

Appendix G: Mitigation Strategies

COMPLETED STRATEGIES:

MITIGATION ACTION C-1 (formerly 1.1.1)	Evacuation Interstate Ramp Barrier Gates: Installation of fixed barriers at interstate ramps that can be manually operated to improve evacuations for needed hazards with limited preparation for mobilization and limited state resources.
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Category:	1:1, 2:3
Hazard(s) Addressed:	Hurricane
Priority (High, Moderate, Low):	High
Estimated Cost:	\$8.7 Million
Potential/Current Funding Sources:	VDOT/Federal Highway Fund
Lead Agency/Department Responsible:	Virginia Department of Transportation
Project Timeline:	ASAP
Implementation Status:	COMPLETED

MITIGATION ACTION C-2 (formerly 1.2.1)	Evaluation of DEQ locations to determine if offices and monitoring stations are within 100 year flood zone
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Category:	3:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	\$1,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Virginia Department of Environmental Quality
Project Timeline:	1 Year
Implementation Status:	COMPLETED



MITIGATION ACTION C-3 (formerly 1.5.2)	Emergency Power Systems for 9 Regional Agency Cooler Facilities: Provide emergency back-up power at 9 of the agencies largest cooler facilities that can be utilized for refrigeration functions associated with the emergency response needs of the Commonwealth. The cooler facilities are already in place and include drive in type facilities for the storage and distribution of tree seedlings during early spring. These sites are generally available for most of the summer and fall seasons, and would allow for multiple tractor-trailer sized cold storage facilities for critical food, health, and ice needs.
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Critical
Estimated Cost:	\$200,000
Potential/Current Funding Sources:	DHS – State Homeland Security
Lead Agency/Department Responsible:	Virginia Department of Forestry
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-4 (formerly 1.5.3)	Supplemental Power for Government Data Centers: Establish a real-time off-site data center for DGS survey of mission critical applications and communications. The center would house a 3 terabyte mass storage device, 2 database servers, 2 email servers, 5 application servers, 2 domain servers, 5 Citrix servers, software and telecommunications circuits required to support real-time fail over capabilities for DGS applications
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$500,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of General Services
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED

MITIGATION ACTION
C-5 (formerly 1.5.5 in 2007 plan)
Provide uninterruptible power source (UPS) for DCLS: Install an UPS system in the Archive Room located at the Div of Consolidated Laboratory Services and re-feed bus way A from the new UPS system.

Category: 1:5
Hazard(s) Addressed: All
Priority (High, Moderate, Low): NR
Estimated Cost: \$435,000
Potential/Current Funding Sources: Agency Funds
Lead Agency/Department Responsible: Department of General Services
Project Timeline: As Funding Becomes Available
Implementation Status: **COMPLETED**

MITIGATION ACTION
C-6 (formerly 2.1.3 in 2007 plan)
Develop a Continuity of Operations Plan (COOP) that establishes procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.

Category: 2:4
Hazard(s) Addressed: All
Priority (High, Moderate, Low): NR
Estimated Cost: \$2,000
Potential/Current Funding Sources: Agency Funds
Lead Agency/Department Responsible: Department of Agriculture and Consumer Services
Project Timeline: 1 Year
Implementation Status: **COMPLETED**

MITIGATION ACTION
C-7 (formerly 2.1.4 in 2007 plan)
Hazard Mitigation Planning: Perform a hazard/vulnerability assessment of buildings and infrastructure on the Radford University campus.

Category: 2:3
Hazard(s) Addressed: All
Priority (High, Moderate, Low): NR
Estimated Cost: \$47,000
Potential/Current Funding Sources: Pre-Disaster Mitigation Program
Lead Agency/Department Responsible: Radford University
Project Timeline: As Funding Becomes Available
Implementation Status: **COMPLETED**



MITIGATION ACTION C-8 (formerly 2.1.5 in 2007 plan)	Hazard Mitigation Planning: Perform a hazard/vulnerability assessment of buildings and infrastructure on the Virginia State University campus.
Category:	2:3
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$100,000
Potential/Current Funding Sources:	Pre-Disaster Mitigation Program
Lead Agency/Department Responsible:	Virginia State University
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-9 (formerly 2.1.7 in 2007 plan)	Jamestown Settlement Electrical Surge Protection: Provide electrical surge protection to computers, sensitive audio/visual equipment and to interactive exhibits. Protection would be extended to the Education, Visitor Services and Theater/Special Exhibitions Wings.
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$172,500
Potential/Current Funding Sources:	Capital Projects or NGF
Lead Agency/Department Responsible:	Jamestown-Yorktown Foundation
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-10 (formerly 2.1.8 in 2007 plan)	Jamestown Settlement Emergency Generators: Upgrade generators for the following buildings: Education Wing from 20KW to 300KW Natural Gas; Visitor Services Wing from 50KW to 300 KW Natural Gas; and relocate existing 50KW generator from Visitor Services Wing to the Maintenance Building.
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$562,000
Potential/Current Funding Sources:	Maintenance Reserve
Lead Agency/Department Responsible:	Jamestown-Yorktown Foundation
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED

MITIGATION ACTION
C-11 (formerly 2.1.9 in 2007 plan)

Development of a Plant Pest Emergency Action Plan: Development of a Plant Pest Emergency Action Plan by the Office of Plant and Pest Services (OPPS). OPPS cooperates with state, federal and local agencies and industries to protect Virginia’s agricultural and horticultural interests from plant pests and diseases. This plan would enhance emergency action coordination, communication, survey and sample analysis, regulatory/quarantine response.

Category: 2:6
Hazard(s) Addressed: Human-Caused, Biological
Priority (High, Moderate, Low): NR
Estimated Cost: \$2,000
Potential/Current Funding Sources: State Agency Funds
Lead Agency/Department Responsible: Department of Agriculture and Consumer Services
Project Timeline: 2005
Implementation Status: **COMPLETED**

MITIGATION ACTION
C-12 (formerly 2.1.10 in 2007 plan)

Yorktown Victory Center Surge Protection: Provide electrical surge protection to building electrical system to protect sensitive, expensive computer and audio/visual equipment.

Category: 1:5
Hazard(s) Addressed: All
Priority (High, Moderate, Low): NR
Estimated Cost: \$57, 500
Potential/Current Funding Sources: Capital Projects or NGF
Lead Agency/Department Responsible: Jamestown-Yorktown Foundation
Project Timeline: As Funding Becomes Available
Implementation Status: **COMPLETED**

MITIGATION ACTION
C-13 (formerly 2.1.11 in 2007 plan)

Yorktown Victory Center Emergency Generator: Upgrade the existing 20 KW diesel generator to a 480 KW natural gas generator.

Category: 1:5
Hazard(s) Addressed: All
Priority (High, Moderate, Low): NR
Estimated Cost: \$290,000
Potential/Current Funding Sources: Maintenance Reserve
Lead Agency/Department Responsible: Jamestown-Yorktown Foundation
Project Timeline: As Funding Becomes Available
Implementation Status: **COMPLETED**

MITIGATION ACTION C-14 (formerly 2.1.12 in 2007 plan)	Jamestown Settlement Tree Trimming and Removal: Selectively trim healthy trees and remove damaged limbs and/or trees from site.
Category:	1:6, 1:3
Hazard(s) Addressed:	Hurricane, Winter Storm
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$20,000
Potential/Current Funding Sources:	Facilities Operational Budget
Lead Agency/Department Responsible:	Jamestown-Yorktown Foundation
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-15 (formerly 2.1.13 in 2007 plan)	Yorktown Victory Center Tree Trimming: Selectively trim healthy trees and remove damaged limbs and/or trees from site.
Category:	1:6, 1:3
Hazard(s) Addressed:	Hurricane, Winter Storm
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$20,000
Potential/Current Funding Sources:	Facilities Operational Budget
Lead Agency/Department Responsible:	Jamestown-Yorktown Foundation
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-16 (formerly 2.1.14 in 2007 plan)	Hazard Mitigation Planning (Pre-Disaster Mitigation Grant Program, Disaster Resistant University Grant): Perform a hazard/vulnerability assessment (e.g., fire, flooding, power/heat/cooling production and distribution, emergency power, protection of critical/irreplaceable stocks/materials, terrorism, etc.) of buildings and infrastructure on the local Virginia Tech Campus.
Category:	2:2
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$100,000
Potential/Current Funding Sources:	Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Virginia Tech, VDEM, CGIT
Project Timeline:	Ongoing
Implementation Status:	COMPLETED

MITIGATION ACTION C-17 (formerly 2.3.3 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-18 (formerly 2.3.4 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-19 (formerly 2.3.5 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED

MITIGATION ACTION C-20 (formerly 2.3.6 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-21 (formerly 2.3.7 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-22 (formerly 2.3.8 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED

MITIGATION ACTION C-23 (formerly 2.3.9 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-24 (formerly 2.3.10 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-25 (formerly 2.3.11 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED

MITIGATION ACTION C-26 (formerly 2.3.12 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-27 (formerly 3.1.3 in 2007 plan)	Mitigation: Security of Data & Assets: Critical Organizational exposures include protection of data (financial documents) and of data (financial documents) and protection of other assets (personal and fixed assets).
Category:	1:3
Hazard(s) Addressed:	Human-Caused
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$200,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Virginia Housing Development Authority
Project Timeline:	4 th Quarter 2004
Implementation Status:	COMPLETED - Key Card Access System Installed
MITIGATION ACTION C-28 (formerly 3.3.3 2007 plan)	Floodplain Management Plan: Develop a comprehensive plan/approach to update local flood maps into digital format using recent data and methods.
Category:	3:1, 3:2
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	NR
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	FEMA HMA funds
Lead Agency/Department Responsible:	DCR, VDEM, Local Jurisdictions
Project Timeline:	ONGOING
Implementation Status:	COMPLETED/MODIFIED – DCR completed a State Floodplain Management Plan in 2004/2005, FEMA has the responsibility of updating the local Flood Insurance Rate Maps.

MITIGATION ACTION C-29 (formerly 3.5.1 2007 plan)

Acquire and utilize handheld field data recorders to facilitate emergency response information collection & distribution. This project will expand existing agency GIS capabilities to provide a much more efficient method for recording incident information in support of assessment and planning roles. This project will provide county level VDOF personnel with handheld data collectors and the training will allow for real-time data collection in a digital format to expedite local damage assessments and to provide GIS based information that is critical for incident response. This expands DOF's existing state of the art GIS capabilities making it more available to support the Commonwealth's emergency response needs.

Category: 3:1, 3:3, 1:1
Hazard(s) Addressed: Wildfire
Priority (High, Moderate, Low): NR
Estimated Cost: \$450,000
Potential/Current Funding Sources: Federal NFP funds, State General Funds
Lead Agency/Department Responsible: VDOF
Project Timeline: As Funding Becomes Available
Implementation Status: **COMPLETED**

MITIGATION ACTION C-30 (formerly 4.2.2 2007 plan)

Development of a Business Disaster Guide: Development of a business disaster guide to help business mitigate and prepare for disasters.

Category: 4:1
Hazard(s) Addressed: ALL
Priority (High, Moderate, Low): NR
Estimated Cost: \$25,000
Potential/Current Funding Sources: Not Determined
Lead Agency/Department Responsible: VDEM, Citizen's Corps, Chamber of Commerce
Project Timeline: ONGOING
Implementation Status: **COMPLETED**



MITIGATION ACTION C-31 (formerly 4.3.3 2007 plan)	Preplanned and Developed Informational Campaigns for Natural Disaster Response: To develop and implement several ready to roll public information campaigns for the common natural disasters that can occur in the Commonwealth. Pre-planned messages and pre-approval PSA's will allow for a faster response to public needs and will help to provide important public information before during and after the event. Information is planned for hurricanes, tornados, flooding, winter storms and wildfire events.
Category:	4:1, 4:3
Hazard(s) Addressed:	Wildfire
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$50,000
Potential/Current Funding Sources:	Agency General Fund/NFP Funds
Lead Agency/Department Responsible:	VDOF
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-32 (formerly 4.3.4 2007 plan)	Increasing awareness and readiness of microbiologists in the VDACS Regional Animal Health Laboratories to recognize and deal with bacterial agents that can be utilized in bioterrorism attacks. This training has come in a variety of modalities, including attendance by one microbiologist from each laboratory at an Association of Veterinary Microbiologists meeting in Charleston, WV, that dealt specifically with bioterrorism agents, attendance by the Program Supervisor at a national food safety conference and training materials for recognition of bioterrorism.
Category:	4:3
Hazard(s) Addressed:	Human-Caused
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$3,035
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDACS
Project Timeline:	Ongoing
Implementation Status:	COMPLETED

MITIGATION ACTION C-33 (formerly 4.3.6 2007 plan)	Monitoring Food Security in Meat and Poultry Slaughter and Processing Plants: Virginia Dept of Agriculture Inspectors assigned to meat and poultry slaughter and processing plants throughout the state are notified with the national alert level reaches orange. The inspectors then perform a security check of the facilities to which they are assigned.
Category:	1:1
Hazard(s) Addressed:	Human Caused
Priority (High, Moderate, Low):	NR
Estimated Cost:	N/A (2004)
Potential/Current Funding Sources:	Agency and Federal Funds
Lead Agency/Department Responsible:	VDACS
Project Timeline:	Ongoing
Implementation Status:	COMPLETED
MITIGATION ACTION C-34 (formerly 4.4.1 2007 plan)	Educate Insurance Industry re: NFIP: Develop, require and implement better training and/or continuing education programs for insurance agents involved in writing and administering NFIP policies
Category:	4:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	NR
Estimated Cost:	N/A
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	SCC and DCR
Project Timeline:	3 Years
Implementation Status:	COMPLETED - Section 207 of the Flood Insurance Reform Act of 2004 requires all agents selling flood insurance policies under the NFIP to be properly trained and educated about the NFIP to ensure agents may best serve their clients. On January 24, 2007 the Bureau sent a letter to all property and casualty agents advising them of this requirement. This letter can be found on the BOI website at http://www.scc.virginia.gov/division/boi/webpages/boi2007administrativeletters.htm

STRUCTURAL STRATEGIES:

MITIGATION ACTION (formerly 1.1.2)	S-1	HVAC Systems Protection of Capitol Complex Buildings: Study the feasibility and options to protect HVAC system on critical buildings on the Capitol Square Complex. Develop the design for system modifications at four of the highest risk buildings including Supreme Court, General Assembly and other select facilities.
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Category:	1:1, 1:3
Hazard(s) Addressed:	Human Caused
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$500,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of General Services
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED

MITIGATION ACTION S-2 (formerly 1.1.3)	Real time flood warning system: Identify communities that may be underserved for stream, river, and water quality gages in the Commonwealth and collaboratively work towards providing warning systems in those areas.
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Category:	1:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	5% HMGP
Lead Agency/Department Responsible:	USGS, VDEM, NWS, DEQ, FEMA, local jurisdictions
Project Timeline:	As Funding Becomes Available
Implementation Status:	MODIFIED - NOT STARTED

MITIGATION ACTION S-3 (formerly 1.1.4)	Reduce Impact of Flooding on Virginia Tech Campus: Coordinate with adjacent locality to evaluate and improve upstream storm water management practices. Evaluate and expand size of underground stream diversion piping system to improve storm water capacity and reduce surface flows. Project would reduce flooding risks for repetitive loss buildings located on a 100-year floodplain and additional structures located on a 500-year floodplain. This project supports the university's sheltering initiative.
Category:	1:3, 1:4
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined, Mitigation Study Required
Potential/Current Funding Sources:	HMGP, FEMA Public Assistance
Lead Agency/Department Responsible:	Virginia Tech
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED



MITIGATION ACTION
S-4 (NEW Strategy)

TIDEWATCH presently collects water level observations at Jamestown (James River N. Ferry Pier) and Hampton/Poquoson (Back River) using VIMS-owned microwave radar sensors with GOES radio transmission to a server at VIMS at half-hour intervals. Six-minute water levels referenced to NOAA tidal datums (HAT,MHHW,MSL,MLLW,LAT) are displayed along with data from six active NOAA stations in lower Chesapeake Bay at www.vims.edu/tidewatch. Processed data stored in VIMS data base archives are also referenced to NGVD29 and NAVD88. A 24-hour operational forecast component for TIDEWATCH is presently under development with funding provided by NOAA/NWS. Funds are needed to maintain operation and add one new station to TIDEWATCH.

Category: 1:1, 2:2, 2:3, 3:1, 3:3
Hazard(s) Addressed: Coastal Flooding
Priority (High, Moderate, Low): Medium
Estimated Cost: \$225,000
Potential/Current Funding Sources: Not Determined, possibly 5% HMGP if available
Lead Agency/Department Responsible: VIMS
Project Timeline: Short Term
Implementation Status: New Strategy

MITIGATION ACTION S-5 (formerly 1.4.1 and 3.2.3 in 2007 plan)	Camera Security Systems and Security Barriers: Provide and maintain a camera security system with digital recording capability and internet based monitoring system for critical Capitol Service facilities. Provide training for Capitol Police and staff to monitor the camera captured activity. Install security barriers with automated access control/monitoring systems to protect the Capitol Square accesses and the facilities in Capitol Square.
Category:	1:1, 1:5
Hazard(s) Addressed:	Human Caused
Priority (High, Moderate, Low):	High
Estimated Cost:	\$1.25 Million
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of General Services and the Virginia Department of Transportation
Project Timeline:	As Funding Becomes Available
Implementation Status:	ONGOING – As Agency Funding is available to complete projects.

MITIGATION ACTION S-6 (formerly 1.3.1)	Improve security of Virginia Tech Power plant and related utility systems: Implement security measures to protect Virginia Tech's Power plant and Chiller Plant. Install security systems within the 5 miles of steam tunnels to monitor/control access.
Category:	1:5, 1:1
Hazard(s) Addressed:	Human Caused, Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined, Engineering Study Required
Potential/Current Funding Sources:	HMGP, DHS Grant
Lead Agency/Department Responsible:	Virginia Tech
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED



MITIGATION ACTION S-7 (formerly 1.3.7)	Install smoke detection and fire alarms systems in Virginia Tech buildings: Install or expand existing fire detection and alarm systems in Virginia Tech properties.
Category:	1:1
Hazard(s) Addressed:	Fire, Human Caused
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$3,500,000
Potential/Current Funding Sources:	Maintenance Reserve
Lead Agency/Department Responsible:	Virginia Tech
Project Timeline:	As Funding Becomes Available
Implementation Status:	IN PROGRESS – A portion of available maintenance reserve dollars have been designated to upgrade alarms and detector systems

MITIGATION ACTION S-8 (formerly 1.2.2)	Window and Door Glass Protection: Install 8 mil film with wet glaze attachment on glass windows and doors at 36 State owned National Guard armories throughout the Commonwealth.
Category:	1:3
Hazard(s) Addressed:	Hurricane, Human Caused
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$356,250
Potential/Current Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	Department of Military Affairs
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED

MITIGATION ACTION S-9 (formerly 1.2.4)	Relocation of VDOF – Big Stone Gap office facility to mitigate recurring flood losses: Relocate the VDOF county office facility in Big Stone Gap, VA. To avoid the problems of recurring flood damage
Category:	1:2, 1:4
Hazard(s) Addressed:	Flooding
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$590,000
Potential/Current Funding Sources:	HMGP
Lead Agency/Department Responsible:	Virginia Department of Forestry
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED



MITIGATION ACTION S-10 (NEW Strategy)	The identification of a nearby University building on higher ground and at a further distance from the highway interchange and rail line for renovation, the incorporation of improved anti-terrorism and other hazard mitigation measures in the facility planning and construction, and the relocation of the existing police function to the renovated facility.
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Category:	1:2, 1:3, 1:4, 1:5, 2:2, 2:4
Hazard(s) Addressed:	Human-Caused, Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$850,000
Potential/Current Funding Sources:	DHS Buffer Zone Protection Program, State Homeland Security Grant Program, National Infrastructure Protection Program, Law Enforcement Terrorism Prevention Program, Emergency Management Performance Grants
Lead Agency/Department Responsible:	UVA
Project Timeline:	Long Term, As Funds Become Available
Implementation Status:	New Strategy

MITIGATION ACTION S-11 (NEW Strategy)	Most academic buildings do not have any access control mechanisms, nor do all classrooms. Implement appropriate access control systems for University facilities. Ideally, the system will be centralized. Incorporate consistent access control elements into new construction design guidelines.
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Category:	1:2, 1:3
Hazard(s) Addressed:	Human-Caused
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$100,000
Potential/Current Funding Sources:	Maintenance Reserve and capital outlay programs; Operations and Maintenance of Plant budget
Lead Agency/Department Responsible:	UVA
Project Timeline:	Short Term, As Funds Become Available
Implementation Status:	New Strategy



MITIGATION ACTION S-12 (formerly 1.2.5)	Replace cottages Southeast Virginia Training Center: Replace existing cottages and program center with new buildings that meet code.
Category:	1:2
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$23,768,000
Potential/Current Funding Sources:	Bond Proceeds - Funded
Lead Agency/Department Responsible:	Department of Behavioral Health and Development
Project Timeline:	As Funding Becomes Available
Implementation Status:	IN PROGRESS - An appropriation for the replacement of the cottages at SEVTC has been received. An unsolicited PPEA proposal has been received proposing a design-build contract for the replacement of these cottages. Necessary procurement actions are underway. In the interim, DMHMRSAS has completed several projects at this site including replacement of all cottage roofs and food service renovations.

MITIGATION ACTION S-13 (formerly 1.2.3)	Install fire alarm and sprinkler systems at Western State Hospital: Install automatic fire sprinkler and fire alarm systems throughout these buildings.
Category:	1:3
Hazard(s) Addressed:	Fire, Human Caused
Priority (High, Moderate, Low):	High
Estimated Cost:	\$125 Million
Potential/Current Funding Sources:	Bond Proceeds - Funded
Lead Agency/Department Responsible:	Department of Behavioral Health and Development
Project Timeline:	32 Months
Implementation Status:	IN PROGRESS - DBHD has received an appropriation to build a complete replacement facility for WSH. Using PPEA procurement procedures, the Department is in the process of negotiating a design-build contract with the firm of Balfour-Beatty Construction for the design and construction of a replacement facility.



MITIGATION ACTION S-14 (formerly 1.3.6)	Install fire sprinkler and alarm systems at Central Virginia Training Center: Install fire sprinkler and alarm systems.
Category:	1:3
Hazard(s) Addressed:	Fire, Human Caused
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$43 Million
Potential/Current Funding Sources:	\$25.2 Funded with Bond Proceeds
Lead Agency/Department Responsible:	Department of Behavioral Health and Development
Project Timeline:	Estimated completion of funded work - June, 2013
Implementation Status:	IN PROGRESS – Improvements have been made to the fire alarm system at Central Virginia Training Center. Building 11 has been renovated, sprinklers have been fully installed, and has a new fire alarm system. Final plans and specifications have been submitted for approval to do a complete renovation of buildings 8 and 12 also. Plans are underway to renovate additional buildings.

MITIGATION ACTION S-15 (formerly 1.3.5)	Install fire sprinkler and alarm system at Northern Virginia Training Center: These buildings are sited on wooded property in Northern Virginia. This project will install fire sprinkler and fire alarm systems in these buildings.
Category:	1:3
Hazard(s) Addressed:	Fire, Human Caused
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$8.1 Million
Potential/Current Funding Sources:	Bond Proceeds - Funded
Lead Agency/Department Responsible:	Department of Behavioral Health and Development
Project Timeline:	Estimated completion April 2011
Implementation Status:	IN PROGRESS – Construction contracts have been awarded and significant progress has been made in completing the installation of fire sprinklers and new fire alarm systems in the residential buildings



MITIGATION ACTION S-16 (formerly 1.3.4)	Improve fire safety in certain Virginia Tech multi-story buildings: Evaluate existing buildings with unenclosed multi-story stairwells to determine if enclosure of the stairwells and/or sprinkling would assure an adequate level of fire safety; once study is completed, implement retrofits on prioritized basis.
Category:	1:3
Hazard(s) Addressed:	Fire, Human Caused
Priority (High, Moderate, Low):	Low
Estimated Cost:	Building Engineering Studies required
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	Virginia Tech
Project Timeline:	As Funding Becomes Available
Implementation Status:	IN PROGRESS – Upgrades and Systems installed as part of building renovations

MITIGATION ACTION S-17 (formerly 1.3.8)	Install sprinkler systems in vulnerable buildings on the Virginia Tech campus: Evaluate and install fire suppression systems on a prioritized basis in vulnerable Virginia Tech buildings.
Category:	1:3
Hazard(s) Addressed:	Fire, Human Caused
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Building Engineering Studies required
Potential/Current Funding Sources:	Not Identified
Lead Agency/Department Responsible:	Virginia Tech
Project Timeline:	As Funding Becomes Available
Implementation Status:	In Progress' Upgrades and Systems installed as part of building renovations



MITIGATION ACTION (formerly 1.2.7)	S-18	Structural Mitigation: Support implementation of structural mitigation of targeted hazard-prone properties i.e. , repetitive flood properties (FEMA repetitive loss and severe repetitive loss lists) through sponsorship of FEMA HMGP, FMA, PDM, RFC and SRL grant programs
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Category:	1:4, 1:3
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	Based HMA Funds
Potential/Current Funding Sources:	HMA Funds
Lead Agency/Department Responsible:	VDEM, Local Government Sponsors
Project Timeline:	Ongoing
Implementation Status:	IN PROGRESS

MITIGATION ACTION S-19 (NEW Strategy)	Install and implement the antiterrorism mitigation measures identified in the UVA Hazard Mitigation Plan designed to harden key at-risk critical infrastructure facilities and reduce their risk and vulnerability to a terrorist threat. These include: physical improvements to defeat VIED and IED devices such as barriers, gates, walls, and other security features; improved CBRNE warning and detection capabilities such as area-wide detection systems for use at multiple mass gathering sites hosting football, basketball and concerts; procedural improvements such planning and polices to reduce unauthorized access and improve screening capabilities; and educational improvements to provide ant-terrorism training for facility staff, police, fire, and other emergency responders.
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Category:	1:1, 1:2, 1:3, 1:5, 2:1, 2:2, 2:4
Hazard(s) Addressed:	Human-Caused
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$350,000
Potential/Current Funding Sources:	DHS Buffer Zone Protection Plan, State Homeland Security Grant Program, National Infrastructure Protection Plan, Law Enforcement Terrorism Prevention Program, Emergency Management Performance Grants
Lead Agency/Department Responsible:	UVA
Project Timeline:	Ongoing – As Funding Becomes Available
Implementation Status:	New Strategy

MITIGATION ACTION S-20 (formerly 1.3.2)	Provide emergency power for vulnerable Virginia Tech properties: Evaluate and install emergency power generators sufficient to maintain critical business and research functions within vulnerable buildings. This strategy supports the university’s sheltering initiative.
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	High
Estimated Cost:	Varies by location and power requirement
Potential/Current Funding Sources:	Not Identified, 5% HMGP if available
Lead Agency/Department Responsible:	Virginia Tech
Project Timeline:	As Funding Becomes Available
Implementation Status:	IN PROGRESS – Emergency Generators installed as part of building renovations
MITIGATION ACTION S-21 (formerly 1.3.3)	Evaluate/retrofit ventilation systems on Virginia Tech campus to minimize vulnerability to terrorism: Evaluate vulnerability of ground-level air intakes, and design and retrofit systems to reduce vulnerability.
Category:	1:3
Hazard(s) Addressed:	Human Caused
Priority (High, Moderate, Low):	Low
Estimated Cost:	Not Determined, Engineering Study Required
Potential/Current Funding Sources:	DHS Grant, HMGP
Lead Agency/Department Responsible:	Virginia Tech
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED
MITIGATION ACTION S-22 (formerly 1.4.2)	UVA-Wise Utility Replacement: Replace overhead power lines with underground.
Category:	1:5
Hazard(s) Addressed:	Hurricane, Tornado, Winter Storms
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$1 Million
Potential/Current Funding Sources:	State General Funds and College Bonds
Lead Agency/Department Responsible:	University of Virginia at Wise
Project Timeline:	Ongoing
Implementation Status:	IN PROGRESS - continuing with this as construction projects are implemented additional overhead power lines have been lowered

MITIGATION ACTION S-23 (formerly 1.5.1)	Electrical wiring for future emergency generator hook-up: Provide necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at State owned National Guard armories throughout the Commonwealth.
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	High
Estimated Cost:	\$204,000
Potential/Current Funding Sources:	HMGP, Agency Funds
Lead Agency/Department Responsible:	Department of Military Affairs
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED
MITIGATION ACTION S24 – S28 (formerly 1.5.6 – 1.5.10 in 2007 plan)	Installation of Emergency Power System: Install generator to provide electrical power to 5 regional animal health laboratory facilities.
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$832,000
Potential/Current Funding Sources:	Capital Budget Request
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED – Capital Budget Request put in for FY 2010-2016
MITIGATION ACTION S-29 (NEW Strategy)	Conduct a campus-wide assessment of generator needs and capacities for existing buildings. Determine level of service provided by generator and service needs (i.e., fuel requirements).
Category:	1:5
Hazard(s) Addressed:	Winter Weather, Flood, Human-Caused, Earthquake, Tornado, Hurricane,
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$10,000
Potential/Current Funding Sources:	DHS Homeland Security Program, University General Funds
Lead Agency/Department Responsible:	UVA
Project Timeline:	Short Term
Implementation Status:	New Strategy

PLANNING STRATEGIES:

MITIGATION ACTION P-1 (formerly 1.2.6)	Structural Mitigation of Repetitive Loss Structures: Integrate repetitive loss list and severe repetitive loss list structural targeting into local, regional and state mitigation planning and grant implementation property targeting.
Category:	2:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	Based on Annual and Post Disaster HMA Funds
Potential/Current Funding Sources:	HMA
Lead Agency/Department Responsible:	VDEM, Local Government Project Sponsors
Project Timeline:	Ongoing
Implementation Status:	ONGOING
MITIGATION ACTION P-2 (formerly 2.1.15 in 2007 plan)	Incorporate repetitive loss property strategies into local, regional and state hazard mitigation plans. Target repetitive loss property mitigation through development of mitigation strategies for repetitive loss and severe repetitive loss properties to reduce damages from flooding and maintain local government eligibility for FMA, RCF and SRL grant mitigation programs. Encourage targeting of repetitive and severe repetitive loss properties for mitigation funding through HMGP and PDM programs.
Category:	2:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	Varies due to HMGP, SRL and FMA allocations and competitiveness of PDM and RFC projects
Potential/Current Funding Sources:	HMGP as available; FMA and SRL annual allocation; PDM and RFC annual competitive funds.
Lead Agency/Department Responsible:	VDEM, State Hazard Mitigation Committee, Local Project Sponsors
Project Timeline:	Ongoing
Implementation Status:	ONGOING

MITIGATION ACTION P-3 (formerly 2.5.1 in 2007 plan)	Encourage use of Hazard Assessment data from this EOP to update other state plans. Incorporate the results of this State Hazard Mitigation Plan into state, local, and university COOPs, EOPs, hazard mitigation plans, etc., as needed.
Category:	2:1
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	High
Estimated Cost:	VDEM Staff Time
Potential/Current Funding Sources:	FEMA/VDEM
Lead Agency/Department Responsible:	VDEM, OCP, All State Agencies, PDCs
Project Timeline:	Ongoing
Implementation Status:	MODIFIED/ONGOING – now includes local and university plans.

MITIGATION ACTION P-4 (NEW Strategy)	Require local plan revision to include “mitigation worksheets” which provide a standard method for reporting information from local plans to improve integration into future state plans. The plan is for this to be a pilot program for FY2009 grants and implemented as a requirement for FY2010 grants and beyond.
Category:	2:1
Hazard(s) Addressed:	All Hazards
Priority (High, Moderate, Low):	
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	New Strategy



MITIGATION ACTION P-5 (NEW Strategy)	PDC Regional Hazard Mitigation Plan Implementation and Maintenance - Planning District Commissions are responsible for developing and maintaining regional hazard mitigation plans. Funds are needed for implementation and maintenance of the regional plans on an annual, ongoing basis to ensure ongoing collaboration and cooperation at the regional level; there is currently no set aside funding available.
Category:	2:1, 2:2, 2:3, 2:4, 2:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$30,000
Potential/Current Funding Sources:	FEMA HMA
Lead Agency/Department Responsible:	VAPDC/RRC
Project Timeline:	Ongoing
Implementation Status:	New Strategy
MITIGATION ACTION P-6 (NEW Strategy)	Promote DRU plans to public universities that do not currently have DRU plans. Also provide outreach to existing DRU plans about updating their plans.
Category:	2:2
Hazard(s) Addressed:	All Hazards
Priority (High, Moderate, Low):	
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	New Strategy
MITIGATION ACTION P-7 (formerly 2.1.6 in 2007 plan)	Hazard Mitigation Planning: Perform a hazard/vulnerability assessment of buildings and infrastructure on the Norfolk State University campus.
Category:	2:3
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	
Estimated Cost:	\$100,000
Potential/Current Funding Sources:	Pre-Disaster Mitigation Program/ HMGP
Lead Agency/Department Responsible:	Norfolk State University
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED

MITIGATION ACTION
P-8 (formerly 2.1.1 in 2007 plan)

Identifying a number of specific facilities that can be designated as “all hazard” reception shelter centers throughout the Commonwealth near major traveled routes where citizens can seek shelter and/or get information on the nearest shelter facility. An MOU will be developed between the local jurisdiction and VDEM.

Category: 2:3, 1:6
Hazard(s) Addressed: All Hazards
Priority (High, Moderate, Low): High
Estimated Cost: Not Determined
Potential/Current Funding Sources: DHS – Homeland Security Grant Program
Lead Agency/Department Responsible: VDEM Preparedness and Local Jurisdictions
Project Timeline: Ongoing
Implementation Status: **MODIFIED/ONGOING** – Greensville County is the first and only locality to sign and MOU with VDEM to provide sheltering for the Hampton Roads area if the need existed.

MITIGATION ACTION
P-9 (formerly 2.3.1 in 2007 plan)

As per Governor’s Executive Order, all state agencies are required to develop a Continuity of Operations Plan (COOP) and update the plan annually.

Category: 2:4, 2:5
Hazard(s) Addressed: All
Priority (High, Moderate, Low): High
Estimated Cost: Variable Dependent on Size of Agency
Potential/Current Funding Sources: State Agency Funds
Lead Agency/Department Responsible: All State Agencies
Project Timeline: Ongoing
Implementation Status: **ONGOING**

MITIGATION ACTION
P-10 (formerly 2.3.2 in 2007 plan)

State Agency COOP Implementation; Develop processes and procedures for the prioritization and management of the concurrent implementation of multiple agency COOPs due to a regional disaster and/or emergency.

Category: 2:4
Hazard(s) Addressed: All
Priority (High, Moderate, Low): High
Estimated Cost: Not Determined
Potential/Current Funding Sources: Agency Funds
Lead Agency/Department Responsible: All State Agencies, Office of Commonwealth Preparedness, VDEM
Project Timeline: Ongoing
Implementation Status: **ONGOING**

MITIGATION ACTION P-11 (formerly 2.6.2 in 2007 plan)	Gain support to incorporate hazard mitigation planning into local comprehensive planning process: Work with Governor’s office, state Secretary’s and General Assembly to incorporate the hazard mitigation planning process into the local comprehensive planning process, thus working to solidify these principles and methods into planning at the local level.
Category:	2:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Medium
Estimated Cost:	N/A
Potential/Current Funding Sources:	N/A
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	MODIFIED/NOT STARTED - First support needs to be gained before any legislation can be passed. A local working group needs to be formed.

HIRA STRATEGIES:

MITIGATION ACTION H-1 (formerly 2.1.2 in 2007 plan)	As state planning documents reach final draft stages, an operational security review will be performed. Any information that is deemed to be sensitive will be identified and options explored such as removal of the material deemed sensitive from the public version of the document or establishment of an un-edited version in a secure manner.
Category:	3:1
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	MODIFIED/ONGOING – Initial Discussions are taking place.

MITIGATION ACTION H-2 (formerly 3.5.2 2007 plan)	Comprehensive State Facility Inventory Database: Enhance and consolidate the existing state facility databases into a single database. Issues to address would be types of facilities to include and the data to collect on each to meet the needs of the respective parties to this effort. Develop and implement the database, including implementation of strategies to have state agencies be responsible for maintaining their own data.
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Category:	3:1
Hazard(s) Addressed:	ALL
Priority (High, Moderate, Low):	Low
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	5% HMGP funding.
Lead Agency/Department Responsible:	VDEM, DGS, Dept. of Treasury, CGIT
Project Timeline:	ONGOING
Implementation Status:	NOT STARTED – Dept. of Treasury VAPS database was used for the 2010 update, will attempt to utilize the best data from the DGS and VAPS database for the next revision.

MITIGATION ACTION H-3 (formerly 3.1.1 and 3.1.2 in 2007 plan)	Continued Natural Hazard Information Collection and Distribution: As events occur in the Commonwealth, develop an ongoing method to collect, organized, and analyze data as needed. Hold bi-annual meetings/conference calls to discuss improvements in data collection. Compile all data in a GIS format for future revisions of the plan and distribution to other state agencies, universities, and local governments.
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Category:	3:1
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds, FEMA funds (PDM, HMGP)
Lead Agency/Department Responsible:	VDEM, State Climatology Office, National Weather Service, VDOF, DMME, DCR, DEQ, CGIT, FEMA, OCP.
Project Timeline:	Ongoing
Implementation Status:	ONGOING

MITIGATION ACTION H-4 (formerly 3.1.4 in 2007 plan)	Real time flood inundation program: Determine usefulness of existing data being collected through stream, rain, and water quality gages and develop a method to improve and coordinate data sources into a real time flood mapping system.
Category:	3:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Federal Funds
Lead Agency/Department Responsible:	FEMA, USGS, VDEM, NWS, DEQ, local jurisdictions
Project Timeline:	As Funding Becomes Available
Implementation Status:	MODIFIED - NOT STARTED

MITIGATION ACTION H-5 (formerly 3.2.2 in 2007 plan)	Work with FEMA and USGS to establish a process for incorporating updated flood frequency data into updated DFIRMs as a part of the Risk Map efforts. USGS flood frequency data is typically updated on a 15 year basis.
Category:	3:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Federal Funds
Lead Agency/Department Responsible:	FEMA, USGS, VDEM, NWS
Project Timeline:	As Funding Becomes Available
Implementation Status:	MODIFIED - NOT STARTED

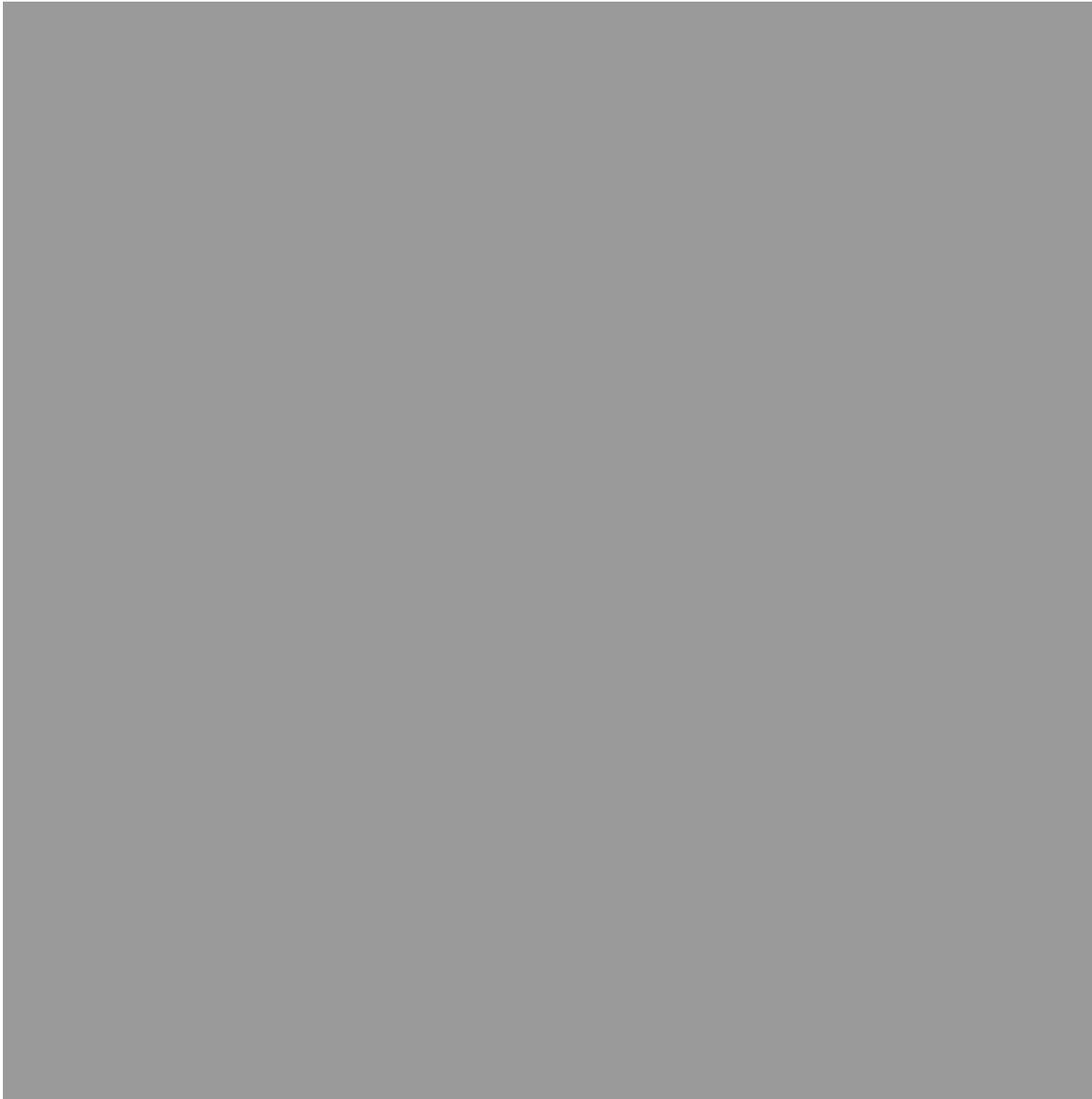


MITIGATION ACTION H-6 (formerly 3.2.4 2007 plan)	Community Inventory Assessment Methods: Work with localities to develop a semi-standardized database for identifying and tracking community assets, including critical and non-critical facilities. This data would be identified first and then a phased implementation program initiated to support collection of this data at the local level.
Category:	3:2
Hazard(s) Addressed:	ALL
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Local, State, Federal Funds
Lead Agency/Department Responsible:	Local Governments, VDEM, OCP, VGIN, VITA, PDC's, State Universities.
Project Timeline:	10 Years
Implementation Status:	NOT STARTED

MITIGATION ACTION H-7 (formerly 3.1.5 in 2007 plan)	Comprehensive Dam Information Database Development: Identify and convene committee to identify, coordinate and collect relevant data for use in a single comprehensive database of ALL dams located in or affecting the Commonwealth of Virginia.
Category:	3:1
Hazard(s) Addressed:	Flooding due to Dam Failure
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Conservation and Recreation – Dam Safety Program
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED



MITIGATION ACTION H-8 (formerly 3.1.6 in 2007 plan)	Dam Inundation Areas Mapping and Risk Assessment: Identify and implement a method to map and assess the hazards of dam inundation areas in the Commonwealth of Virginia. Will require protection of sensitive data as completed.
Category:	3:1
Hazard(s) Addressed:	Flooding due to Dam Failure
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Conservation and Recreation – Dam Safety Program
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED



MITIGATION ACTION
H-9 (formerly 3.1.8 in 2007 plan)

Delineation of Watersheds & Recharge Areas for Karst Aquifers in VA and Compilation of GIS-based Comprehensive Karst Hydrology for Virginia: The VA DCR Karst Program is engaged in a project to delineate watersheds and define recharge areas for karst aquifers in VA. A GIS-based VA Karst Hydrology Atlas is being completed detailing karst groundwater dye tracing investigations. The current Karst Program dye tracing work is to produce data to provide a hydrologic basis for defining conservation site boundaries for VA’s significant caves. Given significant resources, it would be desirable to perform hydrologic investigations including extensive groundwater dye tracing throughout VA’s karst areas. If it was available, knowledge of underground flow paths would be invaluable information for planning and for emergency services personnel in the event of a hazardous material event in VA’s karst lands.

Category: 3:1
Hazard(s) Addressed: Karst
Priority (High, Moderate, Low): Low
Estimated Cost: \$150,000
Potential/Current Funding Sources: Agency Funds, HMGP
Lead Agency/Department Responsible: Department of Conservation and Recreation – Natural Heritage Program, Department of Mines, Minerals, and Energy, and Department of Environmental Quality
Project Timeline: As Funding Becomes Available
Implementation Status: **ONGOING** – with little progress made.



MITIGATION ACTION H-10 (NEW Strategy combined with former strategy 3.1.7)	Karst Hazard Mapping Program - Assessments conducted by DMME of known karst and sinkhole locations are currently available only in a non-digital format and at scales that are inadequate for site-specific decision making. There is a substantial need to complete the geologic mapping, digital conversion, and quality assurance of this data. Working in cooperation with the DCR Natural Heritage Karst Program, DMME will complete the digital conversion of currently available karst and sinkhole location maps to digital products using GIS-based mapping applications. Derivative maps will also be produced that delineate the relative susceptibility to karst development and related hazards of mapped carbonate bedrock formations in the Valley and Ridge physiographic province.
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Category:	3:1, 3:3
Hazard(s) Addressed:	Karst
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$650,000
Potential/Current Funding Sources:	Not Determined, possibly 5% HMGP if available
Lead Agency/Department Responsible:	DMME
Project Timeline:	Short Term
Implementation Status:	New Strategy

MITIGATION ACTION H-11 (formerly 3.3.4 2007 plan)	Update Repetitive Loss Property lists As Needed: Update Repetitive Loss list on an annual basis, submit AW501 form to remove mitigated properties from list.
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Category:	3:1, 3:2
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Low
Estimated Cost:	N/A
Potential/Current Funding Sources:	FEMA
Lead Agency/Department Responsible:	FEMA Region III, DCR, VDEM
Project Timeline:	ONGOING
Implementation Status:	MODIFIED/ONGOING



MITIGATION ACTION H-12 (NEW Strategy)	Landslide Hazard Mapping Program - Landslide hazard maps are needed in Virginia to identify high risk areas for emergency and land use planning purposes. Provide GIS-based maps that identify areas at higher risk for damage from landslides, including debris flows, suitable for emergency and land use planning purposes. Mapping will target areas with a high susceptibility to landslides. Work will be prioritized by locality based on overall VDEM landslide hazard ranking.
Category:	3:1
Hazard(s) Addressed:	Flood, Landslide
Priority (High, Moderate, Low):	High
Estimated Cost:	\$16 Million
Potential/Current Funding Sources:	Not Determined, possibly 5% HMGP
Lead Agency/Department Responsible:	DMME
Project Timeline:	Long Term
Implementation Status:	New Strategy
MITIGATION ACTION H-13 (NEW Strategy)	Virginia Mine Mapping System - The Virginia Mine Mapping System is a database catalogue and geographic information system that serves as a highly effective tool for visualizing and analyzing underground mine workings that are keyed to specific coal beds in a spatially geo-referenced framework. Using the high spatial resolution of stratigraphic information contained in 30,000 mine maps and over 6,000 geophysical well logs from the Southwest Virginia Coalfields, DMME will digitize and integrate this information to improve the elevation control on the underground mine extents. These improvements will enable the database to serve as a tool for reducing the risks associated with living or working near abandoned underground coal mines.
Category:	3:1
Hazard(s) Addressed:	Human Caused
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$600,000
Potential/Current Funding Sources:	Not Determined, possibly 5% HMGP
Lead Agency/Department Responsible:	DMME
Project Timeline:	Short Term
Implementation Status:	New Strategy

MITIGATION ACTION H-14 (NEW Strategy)	Assessment of inundation hazards related to mining-related impoundments- Working with the Department of Conservation and Recreation (DCR) and the Department of Emergency Management (VDEM), DMME will identify and implement methods to map potential inundation hazard areas of mining-related dams and impoundments using GIS-based applications. Potential hazard areas identified by this assessment will be integrated with other dam hazards databases, as needed, and made available to the public and locality land use planning authorities for emergency planning purposes.
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Category:	3:1, 3:3
Hazard(s) Addressed:	Dam Failure, Flood
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$250,000
Potential/Current Funding Sources:	Not Determined, possibly 5% HMGP if available
Lead Agency/Department Responsible:	DMME
Project Timeline:	Short Term
Implementation Status:	New Strategy



**MITIGATION ACTION
 H-15 (NEW Strategy)**

Inventory and Characterization of Mines and Quarries for Emergency Water Supplies - Abandoned and inactive mines and quarries in Virginia can hold substantial quantities of water that might be tapped during emergency conditions brought on by drought, contamination of normal drinking water supplies, hazardous dust control, or the need for fire suppression. The action item would augment existing programs conducted by DMME to inventory the locations of abandoned mines in Virginia to assess public safety hazards. Field investigations and laboratory tests specifically designed to characterize the water storage capacities, geologic nature, and chemical properties of waters impounded by abandoned and inactive mines would be conducted at sites using a priority ranking that assigns highest priority to sites near metropolitan areas, transportation corridors, and other sensitive regions. The end product would be an interactive map-based system showing locations and attributes of sites available for emergency response planners.

Category: 3:1, 3:3
Hazard(s) Addressed: Drought, Flood, Wildfire
Priority (High, Moderate, Low): Medium
Estimated Cost: \$375,000
Potential/Current Funding Sources: Not Determined, possibly 5% HMGP if available
Lead Agency/Department Responsible: DMME
Project Timeline: Short Term
Implementation Status: **New Strategy**

MITIGATION ACTION H-16 (NEW Strategy)	Statewide Inventory of Abandoned Mines and Quarries- Abandoned mines and quarries in many parts of Virginia have not been accurately located or assessed for hazard potential. A thorough inventory is needed to prioritize reclamation activities aimed at mitigating risks to citizens. Complete a statewide inventory of abandoned mining sites and provide location and hazard information to emergency planners and responders and other interested parties in a GIS-based information delivery system.
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Category:	3:1, 3:3
Hazard(s) Addressed:	Human Caused
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$975,000
Potential/Current Funding Sources:	Not Determined, possibly 5% HMGP if available
Lead Agency/Department Responsible:	DMME
Project Timeline:	As Funding Becomes Available
Implementation Status:	New Strategy

MITIGATION ACTION H-17 (NEW Strategy)	DOF has historical damages of timber and structures due to wildfire in the same dataset. VDEM will work with DOF to obtain a dataset that has timber damage and structural damage separated out for the next revision of the HIRA. This information will also be helpful in conducting Benefit Cost Analysis for wildfire mitigation projects in the Commonwealth
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Category:	3:2
Hazard(s) Addressed:	Wildfire
Priority (High, Moderate, Low):	Low
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDEM, DOF
Project Timeline:	Short Term
Implementation Status:	New Strategy



MITIGATION ACTION H-18 (NEW Strategy)	Hazard Evaluation of Critical and State-Owned Facilities in Coastal Areas - Flooding is Virginia’s most significant hazard. Coastal Virginia is experiencing increased risk due to sea-level rise (up to 2.3 feet over the past 100 years). State-owned and critical facilities adjacent to shorelines or in low-lying areas may be at greater risk today than they were at the time of construction. A detailed evaluation of ground stability and susceptibility to modern storm tides (storm surge plus highest astronomical tides) will identify facilities in need of mitigation or relocation. Project to be conducted in partnership with Virginia Institute of Marine Science, Shoreline Studies Program
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Category:	3:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$360,000
Potential/Current Funding Sources:	Not Determined, possibly 5% HMGP if available
Lead Agency/Department Responsible:	DMME
Project Timeline:	Short Term
Implementation Status:	New Strategy

OUTREACH AND EDUCATION STRATEGIES:

MITIGATION ACTION O-1 (NEW Strategy)	As a result of the revised HIRA, the state facility analysis was improved due to improved data. VDEM will work with DGS to provide outreach to those state agencies and promote awareness to those facility managers of the natural hazards they may be vulnerable to. The goal is to promote more strategies that involve the mitigation of state facilities.
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Category:	4:1
Hazard(s) Addressed:	All Natural Hazards
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDEM, DGS, Other State Agencies
Project Timeline:	Ongoing
Implementation Status:	New Strategy

MITIGATION ACTION O-2 (NEW Strategy)	Continue holding annual HMA grant workshops in concurrence with the annual HMA application period. These workshops focus on the 5 HMA grant programs and how to build a strong application. The location of these workshops are determined by each VDEM region.
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Category:	4:1
Hazard(s) Addressed:	All Natural Hazards
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	New Strategy

MITIGATION ACTION O-3 (formerly 4.3.1 2007 plan)	Annually update and improve on the hazard mitigation toolkit which includes various FEMA and VDEM planning and project documents, and a mechanism for reporting annually on the status of local and state mitigation strategies.
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Category:	4:1
Hazard(s) Addressed:	ALL
Priority (High, Moderate, Low):	High
Estimated Cost:	\$4,000
Potential/Current Funding Sources:	VDEM/FEMA
Lead Agency/Department Responsible:	VDEM Mitigation
Project Timeline:	ONGOING – Annually
Implementation Status:	MODIFIED/ONGOING – This action was modified after the Virginia Hazard Mitigation Toolkit was developed, marketed, and implemented in 2007.



MITIGATION ACTION (formerly 3.3.1 2007 plan)	O-4	State Hazard Mitigation Website Maintenance: Maintain and develop a website or sub-site from VDEM to provide current information and data about the state and local hazard mitigation process. This site should include information related to local efforts, state efforts, links to hazard assessment data and methods and state and FEMA guidance on the mitigation planning process generally.
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Category:	4:1
Hazard(s) Addressed:	ALL
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	HMA Management Costs
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	ONGOING

MITIGATION ACTION O-5 (formerly 4.2.3 and 4.2.6 2007 plan)	Provide local training on Hazard Mitigation Planning Process (G318), and work towards improving this course in the future. Revise the course so that it is geared towards plan updates, improved hazard assessment methods, and specific to the Commonwealth of Virginia.
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Category:	4:1, 4:2
Hazard(s) Addressed:	ALL
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	FEMA funds
Lead Agency/Department Responsible:	VDEM Mitigation, OTE, and FEMA Region III
Project Timeline:	ONGOING
Implementation Status:	ONGOING



MITIGATION ACTION O-6 (formerly 4.3.10 2007 plan)	Encourage local government sponsorship of grant projects to mitigate repetitive loss properties: Target repetitive loss property communities with direct mailings, workshops, web-based guidance and project applications and technical support to maximize use of FEMA grant programs to mitigate targeted repetitive loss and severe repetitive loss list properties. Maximize outreach through technical workshops.
Category:	4:1, 4:2
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	None
Potential/Current Funding Sources:	VDEM Staff Time
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	ONGOING – 7 HMA workshops were held in 2009 year along with 3 in 2008, as well as letters sent to SRL communities about available funding and assistance.

MITIGATION ACTION O-7 (formerly 4.3.8 2007 plan)	Train VDEM Divisions in Mitigation Project Development: Train and work with other VDEM programs/divisions to identify and describe potential mitigation projects related to their particular programs.
Category:	4:1, 4:2
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency and Federal Funds
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	MODIFIED/ONGOING – Since HMA programs cannot support stand alone human caused projects, and since the updated local and state planning guidance does not require human caused hazards to be addressed it was removed from this strategy. VDEM staff are invited to participate in HMA workshops, and were in attendance in 2009.



MITIGATION ACTION O-8 (formerly 4.3.2 2007 plan)	Encourage NFIP participation: Develop and implement an education program for localities, private non-profits, and citizens regarding the NFIP program and flood insurance generally.
Category:	4:1, 4:3
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	FEMA/DCR
Lead Agency/Department Responsible:	DCR Floodplain Management, VDEM Mitigation
Project Timeline:	ONGOING/POST DISASTER
Implementation Status:	ONGOING
MITIGATION ACTION O-9 (formerly 3.1.9 in 2007 plan)	To continue ongoing fire and emergency services to over 800 fire and EMS departments across the Commonwealth. VDFP is the only accredited entity for training Virginia's Fire Service.
Category:	4:2
Hazard(s) Addressed:	Wildfire
Priority (High, Moderate, Low):	High
Estimated Cost:	\$2.1 Million
Potential/Current Funding Sources:	Fire Programs Fund
Lead Agency/Department Responsible:	Virginia Department of Fire Programs
Project Timeline:	Ongoing
Implementation Status:	MODIFIED/ONGOING - On average, VDFP coordinates 2200 courses per year.
MITIGATION ACTION O-10 (formerly 4.3.7 2007 plan)	The Food Safety and Security Program, Office of Dairy and Foods, will continue to distribute a bi-annual newsletter to Virginia's food industry. The newsletter addresses issues that should be helpful for the food industry to develop protocols for providing protection of food supply against terrorists.
Category:	4:3
Hazard(s) Addressed:	Human Caused
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$3,500 per newsletter
Potential/Current Funding Sources:	General Assembly Funds
Lead Agency/Department Responsible:	VDACS
Project Timeline:	Ongoing
Implementation Status:	ONGOING

MITIGATION ACTION O-11 (formerly 4.2.1 2007 plan)	Enhanced Statewide Hurricane Public Education Program: Increase the general public’s knowledge of disaster preparedness with emphasis on hurricane through an enhanced public education program – ReadyVirginia.gov.
Category:	4:3
Hazard(s) Addressed:	Hurricane
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	5% HMGP funding.
Lead Agency/Department Responsible:	VDEM Public Affairs
Project Timeline:	ONGOING
Implementation Status:	ONGOING
MITIGATION ACTION O-12 (formerly 4.2.4 2007 plan)	Mitigation Success Stories Development: Develop a simple method to identify and record the ongoing mitigation success stories from across the Commonwealth. Identify the critical information/data needed to show the full benefits of these actions over time.
Category:	4:3, 4:1
Hazard(s) Addressed:	ALL
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	FEMA/VDEM
Lead Agency/Department Responsible:	VDEM Mitigation
Project Timeline:	ONGOING – Post Disaster
Implementation Status:	ONGOING



MITIGATION ACTION O-13 (formerly 4.3.5 2007 plan)	Building Emergency Evacuation Program: Develop and distribute internet and compact disk based evacuation plans for all facilities managed by the Department of General Services serving approximately 5 million sq. ft. Based on the general structure, the procedures for each building would be customized to meet actual requirements using video and digital picture technology. Evacuation plans would be web-based and each agency in a facility would receive a CD/DVD version for group training sessions.
Category:	4:2, 2:3
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$150,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	DGS
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED
MITIGATION ACTION O-14 (NEW Strategy)	Other states have taken advantage of state facility risk assessments to reduce insurance rates for the state. It is VDEM's strategy to coordinate with the Department of Treasury to determine how the state can lower insurance on state facilities as a result of facilities with low risk in the revised HIRA.
Category:	4:3, 2:5
Hazard(s) Addressed:	All Natural Hazards
Priority (High, Moderate, Low):	Low
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDEM, Dept of Treasury
Project Timeline:	Short Term
Implementation Status:	New Strategy

CANCELED STRATEGIES:

MITIGATION ACTION CL-1 (formerly 1.5.4)	Emergency hardware and software procurement: Procurement of hardware and software as needed to conduct business in the event of an emergency or disaster.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	
Estimated Cost:	\$500,000
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	Department of Behavioral Health and Development and VITA
Project Timeline:	As Funding Becomes Available
Implementation Status:	CANCELED – Unable to trace where strategy came from.
MITIGATION ACTION CL-2 (formerly 2.3.13 in 2007 plan)	Incorporation of relevant state agency Continuity of Operations Plans (COOP) information into the 2007 Hazards Mitigation Plan.
Category:	2:4, 2:1
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	VDEM and Planning Sub-Committee
Project Timeline:	2007
Implementation Status:	CANCELED – This action does not have a tangible outcome so it was removed from this update, COOP plans are constantly changing annually.

MITIGATION ACTION CL-3 (formerly 2.6.1 in 2007 plan)	Develop a Family of Public Health Emergency Preparedness and Response Plans: Develop a family of All Hazard, Public Health Emergency Preparedness and Response Plans.
Category:	2:6
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Critical
Estimated Cost:	\$57 Million
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	Virginia Department of Health
Project Timeline:	Updated Annually
Implementation Status:	CANCELED – VDH suggested it be removed from the plan.
MITIGATION ACTION CL-4 (formerly 4.3.9 2007 plan)	The Food and Safety and Security Program, Office of Dairy and Foods, performs vulnerability assessments of food establishments during routine inspections. Vulnerability information is not recorded in writing, but is reported to food establishment operators verbally.
Category:	3:1
Hazard(s) Addressed:	Human Caused
Priority (High, Moderate, Low):	
Estimated Cost:	\$40,000 (2004)
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	VDACS
Project Timeline:	Ongoing
Implementation Status:	DELETED – Committee felt that since there was no record of this information, then it need not be in the plan.



MITIGATION ACTION CL-5 (formerly 3.3.2 2007 plan)	Expand agency GIS capabilities to 18 county office locations to support emergency response assessment and informational needs. The agency has already developed an internet based mapping utility (ForestRIM) that relies on agency GIS data layers. This utility has proved invaluable during emergency incidents to provide location and resource information, as well as for the production of planning related maps and documents. Currently this utility is only available at 6 Regional office locations. This project will allow expansion of the program to include an additional 18 sites across the Commonwealth, which will facilitate increased local use of the product for all cooperating agencies.
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Category:	3:1, 3:3
Hazard(s) Addressed:	Wildfire
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$178,000
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	VDOF
Project Timeline:	As Funding Becomes Available
Implementation Status:	CANCELED - The project has been revised significantly and is now included under 3.5.1

MITIGATION ACTION CL-6 (formerly 3.2.1 in 2007 plan)	Human-caused hazards assessment methods development: Identify and implement at the state and local levels validated assessment methods for human-caused hazards.
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Category:	3:1
Hazard(s) Addressed:	Human-Caused
Priority (High, Moderate, Low):	Critical
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	VDEM
Project Timeline:	3 Years
Implementation Status:	CANCELED – Not a FEMA requirement as anticipated, HMA grants cannot support stand alone human-caused hazard projects, and human caused hazards are further addressed in other sections of the COVEOP.

MITIGATION ACTION CL-7 (formerly 2.8.1 in 2007 plan)	Comprehensive State Agency Grants Database Development: Identify the basic information about all state agency grant and funding programs. Place this information into a comprehensive, online, keyword-searchable database for use by localities and other state agencies to identify other funding sources for mitigation projects.
Category:	4:1
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Not Provided
Estimated Cost:	Not Provided
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	CANCELED – State Hazard Steering Committee felt that the project was not relevant and would be duplicating efforts in many ways.
MITIGATION ACTION CL-8 (formerly 4.2.5 2007 plan)	In cooperation with faculty from the Virginia-Maryland Regional College of Veterinary Medicine, develop a web-based foreign animal disease-training course for veterinary practitioners and others. Training is designed to refresh practitioners on the clinical features of foreign animal disease. The training will also introduce veterinarians to important aspects of the Commonwealth’s emergency response plan. Practitioners would receive continuing education credits for successfully completing the training course.
Category:	4:1
Hazard(s) Addressed:	Biological
Priority (High, Moderate, Low):	Medium (2004)
Estimated Cost:	10,000
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	VDACS
Project Timeline:	Not Provided
Implementation Status:	CANCELED – VDACS requested it be removed from the plan.

Appendix G: Mitigation Strategies

COMPLETED STRATEGIES:

MITIGATION ACTION
C-1 (formerly 1.1.1) **Evacuation Interstate Ramp Barrier Gates:**
Installation of fixed barriers at interstate ramps that can be manually operated to improve evacuations for needed hazards with limited preparation for mobilization and limited state resources.

Category: 1:1, 2:3
Hazard(s) Addressed: Hurricane
Priority (High, Moderate, Low): High
Estimated Cost: \$8.7 Million
Potential/Current Funding Sources: VDOT/Federal Highway Fund
Lead Agency/Department Responsible: Virginia Department of Transportation
Project Timeline: ASAP
Implementation Status: **COMPLETED**

MITIGATION ACTION
C-2 (formerly 1.2.1) **Evaluation of DEQ locations to determine if offices and monitoring stations are within 100 year flood zone**

Category: 3:1
Hazard(s) Addressed: Flood
Priority (High, Moderate, Low): High
Estimated Cost: \$1,000
Potential/Current Funding Sources: Agency Funds
Lead Agency/Department Responsible: Virginia Department of Environmental Quality
Project Timeline: 1 Year
Implementation Status: **COMPLETED**

MITIGATION ACTION
C-3 (formerly 1.5.2) **Emergency Power Systems for 9 Regional Agency Cooler Facilities:** Provide emergency back-up power at 9 of the agencies largest cooler facilities that can be utilized for refrigeration functions associated with the emergency response needs of the Commonwealth. The cooler facilities are already in place and include drive in type facilities for the storage and distribution of tree seedlings during early spring. These sites are generally available for most of the summer and fall seasons, and would allow for multiple tractor-trailer sized cold storage facilities for critical food, health, and ice needs.

Category: 1:5
Hazard(s) Addressed: All

Priority (High, Moderate, Low):	Critical
Estimated Cost:	\$200,000
Potential/Current Funding Sources:	DHS – State Homeland Security
Lead Agency/Department Responsible:	Virginia Department of Forestry
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-4 (formerly 1.5.3)	Supplemental Power for Government Data Centers: Establish a real-time off-site data center for DGS survey of mission critical applications and communications. The center would house a 3 terabyte mass storage device, 2 database servers, 2 email servers, 5 application servers, 2 domain servers, 5 Citrix servers, software and telecommunications circuits required to support real-time fail over capabilities for DGS applications
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$500,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of General Services
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-5 (formerly 1.5.5 in 2007 plan)	Provide uninterruptible power source (UPS) for DCLS: Install an UPS system in the Archive Room located at the Div of Consolidated Laboratory Services and re-feed bus way A from the new UPS system.
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$435,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of General Services
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-6 (formerly 2.1.3 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that establishes procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All

Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	1 Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-7 (formerly 2.1.4 in 2007 plan)	Hazard Mitigation Planning: Perform a hazard/vulnerability assessment of buildings and infrastructure on the Radford University campus.
Category:	2:3
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$47,000
Potential/Current Funding Sources:	Pre-Disaster Mitigation Program
Lead Agency/Department Responsible:	Radford University
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-8 (formerly 2.1.5 in 2007 plan)	Hazard Mitigation Planning: Perform a hazard/vulnerability assessment of buildings and infrastructure on the Virginia State University campus.
Category:	2:3
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$100,000
Potential/Current Funding Sources:	Pre-Disaster Mitigation Program
Lead Agency/Department Responsible:	Virginia State University
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-9 (formerly 2.1.7 in 2007 plan)	Jamestown Settlement Electrical Surge Protection: Provide electrical surge protection to computers, sensitive audio/visual equipment and to interactive exhibits. Protection would be extended to the Education, Visitor Services and Theater/Special Exhibitions Wings.
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$172,500
Potential/Current Funding Sources:	Capital Projects or NGF
Lead Agency/Department Responsible:	Jamestown-Yorktown Foundation
Project Timeline:	As Funding Becomes Available

Implementation Status:	COMPLETED
MITIGATION ACTION C-10 (formerly 2.1.8 in 2007 plan)	Jamestown Settlement Emergency Generators: Upgrade generators for the following buildings: Education Wing from 20KW to 300KW Natural Gas; Visitor Services Wing from 50KW to 300 KW Natural Gas; and relocate existing 50KW generator from Visitor Services Wing to the Maintenance Building.
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$562,000
Potential/Current Funding Sources:	Maintenance Reserve
Lead Agency/Department Responsible:	Jamestown-Yorktown Foundation
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-11 (formerly 2.1.9 in 2007 plan)	Development of a Plant Pest Emergency Action Plan: Development of a Plant Pest Emergency Action Plan by the Office of Plant and Pest Services (OPPS). OPPS cooperates with state, federal and local agencies and industries to protect Virginia's agricultural and horticultural interests from plant pests and diseases. This plan would enhance emergency action coordination, communication, survey and sample analysis, regulatory/quarantine response.
Category:	2:6
Hazard(s) Addressed:	Human-Caused, Biological
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	State Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	2005
Implementation Status:	COMPLETED
MITIGATION ACTION C-12 (formerly 2.1.10 in 2007 plan)	Yorktown Victory Center Surge Protection: Provide electrical surge protection to building electrical system to protect sensitive, expensive computer and audio/visual equipment.
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$57,500

Potential/Current Funding Sources:	Capital Projects or NGF
Lead Agency/Department Responsible:	Jamestown-Yorktown Foundation
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-13 (formerly 2.1.11 in 2007 plan)	Yorktown Victory Center Emergency Generator: Upgrade the existing 20 KW diesel generator to a 480 KW natural gas generator.
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$290,000
Potential/Current Funding Sources:	Maintenance Reserve
Lead Agency/Department Responsible:	Jamestown-Yorktown Foundation
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-14 (formerly 2.1.12 in 2007 plan)	Jamestown Settlement Tree Trimming and Removal: Selectively trim healthy trees and remove damaged limbs and/or trees from site.
Category:	1:6, 1:3
Hazard(s) Addressed:	Hurricane, Winter Storm
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$20,000
Potential/Current Funding Sources:	Facilities Operational Budget
Lead Agency/Department Responsible:	Jamestown-Yorktown Foundation
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-15 (formerly 2.1.13 in 2007 plan)	Yorktown Victory Center Tree Trimming: Selectively trim healthy trees and remove damaged limbs and/or trees from site.
Category:	1:6, 1:3
Hazard(s) Addressed:	Hurricane, Winter Storm
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$20,000
Potential/Current Funding Sources:	Facilities Operational Budget
Lead Agency/Department Responsible:	Jamestown-Yorktown Foundation
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-16 (formerly 2.1.14 in 2007 plan)	Hazard Mitigation Planning (Pre-Disaster Mitigation Grant Program, Disaster Resistant University Grant): Perform a hazard/vulnerability assessment (e.g., fire,

flooding, power/heat/cooling production and distribution, emergency power, protection of critical/irreplaceable stocks/materials, terrorism, etc.) of buildings and infrastructure on the local Virginia Tech Campus.	
Category:	2:2
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$100,000
Potential/Current Funding Sources:	Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Virginia Tech, VDEM, CGIT
Project Timeline:	Ongoing
Implementation Status:	COMPLETED
MITIGATION ACTION C-17 (formerly 2.3.3 in 2007 plan)	
Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.	
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-18 (formerly 2.3.4 in 2007 plan)	
Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.	
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-19 (formerly 2.3.5 in 2007 plan)	
Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of	

a disaster or disruptive event.	
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION	
C-20 (formerly 2.3.6 in 2007 plan)	
Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.	
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION	
C-21 (formerly 2.3.7 in 2007 plan)	
Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.	
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION	
C-22 (formerly 2.3.8 in 2007 plan)	
Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.	
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000

Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-23 (formerly 2.3.9 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-24 (formerly 2.3.10 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-25 (formerly 2.3.11 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED

MITIGATION ACTION C-26 (formerly 2.3.12 in 2007 plan)	Develop a Continuity of Operations Plan (COOP) that established procedures and responsibility for resumption of Agency mission critical functions after occurrence of a disaster or disruptive event.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	Less Than One Year
Implementation Status:	COMPLETED
MITIGATION ACTION C-27 (formerly 3.1.3 in 2007 plan)	Mitigation: Security of Data & Assets: Critical Organizational exposures include protection of data (financial documents) and of data (financial documents) and protection of other assets (personal and fixed assets).
Category:	1:3
Hazard(s) Addressed:	Human-Caused
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$200,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	Virginia Housing Development Authority
Project Timeline:	4 th Quarter 2004
Implementation Status:	COMPLETED - Key Card Access System Installed
MITIGATION ACTION C-28 (formerly 3.3.3 2007 plan)	Floodplain Management Plan: Develop a comprehensive plan/approach to update local flood maps into digital format using recent data and methods.
Category:	3:1, 3:2
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	NR
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	FEMA HMA funds
Lead Agency/Department Responsible:	DCR, VDEM, Local Jurisdictions
Project Timeline:	ONGOING
Implementation Status:	COMPLETED/MODIFIED – DCR completed a State Floodplain Management Plan in 2004/2005, FEMA has the responsibility of updating the local Flood Insurance Rate Maps.

MITIGATION ACTION C-29 (formerly 3.5.1 2007 plan)	Acquire and utilize handheld field data recorders to facilitate emergency response information collection & distribution. This project will expand existing agency GIS capabilities to provide a much more efficient method for recording incident information in support of assessment and planning roles. This project will provide county level VDOF personnel with handheld data collectors and the training will allow for real-time data collection in a digital format to expedite local damage assessments and to provide GIS based information that is critical for incident response. This expands DOF's existing state of the art GIS capabilities making it more available to support the Commonwealth's emergency response needs.
Category:	3:1, 3:3, 1:1
Hazard(s) Addressed:	Wildfire
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$450,000
Potential/Current Funding Sources:	Federal NFP funds, State General Funds
Lead Agency/Department Responsible:	VDOF
Project Timeline:	As Funding Becomes Available
Implementation Status:	COMPLETED
MITIGATION ACTION C-30 (formerly 4.2.2 2007 plan)	Development of a Business Disaster Guide: Development of a business disaster guide to help business mitigate and prepare for disasters.
Category:	4:1
Hazard(s) Addressed:	ALL
Priority (High, Moderate, Low):	NR
Estimated Cost:	\$25,000
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	VDEM, Citizen's Corps, Chamber of Commerce
Project Timeline:	ONGOING
Implementation Status:	COMPLETED
MITIGATION ACTION C-31 (formerly 4.3.3 2007 plan)	Preplanned and Developed Informational Campaigns for Natural Disaster Response: To develop and implement several ready to roll public information campaigns for the common natural disasters that can occur in the Commonwealth. Pre-planned messages and pre-approval PSA's will allow for a faster response to public needs and will help to provide important public information

before during and after the event. Information is planned for hurricanes, tornados, flooding, winter storms and wildfire events.

Category: 4:1, 4:3
Hazard(s) Addressed: Wildfire
Priority (High, Moderate, Low): NR
Estimated Cost: \$50,000
Potential/Current Funding Sources: Agency General Fund/NFP Funds
Lead Agency/Department Responsible: VDOF
Project Timeline: As Funding Becomes Available
Implementation Status: **COMPLETED**

MITIGATION ACTION C-32 (formerly 4.3.4 2007 plan) Increasing awareness and readiness of microbiologists in the VDACS Regional Animal Health Laboratories to recognize and deal with bacterial agents that can be utilized in bioterrorism attacks. This training has come in a variety of modalities, including attendance by one microbiologist from each laboratory at an Association of Veterinary Microbiologists meeting in Charleston, WV, that dealt specifically with bioterrorism agents, attendance by the Program Supervisor at a national food safety conference and training materials for recognition of bioterrorism.

Category: 4:3
Hazard(s) Addressed: Human-Caused
Priority (High, Moderate, Low): NR
Estimated Cost: \$3,035
Potential/Current Funding Sources: Agency Funds
Lead Agency/Department Responsible: VDACS
Project Timeline: Ongoing
Implementation Status: **COMPLETED**

MITIGATION ACTION C-33 (formerly 4.3.6 2007 plan) Monitoring Food Security in Meat and Poultry Slaughter and Processing Plants: Virginia Dept of Agriculture Inspectors assigned to meat and poultry slaughter and processing plants throughout the state are notified with the national alert level reaches orange. The inspectors then perform a security check of the facilities to which they are assigned.

Category: 1:1
Hazard(s) Addressed: Human Caused
Priority (High, Moderate, Low): NR
Estimated Cost: N/A (2004)
Potential/Current Funding Sources: Agency and Federal Funds
Lead Agency/Department Responsible: VDACS
Project Timeline: Ongoing
Implementation Status: **COMPLETED**

MITIGATION ACTION C-34 (formerly 4.4.1 2007 plan) Educate Insurance Industry re: NFIP: Develop, require and implement better training and/or continuing education programs for insurance agents involved in writing and administering NFIP policies

Category: 4:1
Hazard(s) Addressed: Flood
Priority (High, Moderate, Low): NR
Estimated Cost: N/A
Potential/Current Funding Sources: Agency Funds
Lead Agency/Department Responsible: SCC and DCR
Project Timeline: 3 Years
Implementation Status: **COMPLETED** - Section 207 of the Flood Insurance Reform Act of 2004 requires all agents selling flood insurance policies under the NFIP to be properly trained and educated about the NFIP to ensure agents may best serve their clients. On January 24, 2007 the Bureau sent a letter to all property and casualty agents advising them of this requirement. This letter can be found on the BOI website at <http://www.scc.virginia.gov/division/boi/webpages/boi2007administrativeletters.htm>

STRUCTURAL STRATEGIES:

MITIGATION ACTION S-2 (formerly 1.1.3) Real time flood warning system: Identify communities that may be underserved for stream, river, and water quality gages in the

Commonwealth and collaboratively work towards providing warning systems in those areas.	
Category:	1:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	5% HMGP
Lead Agency/Department Responsible:	USGS, VDEM, NWS, DEQ, FEMA, local jurisdictions
Project Timeline:	As Funding Becomes Available
Implementation Status:	MODIFIED - NOT STARTED
MITIGATION ACTION S-3 (formerly 1.1.4)	Reduce Impact of Flooding on Virginia Tech Campus: Coordinate with adjacent locality to evaluate and improve upstream storm water management practices. Evaluate and expand size of underground stream diversion piping system to improve storm water capacity and reduce surface flows. Project would reduce flooding risks for repetitive loss buildings located on a 100-year floodplain and additional structures located on a 500-year floodplain. This project supports the university's sheltering initiative.
Category:	1:3, 1:4
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined, Mitigation Study Required
Potential/Current Funding Sources:	HMGP, FEMA Public Assistance
Lead Agency/Department Responsible:	Virginia Tech
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED
MITIGATION ACTION S-4 (NEW Strategy)	TIDEWATCH presently collects water level observations at Jamestown (James River N. Ferry Pier) and Hampton/Poquoson (Back River) using VIMS-owned microwave radar sensors with GOES radio transmission to a server at VIMS at half-hour intervals. Six-minute water levels referenced to NOAA tidal datums (HAT,MHHW,MSL,MLLW,LAT) are displayed along with data from six active NOAA stations in lower Chesapeake Bay at www.vims.edu/tidewatch. Processed data stored in VIMS data base archives are also referenced to NGVD29 and NAVD88. A 24-

hour operational forecast component for TIDEWATCH is presently under development with funding provided by NOAA/NWS. Funds are needed to maintain operation and add one new station to TIDEWATCH.	
Category:	1:1, 2:2, 2:3, 3:1, 3:3
Hazard(s) Addressed:	Coastal Flooding
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$225,000
Potential/Current Funding Sources:	Not Determined, possibly 5% HMGP if available
Lead Agency/Department Responsible:	VIMS
Project Timeline:	Short Term
Implementation Status:	New Strategy
MITIGATION ACTION S-7 (formerly 1.3.7)	Install smoke detection and fire alarms systems in Virginia Tech buildings: Install or expand existing fire detection and alarm systems in Virginia Tech properties.
Category:	1:1
Hazard(s) Addressed:	Fire, Human Caused
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$3,500,000
Potential/Current Funding Sources:	Maintenance Reserve
Lead Agency/Department Responsible:	Virginia Tech
Project Timeline:	As Funding Becomes Available
Implementation Status:	IN PROGRESS – A portion of available maintenance reserve dollars have been designated to upgrade alarms and detector systems
MITIGATION ACTION S-9 (formerly 1.2.4)	Relocation of VDOF – Big Stone Gap office facility to mitigate recurring flood losses: Relocate the VDOF county office facility in Big Stone Gap, VA. To avoid the problems of recurring flood damage
Category:	1:2, 1:4
Hazard(s) Addressed:	Flooding
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$590,000
Potential/Current Funding Sources:	HMGP
Lead Agency/Department Responsible:	Virginia Department of Forestry
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED
MITIGATION ACTION S-10 (NEW Strategy)	The identification of a nearby University building on higher ground and at a further distance from the highway interchange and rail line for renovation, the incorporation of

improved anti-terrorism and other hazard mitigation measures in the facility planning and construction, and the relocation of the existing police function to the renovated facility.	
Category:	1:2, 1:3, 1:4, 1:5, 2:2, 2:4
Hazard(s) Addressed:	Human-Caused, Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$850,000
Potential/Current Funding Sources:	DHS Buffer Zone Protection Program, State Homeland Security Grant Program, National Infrastructure Protection Program, Law Enforcement Terrorism Prevention Program, Emergency Management Performance Grants
Lead Agency/Department Responsible:	UVA
Project Timeline:	Long Term, As Funds Become Available
Implementation Status:	New Strategy
MITIGATION ACTION S-11 (NEW Strategy)	Most academic buildings do not have any access control mechanisms, nor do all classrooms. Implement appropriate access control systems for University facilities. Ideally, the system will be centralized. Incorporate consistent access control elements into new construction design guidelines.
Category:	1:2, 1:3
Hazard(s) Addressed:	Human-Caused
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$100,000
Potential/Current Funding Sources:	Maintenance Reserve and capital outlay programs; Operations and Maintenance of Plant budget
Lead Agency/Department Responsible:	UVA
Project Timeline:	Short Term, As Funds Become Available
Implementation Status:	New Strategy
MITIGATION ACTION S-12 (formerly 1.2.5)	Replace cottages Southeast Virginia Training Center: Replace existing cottages and program center with new buildings that meet code.
Category:	1:2
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$23,768,000
Potential/Current Funding Sources:	Bond Proceeds - Funded
Lead Agency/Department Responsible:	Department of Behavioral Health and Development

Project Timeline: As Funding Becomes Available
Implementation Status: **IN PROGRESS** - An appropriation for the replacement of the cottages at SEVTC has been received. An unsolicited PPEA proposal has been received proposing a design-build contract for the replacement of these cottages. Necessary procurement actions are underway. In the interim, DMHMRSAS has completed several projects at this site including replacement of all cottage roofs and food service renovations.

MITIGATION ACTION S-13 (formerly 1.2.3) **Install fire alarm and sprinkler systems at Western State Hospital: Install automatic fire sprinkler and fire alarm systems throughout these buildings.**

Category: 1:3
Hazard(s) Addressed: Fire, Human Caused
Priority (High, Moderate, Low): High
Estimated Cost: \$125 Million
Potential/Current Funding Sources: Bond Proceeds - Funded
Lead Agency/Department Responsible: Department of Behavioral Health and Development
Project Timeline: 32 Months
Implementation Status: **IN PROGRESS** - DBHD has received an appropriation to build a complete replacement facility for WSH. Using PPEA procurement procedures, the Department is in the process of negotiating a design-build contract with the firm of Balfour-Beatty Construction for the design and construction of a replacement facility.

MITIGATION ACTION S-14 (formerly 1.3.6) **Install fire sprinkler and alarm systems at Central Virginia Training Center: Install fire sprinkler and alarm systems.**

Category: 1:3
Hazard(s) Addressed: Fire, Human Caused
Priority (High, Moderate, Low): Low
Estimated Cost: \$43 Million
Potential/Current Funding Sources: \$25.2 Funded with Bond Proceeds
Lead Agency/Department Responsible: Department of Behavioral Health and Development
Project Timeline: Estimated completion of funded work - June, 2013
Implementation Status: **IN PROGRESS** – Improvements have been made to the fire alarm system at Central Virginia Training Center. Building 11 has been renovated, sprinklers have been fully installed, and has a new fire alarm system. Final plans and specifications

have been submitted for approval to do a complete renovation of buildings 8 and 12 also. Plans are underway to renovate additional buildings.

**MITIGATION ACTION
S-15 (formerly 1.3.5)**

Install fire sprinkler and alarm system at Northern Virginia Training Center: These buildings are sited on wooded property in Northern Virginia. This project will install fire sprinkler and fire alarm systems in these buildings.

Category: 1:3
Hazard(s) Addressed: Fire, Human Caused
Priority (High, Moderate, Low): Medium
Estimated Cost: \$8.1 Million
Potential/Current Funding Sources: Bond Proceeds - Funded
Lead Agency/Department Responsible: Department of Behavioral Health and Development
Project Timeline: Estimated completion April 2011
Implementation Status: **IN PROGRESS** – Construction contracts have been awarded and significant progress has been made in completing the installation of fire sprinklers and new fire alarm systems in the residential buildings

**MITIGATION ACTION
S-16 (formerly 1.3.4)**

Improve fire safety in certain Virginia Tech multi-story buildings: Evaluate existing buildings with unenclosed multi-story stairwells to determine if enclosure of the stairwells and/or sprinkling would assure an adequate level of fire safety; once study is completed, implement retrofits on prioritized basis.

Category: 1:3
Hazard(s) Addressed: Fire, Human Caused
Priority (High, Moderate, Low): Low
Estimated Cost: Building Engineering Studies required
Potential/Current Funding Sources: Not Determined
Lead Agency/Department Responsible: Virginia Tech
Project Timeline: As Funding Becomes Available
Implementation Status: **IN PROGRESS** – Upgrades and Systems installed as part of building renovations

**MITIGATION ACTION
S-17 (formerly 1.3.8)**

Install sprinkler systems in vulnerable buildings on the Virginia Tech campus: Evaluate and install fire suppression systems on a prioritized basis in vulnerable Virginia Tech buildings.

Category: 1:3

Hazard(s) Addressed: Fire, Human Caused
Priority (High, Moderate, Low): Medium
Estimated Cost: Building Engineering Studies required
Potential/Current Funding Sources: Not Identified
Lead Agency/Department Responsible: Virginia Tech
Project Timeline: As Funding Becomes Available
Implementation Status: **In Progress'** Upgrades and Systems installed as part of building renovations

MITIGATION ACTION S-18
(formerly 1.2.7)
Structural Mitigation: Support implementation of structural mitigation of targeted hazard-prone properties i.e. , repetitive flood properties (FEMA repetitive loss and severe repetitive loss lists) through sponsorship of FEMA HMGP, FMA, PDM, RFC and SRL grant programs

Category: 1:4, 1:3
Hazard(s) Addressed: Flood
Priority (High, Moderate, Low): High
Estimated Cost: Based HMA Funds
Potential/Current Funding Sources: HMA Funds
Lead Agency/Department Responsible: VDEM, Local Government Sponsors
Project Timeline: Ongoing
Implementation Status: **IN PROGRESS**

MITIGATION ACTION S-22
(formerly 1.4.2)
UVA-Wise Utility Replacement: Replace overhead power lines with underground.

Category: 1:5
Hazard(s) Addressed: Hurricane, Tornado, Winter Storms
Priority (High, Moderate, Low): Low
Estimated Cost: \$1 Million
Potential/Current Funding Sources: State General Funds and College Bonds
Lead Agency/Department Responsible: University of Virginia at Wise
Project Timeline: Ongoing
Implementation Status: **IN PROGRESS** - continuing with this as construction projects are implemented additional overhead power lines have been lowered

MITIGATION ACTION S-23
(formerly 1.5.1)
Electrical wiring for future emergency generator hook-up: Provide necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at State owned National Guard armories throughout the Commonwealth.

Category: 1:5
Hazard(s) Addressed: All

Priority (High, Moderate, Low):	High
Estimated Cost:	\$204,000
Potential/Current Funding Sources:	HMGP, Agency Funds
Lead Agency/Department Responsible:	Department of Military Affairs
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED
MITIGATION ACTION S24 – S28 (formerly 1.5.6 – 1.5.10 in 2007 plan)	Installation of Emergency Power System: Install generator to provide electrical power to 5 regional animal health laboratory facilities.
Category:	1:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$832,000
Potential/Current Funding Sources:	Capital Budget Request
Lead Agency/Department Responsible:	Department of Agriculture and Consumer Services
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED – Capital Budget Request put in for FY 2010-2016
MITIGATION ACTION S-29 (NEW Strategy)	Conduct a campus-wide assessment of generator needs and capacities for existing buildings. Determine level of service provided by generator and service needs (i.e., fuel requirements).
Category:	1:5
Hazard(s) Addressed:	Winter Weather, Flood, Human-Caused, Earthquake, Tornado, Hurricane,
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$10,000
Potential/Current Funding Sources:	DHS Homeland Security Program, University General Funds
Lead Agency/Department Responsible:	UVA
Project Timeline:	Short Term
Implementation Status:	New Strategy

PLANNING STRATEGIES:

MITIGATION ACTION P-1 (formerly 1.2.6)	Structural Mitigation of Repetitive Loss Structures: Integrate repetitive loss list and severe repetitive loss list structural targeting into local, regional and state mitigation planning and grant implementation property targeting.
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Category:	2:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	Based on Annual and Post Disaster HMA Funds
Potential/Current Funding Sources:	HMA
Lead Agency/Department Responsible:	VDEM, Local Government Project Sponsors
Project Timeline:	Ongoing
Implementation Status:	ONGOING

MITIGATION ACTION
P-2 (formerly 2.1.15 in 2007 plan)

Incorporate repetitive loss property strategies into local, regional and state hazard mitigation plans. Target repetitive loss property mitigation through development of mitigation strategies for repetitive loss and severe repetitive loss properties to reduce damages from flooding and maintain local government eligibility for FMA, RCF and SRL grant mitigation programs. Encourage targeting of repetitive and severe repetitive loss properties for mitigation funding through HMGP and PDM programs.

Category:	2:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	Varies due to HMGP, SRL and FMA allocations and competitiveness of PDM and RFC projects
Potential/Current Funding Sources:	HMGP as available; FMA and SRL annual allocation; PDM and RFC annual competitive funds.
Lead Agency/Department Responsible:	VDEM, State Hazard Mitigation Committee, Local Project Sponsors
Project Timeline:	Ongoing
Implementation Status:	ONGOING

MITIGATION ACTION
P-3 (formerly 2.5.1 in 2007 plan)

Encourage use of Hazard Assessment data from this EOP to update other state plans. Incorporate the results of this State Hazard Mitigation Plan into state, local, and university COOPs, EOPs, hazard mitigation plans, etc., as needed.

Category:	2:1
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	High
Estimated Cost:	VDEM Staff Time
Potential/Current Funding Sources:	FEMA/VDEM

Lead Agency/Department Responsible: VDEM, OCP, All State Agencies, PDCs
Project Timeline: Ongoing
Implementation Status: **MODIFIED/ONGOING** – now includes local and university plans.

MITIGATION ACTION
P-4 (NEW Strategy)
 Require local plan revision to include “mitigation worksheets” which provide a standard method for reporting information from local plans to improve integration into future state plans. The plan is for this to be a pilot program for FY2009 grants and implemented as a requirement for FY2010 grants and beyond.

Category: 2:1
Hazard(s) Addressed: All Hazards
Priority (High, Moderate, Low):
Estimated Cost: Not Determined
Potential/Current Funding Sources: Agency Funds
Lead Agency/Department Responsible: VDEM
Project Timeline: Ongoing
Implementation Status: **New Strategy**

MITIGATION ACTION
P-5 (NEW Strategy)
 PDC Regional Hazard Mitigation Plan Implementation and Maintenance - Planning District Commissions are responsible for developing and maintaining regional hazard mitigation plans. Funds are needed for implementation and maintenance of the regional plans on an annual, ongoing basis to ensure ongoing collaboration and cooperation at the regional level; there is currently no set aside funding available.

Category: 2:1, 2:2, 2:3, 2:4, 2:5
Hazard(s) Addressed: All
Priority (High, Moderate, Low): Medium
Estimated Cost: \$30,000
Potential/Current Funding Sources: FEMA HMA
Lead Agency/Department Responsible: VAPDC/RRC
Project Timeline: Ongoing
Implementation Status: **New Strategy**

MITIGATION ACTION
P-6 (NEW Strategy)
 Promote DRU plans to public universities that do not currently have DRU plans. Also provide outreach to existing DRU plans about updating their plans.

Category: 2:2
Hazard(s) Addressed: All Hazards
Priority (High, Moderate, Low):
Estimated Cost: Not Determined
Potential/Current Funding Sources: Agency Funds

Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	New Strategy
MITIGATION ACTION P-7 (formerly 2.1.6 in 2007 plan)	Hazard Mitigation Planning: Perform a hazard/vulnerability assessment of buildings and infrastructure on the Norfolk State University campus.
Category:	2:3
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	
Estimated Cost:	\$100,000
Potential/Current Funding Sources:	Pre-Disaster Mitigation Program/ HMGP
Lead Agency/Department Responsible:	Norfolk State University
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED
MITIGATION ACTION P-8 (formerly 2.1.1 in 2007 plan)	Identifying a number of specific facilities that can be designated as “all hazard” reception shelter centers throughout the Commonwealth near major traveled routes where citizens can seek shelter and/or get information on the nearest shelter facility. An MOU will be developed between the local jurisdiction and VDEM.
Category:	2:3, 1:6
Hazard(s) Addressed:	All Hazards
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	DHS – Homeland Security Grant Program
Lead Agency/Department Responsible:	VDEM Preparedness and Local Jurisdictions
Project Timeline:	Ongoing
Implementation Status:	MODIFIED/ONGOING – Greenville County is the first and only locality to sign and MOU with VDEM to provide sheltering for the Hampton Roads area if the need existed.
MITIGATION ACTION P-9 (formerly 2.3.1 in 2007 plan)	As per Governor’s Executive Order, all state agencies are required to develop a Continuity of Operations Plan (COOP) and update the plan annually.
Category:	2:4, 2:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	High
Estimated Cost:	Variable Dependent on Size of Agency
Potential/Current Funding Sources:	State Agency Funds
Lead Agency/Department Responsible:	All State Agencies
Project Timeline:	Ongoing
Implementation Status:	ONGOING

MITIGATION ACTION P-10 (formerly 2.3.2 in 2007 plan)	State Agency COOP Implementation; Develop processes and procedures for the prioritization and management of the concurrent implementation of multiple agency COOPs due to a regional disaster and/or emergency.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	All State Agencies, Office of Commonwealth Preparedness, VDEM
Project Timeline:	Ongoing
Implementation Status:	ONGOING
MITIGATION ACTION P-11 (formerly 2.6.2 in 2007 plan)	Gain support to incorporate hazard mitigation planning into local comprehensive planning process: Work with Governor's office, state Secretary's and General Assembly to incorporate the hazard mitigation planning process into the local comprehensive planning process, thus working to solidify these principles and methods into planning at the local level.
Category:	2:5
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Medium
Estimated Cost:	N/A
Potential/Current Funding Sources:	N/A
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	MODIFIED/NOT STARTED - First support needs to be gained before any legislation can be passed. A local working group needs to be formed.

HIRA STRATEGIES:

MITIGATION ACTION H-1 (formerly 2.1.2 in 2007 plan)	As state planning documents reach final draft stages, an operational security review will be performed. Any information that is deemed to be sensitive will be identified and
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	options explored such as removal of the material deemed sensitive from the public version of the document or establishment of an un-edited version in a secure manner.
Category:	3:1
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	MODIFIED/ONGOING – Initial Discussions are taking place.

MITIGATION ACTION H-2 (formerly 3.5.2 2007 plan)	Comprehensive State Facility Inventory Database: Enhance and consolidate the existing state facility databases into a single database. Issues to address would be types of facilities to include and the data to collect on each to meet the needs of the respective parties to this effort. Develop and implement the database, including implementation of strategies to have state agencies be responsible for maintaining their own data.
Category:	3:1
Hazard(s) Addressed:	ALL
Priority (High, Moderate, Low):	Low
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	5% HMGP funding.
Lead Agency/Department Responsible:	VDEM, DGS, Dept. of Treasury, CGIT
Project Timeline:	ONGOING
Implementation Status:	NOT STARTED – Dept. of Treasury VAPS database was used for the 2010 update, will attempt to utilize the best data from the DGS and VAPS database for the next revision.

MITIGATION ACTION H-3 (formerly 3.1.1 and 3.1.2 in 2007 plan)	Continued Natural Hazard Information Collection and Distribution: As events occur in the Commonwealth, develop an ongoing method to collect, organized, and analyze data as needed. Hold bi-annual meetings/conference calls to discuss improvements in data collection. Compile all data in a GIS format for future revisions of the plan and distribution to other state agencies, universities, and local
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governments.	
Category:	3:1
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds, FEMA funds (PDM, HMGP)
Lead Agency/Department Responsible:	VDEM, State Climatology Office, National Weather Service, VDOF, DMME, DCR, DEQ, CGIT, FEMA, OCP.
Project Timeline:	Ongoing
Implementation Status:	ONGOING
MITIGATION ACTION	
H-4 (formerly 3.1.4 in 2007 plan)	
Real time flood inundation program: Determine usefulness of existing data being collected through stream, rain, and water quality gages and develop a method to improve and coordinate data sources into a real time flood mapping system.	
Category:	3:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Federal Funds
Lead Agency/Department Responsible:	FEMA, USGS, VDEM, NWS, DEQ, local jurisdictions
Project Timeline:	As Funding Becomes Available
Implementation Status:	MODIFIED - NOT STARTED
MITIGATION ACTION	
H-5 (formerly 3.2.2 in 2007 plan)	
Work with FEMA and USGS to establish a process for incorporating updated flood frequency data into updated DFIRMs as a part of the Risk Map efforts. USGS flood frequency data is typically updated on a 15 year basis.	
Category:	3:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Federal Funds
Lead Agency/Department Responsible:	FEMA, USGS, VDEM, NWS
Project Timeline:	As Funding Becomes Available
Implementation Status:	MODIFIED - NOT STARTED
MITIGATION ACTION	
H-6 (formerly 3.2.4 2007 plan)	
Community Inventory Assessment Methods: Work with localities to develop a semi-standardized database for identifying and tracking community assets, including critical and non-critical facilities. This data would be identified first and then a phased	

implementation program initiated to support collection of this data at the local level.

Category: 3:2
Hazard(s) Addressed: ALL
Priority (High, Moderate, Low): Medium
Estimated Cost: Not Determined
Potential/Current Funding Sources: Local, State, Federal Funds
Lead Agency/Department Responsible: Local Governments, VDEM, OCP, VGIN, VITA, PDC's, State Universities.
Project Timeline: 10 Years
Implementation Status: **NOT STARTED**

MITIGATION ACTION H-7 (formerly 3.1.5 in 2007 plan) **Comprehensive Dam Information Database Development: Identify and convene committee to identify, coordinate and collect relevant data for use in a single comprehensive database of ALL dams located in or affecting the Commonwealth of Virginia.**

Category: 3:1
Hazard(s) Addressed: Flooding due to Dam Failure
Priority (High, Moderate, Low): Medium
Estimated Cost: Not Determined
Potential/Current Funding Sources: Agency Funds
Lead Agency/Department Responsible: Department of Conservation and Recreation – Dam Safety Program
Project Timeline: As Funding Becomes Available
Implementation Status: **NOT STARTED**

MITIGATION ACTION H-8 (formerly 3.1.6 in 2007 plan) **Dam Inundation Areas Mapping and Risk Assessment: Identify and implement a method to map and assess the hazards of dam inundation areas in the Commonwealth of Virginia. Will require protection of sensitive data as completed.**

Category: 3:1
Hazard(s) Addressed: Flooding due to Dam Failure
Priority (High, Moderate, Low): Medium
Estimated Cost: Not Determined
Potential/Current Funding Sources: Agency Funds
Lead Agency/Department Responsible: Department of Conservation and Recreation – Dam Safety Program
Project Timeline: As Funding Becomes Available
Implementation Status: **NOT STARTED**

MITIGATION ACTION H-9 (formerly 3.1.8 in 2007 plan) **Delineation of Watersheds & Recharge Areas for Karst Aquifers in VA and**

plan)
Compilation of GIS-based Comprehensive Karst Hydrology for Virginia: The VA DCR Karst Program is engaged in a project to delineate watersheds and define recharge areas for karst aquifers in VA. A GIS-based VA Karst Hydrology Atlas is being completed detailing karst groundwater dye tracing investigations. The current Karst Program dye tracing work is to produce data to provide a hydrologic basis for defining conservation site boundaries for VA’s significant caves. Given significant resources, it would be desirable to perform hydrologic investigations including extensive groundwater dye tracing throughout VA’s karst areas. If it was available, knowledge of underground flow paths would be invaluable information for planning and for emergency services personnel in the event of a hazardous material event in VA’s karst lands.

Category: 3:1
Hazard(s) Addressed: Karst
Priority (High, Moderate, Low): Low
Estimated Cost: \$150,000
Potential/Current Funding Sources: Agency Funds, HMGP
Lead Agency/Department Responsible: Department of Conservation and Recreation – Natural Heritage Program, Department of Mines, Minerals, and Energy, and Department of Environmental Quality
Project Timeline: As Funding Becomes Available
Implementation Status: **ONGOING** – with little progress made.

MITIGATION ACTION
H-10 (NEW Strategy combined with former strategy 3.1.7)
Karst Hazard Mapping Program - Assessments conducted by DMME of known karst and sinkhole locations are currently available only in a non-digital format and at scales that are inadequate for site-specific decision making. There is a substantial need to complete the geologic mapping, digital conversion, and quality assurance of this data. Working in cooperation with the DCR Natural Heritage Karst Program, DMME will complete the digital conversion of currently available karst and sinkhole location maps to digital products using GIS-based mapping applications. Derivative

maps will also be produced that delineate the relative susceptibility to karst development and related hazards of mapped carbonate bedrock formations in the Valley and Ridge physiographic province.

Category: 3:1, 3:3
Hazard(s) Addressed: Karst
Priority (High, Moderate, Low): Low
Estimated Cost: \$650,000
Potential/Current Funding Sources: Not Determined, possibly 5% HMGP if available
Lead Agency/Department Responsible: DMME
Project Timeline: Short Term
Implementation Status: **New Strategy**

MITIGATION ACTION H-11 (formerly 3.3.4 2007 plan) **Update Repetitive Loss Property lists As Needed: Update Repetitive Loss list on an annual basis, submit AW501 form to remove mitigated properties from list.**

Category: 3:1, 3:2
Hazard(s) Addressed: Flood
Priority (High, Moderate, Low): Low
Estimated Cost: N/A
Potential/Current Funding Sources: FEMA
Lead Agency/Department Responsible: FEMA Region III, DCR, VDEM
Project Timeline: ONGOING
Implementation Status: **MODIFIED/ONGOING**

MITIGATION ACTION H-12 (NEW Strategy) **Landslide Hazard Mapping Program - Landslide hazard maps are needed in Virginia to identify high risk areas for emergency and land use planning purposes. Provide GIS-based maps that identify areas at higher risk for damage from landslides, including debris flows, suitable for emergency and land use planning purposes. Mapping will target areas with a high susceptibility to landslides. Work will be prioritized by locality based on overall VDEM landslide hazard ranking.**

Category: 3:1
Hazard(s) Addressed: Flood, Landslide
Priority (High, Moderate, Low): High
Estimated Cost: \$16 Million
Potential/Current Funding Sources: Not Determined, possibly 5% HMGP
Lead Agency/Department Responsible: DMME
Project Timeline: Long Term
Implementation Status: **New Strategy**

MITIGATION ACTION Virginia Mine Mapping System - The

H-13 (NEW Strategy)	Virginia Mine Mapping System is a database catalogue and geographic information system that serves as a highly effective tool for visualizing and analyzing underground mine workings that are keyed to specific coal beds in a spatially geo-referenced framework. Using the high spatial resolution of stratigraphic information contained in 30,000 mine maps and over 6,000 geophysical well logs from the Southwest Virginia Coalfields, DMME will digitize and integrate this information to improve the elevation control on the underground mine extents. These improvements will enable the database to serve as a tool for reducing the risks associated with living or working near abandoned underground coal mines.
Category:	3:1
Hazard(s) Addressed:	Human Caused
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$600,000
Potential/Current Funding Sources:	Not Determined, possibly 5% HMGP
Lead Agency/Department Responsible:	DMME
Project Timeline:	Short Term
Implementation Status:	New Strategy

MITIGATION ACTION H-14 (NEW Strategy)	Assessment of inundation hazards related to mining-related impoundments- Working with the Department of Conservation and Recreation (DCR) and the Department of Emergency Management (VDEM), DMME will identify and implement methods to map potential inundation hazard areas of mining-related dams and impoundments using GIS-based applications. Potential hazard areas identified by this assessment will be integrated with other dam hazards databases, as needed, and made available to the public and locality land use planning authorities for emergency planning purposes.
Category:	3:1, 3:3
Hazard(s) Addressed:	Dam Failure, Flood
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$250,000
Potential/Current Funding Sources:	Not Determined, possibly 5% HMGP if available

Lead Agency/Department Responsible:	DMME
Project Timeline:	Short Term
Implementation Status:	New Strategy
MITIGATION ACTION H-15 (NEW Strategy)	Inventory and Characterization of Mines and Quarries for Emergency Water Supplies - Abandoned and inactive mines and quarries in Virginia can hold substantial quantities of water that might be tapped during emergency conditions brought on by drought, contamination of normal drinking water supplies, hazardous dust control, or the need for fire suppression. The action item would augment existing programs conducted by DMME to inventory the locations of abandoned mines in Virginia to assess public safety hazards. Field investigations and laboratory tests specifically designed to characterize the water storage capacities, geologic nature, and chemical properties of waters impounded by abandoned and inactive mines would be conducted at sites using a priority ranking that assigns highest priority to sites near metropolitan areas, transportation corridors, and other sensitive regions. The end product would be an interactive map-based system showing locations and attributes of sites available for emergency response planners.
Category:	3:1, 3:3
Hazard(s) Addressed:	Drought, Flood, Wildfire
Priority (High, Moderate, Low):	Medium
Estimated Cost:	\$375,000
Potential/Current Funding Sources:	Not Determined, possibly 5% HMGP if available
Lead Agency/Department Responsible:	DMME
Project Timeline:	Short Term
Implementation Status:	New Strategy
MITIGATION ACTION H-16 (NEW Strategy)	Statewide Inventory of Abandoned Mines and Quarries- Abandoned mines and quarries in many parts of Virginia have not been accurately located or assessed for hazard potential. A thorough inventory is needed to prioritize reclamation activities aimed at mitigating risks to citizens. Complete a statewide inventory of abandoned mining sites and provide

	location and hazard information to emergency planners and responders and other interested parties in a GIS-based information delivery system.
Category:	3:1, 3:3
Hazard(s) Addressed:	Human Caused
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$975,000
Potential/Current Funding Sources:	Not Determined, possibly 5% HMGP if available
Lead Agency/Department Responsible:	DMME
Project Timeline:	As Funding Becomes Available
Implementation Status:	New Strategy
MITIGATION ACTION H-17 (NEW Strategy)	DOF has historical damages of timber and structures due to wildfire in the same dataset. VDEM will work with DOF to obtain a dataset that has timber damage and structural damage separated out for the next revision of the HIRA. This information will also be helpful in conducting Benefit Cost Analysis for wildfire mitigation projects in the Commonwealth
Category:	3:2
Hazard(s) Addressed:	Wildfire
Priority (High, Moderate, Low):	Low
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDEM, DOF
Project Timeline:	Short Term
Implementation Status:	New Strategy
MITIGATION ACTION H-18 (NEW Strategy)	Hazard Evaluation of Critical and State-Owned Facilities in Coastal Areas - Flooding is Virginia’s most significant hazard. Coastal Virginia is experiencing increased risk due to sea-level rise (up to 2.3 feet over the past 100 years). State-owned and critical facilities adjacent to shorelines or in low-lying areas may be at greater risk today than they were at the time of construction. A detailed evaluation of ground stability and susceptibility to modern storm tides (storm surge plus highest astronomical tides) will identify facilities in need of mitigation or relocation. Project to be conducted in partnership with Virginia Institute of Marine Science, Shoreline Studies Program

Category:	3:1
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$360,000
Potential/Current Funding Sources:	Not Determined, possibly 5% HMGP if available
Lead Agency/Department Responsible:	DMME
Project Timeline:	Short Term
Implementation Status:	New Strategy

OUTREACH AND EDUCATION STRATEGIES:

MITIGATION ACTION O-1 (NEW Strategy)	As a result of the revised HIRA, the state facility analysis was improved due to improved data. VDEM will work with DGS to provide outreach to those state agencies and promote awareness to those facility managers of the natural hazards they may be vulnerable to. The goal is to promote more strategies that involve the mitigation of state facilities.
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Category:	4:1
Hazard(s) Addressed:	All Natural Hazards
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDEM, DGS, Other State Agencies
Project Timeline:	Ongoing
Implementation Status:	New Strategy

MITIGATION ACTION O-2 (NEW Strategy)	Continue holding annual HMA grant workshops in concurrence with the annual HMA application period. These workshops focus on the 5 HMA grant programs and how to build a strong application. The location of these workshops are determined by each VDEM region.
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Category:	4:1
Hazard(s) Addressed:	All Natural Hazards
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	New Strategy

MITIGATION ACTION O-3 (formerly 4.3.1 2007 plan)	Annually update and improve on the hazard mitigation toolkit which includes various
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FEMA and VDEM planning and project documents, and a mechanism for reporting annually on the status of local and state mitigation strategies.
Category: 4:1
Hazard(s) Addressed: ALL
Priority (High, Moderate, Low): High
Estimated Cost: \$4,000
Potential/Current Funding Sources: VDEM/FEMA
Lead Agency/Department Responsible: VDEM Mitigation
Project Timeline: ONGOING – Annually
Implementation Status: MODIFIED/ONGOING – This action was modified after the Virginia Hazard Mitigation Toolkit was developed, marketed, and implemented in 2007.

MITIGATION ACTION O-4 (formerly 3.3.1 2007 plan)	State Hazard Mitigation Website Maintenance: Maintain and develop a website or sub-site from VDEM to provide current information and data about the state and local hazard mitigation process. This site should include information related to local efforts, state efforts, links to hazard assessment data and methods and state and FEMA guidance on the mitigation planning process generally.
Category: 4:1	
Hazard(s) Addressed: ALL	
Priority (High, Moderate, Low): Medium	
Estimated Cost: Not Determined	
Potential/Current Funding Sources: HMA Management Costs	
Lead Agency/Department Responsible: VDEM	
Project Timeline: Ongoing	
Implementation Status: ONGOING	

MITIGATION ACTION O-5 (formerly 4.2.3 and 4.2.6 2007 plan)	Provide local training on Hazard Mitigation Planning Process (G318), and work towards improving this course in the future. Revise the course so that it is geared towards plan updates, improved hazard assessment methods, and specific to the Commonwealth of Virginia.
Category: 4:1, 4:2	
Hazard(s) Addressed: ALL	
Priority (High, Moderate, Low): High	
Estimated Cost: Not Determined	

Potential/Current Funding Sources:	FEMA funds
Lead Agency/Department Responsible:	VDEM Mitigation, OTE, and FEMA Region III
Project Timeline:	ONGOING
Implementation Status:	ONGOING
MITIGATION ACTION O-6 (formerly 4.3.10 2007 plan)	Encourage local government sponsorship of grant projects to mitigate repetitive loss properties: Target repetitive loss property communities with direct mailings, workshops, web-based guidance and project applications and technical support to maximize use of FEMA grant programs to mitigate targeted repetitive loss and severe repetitive loss list properties. Maximize outreach through technical workshops.
Category:	4:1, 4:2
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	None
Potential/Current Funding Sources:	VDEM Staff Time
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	ONGOING – 7 HMA workshops were held in 2009 year along with 3 in 2008, as well as letters sent to SRL communities about available funding and assistance.
MITIGATION ACTION O-7 (formerly 4.3.8 2007 plan)	Train VDEM Divisions in Mitigation Project Development: Train and work with other VDEM programs/divisions to identify and describe potential mitigation projects related to their particular programs.
Category:	4:1, 4:2
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$2,000
Potential/Current Funding Sources:	Agency and Federal Funds
Lead Agency/Department Responsible:	VDEM
Project Timeline:	Ongoing
Implementation Status:	MODIFIED/ONGOING – Since HMA programs cannot support stand alone human caused projects, and since the updated local and state planning guidance does not require human caused hazards to be addressed it was removed from this strategy. VDEM staff are invited to participate in HMA workshops, and were in attendance in 2009.
MITIGATION ACTION	Encourage NFIP participation: Develop

O-8 (formerly 4.3.2 2007 plan)	and implement an education program for localities, private non-profits, and citizens regarding the NFIP program and flood insurance generally.
Category:	4:1, 4:3
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	FEMA/DCR
Lead Agency/Department Responsible:	DCR Floodplain Management, VDEM Mitigation
Project Timeline:	ONGOING/POST DISASTER
Implementation Status:	ONGOING
MITIGATION ACTION O-9 (formerly 3.1.9 in 2007 plan)	To continue ongoing fire and emergency services to over 800 fire and EMS departments across the Commonwealth. VDFP is the only accredited entity for training Virginia's Fire Service.
Category:	4:2
Hazard(s) Addressed:	Wildfire
Priority (High, Moderate, Low):	High
Estimated Cost:	\$2.1 Million
Potential/Current Funding Sources:	Fire Programs Fund
Lead Agency/Department Responsible:	Virginia Department of Fire Programs
Project Timeline:	Ongoing
Implementation Status:	MODIFIED/ONGOING - On average, VDFP coordinates 2200 courses per year.
MITIGATION ACTION O-10 (formerly 4.3.7 2007 plan)	The Food Safety and Security Program, Office of Dairy and Foods, will continue to distribute a bi-annual newsletter to Virginia's food industry. The newsletter addresses issues that should be helpful for the food industry to develop protocols for providing protection of food supply against terrorists.
Category:	4:3
Hazard(s) Addressed:	Human Caused
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$3,500 per newsletter
Potential/Current Funding Sources:	General Assembly Funds
Lead Agency/Department Responsible:	VDACS
Project Timeline:	Ongoing
Implementation Status:	ONGOING
MITIGATION ACTION O-11 (formerly 4.2.1 2007 plan)	Enhanced Statewide Hurricane Public Education Program: Increase the general public's knowledge of disaster preparedness with emphasis on hurricane through an

enhanced public education program – ReadyVirginia.gov.	
Category:	4:3
Hazard(s) Addressed:	Hurricane
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	5% HMGP funding.
Lead Agency/Department Responsible:	VDEM Public Affairs
Project Timeline:	ONGOING
Implementation Status:	ONGOING
MITIGATION ACTION O-12 (formerly 4.2.4 2007 plan)	Mitigation Success Stories Development: Develop a simple method to identify and record the ongoing mitigation success stories from across the Commonwealth. Identify the critical information/data needed to show the full benefits of these actions over time.
Category:	4:3, 4:1
Hazard(s) Addressed:	ALL
Priority (High, Moderate, Low):	Medium
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	FEMA/VDEM
Lead Agency/Department Responsible:	VDEM Mitigation
Project Timeline:	ONGOING – Post Disaster
Implementation Status:	ONGOING
MITIGATION ACTION O-13 (formerly 4.3.5 2007 plan)	Building Emergency Evacuation Program: Develop and distribute internet and compact disk based evacuation plans for all facilities managed by the Department of General Services serving approximately 5 million sq. ft. Based on the general structure, the procedures for each building would be customized to meet actual requirements using video and digital picture technology. Evacuation plans would be web-based and each agency in a facility would receive a CD/DVD version for group training sessions.
Category:	4:2, 2:3
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Low
Estimated Cost:	\$150,000
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	DGS
Project Timeline:	As Funding Becomes Available
Implementation Status:	NOT STARTED
MITIGATION ACTION O-14 (NEW Strategy)	Other states have taken advantage of state facility risk assessments to reduce insurance

	rates for the state. It is VDEM’s strategy to coordinate with the Department of Treasury to determine how the state can lower insurance on state facilities as a result of facilities with low risk in the revised HIRA.
Category:	4:3, 2:5
Hazard(s) Addressed:	All Natural Hazards
Priority (High, Moderate, Low):	Low
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Agency Funds
Lead Agency/Department Responsible:	VDEM, Dept of Treasury
Project Timeline:	Short Term
Implementation Status:	New Strategy

CANCELED STRATEGIES:

MITIGATION ACTION CL-1 (formerly 1.5.4)	Emergency hardware and software procurement: Procurement of hardware and software as needed to conduct business in the event of an emergency or disaster.
Category:	2:4
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	
Estimated Cost:	\$500,000
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	Department of Behavioral Health and Development and VITA
Project Timeline:	As Funding Becomes Available
Implementation Status:	CANCELED – Unable to trace where strategy came from.
MITIGATION ACTION CL-2 (formerly 2.3.13 in 2007 plan)	Incorporation of relevant state agency Continuity of Operations Plans (COOP) information into the 2007 Hazards Mitigation Plan.
Category:	2:4, 2:1
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	High
Estimated Cost:	Not Determined
Potential/Current Funding Sources:	Not Determined

Lead Agency/Department Responsible:	VDEM and Planning Sub-Committee
Project Timeline:	2007
Implementation Status:	CANCELED – This action does not have a tangible outcome so it was removed from this update, COOP plans are constantly changing annually.
MITIGATION ACTION CL-3 (formerly 2.6.1 in 2007 plan)	Develop a Family of Public Health Emergency Preparedness and Response Plans: Develop a family of All Hazard, Public Health Emergency Preparedness and Response Plans.
Category:	2:6
Hazard(s) Addressed:	All
Priority (High, Moderate, Low):	Critical
Estimated Cost:	\$57 Million
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	Virginia Department of Health
Project Timeline:	Updated Annually
Implementation Status:	CANCELED – VDH suggested it be removed from the plan.
MITIGATION ACTION CL-4 (formerly 4.3.9 2007 plan)	The Food and Safety and Security Program, Office of Dairy and Foods, performs vulnerability assessments of food establishments during routine inspections. Vulnerability information is not recorded in writing, but is reported to food establishment operators verbally.
Category:	3:1
Hazard(s) Addressed:	Human Caused
Priority (High, Moderate, Low):	
Estimated Cost:	\$40,000 (2004)
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	VDACS
Project Timeline:	Ongoing
Implementation Status:	DELETED – Committee felt that since there was no record of this information, then it need not be in the plan.
MITIGATION ACTION CL-5 (formerly 3.3.2 2007 plan)	Expand agency GIS capabilities to 18 county office locations to support emergency response assessment and informational needs. The agency has already developed an internet based mapping utility (ForestRIM) that relies on agency GIS data layers. This utility has proved invaluable during emergency incidents to provide location and resource information, as well as for the production of planning related maps and

documents. Currently this utility is only available at 6 Regional office locations. This project will allow expansion of the program to include an additional 18 sites across the Commonwealth, which will facilitate increased local use of the product for all cooperating agencies.

Category: 3:1, 3:3
Hazard(s) Addressed: Wildfire
Priority (High, Moderate, Low): Medium
Estimated Cost: \$178,000
Potential/Current Funding Sources: Not Determined
Lead Agency/Department Responsible: VDOF
Project Timeline: As Funding Becomes Available
Implementation Status: **CANCELED** - The project has been revised significantly and is now included under 3.5.1

MITIGATION ACTION
CL-6 (formerly 3.2.1 in 2007 plan)
Human-caused hazards assessment methods development: Identify and implement at the state and local levels validated assessment methods for human-caused hazards.

Category: 3:1
Hazard(s) Addressed: Human-Caused
Priority (High, Moderate, Low): Critical
Estimated Cost: Not Determined
Potential/Current Funding Sources: Not Determined
Lead Agency/Department Responsible: VDEM
Project Timeline: 3 Years
Implementation Status: **CANCELED** – Not a FEMA requirement as anticipated, HMA grants cannot support stand alone human-caused hazard projects, and human caused hazards are further addressed in other sections of the COVEOP.

MITIGATION ACTION
CL-7 (formerly 2.8.1 in 2007 plan)
Comprehensive State Agency Grants Database Development: Identify the basic information about all state agency grant and funding programs. Place this information into a comprehensive, online, keyword-searchable database for use by localities and other state agencies to identify other funding sources for mitigation projects.

Category: 4:1
Hazard(s) Addressed: All
Priority (High, Moderate, Low): Not Provided
Estimated Cost: Not Provided
Potential/Current Funding Sources: Not Determined
Lead Agency/Department Responsible: VDEM

Project Timeline:	Ongoing
Implementation Status:	CANCELED – State Hazard Steering Committee felt that the project was not relevant and would be duplicating efforts in many ways.
MITIGATION ACTION CL-8 (formerly 4.2.5 2007 plan)	In cooperation with faculty from the Virginia-Maryland Regional College of Veterinary Medicine, develop a web-based foreign animal disease-training course for veterinary practitioners and others. Training is designed to refresh practitioners on the clinical features of foreign animal disease. The training will also introduce veterinarians to important aspects of the Commonwealth’s emergency response plan. Practitioners would receive continuing education credits for successfully completing the training course.
Category:	4:1
Hazard(s) Addressed:	Biological
Priority (High, Moderate, Low):	Medium (2004)
Estimated Cost:	10,000
Potential/Current Funding Sources:	Not Determined
Lead Agency/Department Responsible:	VDACS
Project Timeline:	Not Provided
Implementation Status:	CANCELED – VDACS requested it be removed from the plan.

