Local Mitigation Strategy

for

Seminole County

and its

Municipalities

SEMINOLE COUNTY
FLORIDA'S NATURAL CHOICE

2015-2020

Contents

Executive Summary

Seminole County is threatened by a variety of different types of natural, technological, and human-caused hazards. These hazards endanger the health and safety of the community, jeopardize its economic vitality, and threaten the quality of its environment. The public and private sectors of Seminole County have joined together to create the Seminole County Local Mitigation Strategy Working Group (LMS Working Group) to undertake a comprehensive planning process. This process analyzes the multitudes of hazards that affect Seminole County while developing effective mitigation measures to lessen the overall impact to the community.

This document encompasses a multi-jurisdictional approach to hazard mitigation planning. The planning process was conducted through the coordinated and cooperative effort of several local governments including City of Altamonte Springs, City of Casselberry, City of Lake Mary, City of Longwood, City of Oviedo, City of Sanford, City of Winter Springs, and Seminole County. Seminole County's seven municipalities have formally adopted the current Seminole County Local Mitigation Strategy. Upon approval of this updated Seminole County Local Mitigation Strategy a new resolution will be formally adopted.

The LMS Working Group has also conducted a significant amount of research to identify the hazards threatening Seminole County in order to estimate relative risk posed to the County by those hazards. For each hazard, an impact analysis was completed that evaluated impacts to the public, property, environment, and program operations. A consequence analysis was completed that examined the potential consequences in relationship to the public, responder safety, continuity of operations, property/facilities/infrastructure, environment, economic and public confidence in the jurisdictions governance[1]. The information in this document has been used by the LMS Working Group to prioritize its planning efforts to assess the vulnerabilities of the facilities and neighborhoods of Seminole County to the impacts of future disasters. The LMS Working group has worked to identify, justify and prioritize specific proposals for projects and programs that will avoid or minimize these vulnerabilities.

Proposed projects and programs aimed at reducing the impacts of future disasters are called "mitigation initiatives" in this document. Mitigation initiatives have been developed, and will continue to be developed by the LMS Working Group as new hazard research is conducted; risk levels are increased, and as resources and opportunities become available. Implementation of this strategy is essential and will continue to help make participating communities more resistant to the effects of major disasters.

This strategy will continue to be updated and expanded in the future to encompass changes in characteristics of hazards, experiences with disasters, and changing conditions of participating jurisdictions. The update process and future editions of the mitigation plan issued will also be used to continue to inform and involve the general public and other interested groups to fully participate in making the community more resistant to the impacts of future disasters.

[1] EMAP Standard 4.3.1/4.3.2

General

Introduction

Mitigation is any action taken to permanently reduce or eliminate the risk to people and their property from the effects of hazards. The key to successful hazard vulnerability reduction through mitigation is to implement a well conceived planning process. The LMS Working Group is established to ensure the public, private, and non-profit sectors of the community more resistant to the impacts of future disasters. The LMS Working Group has been tasked with a comprehensive evaluation of the vulnerabilities of Seminole County for all-hazards in order to identify ways to make the community more resilient to the impacts of a disaster.

Purpose

The primary purpose of the LMS is to establish an on-going process that encourages hazard mitigation as part of a daily routine for Seminole County. The LMS process encouraged Seminole County to assess its vulnerabilities to all types of hazards, identify a comprehensive list of goals, objectives, plans, programs and projects in order to decrease or eliminate the effects of the identified vulnerabilities and then finally prioritize the implementation of the selected initiatives.

Planning Process

The LMS Working Group is comprised of all local government agencies within Seminole County, business leaders, community organizations, inter-faith groups, healthcare facilities, school board personnel and citizens.

On a periodic basis, the LMS Working Group solicits the continuing involvement in mitigation planning by each jurisdiction in Seminole County. Jurisdictions are encouraged to identify agencies and organizations that should represent the jurisdiction on the LMS Working Group. Written solicitation was issued by Seminole County's Office of Emergency Management to local jurisdictions, adjacent counties, community and faith based organizations to attend a LMS Planning Team Kick-Off Meeting on March 17, 2014. Subsequent meetings were held on May 29th, July 15th, October 9th, and November 13th, 2014. Organizations not directly associated with the state, regional or local governments, such as large businesses and volunteer agencies and the public are solicited on an annual basis to join the planning process, as well as periodic public information efforts through the LMS Working Group. Organizations that respond and attend the meetings are considered to be participants in the Seminole County LMS Planning Process and requested to engage in the meetings and planning activities necessary to develop, maintain and implement the plan.

Participating Organizations

Participating local government agencies are registered as organizations under the appropriate jurisdiction, as are other groups, associations, districts, regions, and agencies, both public and private, which serve the jurisdiction they are headquartered in.

Seminole County's multi-jurisdictional planning approach enables all interested organizations, groups, and agencies, regardless of their total number, to be directly and actively involved in the planning within a

limited number of jurisdictions. Seminole County has involved seven jurisdictions defined as active participants in the planning process.
The active planning participants include: City of Altamonte Springs, City of Casselberry, City of Lake Mary, City of Longwood, City of Oviedo, City of Sanford, City of Winter Springs, and Seminole County.

This is an all-inclusive list for all the entities within Seminole County required to approve the LMS as a multi-jurisdictional plan. Participation will be identified by attendance and active participation in the process. Participating entities are the same jurisdictions that participated in the 2010 plan update and they have been consistently active in the process since that time.

This LMS Working Group has had participation by all of the entities listed below to the extent that they have attended the meetings, participated, and contributed to the update process of gathering data, providing insight, and information all in the effort to better mitigate Seminole County.

Name	Agency	Position
Frankie Lumm	American Red Cross	Disaster Program Manager
Phil Riebel	Citizen	Citizen
Benjamin Korson	Citizen	Citizen
Lucius Cushman	Citizen	Citizen
James T. Van Horn	Citizen	Citizen
Michelle Bernstein	Citizen	Citizen
Anthony Apfelbeck	City of Altamonte Springs	Fire Marshall/Building Official
Danielle Marshall	City of Altamonte Springs	Division Director
Mark Gisclar	City of Casselberry	Public Works Director
Kenna Henry	City of Casselberry	Public Works Management Analyst
Danielle Koury	City of Lake Mary	Stormwater Engineer
David Dovan	City of Lake Mary	Assistant Public Works Director
Paul Ross	City of Longwood	Lieutenant
Cindy Carbonell	City of Longwood	Battalion Chief
William Gulbrandsen	City of Longwood	Fire Chief
David Waller	City of Oviedo	Operations Manager
Lars White	City of Oviedo	Fire Chief
Brett Hart	City of Sanford	Consultant
Brian Sharbono	City of Sanford	Firefighter/ Paramedic
Zynka Perez	City of Winter Springs	Stormwater Utility Manager
Lloyd Frausel	DOH- Seminole	Operations and Management Consultant
Tommie Suggs	Florida Forest Service	Forest Area Supervisor
Eugene McDonald	Florida Forest Service	Forest Area Supervisor
Cliff Frazier	Florida Forest Service	Wildfire Mitigation Specialist
John Murphy	HarvestTime International	CEO
Eric Alberts	Orlando Health	Emergency Preparedness Manager
Keila Walker	Orlando Health	Emergency Preparedness Specialist
Tony Coleman	Seminole County Building & Development	CRS Coordinator/ Floodplain Administrator
Ken York	Seminole County Economic Development	Program Manager
Alan Harris	Seminole County Emergency Management	Emergency Manager
Nikolai Mon	Seminole County Emergency Management	Intern
Josh Sheldon	Seminole County Emergency Management	Intern
Tina Dantuma	Seminole County Emergency Management	Intern
Steven Lerner	Seminole County Emergency Management	Mitigation-Recovery Coordinator
Shirley Exner	Seminole County Emergency Management	Senior Planner
Jennifer Tart	Seminole County Emergency Management	Emergency Management Specialist
Mark Flomerfelt	Seminole County Engineering	Professional Engineer
Robert Beck	Seminole County Fire Department	Division Chief

Jim Duby	Seminole County Natural Lands	Manager, Natural Lands
Michael Rigby	Seminole County Public Schools	Facilities Planning/Operations Planner
Marie Lackey	Seminole County Public Works	Public Works Outreach Coordinator
Rolando Raymundo	Seminole County Public Works	Professional Engineer
Bill Litton	Seminole County Sheriff's Office	Emergency Management Coordinator
Deb Lightfoot	Seminole H.E.A.R.T.	Board of Director's
Maxine Oliver	Seminole State College	Safety, Security, Risk Mgmt. Director

Public Participation

Several public information activities have been undertaken to explain the mitigation planning process to the community and to solicit their input and involvement in the planning process, as well as provide mitigation awareness and educational information. The LMS Working Group welcomes public input to the planning process, and fosters public participation through the issuance of legal notices and holding public meetings. For the update of this document, a link was added to www.prepareseminole.com that continues to allow the public to submit input and comment for the LMS update. Social media was also utilized through postings on both Facebook and Twitter to allow citizens the opportunity to read the plan and comment via email to the LMS Coordinator.

The LMS will be available via the website for continued public comment. A public announcement on www.prepareseminole.com will be posted to offer another public opportunity for comment and input prior to the adoption hearing.

Once the plan is adopted the approved plan will continue to be made available via the website for future review and comment. Public comment on the plan will continue to be encouraged on www.prepareseminole.com. In addition to seeking public comment and input to the overall planning process and the draft plan, many of the participating agencies and organizations in the LMS Working Group individually conduct efforts to inform the public about the impacts of disasters, hazard mitigation and the mitigation planning process.

Upcoming community outreach efforts will focus on including the precepts of mitigation in current public information activities, and to make the public aware of this planning process, its goals and objectives, and opportunities for public input at every possible occasion.

The Seminole County LMS Working Group will continue efforts to develop and implement a year-round program to engage the community in the LMS planning process and to provide then with mitigation-related information and educations. These efforts will be to continually invite public comments and recommendations regarding the mitigation goals for the community, the priorities for the planning, and the unique needs of each community for mitigation-related public information.

Update Process

The current LMS Working Group, participants and attendees utilized the *Local Mitigation Plan Review Guide* (FEMA, 2011), to review the 2010 LMS. Based upon the review it was determined that the plan updates would need to meet the federal and state LMS Plan requirements. The LMS Working Group determined the existing LMS was not satisfactory to provide the foundation of a county-wide mitigation program. A complete review of every section of the Seminole County LMS was conducted and the plan was redeveloped using the *2014 Florida Local Mitigation Strategy Crosswalk* and the *Disaster Mitigation Act of 2000*.

During the 2014 Seminole County LMS update the following actions were taken by the LMS Working Group:

A LMS revision kick-off meeting with the LMS Planning Team was conducted to review and analyze each section of the plan.

It was determined that all sections reviewed needed to be revised and updated. The following sections were reviewed:

General Section:
This section includes the plan introduction, purpose, and planning process. This section was revised to reflect the current approach and processes of the Seminole County LMS Working Group.

Risk Assessment Section:
This section includes the hazard analysis and assessing the vulnerabilities of Seminole County. This section was updated to reflect current documented history and outlook of the hazards that could impact Seminole County. Each section was revised to reflect updated hazard events and to reflect current vulnerabilities. The Seminole County LMS Working Group determined for continuity purposes the LMS hazards would remain consistent with the Seminole County Comprehensive Emergency Management Plan (CEMP).

Mitigation Goals Section
This section includes the mitigation goals, the project list, National Flood Insurance Protection (NFIP) compliance data, and the process for mitigation project implementation. Each section was revised to reflect current updated goals for the LMS, the current project list, updated NFIP data, and the revised process for the implementation of the mitigation projects.

Plan Maintenance Section
This section includes the monitoring and evaluation process for the LMS, the update process for the LMS, and how the LMs in implemented through existing plans and procedures. This section was revised to reflect the current processes for the monitoring, evaluation, and update for the LMS, The implementation of existing plans and processes for LMS implantation was reviewed and revised to reflect the current implementation process.

LMS Working Group By-Laws Appendix
The LMS Working Group By-Laws were rewritten to reflect the current policies and guidelines of the Seminole County LMS Working Group.

LMS Working Group Operating Procedures Appendix
The LMS Working Group Operating Procedures were rewritten in the By-Laws to reflect the current operating procedures of the LMS Working Group.

The draft revisions of the LMS sections that required updates were disseminated to all LMS Working Group members for review and comment.

A follow-up meeting will be conducted to review the LMS final draft and approve all revised sections.

The LMS Working Group will continue to send out annual written invitations to everyone who may have a stake in the process, and will include any additional people or groups as needed and identified, as required by Florida Administrative Rule 27P-22.

Risk Assessment

Hazards

The technical planning process begins with hazard identification. In this process, the LMS Planning Team and representatives of individual jurisdictions identify all of the natural, technological and human-caused hazards that could threaten Seminole County. The following hazards were selected by the LMS Planning Team for the 2015-2020 LMS:

- Agriculture (Exotic Pests and Disease)
- Civil Disorder
- Critical Infrastructure Disruption
    - Communication
    - Power
    - Utility
- Cyber Security/Cyber Attack
- Disease and Pandemic Outbreak
- Drought and Water Shortage
- Earthquakes
- Extreme Heat
- Financial Collapse
- Fires
- Flooding
- Hazardous Materials Accident (Fixed Site and Transportation)
- Mass Gatherings/ Planned Events
- Mass Migration/ Repatriation
- Severe Weather
    - Hail
    - Lightning
    - Micro-bursts
    - Thunderstorms
- Sinkholes/Land Subsidence
- Terrorism (Chemical Biological Radiological Nuclear Explosive)
- Tornadoes
- Transportation Accident
    - Aircraft
    - Rail
    - Mass Casualty Incident
- Tropical Cyclones
    - Hurricanes
    - Tropical Storms
- Violent Act (Non- Terrorism)
- Winter Storm/ Freezes

As hazards are identified for Seminole County, participants can make an estimate of the relative risk each possesses to the community. This section details the natural and human-caused hazards to which Seminole County is vulnerable.

The Seminole County LMS Planning Team has incorporated hazard history that was available. In the future, the LMS Planning Team will incorporate continued hazard history for inclusion in the LMS.

Relative Risk

Each hazard described in this section is ranked by level of relative risk based on probability and severity. These scales are defined below:

Probability Scale- based on historical data this scale takes into effect the likelihood that Seminole County will be impacted by the hazard within a given period of time

- 0=None- Although the hazard is noted, no previous occurrence has been recorded and the hazard is considered no threat to the jurisdiction
- 1=Low- Some potential for the hazard to exist once every 10 years or more
- 2=Moderate- Potential for the hazard to exist once every 5-10 years
- 3=High- Potential for the hazard to exist once every 1-5 years

Severity Scale- based on the magnitude of the hazard and the on-going mitigation measures

Magnitude

Human Impact (Possibility of death or injury)

- 0=None- No possibility of death or injury
- 1=Low- Some potential for death or injury
- 2= Moderate- Potential for death or injury
- 3=High- Strong potential for death or injury

Property Impact (Physical losses and damages)

- 0=None- No possibility of physical loss and/or damage
- 1=Low- Some potential for physical loss and/or damage
- 2= Moderate- Potential for physical loss and/or damage
- 3=High- Strong potential for physical loss and/or damage

Spatial Impact (Amount of geographic area affected)

- 0=None- No geographic area affected
- 1=Low- Up to 25% of total land mass affected
- 2= Moderate- 25%-50% of total land mass affected
- 3=High- 50% or more of total land mass affected

Economic Impact (Interruption of business services)

- 0=None- No interruption of business services
- 1=Low- Some potential for business service interruption
- 2= Moderate- Potential for business service interruption
- 3=High- Strong potential for business service interruption

Mitigation

Preparedness (Specialized Plans)

- 0=None-N/A
- 1=High- Specific plan dedicated to this hazard
- 2= Moderate- Hazard is addressed in other plans
- 3=Low- No specific plan for hazard

Training and Exercising (Multi-year Training and Exercise Planning)

- 0=None- No training or exercising on this hazard
- 1=High- Yearly training and exercising
- 2= Moderate- Training and exercising completed every other year
- 3=Low- Rarely trained or exercised

Logistics (Availability of specialized equipment, teams or support)

- 0=None- No specialized equipment, teams, or support
- 1=High- Highly specialized equipment, teams or support
- 2= Moderate- Minimal specialized equipment, teams or support
- 3=Low- Very few teams, equipment and support available

Relative Risk Calculation/Scale

Probability x (Magnitude-Mitigation) = Relative Risk

Low= 0%-30%	Medium= 31%-60%	High= 61%+

Hazard Analysis

Agriculture (Exotic Pests and Disease)

Relative Risk: Medium

Agriculture incidents in Seminole County are quite rare and historically have not caused much damage to the community. In coordination with the Seminole County's Agriculture Extension Office, Emergency Management is made aware of incidents involving crops and exotic pest outbreaks that may pose a threat to the community. Historically, Seminole County experienced two major pest infestations. In 1982, the City of Longwood experienced a toad infestation due to heavy rains. In 1999, the City of Altamonte Springs experienced mice infestations which lead to some homeowners finding up to 100 mice in their homes.

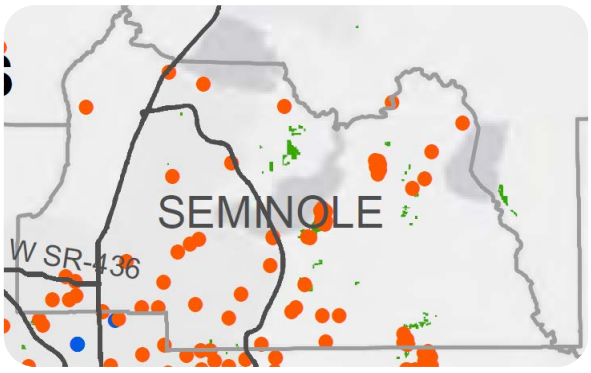


Figure 1: Citrus Greening (HLB)/Citrus Canker in Seminole County

On-going crop diseases present a threat to the agriculture community in Seminole County. Although limited, Citrus Greening (HLB) and Citrus Canker both pose a threat to the orange groves in Seminole County. Figure 1 notes instances of Citrus Greening samples taken in Seminole County as of March 31, 2014. Citrus Canker has not been detected in Seminole County since 1995; however, Canker is closely monitored by the Florida Department of Agriculture and Consumer Services- Division of Plant Industry for its potential impact on the citrus industry.

Crop	Acres
Vegetables	41
Citrus	504
Orchards	22
Berries	32
Nurseries	1,1113
Greenhouses	14
Cattle	17,219
Timber	1,533

Figure 2: Total crops in Seminole County

Agriculture incidents pose a medium threat to Seminole County. Consequences noted for an agriculture incident include; economic loss, quarantine of livestock, infectious disease, disposal of diseased livestock/ agriculture stock, mass feeding, mass care, and mass casualty.

The spatial extent of damage as a result of an agriculture incident is noted as minor as the incident is expected to encompass less than 25% of the total land mass of Seminole County. Much of the agricultural foundation of Seminole County is located in the northwestern portion of the county but the effects of an agriculture incident may impact the entire county.

The Local Mitigation Strategy recognizes that with a changing climate, there is the potential for an increasing risk of environmental impacts from exotic pests and disease and that future mitigation and adaptation strategies related to this hazard should be considered.

Civil Disorder

Relative Risk: Medium

Events of civil disorder are classified as armed violence, riots, protests, and threats against military or the government. The proper planning and prevention methods aid in the mitigation of civil disorder events. For threats of civil disorder utilizing armed violence, it is likely that a joint jurisdictional management of operations will take effect, coordinated at the County level between the Sheriff's Office, Florida Department of Law Enforcement (FDLE), and the Office of Emergency Management.

Figure 3: Protest at Fort Mellon Park for the death of Trayvon Martin

Although a rare occurrence, on February 26, 2012, Seminole County was impacted by the effects of the highly publicized shooting of 17 years old, Trayvon Martin. In the aftermath of the shooting, a number of high-profile citizens made public comments or released statements causing the public to stage protests, students to engage in school walk outs, and thousands of planned rallies across the nation. A coordinated effort amongst public safety officials in Seminole County led to a successful operation. The Seminole County EOC provided support for seven weeks in the trial phase of the event which is noted as the longest EOC activation in the State of Florida for a non-weather related incident.

Buildings, infrastructure, and critical facilities have some potential for impact by this hazard. However, impact areas are undefined so exact value of dollar loss cannot be determined.

Consequences that can be associated with civil unrest incidents are; transportation/traffic issues, public health, law enforcement/security issues, impact to social services, and impact on the jail and detention facilities.

The spatial extent of damage as a result of a civil unrest incident is noted as minor as the incident is expected to encompass less than 25% of the total land mass of Seminole County.

Critical Infrastructure Disruption (Communication, Power, Utilities)

Relative Risk: Medium

Numerous facilities in Seminole County are classified as critical infrastructure. Disruption of these facilities could severely impact the economic and social well being of the citizens and patrons of Seminole County. A recent global research study conducted by the Ponemon Institute concluded that 67% of critical infrastructure providers reported at least one security breach in the past 12 months which caused a disruption of operations or a loss of sensitive information (Ponemon Institute, 2013). Several categories of critical infrastructure disruption are noted such that communication, power, and basic utility disruption will each, individually have different impacts and consequences on the community. Collectively, they are analyzed, as the mitigation measures taken to protect these critical facilities would be similar.

Disruption to these facilities by threat or attack will be dealt with utilizing the Seminole County Terrorism Annex.

Buildings, infrastructure, and critical facilities have some potential for impact by this hazard. However, impact areas are undefined so exact value of dollar loss cannot be determined.

Consequences that can be associated with critical infrastructure disruption are; notification and warning, public information, law enforcement/traffic control, communications failure, civil unrest and mass care.

The spatial extent of damage as a result of critical infrastructure disruption is noted as minor as the incident is expected to encompass less than 25% of the total land mass of Seminole County.

Communication

Communication disruption is classified as any disruption of public safety communications equipment necessary to maintain life safety for Seminole County. Communication disruption may occur in the failure of radio towers, interoperable communication systems, and Public Safety Answering Points (PSAP). Seminole County currently encompasses radio communication towers and Public Safety Answering Points that assist the community and first responders in responding to emergencies. Seminole County maintains an 800 MHz P25 digital communications system. Failure of major communications systems could cause a reduced response time to emergencies and severely impact the overall operations of an emergency.

Power

There are two major power companies that service Seminole County, Duke Energy and Florida Power and Light. Major disruption to power service could be caused by severe weather or damage to the power grid. In this event, officials would have to coordinate response to critical infrastructure and persons with special needs. Shelters may be required for special needs clients during long term outages. The Seminole County Office of Emergency Management maintains a critical infrastructure list for priority power restoration.

Utilities

Additional utilities in Seminole County include water facilities, sewer/solid waste, cable providers, telephone companies and cellular phone carriers. A loss to major utilities will cause a major disruption in services for the community and overall could pose a threat to a quick recovery to Seminole County. As a result, plans have been developed to ensure a continuity of operations for local government to provide a quick return of services for the residents.

Cyber Security/Cyber Attack

Relative Risk: High

Over the past decade the nation as a whole has seen an increase in cyber attack which is defined as any offensive maneuver employed by individuals or whole organizations that target computer information systems, infrastructure and/or networks, by means of malicious acts to either steal, alter, or destroy a specified target. Seminole County's Office of Emergency Management and Seminole County's Information Services Department strives to ensure the safety and security of the technical infrastructure within the County. In doing so, threat analyses are completed to note vulnerabilities in the system and develop corrective actions to mitigate these attacks in the Seminole County Information Security Policy. The Internet Crime Complaint Center (IC3) has reported over 781 million in monetary value lost in just 2013, increasing by 48 percent compared to 2012. The average loss per victim in Florida was about $2,750 in 2013. To prevent this crime, laws have been enacted specifically the Cybercrime Prevention Act of 2012. The focus in the future will be to ensure that Seminole County Information Services in partnership with various public safety agencies conduct annual exercises and monitor the current threat levels of cyber attack for county informational technology infrastructure.

Buildings, infrastructure, and critical facilities have some potential for impact by this hazard. However, impact areas are undefined so exact value of dollar loss cannot be determined.

Consequences that can be associated with cyber attack are; law enforcement/security issues, impact to social services, communications failure, loss of critical information, economic loss and civil unrest.

The spatial extent of damage as a result of a cyber attack incident is noted as minor as the incident is expected to encompass less than 25% of the total land mass of Seminole County.

Disease and Pandemic Outbreak

Relative Risk: High

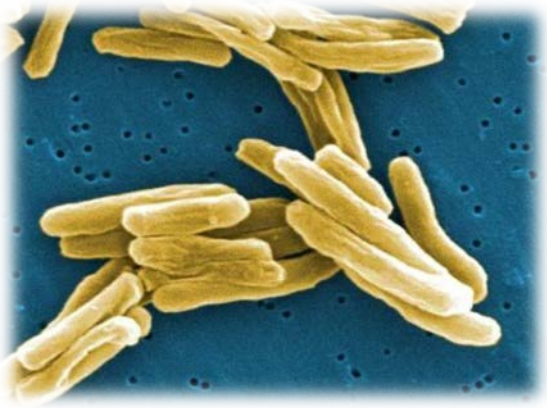


Figure 4: Microscopic image of Tuberculosis

The Department of Health is the lead agency if an outbreak occurs. The Florida Department of Health-Seminole County (ESF-8 Health / Medical) has been training employees on their duties to include epidemiology surveillance, public outreach, distribution of pharmaceuticals, and tracking the trends of possible outbreaks throughout the Country and World. The Department of Health has plans in place, including: the use of the Strategic National Stockpile, how to identify the outbreak, and how to determine the particular diseases. A Memorandum of Understanding (MOU) has been signed with Seminole County Government and the School Board on the use of the schools as Points of Dispensing. These facilities would be used if a major distribution of pharmaceuticals were required to prevent the spread of a disease or assist persons if an outbreak has already occurred. Previous events in Seminole County have caused the activation of specific operational plans to respond to outbreaks of various diseases and bacteria.

Seminole County has experienced some significant occurrences of diseases such as H1N1, Influenza, Norovirus, Tuberculosis, Rabies, Chikungunya fever, and West Nile virus.

The Seminole County Office of Emergency Management and Department of Health continue to monitor pandemic and disease outbreaks for their potential to harm the citizens of Seminole County. Quarantine and isolation are both methods that may be utilized to help decrease the potential for spread of any disease. Public outreach is a major component of this activity. The Department of Health as the lead agency would provide oversight for a Joint Information System to provide isolation and quarantine information.

Buildings, infrastructure, and critical facilities have some potential for impact by this hazard. However, impact areas are undefined so exact value of dollar loss cannot be determined.

Consequences that can be associated with disease and pandemic outbreak are; law enforcement/security issues, infectious disease control, impact to social services, economic loss and mass care.

The spatial extent of damage as a result of disease outbreak is noted as high, the incident is expected to encompass more than 50% of the total land mass of Seminole County.

Drought and Water Shortages

Relative Risk: High

Extent: D4- Exceptional Drought (Drought Severity Classification)

A drought is noted as a period of unusual dry weather that persists long enough to cause serious problems such as crop damage and/or water supply shortages. There are four basic approaches to measuring drought (Wilhite, 1985):

Meteorological- defined usually on the basis of the degree of dryness (in comparison to some "normal" or average amount) and the duration of the dry period.

Agricultural-drought to agricultural impacts, focusing on precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits, reduced groundwater or reservoir levels.

Hydrological- associated with the effects of periods of precipitation (including snowfall) shortfalls on surface or subsurface water supply (i.e., streamflow, reservoir and lake levels, groundwater).

Socioeconomic-associated with the supply and demand of some economic good with elements of meteorological, hydrological, and agricultural drought.

The severity of the drought depends upon the degree of moisture deficiency, the duration, and the size of the affected area. In the past, most of Central Florida has suffered from droughts to the extent that unnecessary water use has been curtailed by legislation. This curtailment, imposed by local governments and the St. Johns Water Management District, was accomplished by water restriction use during designated hours and alternate days. Many natural hazards can arise from the effects of drought. Historically, drought in Florida has been known to contribute to wildfires, sinkholes, and major water shortages between the months of November-April. Drought is measured on a scale of 0-4 displayed in the table below:

Scale	Severity
D0	Abnormally Dry
D1	Drought- Moderate
D2	Drought- Severe
D3	Drought- Extreme
D4	Drought- Exceptional

One of the most severe cases of long term drought in Florida occurred from October, 2010 and lasted until June of 2012 in which a major portion of the state displayed D3- Drought Extreme conditions. During this extensive period, the two month period of April and May of 2012, showed the highest level of drought

concern with portions of the state under a D-4 Drought Exceptional condition (The National Drought Mitigation Center, 2014).

One of the major bodies of water providing a water source for much of our crops and agriculture territory in Seminole County is the St. Johns River. During long periods of drought, a disruption in the watering cycle can have potentially damaging effects including substantial crop loss in the northwestern portion of the County. In addition to the crop loss and live stock reductions, drought in Seminole County is associated with increase in wildfire threat which in turn, places both human and wildlife populations at a higher risk.

In partnership with County and municipal staff and the St. Johns River Water Management District, a contingency plan is in place to restrict water use across the county in an effort assist with water conservation efforts during periods of drought.

Some direct impacts related to drought include reduced crop production, increased fire hazard, reduced water levels at major lakes and rivers, damage to fish habitat, and income loss for the agriculture industry. These impacts have been recorded as a result of historic events including the extreme drought conditions of 2010-2012.

The Office of Emergency Management regularly monitors the National Oceanographic and Atmospheric Administration, National Weather Service, United States Geological Survey, and the Southeast River Forecast Center for water, river, and lake levels. Activation of public information messages may be necessary if water levels become dangerously low. Seminole County and all of its municipalities may be affected by drought conditions. Structures are not vulnerable to the consequences of drought; therefore do not have a potential dollar loss.

Consequences associated with drought can be public health, agricultural loss, economic recovery assistance programs, mass care, and notification and warning.

The Local Mitigation Strategy recognizes that with a changing climate, there is the potential for an increasing risk of environmental impacts from drought and water shortages and that future mitigation and adaptation strategies related to this hazard should be considered.

Earthquakes

Relative Risk: Low

Extent: 5.0 Moderate (Richter Scale)

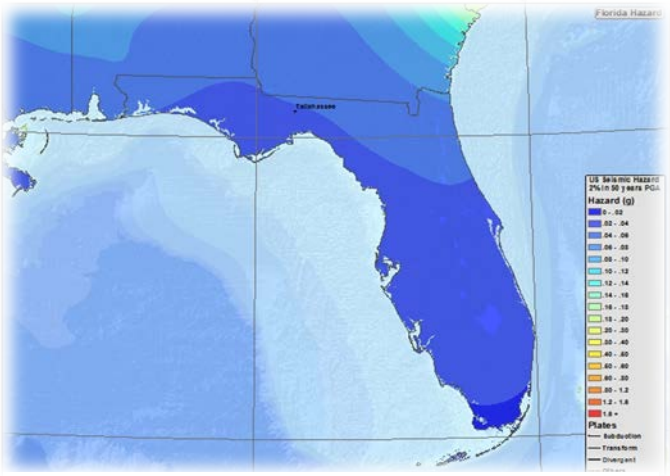


Figure 5: Displays Florida's peak ground acceleration levels in relationship to potential seismic activity

An earthquake is a sudden movement of the Earth's lithosphere (its crust and upper mantle). Earthquakes are caused by the release of built-up stress within rocks along geologic faults or by the movement of magma in volcanic areas. They are usually followed by aftershocks.

Seminole County is located well outside of any areas identified by the United States Geological Survey as having seismic risk. The peak ground acceleration (PGA) with a 10% probability of exceedance in 50 years for Seminole County is 0% (lowest potential for seismic group shaking events). FEMA recommends that earthquakes only be further evaluated for mitigation purposes for an area with a PGA of 3% or more.

The probability of an earthquake is very low; however the impact would be major throughout the county. No earthquake has ever been recorded in Seminole County.

An earthquake would affect all jurisdictions within the County.

Buildings infrastructure and critical facilities have some potential for impact by this disaster. However, because impact areas are undefined, an exact value of dollar loss cannot be determined.

While the risk to earthquake is not usually associated with Florida, Seminole County's vulnerability to earthquake impact is similar to that of most jurisdictions. Depending on the severity, structures and critical facilities are susceptible to damaged by earthquake shock. Current Florida building code does not provide for earthquake building standards. Therefore, no buildings in Seminole County are built to completely withstand an earthquake of any magnitude. Historically, earthquakes have occurred around the State of Florida as a whole and no major fault lines exist around or through Seminole County. In addition to the physical hazards of structural collapse, utilities disruption can cause a public health concern; particularly for elderly and lower income populations. Economic impact would be felt through reconstruction costs, as well as damage and disruption of local businesses.

Earthquakes are measured on a scale of less than 2.0 to 9.0 and greater based on the Richter magnitude scale. The Richter scale defines magnitude based on the ratio of the amplitude corresponding to the release of energy from the earth.

Due to the low probability of occurrence, this hazard will not be further evaluated in this document related to vulnerability to people, property, critical infrastructure, environment, economy, or response operations.

Extreme Heat

Relative Risk: Medium

Extent: 10 consecutive days of 99°F or higher

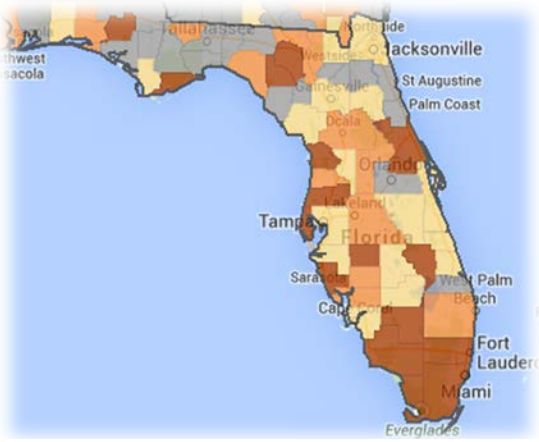


Figure 6: Seminole County is expected to have an average of 13.8 summer days per year of extreme heat (Natural Resources Defense Council).

Heat-related deaths and illness are preventable yet annually many people succumb to extreme heat. According to NOAA's National Weather Service heat is the number one weather-related killer in the United States. In 2010, 138 people died as a result of extreme heat, up significantly from 45 fatalities in 2009. This number is well above even the 10-year average for heat related fatalities, 115.

The National Weather Service statistical data shows that heat causes more fatalities per year than floods, lightning, tornadoes and hurricanes combined. In 2010, the most dangerous place to be was in a permanent home, likely with little or no air conditioning, where a reported 64 deaths (46%) occurred. The next most dangerous identified location was outside or in an open area, where 26 people (19%) succumbed to heat. Extreme heat most strongly affected adults aged 60-69, 31 (22%) and 50-59 years old, 22 deaths (16%) as well as seniors 80-89, 20 deaths (14%). Typically, seniors are the group most affected by heat. Once again, many more males 86 (62%), than females, 47 (34%), were killed by heat.

Temperatures that hover 9 degrees or more above the average high temperature of 90°F for the region and last for 3 or more consecutive days are defined as extreme heat. Since 2010 there have been no recorded extreme heat events in Seminole County. The last known events took place in 2004 and during the wildfire season of 1998. There were no recorded major impacts of the extreme heat events of 2004 and 1998 aside from widespread wildfires across the state. A major impact to these extreme heat events included the monitoring of heat and drought indexes for the implantation of county wide burn bans. Public information activities are also put in place during extreme heat events that remind people of the risk of heat exhaustion. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground. Excessively dry and hot conditions can provoke dust storms and low visibility. Droughts occur when a long period passes without substantial rainfall. A heat wave combined with a drought is a very dangerous situation. The highest recorded temperature for Seminole County was on June 1, 2004 at 101°F. To the left is a chart which ranks the top 10 hottest days on record in Seminole County.

Seminole County's Hottest Days		
Rank	Temperature	Date
1	101	6-01-2004
2	100	6-14-2010
3	100	6-19-2004
4	100	5-24-1953
5	100	6-25-1951
6	100	7-06-1951
7	100	6-05-1951
8	100	6-01-1945
9	100	5-31-1945
10	100	6-15-2011

Figure 7: Orlando-Sanford AP, FL- Data from NWS Melbourne

Extreme heat has no impact on the physical loss of building infrastructure, critical facilities, and housing of vulnerable populations. The value of potential dollar loss from impact to community is not relevant.

Extreme heat events affect all jurisdictions within the county equally.

With its location in Central Florida, Seminole County is susceptible to periods of extreme heat. The greatest vulnerability to extreme heat events is the public health of the citizens of Seminole County. While anyone can be affected by extreme heat, the most vulnerable are the elderly, lower income, and homeless populations. Seminole County currently implements a cooling station plan in the event of an extreme heat event. One of the great challenges to implementing this plan would be notification and transportation of individuals to cooling facilities that do not have means of transportation. In a recent study conducted by the Florida Council on Homelessness, Seminole county recorded 842 citizens who were either homeless or staying in emergency housing. Seminole County School Board notes almost 2,000 students are homeless and 45% are now on free-reduced lunch. Based on current census data 13.8% of Seminole County's population is 65 years old or older. In addition to physical health risks (mainly heat stroke), extreme heat can also cause physiological strain. Higher electrical demand during extreme heat often causes power outages that further exacerbate the impact of the event. Extended periods of high heat can also have a negative impact wildlife and fishery habitats. Extreme heat does not normally impact infrastructure.

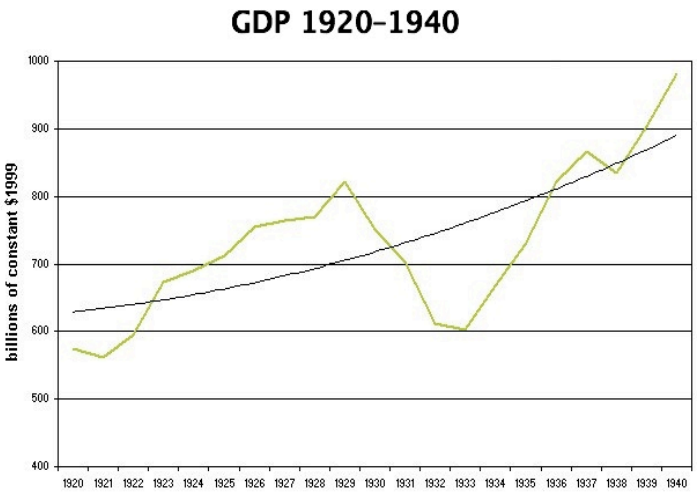
Consequences associated with extreme heat are notification and warning, economic disruption, mass care, economic recovery assistance program, and activation of the cooling plan.

The Local Mitigation Strategy recognizes that with a changing climate, there is the potential for an increasing risk of environmental impacts from extreme heat and that future mitigation and adaptation strategies related to this hazard should be considered.

Financial Collapse

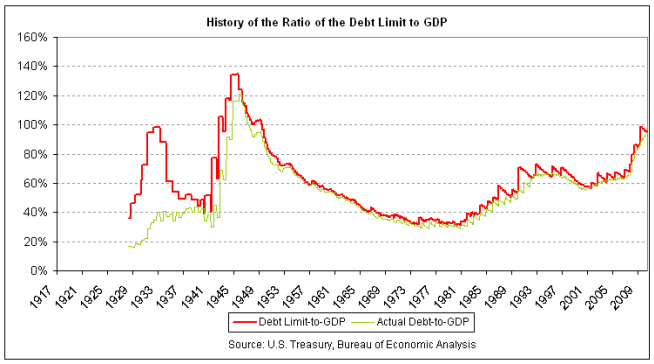
Relative Risk: Low

A financial collapse is a devastating breakdown of the national, regional, or territorial economy. The span of time these events last could range anywhere from months to decades while the lasting effects can be seen for a long time after. In our country, there were two notable financial collapses known as the Great Depression lasting from 1929 to the early 1940s and the Great Recession lasting from December 2007 to June 2009.



The Great Depression began on October 29, 1929, a day known as Black Tuesday. This happened due to a crash in the stock market. As a result, a chain of events were set off leading to the closure of many banks and the loss of many Americans money savings. Many aspects of life were altered from this event. 25% of the workforce was left jobless and wages were 80% of where they were before the Depression due to the closing of factories, businesses, and banks. During this same time, the Great Plains was from suffered the worst drought ever and combined with a lack of loans, the agriculture industry also faltered. After all of this happened, normal social aspects changed. Many Families were left homeless and bankrupt. During the desperate times, citizens did whatever they could to feed their family. There was a spike increase in crimes such as theft, and suicide became more common when workers lost their jobs. Education was also halted,

higher education seemed unattainable and many public schools closed down due to insufficient funds. Families also migrated west to find jobs creating many cultural changes we still see today. Eventually, America bounced out if the Great Depression with the help of Franklin D. Roosevelt's New Deal and the entrance into World War II.



Another time America entered a financial collapse was during the Great Recession. In December 2007, the 8 trillion dollar housing bubble burst. In the previous decade, borrowing money was cheap and easy and borrowing money led to economic growth. However, in 2008, no one wanted to give out loans halting the growth in the economy. As a result, many loaning agencies like AIG, Bear Stearns, Fannie May & Freddie Mac, Indymac Bank, and Washington Mutual filed for bankruptcy. This caused widespread panic because communities were concerned that if the loaning agencies had no money, the housing market would be at a standstill until a solution arose. After this, customer banks started closing and having to sell out to larger banks or the federal government. After all of this, stocks fell to 50% of their original value and unemployment peaked at 10%, the highest it has been in many years. Many Americans lost their jobs, houses, vehicles, businesses, and savings during this time. After many bailouts, programs, and time, the economy and job market are starting to recover but financial collapse remains a serious hazard to our communities.

Historically Seminole County has maintained a healthy level of reserves over the years to compensate for potential economic loss. In the event of financial collapse, the reserves for local governments will provide help to push through the tough economic period.

Fires/Wildfires

Relative Risk: Medium

Extent: 41,636 high risk acres

A wildfire is an uncontrolled fire that begins in areas of combustible vegetation, usually the countryside or a wilderness area.

Seminole County is susceptible to wildfires throughout the year, particularly during the months with minimal rainfall amounts. The major cause of brush fires and forest fires is due to residents not conforming to the burning regulations in effect and not considering the conditions as they exist (dry or windy conditions). The Spring is the highest period for lightning caused fires fueled by strong spring winds and lack of rainfall during the same period. In recent years, homes and businesses have been threatened by encroaching wildfires.

Due to the extremely hot and dry conditions during the summer of 1998, Central Florida became engulfed in wildfires unlike it had ever experienced before. Some of the more significant events of this wildfire

summer were the cancellation of the "Pepsi 400" NASCAR race on July 4th, the total evacuation of Flagler County and a statewide burn ban and fireworks ban. In Seminole County approximately 2,000 acres burned in the Geneva area and 12 residences were destroyed. There were no fatalities or injuries, but the dollar loss was approximately $1.1million.

Since 1998, the Seminole County Fire Department and Natural Lands have taken an aggressive stance to minimize fuel loads in the wildland/urban interface by conducting prescribed burns and elevated response to brush fires. Seminole County remains at high risk for brush fires.

Occasionally, the Southeast United States experiences unusually long drought caused by the "La Nina" weather pattern. Seminole County has experienced increases in severe brush fire activity during these weather cycles. The Seminole County Fire Department, Division of Forestry, local fire departments, and Natural Lands continue to provide public education to prevent forest fires.

Seminole County has written a Community Wildfire Protection Plan (CWPP) that will be included in the LMS. CWPP's are authorized by the Healthy Forests Restoration Act of 2003 and assist communities that have urban/wildland interface areas. Local partnerships include: Seminole County Fire Department, Seminole County Office of Emergency Management, Florida Division of Forestry, and Seminole County Natural Lands. The CWPP assesses Seminole County's wildfire vulnerability, available resources, organizational support, and provides a mitigation action plan. It also identifies and prioritizes areas for wild land fuel management, provides wildfire prevention, educational programs, incorporates best practices for building retrofitting and landscaping. The CWPP will also enhance the goals and strategies of the LMS

In April 2012, Seminole County officials declared a local state of emergency and put in place a burn ban for the entire county, meaning outdoor burning – such as campfires, bonfires or burning leaves or trash – was prohibited. The burn ban remained in effect until the average Keetch-Byram Drought Index in Seminole County dropped below 500. The index number is calculated by measuring the amount of moisture in the soil and ranges from zero to 800. The higher the number, the greater the chances for a severe wildfire outbreak.

Since 2010, there have been no major wildfire incidents that threatened Seminole County. The last recorded major incident occurred during the 1998 wildfire season. The last recorded major incident occurred in February of 2013. On February 13, 2013, a wildfire started in the Wekiva State Preserve area and quickly consumed 50 acres of land near Markham Woods community. These wildfires lead to the closing of some roadways and the notification to homes in the surrounding area. Luckily, this incident did not threaten any homes; however, across the country many homes are impacted and individuals forced to evacuate as a result of wildfires.

Wildfires in Seminole County and most of its municipalities impact wooded areas with low population density. Wildfires generally do not pose a high risk to major population areas.

Wildfires have the ability to affect all jurisdictions within Seminole County.

Buildings, infrastructure, critical facilities and housing for vulnerable populations have some potential for impact by wildfires. Since impact areas are undefined, exact dollar loss cannot be determined.

The spatial extent of a wildfire hazard is noted as low, as the hazard would not affect more than 25% of the total land mass of the county.

Some noted consequences of wildfires include; notification and warning, evacuation, property damage/loss, mass care, and economic recovery.

The Local Mitigation Strategy recognizes that with a changing climate, there is the potential for an increasing risk of environmental impacts from fires/wildfires and that future mitigation and adaptation strategies related to this hazard should be considered.

Flooding

Relative Risk: High

Extent: St. John's River above Lake Harney reaches 13.0 ft (Expect more than 3 feet of water in some areas)

Flooding is the covering of land by water that is not normally covered water. It occurs when an area is inundated beyond its natural or designed ability to drain and absorb this water.

Since much of Seminole County is flood prone, it is greatly affected by heavy rains. The areas most affected by heavy rains are located in the northeastern and eastern parts of the County. These residents are along the St. John's River, Econlockhatchee River, Lake Monroe, Lake Jessup and Lake Harney.

In August 2008, Seminole County suffered the effects of Tropical Storm Fay. This was the worst flood event in Seminole County recorded history, far passing the floods from three hurricanes in 2004 and the historic flooding event of 1924. Because of the storm's devastating rains, damaging winds, and extensive property and public damages, Seminole County received a Presidential Disaster Declaration on August 31, 2008. The Tropical Storm Fay event engaged a large number of agencies, organizations, and individuals from all levels of government and the private sector.

Seminole County was dramatically affected by the Tropical Storm Fay event. Damage included localized flooding, trees in homes, debris, major power outages, and roadway washouts during the initial event. Localized flooding was reported in the areas of Wekiva River in Altamonte Springs, Spring Oaks subdivision in Altamonte Springs, Lake Kathryn Estates in Casselberry, State Road 419 in Oviedo, Black Hammock in Oviedo, Fish Camp off Spring Avenue (State Road 434), Lake Mary Boulevard in Lake Mary, and Lincoln Heights neighborhood in Sanford. The large amount of rain from the Tropical Storm Fay event exceeded the ability of the existing drainage systems to move water to away from neighborhoods into streams and rivers. Over 150 homes were affected during the event.

Other major occurrences of flooding include September of 2004. During this flood, water levels began to reach flood stage on the middle basin mainly around Geneva and Sanford. Significant flooding occurred after Hurricane Jeanne with a record crest of 10.1 feet at the Lake Harney gage on the St. John's River. Roads, plant nurseries and homes along Lake Harney were flooded around the Geneva community.

In October of 2011, some of the same flooding impacts were felt from long periods of heavy rain. During this time, flood warnings were issued in the Lake Harney area. The flood caused many roads to become impassable and warranted the closing of Mullet Lake Park.

In September of 2014, long periods of rain caused major flooding along Geneva roadways, making many of them impassable. Sandbag operations were implemented in order to protect many residential structures from impending flood damage of the St. Johns River. This flooding event also warranted the closing of Mullet Lake Park, Bookertown Park, Lake Monroe Wayside, C.S. Lee Park, and Lake Jessup boat ramps as the docks were not visible. No major damage to homes or personal property was recorded. During this flood event, the National Weather Service and Emergency management conducted fly over and lake surveys to ensure stabilizing of waterways.

Due to the potential danger of flooding, wind damage, power outages and road closures in the eastern and western portion of our County, residents along the St. John's River, Wekiva River, and our lake home residents in these locations, shall be considered for recommended or mandatory evacuations in preparation for an Atlantic land-falling hurricane.

The time needed to notify these residents plus complete the evacuation process makes for critical Public Safety considerations.

The County has approximately 5,500 homeowners and 500 businesses that could be affected by flooding during a 100-year flood. These businesses and homeowners have been identified by address and GIS mapping. The County has notified all the affected residents and business owners and provided them with assistance brochures pertaining to the possible flooding and the National Flood Insurance Program (NFIP). In many flood prone areas, the terrain is heavily wooded with vast areas of marshlands, which receive the overflows from Lake Monroe, Lake Harney, Lake Jessup and the St. John's River. Another problem area is U.S. Highway 17-92, where it runs parallel to Lake Monroe. This main artery will be under water when flood gage reaches 10 feet.

According to a 100-year storm calculation, portions of this main artery might be under water after such a storm. Previously identified flood prone areas close to home and business owners are less of a flood threat today due to the County's aggressive Storm Water Management efforts. When new subdivisions, commercial developments or road widening projects are undertaken, the County provides substantial allowances for storm water runoff, away from populated areas. Road and residential flooding is significantly improved throughout Seminole County.

Seminole County has several systems for notification to residents for flood threats, as well as other significant events. Some of these are as follows: National Weather Service notices, river gauges along the St. John's River, Emergency Satellite Communications link with the Florida Division of Emergency Management in Tallahassee, Dialogic Communicator notification system, Alert Seminole, Reverse 9-1-1, Doppler radar and media releases.

There are no dams located in Seminole County.

In May of 2012, Seminole County created a new Floodplain Management Plan. This plan was developed under the guidance of a Floodplain Management Planning Committee. The plan provides the framework for all interested parties to work together and reach consensus on how to address the issue of flooding. This floodplain management plan identifies activities that can be undertaken by both the public and the private sectors to reduce safety hazards, health hazards, and property damage caused by floods. The plan fulfills the federal mitigation planning requirements, qualifies for CRS credit, and provides the county with a blueprint for reducing the impacts of these flood hazards on people and property.

Seminole County is surrounded to the east and north by the St. John's River. Flooding has been reported along this river historically. Below is a chart that details high crest levels at various points throughout the last few decades.

Flood categories are measured in several stages that are dependent on historical water levels of particular lakes and rivers. At each action point a mitigation action needs to be taken in preparation for possible significant hydrologic activity.

- Action Stage- the level in which a partner/organization needs to make preparations for a significant hydrological event.
- Minor Flooding- minimal of no property damage, but possibly some public threat.
- Moderate Flooding- some inundation of structures and roads near stream. Some evacuations of people and/or transfer of property to higher elevation.
- Major Flooding- extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.

Height (ft)	Date
11.09	08/28/2008
10.62	10/13/1953
10.10	10/01/1924
10.07	10/02/2004
9.50	09/12/2004
9.45	11/21/1994
8.83	03/01/1998
8.71	10/24/1995
8.61	09/21/2001
8.20	10/03/2014

Figure 8: St. John's River above Lake Harney Southeast River Forecast Center

Bodies of water in Seminole County that pose a threat to the public include but are not limited to the St. John's River, Lake Jesup, Lake Kathryn, Lake Harney, Wekiva River, Little Wekiva River, and the Econlockhatchee River.

While these major bodies of water historically have posed a threat to the county, flooding could potentially affect any particular area of the county and any of its municipalities.

The Local Mitigation Strategy recognizes that with a changing climate, there is the potential for an increasing risk of environmental impacts from flooding and that future mitigation and adaptation strategies related to this hazard should be considered.

Hazardous Materials (Fixed Site and Transportation)

Relative Risk: Medium

There are numerous hazardous materials facilities and plants throughout Seminole County. A majority of these facilities are water treatment facilities and some construction and building facilities. In addition, there are hazardous materials located in minor quantities at schools, hospitals, and some of the telecommunication facilities throughout Seminole County.

Seminole County has an aggressive hazardous materials inspection and cataloguing program. The information collected from the facilities is placed into a State-wide system for easy access by emergency responders. The Emergency Operations Center monitors planning and training activities, spills, chemical releases, and hazardous materials events.

Seminole County would not be directly affected by a coastal oil spill; therefore, an assessment is excluded. However, the County could feel the effects from a spill during an incident affecting the Florida Power and Light facility on the St. John's River in Volusia County at Highway 17-92 near the bridge.

The movement of people and materials throughout Seminole County has greatly increased. Accompanying this increased movement of people and materials is the increased risk of a disaster involving hazardous materials, such as petroleum products, volatile and toxic chemicals, radioactive materials, and explosives. Transportation of some of these materials and people is accomplished by the use of the railway system. The CSX Railroad has one set of tracks passing through the west central and western sections of the County in a north-south direction. These tracks, used for the movement of freight and passengers through and into the County, cross four main highways and roads; namely, Lake Mary Boulevard, SR 434, CR 427 and SR 436, all heavily used by vehicular traffic.

In addition to rail systems, hazardous materials are transported through Seminole County by use of Interstate 4 and State Road 417. Cleanup of these spills are coordinated through the Seminole County Fire Department and Department of Transportation.

The spatial extent of a hazardous materials incident is noted as low, as the hazard would not affect more than 25% of the total land mass of the county.

Mass Gatherings/ Planned Events

Relative Risk: Medium

There are numerous special events in Seminole County that bring over 10,000 persons together in one venue. Of these, the largest event is the annual "Red Hot and Boom" celebration in the City of Altamonte Springs. This event draws more than 150,000 people to enjoy the Independence Day celebration. In addition to "Red Hot and Boom", the City of Sanford's Fort Mellon Independence Day Celebration, Winter Springs, and Oviedo events have significant numbers of people on July 4th. Other special events are normally located in the various parks and recreational centers throughout Seminole County. The largest of

the non-government sponsored events is the Scottish Festival. Thousands of people come to Seminole County to visit the parks during these events.

Seminole County has hosted the Elite Club National Soccer League in December 2011. This event takes place in two venues: Sylvan Lake Park and Seminole Soccer Complex.

There were an estimated 120 teams of 16 female players per team ranging from 15-18 years of age. All teams were from outside of the State of Florida. Most arrived at the Orlando International Airport and obtained transportation to the facilities / hotels. The majority of the players and guests stayed in hotels throughout Seminole County, northern Orange County and Volusia County.

The spatial extent of a mass gathering is noted as low, as the hazard would not affect more than 25% of the total land mass of the county.

Some noted consequences of mass gatherings include; transportation/traffic control, law enforcement/security issues, and notification and warning.

Mass Migration/ Repatriation

Relative Risk: Low

Pockets of migrant workers in Seminole County remain very low. These workers are drawn from the local work force and migrants, if any, are transported into the area on a daily basis to work in the farmlands of Seminole County.

On January 12, 2010 a 7.0 magnitude earthquake occurred, approximately 16 miles west south-west from Port-au-Prince Haiti. Operation Haiti Relief was activated by the State of Florida Emergency Operations Center. Upon notification that the Orlando Sanford International Airport would be utilized for receiving incoming flights from Haiti, Seminole County activated certain Emergency Support Functions (ESFs) on January 14, 2010. A joint Seminole County/Orlando Sanford International Airport Emergency Operations Center was established in the Vigilante Room at the airport on Saturday, January 16, 2010 to coordinate repatriation of United States citizens through Seminole County, Florida.

Operation Haiti Relief continued until February 8, 2010. Through the duration of this event 126 flights arrived at the Orlando Sanford International Airport; there were 112 military flights and 14 contracted Department of Defense commercial flights; the United States Customs and Border Protection processed 9,508 persons through the airport of which 7,399 were United States citizens and 2,109 were foreign nationals; there were over 250 orphans that arrived at the airport and were matched with adoptive parents and a total of 71 patients transported to local hospitals with various levels of injuries.

This hazard has no impact to the physical loss of buildings infrastructure, critical facilities, and housing of vulnerable populations and therefore the value of potential dollar loss from impact to the built environment is not relevant.

The spatial extent of a mass migration is noted as low, as the hazard would not affect more than 25% of the total land mass of the county.

Some noted consequences of mass migration include; transportation control, public health, law enforcement and security issues, and impact to social services.

Severe Weather (Hail, Lightning, Micro-Bursts, Thunderstorms)

Relative Risk: Medium

Severe weather is defined as any meteorological event that poses as risk to life, property, social disruption, and/or requires the intervention of authorities.

Hail: Hail is a form of solid precipitation consisting of balls or irregular lumps of ice .5 millimeters or larger that form during certain thunderstorm conditions.

Hail Extent: 2.5in- Tennis ball (NOAA Hail Conversions) (National Oceanic and Atmospheric Administration)

Lightning: Lightning is the electrostatic discharge of atmospheric electricity, characterized by flashes that can travel within a thundercloud, between clouds, or from a cloud to the surface of the earth; lightening is usually accompanied by audible thunder.

Lightning Extent: 12+ flashes/sq km/yr (Cloud to Ground flash Density) (VAISALA, 2013)

Micro-burst: A micro-burst is a violent, short-lived, localized column of sinking air caused by an intense downdraft, creating extreme wind shears at lower altitudes; usually associated with thunderstorms. A micro-burst can present wind gust/bursts between 50-70mph but can reach as high at 115mph.

Micro-burst Extent: 70mph wind gusts

Thunderstorms: Thunderstorms are formed by the convection behavior of unstable air mass layers, which result in the meteorological effects of wind, heavy rainfall, lightning and thunder, and sometimes hail.

Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until having developed sufficient weight they fall as precipitation—as balls or irregularly shaped masses of ice greater than 0.75 inches in diameter. The size of hailstones is a direct function of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a function of the intensity of heating at the Earth's surface. Higher temperature gradients relative to elevation above the surface result in increased suspension time and hailstone size. Hailstorms are another potential damaging outgrowth of severe thunderstorms.

When hail impacts Seminole County, the county and all the municipalities are vulnerable to the consequences of damage from hail.

In the United States, there are an estimated 25 million cloud-to-ground lightning flashes each year. According to the National Lightning Detection Network, Seminole County averages a cloud to ground lightning flash density of 12 or more flashes per square kilometer per year. Lightning can be fascinating to

watch, but it is also extremely dangerous. Florida has more lightning-related deaths and injuries than any other state.

Because lightning strikes usually claim only one or two victims at a time and don't cause mass destruction like tornadoes and hurricanes, lightning generally receives less attention than it should. Although documented lightning injuries in the United States average about three hundred per year, undocumented injuries caused by lightning are likely much higher.

Lightning is a dangerous threat to people in the United States, particularly those outside in the summer. With common sense, we can greatly reduce the number of lightning deaths.

Central Florida also has one of the highest density lightning flashes in the world. It is only surpassed by tropical Africa. Florida has about one million cloud-to-ground lightning strikes each year. The number one area for fatalities is in open fields, followed by water related areas, under trees, and driving equipment like farm tractors.

These occurred mostly in the months of June and July in the afternoon averaging at about 4:00 p.m. Being struck by lightning does not mean it is always fatal. There are many survivors of lightning strikes.

Severe thunderstorms on 3/30/11 and 3/31/11 affected Seminole County, its municipalities and the citizens with widespread power outages, fallen trees, road flooding and damage to homes. Public Works responded to fallen trees on road ways, road flooding and road closures. In some areas such as Winter Springs, there was major damage to a mobile home park. The Seminole County Emergency Operations Center operated at a Level 2 (partial activation) throughout the day and was in contact with The National Weather Service in Melbourne for continued storm status reports.

In July of 2013, a line of thunderstorms moved across east Seminole County. One storm within the lane because severe and produced a microburst with peak winds of 76mph. Tower personnel reported a loaded luggage cart was blown over into an active taxiway.

Several other occurrences of microburst and severe wind have also impacted the County with a majority of them generating from major squall lines of passing cold fronts. These thunderstorms have created damage in isolated locations causing minor damage to homes, trees falling on houses or cars and structural damage to manufactured homes. These events have occurred in the months of February and March for the past 10 years.

Severe weather has the ability to affect all jurisdictions within Seminole County.

Severe weather events, such as thunderstorms, lightning, hail, high winds, and heavy rain can impact all areas of Seminole County. These events can cause damage to structures, disruption of utilities (mainly electrical), and surface/air transportation problems. While all populations can be impacted by severe weather, lack of shelter puts the homeless at highest risk. Seminole County currently has 6,634.2 acres of Natural Lands of which bring 450,000 visitors annually. This large amount of open space and natural area is highly susceptible to lightening strike which can play a key role in the opening of these areas. Seminole County currently has lightening warning systems at Sanlando Park, Red Bug Lake Park, Sylvan Lake Park,

and Soldiers Creek Park; all of which are frequented by residents for various sports and leisure activities. While severe weather is noted as a high risk hazard it is important to identify parks utilized for recreation activities within municipal jurisdictions that do not have severe weather detection systems. Due to the frequent nature of severe thunderstorms in Seminole County from June 1 through November 30 much of the population is accustomed to thunderstorms that it poses little vulnerability. The existing Storm water system in Seminole County and its municipalities is able to withstand many of the frequent thunderstorms that occur during the summer months.

The spatial extent of severe weather is noted as high, as the hazard would affect more than 50% of the total land mass of the county.

The Local Mitigation Strategy recognizes that with a changing climate, there is the potential for an increasing risk of environmental impacts from severe weather and that future mitigation and adaptation strategies related to this hazard should be considered.

Sinkholes/ Land Subsidence

Relative Risk: Medium

Extent: 30 feet deep

A sinkhole is a depression or hole in the ground brought about by one of the various forms erosion beneath the earth, causing a collapse of the surface layer.

Seminole County is susceptible to sinkhole and subsidence conditions because it is underlain by thick carbonate deposits that are susceptible to dissolution by circulating ground water. Florida's principal source of freshwater, ground water, moves into and out of storage in the carbonate aquifers— some of the most productive in the nation. Development of these ground water resources for municipal, industrial and agricultural water supplies creates regional ground water level declines that play a role in accelerating sinkhole formation, thereby increasing susceptibility of the aquifers to contamination from surface water drainage. Such interactions between surface-water and ground-water resources in Florida play a critical and complex role in the long-term management of water resources and ecosystems of Florida's wetlands. These conditions are monitored, but if the occurrence occurs on private property, it is the citizen's responsibility to repair the damage. If the condition exists on public property, the Public Works Department will take control of the situation.

To date, over 130 sinkhole/land subsidence events have been reported in Seminole County according to the USGS. One of the largest sinkholes reported happened in 1965 in the Casselberry area where a recorded length and width of the sinkhole was around 100 feet with a depth of about 30 feet. While the sinkholes are localized incidents, they can occur in any jurisdiction within Seminole County. Sinkholes pose a risk to contaminated drinking water when the sinkhole encroaches on an aquifer. Currently over 65 million gallons of ground water are drawn for public use in Seminole County. Sinkholes and land subsidence events historically do not have a spatial impact of more than 25% of the total land mass of the county. Due to the frequency of occurrence and the likelihood of future occurrences, the Sinkhole/Land subsidence hazard is ranked at a medium threat level.

Seminole County's top soil composition consists of 13.4% fine sands and 10.4% depressional soils amongst more than 15 other types of soils. Sinkholes can occur in any area of Seminole County. All structures, utilities, systems, and populations are equally vulnerable. Depending on the location and size of a sinkhole, the social and economic impact can range from minimal to extensive. While sinkholes have been reported in all parts of Seminole County, most are small and cause little damage. The most vulnerable sections of the County for sinkholes is from the Interstate-4 corridor to the western county line. This region is primarily cohesive, low-permeability clayey sediments 30 to 200 feet thick. Abruptly-forming collapse sinkholes are possible in this area. The size of these sinkholes depends upon the thickness and bearing properties of the overburden sediment. This area of the County is primarily residential with some large national headquarters in the Heathrow area. Interstate-4 would be in this quadrant of the community. A sinkhole along Interstate-4 could cause major traffic issues. The Interstate-4 corridor to the east county line is primarily in cohesive, permeable sand ranging from 20 to 200 feet thick. Small cover subsidence sinkholes are possible with less-common collapse sinkholes forming in areas with clayey overburden sediments. This part of the community is primarily residential and agricultural.

According to the Florida Geological Survey, several sinkhole/land subsidence events have occurred in Seminole County that has initiated the response from public safety officials across the community.

In January of 2015, a land subsidence event occurred in Geneva in which firefighters rescued a dog who was 75% trapped in the hole. There was no official confirmation if the depression was actually a sinkhole however the dog was rescued and administered oxygen. The dog was transported to a local animal hospital and made a full recovery.

In February of 2014, a 6 foot deep, and 5 foot wide hole on the Rock Lake Middle School in Longwood opened up causing no structural damage. Physical education classes were cancelled due to its location but the school operations were not impacted. Since then, the hole was filled with dirt and a fence erected around it to prevent further damage.

In December of 2012, a 25 foot deep sinkhole in Lake Mary threatened a home causing the homeowners to evacuate. The City of Lake Mary deemed the home unsafe however the repairs to the home were covered by the homeowner's insurance company totaling over $300,000. Major repairs noted were to major cracks in the structure.

In 2002, a 50 foot wide and 30 foot deep sinkhole opened up in Sanford destroying a barn and swallowing two horses. Much of the damaged was caused by ground water filling the hole rapidly. No damage was reported to the residential structure of the home.

The Local Mitigation Strategy recognizes that with a changing climate, there is the potential for an increasing risk of environmental impacts from sinkholes/land subsidence and that future mitigation and adaptation strategies related to this hazard should be considered.

Terrorism (Chemical, Biological, Radiological, Nuclear, Explosive)

Relative Risk: Medium

State and Local governments have primary responsibility in planning for and managing the consequences of a terrorist incident using available resources in the critical hours before Federal assistance can arrive. The terrorist threat may represent Chemical, Biological, Radiological, Nuclear, Explosive (CBRNE) hazards, and/or other threats or a combination of several hazards. The initial detection of a Weapons of Mass Destruction (WMD) attack will likely occur at the local level by either first responders or private entities (e.g., hospitals, corporations, etc.). The detection of a terrorist incident involving covert biological agents will most likely occur through the recognition of similar symptoms or syndromes by clinical in-hospital or clinical settings. It is incumbent upon all county and municipal responders to be as well trained as possible in WMD response. The intricacies of the effective response demand the utmost cooperation among all responders, Federal, State, County and Municipalities.

Terrorism is a serious issue in Florida. Terrorism increases the likelihood of mass casualty and mass evacuation from a target area. For threats of armed violence, it is likely that joint jurisdictional management of the operation will take effect and will be coordinated at the County level between the Sheriff, Fire/Rescue, the Department of Health and FDLE. There are seven regional coordination teams throughout the State of Florida, called Regional Domestic Security Task Force (RDSTF). These consortiums evaluate vulnerabilities to the community and provide strategic plans for strengthening the homeland. In addition to the RDSTF, the Central Florida area is listed as an Urban Area Security Initiative. In 2003, the U.S. Department of Homeland Security (DHS) created the Urban Areas Security Initiative (UASI) Grant Program to support the planning, equipment, training and exercise needs of high-threat, high-density urban areas around the country.

The Central Florida UASI was designed to assist the Metro-Orlando area build an enhanced and sustainable capacity to prevent, protect against, respond to and recover from acts of terrorism and other hazards. The Federal UASI program provides "financial assistance to address the unique planning, equipment, training, and exercise needs of high-threat, high-density urban areas, and to assist them in building an enhanced and sustainable capacity to prevent, respond to, and recover from threats or acts of terrorism.

The spatial extent of a terrorist event is noted as low, as the hazard would not affect more than 25% of the total land mass of the county.

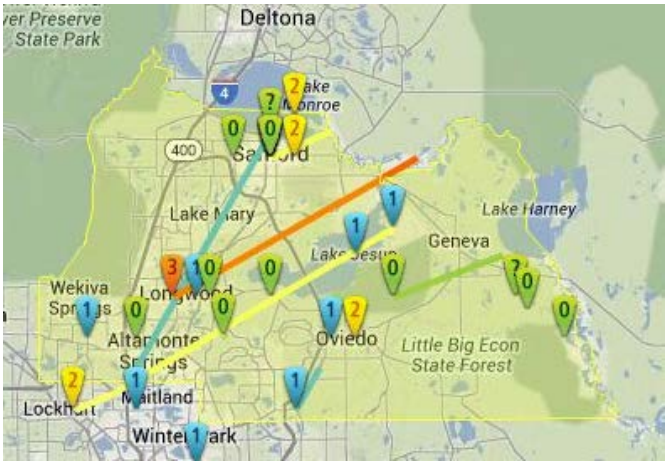
There have been no documented previous occurrences of a terrorist attack in Seminole County. Buildings, infrastructure, critical facilities and housing for vulnerable populations have some potential for impact by this hazard. Due to the fact of impact areas being undefined, an exact dollar loss value cannot be determined.

Tornadoes

Relative Risk: High

Extent: EF5 (Enhanced Fujita Scale)

A tornado is a mobile vortex of violently rotating winds, extending downward from the cloud base and advancing in front of a storm front; they are made visible by vaporized moisture and debris.



Florida is the State that experiences the most number of tornadoes per square mile. Florida had an average of 52 tornadoes per year since 1961, with an average of two fatalities per year. Florida tornadoes are generally of short duration and have a narrower path. Because of the unpredictable pattern of storms and tornadoes and the relatively high reoccurrence frequency, all of the State, including Seminole County is vulnerable to damage. As the number of structures and people increase, the potential damage and injury rates increase. Mobile and modular homes, poorly constructed and substandard housing apartment complexes, and low rent housing projects are extremely susceptible to damage and destruction.

On April 4, 1966, Seminole County experienced its largest tornado on record. An EF4 tornado hit Seminole County killing 11 and injuring 530 people. Another major tornado event in Seminole County took place in February of 1998 in which an EF3 tornado injured over 150 people and caused $31 million dollars in damages.

In May of 2009, an EF0 tornado touched down briefly and removed the roofs form a single family home and a manufactured home. Portions of the roof and other debris were carried downstream, another 8 homes sustained minor damage in Casselberry.

In November of 2006, an EF1 tornado touched down in southern Seminole County near the City of Oviedo. The tornado severely damaged four homes and eight homes had moderate damage. 32 manufactured homes suffered minor damage.

In February of 1998, a category EF3 tornado was produced by a super cell. The tornado initially touched down in the Longwood area and moved northeast at 45mph. The tornado passed through several neighborhoods in the southeast portion of Sanford killing 12 people in manufactured homes and injuring

70. The tornado included maximum winds near 200 mph and damaged or destroyed 625 structures in the Central Florida region.

Since 1966, Seminole County has been affected by a total of 28 tornado events that have caused significant damage across the county. The spatial extent of a tornado event is low as tornadoes' typically do not impact more than 25% of the total landmass of the county. Due to the impact to physical property, the possibility of death or injury and the likelihood of interruption of economic services to the community, a tornado event is rated high on a threat level when compared to other hazards.

Due to the largely unpredictable frequency and pattern of tornados, the whole of Seminole County remains vulnerable to their impact. The high wind speeds associated with tornados leaves all structures susceptible to damage, with the greatest potential for loss being manufactured homes, dilapidated housing, and other less hardened properties. There are currently 5,066 manufactured homes in Seminole County. Danger for residents in older manufactured homes notes the need for Seminole County to find an alternate safe location for residents to go to during possible tornado weather. While all populations in Seminole County can be impacted, the most vulnerable are the homeless, the elderly, and those of lower income. Depending on the location and severity, tornados can cause social disruption in the form of electrical outages, transportation problems, economic loss, and the accompanying physiological hardships associated with physical and human loss.

The spatial extent of a tornado event is noted as low, as the hazard would not affect more than 25% of the total land mass of the county.

The Local Mitigation Strategy recognizes that with a changing climate, there is the potential for an increasing risk of environmental impacts from tornadoes and that future mitigation and adaptation strategies related to this hazard should be considered.

Transportation Accident (Aircraft, Rail, Mass Casualty Incident)

Relative Risk: Medium

Seminole County has three (3) small air strips on the east side of Seminole County in Geneva, Lake Harney area, and Chuluota capable of landing a small aircraft (i.e. Cessna). In addition, many small planes use lakes as landing and take-off locations, including Prairie Lake (Altamonte Springs), Lake Jessup (Winter Springs), and various other large bodies of water. The largest airport in Seminole County is an international airport inside the City of Sanford.

The Orlando Sanford International Airport (SFB) is situated on approximately 2,000 acres in the boundaries of the City of Sanford in the northwestern section of Seminole County. The Sanford Airport Authority is responsible for the operation, maintenance, and development of the SFB airstrips. In the year 2013, the SFB statistics included 269,708 landings and takeoffs; 3,112 tons of cargo; and 2,032,680 passenger arrivals and departures. A majority of the passengers arriving and departing from SFB are international travelers.

Figure 9: Future development of Wekiva Expressway and Central Florida "belt"

Rail systems are another major transportation method. The addition of the Central Florida Rail Corridor (CFRC) Transit System provides new vulnerabilities for major transportation of persons through the community. CFRC/SunRail Commuter Trail Service endpoints will be in various cities in Seminole County. SunRail began operations in 2014 with stations in DeBary, Sanford, Lake Mary, Longwood, Altamonte Springs, Maitland, Winter Park, Florida Hospital, LYNX Central Station, Church Street, Orlando Health/Amtrak and Sand Lake Road.

When SunRail is fully operational in 2016, there will be seventeen train stations along the 61 mile CRFC Corridor. The Amtrak Auto Train takes passengers and their vehicles nonstop from Sanford, Florida to the Washington, DC area. In addition to SunRail and the Amtrak Auto Train, Amtrak provides major transportation of customers through the center portions of Seminole County.

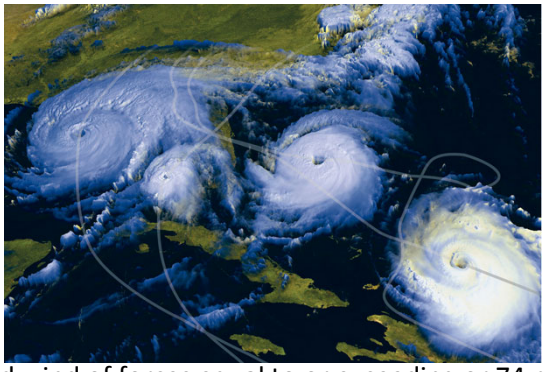
The future of Central Florida's road ways include the development of a "belt-way" which will connect 408,417, and 429 and Interstate 4. This belt way will allow more traffic to flow around the Central Florida Area increasing the likelihood of a transportation accident.

The spatial extent of a transportation incident is noted as low, as the hazard would not affect more than 25% of the total land mass of the county.

Tropical Cyclones (Hurricanes and Tropical Storms)

Relative Risk: High

Extent: Category 5 (Saffir-Simpson Scale)



A tropical cyclone is a rapidly rotating storm system characterized by a low-pressure center, strong winds, and a spiral arrangement of thunderstorms that produce heavy rain. Depending on their size, sustained winds speeds, and location they can be referred to as:

Hurricanes: A hurricane is a tropical cyclone with sustained wind of forces equal to or exceeding or 74 mph, most often occurring in the Western Atlantic and usually accompanied by rain, thunder, and lightning. Hurricanes are categorized using Saffir-Simpson scale, which measures sustained wind speeds over a 1 minute average and at 33ft above the surface . The categories are:

Category 1: Sustained wind speeds of 74-95 mph.

Category 2: Sustained wind speeds of 96-110 mph.

Category 3: Sustained wind speeds of 111-129 mph.

Category 4: Sustained wind speeds of 130-156 mph.

Category 5: Sustained wind speeds of 157 mph or higher.

Note: Categories three and above are considered major hurricanes.

Tropical Storms: A tropical storm is a tropical cyclone with an organized system of strong thunderstorms, defined surface circulation, and maximum sustained winds of 39-73 miles per hour. Storms with wind speeds below 39 mph are considered tropical depressions.

With an approaching hurricane or tropical storm, a tremendous amount of attention is devoted to the coastal areas that will be affected by winds and surge -- and rightly so. Inland counties, such as Seminole County, face a triple threat as well: damaging winds, flooding rains, and tornadoes.

Seminole County is approximately 40 miles from the coast. Damaging winds can continue well inland. This can be from fast-moving storms that get significantly inland before they weaken enough to drop their winds below damaging speeds. Damage can also come from gusts within thunderstorm bands accompanying the storm. The destruction dealt by the devastating winds can result in destroyed buildings, downed trees and power outages. However, the greatest damage is usually due to the impact of flooding.

The 2004 and 2005 hurricane seasons showed just how many tornadoes that hurricanes and tropical storms can spawn: more than 300 and 200, respectively. Six of the top 10 tornado-producing hurricanes occurred in the last two years. Hurricane Ivan in 2004 has the record with 127 tornadoes.

In the summer of 2004, Hurricanes Charley, Frances and Jeanne impacted Seminole County. The Emergency Operations Center was fully activated and a Local State of Emergency was declared. County offices and schools were closed. Executive Orders were signed prohibiting price gouging and issuing a mandatory evacuation of mobile and manufactured homes. A mandatory curfew was issued. Public shelters and Special Needs shelters were opened and housed a total of 5,000 residents.

For inland flooding, it doesn't take a hurricane to produce a disaster. In 2008, the remnants of Tropical Storm Fay stalled out over Central Florida, with many places getting more than 15-20 inches of rain -- resulting in a massive flood. There have been no recorded tropical cyclones to have impacted Seminole County since 2010.

Seminole County's location in Central Florida leaves it highly vulnerable to Tropical Cyclone impact. Damage from high winds and rain-induced flooding can impact all structures and utilities. The structures most susceptible to damage are older buildings, dilapidated housing, and other less hardened properties such as mobile homes. There are currently 5,066 manufactured homes in Seminole County. Widespread electrical outage is probable, as well as water and sewage backup in flooded areas. Depending on the intensity of a cyclone, economic impacts can be severe. All populations may be impacted by these events, but those at highest risk are the elderly, the disabled, lower income, and the homeless. Tropical cyclones can also cause extensive environmental damage. As the population increases, ensuring that Seminole

County has enough shelter space to provide for its residents and evacuees of surrounding areas is paramount. Further assessments should be done to examine viable shelter space within the County in addition to existing shelters. The protection of critical infrastructure, communication systems, and power sources are key to the recovery after a tropical cyclone event. Ensuring that our private and public sector facilities meet existing building code to withstand the impacts of tropical cyclones should be implemented. All of Seminole County will be vulnerable to high winds during a tropical cyclone. The greatest danger from winds will be those living in structurally unsound housing and manufactured homes. Encouraging residents and business owners to protect their facilities with storm shutters and generators will greatly reduce the damage caused by tropical cyclones.

Tropical Cyclones have the ability to affect all jurisdictions within Seminole County.

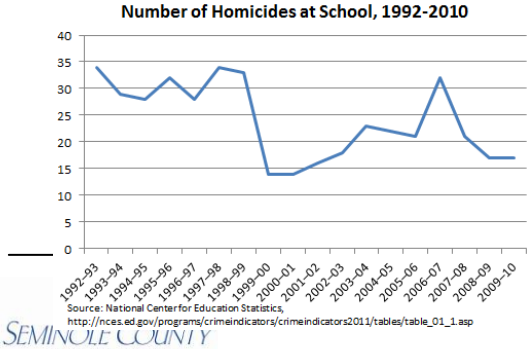
The spatial extent of a tropical cyclone event is noted as high, as the hazard would affect more than 50% of the total land mass of the county.

The Local Mitigation Strategy recognizes that with a changing climate, there is the potential for an increasing risk of environmental impacts from tropical cyclones and that future mitigation and adaptation strategies related to this hazard should be considered.

Violent Acts (Non-Terrorism)

Relative Risk: Medium

Acts of violence in America are a legitimate hazard to communities and municipalities across America. Since 1990s shootings in public schools, recreation parks, movie theatres, and college campuses have increased in both number of incidents and number of fatalities. Violent Act hazards are not concentrated to a particular region or locale. Shootings, stabbings and other violent acts can take place anywhere in the country and are highly unpredictable. Perpetrators of violent acts do not have an agenda, do not have a target group in mind and do not have a purpose or mission to be accomplished. Unlike terrorist groups, perpetrators of violent acts are not organized and are very difficult to spot because perpetrators are largely ignored or go unnoticed. Violent acts negatively impact neighborhoods and communities because shootings and fatalities occur to members of younger population demographics (ages 5 to 30).



Violent act incidents present a profound hazard to communities in America. The tragic incident at Columbine High School, Colorado in 1999 is an example of violent non-terrorism act. Columbine shootings by two high school students, Dylan Kiebold and Eric Harris, caused the deaths of twelve students and one

teacher. The Columbine shootings garnered mass public attention and have been referenced as the starting incident of the current modern era of violent non-terrorist acts. An even more deadly campus shooting took place in April of 2007 when a mentally unstable and disgruntled 23-year old Virginia Tech student, Seung-Hui Cho, shot and killed 32 students and faculty staff members at Virginia Tech campus. Seung-Hui Cho used a Glock 9mm pistol with 50 rounds of ammunition and shot recklessly at people and buildings on campus. Minutes after killing 32 people, Seung-Hui Cho committed suicide via self-inflicted gunshot.

Violent non-terrorism acts occur in other places besides public schools and college campuses. In July 20 of 2012, perpetrator James Holmes shot 70 people at a movie theatre in the city of Aurora, Colorado. 12 people were killed and 58 others were injured by Holmes' shooting rampage. James Holmes activated two tear gas canisters before opening fire into the movie theatre crowd who were watching a Hollywood feature. Holmes used an automatic assault rifle (AR-15), a 12-guage shotgun and a .40-caliber handgun. After this tragic incident, movie goers around America were fearful and worried for a couple of days. The latest school shooting to receive large national attention took place on December 14, 2012 at Sandy Hook Elementary School in Newton, Connecticut. The perpetrator, 20 year old Adam Lanza, had killed his mother at home before going to the school. Lanza used a Bushmaster .223 caliber rifle to shoot and kill 20 children and 6 adults before killing himself. Sandy Hook shootings demonstrate how violent non-terrorism acts can have profound effects on the local communities and even the nation.

The spatial extent of a major act of violence is noted as low, as the hazard would not affect more than 25% of the total land mass of the county.

Winter Storms/ Freezes

Relative Risk: Low

Extent: 10 consecutive days of 32°F or lower

A freeze is when the surface air temperature is expected to be 32°F or below over a widespread area for at least 3 or more consecutive days. Use of the term is usually restricted to aversive situations or occasions when wind or other conditions prevent frost. "Killing" may be used during the growing season when the temperature is expected to be low enough for a sufficient duration to kill all but the hardiest herbaceous crops.

Extreme cold can immobilize an entire region. Even areas, such as Seminole County, that normally experience mild winters can be hit with a major extreme cold winter event. Winter storms can result in ice, localized flooding, closed highways, and blocked roads, downed power lines and hypothermia.

In December, 1989, a cold outbreak and hard freeze affected all 67 counties in Florida. Many daily and some monthly and all-time low temperature records were tied or broken. Low temperatures were in the teens in north and north central Florida and in the 20s the central and south central parts of the state. Snow and sleet fell as far south as a Sarasota to Melbourne line, with a maximum of two to three inches in the panhandle. Northeast Florida experienced its first white Christmas in recorded history and airports and interstates were closed. Many traffic accidents and several fatalities occurred on ice-covered roads. At least six people died of hypothermia and another four in space-heater related fires. Extensive crop damage,

including a loss of about 30% of the $1.4 billion citrus crop, left tens of thousands of migrant farm workers unemployed. Winter vegetables, berries, nursery ornamentals and fish suffered heavy losses. Power blackouts hit hundreds of thousands of residents at various times during the event.

In January of 2010, after a cold front moved through much of Seminole County; during the early morning hours, mixed precipitation occurred on vehicle, pool screen enclosures and some plants. The Orlando-Sanford International Airport observation tower indicated sleet on the runway between the hours of 7:00am and 9:00am.

Structures are not vulnerable to the consequences of winter storms or freezes; therefore do not have a potential dollar loss.

While extreme cold events are not common in Florida, when they do happen the impact can be extensive. Economic impact can be directly felt through agricultural crop loss, while ice, sleet, and snow also cause major transportation disruption and utility outages. Long term freeze events can leave the 598 acres of nursery stock crops and 452 acres of orange crops vulnerable to losses for the agriculture industry which provides over $2.5 billion in revenue to Seminole County. Higher electrical demand from heating can also cause power outages. All populations of Seminole County are impacted by winter storm/extreme cold events, but the elderly, lower income, and homeless are the most vulnerable. During freezing temperatures, Seminole County activates their cold weather shelter plan with various non-profit and community organizations to provide a place to stay for the homeless population of Seminole County.

Winter storms/freezes have the ability to affect all jurisdictions within Seminole County.

Temperatures in Seminole County have fallen below 32°F in recent years and have prompted the opening of cold weather shelters. Two instances of winter storms or long term freezes have affected Seminole County since 2010. From January 9-13 and December 27-29 of 2010 Seminole County experienced temperatures of under 32°F or lower. This freeze threatened crops and required the opening of cold weather shelters for vulnerable populations.

The spatial extent of a winter storm or freeze event is noted as high, as the hazard would affect more than 50% of the total land mass of the county.

The Local Mitigation Strategy recognizes that with a changing climate, there is the potential for an increasing risk of environmental impacts from winter storms/freezes and that future mitigation and adaptation strategies related to this hazard should be considered.

Vulnerability

The LMS Working Group has included a multi-layered approach to assessing the vulnerability of the participating jurisdictions to future disasters. The various vulnerability assessments build on the identification of hazards in the community and the risk that the hazards pose to the community.

Local planners can use the hazard identification and risk estimation process to prioritize the facilities and neighborhoods that most need to be assessed for their specific vulnerability, for example by beginning with the jurisdictions exhibiting the highest overall relative risk. Then, for these jurisdictions, the individual facilities, systems and neighborhoods of Seminole County are assessed specifically for the extent of their vulnerability to damage or disruption by the hazard events identified for the corresponding jurisdiction, and the specific impact to the community if this occurred.

Assessing Vulnerabilities

Repetitive Loss Properties

The Flood Mitigation Assistance (FMA) Grant Program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 with the goal of reducing or eliminating claims under the National Flood Insurance Program.

Consistent with Biggert-Waters Flood Insurance Reform Act of 2012 (Public Law 112-141), the FMA Grant Program changed in FY 2013 to allow more federal funds for properties with repetitive flood claims and severe repetitive loss properties, and the Repetitive Flood Claims and Severe Repetitive Loss Grant Programs were eliminated.

The primary objective of the Repetitive Loss Properties Strategy is to eliminate or reduce the damage to property and the disruption of life caused by repeated flooding of the same properties. A specific target group of repetitive loss properties is identified and serviced separately from other NFIP policies by the Special Direct Facility (SDF). The target group includes every NFIP-insured property that, since 1978 and regardless of any change(s) of ownership during that period, has experienced:

- Insured property with at least 2 flood claims where the repairs equaled or exceeded 25% of the market value of the structure at the time of the flood event.
- Insured property with flood history of 4 or more separate claims of $5,000 each with cumulative total exceeding $20,000 or at least 2 claim payments where the cumulative amount of 2 claims exceeds the market value of the structure.

Although the Flood Mitigation Assistance Grant Program is federally funded, the program is administered through a partnership with the Florida Division of Emergency Management (FDEM),

local and Native American Tribal governments and the Federal Emergency Management Agency. FDEM has the authority and responsibility for developing and maintaining a State Mitigation Plan, assisting local and Native American Tribal governments in developing and maintaining Flood Mitigation Plans, reviewing Flood Mitigation Assistance Program sub-applications, recommending cost effective sub-applications to FEMA and providing pass-through grant funds to awarded Flood Mitigation Assistance Program projects from eligible sub-applicants.

FDEM is also responsible for ensuring that projects funded by the Flood Mitigation Assistance Program are completed and that all performance and financial reporting requirements are met.

	Seminole County	Altamonte Springs	Casselberry	Lake Mary	Longwood	Oviedo	Sanford	Winter Springs
# of Properties by Type								
Residential	18	0	0	0	0	1	5	0
Commercial	0	5	0	0	0	0	1	1
Institutional	0	0	0	0	0	0	0	0
Total # of Repetitive Loss Properties	18	5	0	0	0	1	0	0
# of repetitive Loss Properties in a Special Flood Hazard Area	10	5	0	0	0	0	0	0
Total Payments	$449,121.35	$222,383.21	$0	$0	$0	$37,164.22	$108,243.39	$0

The actual database of repetitive loss properties will not be provided in this LMS plan because of the specific address and personal information that is associated with the information. However, specific requests for information may be requested from any of the appropriate jurisdictions directly, or through the NFIP at FEMA.

Through the various outreach methods in each jurisdiction that has repetitive loss properties, an effort is being made to eliminate or reduce the risks of future flooding to those properties through various mitigation techniques.

Each jurisdiction sends a notice to each owner of a repetitive loss property, soliciting interest and participation in various potential grant programs, in an attempt to mitigate their property from

future flood losses. Each property owner interested that responds to the solicitation will be prioritized utilizing the prioritization guidelines, produced by the program in which they apply. Currently, each jurisdiction maintains that information.

When projects come to the LMS for funding support, all projects submitted for alternative funding opportunities are supported by the LMS regardless of the jurisdiction and in priority as they are individually scored utilizing the LMS project scoring criteria. Depending upon the grant program or alternative funding source, those sources or grant programs may have their own prioritization process, which may compliment or negate the local prioritization. A list of interested people can be found in each of the jurisdictions repetitive loss property coordinator offices.

Land Use Trends and Potential Loss

The LMS Working Group recognizes that the way in which land is utilized, especially land within known hazard-prone areas, is a key measure of community vulnerability, because some land uses, such as for residential or industrial development, can be more susceptible to disaster-related damages than others. For the Seminole County mitigation strategy, this analysis is done on a jurisdiction-specific basis because individual jurisdictions have the most significant planning and legal control over land use policy.

Those jurisdictions that have completed this analysis, two reports contain information on land use trends within the jurisdiction:

- Current Land Uses and the Potential for New Development, which identifies the estimated amount of land still available for new development, as well as summarizing the relative extent of current land uses.

- Future Land Uses and General Development Trends, which summarize the jurisdiction's rate of development of vacant lands or redevelopment of existing properties, and, if the jurisdiction has an adopted land use plan, the desired relative extent of planned land uses.

All jurisdictions reported they were growing either slightly or rapidly, and all are participants in the National Flood Insurance Program. Pressure for development into wetland areas continues to be an ongoing issue in the county. The LMS Working Group recognizes that its efforts, particularly to identify the areas of the participating jurisdictions at risk from various hazards, is a key factor in guiding the careful use of land to minimize future vulnerabilities to disaster. When needed and desired by a specific jurisdiction, modifications to the plans, ordinances, codes and similar policies can be proposed as mitigation initiatives for incorporation into this plan.

Critical Facilities and Structure

Seminole County has conducted an inventory of existing buildings, infrastructure, and critical facilities located within the hazard areas boundaries. For purpose of this LMS these include emergency service facilities, medical facilities, government facilities, schools, emergency/evacuation shelters, fire and police stations, emergency operation center, facilities used by special needs populations, and any other facilities identified by the Office of Emergency Management. This critical facilities list aligns with the critical infrastructure sectors outlines by the Department of Homeland Security and is updated annually.

The identified potentially at-risk critical facilities and structures for Seminole County are listed in the Critical Facility and Structure List maintained by Seminole County's Office of Emergency

Management. The Seminole County Comprehensive Emergency Management Plan contains additional information in regard to vulnerable existing buildings, infrastructure, and critical facilities. The Critical Facility and Structure List contains confidential information so therefore is not published with this plan.

Mitigation Goals

The LMS Working Group has established a number of goals and objectives to guide its work in the development of this plan. The goals and objectives help to focus the efforts of the group in the mitigation planning effort to achieve an end result that matches the unique needs, capabilities and desires of the participating jurisdictions.

The goals are established for both the entire planning area and all of the participating jurisdictions in a process that can be described as follows: near the beginning of the planning process, a list of suggested goals and objectives selected from the previous LMS document was circulated to members of the LMS Working Group. The goals selected by the LMS Working Group are related to the broad mitigation needs and capabilities of the communities involved, rather than addressing a specific hazard type or category. Therefore, the Seminole County mitigation goals and objectives, by definition, are multi-hazard in scope and can be described as statements of the desired mitigation-related capabilities that will be present in each participating jurisdiction in the future as the goals are achieved.

Mitigation Actions

The goals established by the LMS Working Group are considered to be broad, general guidance that define the long-term direction of the planning. Each goal statement has one or more objectives that provide a more specific framework for actions to be taken by the LMS Working Group and its participants. The objectives define actions or results that can be placed into measurable terms by the LMS Working Group, and translated into specific assignments by the LMS Working Group for implementation by the participants in the LMS Working Group and associated agencies and organizations.

The objectives selected by the LMS Working Group are intended to create a specific framework for guiding the development of proposed mitigation initiatives for incorporation into the plan. Whenever feasible, the planning participants have associated each proposed mitigation initiative with the objective statement the initiative is intended to achieve. By associating a mitigation initiative with a specific objective, the proposed initiative is also, of course, intended to help achieve the broader goal statement to which the objective corresponds. Proposing mitigation initiatives that are consistent with the selected objectives is a principal mechanism for the LMS Working Group participants to achieve the stated goals of the mitigation planning program.

Seminole County Local Mitigation Goals and Objectives

Goal 1 - Local government shall make every reasonable effort to identify, develop, implement, and reduce hazard vulnerability through effective mitigation programs.
Objective 1.1 - Identify hazards, risk areas and vulnerabilities in the community using historic and scientific data.
Objective 1.2 - Utilize historic and scientific data as the primary decision making tools for mitigation policy decisions.
Objective 1.3 - Develop programs to target vulnerabilities through effective public outreach, mitigation projects, and ordinances/zoning regulation.
Objective 1.4 - Measure effectiveness of mitigation initiatives implemented in the community through documentation, disaster after action/improvement plans, and public comment.
Objective 1.5 - Actively participate in state and national mitigation planning efforts to ensure the county is represented in decision making processes and resource allocation.

Goal 2 - All sectors of the community will work together to create a disaster resilient community.
Objective 2.1 - Specific interagency agreements and collaboration will be used to improve multi-jurisdiction / multi-agency coordination.
Objective 2.2 – Seek public and private sector organizations input to promote hazard mitigation programming throughout the community.
Objective 2.3 – Develop and administer outreach programs to gain participation in mitigation programs by business, industry, institutions and community groups.
Objective 2.4 – Encourage continuity of operations programs to promote community resilience.

Objective 2.5 – Encourage local elected governing bodies to promulgate the local mitigation plan and support community mitigation programming.
Objective 2.6- Ensure appropriate local government staff training and exercise activities occur.

Goal 3 - Reduce the vulnerability of critical infrastructures and public facilities from the effects of all hazards.
Objective 3.1 – Detect emergency situations and promptly initiate emergency response operations.
Objective 3.2 – Retrofit or relocate critical infrastructure to withstand the impact of disasters.
Objective 3.3 – Utility, communications, and information technology systems will be evaluated to ensure resilience. Retrofit and relocation projects may be submitted to strengthen systems.
Objective 3.4 - Relocate, retrofit or modify evacuation routes to ensure safe passage before, during and after disaster events.
Objective 3.5 – Evaluate and retrofit evacuation shelters, critical emergency services and medical facilities to ensure operability during and after disaster events.
Objective 3.6 - Assess routes to key health care facilities to remove vulnerabilities and possible blockage as a result of a disaster.
Objective 3.7 – Assess and acquire adequate resources, equipment and supplies to meet victims' health and safety needs after a disaster.

Goal 4 – Strengthen continuity planning for local government operations to avoid significant disruptions.
Objective 4.1 – Encourage community redevelopment plans to guide decision- making and resource allocation by local government in the aftermath of a disaster.
Objective 4.2 – Protect vital local government records and documents from impacts of disasters.
Objective 4.3 – Encourage continuity of Operations Plans and programs to assist local government in retrofitting or relocating critical assets.
Objective 4.4 - Buildings and facilities used for the routine operations of government should be retrofitted or relocated to withstand the impacts of disasters.

Objective 4.5 – Encourage redundant equipment, facilities, and/or supplies to strengthen resilience in local government operations after a disaster.

Goal 5 - Develop policies and regulation to support effective hazard mitigation programming throughout the community.

Objective 5.1 – Develop programs to ensure appropriate emphasis in resource allocation and decision-making.

Objective 5.2 – Develop and enforce land use policies, plans and regulations to discourage or prohibit inappropriate location of structures or infrastructure components in areas of high risk.

Objective 5.3 – Develop and enforce building and land development codes that are effective in addressing the hazards threatening the community.

Objective 5.4 – Encourage protection of high hazard natural areas from new or continuing development.

Objective 5.5 - Participate fully in the National Flood Insurance Program, Building Code Effectiveness Rating Schedule and the associated Community Rating System.

Objective 5.6 – Encourage the location of new local government facilities to be outside of designated hazard areas and design to withstand impact of hazards.

Objective 5.7 - Incorporate techniques to minimize the physical or operational vulnerability to disasters in all reconstruction or rehabilitation of local government facilities.

Objective 5.8 - Establish and enforce regulations to ensure that public and private property maintenance is consistent with minimizing vulnerabilities to disaster.

Objective 5.9- Encourage the development and enforcement of energy conservation, green development, and resource sustainability best practices.

Goal 6 - Encourage economic vitality of the community by promoting business continuity education, disaster planning, and diversifying employment opportunities.

Objective 6.1 – Promote disaster resilient whole community.

Objective 6.2 – Strengthen components of the infrastructure needed by the community's businesses and industries from impact of disaster.

Objective 6.3 – Review needs of key employers in the community through communication and coordination activities.
Objective 6.4 - Establish programs, facilities and resources to support business resumption activities.
Objective 6.5 – Encourage diversification of employment base in the community.
Objective 6.6 - Implement programs to address public confidence of community condition and functioning in the aftermath of a disaster.

Goal 7 – Strengthen community's infrastructure to minimize significant disruption from a disaster.
Objective 7.1 - Construct or retrofit transportation facilities to minimize the potential for disrupting during a disaster.
Objective 7.2 – Strengthen water and sewer services in the community.
Objective 7.3 - Encourage hazard mitigation programs by private sector organizations owning or operating key community utilities.
Objective 7.4 – Work with energy, telecommunications, and information technology companies to support strengthening of systems and facilities serving the community.
Objective 7.5 - Reduce vulnerability to disasters of schools, libraries, museums, and other institutions important to the daily lives of the community.

Addressing Known Risks and Vulnerabilities

In addition to developing proposed mitigation initiatives to achieve the established goals and objectives, an important emphasis of the LMS Working Group is to also include proposed mitigation initiatives in its plan that will address known vulnerabilities of important facilities and neighborhoods to the impacts of future natural, technological or human-caused disasters. By reducing known vulnerabilities to future disasters, it is important in the plan to document those initiatives that are intended to address identified vulnerabilities of facilities, systems and neighborhoods, as well as to strengthen the mitigation-related policy framework for the entire county.

There are a number of initiatives that are not directly associated with specific facilities or neighborhoods that have been assessed for their vulnerabilities, but address other mitigation-related concerns, such as storm water drainage —trouble spots in the county. While they may not affect an entire neighborhood or critical roadway, they can create unsafe conditions or damage properties. The proposed addition of vital communications equipment to mitigate specific community-wide vulnerabilities impacts the interconnectedness of critical facilities, and is generally intended to benefit the whole community.

National Flood Insurance Program (NFIP) Compliance

All jurisdictions are active participants in the NFIP. In an effort to ensure continued compliance with the NFIP, each participating community will:

- Continue to enforce their adopted Floodplain Management Ordinance requirements, which include regulating all new development and substantial improvements in Special Flood Hazard Areas (SFHA).
- Continue to maintain all records pertaining to floodplain development, which shall be available for public inspection
- Continue to notify the public when there are proposed changes to the floodplain ordinance or Flood Insurance Rate Maps.
- Maintain the map and Letter of Map Change repositories.
- Continue to promote Flood Insurance for all properties.
- Continue their Community Rating System outreach programs.

Community Name	Policies In-Force	Insurance In-Force	Written Premium In- Force
Altamonte Springs	665	$145,058,500	$352,009
Casselberry	345	$74,807,800	$180,016
Lake Mary	269	$76,977,000	$130,881
Longwood	239	$65,305,300	$163,283
Oviedo	694	$198,390,700	$291,811
Sanford	584	$146,997,300	$332,276
Winter Springs	729	$196,693,900	$333,483
Seminole County	4,243	$1,175,590,800	$2,134,106

As of 08/31/2014

Community Rating System

The Community Rating System (CRS) is a voluntary program for NFIP-participating communities. The goals of the CRS are to reduce flood losses, to facilitate accurate insurance rating, and to promote the awareness of flood insurance. The CRS has been developed to provide incentives for communities to go beyond the minimum floodplain management requirements to develop extra measures to provide protection from flooding. The incentives are in the form of premium discounts.

Community Number	Community Name	CRS Entry Date	Current Effective Date	Current Class	% Discount for SFHA	% Discount for Non-SFHA	Status
120290	Altamonte Springs	10/1/1994	5/1/2014	7	15	5	C
120416	Lake Mary	10/1/2009	10/1/2009	8	10	5	C
120292	Longwood	10/1/1996	10/1/2010	10	0	0	R
120293	Oviedo	10/1/2008	10/1/2013	6	20	10	C
120289	Seminole County	10/1/1991	5/1/2011	6	20	10	C
120295	Winter Springs	10/1/1993	5/1/2013	6	20	10	C

As of 5/1/2014 Status: C= Current, R= Rescinded

It must be emphasized that in many cases, detailed information regarding the areas potentially impacted by a specific hazard, as well as its potential health and safety, property, environmental and economic impacts of that hazard, may not have been available. Further, it has not been the intent of the LMS Working Group, nor have funding resources been available, to conduct extensive new studies to obtain such information solely for the purposes of the development of this mitigation plan. Therefore, it has often been necessary to rely on the informed judgment of knowledgeable local officials to identify hazards and derive estimates of the risk each poses to the community.

Implementation

Prioritization of Actions

The LMS Working Group is responsible for identifying projects and activities that the Seminole County and its municipalities want to implement that will support the tasks identified in the Goals and Objectives section. Projects will be submitted to the LMS by eligible applicants. Project submissions must complete a CBA and HMGP scoring form in order to be added to the priority list (see Project List Appendix). To accomplish this responsibility, the LMS Working Group will do the following:

- Establish a schedule for the participants to submit proposed mitigation initiatives to be considered for incorporation into the next edition of the Seminole County Local Mitigation Strategy.
- Ensure the use of risk assessment methodology by all participating agencies and organizations in Seminole County for the identification, characterization and prioritization of proposed mitigation initiatives.
- Distribute the guidance, training or information incorporated into LMS as needed to facilitate complete and accurate submittals by the participants.
- Review each proposed mitigation initiative received for completeness, adherence to the prescribed methodology, the validity of the characterization information and data used by the participant, and the likelihood that the proposal will actually mitigate the hazard(s) or vulnerability(ies) of concern.
- Prepare a cost/benefit analysis of the proposed mitigation initiatives.
- Compare proposed mitigation initiatives with others already incorporated into the plan or being submitted during the current planning period to ensure an absence of conflict or redundancy in purpose.
- If needed, return the proposed mitigation initiatives to the submitting agency or organization for additional information or analysis and resubmitted.
- Prepare a recommendation for action by the LMS Working Group to incorporate the proposed mitigation initiative into the Seminole County Local Mitigation Strategy and to consent to listing the proposed initiative on the project list.
- On request of the agency or organization attempting to implement an approved mitigation initiative, the LMS Working Group will certify to any identified party that the proposed mitigation initiative has been approved for incorporation into the strategy.

- The priority of implementation is based on the score given to the project by analysis from the LMS Working Group.

Changes in prioritization of the project rankings could change for several reasons. Environmental conditions, such as a pending drought, would warrant more aggressive or rapid implementation of proposed mitigation initiatives associated with this hazard, even if their overall priority score was less than those addressing flood. In this way, adjustments in the implementation of the plan can be made. Conditions that could warrant a change in the implementation schedule of the mitigation initiatives could include but are not limited to:

- Declared Disasters
- Funding Availability
- New or Revised Policy Development
- Plan Revision Cycles
- Legal of Fiscal Restraints
- Life Safety Priorities

Mitigation Project Priority List

The detailed project priority list can be found in LMS Project Priority List Appendix of this plan. This Appendix (Excel Spreadsheet) also includes the completed and deleted project lists.

Responsible for Mitigation Actions

Once incorporated into the Seminole County Local Mitigation Strategy, the agency or organization proposing the initiative becomes responsible for its implementation. This may mean developing a budget for the effort, or making application to state and federal agencies for financial support for implementation. This is the approach utilized by the LMS Working Group because only the jurisdiction or organization itself has the authority or responsibility to implement its proposed mitigation initiatives. The current status of implementation of mitigation initiatives incorporated into the plan is discussed in the next section.

In this plan implementation process, the LMS Working Group continues to monitor the implementation status of initiatives, to assign priorities for implementation and to take other such actions to support and coordinate implementation of initiative by the involved organizations. In reality, it is the implementation of proposed initiatives, along with other actions by the organizations participating in the planning to maintain, refine and expand the technical analyses used in the planning, that constitutes the process to implement the mitigation plan.

Cost-Benefit Analysis

When a project is submitted for the LMS for inclusion in the Project List with the intention of seeking funds from various grant programs a cost/benefit analysis worksheet will be submitted with the proposed project for consideration by the LMS Working Group. This worksheet can be found in the Project List Appendix of this plan.

Actions Completed

A mitigation project that has been funded and completed will be added to the Completed Project

List. The LMS Completed Project List is maintained and housed within the Department of Public Safety, Office of Emergency Management. This list can be found in the LMS Project Priority List Appendix, Completed List Tab. The LMS project list can change frequently as funding, various local, state and federal requirements, etc. change and/or are updated. For deleted or deferred mitigation projects a list is maintained with each project listed including an explanation as to why the project was deleted or deferred. This list can be found in the LMS Project Priority List Appendix, Deleted List Tab.

Strategy Maintenance

LMS Monitoring and Evaluation

The LMS Plan will be housed in the in the Department of Public Safety, Office of Emergency Management for Seminole County. The LMS Working Group meets on a quarterly basis at a minimum, as well as after times of natural disaster events, and any other time deemed appropriate by the Working Group Chairperson, to update and revise the LMS. The criteria used to evaluate the LMS document and activities should include, but not be limited to the following:

- Federal and/or State Requirements
- Changes in development trends and land use that could affect infrastructure
- Storms or other natural events that have altered Seminole County's hazard areas
- Completion of existing mitigation projects and introduction of new goals
- Changes in policy, procedure or code
- Changes in building codes and practices
- Review of legislative actions that could affect funding of mitigation efforts
- Changes in Flood Insurance Rate Maps, National Flood Insurance Program, etc.

On an annual basis the Department of Public Safety, Office of Emergency Management will generate a LMS progress report that will evaluate the successes or areas of improvement for the LMS. The report will be available to the public, as well as provided to all jurisdictional governing bodies. This annual report also satisfies the CRS program requirements for an annual report for the floodplain management plan. This will allow people to re-acquaint themselves with the LMS document and the processes that it identifies, so any recommendations, suggestions, and updates, can be properly reviewed and weighed for consistency with the direction of the LMS.

The plan is periodically reviewed and adopted by the participating jurisdictions' governing bodies to ensure that the mitigation actions taken by their organizations are consistent with each community's larger vision and goals, as well as their overall unique needs and circumstances. The adoption process includes instructing the jurisdictions' agencies and organizations to continue to refine, expand and implement the plan.

LMS Updates

Every five years, the LMS plan applies for formal review to FEMA, a FEMA approved LMS mitigation plan is what keeps our communities eligible for various Federal and state grant programs.

Each year, the LMS committee will review the current plan to make note of any modifications to be placed in the new plan. These notes will be used to develop the new plan. Additional projects will

be collected to address the notes made each year. Damage assessment reports will be collected from disasters to determine what types of mitigation efforts may be necessary. These mitigation issues will be used in the creation of the new plan.

Citizen input will be requested at various times throughout the year. These activities include the annual Severe Weather Awareness Week, Prepare Seminole! campaign, and at various community outreach activities. All citizen inputs will be brought up at quarterly LMS meetings to be held at the Seminole County Emergency Operations Center. Each year, a list of meetings times and dates will be posted to the website.

All notes and mitigation efforts will be put together to develop a draft LMS for update. Once the document is ready for review, LMS committee members will conduct public meetings to solicit additional input before the LMS plan, any supporting documentation, and the criteria checklist will be first submitted to the Florida Division of Emergency Management for review, and then forwarded to FEMA for review and approval.

It will be anticipated the review process could take several months. The Seminole County LMS Working Group will establish a more aggressive meeting schedule in preparation for the updated/revised LMS to be resubmitted for approval for each 5-year FEMA formal review.

Following adoption or approval of the plan by all parties involved, the respective agencies and organizations will continue to implement the plan, to expand its scope, continue its analyses, and take other such continuing action to maintain the planning process. This includes action by the LMS Working Group to routinely incorporate proposed mitigation initiatives into the plan, without the necessity to also continuously solicit the formal approval of the plan by the jurisdictions' governing bodies. This process is administered by Department of Public Safety, Office of Emergency Management.

Implementation through Existing Plans and Programs

One of the methods to most effectively implement the LMS is to propose and implement initiatives that will further the goals and objectives in the LMS. Initiatives listed, when implemented will serve to mitigate existing issues. Other current plans, when reviewed and updated will be compared to the initiatives and objectives of the LMS to ensure that all planning activities work toward the common goal. Some identified planning mechanisms that have been utilized in the past include (but have not been limited to) floodplain ordinances, county and municipal comprehensive plans, land development codes, comprehensive emergency management plan.

Seminole County's Office of Emergency Management has oversight of the process for incorporating the LMS into other local government planning mechanisms. Some plans, such as the Comprehensive Emergency Management Plan (CEMP) and Continuity of Operations Plan (COOP), have prescribed processes that provide the opportunity for integration of LMS goals and objectives at scheduled intervals. During these planning cycles, Emergency Management reviews the LMS for consistency and identifies opportunities to link the LMS to the revised plans. As an example, information collected for the LMS risk assessment has been used to update the CEMP.

As part of the planning integration process, Emergency Management staff also continuously seeks plan-development opportunities that are not part of existing planning cycles, but are relevant to the

goals and objectives of the LMS. The process for linking the LMS to planning projects includes identifying mitigation- related elements in the plans under development, and assuring that policies and initiatives in the LMS are considered and addressed. Strategic planning is an example of this, as the process includes looking at both short- and long-term needs and addressing gaps and initiatives through policy and budget.

Public education and outreach is a large portion of the Local Mitigation Strategy. The LMS is incorporated in the Prepare Seminole! Campaign which is a community action program to help all citizens, businesses, and other organizations prepare and mitigate damages. This campaign was launched in 2005 after tornadoes affected the Central Florida area. The public outreach initiative uses LMS goals and objectives to encourage mitigation efforts.

The LMS goals are used to help strengthen vulnerable critical facilities by using other grants, funding opportunities, and policy. The State Homeland Security Grant has been used to strengthen interoperable communication systems that are used during disasters. In addition, these grants have strengthened capabilities of the Emergency Operations Center to provide redundant communications with other EOCs in the region and the State of Florida EOC in Tallahassee, Florida.

The Development Services Department uses strict building codes to prevent loss from fires, natural disasters, as well as man-made events. In the City of Altamonte Springs, fire sprinkler codes were adopted to prevent the loss of homes and buildings from fires. Strict planning and building codes are used to minimize the vulnerability of newly constructed buildings throughout Seminole County.

Particular highlights of the LMS Working Group efforts to implement the mitigation plan through other plans and programs include updates to the Comprehensive Emergency Management Plan (using the hazards/risk assessment), comprehensive future land use plans of Seminole County and municipalities. During the updating process, both of these documents will be revised to limit development in hazard areas, etc. These examples demonstrate that each participating jurisdiction is committed to incorporating mitigation principles and concepts into their normal operations and activities via their existing planning and programming processes.

Authorities and References

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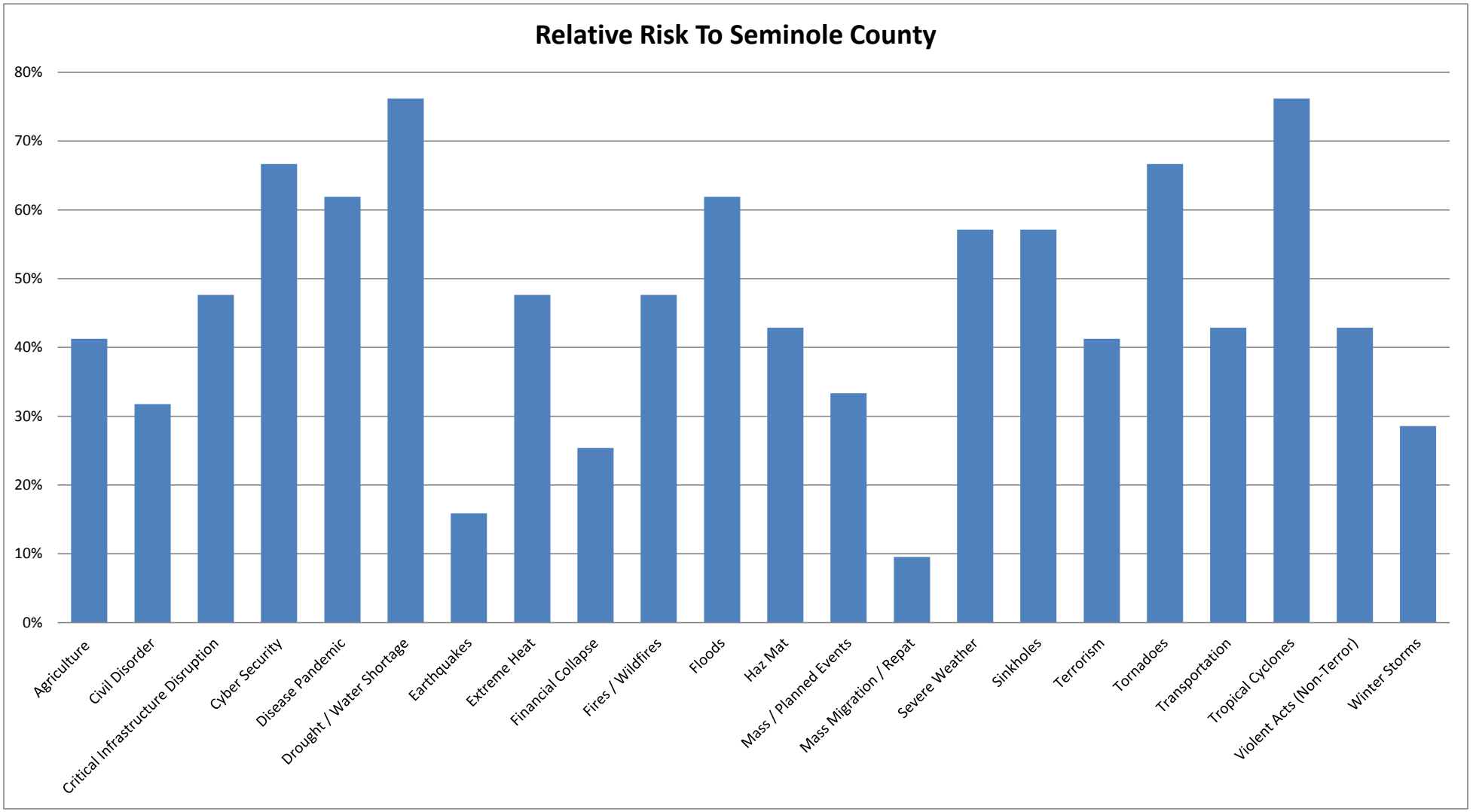
HAZARD AND VULNERABILITY ASSESSMENT TOOL

INCIDENT	PROBABILITY	SEVERITY = (MAGNITUDE - MITIGATION)							RISK
		HUMAN IMPACT	PROPERTY IMPACT	SPATIAL	ECONOMIC IMPACT	PREPAREDNESS	TRAINING EXERCISE	LOGISTICS	
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Amount of Geographic Area Affected*	*Interuption of services*	*Specialized Plans*	*Multi-year Training and Exercise Planning*	*Equipment Teams Support*	*Relative threat**
SCORE	1 = 10+ 2 = 6-10 yrs 3 = 1-5 yrs	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	1 = Up to 25% 2 = 25-50% 3 = 50 or more	0 = N/A 1 = Low 2 = Moderate 3 = High	1 = Specific Haz Plan /Test 2 = Addressed in other plans 3 = No spec plan for haz	1 = Yearly TEP 2 = TEP every other yr 3 = Rarely trained/exercised	1 = Highly Spec Teams/Equip 2 = Minimal Equip/Teams 3 = Low or none	*0 - 100%*
Agriculture	2	2	1	1	2	2	3	2	**41%**
Civil Disorder	2	2	2	1	2	1	1	1	**32%**
Critical Infrastructure Disruption	3	1	1	1	2	2	2	1	**48%**
Cyber Security	3	1	1	1	3	3	2	3	**67%**
Disease Pandemic	3	3	1	3	3	1	1	1	**62%**
Drought / Water Shortage	3	2	1	3	2	2	3	3	**76%**
Earthquakes	1	1	1	1	1	2	3	1	**16%**
Extreme Heat	3	2	0	3	1	1	2	1	**48%**
Financial Collapse	1	0	2	3	3	2	3	3	**25%**
Fires / Wildfires	3	2	2	1	2	1	1	1	**48%**
Floods	3	2	3	2	2	1	2	1	**62%**
Haz Mat	3	3	1	1	1	1	1	1	**43%**
Mass / Planned Events	3	2	0	1	1	1	1	1	**33%**
Mass Migration / Repat	1	1	0	1	1	1	1	1	**10%**
Severe Weather	3	2	2	3	1	2	1	1	**57%**
Sinkholes	3	2	2	1	1	2	3	1	**57%**
Terrorism	2	3	3	1	3	1	1	1	**41%**
Tornadoes	3	3	3	1	3	2	1	1	**67%**
Transportation	3	3	1	1	1	1	1	1	**43%**
Tropical Cyclones	3	3	3	3	3	1	1	2	**76%**
Violent Acts (Non-Terror)	3	3	1	1	1	1	1	1	**43%**
Winter Storms	2	1	1	3	1	1	1	1	**29%**
***Threat Increases with Percentage**			**LOW**	**0%-30%**	**MEDIUM**	**31%-60%**	**HIGH**	**61% +**	


Relative Risk To Seminole County
80%
70%
60%
50%
40%
30%
20%
10%
0%
Agriculture
Civil Disorder
Critical Infrastructure Disruption
Cyber Security
Disease Pandemic
Drought / Water Shortage
Earthquakes
Extreme Heat
Financial Collapse
Fires / Wildfires
Floods
Haz Mat
Mass / Planned Events
Mass Migration / Repat
Severe Weather
Sinkholes
Terrorism
Tornadoes
Transportation
Tropical Cyclones
Violent Acts (Non-Terror)
Winter Storms

Seminole County LMS Hazard Summary

Hazard	Agriculture (Exotic Pests and Diseases
Probability of Occurrence	6-10 Years — Risk % 41 — Rating Medium
Significant Occurrences	-(1982): The City of Longwood - toad infestation due to heavy rains. (1999): The City of Altamonte Springs experienced mice infestations. (1995): Citrus Canker detected in Seminole County -Spatial extent - while the direct impacts may be less than 25%, the indirect effects of an incident could be county-wide

Impacts/Consequences

Human	Moderate Impact- - Increased possibility of death or injury to agriculture diseases - Risk to contaminated food crops
Property	Low impact to critical infrastructure and property resulting in physical losses - Historically this hazard has more of an impact on crops - Exotic pests can become a nuisance to property owners if not properly treated
Environment	- Hazard can have broader negative impacts to local ecosystems such as habitat loss and biodiversity degradation. - The 2014 National Climate Assessment reports that with a changing climate, the risk associated with disease-causing agents and parasites is expected to increase and that the risk of environmental impacts may increase over time
Economic	Moderate Impact - The community may experience a moderate economic loss, primarily for the farming and agriculture industry, as a result of a pest or disease outbreak
Program Operations	The County Comprehensive Emergency Management Plan (CEMP) covers basic response and recovery capabilities for exotic pests and diseases that are agriculturally based.
Responders	Depending on the nature of the pest or disease, responders may require certain protective equipment and tools
COOP	An agriculture incident would have minimal impacts on COOP Plan because this hazard would not disrupt normal procedures
Property/ Facilities/ Infrastructure	There would likely be little impact to critical infrastructure, but privately owned farmland has the potential to be devastated
Public Confidence in Jurisdiction's Governance	Would depend on how satisfied those impacted are with the local response

Seminole County LMS Hazard Summary

Hazard	Civil Disorder
Probability of Occurrence	6-10 Years — Risk % 32 — Rating Medium
Significant Occurrences	February 26, 2012 - shooting of 17 year old, Trayvon Martin in Sanford. There were public protests, school walk outs, and thousands of planned rallies across the nation. The Seminole County EOC provided support for seven weeks in the trial phase of the event. While spatial extent of the hazard would be 25% or less, civil disorder could have county-wide effects.

Impacts/Consequences

Human	Moderate Impact - Because the hazard is human in nature, tension between the public, law enforcement, judicial system, and media would be heightened -Disorder can also lead to violent acts potentially impacting local population
Property	Moderate Impact - There would be little impact in general, but protests and riots have the potential to cause localized problems
Environment	-Very little to no impact on the environment
Economic	Moderate Impact - Depending on the population involved, strikes, protests, and riots could have negative impacts to economic prosperity with employees not showing up to work
Program Operations	Would likely be a jurisdictional management of operations will take effect, coordinated at the County level between the Sheriff's Office, Florida Department of Law Enforcement (FDLE), and the Office of Emergency Management.
Responders	-Those in Law Enforcement may need additional protective equipment when responding to potentially violent incidents of disorder -Possible increases in crime rate
COOP	-There could be some impact to COOP Plan as civil unrest could lead to disruption in operations in affected areas
Property/ Facilities/ Infrastructure	-Moderate impact to property, facilities, and infrastructure
Public Confidence in Jurisdiction's Governance	-Depending on the population affected, those related to or of similar circumstances would react to how the situation is handled

Seminole County LMS Hazard Summary

Hazard	Critical Infrastructure Disruption (Communication, Power, Utilities)
Probability of Occurrence	1-5 Years — Risk % 48 — Rating Medium
Significant Occurrences	Occurs fairly frequently mainly due to severe weather or in extreme cases tropical cyclones. Strong thunderstorms in the summer and storms associated with passing fronts or low pressure systems occur every year. Impacts from a disruption would impact less than 25% of the county, but may have county-wide effects.

Impacts/Consequences

Human	-Low impact - Could cause loss of power to home, disruption in drinking water supply, and threats unable to be relayed due to loss of communication between people involved with public safety information
Property	-Low impact -various homes and businesses could lose electrical power
Environment	-Hazards such as flooding from water main breaks, pollution from damaged or malfunctioning power plants and contamination from sewage/solid waste pose threats to local ecosystems and air quality.
Economic	-Moderate impact - depending on the type, scale, duration, and severity of disruption
Program Operations	-Disruption to these facilities by threat or attack will be dealt with utilizing the Seminole County Terrorism Annex. -In other situations the responsible agency would coordinate with emergency management
Responders	Depending on the size of the disruption, this may cause an interruption of emergency radio traffic in the event of a communications failure.
COOP	There may be some impact to COOP Plan if communication is disrupted. If so, alternate methods would be used to coordinate the appropriate response
Property/ Facilities/ Infrastructure	-Facilities near the affected areas may have to shut down -Properties may have to undergo decontamination -Infrastructure at a regional level could be severely affected if shut down
Public Confidence in Jurisdiction's Governance	High confidence in jurisdictional response partly dependent on a timely recovery

Seminole County LMS Hazard Summary

Hazard	Cyber Security/Cyber Attack
Probability of Occurrence	1-5 Years — Risk % 67 — Rating High
Significant Occurrences	-The nation as a whole has been affected by various cyber attacks, especially credit card fraud. -In 2013, the average monetary loss per victim in Florida was about $2,750. -A cyber security threat would physically affect less than 25% of Seminole County, but could have county-wide effects.

Impacts/Consequences

Human	Low impact- physical harm to the public would be unlikely
Property	Low impact- physical damage to property would be unlikely
Environment	Low impact- potential for impact depending on the nature of the attack
Economic	High impact- Depending on the nature of the threat, financial transactions and other economic processes could be heavily impacted
Program Operations	-Emergency management has combined with the County's Information Services Department to mitigate technological hazards -Operations within vicinity areas affected
Responders	Low impact to those responding to a cyber security threat
COOP	Low impact to COOP, depending on target of attack. This may cause the relocation of a particular service if severe enough.
Property/ Facilities/ Infrastructure	Information technology infrastructure could be stressed or shut down, but otherwise only a low risk to property and facilities
Public Confidence in Jurisdiction's Governance	-Confidence is high in protecting community from cyber attacks -Confidence is lower in being able to respond and recover from an attack

Seminole County LMS Hazard Summary

Hazard	Disease and Pandemic Outbreak
Probability of Occurrence	1-5 Years — Risk % 62 — Rating High
Significant Occurrences	Hepatitis C: yearly cases averaging 300 patients. Influenza: Reported every other year averaging 40 cases. 2009 H5N1 and H7N9 Avian flu reported 141 cases. Salmonellosis: averaging over 100 reported cases per year. Spatial Extent - Depending on the severity, a disease outbreak could affect more than 50%, and most likely the entire county.

Impacts/Consequences

Human	High impact -- Hepatitis C - Long term effects of cirrhosis of the liver and death. Influenza - Airborne viral spread contamination. Insignificant rate of death, although possible for people with associated health risks, elderly and children. Salmonellosis - Sickness with symptoms vomiting, diarrhea and fever. If not treated may lead to death.
Property	Low Impact -- Temporarily or permanently closing down restaurants, grocery stores and other small businesses/food relating industries if disease is harmful enough.
Environment	Likely low impact, unless the disease affected certain animal populations
Economic	High Impact- Slow down of business and economic activity in an area affected by the disease due to workers missing duty (sickness), temporary close down of businesses, hospital resource/space usage and limited interaction between people due to quarantine and fear of exposure.
Program Operations	-The Department of Health is the lead agency in an event. -The County would make use of the Strategic National Stockpile, and use the County's schools as a point of dispensing of pharmaceuticals ---A Hospital capacity may be impacted depending on size and severity of event
Responders	Heightened stress on medical personnel and may require higher level of personal protective equipment (PPE)
COOP	Low impact to COOP Plan, unless disease spread and affected individuals involved in the response operations
Property/ Facilities/ Infrastructure	Increased stress on local hospitals with increasing patients related to disease minimal impact to physical structures.
Public Confidence in Jurisdiction's Governance	Seminole County's response to a disease outbreak would determine the public's confidence in the medical and emergency management capabilities

Seminole County LMS Hazard Summary

Hazard	Drought and Water Shortage
Probability of Occurrence	1-5 Years — Risk % 76 — Rating High
Significant Occurrences	From October 2010 to June of 2012, much of the state had D3- Drought Extreme conditions. The 2 month period of April and May of 2012, reached highest level of drought with portions of the state under a D-4 Drought Exceptional condition. - Spatial Extent - A drought would affect more than 50%, and most likely the entire county.

Impacts/Consequences

Human	Moderate Impact- may require water use restrictions, which could cause stress to agricultural concerns -Increase in heat-related illness including dehydration -Vulnerable populations (infants, children, elderly, and pets) may require more attention
Property	Low Impact- Heat-sensitive components may be compromised
Environment	Low Impact- A reduction in ground water supplies creates a situation conducive to sinkholes -Non-domesticated animals will be directly impacted, flora may die off, increased fire risk as well as likelihood of soil quality degradation -With a changing climate, the risk for environmental impacts may increase over time
Economic	Moderate Impact- Agribusiness, public utilities, and other industries reliant upon water for production or services
Program Operations	Prolong drought periods may require suspension of services
Responders	-Prolonged exposure to severe conditions, overexertion required by job will increase risk of heat-related illness
COOP	Low impact to COOP Plan from a drought our water shortage incident because no major disruptions associated with it
Property/ Facilities/ Infrastructure	Low impact -Heat-sensitive components may be compromised
Public Confidence in Jurisdiction's Governance	The response of various utilities, water resource managers, and emergency management would be subject to the public's approval

Seminole County LMS Hazard Summary

Hazard	Earthquakes
Probability of Occurrence	10+ Years — Risk % 16 — Rating Low
Significant Occurrences	Earthquakes have not had a major impact in Florida. January 1879-St.Augustine, January 1880 Cuba and Key West, January 2014- Cuba and Key West, Other minor occurrences are recorded with very limited damage. Spatial Extent - An earthquake would be very localized and affect less than 25% of the county.

Impacts/Consequences

Human	Low Impact- Risk to health and safety from falling debris, stress and fatigue are also possible if incident is severe enough.
Property	Low Impact - earthquakes can cause damage to property, facilities, and infrastructure but historically has not occurred in Seminole County.
Environment	Low Impact - localized consequences, but historically has not occurred in Seminole County
Economic	Low Impact to the overall economy of Seminole County. Business would be able to reopen once a building inspection was complete.
Program Operations	If severe enough, a moderate impact to critical facilities would occur, but earthquakes have not historically occurred in Seminole County
Responders	There would be a risk of falling debris and impacted transportation routes, but earthquakes historically have not occurred
COOP	Low likelihood, but moderate impact to COOP Plan In an event, resources to continue operations may be limited (i.e. phones, Internet)
Property/ Facilities/ Infrastructure	Potentially high impact, but seismic events have historically not occurred in Seminole County
Public Confidence in Jurisdiction's Governance	Public confidence in this hazard will be directly related to the County's overall response by local leaders and public safety officials.

Seminole County LMS Hazard Summary

Hazard	Extreme Heat
Probability of Occurrence	1-5 Years — Risk % 48 — Rating Medium
Significant Occurrences	Summer heat indices can exceed 100 degrees. Two of the top ten warmest temperatures recorded were in June of 2004, reaching 100 and 101 degrees. The Natural Resources Defense Council expects for the county to have 13.8 summer days per year of extreme heat. - Spatial Extent - Extreme heat would affect more than 50%, if not the entire county.

Impacts/Consequences

Human	Moderate Impact -Inside a home with little or no air conditioning is the most dangerous place to be during extreme heat. -Heat related illness (exhaustion, stroke, and dehydration) are more likely especially with the vulnerable population (children, elderly, and pets)
Property	Negligible impact to property as most infrastructure is built to withstand high temperatures seen with Central Florida's climate
Environment	-Low impact -A reduction in ground water supplies create a situation conducive to sinkholes, non-domesticated animals will be directly impacted, flora may die off -- With a changing climate, the risk of environmental impacts may increase over time
Economic	Low impact - may stress local water supply demands
Program Operations	There would likely be minimal impacts to operations from an extreme heat event as long as working conditions remain normal (proper A/C, etc.)
Responders	-Prolong exposure to severe conditions -Overexertion required by job will increase heat-related illness
COOP	There would likely be minimal impacts to COOP Plan and to local government as long as working conditions remain normal (proper A/C, etc.)
Property/ Facilities/ Infrastructure	Negligible impact to property, facilities, and infrastructure as most are built to withstand high temperatures
Public Confidence in Jurisdiction's Governance	The public confidence would be related to any response actions the county takes to alleviate effects from extreme heat

Seminole County LMS Hazard Summary

Hazard	Financial Collapse
Probability of Occurrence	10+ Years — Risk % 25 — Rating Low
Significant Occurrences	The Great Depression - 1929-1940s, Great Recession - December 2007 -June 2009 Spatial Extent - Would affect more than 50% of area - a financial collapse would impact virtually the entire county's population

Impacts/Consequences

Human	Negligible -no physical harm to the population is noted
Property	Moderate Impact - houses, vehicles, etc. can be lost with inability to finance costs due to potential money loss however, no physical loss to property is noted
Environment	There would be no direct impact to the environment, however economic effects could indirectly affect environmental protection projects, initiative, etc.
Economic	High Impact - Subject to the nature of the collapse, many, if not all economic properties would be affected. -Stocks, unemployment, the ability to loan and borrow would all be impacted
Program Operations	Certain operations may be slowed by an economic crisis
Responders	There would likely be minimal impacts to those dealing with financial collapse; high stress, anxiety, etc.
COOP	May be some impact to COOP Plan - Employees needed to help in the recovery may lose their jobs as a result of a financial collapse
Property/ Facilities/ Infrastructure	Physical damage not applicable, but any repairs or new construction needed may be impacted by a struggling economy
Public Confidence in Jurisdiction's Governance	Public's confidence would be dependent on the ability of the economy to recover in a somewhat timely manner

Seminole County LMS Hazard Summary

Hazard	Fires/Wildfires
Probability of Occurrence	1-5 Years — Risk % 48 — Rating Medium
Significant Occurrences	-Summer 1998 -2,000 acres burned in Geneva, 12 residences destroyed, no fatalities or injuries, about $1.1 million loss-- 4/2012 - local state of emergency, burn ban -Spatial Extent - Impact less than 25% of the area within Seminole County, though the effects of smoke could cover a slightly larger area

Impacts/Consequences

Human	-Moderate Impact- has potential to kill or injure people trapped in burning buildings -For immediate area, smoke that decreases air quality may exacerbate respiratory problems, those with special needs may require more attention
Property	Moderate Impact- Can damage or destroy buildings including homes and businesses
Environment	-Extensive impact to wildlife and vegetation -With a changing climate, the risk for environmental impacts may increase over time
Economic	Moderate Impact- potential impact on agricultural industry and insurance industry
Program Operations	If affected, operations may be relocated or suspended
Responders	-Increased exposure to smoke inhalation -High risk of health and safety of responders
COOP	To continue the COOP Plan, operations may be relocated or suspended
Property/ Facilities/ Infrastructure	Moderate impact to transportation and utilities infrastructure, potential damage to properties
Public Confidence in Jurisdiction's Governance	The public confidence level depends upon the level of approval of the county to contain and respond to the fire threat

Seminole County LMS Hazard Summary

Hazard	Flooding
Probability of Occurrence	1-5 Years — Risk % 62 — Rating High
Significant Occurrences	Tropical Storm Fay (2008) - localized flooding, roadway washouts, affected over 150 homes, prompted Presidential Disaster Declaration, Hurricanes in 2004 - Charley, Frances, and Jeanne, Historic flooding event of 1924 -Spatial Extent - Flooding could impact between 25%-50% of the county's area, potentially greater in rare events

Impacts/Consequences

Human	Moderate Impact- risk to loss of life and injury, displacement, increased distress -May affect drinking water; can increase risks to health
Property	High Impact- Utility outages, transportation infrastructure closures, and isolated populations Varying levels of damage to structures in low-lying areas
Environment	-Increased risk of exposure to hazardous materials -Displacement of wildlife may increase public health and safety issues -Increased arboviral vectors
Economic	Moderate Impact- dependent on severity of flooding -High impact on insurance industry
Program Operations	Operations may be affected or interrupted by flooding
Responders	Risk to life and safety while responding to populations affected by flooding
COOP	Potential impact to COOP Plan - staffing difficulties are possible (personnel unable to drive to work, attending to own family)
Property/ Facilities/ Infrastructure	High Impact- Utility outages, transportation infrastructure closures, and isolated populations Varying levels of damage to structures in low-lying areas
Public Confidence in Jurisdiction's Governance	Confidence will be shaped by the reaction to the response of emergency management in mitigating, preparing, and responding to a flooding event

Seminole County LMS Hazard Summary

Hazard	Hazardous Materials (Fixed Site and Transportation)
Probability of Occurrence	6-10 Years
Risk %	43
Rating	Medium
Significant Occurrences	-No major incidents to report, though potential exists with CSX railroads, as well as Interstate 4 and SR 417 are used to transport hazardous materials --- Spatial Impact - Any hazardous material accident would have very localized impacts, and would account for less than 25% of the county's geographic area

Impacts/Consequences

Human	High Impact- depending on the hazardous material they are ranging impacts to human health and safety -may require shelter-in-place
Property	Low Impact- the property affected by a spill could have varying impacts depending on the type and scale of the disaster
Environment	High impact - to areas of highest concentration, may require specialized clean up
Economic	Low Impact - to financial community of impacted area
Program Operations	Low impact to operations, unless rare event that required relocation
Responders	Protective actions required for responders such as proper PPE, depending on the hazardous materials
COOP	Low impact - Unless directly impacted operations center, this hazard poses very little threat to COOP Plan
Property/ Facilities/ Infrastructure	Most likely low impact, but depending on nature and severity of event, there could be a larger risk to infrastructure, etc.
Public Confidence in Jurisdiction's Governance	The public's confidence would be related to the ability of the county to respond appropriately and contain the situation

Seminole County LMS Hazard Summary

Hazard	Mass Gathering/Planned Events
Probability of Occurrence	1-5 Years — Risk % 33 — Rating Medium
Significant Occurrences	-"Red, Hot, and Boom" 4th of July Celebration in Altamonte Springs brings over 150,000 people, City of Sanford's Fort Mellon, Winter Springs and Oviedo fireworks, Scottish Festival, ECNL Soccer League, December -Spatial Extent - These events are localized and would affect less than 25% of the county

Impacts/Consequences

Human	Moderate Impact- With large amounts of people, general injuries are more likely, civil disturbances more likely, increased traffic and accident risk
Property	Negligible impact - Influx of people may overtax local resources, if not prepared however no impact to the physical property is expected
Environment	Negligible impact - this non-natural hazard would likely not have an impact on local environment
Economic	Low Impact- increased demand of local resources, food, water, etc.
Program Operations	If gathering near center of operations, civil unrest could lead to disruption in operations in affected areas
Responders	May experience increased calls of service, potentially dealing with heavy traffic, slowing response time
COOP	If gathering near center of operations, civil unrest could lead to disruption to the COOP in affected areas
Property/ Facilities/ Infrastructure	Influx of people may overtax local facilities, roads, and resources, if not prepared
Public Confidence in Jurisdiction's Governance	How the County responds with security, and response to any emergency will determine the public's confidence

Seminole County LMS Hazard Summary

Hazard	Mass Migration/Repatriation
Probability of Occurrence	6-10 Years — Risk % 10 — Rating Low
Significant Occurrences	January 2010 -Operation Haiti Relief after earthquake brought displaced and some injured people through Orlando Sanford International Airport -Spatial Extent - this hazard would affect less than 25% of the geographical area

Impacts/Consequences

Human	Low Impact - Possible increases in crime rate, civil disturbances may increase
Property	Negligible Impact - mass migration would have little to no impact on physical property
Environment	Low Impact - Massive increase in population could strain environment
Economic	Low impact - increase demands of deliverable goods -increased crime in affected areas could affect local economy
Program Operations	Increased population could lead to civil unrest which may affect operations
Responders	Could be increased calls to service and need for additional personnel to handle influx of population
COOP	Civil unrest could lead to disruption to COOP Plan in affected areas
Property/ Facilities/ Infrastructure	Depending on type and scale of event, some local facilities and infrastructure could be stressed or overtaxed
Public Confidence in Jurisdiction's Governance	The ability of necessary responders to coordinate the specific event will determine public's confidence. The public may react to how migrants are treated as well.

Seminole County LMS Hazard Summary

Hazard	Severe Weather (Hail, Lightning, Micro-bursts, Thunderstorms)
Probability of Occurrence	1-5 Years — Risk % 57 — Rating Medium
Significant Occurrences	3/30-3/31/2011 -Winter Park storms caused widespread power outages, fallen trees, road flooding, and damage to homes. 7/27/13 - Micro-burst near Sanford Airport - one slightly damaged building, carts blown across property - Spatial Extent - This hazard could impact greater than 50% of the county and in extreme cases, county-wide effects

Impacts/Consequences

Human	Moderate Impact - Potential for minimal loss of life and injuries -May require shelter operations, potential impact on mental and physical health
Property	Moderate Impact - can cause utility outages and potentially major damage to buildings from wind, lightning can start fires as well, there is also a threat to aviation property
Environment	Low Impact - environmental tolerances can be overwhelmed by hazards associated with severe weather -Debris and hazardous materials could be released into the environment -With a changing climate, the risk of environmental impacts from severe weather may increase
Economic	Low Impact - depending on type of hazard and specific event, there could be damage to certain buildings, etc.
Program Operations	Dangerous weather conditions may cause difficulty in responders ability to travel -Loss of power may impact system operations and or communication
Responders	Protective actions required, PPE required for safety in addressing downed utility line, hazardous material, and debris -Status of responder's family will affect responder's ability to perform his/her duties
COOP	Some impact to COOP - Only in extreme situations of damage would relocation be necessary, communication and utilities may be impacted
Property/ Facilities/ Infrastructure	Possible utility outages and transportation infrastructure closures, damage to property and buildings in general is possible
Public Confidence in Jurisdiction's Governance	Residents affected by severe weather can look to local first responders and insurance companies to assist with damages. OEM responds to all reported severe weather events and coordinates messaging with the National Weather Service to alert residents of pending severe weather.

Seminole County LMS Hazard Summary

Hazard	Sinkholes/Land Subsidence
Probability of Occurrence	1-5 Years — Risk % 57 — Rating Medium
Significant Occurrences	Average size: 3-4 ft. wide and 4-5 ft. deep, 130 sinkholes/land subsidence in the county since 1962. They are a common naturally occurring geological phenomenon - Spatial Extent- localized incidents that affect less than 25% of the total land mass of the county

Impacts/Consequences

Human	Moderate Impact on the public outside of the immediate area - Risk to contaminated drinking water when sinkhole encroaches on aquifer
Property	Moderate Impact overall, isolated to home or businesses affected; could be costly to repair - Sinkholes/ Land Subsidence events can affect the infrastructure by draining unfiltered water from streams, lakes and protected wetlands into the aquifer
Environment	Moderate Impact to the environment; sinkholes can affect the environment by threatening water supplies by draining water from streams, lakes, and wetlands directly into the aquifer; this could affect wildlife habitats
Economic	Low impact to the overall local economy, a localized sinkhole or land subsidence event would have a very limited impact on services.
Program Operations	There would be minimal impact to program operations due to the isolated nature of sinkholes
Responders	Low impact to responders due isolated nature of sinkholes
COOP	There would be minimal impact to COOP due to the isolated nature of sinkholes
Property/ Facilities/ Infrastructure	Isolated sinkholes could impact critical facilities, transportation infrastructure, and private property
Public Confidence in Jurisdiction's Governance	Residents affected by sinkholes may look to first responders and insurance companies for assistance. OEM responds to all reported sinkholes/land subsidence events to perform a site survey and take photos for documentation. New study for Florida to be released in 2015.

Seminole County LMS Hazard Summary

Hazard	Terrorism (Chemical, Biological, Radiological, Nuclear, Explosive)
Probability of Occurrence	6-10 Years — Risk % 41 — Rating Medium
Significant Occurrences	No major terrorist attacks in Central Florida or Seminole County, Other than 9/11/01, South Florida experienced and Anthrax outbreak in 2001. Spatial Extent - A terrorist attack would most likely be very localized and isolated and impact less than 25% of the geographic area of the County, effects could be county-wide

Impacts/Consequences

Human	High Impact - great potential for threat to health and safety depending on type of attack -localized impact if explosive, but potentially wide spread effects if CBRN
Property	High Impact - depending on type of attack and property targeted, there could be major if not catastrophic localized damage
Environment	-Potentially high impact if CBRNE is dispersed -Aquifer system is vulnerable to intentional spill of hazardous material
Economic	High Impact - if target is financial or major commercial building or institution, impacts can be greater and more widespread; other cases could shut down industries, infrastructure, and/or the delivery of services
Program Operations	If dispersal is in vicinity, there could be major impacts and disruption; potential relocation
Responders	-Potentially very dangerous and hazardous conditions -Requires proper protective equipment for various threats, increase stress and fatigue
COOP	Depending on type, scale, and specific location of event, the COOP Plan could be disrupted
Property/ Facilities/ Infrastructure	Potentially high impact to critical facilities and infrastructure depending on target of attack and type of threats
Public Confidence in Jurisdiction's Governance	Public's confidence could be severely impacted by terrorist attack depending on nature and scale of threat. Prevention and response are key to maintaining confidence.

Seminole County LMS Hazard Summary

Hazard	Tornadoes
Probability of Occurrence	1-5 Years — Risk % 67 — Rating High
Significant Occurrences	On 2/22/1998 an EF 3 tornado struck Seminole County and caused $31 million dollars in damages. -Spatial Extent - Tornadoes are usually very isolated and would impact less than 25% of the geographically area of the county

Impacts/Consequences

Human	High impact in the immediate path of the tornado. From 1950- 2004 there have been a total of 14 fatalities and 152 injuries as a result of tornado events.
Property	High Impact -Tornadoes have historically been known to cause a large mount of property damage. In 1998, and EF 3 tornado in Seminole County caused $31 million in damages.
Environment	Moderate Impact - mainly isolated in nature, but can harm or kill various plant and animals -Debris and hazardous material could be released into the environment -With a changing climate, the risk for environmental impacts from tornadoes may increase
Economic	High Impact - A tornado can have a large economic impact to the community. Tornado events are typically very costly to recover from and can impact the ability for the community to reopen businesses
Program Operations	Agencies may be forced to relocate if tornado is threatening. Operations could be stalled by transportation and communication barriers
Responders	Immediate response can be stalled because of dangerous weather conditions, proper protective equipment may be needed as well
COOP	Possible impact to COOP Plan. Agencies may be forced to relocate to continue essential operations as a result of impact from tornadoes
Property/ Facilities/ Infrastructure	Tornadoes can cause massive failure in electrical, communications, and other critical infrastructures
Public Confidence in Jurisdiction's Governance	Timely warning provided by local forecasters and emergency management will be critical along with response and recovery efforts taken by county will impact public's confidence

Seminole County LMS Hazard Summary

Hazard	Transportation Accident
Probability of Occurrence	1-5 Years — Risk % 43 — Rating Medium
Significant Occurrences	There have not been any major accidents recently in Seminole County, but the potential exists with the Orlando Sanford International Airport (SFB), rail systems (Central Florida Rail Corridor (CFRC), SunRail and Amtrak Auto Train. - Spatial Extent - accidents are very isolated in nature and would affect less than 25% of the geographical area of the county

Impacts/Consequences

Human	High Impact - Depending on type of accident, major injuries and mass casualties are possible, especially with aircraft and trains.
Property	Low Impact - depending on nature and scale of accident, isolated property damage could occur
Environment	Low Impact - any impact would isolated in nature, unless in the extreme case a fire is started in a vulnerable wild-fire area.
Economic	Low Impact - Isolated accidents do not pose major threats to the economy, though depending on the type and scale of the accident and areas impacted, the cost to repair and recovery could be expensive
Program Operations	A transportation accident would have little or no impact on program operations
Responders	Responders would require appropriate protective equipment, personnel may need support if a mass casualty incident
COOP	Impacts to COOP Plan would likely be minimal because the isolated nature of a transportation accident
Property/ Facilities/ Infrastructure	Isolated property and critical facilities and transportation infrastructure could be shut down or impacted depending on nature, scale and location of event
Public Confidence in Jurisdiction's Governance	Public confidence is related to the overall response to a major traffic accident on the part of the county's responders

Seminole County LMS Hazard Summary

Hazard	Tropical Cyclones
Probability of Occurrence	1-5 Years — Risk % 76 — Rating High
Significant Occurrences	2004 -Hurricanes Charley, Frances, and Jeanne - Local State of Emergency declared, County offices and schools closed, 2005- Wilma - flooding rains,etc., 2008- Tropical Storm Fay - major flooding from torrential rains - Spatial Extent - Tropical cyclones can have far reaching effects and would impact the entire county

Impacts/Consequences

Human	High Impact - depending on the strength of the storm, evacuation may be necessary of low lying areas -Food and water issues if residents unprepared for shelter in place for duration of event -Injuries and fatalities possible, most likely due to flooding
Property	High Impact - depending on strength of the storm, structural damage to residential, commercial, industrial, and governmental buildings could be major
Environment	Varied Impacts - depending on strength of the storm, trees and shrubbery could sustain major damage -Transportation of foreign debris and flooding can disrupt ecosystem services
Economic	High Impact - Depending on strength of the storm, low to high impacts could be felt within the path of the storm on all business sectors Regional impacts could be greater with a catastrophic storm
Program Operations	If damage to government offices, relocation may be needed
Responders	-May be difficulty in responding during event because of dangerous weather conditions, -experience fatigue and stress during hazardous conditions -status of responder's family will affect the responder's ability to perform his/her duties
COOP	The COOP Plan may be disrupted depending on strength of storm
Property/ Facilities/ Infrastructure	High Impact - depending on strength of the storm, structural damage to residential, commercial, industrial, and governmental buildings could be major -major disruption could occur with transportation infrastructure, or damage to critical facilities
Public Confidence in Jurisdiction's Governance	The public's confidence is related to how well services are kept online, proper warning information, and ability to respond to various hazards associated with tropical cyclones

Seminole County LMS Hazard Summary

Hazard	Violent Acts (Non-Terrorism)
Probability of Occurrence	1-5 Years — Risk % 43 — Rating Medium
Significant Occurrences	There have been no major recent acts of violence in Seminole County, but the possibility is always there - Spatial Extent - Event would be highly isolated in nature and would impact less than 25% of the geographic area of the county

Impacts/Consequences

Human	High Impact- Violent acts can cause mass injuries/casualties depending on nature and scale of act -Mental and emotional stress can also be heightened
Property	Low Impact- Non-terrorist violent acts typically do not target or impact property specifically, and if so, damage would likely be minimal
Environment	Low impact - There is low probability that the environment would be impacted from a violent act unless it is an intentional fire
Economic	Low Impact- any violent act would have minimal effects on local economy
Program Operations	Unless act directly impacts government personnel or buildings, the impacts would be minimal
Responders	-Would require necessary protective equipment depending on nature and scale of situation -Status of responder's family will affect the responder's ability to perform his/her duties
COOP	The COOP Plan would largely be unaffected by a non terrorist violent act depending on the act
Property/ Facilities/ Infrastructure	Impacts isolated to facilities directly related to violent act, some transportation infrastructure could be disrupted during response to security threat
Public Confidence in Jurisdiction's Governance	Public's confidence dependent upon the ability of the County to thwart threat and respond to situation and protect victims

Seminole County LMS Hazard Summary

Hazard	Winter Storms/Freezes
Probability of Occurrence	6-10 Years — Risk % 29 — Rating Low
Significant Occurrences	December 1989- could outbreak and hard freeze, temperatures in the 20s, extensive damage to citrus crop, power blackouts, in the entire state of Florida, 26 deaths were the result of hypothermia -Spatial Extent- Would likely have county-wide consequences impacting greater than 50% of the geographic area of the county

Impacts/Consequences

Human	Low impact- Risk of hypothermia and extreme loss of heat if residents are not prepared for conditions (especially with wind chill factored in), special needs population, infants, children, and elderly may require more attention
Property	Low impact- historically, no major problems for properties in Seminole County, but in extreme situations, electrical outages, and dangerous road conditions are possible
Environment	Moderate Impact- Damage or loss of susceptible plants and animals
Economic	Low impact- possible impact to agriculture, especially plant and animal industries within the county
Program Operations	Relatively low impact to operations; prolonged severe cold weather periods may strain utility company
Responders	Low impact to responders; extended periods of cold weather increases risk for hypothermia, fatigue, etc.
COOP	Very little to no impact on COOP from a winter storm or freeze except in the case of power outages
Property/ Facilities/ Infrastructure	Low impact- historically, no major problems for properties in Seminole County, but in extreme situations, electrical outages, and dangerous road conditions are possible
Public Confidence in Jurisdiction's Governance	The public's confidence is dependent on the ability of responders to provide proper warning, response to utility outages, and protection of vulnerable populations and infrastructure