Time: More Than Two Weeks
Impact:
- Serious Injury or Death Unlikely
 - Moderate Damage to Private Property
 - Moderate Structural Damage to Public Facilities

DROUGHT: 232, Moderately Low Hazard

DEFINITION: A prolonged period of limited precipitation affecting the supply and quality of water.

- Potential Impact:** Throughout a Large Region
Cascade Effects: Some Potential
Frequency: A Regular Event

Onset: More Than One Week Warning

Hazard Duration: More Than One Week

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death Unlikely
- Severe Damage to Private Property
- Little or No Structural Damage to Public Facilities

CIVIL UNREST: 230, Moderately Low Hazard

DEFINITION: An individual or collective action causing serious interference with the peace, security, and/or functioning of a community (e.g., riot).

Potential Impact: Several Locations

Cascade Effects: Some Potential

Frequency: An Infrequent Event

Onset: No Warning

Hazard Duration: More Than One Week

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Moderate Damage to Private Property
- Little or No Structural Damage to Public Facilities

ICE JAM: 230, Moderately Low Hazard

DEFINITION: Large accumulation of ice in rivers or streams interrupting the normal flow of water and often leading to flooding conditions and/or damage to structures.

Potential Impact: Several Locations

Cascade Effects: Highly Likely

Frequency: A Regular Event

Onset: One Day Warning

Hazard Duration: More Than One Week

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death Unlikely
- Moderate Damage to Private Property
- Little or No Structural Damage to Public Facilities

WILDFIRE: 230, Moderately Low Hazard

DEFINITION: An uncontrollable combustion of trees, brush, or grass involving a substantial land area which may have the potential for threatening human life and property.

Potential Impact: Single Location
Cascade Effects: Some Potential
Frequency: A Frequent Event
Onset: No Warning
Hazard Duration: Less Than One Day
Recovery Time: Less Than One Day

Impact:

- Serious Injury or Death Unlikely
- Moderate Damage to Private Property
- Little or No Structural Damage to Public Facilities

AIR CONTAMINATION: 224, Moderately Low Hazard

DEFINITION: This is pollution caused by atmospheric conditions, (as opposed to a chemical spill or release type of situation) such as a temperature inversion induced smoggy condition sufficiently serious to create some danger to human health.

Potential Impact: Throughout a Large Region
Cascade Effects: Some Potential
Frequency: A Regular Event
Onset: Several Hours Warning
Hazard Duration: Two to Three Days
Recovery Time: One to Two Days

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

STRUCTURAL COLLAPSE: 219, Moderately Low Hazard

DEFINITION: A sudden structural failing, partial or fully, of buildings, bridges or tunnels, threatening human life and health.

Potential Impact: Throughout a Large Region
Cascade Effects: Some Potential
Frequency: An Infrequent Event
Onset: No Warning
Hazard Duration: Less Than One Day
Recovery Time: One to Two Days

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Severe Damage to Private Property
- Little or No Structural Damage to Public Facilities

HURRICANE: 204, Moderately Low Hazard

DEFINITION: Tropical cyclones, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74 miles per hour or more and blow in a large spiral around a relatively calm center or "eye." Circulation is counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.

Potential Impact: Throughout a Large Region

Cascade Effects: Highly Likely

Frequency: An Infrequent Event

Onset: Several Days Warning

Hazard Duration: Two to Three Days

Recovery Time: One to Two Weeks

Impact:

- Serious Injury or Death Unlikely
- Moderate Damage to Private Property
- Severe Structural Damage to Public Facilities

EPIDEMIC: 200, Moderately Low Hazard

DEFINITION: The occurrence or outbreak of disease to an unusual number of individuals or proportion of the population, human or animal.

Potential Impact: Throughout a Large Region

Cascade Effects: Highly Likely

Frequency: An Infrequent Event

Onset: Several Days Warning

Hazard Duration: More Than One Week

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

LANDSLIDE: 194, Moderately Low Hazard

DEFINITION: The downward and outward movement of slope-forming materials reacting to the force of gravity. Slide materials may be composed of natural rock, soil, artificial fill, or combinations of these materials. The term landslide is generalized and includes rockfalls, rockslides, creep, block glides, debris slides, earth-flow, mud flow, slump, and other similar terms.

Potential Impact: Single Location
Cascade Effects: Some Potential
Frequency: A Regular Event
Onset: No Warning
Hazard Duration: Less Than One Day
Recovery Time: Less Than One Day

Impact:

- Serious Injury or Death Unlikely
- Moderate Damage to Private Property
- Little or No Structural Damage to Public Facilities

RADIOLOGICAL (IN TRANSIT): 176, Moderately Low Hazard

DEFINITION: A release or threat of release of radioactive material from a transportation vehicle including truck, rail, air, and marine vehicle.

Potential Impact: Single Location
Cascade Effects: Some Potential
Frequency: A Rare Event
Onset: No Warning
Hazard Duration: More Than One Week
Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

FUEL SHORTAGE: 169, Moderately Low Hazard

DEFINITION: A situation in which the normal quantity and/or timely delivery of fuel supplies to distributors and retail establishments is interrupted.

Potential Impact: Throughout a Large Region
Cascade Effects: Some Potential
Frequency: An Infrequent Event
Onset: More Than One Week Warning

Hazard Duration: More Than One Week

Recovery Time: Less Than One Day

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Moderate Damage to Private Property
- Moderate Structural Damage to Public Facilities

Low Hazards (2)

Hazard(s) rated as low: RADIOLOGICAL (FIXED SITE), FOOD SHORTAGE.

RADIOLOGICAL (FIXED SITE): 155, Low Hazard

DEFINITION: A release or threat of release of radioactive material from a nuclear power generating station or research reactor or other stationary source of radioactivity.

Potential Impact: Single Location

Cascade Effects: Some Potential

Frequency: A Rare Event

Onset: Several Hours Warning

Hazard Duration: More Than One Week

Recovery Time: More Than Two Weeks

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

FOOD SHORTAGE: 124, Low Hazard

DEFINITION: A situation where the normal distribution pattern and/or the timely delivery of foodstuffs to retail establishments for normal consumer demand is interrupted for a substantial period of time.

Potential Impact: Throughout a Large Region

Cascade Effects: Some Potential

Frequency: A Rare Event

Onset: Several Days Warning

Hazard Duration: Four days to One Week

Recovery Time: Less Than One Day

Impact:

- Serious Injury or Death is Likely, but not in Large Numbers
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

MAJOR COUNTYWIDE HAZARDS:

HAZARDS THAT OCCUR WITH NO WARNING *
TERRORISM
DAM FAILURE
HAZMAT (FIXED SITE)
BLIGHT
WATER SUPPLY CONTAMINATION
UTILITY FAILURE
FIRE
HAZMAT (IN TRANSIT)
INFESTATION
EARTHQUAKE
OIL SPILL
TRANSPORTATION ACCIDENT
EXPLOSION
CIVIL UNREST
WILDFIRE
STRUCTURAL COLLAPSE
LANDSLIDE
RADIOLOGICAL (IN TRANSIT)

HAZARDS THAT OCCUR MOST OFTEN ~
WINTER STORM (SEVERE)
UTILITY FAILURE
FIRE
OIL SPILL
WILDFIRE

HAZARDS THAT PRESENT THE GREATEST THREAT TO LIFE+
TERRORISM
DAM FAILURE
HAZMAT (FIXED SITE)
WATER SUPPLY CONTAMINATION

*No warning was selected from the Onset Tab.

~A frequent event was selected on frequency Tab.

+Serious injury and death in extremely large numbers was selected from the Impact Tab.