







RISK and VULNERABILITY (4.3.1)	 <div> <div>People</div> <div>Property</div> <div>Environment</div> <div>Program Operations</div> </div>			
HAZARD/HIRA				
Natural				
Hurricanes/Tropical Storms	<p>According to the Volusia County Property Appraiser, over 45% of the County's population resides along the coast (205,000 people). The coastal region also leads the County in tourism. The large coastal population is highly vulnerable to the affects of a hurricane. Volusia County's worst hurricane season was 2004. Hurricanes Charley, Frances and Jeanne impacted Volusia County, back-to-back. Although Charley was the only storm to impact the County with hurricane-force winds, never-the-less these storms had a major impact on homes and infrastructure, and caused adverse human consequences. (Section V)</p>	<p>Volusia County's worst hurricanes on record were Hurricanes Charley, Frances and Jeanne in 2004. These back-to-back storms battered Volusia County with tropical storm force winds for weeks. Storms of this magnitude have the potential to destroy homes and infrastructure, injure and kill people in its path, and cause massive environmental consequences. Cumulatively the County experienced over \$560,000,000 in damages. Approximately 40% of homes were damaged. Based on the hazard analysis, Volusia County's annualized losses to residential buildings from Hurricanes is over \$280 million. For non-residential buildings, annualized losses total almost \$70 million. (Section V and VI)</p>	<p>Hurricanes do not only bring high winds to Volusia County, they also have the potential to produce inland flooding, tornadoes, storm surge, and significant beach erosion. These four hazards can severely impact the environment by downing trees, eroding sensitive coastal dunes and ecosystems, loss of sea turtle nests, and causing the runoff of debris and potentially hazardous materials into our waterways. Because erosion events were part of other hazard events (e.g., storm surge, hurricane, severe winter storm) the monetary damage for the erosion alone is unknown.</p>	<p>Program operations may be impacted by a hurricane. Historically, tropical depressions and tropical storms have not impacted the County's ability to perform it's day-to-day program and CEOC operations. Preparedness, response, and recovery efforts have been implemented with no additional strain to the County. In the case of a direct land-falling hurricane in Volusia County, program operations may become strained, especially if it is a major hurricane (Cat 3 or greater). In these situations we will rely on assistance from other counties through the Emergency Management Assistance Compact (EMAC) (mutual aid) or through the State and FEMA. In some cases, it may take several weeks or months to return program operations to a normal level. (VC CEMP)</p>
Floods	<p>According to FEMA, flooding is the most costly natural hazard in the U.S. and can cause long-term adverse psychological impacts. According to FloodSmart.gov, all 50 states are at risk to flooding and flash floods. Flash floods are particularly dangerous because they can quickly sweep cars off roadways, causing injuries and casualties to people in its path. (Volusia County does not experience true "flash flooding"). In addition to life safety, property can be damaged by just an inch of water (FloodSmart.gov). Homeowners insurance and renter's insurance does not cover flooding. A separate policy under the NFIP must be purchased. Citizens without flood insurance may not receive any assistance to repair their homes and property following an event. Countywide, there are 47,452 structures in the 100-year floodplain. For a map the 100-year floodplain, see Figure 5.10.</p>	<p>Property in low-lying areas or Special Flood Hazard Areas (100 year floodplain) are susceptible to damage from flooding (FloodSmart). Floods can destroy homes and businesses, erode property along creeks and rivers, and washout roads and bridges. In some cases, flooding is a secondary hazard from a hurricane event. Volusia County has experienced ten major flood events since 1994 resulting in over \$35,000,000 in insured flood losses. (Section V)</p>	<p>Flooding has the potential to put our environment at risk in different ways. Flooding erodes our river beds which causes sediments to enter the waterways, potentially clogging our stormwater systems. Floods can also bring hazardous materials/pollution into our waterways via runoff. The County's sensitive riparian ecosystems are often negatively impacted in this process. When Lake Okeechobee nears flood level, water is emptied directly into the intracoastal waterway. This water, rich in nutrients, results in algae blooms and oxygen depletion in our rivers, resulting in fish die-offs. Due to a lack of data on historical environmental impacts from flooding in Volusia County, we were unable to directly calculate the full cost.</p>	<p>In rare occasions, program operations may be impacted by a flood. The VCEOC does not sit in a Special Flood Hazard Area (SFHA), although much of the surrounding land, roadways, and access points do. Historically, the EOC has remained operational during flood events with no impact to program operations. County programs may become strained responding to local or statewide flooding events. In these situations we may rely on assistance from other counties and the state through the Emergency Management Assistance Compact (EMAC) and mutual aid agreements.</p>
Thunderstorms	<p>Severe thunderstorms are a common occurrence in Volusia County throughout the year. These are dangerous events capable of producing high winds, hail, tornados, and lightning. All citizens in Volusia County are at risk to the negative effects of thunderstorms. Downed trees, damage to homes, loss of electricity, and rarely, casualties are common byproducts of severe thunderstorms. (Section V and VI)</p>	<p>According to NOAA's Climatic Data Center, from 1996 - 2013, Volusia County had 120 severe thunderstorm/wind events, causing approximately \$142 million in property damage with zero fatalities. All property in Volusia County is at risk to the negative effects of thunderstorms. Downed trees, damage to homes, businesses, and infrastructure, and loss of electricity are common byproducts of severe thunderstorms. (Section V and VI)</p>	<p>Severe thunderstorms in Volusia County have historically had a minimal impact on the environment. In some cases, these storms can down trees and vegetation and cause localized flooding. Please see "Floods" above.</p>	<p>There is no risk to program operations from thunderstorms. VCEM's ability to respond to and manage the event should not be impacted. The VCEOC is equipped with two generators and redundant communication systems. In a catastrophic event, the VCEM may rely on outside support to maintain operations as stated in the above hazard examples.</p>
Tornados	<p>Tornadoes pose a great risk to people and structures. While Volusia County is not located in "tornado alley", people are at risk to the impacts of a tornado. From 1953 to 2009, Volusia County had 69 tornado events, responsible for 2 deaths and 107 injuries. (table 5.12) Not only can tornadoes threaten life safety, they can demolish homes and businesses, destroy infrastructure, and impact entire communities.</p>	<p>Tornadoes pose a great risk to property. From 1996 to 2013, Volusia County had 37 tornado events, responsible for over \$142,000,000 in property damage. Two fatalities and 128 injuries were reported. (Section V, NOAA Climatic Data Center) Tornadoes can reach wind speeds over 200mph, (although the most powerful tornado to impact Volusia County was an EF3) lifting homes and businesses off of their foundations, crippling infrastructure and creating automobile sized missiles. Entire communities may be destroyed.</p>	<p>Because of the vast range of wind speeds associated with tornadoes, the environment is at risk to a variety of impacts. Even an EF0 (65-85mph) can uproot trees and vegetation. In stronger tornadoes, debris will tossed miles away from the source, potentially entering our waterways. Hazardous materials may escape if vehicles are damaged or storage tanks are compromised.</p>	<p>Unless there is a direct impact from a tornado, there is no risk to program operations at the County level. Preparedness, response, and recovery efforts should not be impeded. The VCEOC would remain operational, supporting the local officials. In the case of a direct hit to the VCEOC, program operations would be minimally affected, as the building is hardened to withstand an EF-4 tornado.</p>
Wildfire	<p>Wildfires are one of the most common hazard events in Volusia County. Between 2000 - 2008, the average number of wildfires per year was 129 (Table 5.18). People and their property are at risk to the impacts of a wildfire. Wildfires can burn down trees, vegetation, homes and businesses. Smoke from wildfires can be detrimental to the health of citizens living in close proximity to the fires. Smoke and ash from wildfires can obscure vision and cause extended road closures.</p>	<p>Wildfires can destroy public and private property, ravish parklands, and disrupt the service of critical utilities. The most recorded wildfires in a 2-month period in Volusia County was 233 fires between June and July 1998; 163,000 acres burned. The fires threatened 29,000 homes, \$60,000,000 in timber was lost, and \$2,100,000 in property damage resulted. Both forested and urban areas are at risk to wildfires. (Section V and VI)</p>	<p>Though many wildfires are a natural process, the environment may be negatively impacted. Wildfires can start in urban or woodland areas. The national average size of a wildfires is 309.6 acres (NOAA Wildfire Report 2012). Not only are trees impacted by these fires, so are the native species of plants and animals. Smoke and ash from the fires can pollute waterways and the air.</p>	<p>There is a minimal risk to program operations posed by wildfires. Historically, the VCEOC has been impacted by a wildfire on two occasions, however the smoke intrusion was never severe enough to require COOP activation. If there was a wildfire at or near the VCEOC that caused air pollution or blocked access roads to the facility, program operations may become strained. In this situation, VCEMD may activate our COOP Plan. In extreme circumstances, the VCEM may seek outside help through mutual aid agreements and EMAC.</p>
Drought/ Extreme Heat	<p>People are indirectly at risk to drought. Drought negatively affects agriculture and livestock, which impacts the food people eat. Farmers are the most directly impacted by the impacts of drought. Extreme heat is one of the leading causes of natural hazard deaths in the United States (International Journal of Health Geographics).</p>	<p>Property may be at high risk to drought under extreme circumstances. Extended periods of drought impacts agricultural products and farmlands. Crop losses may be significant. The fern industry may be adversely impacted. Volusia County experienced droughts in 1981, 1985, 1998, 1999, and 2000. (Section V and VI)</p>	<p>The environment is also at risk to drought and extreme heat. Without water, vegetation and sensitive ecosystems may be negatively impacted. Stream flows may be reduced, impacting riparian and riverine ecosystems. (Section V)</p>	<p>Program operations will not be impacted by drought conditions.</p>
Hail	<p>Everyone in Volusia County is at risk to hail. Hail can cause injuries and, in rare cases, death if people are outside during an extreme hail event. In Volusia County there have been no recorded fatalities or injuries reported from hail. (Section V) Hail is more harmful to homes and businesses as it can damage roofs and windows on buildings and vehicles.</p>	<p>Although hail storms do not typically cause widespread damage to property, if the size of the hailstones are great enough, hail can puncture roofs, break car windshields, dent bodywork, and damage windows. Total losses from the 78 hail events from 1996 - 2013 in Volusia County is over \$110,000. (Table 5.3). Because hail is formed during thunderstorms, see "Thunderstorms" for more information.</p>	<p>Although the entire County and environment is vulnerable to hail, there are no direct significant impacts to the environment. An example of an indirect impact may be vehicular accidents on roadways that leak gasoline and hazardous materials into roadways.</p>	<p>Program operations will not be impacted directly by hail. Because hail is formed during thunderstorms, see "Thunderstorms" for more information.</p>
NOAA Climatic Data Center	http://www.ncdc.noaa.gov/			

RISK and VULNERABILITY (4.3.1) (con't)		People	Property	Environment	Program Operations
HAZARD/HIRA					
Natural (Cont'd)					
Severe Winter Storms		All of Volusia County is vulnerable to winter storms. Being in the southern portion of the nation, we rarely experience severe winter storm events, however there were two extended cold periods in the 1980's that froze many of the orange groves. (Section V) NOAA's Climactic Data Center has recorded 0 severe winter storms from 1996 - 2009. Historically the greatest impact of cold weather has been on the homeless population. Shelters have been opened during cold weather events for them.	All of Volusia County is vulnerable to winter storms. The greatest impact was to the orange groves and fern industry in the 80's. The fern industry was also impacted. No dollar amount of damage is available.	The environment is at risk to the negative effects of winter weather. Freezing temperatures can hurt crops and vegetation, particularly non-native species.	Program operations will not be impacted by winter weather.
Lightning		Everyone in Volusia County is at risk to lightning, as Florida is the lightning capitol of the U.S. Lightning can cause serious personal injuries and, in some cases, death. Since 1994, lightning has caused 1 death and five injuries. (Section V) Lightning is also harmful to homes and businesses, potentially sparking fires or destroying an electrical system. Beach goers, boaters, and golfers are at particular risk to lightning.	All of Volusia County is at risk to lightning. Lightning has caused over \$1,367,000 in property damage since 1996. (Table 5.8, NOAA Climactic Data Center) Lightning is responsible for causing numerous structure fires and wildfires in Volusia County, particularly during our dry season in the later winter/early spring.	The environment is vulnerable to lightning strikes. Lightning can spark fires, and if conditions are dry enough, lightning can spark a serious wildfire (Section V). See "Thunderstorms" and "Wildfires" for more information.	Program operations will not be impacted directly by lightning. If VCEOC is directly hit by lightning, we have redundant power, IT, and communication systems in place.
Coastal Erosion		Although there is no life-safety issue with coastal erosion, people living on the coastline of Volusia County are at risk to this hazard type. Because coastal erosion can be a result of tropical storms, hurricanes, and nor'easters, homes and structures built along the coastline may be damaged in a hurricane event. Homes may fall into the ocean and protective dunes may be destroyed.	All property along the coast of Volusia County is at risk to coastal erosion. Private properties in some areas lose inches or feet of beach each year to eroding coastlines. Coastal erosion has caused over \$400,000,000 in damages. (Table 5.13) For a map of critical erosion areas, see Figure 5.8.	The environment is extremely vulnerable to coastal erosion. Erosion can occur via wind or water. Erosion of soil and sand can lead to sedimentation in waterways, loss of habitat for coastal ecosystems, and changes in the coastal geomorphology. (Section V)	Program operations are not at risk to coastal erosion. The VCEOC is located 20 miles inland from the coast.
Sinkhole		Sinkholes are a natural and common geologic feature in areas with underlying limestone and other porous rock types that are soluble in water. There were 80 sinkholes in Volusia County between 1973 and 2005. (Table 5.12) People are at risk to sinkholes should the structure or car they are in be impacted by a sinkhole suddenly opening. No injuries from sinkholes have been recorded in Volusia County.	Property is at risk to sudden sinkhole formation, particularly in west Volusia County. In 2004, a sinkhole devoured a 160 foot section of Howland Boulevard in Deltona. It is estimated it took 1 million cubic yards of dirt to fill it.	The most important environmental issue with respect to sinkholes is the sensitivity of aquifers to groundwater contamination. The effect of man on sinkholes is most severe in cases where polluted surface waters enter sinkhole aquifers. Since they are natural holes, they are attractive sites for the dumping of trash and HAZMAT.	There are no risk to program operations from sinkhole formation.
Tsunami		The residents of the coastal region of Volusia County are at risk to a tsunami. In August 2008, a qualitative tsunami hazard assessment indicated that the U.S. Atlantic coast has a very low Tsunami risk based on low wave run-up, low tsunami hazard frequency, and no reported fatalities. That said, a tsunami event could potentially impact a significant portion of the coastal population. Fortunately there should be a minimum six hours advance notice, sufficient time to evacuate the vulnerable population.	Should a tsunami event impact Volusia County, severe or catastrophic damage could occur. Massive amounts of vegetative and construction debris would result, boats would be washed inland, power lines could collapse, and underground utilities could be destroyed. (Section V)	A tsunami event could be environmentally devastating. Vegetation in large stretches of the coast would be hurt substantially as saltwater-tolerant mangroves and grasses take over from other species. For rare animals with specific reproduction sites, like marine turtles, the tsunami's effects could spell extinction. Salt water intrusion into aquifers would occur. Sewage and other pollutants would contaminate ground water.	Program operations may be impacted by a tsunami. Although Volusia County has never experienced a tsunami, VCEM developed a tsunami response plan that indicated response and recovery efforts may become strained. We will rely on assistance from other counties through mutual aid, the State and FEMA. It may take months to return program operations to a normal level.
Storm Surge		Storm surge occurs when the water level of a tidally influenced body of water increases above the normal astronomical high tide and is associated with tropical storms and hurricanes. Strom surge is the biggest threat to people associated with a tropical cyclone. It is critical for those living in storm surge zones to evacuate when ordered to do so.	All of Volusia County's 48 miles of coastline are vulnerable to storm surge. (Figure 5.11) Billions of dollars of property are located in storm surge zones. The State of Florida has established a Coastal Construction Control Line (CCCL). To minimize property damage, no structures may be built seaward of this line. During several previous storm surge events, some parts of SR A1A were undermined.	Storm surge can be extremely detrimental to the environment, destroying turtle nesting sites, inundating coastal areas and rivers with saltwater, polluting ground water, and killing sensitive vegetative ecosystems.	Program operations may be impacted by a large storm surge event (Category 3 or higher hurricane). Although Volusia County has never experienced a large storm surge event, we have experienced many small-scale storm surge events that caused homes to flood and moderate coastal erosion. Some routine program operations were suspended until the VCEOC returned to a Level 3 (monitoring) status.
Public Health Emergencies		All Volusia County residents are at risk to public health emergencies such as a pandemic influenza, pneumonic plague, epidemic, food contamination, etc. The very young and the very old are especially vulnerable as their immune systems are fragile. Public heath emergencies may be accidental, natural, or intentional. Several cases of dengue fever (DEN-1) have been reported in Martin County. None have been reported in Volusia County to date. Volusia County has experienced cases of imported malaria. Although rare, there have been cases of west nile virus encephalitis in Volusia County. Fortunately WNV is asymptomatic in 80% of the cases.*	Property is not directly at risk to public health emergencies. In rare instances, agriculture may be the source of a deadly bacteria or virus that can spread to consumers.	The environment is likely not to be impacted by a public health emergency unless it is terrorism or HAZMAT related. See HAZMAT/terrorism sections for more information.	Program operations may be impacted by a public health emergency. Historically, influenza and other public health emergencies have not impacted the County's ability to perform it's day-to-day program and VCEOC operations. In the event that numerous VCEOC members were impacted by the event, a reduced staff may be used to operate the VCEOC. Virtual communications from home offices may be required if the situation escalated. In these situations, the VCEOC may rely on assistance from other counties through EMAC. In some cases, it may take several weeks or months to return program operations to a normal level.
Citation		*www.floridahealth.gov			

RISK and VULNERABILITY (4.3.1) (con't)	<div><div></div><div>People</div></div> <div><div>Property</div></div> <div><div>Environment</div></div> <div><div>Program Operations</div></div>			
	HAZARD/HIRA			
	Human-Caused or Technological			
Cyber Attack	<p>A successful cyber attack at the local level may negatively impact the publics ability to conduct business with the County. It's possible that they would be unable to pay utility or tax bills online. On a national scale, increased online control of critical infrastructure means greater vulnerability of electrical power grids, water and transportation systems, oil pipelines, refineries and power-generation plants.</p>	<p>Property is not at risk from a cyber attack.</p>	<p>The environment is not at risk from a cyber attack.</p>	<p>Should a cyber attack take down the County internet/intratnet system, emergency management programmatic activities may experience a minor impact. Cyber infrastructure enables storage and transfer of massive amounts of knowledge to enable planning, resource allocation, personnel deployment, and coordination of emergency situations. The Volusia County Information Technology Department would activate its COOP in this situation.</p>
Civil Disturbance	<p>The public may be negatively impacted by a civil disturbance. If a civil disturbance were to occur during a major NASCAR event, bystanders may be injured or killed. Similar results may occur during Biketoberfest and Bikeweek when hundreds of thousands of motorcycle enthusiasts visit Volusia County.</p>	<p>Property is at risk to a civil disturbance. Rioters may damage both private and public property, disrupting the ability to respond to the situation and causing damages in the hundreds of thousands of dollars. Florida has experienced seven major riots, beginning with the 1923 Rosewood riot, then 1967 Tampa riots, 1980 Miami riots, 1982 Miami riots, 1987 Tampa riots, 1989 Tampa riots, and most recently the 1996 St. Petersburg riots.</p>	<p>The environment is at moderate risk to a civil disturbance. Rioters may burn vehicles and buildings, releasing toxic gas, fumes, and fluids onto roads.</p>	<p>Program applications will not be adversely affected by a civil disturbance.</p>
Coastal Oil Spill	<p>The impact of a coastal oil spill may impact those with pre-existing breathing difficulties living close to the coast. The VCHD and VC Environmental Management will monitor air, water, sediment, and waste generated by the cleanup operations.</p>	<p>Property is not directly at risk from a coastal oil spill.</p>	<p>The environment is at high risk to the impacts from a coastal oil spill. Refer to the "Volusia County Coastal Oil Spill Cleanup and Debris Removal Plan" beginning on page 7 for a description of the potential environmental impact from an oil spill.</p>	<p>Program applications will not be adversely affected by a coastal oil spill.</p>
Terrorist Attack	<p>The citizens of Volusia County are at risk to a terrorist attack every day. Volusia County is home to NASCAR and hosts hundreds of thousands of visitors every year for race events, motorcycle events, and other spectator events such "Wings and Waves" and the New Smyrna Beach "Balloon Fest." Volusia County is home to five colleges and universities with an international blend of students. The risk of terrorist attack include injury and death.</p>	<p>Property is at risk to a terrorist attack. A single explosion or dirty bomb could destroy multiple facilities and injure or kill hundreds of people.</p>	<p>The environment is at risk to a terrorist attack. A dirty bomb or large explosion could potentially contaminate a large area.</p>	<p>Program operations are at minimal risk to a terrorist attack. The VCEOC is a hardened, secure facility. Should a terrorist attack occur in Volusia County, additional resources may be necessary that would be requested through mutual aid agreements and the State. Routine programs operations may be temporarily suspended.</p>
Mass Migration	<p>The citizens of Volusia County are at minimal risk to a mass migration event.</p>	<p>Property is not directly at risk from a mass migration event.</p>	<p>The environment is at minimal risk to a mass migration event.</p>	<p>Program operations are at minimal risk to a mass migration event.</p>
HAZMAT (fixed, mobile, and terrorism)	<p>The citizens of Volusia County are at risk to Hazardous Materials (HAZMAT) every day. HAZMAT can come from fixed or mobile sources, (facilities, trains, semi trucks) or can be intentionally used for harm in a terrorist act. Citizens may be impacted on roadways, at school, in their homes, through their food supply, or in public venues (large stadiums, athletic events, movie theaters, the Speedway, etc). The risks of hazardous materials may be illness, injury, or death. With 2 major interstate highways, 2 major rivers, and 2 railroads in Volusia County, hazardous materials incidents occur on a daily basis; fortunately, the vast majority of these involve minor petroleum spills or sewage discharges.</p>	<p>Property in Volusia County is at risk and vulnerable to the impacts of hazardous materials. Chemical spills, bioterrorism, WAD, cyber attacks, etc, all impact our property and infrastructure. A single explosion could devastate a facility or cluster of facilities. Homes and businesses could receive damage or even collapse. Hazardous materials can erode or corrode infrastructure as well.</p>	<p>The environment is highly vulnerable to hazardous materials, regardless if the release or spill is accidental, intentional, or natural. Hazardous materials can be spread through water, air, or the food supply. Once HAZMAT are in environmental systems, it may take days, weeks, months, or years to clean-up.</p>	<p>Program operations are at a minimal risk to HAZMAT. The VCEOC is not located in close proximity to any hazardous materials facilities. Volusia County Environmental Management, the lead agency for hazardous materials (ESF 10), would work closely with the Volusia County Fire Services HAZAMT team during a large HAZMAT event.</p>
Agroterrorism	<p>Agroterrorism is a term used to denote the deliberate introduction of disease-causing organisms and chemicals into the food supply through agriculture. It could impact the pubic if crops or agricultural foodstuffs contaminated with disease-causing organisms were to enter the food chain.</p>	<p>Agroterrorism could potentially impact crops and livestock. Losses could be in the millions of dollars.</p>	<p>Agroterrorism could have a negative impact on the environment from the standpoint of crop destruction.</p>	<p>Program applications will not be adversely affected by an agroterrorism event. If necessary, additional support would be requested through mutual aid and FDEM.</p>
Citations:				
US Census Bureau				
www.census.gov				
FEMA				
www.fema.gov				
FloodSmart				
http://www.floodsmart.gov				
U.S. - Italy Research Workshop				
http://training.fws.gov/CSP/Resources/conservation_science_web_series/information_page/dubowy/Environmental_Effects_of_Extreme_Floods.pdf				
National Flood Hazard Layer				
https://hazards.fema.gov/femaportal/wps/portal/NFHLWV5kmzdownload				
NOAA Wildfire Report 2012				
http://www.ncdc.noaa.gov/sotc/fire/				
Florida Riot History				
http://www.connexions.org/CxLibrary/Docs/CxP-Riots_List.htm				
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CONSEQUENCES (4.3.2)	 The Public	Responders	Continuity of Operations & delivery of services	Property, facilities & infrastructure
HAZARD/HIRA				
Natural				
Hurricanes/Tropical Storms	<p>The public may face extreme consequences from hurricanes and tropical storms. Hurricanes have the potential to injure and kill people, destroy residences and businesses, and interrupt water, power, and sewer services necessary to return to a normal way of life. Regardless if citizens have insurance or receive assistance, the recovery process from a major hurricane may be very costly and take weeks, months, or years to complete and have serious psychological impacts.</p>	<p>Responders may face extreme difficulties when responding to a hurricane or tropical storm event. Hurricanes can down trees and power lines, destroy critical infrastructure such as local EOCs, fire stations, and hospitals, and damage bridges, roadways, and government buildings critical for response and recovery operations. Responders may have to rescue citizens isolated without resources. Responders should be aware of their risks at all times.</p>	<p>In an extreme event, such as a major hurricane, there may be an impact on delivery of routine program operations as the focus will be on response/recovery to the event.</p>	<p>There are numerous potential consequences that may result from a hurricane or tropical storm. Property along the coast and in storm surge areas may be severely impacted or destroyed. County facilities along the coast in storm surge zones have been identified. Critical infrastructure such as utilities, roadways, bridges, hospitals, EOCs, Police/Fire/EMS stations may be damaged or destroyed in an event.</p>
Floods	<p>The public may face extreme consequences from flooding and/or flash floods (although Volusia County does experience true "flash flooding"). Floods have the potential to injure and kill people, especially those who drive through flooded roadways. Floods can destroy residences and businesses, and interrupt water, power, and sewer services necessary to return to a normal way of life. Regardless if citizens have flood insurance or receive assistance, the recovery process from a flood may be very costly and take weeks, months, or years to complete.</p>	<p>Responders may face difficulties when responding to a flood event. Floods can destroy homes, businesses, and critical infrastructure such as local EOCs, fire stations, and hospitals. Floods can wash out bridges and roadways, as well as destroy government buildings critical for response and recovery operations. Responders may have to perform swift water rescues to citizens trapped in flooded areas. (This occurred during Tropical Storm Fay). Responders should be aware of their risks at all times.</p>	<p>The VCEOC is not located in a SFHA; however, many access roads may be impacted by flooding. In an extreme flood event, there may be an instance when access to the VCEOC is difficult. If something like this should occur, EOC personnel may be transported by VCSO's helicopter assets or all terrain vehicles.</p>	<p>There are numerous potential consequences that may result from a flood. Property in the floodplain or other low-lying areas may be severely impacted or destroyed. County facilities in the floodplain have been identified. Critical infrastructure such as utilities, roadways, bridges, and Police/Fire/EMS stations may be damaged or destroyed in an event.</p>
Thunderstorms	<p>The public may face some minor consequences from a thunderstorm. Thunderstorms have the potential to injure and/or kill people, damage residences and businesses, and interrupt power service. These impacts are very minimal compared to hurricanes and floods. It is important for beach goers to leave the beach when a thunderstorm approaches. Boaters and golfers should seek shelter. Recovery from a thunderstorm event may take several days.</p>	<p>Responders may face some difficulties when responding to a thunderstorm event. Trees may be down, blocking critical roadways and access points. Power lines may also be down in roadways or on private property creating a dangerous situation. Localized flooding may make some roads impassible.</p>	<p>VCEMD does not anticipate any issues maintaining operations and the delivery of services following a thunderstorm. In a catastrophic event, VCEMD has a COOP Plan in place that could be activated and implemented at any time.</p>	<p>Consequences to property, facilities, and infrastructure from thunderstorms are minimal. Downed trees and power lines are typical consequences from thunderstorms. Roofs and windows of homes and businesses may be damaged. Power service to residences and critical facilities may be impacted in the short-term.</p>
Tornados	<p>All of the public in Volusia County is at risk to tornados. Tornados are a common occurrence in Volusia County. The public could face serious consequences from a touchdown, particularly mobile home residents. Tornados can be deadly. Common consequences are damage to homes and businesses, interruption of utility services, and devastation to the local economy.</p>	<p>Responders may face significant difficulties responding to a tornado touchdown. Search & rescue operations may be required. Communication systems may be destroyed. In an extreme event, road signs and landmarks may be missing when trying to navigate to citizens in need. Power lines, debris, and trees may block roadways and access points. Responders should exercise extreme caution.</p>	<p>VCEMD does not anticipate any issues maintaining operations and the delivery of services in the event of a tornado in the County. If there is a widespread tornado outbreak, or if the VCEOC is directly hit by a tornado, it may be necessary to move to the alternate EOC location or function from another location to maintain operations during the event. For more information, see the VCEMD COOP Plan.</p>	<p>All property in Volusia County is at risk to tornados. The consequences to property, facilities, and infrastructure from a tornado may be catastrophic. Depending on the scale of the tornado, damage could be minimal or cataclysmic. Historically, Volusia County's greatest magnitude tornado was an EF3. An EF3 can cause extensive damage, level well constructed homes and buildings, uproot trees, and throw heavy vehicles. Public infrastructure and utilities may be demolished.</p>
Wildfire	<p>The public will feel the direct consequences of a wildfire if their home or place of employment is in the wildfire impact zone. Homes and businesses may be destroyed in a fire, utility service could be interrupted, and access to roadways may be limited. The public may also be impacted by air pollution from the wildfires.</p>	<p>Responders will be directly impacted by a wildfire. Wildfires may change directions quickly as the wind and environmental elements change. Wildfires are often difficult to control and may take numerous resources to do so. Inhalation of smoke and fumes may pose a health risk to firefighters.</p>	<p>VCEMD does not anticipate any issues maintaining operations and the delivery of services during a wildfire. In an event that directly impacts the VCEOC, VCEMD has a COOP Plan in place that could be activated and implemented at any time.</p>	<p>Property, facilities, and infrastructure in the wildfire zone may be significantly impacted. Homes and businesses may be destroyed in a fire, utility service could be interrupted, and access to roadways may be limited.</p>
Drought/Extreme Heat	<p>Consequences of drought and extreme heat on the public are not always direct. Agriculture will be the most directly impacted by drought. The public's food supply may be impacted. If water restrictions are implemented by government, residential lawns and gardens will be impacted.</p>	<p>Responders will not be impacted by drought. In extreme heat, caution should be exercised for first responders. Responders must be sure to maintain adequate hydration.</p>	<p>Historically VCEMD has not had any issues continuing operations and delivering services during droughts or extreme heat events.</p>	<p>Homes, businesses, critical facilities and infrastructure should not be significantly impacted by drought and extreme heat. In some drought situations, river flows may be reduced and impact hydrologic processes such as irrigation capacities, and tourism related businesses (lakes, golf courses, etc). The St Johns River Water Management District may prohibit lawn irrigation, which may impact residences and golf courses. Wells may fall to dangerously low levels.</p>
Hail	<p>Consequences of hail on the public include possible injuries and, in extremely rare cases, death. Hail may indirectly cause public injury if it results in automobile accidents. Because hail is a product of thunderstorms, see "Thunderstorms" for more consequences to the public.</p>	<p>Consequences of hail on responders is minimal. Hail is typically a very brief event due to physics of the atmospheric conditions in Volusia County that are required to make hail. Responders should remain inside during hail storms. Because hail is associated with thunderstorms, see "Thunderstorms" for more information.</p>	<p>VCEMD will not have any issues continuing operations and delivering services during hail events. See "Thunderstorms" for more information.</p>	<p>Hail has the potential to damage property, facilities, and infrastructure. Large hail can puncture roof tops, windshields, vehicles, windows, and other outdoor structures. Because hail is associated with thunderstorms, see "Thunderstorms" for more information.</p>

CONSEQUENCES (4.3.2) (con't)	 The Public	Responders	Continuity of Operations & delivery of services	Property, facilities & infrastructure
HAZARD /HIRA				
Natural				
Severe Winter Storms	Consequences to the public from winter weather include cold temperatures and the potential loss of power. The major impact of severe winter storms in Volusia County is on the homeless population. Shelters may need to be opened during severe winter storms.	Responders will not be adversely impacted from a severe winter storm, as the duration is limited in Volusia County.	Program operations will continue during a winter weather event. If there is a power outage, VCEMD has redundant power, IT, and communication systems in place to maintain operations. VCEMD will continue to coordinate the statewide response throughout the entire winter weather event.	The greatest potential impact of cold weather is on the County's agricultural industry. Orange groves may freeze. The fern industry could be seriously impacted. This could result in lost jobs, most of which are held by migrant workers.
Lightning	Consequences of lightning on the public include possible injuries and, some cases, death. Lightning may strike homes and businesses, potentially sparking a fire or damaging electrical systems. Because lightning is a product of thunderstorms, see "Thunderstorms" for more consequences to the public.	Consequences of lightning on responders are minimal. Lightning may spark building and housing fires, requiring immediate response. When possible, responders should remain inside if there is lightning. Because lightning is associated with thunderstorms, see "Severe Thunderstorms" for more information.	VCEMD will not have any issues continuing operations and delivering services during lightning events. In the event of a lightning strike to the building, VCEMD has a backup power generator, redundant communication systems, and has a IT failover system in place. See "Severe Thunderstorms" for more information.	Lightning has the potential to damage property, facilities, and infrastructure. Lightning can spark fires and destroy electrical systems. From 1996 - 2013, NOAA's Climatic Data Center reports there has been 1 fatality, 20 injuries, and \$1.37 million in property damage caused by lightning in Volusia County. Because lightning is associated with thunderstorms, see "Severe Thunderstorms" for additional information.
Storm Surge	Consequences of storm surge on the public could be devastating. During storm surge, sea water inundates low lying areas of coastal regions drowning human beings and live-stock, erodes beaches and embankments, destroys vegetation and reduces soil fertility.	Consequences of storm surge on responders would be similar to those encountered during a major hurricane.	If there were a major storm surge event, routine program operations may be impacted to a similar extent as during a major hurricane.	Storm surge has the same potential impact on property, facilities, and infrastructure as do major hurricanes.
Coastal Erosion	The public faces numerous consequences to coastal erosion. Coastal erosion plagues many of the public beaches in Volusia County. In addition to the loss of public beaches, private property and homes could be destroyed. Homes could into the ocean in some rare instances.	Responders will not be impacted by coastal erosion.	VCEMD will not have any issues continuing operations and delivering services due to coastal erosion.	Properties, facilities, and infrastructure along the coastline may be impacted by coastal erosion. Coastal erosion can cause homes to fall into the ocean. Critical utilities and roadways may be impacted if the beaches erode and water is able to inundate their systems. Tax revenue may be impacted.
Tsunami	Consequences of a tsunami on people would be similar to those of a major storm surge event.	Consequences of a tsunami on responders would be similar to a major storm surge event.	The impact of a tsunami on program operations would be similar to a major storm surge event.	The impact of a tsunami on property, facilities, and infrastructure would be similar to that experienced during a major storm surge event.
Sinkhole	Consequences of a sinkhole on people would be minimal. Should a major sinkhole form on or near a major roadway,, it's possible cars may drive into it before responders arrive.	Consequences of a sinkhole on responders would be minimal.	There would be no impact on program operations from a sinkhole.	The impact of a sinkhole on property, facilities, and infrastructure would be minimal. The most expensive sinkhole event was the sinkhole that opened on Howland Blvd in Deltona. Approximately 1 million cubic yards of dirt was needed.
Public Health Emergencies	Consequences to the public from public health emergencies (influenza, plague, food contamination, etc) are vast. The public may experience temporary illness, long-term illness, or even death. Hospitals and doctor's offices may become crowded, patients may experience long lines, and pharmaceuticals may be limited. In 2009, the H1N1 pandemic swept the U.S. Vaccinations, medications, and education materials were provided to the public to minimize the impacts of the flu. (CDC H1N1 Flu)	Responders may also feel the consequences of public health emergencies. They may be exposed to the risk and become ill. Responders may have to wear protective gear and receive vaccinations to mitigate their risk. For more information on a Public Health Emergency Response, refer to the VCHD pandemic flu annex.	In an extreme event, such as a widespread public health emergency, there may be an instance when the VCEOC is impacted. If the VCEOC becomes contaminated, it may be necessary to move to our alternate EOC location or function from another location to maintain operations during the event. For more information, see the VCEM COOP Plan.	It is unlikely that the consequences of a public health emergency would impact property, facilities, or infrastructure.

CONSEQUENCES (4.3.2) (con't)	 The Public	Responders	Continuity of Operations & delivery of services	Property, facilities & infrastructure
HAZARD /HIRA				
Human-Caused or Technological				
Terrorist Attack	The public is at risk to a terrorist attack. NASCAR events typically have over 100,000 spectators. Bikeweek/Biketoberfest draw 500,000 participants. We have 5 colleges and universities, and most have stadiums. Shopping malls are plentiful. The consequences of a terrorist attack may be serious injury, death, and psychological impairment.	Responders are at risk to a terrorist attack. It's possible responders could be injured or killed attempting to rescue survivors from buildings. Secondary devices are always a concern.	Continuity of operations would not be seriously impacted by a terrorist event. The CEOC is a secure, hardened facility. If there were a direct attack on the CEOC, it would be limited to the lobby area. In such a case, it may be necessary to move to our alternate EOC for a short period.	Property, facilities, and infrastructure are all at risk to a terrorist attack. Since 9/11, the County and its municipalities, as well as colleges and universities, have taken tremendous effort to increase security and educate the public about terrorist attacks.
Cyber Attack	The impact on the public from a cyber attack could be substantial in a worst-case scenario. If the grid were to be taken out, an extended period of power outage would cause food to spoil. Medication that requires refrigeration could be lost. People dependent on ventilators and oxygen concentrators could be impacted.	Responders would not be impacted by a cyber attack.	Continuity of operations would not be seriously impacted by a cyber attack. Information contained on the County web site would be unavailable.	The impact of a cyber attack on property, facilities, and infrastructure would be minimal.
Civil Disturbance	The impact on the public from a civil disturbance would be limited to those taking part in the civil disturbance and those in the vicinity of the event.	Responders may be impacted by a civil disturbance. It's possible that responders could be injured or killed by those instigating the civil disturbance. Responders must exercise extreme caution when dealing with a civil disturbance.	Continuity of operations would not be seriously impacted by a civil disturbance. The VCEOC is a secure facility. In extreme events, mutual aid would be requested from adjacent counties.	The impact of a civil disturbance on property, facilities, and infrastructure could be substantial. Homes and businesses could be burned. Facilities could be damaged. Streets may be blocked.
Mass Migration	The impact on the public from a mass migration event would be minimal.	The impact on responders to a mass migration event would be limited to those responders managing the mass migration population.	Continuity of operations would not be seriously impacted by a mass migration event. In a large event, mutual aid would be requested from adjacent counties.	The impact of a mass migration event on property, facilities, and infrastructure would be minimal.
Coastal Oil Spill	The impact of a coastal oil spill on the public would be minimal. Persons with pre-existing breathing issues may be impacted by fumes. Volusia County Environmental Management and the VCHD will monitor air quality.	Responders may be impacted by a coastal oil spill. Appropriate PPE will have to be worn at all times to prevent contamination.	Continuity of operations would not be impacted by a coastal oil spill.	It is unlikely that a coastal oil spill will have an impact of property, facilities, or infrastructure. Oil may contaminate docks and boats if were to enter through Ponce de Leon inlet.
Agroterrorism	The public may be adversely impacted by an agroterroism event. If food or agriculture is infected with a disease causing organism, it may makes its way into the food chain. The effects could impact hundreds or thousands of citizens.	Responders may be impacted by an agroterrorism event if they are exposed to food or agricultural products infected with a disease causing organism.	Continuity of operations would likely not be impacted by an agroterroism event.	It is unlikely that an agroterrorism event would have an impact on property, facilities, or infrastructure.
HAZMAT (fixed, mobile and terrorism)	The public will be immediately impacted by the consequences of a Hazardous Materials (HAZMAT) release/spill/explosion. HAZMAT can come from fixed or mobile sources, or can be intentionally used for harm in a terrorist act. Citizens may be impacted on roadways, at school, in their homes, through their food supply, or in public venues (large stadiums, athletic events, movie theaters, etc). The consequences of hazardous materials may be illness, injury, or death. In a major event (such as a radiological release, explosion, or chlorine spill), citizens may be displaced from their homes until the site is cleaned.	Responders face the immediate consequences of HAZMAT incidents. They must determine the type of material released/spilled, and decide on the appropriate response and cleanup of the material. The County has a variety of response teams to include HAZMAT, RMAT (radiological material), and EOD (bomb squad). These responders are specially trained to deal with these incidences and they are provided protective gear to reduce their vulnerability to the hazardous materials.	In the event of a HAZMAT release/spill or Terrorist act, there may be an instance when the VCEOC is impacted. If the VCEOC is damaged or the delivery of services is interrupted, it may be necessary to move to our alternate EOC location or function from another location to maintain operations during the event. For more information, see the VCEMD COOP Plan.	Property, facilities, and infrastructure will be significantly impacted by a HAZMAT incident. Especially in the event of an explosion, homes, businesses, industries, and infrastructure may be damaged or destroyed. In addition, most mobile hazmat releases are caused by traffic accidents, which can destroy vehicles, roadways, and signage.
Citations:				
CDC H1N1 Flu	http://www.cdc.gov/h1n1flu/			
VCHD Public Health Preparedness	http://www.floridahealth.gov/chd/Volusia/HurricaneInformation.html			
CSIRO impacts of an oil spill	http://www.csiro.au/Outcomes/Oceans/Hot-ocean-topics-index/Environmental-impact-of-oil-spills.aspx			
U.S. States & Territories National Tsunami Hazard Assessment: Review and Update	http://nthmp.tsunami.gov/2012tsuhazworkshop/abstracts/Dunbar-Weaver_abs.pdf			

CONSEQUENCES (4.3.2) (con't)	 <i>Environment</i>	<i>Economic condition of the Jurisdiction</i>	<i>Public Confidence in governance</i>
HAZARD/HIRA			
<i>Natural</i>			
Hurricanes/Tropical Storms	Consequences to the environment include erosion of critical dunes, impacts to sensitive coastal ecosystems, downed trees and vegetation, and polluted waterways from the runoff of debris and hazardous materials. VC Environmental Management and the VCHD will take the lead on the monitoring and cleanup of any adverse environmental impacts.	Hurricanes and tropical storms have impacted Volusia County in the hundreds of millions of dollars. The 2004 hurricanes were the largest, most costly disaster. The economic impact to affected jurisdictions has been significant. In any hurricane event, the impact to tourism is millions of dollars a day. It may take several years to recoup the economic costs of a single hurricane event.	Maintaining public confidence in emergency management and County Government is vital. To ensure the public is prepared for a hurricane, VCEMD has completed the following: 1) Video Disaster Preparedness Guide available on the website, 2) Surveys capturing behavioral patterns are conducted after every hurricane evacuation out to gauge the level of preparedness and evacuation compliance, 3) Numerous public presentations, 4) VCEMD prepares for hurricane season with a countywide media campaign through VC Community Information and the Daytona Beach News Journal 5) In the event of a hurricane, the PIO section has premade materials for use in VCEMD's comprehensive social media program; 6) Throughout the year VCEM provides preparedness information via the County's weekly video magazine broadcast on WDSC. All of these programs are in place to instill public confidence in government, even in times of a disaster. For more information, see the ECFRPC Behavioral Analysis documenting evacuation order compliance.
Floods	Environmental consequences to flooding are vast. Flooding may erode river beds, causing sediments to enter the waterways, clogging our water management systems & waterways downstream. Floods can bring hazardous materials or pollution into waterways via runoff. Riparian ecosystems are negatively impacted with the introduction of sediments, pollutants & nutrients. VCHD and VC Environmental Management will monitor the waterways and riparian areas for any adverse impacts.	From 1994 - 2009 there were 11 major flood events in Volusia County causing over \$100,000,000 in damages. (Table 5.14) As of 2010, repetitive losses in the County total almost \$36,000,000 (Table 5.15). The impact of flooding on transportation, agriculture, business continuity, and government services is substantial. Mitigation practices can reduce the impact of flooding on our economy. It is also important that citizens and businesses purchase flood insurance so they can be operational in a short amount of time.	Education, mitigation activities, and awareness are key components to maintaining public confidence in government during a disaster. In conjunction with FEMA, NOAA, USACE, FDEM, and the Florida Department of Insurance, the County provides information on floods and flood insurance to the public. During the NFIP mapping process, citizens were invited to participate and learn about flood risks. VCEMD has distributed over 5,000 NOAA weather radios to mobile home residents to alert them of flood events. VCEMD has premade media products for their social media campaign if there is an event. Additionally, VCEMD has managed 38 Flood Mitigation Assistance grant projects, mitigating homes against future flood losses. This serves to build public confidence in governance.
Thunderstorms	Thunderstorms in Volusia County have historically had few consequences to the environment. In some cases, these storms can down trees and vegetation and cause localized flooding. Please see the "Floods" above. No major consequences to the environment are expected.	Consequences to the economic condition of the County will be minimal. The County has numerous thunderstorms throughout the year. The annual cost of damage to property and infrastructure is minimal.	Public confidence in government will not be impacted by severe Thunderstorm Events. In the case of a catastrophic storm, VCEMD has premade media products for distribution on our webpage and or on our social media outlets (@VCEMDergencyinfo). NOAA weather radios will also send out important information to citizens so they can educate themselves and find resources after the event.
Tornadoes	Because of the vast range of wind speeds associated with tornadoes, consequences to the environment vary greatly. Even an EF0 (65-85mph) can uproot trees and vegetation. In stronger tornadoes, debris will be tossed miles away from the source, potentially entering our waterways. Hazardous materials may escape if vehicles are damaged or storage tanks are compromised. VC Environmental Management and VCHD would monitor the environment for adverse impacts.	Tornadoes are typically a local disaster. The County's economy may only be minimally impacted by a tornado event. If a large outbreak occurred, there could be a greater economic effect. If a small community was hit by a severe tornado, the entire community & local economy could be devastated. Local assistance through the County COAD, especially the American Red Cross, would be utilized.	Public confidence in government will not likely be impacted by a tornado event. If there is a countywide tornado outbreak, VCEMD has premade media products for distribution or on social media outlets (@VCEMDergencyinfo). NOAA weather radios will also send out important information to citizens so they can educate themselves and find resources after the event. Some local communities have tornado sirens and community safe rooms to protect their citizens.
Wildfire	Although wildfires are a natural process, the environment may be negatively impacted. Not only are trees impacted by these fires, so are the native species of plants and animals. The smoke and ash from the fires can pollute waterways and our air. The VC Fire Services and VCHD will monitor the air and water quality in an event.	Wildfires are typically a local disaster and the County's economy should not be impacted to a large extent. If a large fire does occur and cannot be controlled quickly, there could be a greater economic effect. The Coke Zero race was postponed one year due to smoke from wildfires. If a small community was hit by a wildfire, the local economy could be devastated. Local assistance through the County COAD, especially the American Red Cross, would be utilized.	Public confidence in government will likely not be impacted by a wildfire event. If a large wildfire occurs that cannot be quickly controlled, VCEMD has premade media products for distribution and through social media outlets (@VCEMDergencyinfo). NOAA weather radios will also send out important information to citizens so they can educate themselves and find resources after the event. In 1998, 29,000 homes were at risk from the wildfires. Only 6 homes, 1 mobile home, and 2 businesses were lost. This success serves to bolster public confidence in governance. (5.14.3)
Drought/ Extreme Heat	Environmental consequences of drought & extreme heat are significant. Drought reduces the availability of water, reduces crop yields, & impacts our local ecosystems. Droughts may result in an increase in wildfires. For instance, the 1998 drought contributed directly to the wildfires that burned over 163,000 acres. (Section V)	Drought has the potential to significantly impact the County's economy. The annual economic impact of Volusia County's agriculture and natural resources industries is \$781 million. An extended period of drought could seriously impact this.	Public confidence in government will likely not be impacted by a drought or extreme heat event. Droughts are common in Florida and Volusia County. Insurance and assistance programs are widely available to farmers.
Hail	There are no known direct consequences on the environment from Hail. See "Thunderstorms" for more information.	Consequences to the economic condition of the County will be minimal to non-existent, as hail is a fairly uncommon event. The County has very few hail events each year. The annual cost in damages is minimal. Most of the damages from hail are covered under homeowners insurance and auto insurance & therefore do not impact local economy.	Public confidence in government will not be impacted by a hail event. See "Thunderstorms" for more information.

CONSEQUENCES (4.3.2) Part 2		Environment	Economic condition of the Jurisdiction	Public Confidence in governance
HAZARD/ THIRA				
Natural				
Severe Winter Storms		Consequences to the environment from winter weather are minimal. Non-native plant species may be impacted.	The economic condition of the County may be impacted by an extended cold spell. The fern industry would be impacted the most.	Public confidence in government will likely not be impacted by a winter weather event. Winter weather is not a common occurrence in Volusia County.
Lightning		Consequences to the environment from lightning are minimal. The greatest impact is lightning-generated fires. In the case of a fire, see "Wildfires" for more information. Also see "Severe Thunderstorms" since lightning is associated with this hazard type.	Consequences to the economic condition of the County will be minimal to non-existent. Most of the damage resulting from lightning strikes are covered under homeowners insurance, & therefore do not impact the local economy.	Public confidence in government will not be impacted by a lightning event. See "Thunderstorm" for more information.
Storm Surge		Consequences to the environment from storm surge could be devastating. Salt water intrusion into sensitive estuaries could destroy ecosystems. Salt water would intrude into the aquifer, our source for drinking water. Storm surge would spread sewage from septic systems.	Consequences to the economy from a storm surge event are potentially devastating. Homes and businesses would be destroyed. The property tax base would suffer. Tourism, a main driver of our economy, would be impacted.	Public confidence in government may be impacted depending on the speed of recovery. If the recovery process is perceived to going too slowly, public confidence in the government would be lessened. This is a real possibility considering that the public expects immediate response from the government. Public confidence in government suffered in the wake of hurricanes Katrina and Sandy.
Coastal Erosion		There are several consequences to the environment from coastal erosion. Coastal erosion by wind or water can deplete the coastal ecosystems. Protective dunes on the shore may be reduced or washed away in hurricanes and high surf. Eroded sands and soil can enter water and sewer systems, causing issues for the public and environment.	Coastal erosion is very costly and can burden local economies. Beach nourishment is extremely costly, approximately \$2.00/cubic yard.	Public confidence in government should not be impacted by coastal erosion. Rapidly eroding beaches remain a high priority for nourishment.
Tsunami		The consequences to the environment from a tsunami would be similar to that of storm surge.	The consequences to the economy would be similar to that of storm surge.	Public confidence in government may be impacted to a similar extent to that of storm surge.
Sinkhole		The most important current and future environmental issue with respect to sinkholes is the sensitivity of sinkhole aquifers to groundwater contamination. The effect of man on sinkholes is most severe in cases where polluted surface waters enter sinkhole aquifers.	There will not be a major impact to the economy due to a sinkhole event.	Public confidence in government should not be impacted by a sinkhole event.
Public Health Emergencies		Consequences to the environment from a public health emergency are unlikely. Unless the event is terrorism or HAZMAT related, there will be no direct impact. See HAZMAT below for more information.	The economic condition of the County may be impacted by a widespread public health emergency. If a significant percentage of the population becomes ill, they will not be able to go to work or spend money. The economy will be directly impacted by both of these factors. With vaccinations and early detection of pandemics and other public health issues, the impacts can be minimized.	Public confidence in governance may be minimally impacted by a public health emergency. In Volusia County, Environmental Management and the VCHD monitors air & water quality, tracks potential influenzas & other contagious viruses/bacteria, and provides education & outreach on health. VCHD advertises their public health preparedness capabilities online to show transparency to the public. VCHD also runs hospital preparedness programs and hosts healthcare coalitions & partnerships. In a widespread event, VCHD is prepared to meet the needs of the public. Therefore, public confidence in government should only be minimally impacted in a major event.

CONSEQUENCES (4.3.2) Part 2	 Environment	Economic condition of the Jurisdiction	Public Confidence in governance
HAZARD/HIRA			
Human-Caused or Technological			
Terrorism	The environment could be impacted by a terrorist event, particularly if a dirty bomb were used. A large explosion at a facility could release large amounts of asbestos and other toxic materials that would be carried by the wind and possibly enter lakes and rivers.	In the event of a large terrorist attack, the economy would be negatively impacted. Tourism would certainly be impacted to a serious degree.	Public confidence in government would be impacted by a terrorist event. If there were a large event at a large gathering of people (the Speedway, for example) and there were numerous deaths and injuries, the public would perceive that government's ability to detect and prevent terrorist attacks was unsatisfactory. Even if there were a small event, the public would expect the government to have had advance information. A dedicated public affairs effort would be necessary to try to regain the public's confidence.
Cyber Attack	Consequences to the environment would not result from a cyber attack.	The economic condition of the County may be impacted by a cyber attack. Citizens may not be able to use computers to order goods and services or pay bills online. Online delivery of public services may be diminished.	Public confidence in government may be impacted by a cyber attack, particularly if major systems such as the electrical grid are impacted. The public may perceive that the government did not take sufficient steps to prevent the attack, and that recovery from the attack is taking too long.
Civil Disturbance	Minimal consequences to the environment may result from a civil disturbance in the form of smoke and hazardous fumes from fires.	The economic condition of the County may be impacted by a civil disturbance. If there were a large event, tourists may be hesitant to visit Volusia County due to the perception that it is not safe to do so. Homes, businesses, and critical facilities may be damaged and require expensive repairs. If large numbers of businesses were impacted, tax revenue would be impacted.	Public confidence in government may be impacted by a civil disturbance. If the government is unable or takes too long to bring the civil disturbance under control, the public may perceive that government is not able to deal with this type of event.
Mass Migration	There would be no consequences to the environment from a mass migration event.	The economic condition of the County should not be impacted by a mass migration event.	Public confidence in government may be impacted by a mass migration. If the government is unable or takes too long to manage the event by efficiently organizing processing, screening, and housing the migrants, the public may perceive that government is not capable of dealing with a mass migration event.
Coastal Oil Spill	There would be serious consequences to the environment from a coastal oil spill. Sensitive ecosystems would be damaged. Turtle nesting sites may be destroyed. The sand would be contaminated.	The economic condition of the County would be seriously impacted by a coastal oil spill event. During the Deep Water Horizon oil spill, tourism in Volusia County suffered as people thought all of Florida was impacted. All of our charter fishing industry would be devastated. If a coastal oil spill were to occur here, tourism would cease. Businesses located on the peninsula may have to permanently shut down. Tax revenue would be severely impacted.	Public confidence in government would be impacted by a coastal oil spill event. Clean-up and environmental restoration is likely to take months or years to accomplish. The public would get frustrated with the pace of the recovery. Volusia County PIO would be constantly reassuring the public that government, in cooperation with private industry, was doing everything it could to recover from the spill.
Agroterrorism	There may be serious consequences to the environment from an agroterrorism event. If a disease-causing agent were introduced into the agricultural areas of the County, millions of dollars in damage could result.	The economic condition of the County would be seriously impacted by an agroterrorism event. Agriculture is a \$781 million a year business in Volusia County.	Public confidence in government may be impacted by an agroterrorism event. If the event spread throughout the County and impacted multiple farms, the public may perceive that government is not able to manage an agroterrorism event.

HAZMAT (fixed, mobile and terrorism)		The environment is likely to experience significant consequences from a HAZMAT incident. Sensitive ecosystems could be destroyed or significantly disturbed. Hazardous materials can be quickly spread through water, air, or the food supply. Once HAZMAT are in our environmental systems, it may take days, weeks, months, or years to clean-up.	Depending on the size of the incident, the County's economy could experience enormous consequences. As reported by the Huffington Post, the BP oil spill in 2011 has cost approximately \$40 billion to clean up. This would be a worst-case scenario. More common incidents such as HAZMAT spills on highways or releases at chemical facilities impact the economy if an industry or transportation routes are shut down.	Public confidence in governance may be impacted by a HAZMAT incident. In small, localized events, VCEMD does not believe there would be any impact on public confidence. These events happen on a regular basis. In a major chemical release, radiological release, or terrorist incident, citizens may be inclined to lose confidence in governance. In these instances, VCEMD is prepared to draft and issue media products for distribution on our webpage (www.volusia.org/emergency) or on our social media outlets (@vcemergencyinfo).
		Citations:		
		Volusia County Agriculture	http://www.volusia.org/services/community-services/extension/agriculture/	
FL Department of Agriculture SART	http://www.freshfromflorida.com/Divisions-Offices/Marketing-and-Development/Education/For-the-Community/Video-and-Audio/Livestock-and-Animals/Video-Script-SART-State-Agricultural-Response			
FL Drought Status	http://www.plantmaps.com/interactive-florida-drought-conditions-map.php			
Beach Nourishment Study	http://coastal.tamug.edu/AM/ComparisonofBeachNourishmentalongtheU.S.Atlantic,GreatLakes,GulfofMexico,andNewEnglandShorelines/index.html			
NOAA Oil Spill Environmental Impact	http://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/how-oil-harms-animals-and-plants-marine-environments.html			