

City of Alexandria 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies	Priority H = High M=Medium L = Low	Project Status (Not Started, Cancelled, Modified, In Progress, Completed)	If Delayed / Canceled Why? (Lack of \$, support, manpower, etc)	Project Contact Agency
1 (2006)	Revise Flood Insurance Rate Map (FIRM).	H	In progress	Letter of Final Determination scheduled for 1-18-11; Effective date 7-18-11.	Transportation and Environmental Services
2 (2006)	Separate combined sanitary and storm sewers.	H	In progress	Supported byt lack of funding	Transportation and Environmental Services
3 (2006)	Enact state law to allow recreation lake/dam to be used for flood control.	H	Not Started	Lack of support	City Attorney
4 (2006)	Install backflow prevention valves on properties in Commonwealth interceptor service area and four-mile run sewer service area.	M	In progress	Supported but lack of funding	Transportation and Environmental Services
5 (2006)	Acquire flood-prone properties and create public open space.	M	In progress	Partly completed, lack of support and funding	City Attorney
6 (2006)	Elevate structures that have history of repetitive losses recorded by the NFIP.	M	Not Started	Lack of support and funding	Transportation and Environmental Services
7 (2006)	Purchase and distribute free of charge a NOAA weather radio for each of the current 1,634 flood insurance policy holders.	M	Not Started	Lack of support and funding	Emergency Management
8 (2006)	Purchase and install Mobile Public Address System in all city-marked fleet vehicles for warning enhancement.	L	Not Started	Lack of support and funding	General Services

Arlington County 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies Description	Priority (High=3, Medium=2, Low=1)	Project Status (Not Started, Cancelled, Modified, In Progress, Completed)	If Delayed / Canceled Why? (Lack of \$, support, manpower, etc)	Responsible Agency
1 (2006)	Upgrade county EOC to modern standards	H	In Progress		Office of Emergency Management
2 (2006)	Evaluate, update, exercise government Continuity of Operations (Coop) plans	H	In Progress		Office of Emergency Management
3 (2006)	Develop model evacuation and shelter-in-place plans.	H	Not Started	Lack of resources	Office of Emergency Management
4 (2006)	Expand modern public warning siren system.	H	In Progress		Office of Emergency Management
5 (2006)	Evaluate and exercise 211/311 citizen information line.	M	In Progress		Office of Emergency Management
6 (2006)	Certify additional shelter capacity.	M	In Progress		Office of Emergency Management
7 (2006)	Train employees as Incident Management and Incident Support Teams (IMT/IST).	M	In Progress		Office of Emergency Management
8 (2006)	Evaluate and purchase generator capabilities for government critical infrastructure.	H	In Progress		Office of Emergency Management
9 (2006)	Upgrade GIS systems for critical infrastructure mapping	M	In Progress		Office of Emergency Management
10 (2006)	Enhance the security of the water infrastructure system.	H	Not Started	Lack of available funding and staffing resources	Office of Emergency Management

City of Fairfax 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies Description	Priority (High=H, Medium=M, Low=L)	Project Status (Not Started, Cancelled, Modified, In Progress, Completed)	If Delayed / Canceled Why? (Lack of \$, support, manpower, etc)	Responsible Agency
1 (2006)	Complete job description and hire full time staff person to support the emergency management function in the City of Fairfax. At present, the emergency management duties are carried out as collateral duties by the Fire Chief and Assistant Fire Chief.	H	Completed		Fire Department
2 (2006)	Stormwater management/stream restoration projects on the North and Central Forks of Accotink Creek, design, clearing and maintenance to prevent flooding. This project has been identified in the Capital Improvement Program (CIP).	H	In Progress		Public Works
3 (2006)	Install electronic message boards at three (3) locations in the city. These message boards would be used to convey information to motorists regarding emergency conditions, pending severe weather and road closings. This project has been identified in the CIP	M	Modified	Not permanant board but have mobile boards	Public Works
4 (2006)	Perform self-evaluation of Office of Code Administration in accordance with the Building Code Effectiveness Grading Schedule and implement where possible changes leading to an improvement in score on next formal evaluation by ISCO.	M	In Progress		Office of Code Enforcement
5 (2006)	Provide additional automation and display equipment for Emergency Operations Center (EOC). Develop means for inclusion of GIS capability to track storm-related events including road closures, traffic signal status, power outages and building damage due to storm events.	M	In Progress		Fire Department
6 (2006)	Create a GIS layer showing future land use throughout city.	M	In Progress		Community Development and Planning
7 (2006)	Carry out the steps necessary to begin participation by the City of Fairfax in the CRS program.	M	In Progress		Community Development and Planning

Town of Dumfries 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies	Priority H = High M=Medium	Project Status (Not Started, Cancelled, Modified, In Progress, Complete)	If Delayed / Canceled Why? (Lack of \$, support,	Project Contact Agency
1 (2006)	Emergency relocation of Police Department.	M	Status not provided due to resource shortage		Police Department
2 (2006)	Storm sewers on Washington Street.	M	Status not provided due to resource shortage		Department of Public Works
3 (2006)	Storm sewers on Tripoli Boulevard.	M	Status not provided due to resource shortage		Department of Public Works
4 (2006)	Storm sewers on Duke/Cameron Street.	M	Status not provided due to resource shortage		Department of Public Works
5 (2006)	Sandbagging for flood protection of Town Hall/Police Department.	M	Status not provided due to resource shortage		Department of Public Works
6 (2006)	Quantico Creek Restoration.	M	Status not provided due to resource shortage		Department of Public Works
7 (2006)	Storm sewers on Town Hall Parking Lot.	M	Status not provided due to resource shortage		Department of Public Works

Fairfax County 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies Description	Priority (H=High, M=Medium, L=Low)	Color	If Delayed / Canceled Why? (Lack of \$, support, manpower)	Responsible Agency
1 (2006)	Purchase structures that are subject to repetitive flooding.	H	Not Started	Funding	Public Works and Environmental Services
2 (2006)	Implement flood mitigation measures (e.g., elevation, floodproofing) for structures based on the outcome of analyzing alternative solutions to flood causes.	H	In Progress	Home owners have made repairs to several buildings to bring them up to Floodplain Protection standards. County pursuing funding for floodwall/levee system	Public Works and Environmental Services
3 (2006)	Implement recommendations from the U.S. Army Corp of Engineers (ACOE) study for the Huntington community	H	Not Started	Pursuing funding	Public Works and Environmental Services
4 (2006)	Pre-wire of the portion of the Health Administration Building housing the Health Department Operations Center (HDOC) to accept a mobile generator in the event of an electricity outage during an emergency.	H	Completed		Health Department
5 (2006)	Install remote lake level data collectors/alarms for the high-hazard dams, and install stream flow gauges, tide gauges and rain gauges at critical locations throughout the County to allow for earlier warning of potential flooding. Develop action plan for public education and warning.	H	Completed		Public Works and Environmental Services
6 (2006)	Distribute smoke and carbon monoxide detectors to residents.	H	Completed	Project is always ongoing. As new funding is obtained, new distribution is made	Fire and Rescue Department
7 (2006)	Purchase and install an emergency generator for the Burkholder Building, the location of the Fire Department's Operations Center	H	Not Started	Funding issues. Currently being surveyed for pre-wiring for portable generator	Fire and Rescue Department
8 (2006)	Initiate a countywide project to collect global positioning data for private septic systems. Data can be used for future risk assessment and response activities.	M	Completed		Health Department; Department of Information Technology

9 (2006)	Develop and disseminate public outreach educational materials in multiple medias such as radio, TV, fliers, newsprint and Web sites. Information should include preparedness, mitigation and recovery topics including salvage of cans, time requirement for boil water, mold issues, communicable disease issues, etc.	M	Completed		Health Department
10 (2006)	Identify critical facilities and sources of public water service areas using GIS. Information will be used for risk assessment and planning purposes.	M	Completed		Health Department
11 (2006)	Construct a permanent shelter for the public at the county-owned Woodley Hills Estates project, which is a trailers/mobile home facility. There currently is no on-site safe area for residents to evacuate to in the event of any type of natural disaster.	M	Cancelled	Budget issues.	Department of Housing and Community Development
12 (2006)	Create historical database of hazard events including flooding, for use in planning and risk assessment.	M	In Progress	Have all the information, but a seperated database was not created. Plans to integrate with WebEOC are underway	Public Works and Environmental Services; Office of Emergency Management; Department of Information Technology
13 (2006)	Purchase and install backup emergency generators (200amp) for nine (9) RECenters, Nature Center and Frying Pan Park (i.e., shelters and other critical facilities).	M	Not Started	Funding constraints-new data shows facilities are not rated for high wind or water events.	Fairfax County Park Authority
14 (2006)	Use Geographic Information Systems (GIS) data to identify areas for expansion of public services such as water and sewer. Consider expansion opportunities as part of the county comprehensive planning and capital improvements planning processes.	M	In Progress		Planning and Zoning, Public Works and Environmental Services, Health Department; Fairfax County Water Authority
15 (2006)	Distribute FEMA mitigation outreach materials at Fairfax County Government Center.	M	Completed	Expanded to include Board of Supervisor's offices.	Office of Emergency Management
16 (2006)	Build flood protection structures (e.g., floodwalls) to protect the Riverbend Park Visitor Center	L	Status unknown		Fairfax County Park Authority

17 (2006)	Conduct assessment to determine hazardous trees and implement tree trimming program. Acquire necessary equipment such as chainsaws, shippers, trailers, and utility vehicles for two (2) crews (north and south county).	L	Status unknown		Fairfax County Park Authority
18 (2006)	Consider requiring reinforced shelters in new county facilities.	L	Not Started	Budget constraints.	Capital Facilities
19 (2006)	Develop project to improve reliability of the county's water and wastewater facilities in the event of the loss of power in an emergency by connecting the facilities to the I-95 Energy/Resource Recovery Facility (converts waste into energy) and improves the reliability of that facility.	H	Cancelled	Alternative measures being considered.	Public Works and Environmental Services
20 (2006)	Upgrade three existing generators and install a new generator in addition to upgrading the distribution system at the Norman M. Cole Pollution Control Plant (primary wastewater treatment plant).	H	In Progress		Public Works and Environmental Services
21 (2006)	Upgrade the New Alexandria Stormwater Pump Station and Tide Gate.	H	Completed		Public Works and Environmental Services
22 (2006)	Install remote lake level data collectors/alarms for the high-hazard dams, and install stream flow gauges, tide gauges and rain gauges at critical locations throughout the County to allow for earlier warning of potential flooding. Develop action plan for public education and warning.	H	Completed	See also item #5	Public Works and Environmental Services; Office of Emergency Management
23 (2006)	Retrofit five (5) high-hazard dam spillways to meet current state regulations. Other upgrades or retrofits also may be required, as projects are designed.	H	In Progress		Public Works and Environmental Services
24 (2006)	Conduct annual or bi-annual outreach to residents and businesses in the New Alexandria/Belleview areas within the 100-year floodplain. Emergency preparedness training and emergency communications/evacuation procedures.	H	Completed		Public Works and Environmental Services

25 (2006)	Construct a diversion conduit/channel system to carry flows from the "East Watershed" in the New Alexandria subdivision to the pump station in the "West Watershed" during weather events when high tides cause the tide gate to close and high rainfalls accumulate on the upstream side of the tidegate.	M	In Progress	Design is underway. Final completion availability of funding.	Public Works and Environmental Services
26 (2006)	Update GIS contours to 2' contours from 5' contours (part of overall planimetric features update). These contours will be important for a range of flooding determinations, to augment the FEMA DFIRM maps.	M	In Progress	Completion dependent upon available funding.	Department of Information Technology jointly with Public Works and Environmental Services
27 (2006)	Implement streambank stabilization/erosion control projects countywide in Park Authority stream valley parks	M	Status unknown		Fairfax County Park Authority
28 (2006)	Continue to implement building and development standards and regulations as required under the National Flood Insurance Programs.	M	In Progress		Public Works and Environmental Services, Planning and Zoning
29 (2006)	Implement efforts related to Medical Reserve Corps volunteer recruitment including printing, mailings and meetings.	M	Completed		Health Department
30 (2006)	Conduct digitized mapping, integrated with GIS, of flood-prone areas of stream valleys. Use data to identify potential parcels for acquisition.	M	In Progress	95% complete.	Fairfax County Park Authority; Department of Information Technology
31 (2006)	Implement preventive measures for West Nile virus including source reduction, larviciding and public education/outreach.	M	Completed		Health Department
32 (2006)	Conduct dam stabilization activities at Lake Accotink Park.	L	Completed		Fairfax County Park Authority
33 (2006)	Conduct dam stabilization activities at Twin Lakes Golf Course.	L	In Progress		Fairfax County Park Authority
34 (2006)	Finish creating a Geographic Information System (GIS) database of private wells. Data can be used for future risk assessment and response activities.	L	In Progress	95% complete.	Health Department; Department of Information Technology

35 (2006)	Conduct forest stand delineation surveys in riparian areas within stream valley parks. Remove hazardous trees that could damage public or private property adjacent to these parklands.	L	Status unknown		Fairfax County Park Authority
36 (2006)	Acquire flood-prone lands including floodplain areas and Resource Protection Areas.	L	Not Started	Budget constraints.	Fairfax County Park Authority
37 (2006)	Initiate a countywide project to collect global positioning data for all regulated public establishments such as nursing homes and clinics and other critical facilities. Data can be used for future risk assessment and response activities.	L	In Progress	HD collects that information for those facilities they are responsible for. County does have a GIS layer of all special needs facilities in the County, regardless of ownership. Critical infrastructure is entered into ACAMS (DHS database) and is ongoing.	Health Department; Department of Information Technology

2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies	Priority H = High M=Medium L = Low	Project Status (Not Started, Cancelled, Modified, In Progress, Completed)	If Delayed / Canceled Why? (Lack of \$, support, manpower, etc)	Project Contact Agency
1 (2006)	Evacuation planning and management	H	Completed		Public Safety
2 (2006)	Warning Systems. AM radio system	H	Completed		Public Safety
3 (2006)	Physical security of all water system facilities and system	H	Completed		Department of Environmental Services
4 (2006)	Water system storage tank monitoring system.	H	Completed		Department of Environmental Services
5 (2006)	Drainage system maintenance	M	On-going	This is conducted daily every six months	Department of Environmental Services
6 (2006)	Stormwater Management Regulations	M	Completed		Department of Environmental Services
7 (2006)	Emergency response training and exercises	M	On-going	Drills that were conducted during this time included: 1) Companion Animal Rescue Exercise, 2) Active Shooter Exercise, 3) Annual Tornado Drill. Training is ongoing to maintain NIMS compliance.	Public Safety
8 (2006)	Floodplain regulations	L	Completed		Department of Environmental Services

Town of Herndon 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies	Priority H = High M = Medium L = Low	Project Status (Not Started, Cancelled, Modified, In Progress, Completed)	If Delayed / Canceled Why? (Lack of \$, support, manpower, etc)	Contact Agency
1 (2006)	Improve Town's participation in FEMA and National Flood Insurance Program (NFIP) programs to include: 1. Involvement in NFIP Community Rating System (CRS) 2. Complete and maintain FEMA Elevation Certificates 3. Sign a Cooperative Technical Partner (CTP) a	H	Status not provided due to resource shortage		Department of Public Works
2 (2006)	Maintain and inspect the Town's infrastructure so that any potential environmental hazard may be minimized. Such maintenance items may include: 1. Routinely clean and repair stormwater drains 2. Routinely inspect and clear debris from drainage system 3. Routinely inspect the functioning of fire hydrants 4. Require and maintain safe access for fire apparatus	H	Status not provided due to resource shortage		Department of Public Works
3 (2006)	Provide for improvements to the Town's natural infrastructure so that flooding hazards may be minimized. Such items may include: 1. Provide grassy swales along roadside 2. Retain natural vegetative bed in stormwater channels 3. Substitute porous surfaces/pavement for impervious pavement where appropriate 4. Using stream restoration/channelization to ensure adequate drainage diversion of stormwater 5. Establishing a "green infrastructure" program to link, manage and expand existing parks, open space, trails, preserves, etc.	H	Status not provided due to resource shortage		Department of Public Works
4 (2006)	Improve the Town's geographic information system (GIS) capabilities to include: 1. Coordination of GIS data between the Town and adjacent counties (i.e., Fairfax County and Loudoun County) 2. Updating FEMA floodplain data and maps 3. Preparing emergency evacuation maps 4. Updating aerial photography 5. Preparing/updating land use, soils, topography, resource protection maps 6. Preparing HAZUS-MH® risk assessment maps	H	Status not provided due to resource shortage		Department of Public Works
5 (2006)	Provide for a full-time Emergency Management Coordinator. This position would involve managing inter-departmental coordination for the Town's Hazard Mitigation Program. This position would also be responsible for managing and coordinating the Town's emergency grant programs	H	Status not provided due to resource shortage		Police Department
6 (2006)	Develop a townwide "Early Warning System" for hazard events to include: 1. 'Continuity of Operations Plan' 2. Improvements to the employee notification network and its protocols 3. Obtaining 'Reverse 911® system' software, hardware and peripheral equipment 4. 4-wheel drive vehicles with applicable communications and equipment (i.e., command post vehicle for mobile incidents)	H	Status not provided due to resource shortage		Inter-departmental function
7 (2006)	Provide for natural resource protection improvements and other measures to minimize flooding impacts. Such improvements may include: 1. Regularly clear sediment build-up along stream beds 2. Regularly clear debris along stream beds 3. Retain thick vegetative cover flanking stream beds	H	Status not provided due to resource shortage		Department of Public Works
8 (2006)	Develop improvements to the Building Code (and promote its enforcement) so that environmental hazards may minimize damage to structures. For example: 1. Require fire extinguishers in all multi-family residential structures 2. Require standard tie-downs of propane tanks	H	Status not provided due to resource shortage		Department of Public Works
9 (2006)	Provide for structural improvements to the Town's infrastructure so that environmental hazards may be minimized. Such items include: 1. Install quick connect emergency generator hook-ups for critical facilities 2. Increase dimension of drainage culverts in troublesome areas 3. Install water tight covers or inflow guards on sewer manholes 4. Anchor traffic lights and other traffic controls to withstand high winds 5. Substitute porous surfaces/pavement for impervious pavement where appropriate	H	Status not provided due to resource shortage		Department of Public Works
10 (2006)	Develop improvements and continue enforcement of Zoning Ordinance/Town Code so that environmental hazards may minimize damage. During 2005/2006, the Town's zoning ordinance will be revised. This effort will be an opportunity to improve the Town's existing zoning regulations in order to keep development away from flood hazard areas, encourage cluster development, and underground utilities where feasible.	H	Status not provided due to resource shortage		Department of Community Development
11 (2006)	Stormwater drainage improvements: Land acquisition. Design and construction in order to correct local area drainage problems and prevent flooding. Project areas include Monroe Street – Station Street; Madison Street – Grant Street to Dranesville Road; Par	H	Status not provided due to resource shortage		Department of Public Works

Town of Leesburg 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies	Priority H = High M=Medium L = Low	Project Status (Not Started, Cancelled, Modified, In Progress, Completed)	If Delayed / Canceled Why? (Lack of \$, support, manpower, etc)	Project Contact Agency
1 (2006)	<p>Improve drainage in low-lying or poor drainage areas along primary and secondary roads where needed town wide. During heavy rain events several area roadways become inundated with water runoff.</p> <p>Priority Projects: 1. Tuscarora Creek Improvements 2. Town Branch Improvements—King Street 3. Turner-Hardwood Drainage</p>	H	Status not provided due to resource shortage		Engineering and Public Works, Office of Capital Projects, Planning,
2 (2006)	<p>Improve security measures as needed around critical facilities to include the Town's Emergency Operations Center (EOC). This should be coordinated with the Loudoun County Plan.</p>	M	Status not provided due to resource shortage		Town of Administration
3 (2006)	<p>Provide back-up power (generators, where needed) for critical facilities (i.e., fire stations, police stations, water facilities, etc.). This should be done in conjunction with the County Action Plan.</p>	M	Status not provided due to resource shortage		Police, Engineering and Public Works, Planning
4 (2006)	<p>Provide for the rehabilitation of tree canopy coverage to improve run-off, soil preservation, recreation opportunities and aesthetics through the development of a Tree Management Program.</p>	L	Status not provided due to resource shortage		Planning

Loudoun County 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies	Priority H = High M=Medium L = Low	Project Status (Not Started, Cancelled, Modified, In Progress, Completed)	If Delayed / Canceled Why? (Lack of \$, support, manpower, etc)	Project Contact Agency
1 (2006)	Provide back-up power (generators) for critical facilities (i.e., fire stations, police stations, water facilities, shelters, etc.).	H	In Progress	Back up generators and fire stations complete. Police Stations in progress. Shelters, limited power at new facilities	Public Works
2 (2006)	Improve drainage in low-lying or poor drainage areas along primary and secondary roads countywide. During heavy rain events several area roadways become inundated with water runoff and make traveling difficult	H	Cancelled	VDOT owns/maintains these low-lying and poor drainage areas	Public Works
3 (2006)	Installation of traffic signal UPS or generator systems at key intersections. During times of power failure, law enforcement personnel are deployed for extended periods of time directing traffic. The installation of these power backup systems would provide law enforcement personnel the opportunity to conduct other necessary functions.	H	In Progress	Town of Leesburg making progress. Loudoun moving forward with a few key intersections	Public Works
4 (2006)	Instal IFLOW gauges along several waterways to assist with determining flood potential and to provide real-time data back to the Emergency Operations Center (EOC).	H	In Progress	Conversations ongoing with VDEM as to process and program	Emergency Management
5 (2006)	Provide emergency broadcast information in multiple languages. Loudoun County has a growing population of non-English speaking residents and visitors. By providing information in multiple languages the County will be able to, in a timely manner, warn the community and provide emergency information.	M	In Progress	Expanded our capabilities. Enhancement not able to be completed due to lack of funding	Emergency Management
6 (2006)	Enhancement of security measures around critical facilities to include the Emergency Operations Center (EOC).	M	In Progress	New EOC 2007 - Cameras installed at several facilities.	County Administration
7 (2006)	Conduct an all hazard community outreach program to provide emergency preparedness information regarding susceptible hazards and action steps when they occur. This program would be tailored in different languages to ensure adequate dissemination throughout the community	M	In Progress	Only piece missing currently is the multi-language capability	Emergency Management
8 (2006)	Enhance, update and regularly maintain high quality aerial photography of the county. During times of large-scale emergency or disaster situations having the ability to see before and after photos is extremely helpful. In the planning process aerial photography also provides useful insight	M	Completed	Our GIS department has a contract to update photography	Emergency Management

City of Manassas 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies	H = High M=Medium L = Low	Status (Not Started, Cancelled,	If Delayed / Canceled Why? (Lack of \$, support, manpower, etc)	Project Contact Agency
1 (2006)	Update and revise the Flood Insurance Rate Map (FIRM).	H	Not started	Received exempt status in 2010	Engineering and Mapping, Public Works
2 (2006)	Drainage Project – Retrofit and convert <u>one (1)</u> existing storm water management ponds into Regional Storm Water Management Ponds.	H	Not started	delay due to funding	Department of Public Works
3 (2006)	GIS Mapping Upgrade: Upgrade our existing GIS technology and hardware; convert existing static maps into the GIS system: Zoning, Comprehensive Plan, Storm water Management, and Open Space Maps.	H	On-going	Upgraded to ESRI	Engineering and Mapping, Public Works
4 (2006)	Comprehensive Aerial Mapping: hire a contractor(s) to update our aerial mapping of the City of Manassas. The contractor(s) will provide the aerial mapping data in a format that will be compatible with the GIS mapping system. This data will be use to ident	H	Complete	Imagery updated 2009; provided by Virginia Geographic Information Network	Engineering and Mapping, Public Works
5 (2006)	Electric Department has 79% of all distribution facilities below ground. This project will underground the remaining 21% of the distribution facilities.	H	On-going	This is part of a 50 year planning initiative	Utilities - Electric Department
6 (2006)	Design, construction and purchase of either mobile or fixed electric generators at several drinking water pumping stations.	H	Complete	Installation of backup generators completed at Dean (2007) and City water plant (2008)	Utilities - Water Department
7 (2006)	Traffic Signal – Uninterruptible Power Supply (UPS). Add or identify alternative/mobile power sources to several key traffic signals in the City of Manassas.	H	On-going	One UPS has been installed	Department of Public Works
8 (2006)	Variable Traffic Message Signs: add several traffic message boards to the inventory of the City of Manassas.	M	Started	Bids scheduled for January 2011; installation by summer 2011	Department of Public Works
9 (2006)	Hire and contractor to create a CPTED Design Manual	L	Cancelled	Cancelled due to budget cuts	Community Development Office

City of Manassas Park 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies Description	Priority (H=High, M=Medium, L=Low)	Project Status (Not Started, Cancelled, Modified, In Progress, Completed)	If Delayed / Canceled Why? (Lack of \$, support, manpower, etc)	Responsible Agency
1 (2006)	Install comprehensive video surveillance system to protect public buildings and VRE Station from terrorist attacks (Bombings, derailments, etc.), to be continuously monitored.	H	In Progress	Installed at City hall, new PD & FD bldgs; no funding source for VRE	Public Works
2 (2006)	Update evacuation and emergency management plan for gas pipeline rupture, and practice drill.	H	Completed	EOP revised, addresses all hazards.	Fire, Police, Public Works
3 (2006)	Practical Emergency Operations Training Exercise on a citywide basis for a natural disaster.	H	In Progress	On-going process, annual exercises.	Fire, Police, Public Works
4 (2006)	Increase efforts to educate the public on natural and manmade hazards that threaten the City of Manassas Park.	H	In Progress	On-going process to educate the public with VDEM & FEMA provided literature.	Emergency Management
5 (2006)	Practical exercise to include a practice fire evacuation drill for school aged children, for use at home as well as school.	H	In Progress	On-going fire life safety pub ed program	Fire, Police
6 (2006)	Stabilize the slope and prevent erosion at Haverhill Apartment Complex and Railroad Drive. (Fortify the existing structure with a retaining wall).	L	Completed	Any mitigation work planned was completed by the owners-no reoccurring issues since they occupied the development.	Public Works

Prince William County 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies	Priority H = High M=Medium L = Low	Project Status (Not Started, Cancelled, Modified, in Progress, Completed)	If Delayed / Canceled Why? (Lack of \$, support, manpower, etc)	Project Contact Agency
1 (2006)	Providing security for the Police vehicles at the Garfield Police precinct. The security would be in the form of a chain link fence.	H	Modified	Fence partially around lot	Public Works
2 (2006)	Provide generators for critical facilities and shelters.	H	Started	Generators installed at PSCC PSTC McCoart. No funding for schools	Public Works
3 (2006)	Open Space Management Plan.	H		Unknown	Planning Department
4 (2006)	Warning system for the Town of Occoquan. This will include the system and the evacuation plan.	H	Started	Should be installed by Fall 2010	Public Works
5 (2006)	Have a contractor update and revise the Flood Insurance Rate Map (FIRM).	H	Not Started	Lack of funding	Planning Department
6 (2006)	Traffic Signal UPS Systems.	M	Not Started	Lack of funding	County Police
7 (2006)	Have a consultant determine mitigation efforts for County buildings.	M	Not Started	Lack of funding	Emergency Management
8 (2006)	Variable message signs.	M	Completed	Bought by police department	Police
9 (2006)	Provide weather updates from NOAA in Spanish. Prince William County has a growing population of non-English speaking persons living in the county. NOAA weather radios are the most reliable means of getting weather watch and warning information.	M	Not Started	Based on NWS	Emergency Management

Town of Purcellville 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies	Priority H = High M=Medium L = Low	Project Status (Not Started, Cancelled, Modified, In Progress, Completed)	If Delayed / Canceled Why? (Lack of \$, support, manpower, etc)	Project Contact Agency
1 (2006)	Replace and enlarge box culvert under East main Street west of Pickwick Drive to correct chronic flooding during heavy rain episodes. Expand roadway width to accommodate two lanes of moving traffic and a left turn lane for eastbound traffic to turn north.	H	In Progress	VDOT owns/maintains these drainage areas	Purcellville Street/Maintenance Dept.
2 (2006)	Provide emergency back-up power (generators) for critical facilities presently lacking such, specifically Town Hall. Well water pumps, and wastewater pumping facilities.	H	Complete	Generators purchased and installed for critical infrastructure & EOC Center at Town Hall.	Town Engineer and Public Works
3 (2006)	Enlarge box culvert and elevate roadway on Hirst Road at South Branch of Catoclin Creek. Chronic flooding conditions during periods of heavy rain and snow run-off.	H	Complete	Perimeter fencing and employee security cards to gain access to each facility.	Purcellville Street/Maintenance Dept.
4 (2006)	Drainage improvements and intersection reconfiguration. Replace and enlarge drainage culverts and re-design intersection to correct chronic flooding conditions and improve safety at intersection heavily traveled by school buses.	H	In Progress	Design underway, additional funding is required to complete construction.	Streets/Maintenance Department, Capital Projects
5 (2006)	Separate town communications band (frequency) into separate operating frequencies to eliminate conflict between police and public works transmissions. Frequent use of the radio for transmissions by Public works during emergency repair operations conflicts.	M	Complete	New Nextel push to talk eliminates communication conflicts during emergency situations.	Administration and Police
6 (2006)	Conduct all hazard community outreach program to provide emergency preparedness information regarding susceptible hazards and action steps when they occur. Program should be developed in several languages to ensure adequate coverage.	M	In Progress		Emergency Management and Public Information

Town of Vienna 2006 Mitigation Strategy Update

2006 Strategy Number	Mitigation Strategies	Priority H = High M=Medium L = Low	Project Status (Not Started, Cancelled, Modified, In Progress, Completed)	If Delayed / Canceled Why? (Lack of \$, support, manpower, etc)	Project Contact Agency
1 (2006)	Stream Siltation Study to reduce potential for flooding along Woltrapp Creek.	H	provided due to resource shortage		Department of Public Works
2 (2006)	Develop Emergency Response Program for Town.	H	Status not provided due to resource shortage		Administration/ Public Works
3 (2006)	Develop Training Program for Emergency Responders.	H	Status not provided due to		Administration Services
4 (2006)	Purchase and stock dedicated equipment (trailer or vehicle) for emergency response use.	H	Status not provided due to resource shortage		Department of Public Works
5 (2006)	Two portable generators/trailer (50KW); one permanent generator for Town Public Works facility	H	Status not provided due to resource shortage		Department of Public Works
6 (2006)	Emergency equipment: flares and orange cones.	H	Status not provided due to resource shortage		Police
7 (2006)	Emergency Services Early Warning Notification—Reverse 911® System	H	Status not provided due to resource shortage		Police

APPENDIX F

HUMAN-CAUSED HAZARD ANALYSIS

Redacted

Note, Additional Human-caused analysis document to be submitted under separate cover.

This page intentionally left blank.

APPENDIX G

SOCIAL VULNERABILITY ANALYSIS

Redacted

Note, Social Vulnerability Analysis document to be submitted separately.

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APPENDIX H

OUTREACH SCREEN SHOTS

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The following website screenshots were available as of May 2011. Additional websites were to be updated later in the summer of 2011.

City of Fairfax Public Outreach – City website

The screenshot shows the City of Fairfax website's emergency management section. The header includes the City of Fairfax logo and navigation links: Home, Residents, Business, Visitors, City Gov't. A dropdown menu for 'List of Services' is set to 'All'. The main content area is titled 'City Disaster Plans' and lists several documents with download icons:

- City Comprehensive Emergency Management Plan **New**
- City Strategic Work Plan
- City Debris Management Plan, August 2006
- Virginia Regional Hazard Mitigation Plan (file size 27.3 MB)
- Virginia Regional Hazard Mitigation Plan Draft (file size 10.2 MB)
- Model Care Facility Plan

On the left, a sidebar lists 'Emergency Management' resources: Emergency Management, Important Numbers, City Disaster Plans, Community Emergency Response Team (CERT), and Pet Shelter Registration. Below this is an 'Resources' section with links to Emergency Management Training, Your Guide To Emergency Preparedness, Home Guide To Emergency Preparedness, Additional Resources, Disaster Information, and A Message from FEMA Administrator.

Fairfax County Public Outreach – City website

The screenshot shows the Fairfax County website's emergency management section. The header features the Fairfax County logo and navigation links: Home, Living Here, Doing Business, Visiting, Departments & Agencies, and a Search Site field. The main content area is titled 'Office of Emergency Management' and includes sections for 'Winter Weather Preparedness' and 'Advertisement'. A sidebar on the left provides an 'Index' of links: Contacts/Directions, OEM Home, How to Prepare, Outreach/Public Education, Resident Resources, Business Resources, Pre-Disaster Recovery Planning, Citizen Corps Volunteering, About OEM, Weather Forecast, Emergency Information, and Emergency Alerts. Below the index are dropdown menus for Online Services, Our Government, News and Events, Maps, Facts & Stats, and State & Federal.

Northern Virginia Hazard Mitigation Plan

The 2011 Northern Virginia Hazard Mitigation Plan Update is now available for public review and comment. The plan incorporates mitigation projects for Fairfax County and the towns of Vienna, Clifton and Herndon. Please e-mail any comments to oem@fairfaxcounty.gov.



Information Center Residential Business Online Services

- City Departments
- Boards & Commissions
- Codes & Ordinances
- E-Services
- GIS Maps
- Developmental Process
- Important Links
- Health Subscriptions
- Climate Support Center
- Home



One Park Center Court
Manassas Park, VA 20111-2395
Ph: 703-335-8800
Fax: 703-335-0953

CANCELLATION OF FEBRUARY 16, 2011 SCHEDULING BODY MEETING AND RESCHEDULE TO FEBRUARY 22, 2011

Responsibility for Removal of Snow & Ice from sidewalks after Snow Storm
Sec. 20-12. Removal of snow and ice from sidewalks. The tenant or occupant and, in case there shall be no tenant or occupant, the owner of any building or lot of land abutting on any curbed or paved sidewalk shall, during the first eight (8) hours of daylight following the time when snow or ice ceases to fall or form, cause the same to be removed from such curbed or paved sidewalk.

Regional Hazard Mitigation Plan strategies

The Federal Emergency Management Agency (FEMA) requires all localities to have and maintain an approved Hazard Mitigation Plan to reduce repetitive losses from natural hazards-weather related events. The City of Manassas Park participates in the NOVA Regional Hazard Mitigation Planning process. The current plan is coming up on the 5-year required revision, update and approval process. City staff has been working over the last year to update the overall regional plan. The most typical hazards that the city faces are periodic structure fires, the threat of significant winter weather, threat of tornadoes from spring thru fall and the threat of flash urban flooding associated with strong thunderstorms. The city has experienced very few repetitive losses from natural hazards in its history. As required by FEMA, the city is seeking public comment on the proposed mitigation strategies for Manassas Park. The city's executive summary and mitigation strategies can be found on Pages 346-352 of the draft document. Comments can be provided to John O'Neal, Fire Chief/Emergency Management Coordinator via email at joneal@manassasparkva.gov. Download attachment to draft City document at http://www.cityofmanassaspark.us/Public_Documents/ManassasParkVA_BBBoard/02BA2485-000F8613

Request for Bids for Concession Operations for Signal Bay Water Park

Statewide Tornado Drill March 15, 2011

Forecast of 2011 Real Estate Assessments Richard Sanderson, City Assessor

NEWS & ANNOUNCEMENTS

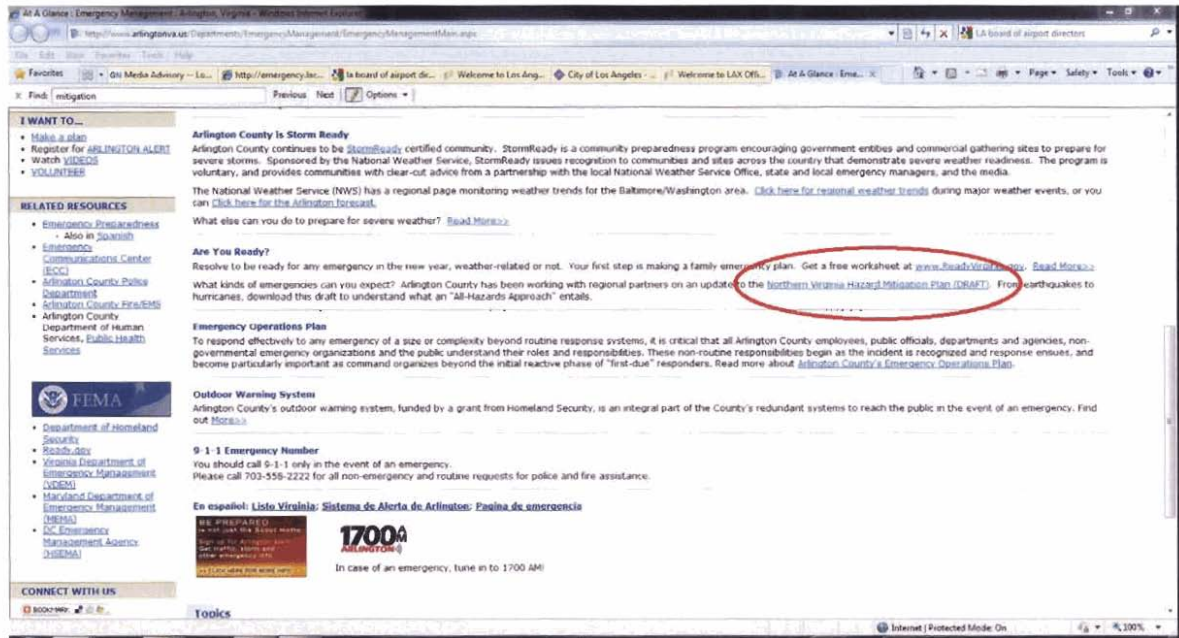
- 2/14/11 Community Development Authority Meeting
- 2/14/11 Responsibility for removal of snow from sidewalks after snow storm
- 2/16/11
- 2/16/11 Cancellation of February 16 City Office Meeting
- 2/16/11 Agenda Feb 16, 2011 (Scheduling Body Meeting)

CITY EVENTS CALENDAR

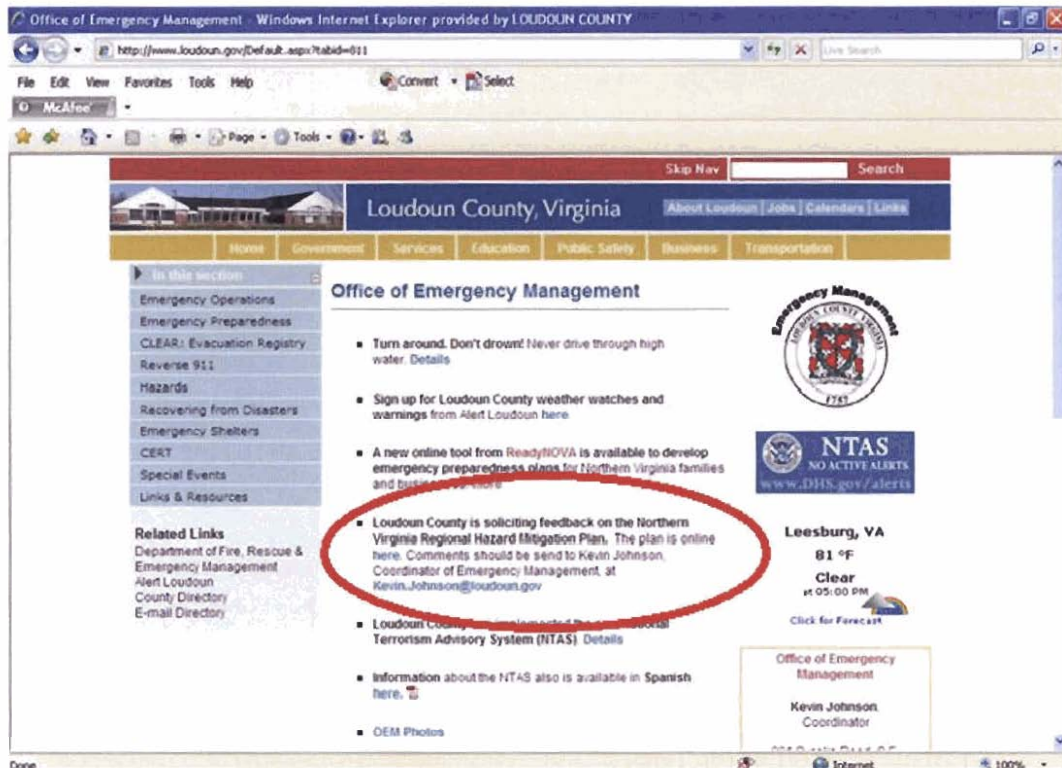
- Sat, Feb 05, 2011
NVRC
7:30 PM - Fenton NVRC Office
- Mon, Feb 21, 2011
CITY OFFICER CLOSED
PRESIDENT'S DAY
9:00 AM -
- Tue, Feb 22, 2011
Governing Body Meeting
7:00 PM -
- Wed, Feb 23, 2011
Community Development Authority Meeting
7:00 PM - City Hall

The following website screenshots were taken between May and September, 2011.

Arlington County Public Outreach Website – County Website



Loudoun County Public Outreach Website – County Website



City of Alexandria Public Outreach Website – City Website

Northern Virginia Hazard Mitigation Plan 2010 Update | Fire Department | City of Alexandria, VA - Windows Internet Explorer

http://alexandriava.gov/fire/info/default.aspx?id=49926

Convert Select

Alloy Navigator - Support H... WebEOC 7.2 - Administration Web Slice Gallery Customize Links Windows Windows Marketplace Windows Media

Northern Virginia Hazard Mitigation Plan 2010 Update ...

CITY OF Alexandria VIRGINIA
ALEXANDRIAVA.GOV

Home Residents Visitors Business City Dep

Home Fire Department Northern Virginia Hazard Mitigation Plan 2010 Update Monday, September 19

Fire Department

Page updated Jul 29 2011 2:21 p.m

Comment Share RSS Print Text Size

2 Comments | Last Comment: August 8, 2011 - 4:37 PM

Northern Virginia Hazard Mitigation Plan 2010 Update

Hazard mitigation is sustained action taken to reduce or eliminate long-term risk to people and their property from hazards. State and local governments are required to develop hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance. Hazard mitigation plans form the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage. The planning process is as important as the plan itself. It creates a framework for risk-based decision making to reduce damages to lives, property, and the economy from future disasters.

Alexandria's Office of Emergency Management welcomes public comments on the draft Northern Virginia Hazard Mitigation Plan 2010 Update. This plan addresses hazards and risks facing Northern Virginia jurisdictions, including the City of Alexandria, as well as planned hazard mitigation actions. It is hoped that this plan will be a useful tool for all community stakeholders.

Please submit comments online no later than **Wednesday, August 31, 2011**

- Northern Virginia Hazard Mitigation Plan (Full document, 11MB)
- Table of Contents (22KB)

Northern Virginia Hazard Mitigation Plan 2010 Update | Fire Department | City of Alexandria, VA - Windows Internet Explorer

http://alexandriava.gov/fire/info/default.aspx?id=49926

Convert Select

Alloy Navigator - Support H... WebEOC 7.2 - Administration Web Slice Gallery Customize Links Windows Windows Marketplace Windows Media

Northern Virginia Hazard Mitigation Plan 2010 Update ...

CITY OF Alexandria VIRGINIA
ALEXANDRIAVA.GOV

Home Residents Visitors Business City D

Home Fire Department Northern Virginia Hazard Mitigation Plan 2010 Update Monday, September 19

Fire Department

Page updated Jul 29 2011 2:21 p.m

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- Northern Virginia Hazard Mitigation Plan (Full document, 11MB)
- Table of Contents (22KB)

Comment Share RSS Print Text Size

Comments

Hazard Mitigation Plan Comment Board
Missing from the plan is any reference to "extreme space weather" (aka, solar storms or superstorms)
...more

Harley (249) User 8/08/11 4:37 PM

Comment on disaster mitigation

A wider public policy issue for consideration has to do with ...more

Paul (245) User - 7/29/11 4:06 PM

Submit a Comment See All 2 Comments »

City of Falls Church Public Outreach Website – City Website

The screenshot shows a web browser window displaying the City of Falls Church website. The address bar shows the URL <http://www.fallschurchva.gov>. The page title is "Northern Virginia Hazard Mitigation Plan, City of...". The main content area features a header with a photograph of a group of people, followed by a navigation menu with links for Home, Online Services, Residential Services, Business Services, Recreation & Culture, Government, and News. Below the navigation menu, there is a breadcrumb trail: Home > Government > Departments > Public Safety > Emergency Preparedness > Northern Virginia Hazard Mitigation Plan. The main heading is "Northern Virginia Hazard Mitigation Plan". The text defines mitigation as actions taken to reduce or eliminate long-term risk to people and property from hazards and their effects. It states that the plan outlines the aspirations and specific courses of action that the community intends to follow to reduce vulnerability and exposure to future hazard events. A map of Northern Virginia is shown with a red dot indicating the location of Falls Church. The text also mentions that a local mitigation plan is the physical representation of a jurisdiction's commitment to reduce risks from natural hazards. Contact information for TOM POLERA, Deputy Emergency Manager and Fire Marshal, is provided: 200 Park Avenue, 22 Fall, Falls Church, VA 22046, 703-248-5038 (TTY 711), 703-248-2158, tom@www.fallschurchva.gov. The page is dated Monday, September 19, 2011. The browser status bar at the bottom shows "Internet | Protected Mode: On" and a zoom level of 100%.

The City of Falls Church also made mention of the NOVA HMP on its Facebook page and provided a hyperlink to its location on the website listed above.



List of Services [Home](#) [Residents](#) [Business](#) [Visitors](#) [City Gov't](#) [Jobs](#) [Calendar](#) [Search](#)

Emergency Management

- Emergency Management
- Important Numbers
- City Disaster Plans
- Community Emergency Response Team (CERT)
- Pet Shelter Registration

Resources

- Emergency Management Training
- Your Guide To Emergency Preparedness
- Home Guide To Emergency Preparedness
- Additional Resources
- Disaster Information
- A Message from FEMA Administrator Video

National Terrorism Advisory System

Office of Emergency Management



Our Vision: Emergency management seeks to promote a safer, less vulnerable city with the capacity to cope with hazards and disasters.

Our Mission: Emergency management protects the community by coordinating and integrating all activities necessary to build, sustain, and improve the capability to mitigate against, prepare for, respond to, and recover from threatened or actual natural disasters, acts of terrorism, or other man-made disaster.

Current Emergency Information

Final Draft - Northern Virginia Hazard Mitigation Plan is now available

Be Disaster Ready

[Make a Plan](#) [Build a Kit](#) [Stay Informed](#)

Get Your Readiness Quotient

Are you Ready?

City of Fairfax
Emergency Operations Center
Activation Level

1 FULL 2 PARTIAL 3 MONITORING

TUNE TO 1650 AM ON THE RADIO TO GET COMMUNITY MESSAGES AND THE LATEST EMERGENCY INFORMATION.



NOKR is designed as an emergency contact system to help if you or your family member is missing, injured or deceased. NOKR is a free service to the public as well as the Local and State agencies using the search service.

Need a speaker for your group or association?
Contact us at:

OEM@fairfaxva.gov
703-385-4856



Emergency Preparedness for Business

Relevant Links

- Fire Department
- Police Department
- Fire and Life Safety Education

eMAS

- Citizen Emergency Alert



Current Weather from the National Weather Service



City Hall
10455 Armstrong St.
Fairfax, Virginia 22030
Other Gov't Offices.

Information Provided by the Office of Emergency Management; 703.385.4856

[City Code](#) | [Contact Us](#) | [Privacy Policy](#) | [Search](#)

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List of Services Home Residents Business Visitors City Gov't Jobs Calendar Search

Emergency Management

- Emergency Management
- Important Numbers
- City Disaster Plans
- Community Emergency Response Team (CERT)
- Pet Shelter Registration

Resources

- Emergency Training
- Your Guide To Emergency Preparedness
- Home Guide To Emergency Preparedness
- Additional Resources
- Disaster Information
- A Message from FEMA Administrator Video

City Disaster Plans

- City Comprehensive Emergency Management Plan [New](#)
- City Strategic Work Plan [↗](#)
This plan outlines the vision, mission, and goals for the City of Fairfax Emergency Management Program.
- City Debris Management Plan, August 2006 [↗](#)
This plan has been developed to provide the framework for City government and other entities to clear and remove debris generated during a public emergency within the City of Fairfax.
- Final "Draft Northern Virginia Hazard Mitigation Plan" (29 MB) [↗](#)
- Model Care Facility Plan [↗](#)

Relevant Links

- Fire Department
- Police Department
- Fire and Life Safety Education

eMAS

- Citizen Emergency Alert

National Terrorism Advisory System



Current Weather from the National Weather Service



City Hall 10455 Armstrong St. Fairfax, Virginia 22030 Other Gov't Offices.

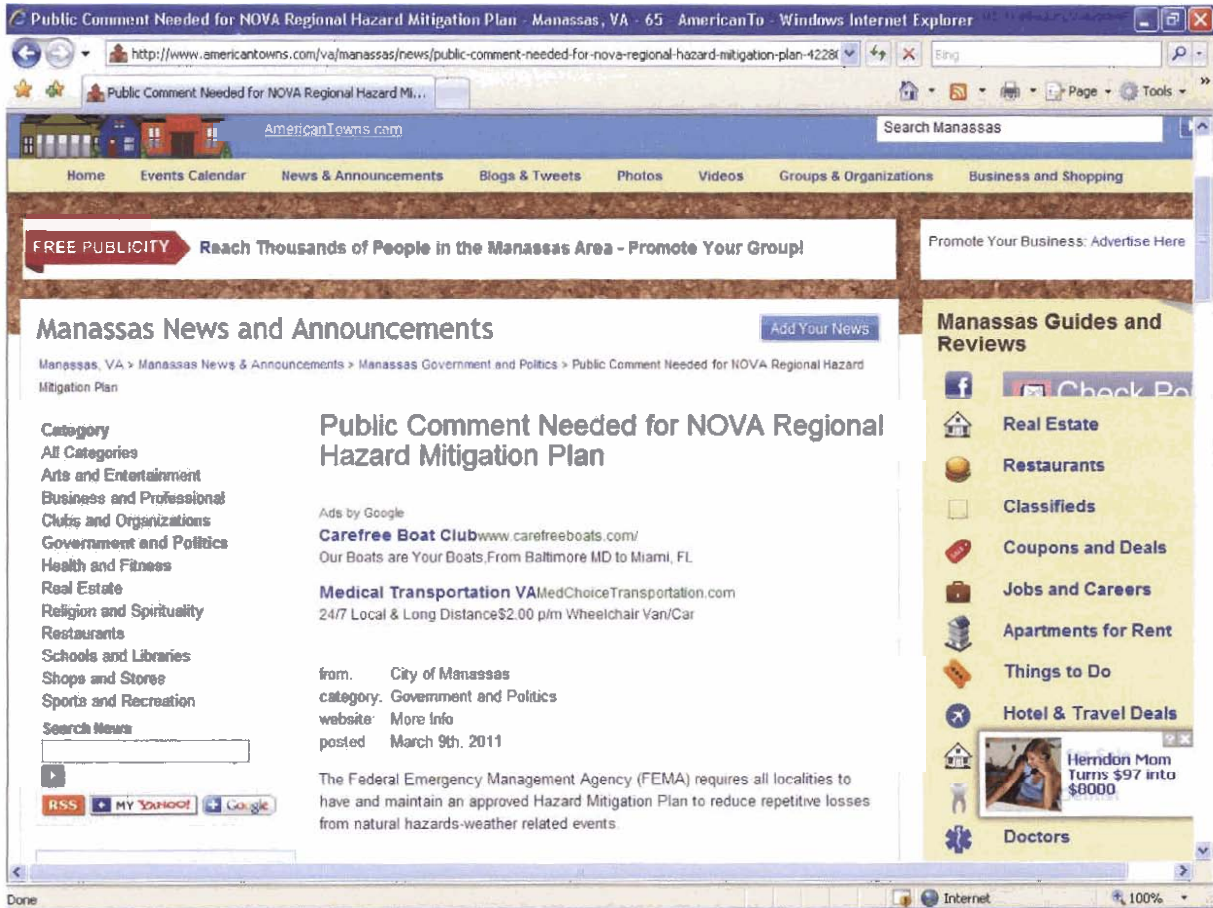
Information Provided by the Office of Emergency Management; 703.385.4856

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City of Manassas Public Outreach Website

Unfortunately, the emergency preparedness webpage for the City of Manassas was revised without having taken a screenshot, and the Hazard Mitigation Plan was no longer up for review prior to plan submittal. The plan was placed on the webpage between the months of May and August. Additionally, a request for public comment was made through a public comment review board (screenshot seen below). This solicitation directed readers to the City of Manassas website where a copy of the Draft NOVA Hazard Mitigation Plan was available for review.



Additionally, the information about the plan update was shared with local media by way of the City Public Information Officer. A copy of that article is on the following page.

Manassas hazard plan goes to public for comment

By: [CHERYL CHUMLEY](#)

Published: April 05, 2011

[Post a Comment](#)

MANASSAS, Va. --

If fire spread through the streets of Manassas, how would city officials respond? That's part of the reason why communities in the region have worked together on a Northern Virginia Regional Hazard Mitigation Plan – to provide a checklist of responses to various natural weather-related disaster scenarios for emergency responders and key staff.

Its five-year update is finished, but needs public review and comment, as required by the Federal Emergency Management Agency.

The plan includes the jurisdictions of Manassas, Manassas Park and Prince William, as well as Loudoun, Fairfax and others. As far as updates in Manassas, city emergency planner Robert Halsall said in an email that most changes come in the form of additions.

"Each plan [for the participating jurisdictions] includes specific dynamics for each jurisdiction including the known types of hazards for weather, transportation, chemical, etc. We are required to make the plan available for public comment," Halsall said. "There are no new changes to our plan, however there are several plans we hope to incorporate in the not so distant future, as they are completed, such as mass evacuation and pet sheltering."

On the wish list of emergency response needs to be fulfilled by November, for example, are purchases of additional weather radios for all the city's schools and an expansion of a communications system that relies on citizen participation and volunteers to get the word out about disasters.

In Manassas Park, the stated needs are greater.

The Manassas Park plan calls for an evaluation of the structural soundness of the Community Center and middle school to "withstand winter storm loads," according to the text. That analysis is due to be completed by July 2012. Other stated needs: consider assessing a stormwater fee on citizens and consider implementing a public outreach program in city schools about area hazards. Both those ideas are supposed to be implemented between July and January 2013.

Prince William County's plan, meanwhile, calls for about a dozen actions. One suggests an evaluation of the communication towers to determine their vulnerability to storms. Another recommends the development of a policy for emergency responders to abide while traveling in high winds.

Interested members of the public who wish to view or comment on the plan can access the full 120-page report at www.manassascity.org.

Staff writer Cheryl K. Chumley can be reached at 703-530-3903.



The Impacts of Mitigation Planning on the City of Fairfax's Community Emergency Response Team

Presented by: Carrie Speranza, CFM





What is Mitigation Planning

- Sustained action to reduce or eliminate the long-term risk to human life and property from hazards
- Mitigation activities may be implemented prior to, during, or after an incident
- FEMA has implemented hazard mitigation planning provisions through regulations at 44 CFR

Required in order to qualify for post-disaster assistance



Builds a foundation...

A solid plan (HIRA) is the foundation for all emergency management planning

Investment in a strong mitigation plan will support:

- Emergency Operations Plans
 - Emergency Response Plans
 - Shelter and Evacuation Plans
 - Long Term Community Recovery Plans – ESF 14
 - Continuity of Operations Plans
- Serves as justification for grants and other funding to get things done!





Typical Plan Sections

1. Planning Process (Public Outreach)
2. Risk Assessment (HIRA)
3. Mitigation Strategy
4. Plan Maintenance

Local jurisdictions must update their plans every 5 years



Northern Virginia Plan Update

- HMGP funding through Arlington County
- 20 jurisdictions
- 2006 Plan, 5-year planning cycle – currently updating the 2011 plan
- Draft plan being reviewed by members of the public





Hazards Addressed

- Multiple hazards impact NOVA
 - Previous Hazard Mitigation Plan (2006)

Flood

Winter Storms

Severe Thunderstorms

Tornadoes

Hurricanes & Tropical Storms

Drought

Wildfire

Earthquakes

Extreme Temperatures

Dam Failure

Erosion

Landslides

Sinkholes

Human-Caused



Data Sources for Analysis

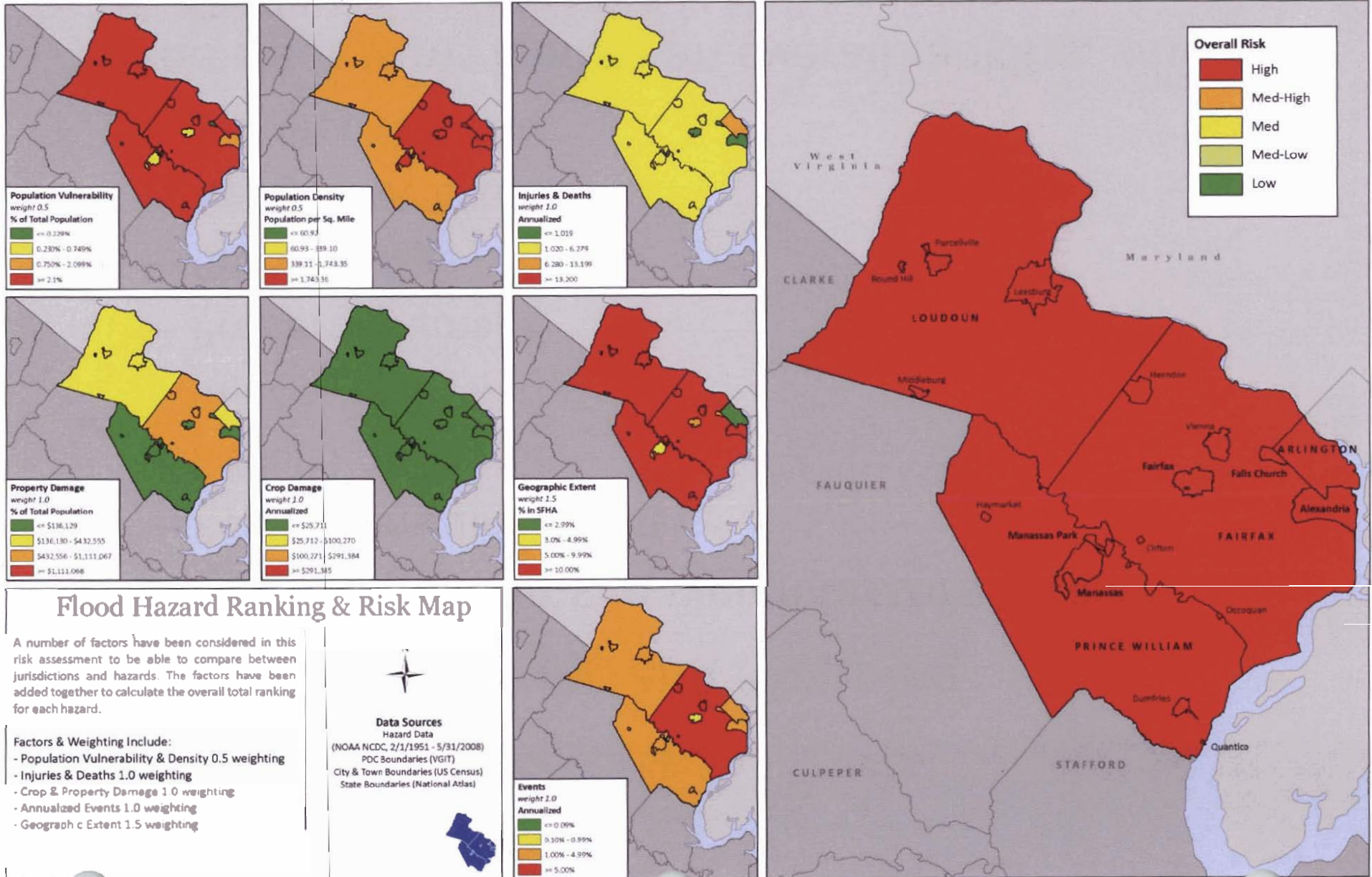
- Population
- Land Use and Development
- Local Zoning
- Critical Facilities
- Building Inventory
- Disaster Data
 - Federally Declared
 - NCDC





Ranking and Mapping

- Series of algorithms to weigh factors (VDEM)
 - Population vulnerability
 - Population Density
 - Injuries and Deaths
 - Property Damage
 - Crop Damage
 - Geographic Extent
 - Number of Events
- The algorithms lead to an overall ranking, which is displayed graphically for all hazards



Flood Hazard Ranking & Risk Map

A number of factors have been considered in this risk assessment to be able to compare between jurisdictions and hazards. The factors have been added together to calculate the overall total ranking for each hazard.

Factors & Weighting Include:

- Population Vulnerability & Density 0.5 weighting
- Injuries & Deaths 1.0 weighting
- Crop & Property Damage 1.0 weighting
- Annualized Events 1.0 weighting
- Geographic Extent 1.5 weighting



Data Sources

Hazard Data
(NOAA NCEC, 2/1/1951 - 5/31/2008)
PDC Boundaries (VGIT)
City & Town Boundaries (US Census)
State Boundaries (National Atlas)

