

Appendix A – Meetings and Outreach

Meetings Contents:

Richmond Regional – Crater Multi-Jurisdictional HMP Update Kick-Off Meeting 7-21-2016
Richmond Regional – Crater Multi-Jurisdictional HMP Kick-Off Meeting 7-21-2016 Sign-In Sheet
Richmond Regional – Crater PDC HMP Update HIRA Results Meeting 10-26-16
Richmond Regional – Crater PDC HMP Update HIRA Meeting 10-26-16 Sign-In Sheet

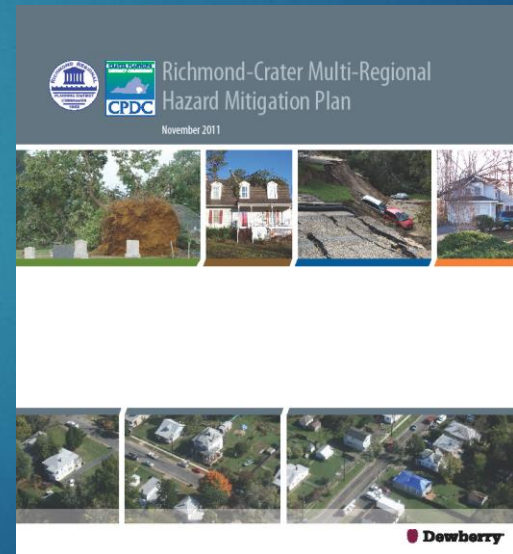
Outreach Contents:

Progress Index 12/12/16
2017 RTD HMP 12/18/16
HMP Public Meetings 12/9/16
2017 HMP Public Meetings Sign-In Sheets
City New Release – Hazard Mitigation Plan Meeting this Friday
Colonial Heights Fire, EMS & Emergency Management – Facebook
Delegate Riley Ingram – Facebook
Dinwiddie Fire and EMS Facebook Landscape
Henrico County Office of Emergency Management – Facebook
Parker C. Agelasto Facebook Announcement
Richmond Regional – Crater PDC HMP 2017 Draft Summary Handout
Richmond Regional – Crater PDC HMP 2017 Website Summary Handout
Richmond Regional PDC HMP Facebook Announcement
RVA Realspeak: Real Issues facing RVA in real time Facebook Post
Social Media Outreach for HIRA Richmond Regional – Crater PDC HMP Update December 2016

Richmond Regional – Crater Multi- Jurisdictional Hazard Mitigation Plan Update

KICK-OFF MEETING

JULY 21, 2016



Agenda

1. **Welcome & Introductions**
2. **Schedule and Plan Update Process**
3. **Data Needs**
4. **Committee Member Responsibilities**
5. **Resiliency Integration**
6. **Next Steps**
7. **Wrap Up & Future Meetings**

Introductions

- ▶ Name
- ▶ Department/Role
- ▶ What is your goal for this project?
- ▶ What issues are you concerned about?
- ▶ What information/expertise can you contribute?

Hazard Mitigation Plan Update

- ▶ **Scope: Update existing hazard mitigation plan to remain compliant with FEMA requirements**

Committees and Dewberry

Committee members need to: establish local planning teams to provide data and updates to existing plan sections in coordination with the RRPDC and CPDC

- ▶ Critical facilities update to Dewberry by August 19
- ▶ Local program capacity assessment (survey) & 2005 and 2011 mitigation actions update to Dewberry by September 2
- ▶ 2016 new mitigation actions (in-person meetings)
- ▶ Adopt the FEMA-approved draft plan
- ▶ **Participate & make the final decisions**

Committee and Dewberry

- ▶ **Richmond Regional and Crater PDC staff are here to:**
 - ▶ **Assist localities with their local planning teams, prepare all the GIS analysis, and ensure public participation**
 - ▶ **Facilitate communication and project scheduling/reporting with VDEM and Dewberry**
 - ▶ **Interface with VDEM/FEMA mitigation program planners**

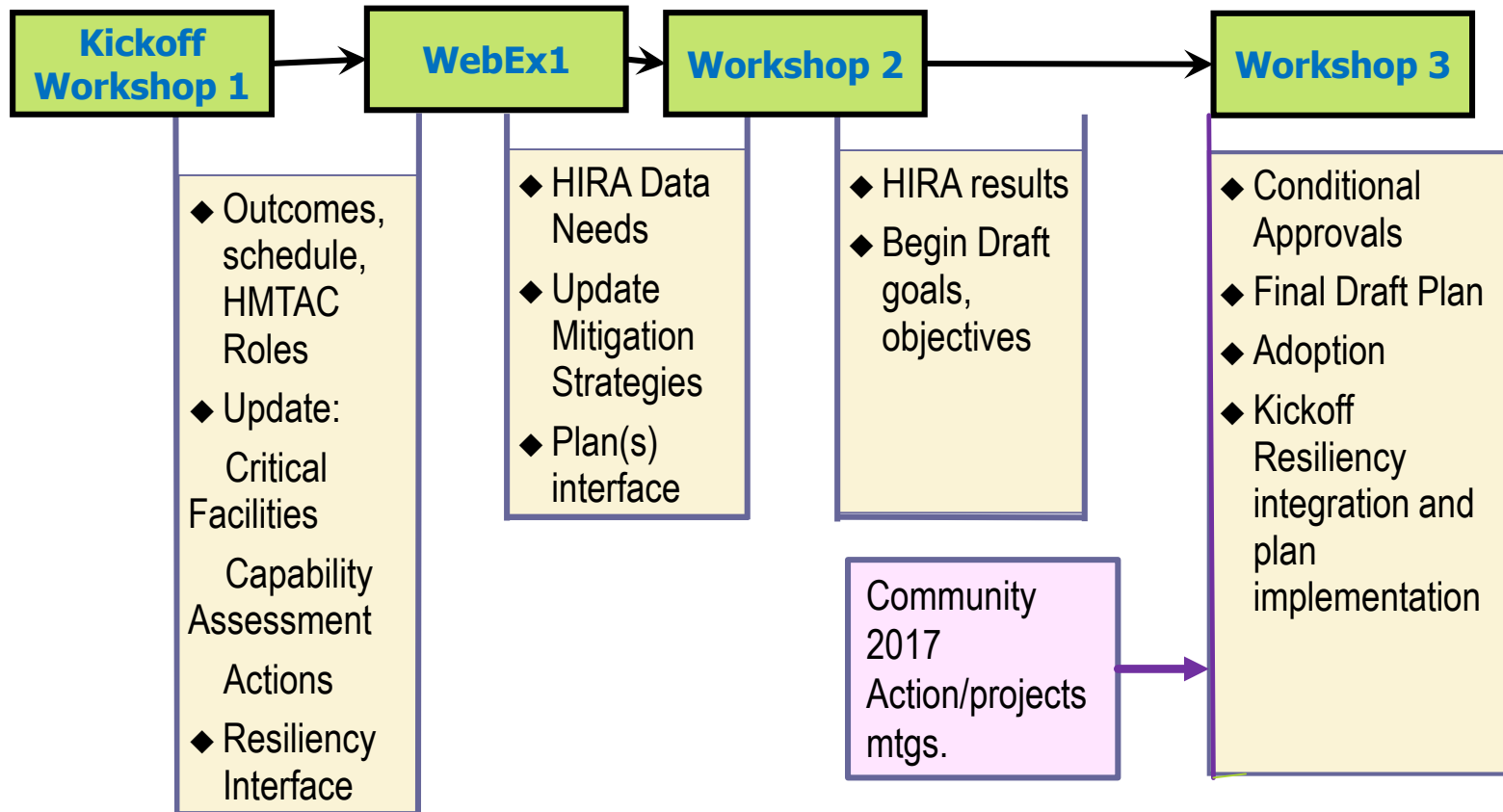
Committee and Dewberry

► Dewberry is here to:

- Lend technical expertise and consultation
- Partner with RR-C PDCs' staff and local government staff to update all required sections of the plan
- Prepare and crosswalk the draft and final plan sections

We will do the heavy lifting to assure you receive a compliant, relatable plan that positions your region and community to become more resilient.

Project Approach: Planning Process



Schedule

Task	Jul	Aug	Sept	Oct	Nov	Dec	Jan - Apr	Jul
Kick-off Meeting	1							
HIRA Update/Development				2				
Capability Assessment								
Draft Plan/ Mitigation Strategies					✕			
Resiliency Integration & Implementation Kick-off						3		
VDEM/FEMA Review						★	★	
Plan Submittal/Adoption Support								

1 – 3

HMTAC Workshops – HIRA Results/Mitigation Goals/Implementation workshop/Resiliency Incorporation

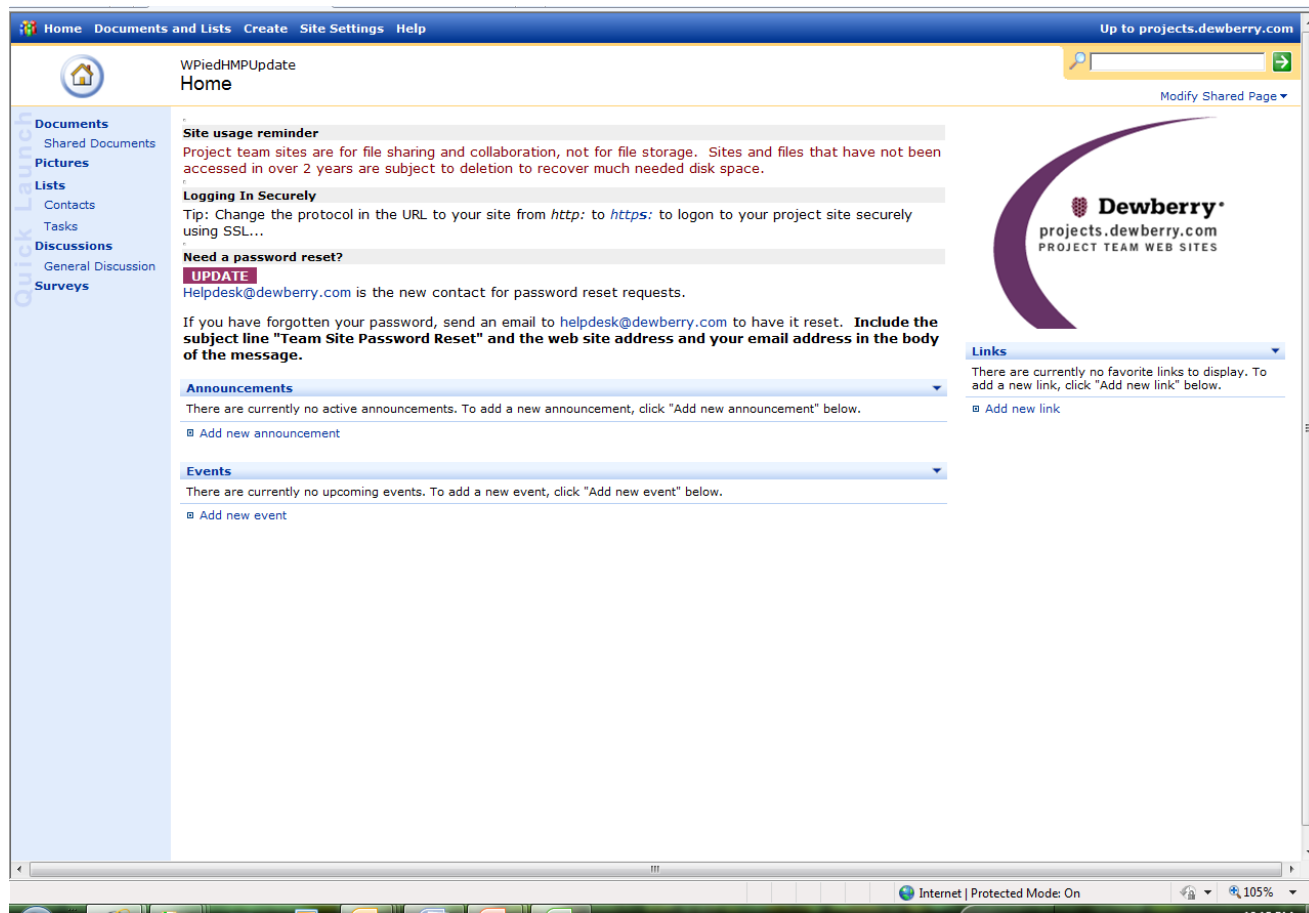


Local on-site Mitigation Strategies Meetings/WebEx



Draft Plan review session with VDEM/ RR and Crater PDC if needed

SharePoint and Mime cast



Why does hazard mitigation matter?

VDEM Hazard Mitigation Definition

...is a sustainable action that will reduce or eliminate injury to citizens, damages to structures and allow continuity of critical society functions...

Resilient VA Resiliency Definition

...capacity to maintain/regain functionality & vitality from natural, climate-induced, or man-made stressors and disturbances. Resiliency strategies can provide communities with tools for bouncing back more quickly from extreme weather or other high-impact events.

Resiliency planning provides communities with the ability to adapt and thrive despite changing environmental, social, and economic conditions.

Existing Plan

Discussion with Technical Advisory Committee

- ▶ What do you like about current plan?
- ▶ To enable cross-cutting mitigation themes and actions/projects are the necessary people/departments ready to participate?
- ▶ Are there other efforts currently going on in your community that we should be aware of such as Local, State or Federal recognition?
- ▶ Are there specific “tool boxes” which would help you?

Existing Plan

Discussion with Planning Committee

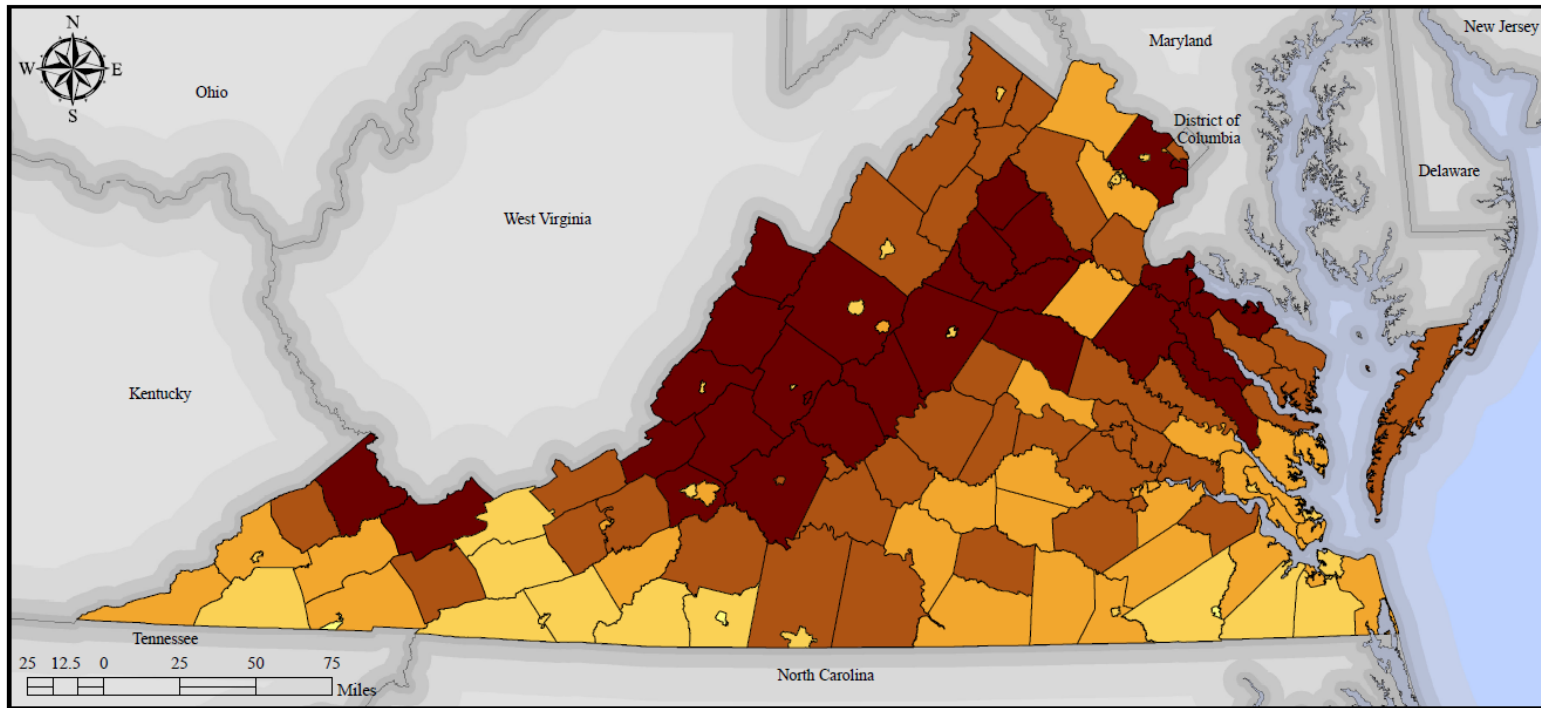
- ▶ How do you envision using the plan – how can it leverage mitigation and resiliency efforts?
- ▶ What would you like changed in the revision to gain your desired outcomes?
- ▶ How did you use the 2010 plan local pullouts?
- ▶ Hazard brainstorm exercise and BREAK

BREAK - Hazard Rankings

Hazard Type	2011 HMP Planning Consideration Level	Virginia 2013 State Ranking	2016 Richmond Regional – Crater Update
Natural			
Winter Storms	Medium -High	Medium-High	
Flooding	Significant	High	
Wind (including Hurricanes, Thunderstorms)	Moderate	Medium-High	
Drought	Limited	Medium	
Wildfire	Limited	Medium	
Tornado	Limited	Medium-High	
Earthquake	None	Medium-Low	
Landslides	Limited	Medium-Low	
Erosion	Not addressed	Addressed with Flood	
Extreme heat	Limited		
Human-Caused			
Dams (Impoundment Failure)	Not Addressed	Low	

Presidentially Declared Disasters

Figure 3.3-1: Total Federal Declared Disasters



PROJECTION: *1/4 Lambert Conformal Conic
North American Datum 1983*

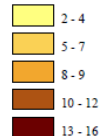


DATA SOURCES:

FEMA & VDEM Declared Disasters
VGIN Jurisdictional Boundaries
ESRI State Boundaries

LEGEND:

Number of Declared Disasters (1964 - 2012)



DATA IDENTIFICATION:

A declared federal disaster is any disaster in which Federal funding was allocated to a jurisdiction in the wake of a disaster incident. The sources and types of funding are not taken into account for this map.

The period of record for this map spans 1964 through 2012. Occurrences include total number of disaster declarations by jurisdiction.

DISCLAIMER: Majority of available hazard data is intended to be used at national or regional scales. The purpose of the data sets are to give general indication of areas that may be susceptible to hazards. In order to identify potential risk in the Commonwealth available data has been used beyond the original intent.

HIRA Update

- ▶ What natural hazard events have occurred since 2012?
- ▶ What specific vulnerabilities exist in each City, County and Town including universities and colleges and school systems and the region that may not have been captured in the previous plan?
- ▶ Please provide any updates to areas of concern noted in HIRA narrative.

Critical Facilities

- ▶ **Critical facilities include public safety, buildings used for sheltering, schools, health care (hospitals and long-term care), correctional facilities, utilities and other vital to community continuity of services after a disaster.**
- ▶ **MPO can be added to this list – transportation, drainage, etc.**
- ▶ **Existing list will be emailed next week. Please review and provide deletions/modifications/additions by August 19, 2016.**

Capability Assessment

- ▶ We will update information provided in tables and text in Chapter 6.
- ▶ Developed a master table for summary program/plan initiative data (sent prior to meeting and handout) customized to RR-C PDCs to be included in the Appendix.
 - ▶ Leverage resiliency planning
- ▶ We will reach out to you with specifics for your jurisdiction during August.
- ▶ Target completion late-September.

Mitigation Actions

- ▶ **Must identify the completed, deleted, or deferred actions or activities from the previously approved plan as a benchmark for progress.**
- ▶ **Existing list will be distributed by August 12.**
- ▶ **Please review and provide deletions/modifications/additions by September 2, 2016 to Jillian Browning jbrowning@dewberry.com copied to Deborah Mills at dmills@dewberry.com.**

Public Involvement in Plan

- ▶ Document how the community was kept involved during the plan maintenance process over the previous five years.
 - ▶ What has been done since 2011?

What's Next?

- ▶ Data gathering for HIRA (mostly PDC teams and Dewberry)
- ▶ Data gathering for Capability Assessment
- ▶ Initiation of Public Outreach
- ▶ Reporting and updates on 2011 Plan Accomplishments
- ▶ Quick progress to date call in Mid-September if necessary
- ▶ Vulnerability analysis Update and Kick-off for Goals, Objectives and Mitigation actions Workshop (October)
 - ▶ How about afternoon of Friday, October 7?
- ▶ Local Mitigation actions 2017 – 2022 meetings (October – November)

Questions, Comments, Discussion

Richmond Regional - Crater PDC Hazard Mitigation Plan Update Kick Off Meeting August 5, 2016 Sign-In Sheet				
Jurisdiction	Name	Position	Email	Phone
Charles City County				
Chesterfield County	Emily Ashley	EM Coordinator	dillone@chesterfield.gov	(804) 796-7068
	Heather Barrar	Principal Planner	barrarh@chesterfield.gov	804. 748-1778
City of Colonial Heights	Beverley Brandt	Emergency Manager	brandtb@colonialheights-va.gov	804-524-8773
Dinwiddie County	Dennis Hale	Fire Chief/EM Coordinator	dhale@dinwiddieva.us	804-469-5388
Town of McKenney				
City of Emporia				

Richmond Regional - Crater PDC Hazard Mitigation Plan Update Kick Off Meeting August 5, 2016 Sign-In Sheet				
Jurisdiction	Name	Position	Email	Phone
Goochland County	Bill Mackay	Fire-Rescue Chief	wmackay@goochlandva.us	804-556-5319
Greensville County				
Town of Jarratt				
Hanover County	Corey Boazley	Captain of EM	lboazley@hanovercounty.gov	804-572-4463
Town of Ashland				
Henrico County				

Richmond Regional - Crater PDC Hazard Mitigation Plan Update Kick Off Meeting August 5, 2016 Sign-In Sheet				
Jurisdiction	Name	Position	Email	Phone
Henrico County				
City of Hopewell				
New Kent County				
City of Petersburg				
Powhatan County				
Prince George County	Donald Hunter	Deputy E.M. Coordinator	dhunter@PrinceGeorgeCountyVA.gov	804 894-0433

Richmond Regional - Crater PDC Hazard Mitigation Plan Update Kick Off Meeting August 5, 2016 Sign-In Sheet				
Jurisdiction	Name	Position	Email	Phone
City of Richmond				
Surry County				
Town of Claremont				
Town of Dendron				
Town of Surry				
Sussex County	Eddie T. Vick	Public Safety Coordinator Emergency manager	etvick@sussexcountyva.gov	804-691-2582
Town of Stony Creek				

Richmond Regional - Crater PDC Hazard Mitigation Plan Update Kick Off Meeting August 5, 2016 Sign-In Sheet				
Jurisdiction	Name	Position	Email	Phone
Town of Waverly				
Crater PDC	MARK BITTNER	DIRECTOR OF PLANNING & IT	mbittner@craterpdc.org	
Richmond Regional PDC	Sarah Stewart	Senior Planner	Sstewart@richmondregional.org	(804) 323-2033
VDEM	Lori Dachille	Chief Regional Coord. Region 1	lori.dachille@vdem.virginia.gov	804-314-0803

Richmond Regional – Crater Multi-Jurisdictional Hazard Mitigation Plan Update

Hazard Identification and Risk Assessment
Results Meeting

October 26, 2016



Agenda

- 1. Welcome**
- 2. Project Schedule**
- 3. Outreach Document**
- 4. Risk Assessment**
- 5. Mitigation Goal Refresh and Strategies**
- 6. Local Mitigation Action Update Meetings**
- 7. Next Steps**

Schedule

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HIRA Update/Development				2				
Capability Assessment								
Draft Plan/ Mitigation Strategies					✕			
Resiliency Integration & Implementation Kick-off							3	
VDEM/FEMA Review						★	★	
Plan Submittal/Adoption Support								

1 – 3

HMTAC Workshops – HIRA Results/Mitigation Goals/Implementation workshop/Resiliency Incorporation



Local on-site Mitigation Strategies Meetings/WebEx



Draft Plan review session with VDEM/ RR and Crater PDC if needed



Hazard Identification and Risk Assessment

Purpose: *Provides a factual basis for prioritizing hazard mitigation activities*

Major HIRA Components

Identify and profile hazards affecting the region:

Vulnerability to critical facilities and estimate losses

Vulnerability for current and future land use and development



Plan Update Requirements

- **Hazard Identification and Risk Assessment**

- Describe all hazards that affect the region; rationale for omitting recognized hazards from analysis
 - Hazard Profiles
 - Location
 - Extent
 - Previous occurrences
 - Probability of future events
- Vulnerability Assessment
 - Summary of the region's vulnerability to each hazard
 - Summary of potential hazard impacts

2016 Plan Update Changes

New analyses and updates:
Updated each hazard
profile

- Hazard profile
- NCDC storm events data
- 2010 – present storm/disaster occurrences
- Summary risk by jurisdiction using new data

New maps based on
updated data

- HIRA summary that includes overall relative risk and critical facility risk comparison by hazard.

Critical Facilities – see handout

Table 5-1. Critical Facilities by Jurisdiction

Jurisdiction Name	Airports	Cell Towers	Combined Fire\EMS	EMS	Fire	Hospital	Police Departments	VDOT Facility	VDOT Tanks	Other	Totals
Charles City County		12	3				1	1	1	1	19
Chesterfield County	1	80	21	10	2	4	5	8	27	3	161
City of Colonial Heights		3	2				1			2	8
Dinwiddie County	1	32	4	3				5	16	2	63
<i>Town of McKenney</i>			1							0	1
City of Emporia		7	1	2		1		1	5	3	20
Goochland County		29	6				1	1	2	1	40
Greensville County	1	16								0	17
<i>Town of Jarratt*</i>					1					0	1
Hanover County	1	54	13	2		5	1	5	12	1	94

Historical Disaster Databases

FEMA Federally Declared Disasters from FEMA –
2010 – Present

NWS - National Climatic Data Center (NCDC) Storm
Events Database

Area Impacted

Damages

Description

The screenshot shows the NOAA National Climatic Data Center (NCDC) Storm Events Database website. The header includes the NOAA logo and the text "NATIONAL CLIMATIC DATA CENTER NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION". Below the header is a navigation bar with links: Home, Contact Us, About NCDC, and Help. The main content area is titled "Storm Events Database" and includes a sidebar with links for Data Access, Documentation, and External Resources. The main text describes the database's purpose and provides a list of event types. At the bottom, there is a search section with a "Select State or Area" dropdown menu, a "Narrative Text Search" input field, and a "Text Search" button.

NOAA NATIONAL CLIMATIC DATA CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Home Contact Us About NCDC Help

NCDC > Storm Events Database

Storm Events Database

Data Access

- Search
- Bulk Data Download (CSV)
- Storm Data Publication

Documentation

- Database Details
- Version History
- Storm Data FAQ
- NOAA's NWS Documentation
- Tornado EF Scale

External Resources

- NOAA's SPC Reports
- NOAA's SPC WCM Page
- NOAA's NWS Damage Assessment Toolkit
- ESR/FEMA Civil Air Patrol
- Images
- SHELDUS
- USDA Cause of Loss Data

Storm Events Database

The Storm Events Database contains the records used to create the official [NOAA Storm Data publication](#), documenting:

- The occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce;
- Rare, unusual, weather phenomena that generate media attention, such as snow flurries in South Florida or the San Diego coastal area; and
- Other significant meteorological events, such as record maximum or minimum temperatures or precipitation that occur in connection with another event.

The database currently contains data from **January 1950 to May 2015**, as entered by NOAA's National Weather Service (NWS). Due to changes in the data collection and processing procedures over time, there are unique periods of record available depending on the event type. NCDC has performed data reformatting and standardization of event types but has not changed any data values for locations, fatalities, injuries, damage, narratives and any other event specific information. Please refer to the [Database Details](#) page for more information.

Select State or Area
-- All States and Areas --

Search

Narrative Text Search

-- or --

Text Search [\[help and examples\]](#)

Declared Disasters

Presidential Declared Disaster Summary

Incident Type	Total Occurrences
Hurricane	29
Severe Storm	20
Snow	17
Flood	8
Drought	6
Severe Ice Storm	2
Earthquake	1
Fire	1
Coastal Storm	1
Tornado	1
Freezing	1
Other	1
Total Events	88

Hazard Priority Ranking Criteria

New for 2016 Plan Update

Probability/History: Prior hazard occurrence. *Weighting Factor: 0.35*

Vulnerability: Potential deaths, injuries, property damage. *Weighting Factor: 0.25*

Maximum Threat (Geographic extent): Worst-case scenario of the hazard and how bad can it get? *Weighting Factor: 0.10*

Warning Time: Preparation time given. *Weighting Factor: 0.10*

Ranking in Previous Plan: The ranking from the 2011 hazard mitigation plan (Significant, Moderate, Limited) compared to the 2016 ranking. *Weighting Factor: 0.20*

Hazard Priority Ranking Criteria

Table V-1. Hazard Ranking Priority Criteria				
Probability/History	Vulnerability	Maximum Threat (Geographic Area Affected)	Warning Time	2011 Ranking
Unlikely No documented occurrence with annual probability <0.01	Negligible 1 to 10% of people or property	Isolated < 5% of community impacted	Extended Three days or more	Limited
Somewhat Likely Infrequent occurrence with at least one documented event and annual probability between 0.5 and 0.01	Limited 10 to 25% of people or property	Small 5 to 25% of community impacted	Limited 2 days	Moderate
Likely Frequent occurrence with at least 2 documented events and annual probability between 1 and 0.5	Critical 25 to 50% of people or property	Medium 25 to 50% of community impacted	Minimal 1 day	
Highly Likely Common events with annual probability >1	Catastrophic >50% of people or property	Large >50% of community impacted	No Notice < 24 hours	Significant

HMTAP Ranking August 2016

Richmond Regional – Crater Hazard Vulnerability Planning Levels			
Hazard Type	2011 Planning Consideration Level	2013 Virginia State Mitigation Plan Consideration Level	2016 HMTAC Preliminary Ranking
Flooding	Significant	High	Moderate
Wind (includes Hurricanes, Thunderstorms, Tornadoes)	Moderate	Medium-High	High
Winter Weather	Moderate	Medium-High	High
Thunderstorm (hail and lightning)	Moderate	N/A	High
Drought (with extreme heat)	Moderate	Medium	Limited
Wildfire	Limited	Medium	Limited
Earthquake	Limited	Medium-Low	Limited
Landslide/Shoreline Erosion	Limited	Medium-Low	Limited
Land Subsidence/Karst/Sinkholes	Limited	Low	Limited
Mass Evacuation	Limited	N/A	Limited

Winter Storm Warnings, 1986-2016

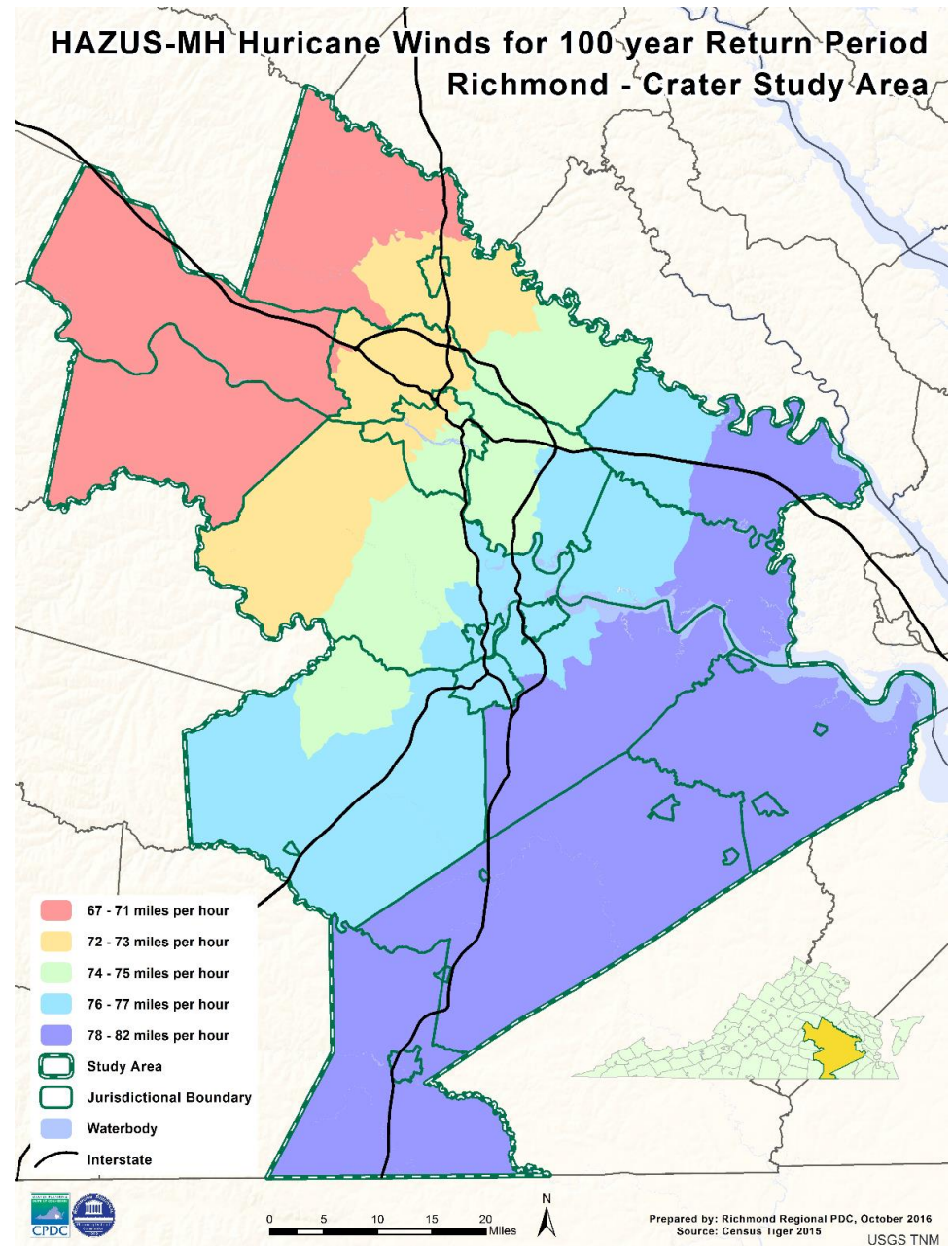
Table 5.31a National Weather Service Winter Alerts, 1986 - 2016

Jurisdiction	Watch Events	Warning Events	Advisory Events	Total Events	Annualized Events
Charles City County	20	36	59	115	3.71
Chesterfield County	21	38	63	122	3.94
City of Colonial Heights	-	-	-	-	-
Dinwiddie County	22	39	66	127	4.10
City of Emporia	-	-	-	-	-
Goochland County	33	45	73	151	4.87
Greensville County	21	37	62	120	3.87
Hanover County	26	41	77	144	4.65
Henrico County	22	38	64	124	4.00
City of Hopewell	-	-	-	-	-
New Kent County	22	34	65	121	3.90
City of Petersburg	-	-	-	-	-
Powhatan County	32	46	65	143	4.61
Prince George County	19	38	62	119	3.84
City of Richmond	-	-	-	-	-
Surry County (Incl. Towns of Claremont, Dendron, Surry)	22	34	62	118	3.81
Sussex County (Incl. Towns of Stony Creek, Wakefield, Waverly)	22	37	65	124	4.00
Totals	282	463	783	1528	49.3

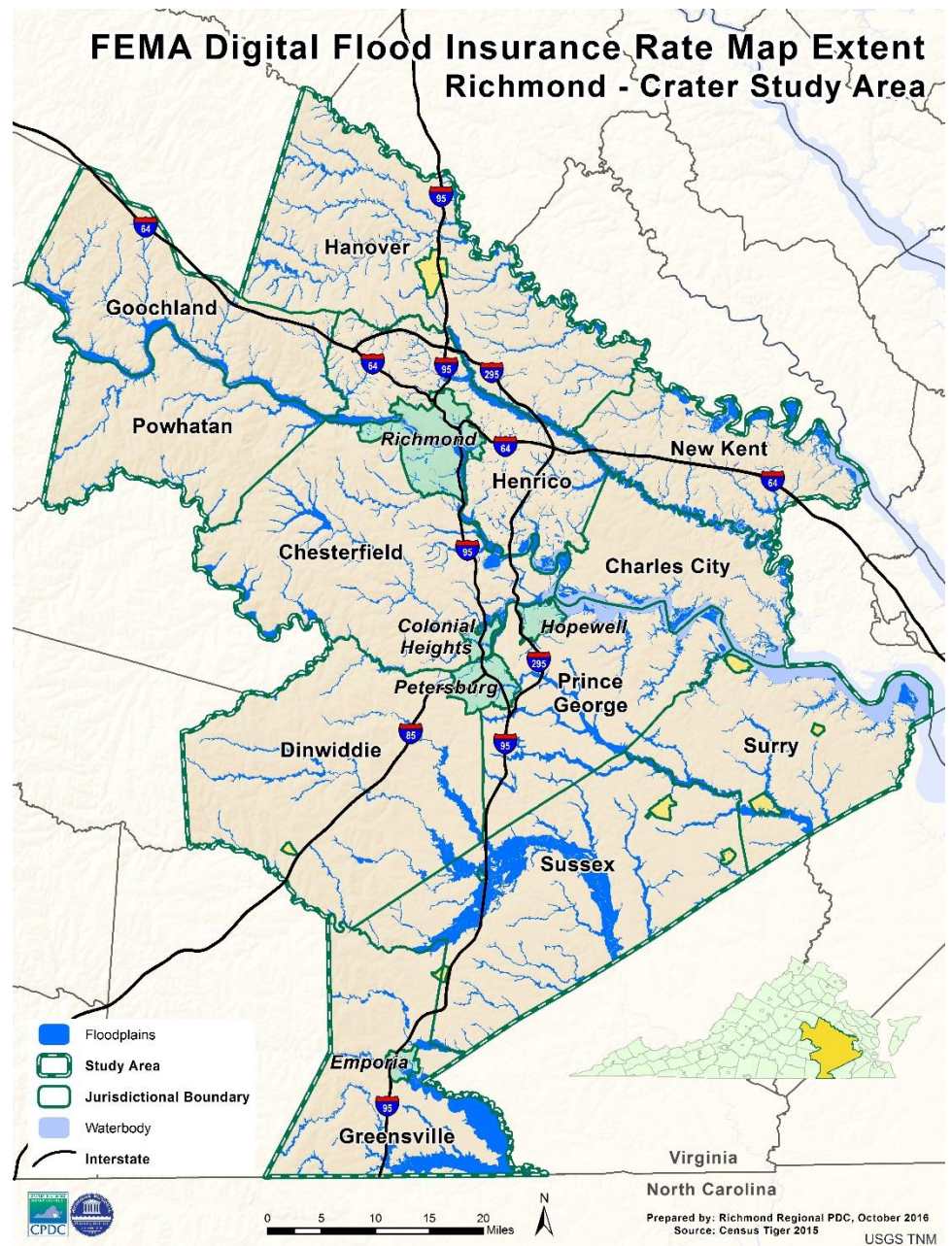
Wind – Tornado Occurrences, 1950 - 2016

County	EF0	EF1	EF3	F0	F1	F2	F3	F4	Total
Charles City County					2				2
Chesterfield County	1			3	8	3			15
City of Colonial Heights		1							1
Dinwiddie County (incl. Town of <u>McKenney</u>)				1		1			2
City of Emporia				1			1		2
Goochland County	1	1				1	1		4
Greensville County (incl. Town of <u>Jarratt</u>)		1		3	1	2			7
Hanover County (incl. Town of Ashland)		1		1	4		1	1	8
Henrico County	1	1		1	3	1			7
City of Hopewell		2		1	1				4
New Kent County	5	1		5	1		1		13
City of Petersburg		1		4	6				11
Powhatan County	1	1		2	1				5
Prince George County				1					1
City of Richmond	1	1		3		3			8
Surry County (incl. Towns of Claremont, Dendron, Surry)		2	1	2	2		1		8
Sussex County (incl. Towns of Stony Creek, Wakefield, Waverly)	2	1		1	2	1	1		8

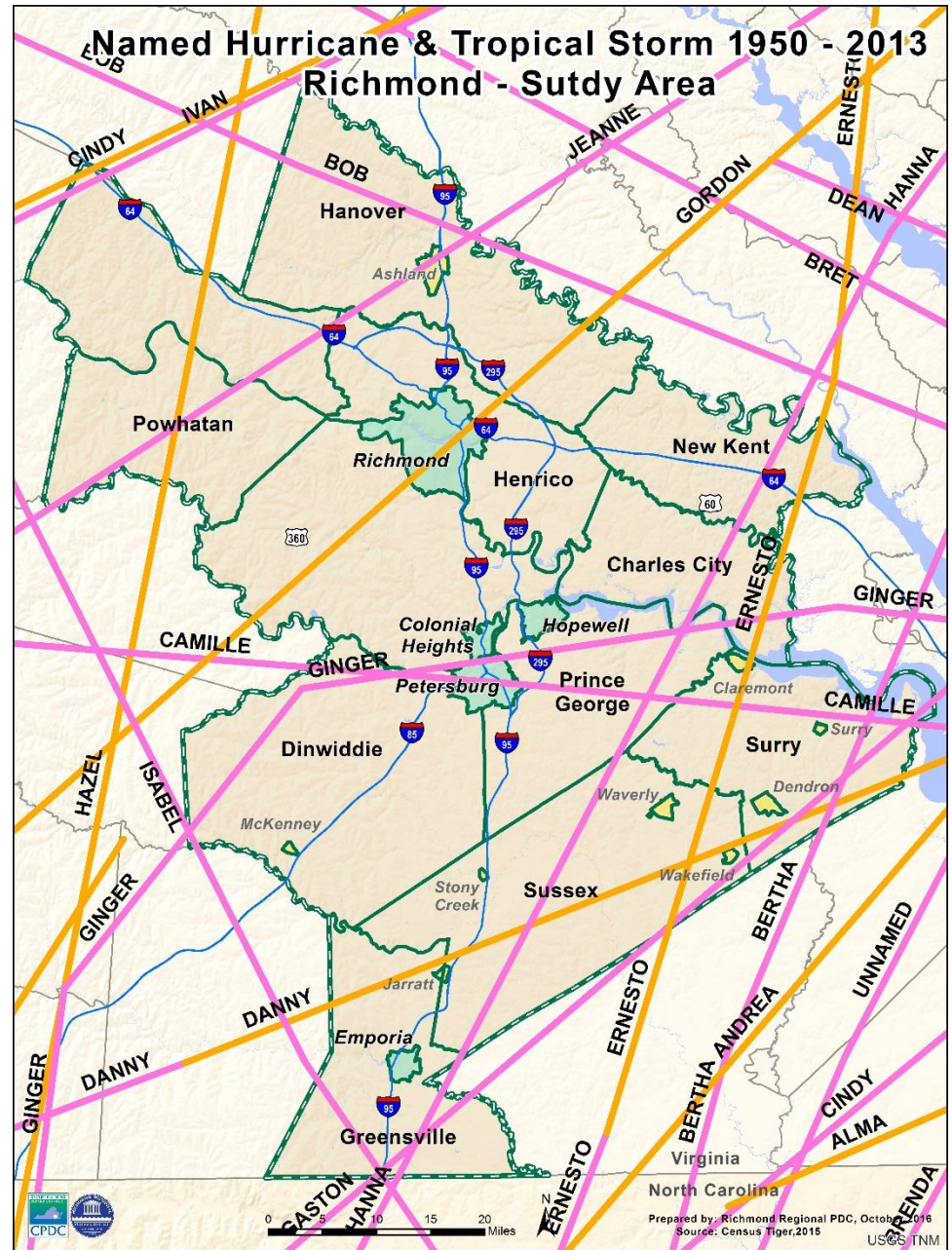
Wind – HAZUS Analysis



FEMA Special Flood Hazard Areas



Historic Hurricane Tracks



FEMA TEIF2.0 Flood Vulnerability Analysis

FEMA Flood Zone

Building Stock Footprint

Tax Assessed Value

+ Est. Contents Value

**\$ Estimated losses from
flood**

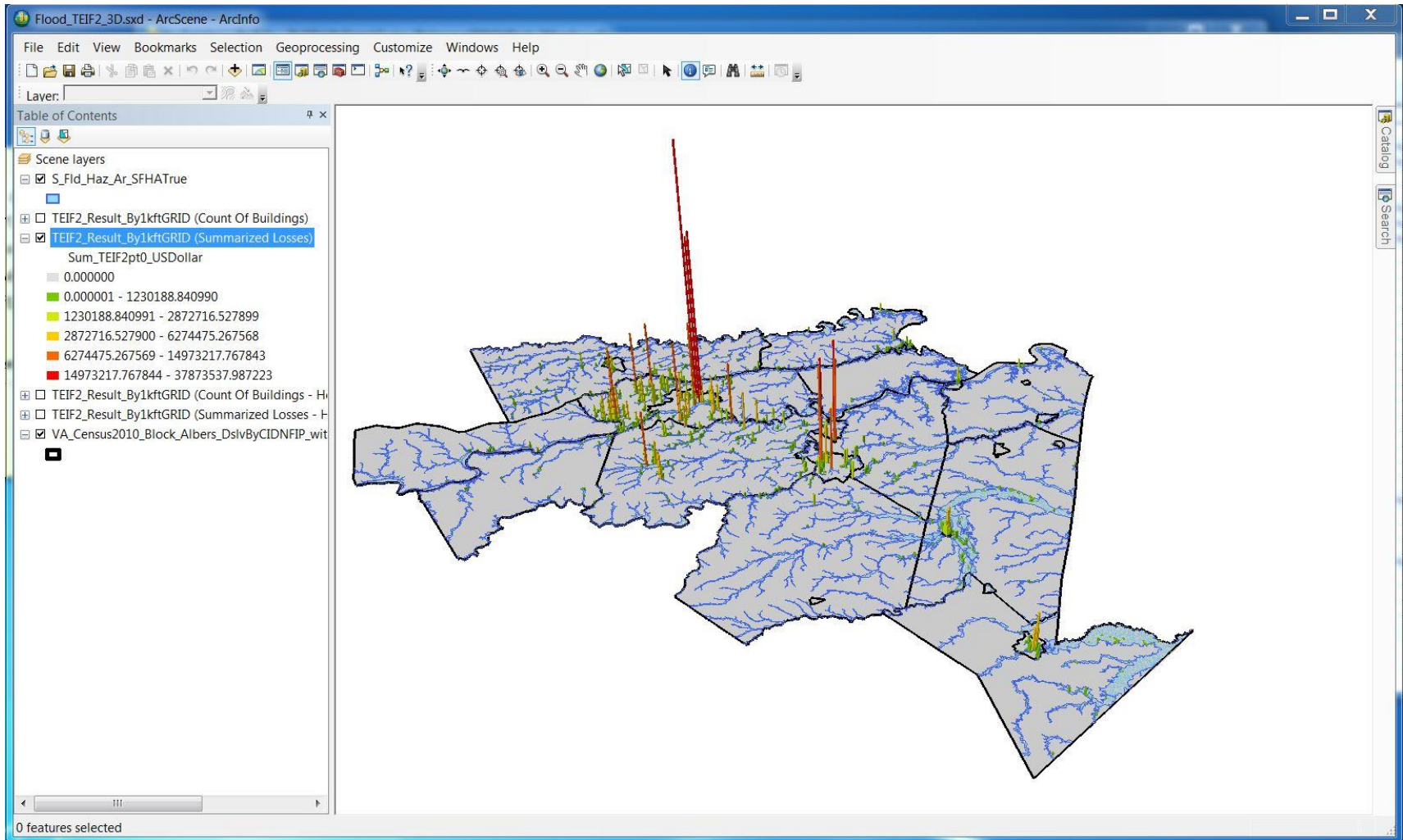
(tabular and GIS layers)

TEIF Flood Analysis – see handout

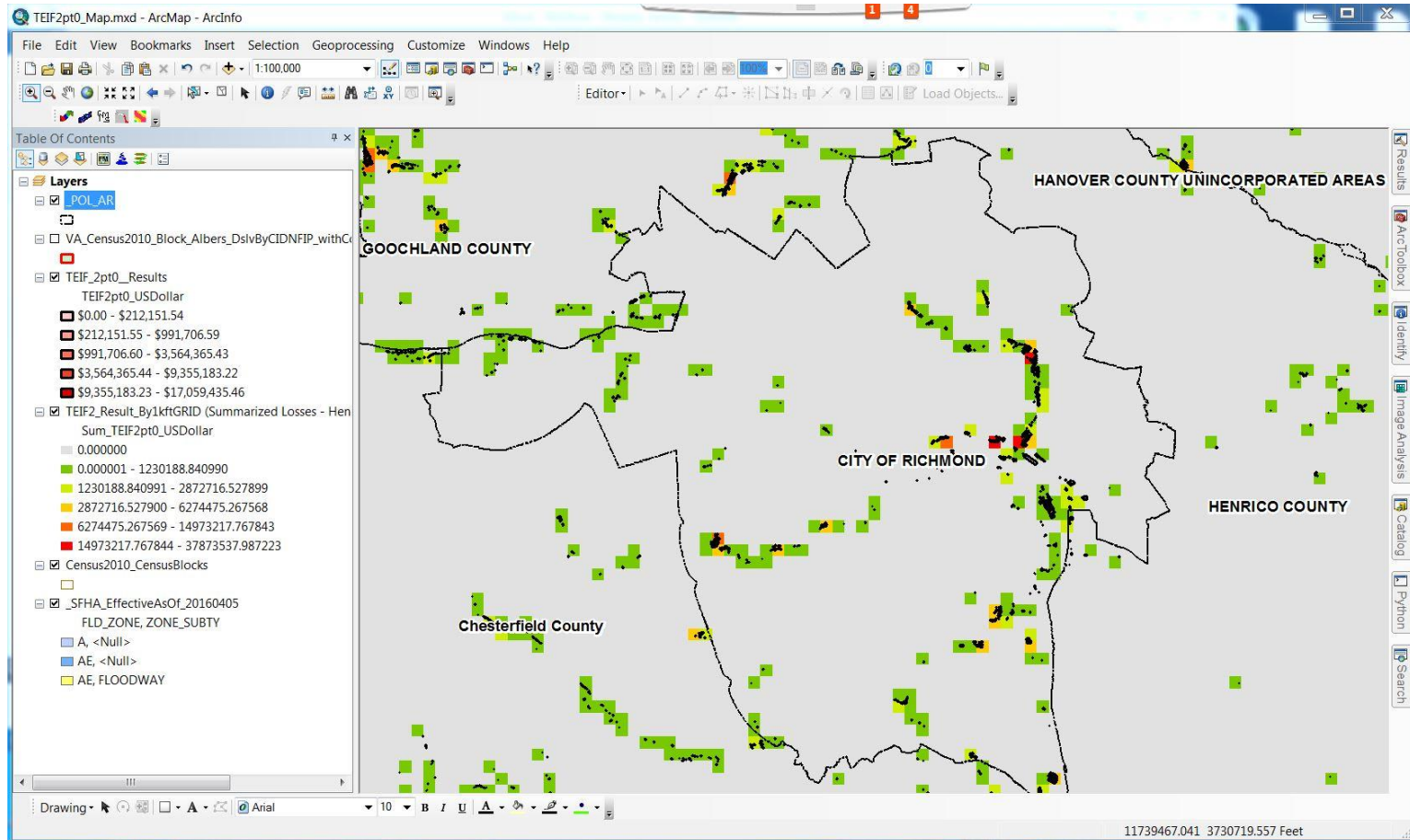
TEIF 2.0 Flood Analysis

COUNTY	Jurisdiction	TEIF2pt0_USDollar ¹	RANK ³
Charles City	Charles City County	\$2,833,653.27	20
Chesterfield	Chesterfield County	\$148,205,562.76	3
Colonial Heights City	Colonial Heights city	\$56,748,000.00 ²	6
Dinwiddie	Dinwiddie County	\$13,507,442.21	14
Dinwiddie	McKenney town	\$0.00	22
Emporia City	Emporia city	\$24,920,647.06	9
Goochland	Goochland County	\$12,715,952.30	15
Greensville	Greensville County	\$6,613,369.74	18
Hanover	Hanover County	\$61,441,447.65	5
Hanover	Ashland town	\$14,059,819.51	13
Henrico	Henrico County	\$192,425,423.55	2
Hopewell Citv	Hopewell citv	\$38.315.100.27	7

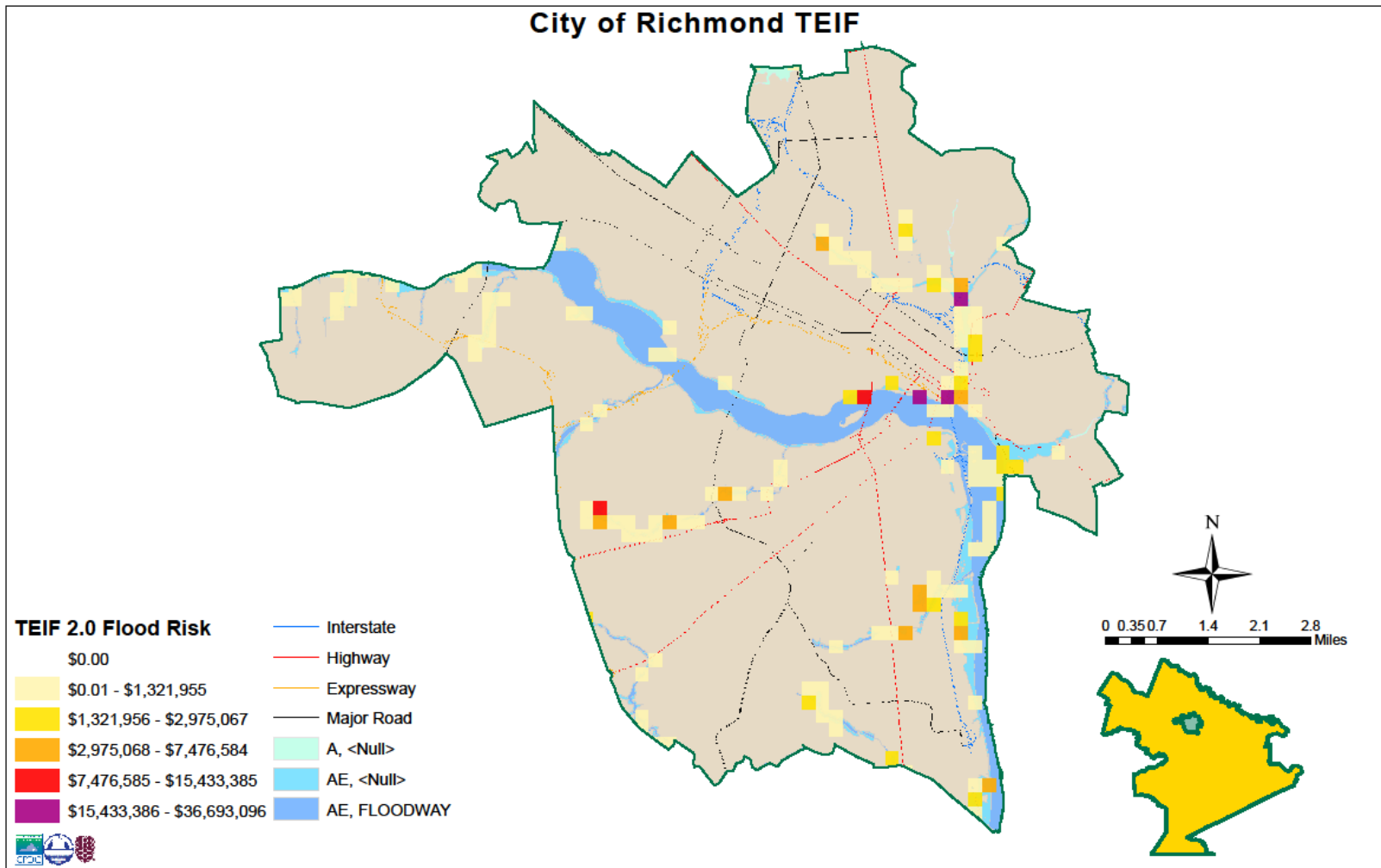
RRPDC Flood Vulnerability



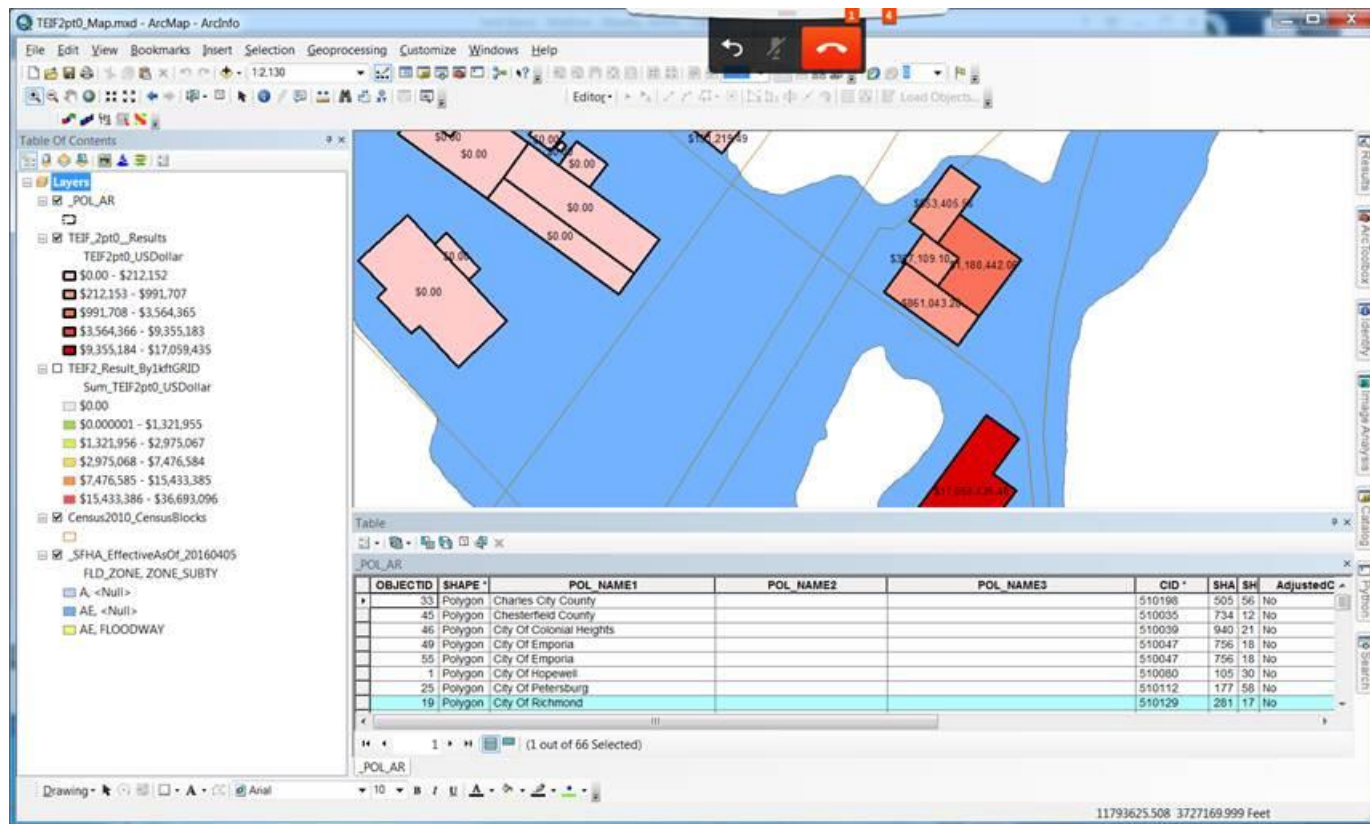
City of Richmond TEIF2.0



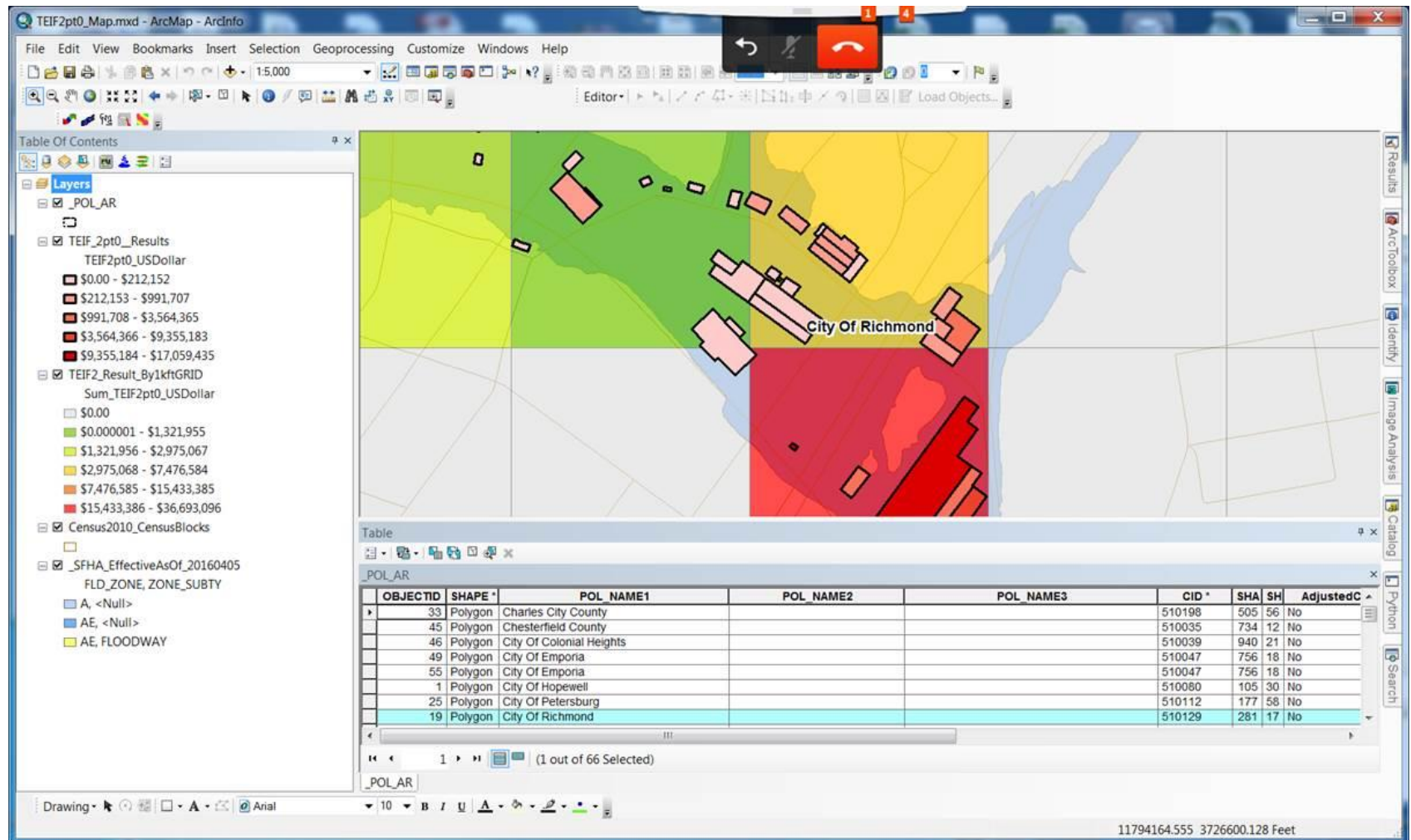
City of Richmond TEIF2.0



Richmond TEIF2.0 Results



Richmond TEIF2.0 Results



Repetitive Loss Properties

4/> paid losses

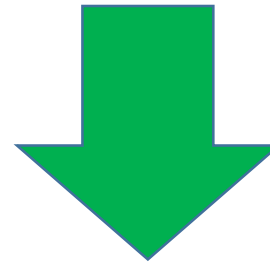
**2 paid losses = current
value of property**

**3 paid losses =/> current
value of the property**

**2016: 14 RL properties
had 66 losses = \$1.6M in
paid claims**

**2011: 146 RL properties
had 414 losses = \$12.3 in
paid claims**

87%



Severe Repetitive Loss Properties

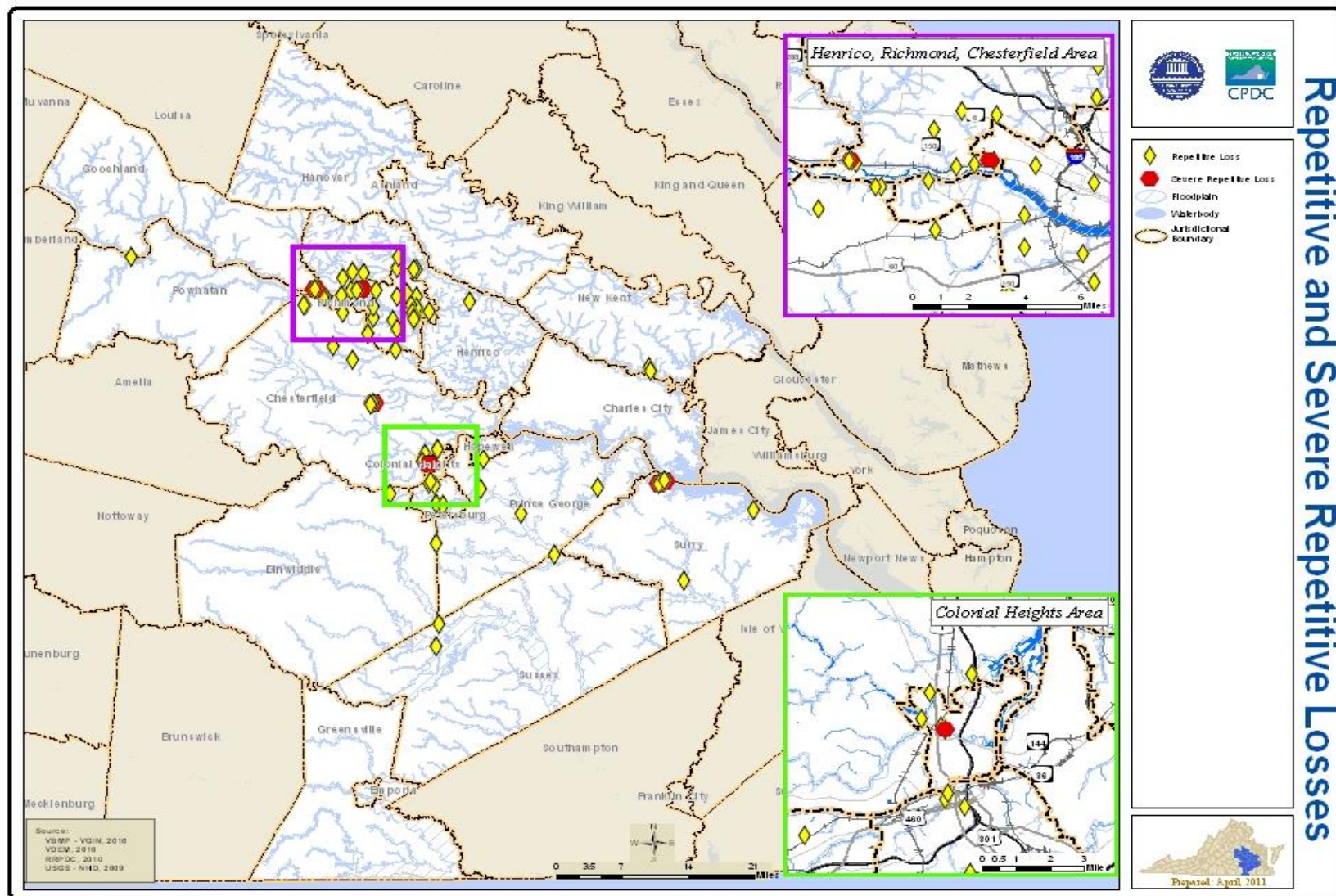
4/> claims payments of \$5,000 exceeding \$20,000

2/> claims payments +/> current property value

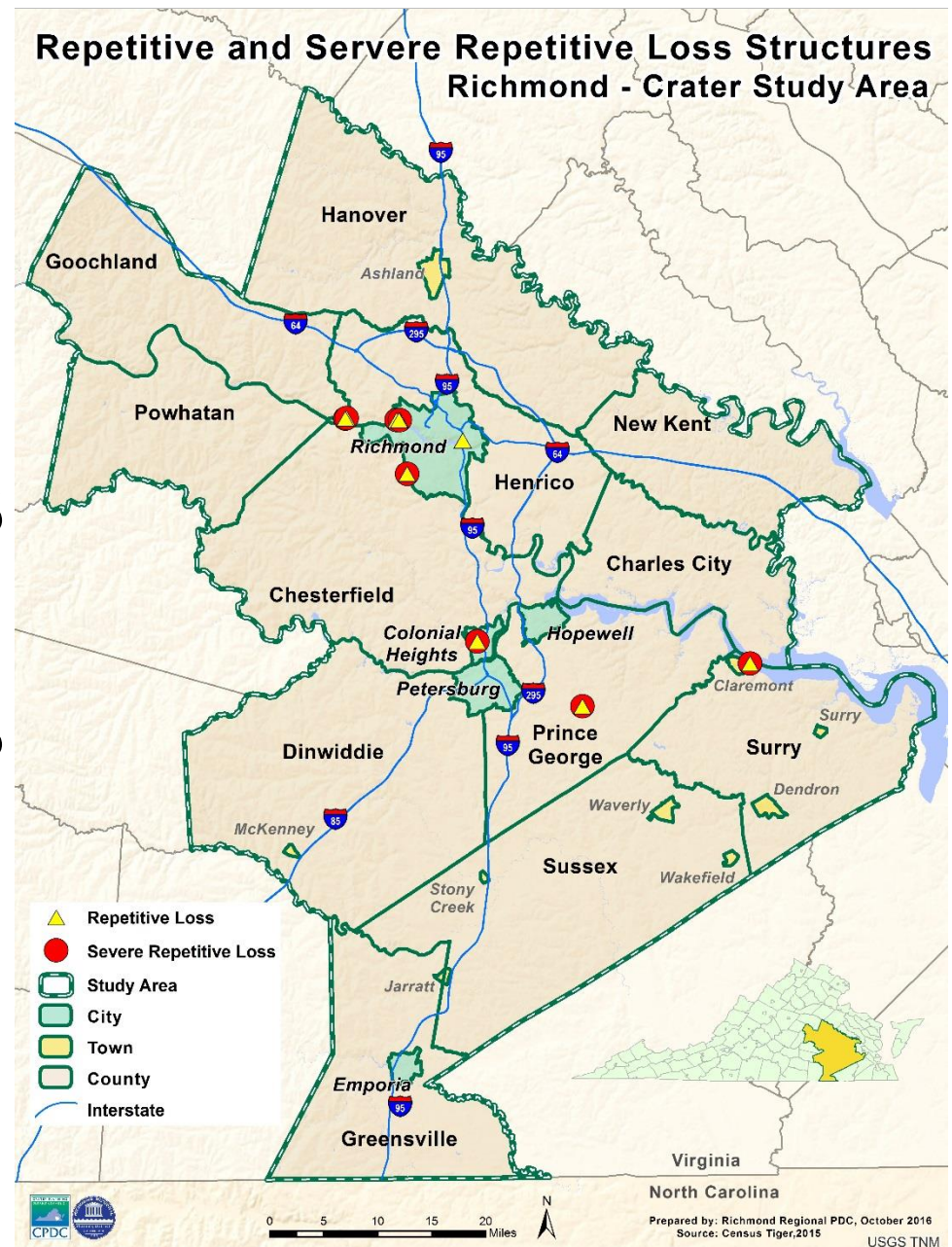
COUNTY	# SRL Properties
Chesterfield County	1
Colonial Heights	2
Henrico County	5
Prince George County	1
Town of Claremont	1



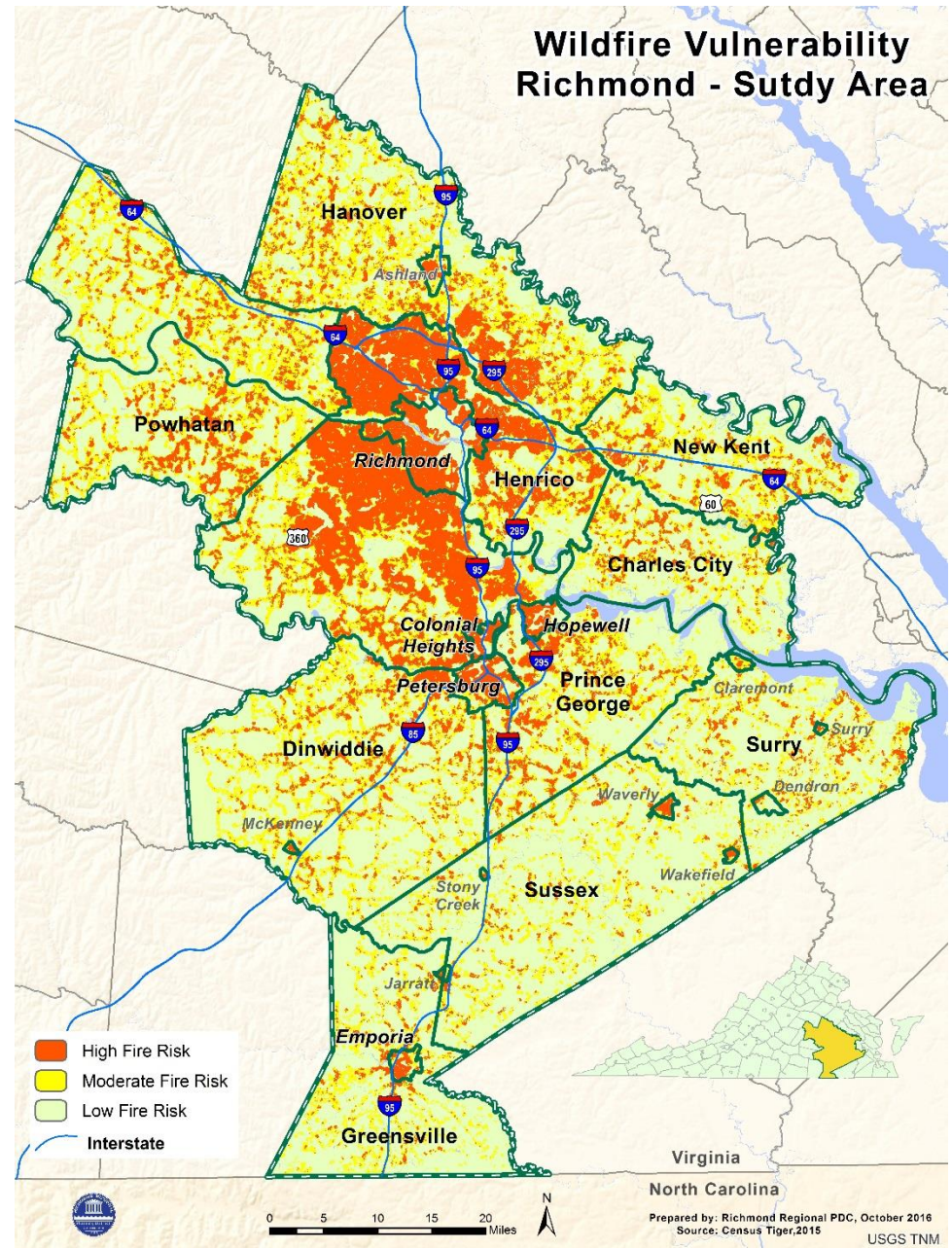
Repetitive Loss and Severe Repetitive Loss Properties 2011



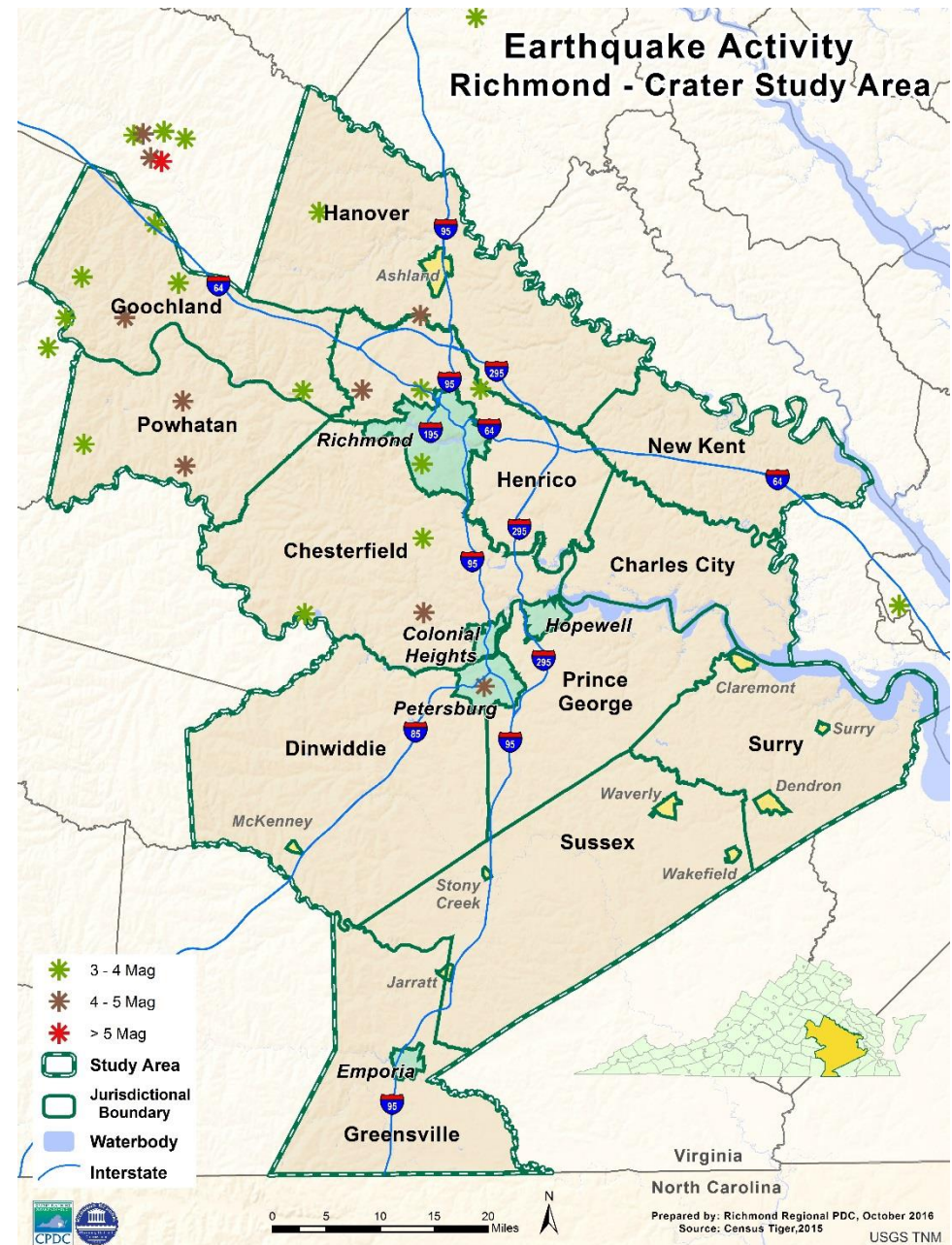
Repetitive Loss and Severe Repetitive Loss Structures - 2016



Wildfire Risk Areas – Urban Forest Interface



Earthquake Epicenters & Magnitudes



Vulnerability Summary

Jurisdiction	Total Annualized Losses	Largest Event Property Damages	Largest Property Damages Event Type	Largest Event Crop Damages	Largest Crop Damages Event Type
Charles City County	\$180,743.34	\$13,987.96	Tornado	\$131,416.88	Drought
Chesterfield County	\$2,479,939.80	\$1,951,015.48	Hurricanes	\$10,694.79	Hurricanes
City of Colonial Heights	\$109,139.03	\$71,663.27	Flood	-	N/A
City of Emporia	\$20,252.60	\$12,223.05	Flood	\$3,284.57	Flood
City of Hopewell	\$87,141.27	\$85,942.05	Tornado	-	N/A
City of Petersburg	\$946,015.13	\$891,490.10	Tornado	\$11,943.88	Flood
City of Richmond	\$1,142,827.00	\$1,065,174.56	Flood	-	N/A
Dinwiddie County	\$2,295,987.73	\$1,272,732.68	Tornado	\$402,556.43	Drought
Goochland County	\$167,949.85	\$24,560.15	Tornado	\$122,076.69	Drought
Greensville County	\$163,994.86	\$71,663.27	Flood	\$47,775.51	Flood
Hanover County	\$677,733.31	\$109,340.00	Flood	\$500,830.07	Drought
Henrico County	\$1,571,013.91	\$982,142.37	Hurricanes	\$244,153.37	Drought
New Kent County	\$139,018.00	\$38,965.66	Flood	\$69,427.79	Drought
Powhatan County	\$621,507.27	\$216,288.04	Hurricanes	\$378,380.68	Drought
Prince George County	\$2,654,799.45	\$1,305,027.80	Hurricanes	\$931,930.92	Hurricanes
Surry County	\$608,554.11	\$367,251.73	Hurricanes	\$115,894.15	Hurricanes
Sussex County	\$455,933.42	\$265,726.39	Flood	\$62,186.96	Flood



HIRA Mitigation Strategy

Reduce societal, economic, and environmental exposure to hazard impacts

Definitions

Goal: general guidelines that describes what planning region would like to achieve

Objective: specific and measurable strategies that must be implemented to achieve the identified goals

Action: more specific than an objective with identified responsible parties, timeframes, and potential funding sources

Richmond – Crater 2011 HMP Goals

1. Reduce loss of life, injuries, and personal property loss.
2. Develop and maintain public and private infrastructure to ensure continued service delivery.
3. Educate and train citizens regarding their vulnerability to regional hazards.
4. Enhance the capabilities of local government to influence and lessen the impacts of hazards.
5. Add Resiliency Goal??
6. Add THIRA-related General Goal?

What's Next?

- Schedule Local Meetings October 27 – November 18, 2016
 - Supplemental capability assessment
 - 2011 action update
 - 2017 – 2022 new actions
- Jackie and Mark will schedule meetings with your locality



Local meetings

Invite:

Emergency managers and public safety officials

Floodplain program administrator

Building official

Zoning or planning officials

Plan adoption advocate

What's Next?

- Comments on Draft HIRA by November 18, 2016
- TEIF 2.0 Flood Analysis WebEx TBD (November)
- Draft Complete Plan Review – December, 2016
- Final Mitigation and Resiliency Meeting – January 2017



Questions?

ftp://www.richmondregional.org/RRPDC_Meetings/

Richmond Regional - Crater PDC Hazard Mitigation Plan Update HIRA Meeting October 26, 2016 Sign-In Sheet				
Jurisdiction	Name	Position	Email	Phone
Charles City County				
Chesterfield County	Heather Barrar	Principal Planner	barrarhc@chesterfield.gov	804-748-1778
City of Colonial Heights				
	Beverley Brandt	Emerg Mgr	brandtb@colonialheightsva.gov	804-524-8773
Dinwiddie County	Dennis Hale	EM	dhale@dinwiddieva.gov	804 704 4025
Town of McKenney				
City of Emporia				

Richmond Regional - Crater PDC Hazard Mitigation Plan Update Kick Off Meeting August 5, 2016 Sign-In Sheet				
Jurisdiction	Name	Position	Email	Phone
Goochland County				
Greensville County				
Town of Jarratt				
Hanover County				
Town of Ashland				
Henrico County	Anna McRay	Dep. Coord of EM	mcra@henrico.us	804/521 7183

Richmond Regional - Crater PDC Hazard Mitigation Plan Update Kick Off Meeting August 5, 2016 Sign-In Sheet				
Jurisdiction	Name	Position	Email	Phone
Henrico County				
City of Hopewell	Ben Ruppert	Coordinator of EM	bruppert@hopewellva.gov	804 541 2298
New Kent County				
City of Petersburg				
Powhatan County	Curt Nellis	EM Coordinator	cnellis@powhatanva.gov	804-598-5677
Prince George County	Donald Hunter	dept EM Coordinator	dhunter@princegeorgecountyva.gov	804 722 8614

Richmond Regional - Crater PDC Hazard Mitigation Plan Update Kick Off Meeting August 5, 2016 Sign-In Sheet				
Jurisdiction	Name	Position	Email	Phone
City of Richmond	Bill Lawson	Planner	william.lawson@richmondga.gov	804 644 2405
Surry County				
Town of Claremont				
Town of Dendron				
Town of Surry				
Sussex County				
Town of Stony Creek				

Richmond Regional - Crater PDC Hazard Mitigation Plan Update Kick Off Meeting August 5, 2016 Sign-In Sheet				
Jurisdiction	Name	Position	Email	Phone
<i>Town of Waverly</i>				
Crater PDC	MARK BITTNER	DIR. PLNG. & IT	mbittner@craterpdc.org	
Richmond Regional PDC	Kathy Robins	Sr. EM Planner	krobins@richmondregional.org	804 323 2033
	Sarah Stewart	Sr Planner	sstewart@richmondregional.org	11
	Jackie Stewart	Manager - Sp. Projects		
	Chuck Gates	Manager - Community Affairs		
	Leigh Medford	GIS Coordination		
VDEM	Lori Dachulle	Chief Regional Coordinator	Lori.Dachulle@vdm.virginia.gov	804-314-0803

CHARLES CITY

Missing: young sturgeon



VCU researcher Matt Balazik holds one of two juvenile sturgeon he found in the James River this November. The juveniles are the only young sturgeon to be found in the James in the past 10 years. RON LOPEZ, CONTRIBUTED PHOTOS

As James River's sturgeon population rebounds, juveniles remain strangely scarce

By Sarah Vogelsong
Staff Writer

CHARLES CITY COUNTY — Growing up between Jordan's Point and Bailey's Creek in Prince George County, Matt Balazik believed that when it came to the James River, sturgeon existed only in memory.

"Like everyone, I thought they were gone," he said, later adding, "We used to



TRI-CITIES

Input sought for disaster plan

Regional agencies
are updating hazard
mitigation plan

From Staff Report

HOPEWELL — Regional officials are getting ready to update their plans for dealing with natural disasters, and residents of the Tri-Cities and neighboring localities are being asked to contribute ideas and comments.

The Crater Planning District Commission is joining forces with the Richmond Regional Planning District Commission for an update of the Richmond-Crater Multi-Regional Hazard Mitigation Plan. Under the federal Disaster Mitigation Act of 2000, state and local governments are required to have hazard mitigation plans to receive certain kinds of disaster assistance grants from the Federal Emergency Management Agency. The law requires that these plans be updated every five years, and the current regional plan was adopted in 2011.

The FEMA grants support emergency warning systems, protection of critical utility infrastructure, acquisition of flood-prone homes, elevation of flood-prone buildings and outreach programs.

SEE DISASTERS, A5



MATTHEW H. HANCHEY

Matthew Howard Hanchey, 74, of Hopewell passed away on Tuesday, December 6, 2016. He was preceded

by (Carolyn); a daughter, Tammy Robertson (Keith); and grandchildren, Chasity Boyd (Kevin), Megan Hanchey and fiancée' (JonDavid Meraz); his brothers, Ray Hanchey (Pat), Albert Hanchey (Phyllis), Earl Hanchey (Debbie); his sisters, Joyce Usher (David), Bea Matthews (Jim), Faye McGill, Libby McCluan (Robert), Jane Shropshire (Hubert);

004 Woodlawn St., Hopewell, VA 23860 and again on Monday, December 12, 2016, at the church. The family is being served by the Hopewell Chapel of J. T. Morriss & Son Funeral Home. Condolences may be registered at www.jtmorriss.com.

J.T. Morriss & Son
FUNERAL HOME & CREMATION SERVICE

DISASTERS

From Page A1

The current plan, almost 300 pages long, examines the kinds of natural disasters the region is likely to face, assesses each of 26 regional localities' ability to respond to disasters and provides advice for officials on how to develop strategies to mitigate the effects of disasters.

"This planning effort will help our community assess its vulnerability to natural hazards and identify activities to reduce the impact of future natural disasters in our communities," said Jackie Stewart, project manager with the Richmond Regional Planning District Commission. "We encourage public participation and input in

Two more meetings are planned in the Richmond area: on Friday, Dec. 16, from 10 a.m. to 2 p.m. at the Richmond Regional Planning District Commission offices at 9211

Forest Hill Ave. in Richmond, and on Monday, Dec. 19, from 6 to 8 p.m. at the Libbie Mill Library, 2100 Libbie Lake East St., Henrico.

More information about the plan, process, study area and schedule can be found on the project website at www.richmondregional.org/HMP.

The two planning district commissions are intergovernmental agencies that help local governments coordinate their efforts in areas such as transportation and economic development. The Crater District commission serves 11 localities: the cities of Colonial Heights, Emporia, Hopewell and Petersburg, and the counties of Charles City, Chesterfield, Dinwiddie, Greensville, Prince George, Surry and Sussex.

PARADE

From Page A1

year lost a nailbiter to Salem after going defeated through the regular

as a biologist at VCU's Rice Rivers Center across the river from Jordan's Point. But after 10 years of sampling the waters of the James and pulling out some 200,000 fish and more than 600 adult sturgeon, no young had turned up.

That is, until this November, when Balazik unexpectedly netted two juveniles not far from Rice Rivers over a two-day period.

"All of a sudden.... a 16- or 17-inch sturgeon came over the side of the boat," the researcher recalled. "I sat up there and looked at it for close to 5 seconds — which is kind of a long time when you think about it — in a state of shock."

The discovery of a second juvenile the following day only cemented the importance of the catch.

"Once is luck; it's hard to put a lot of emphasis on one fish. But to find two fish in almost the same exact spot, it's like we're onto something," Balazik said.

The scarcity of juvenile sturgeon in Virginia waters where they once flourished remains a problem for scientists. As the sturgeon population has begun rebounding along the East Coast, juveniles have appeared in predictable numbers along the coasts and in the rivers of states including New York, Delaware, South Carolina and Georgia. But until this November, they seemed to be completely absent from the James and York rivers.

The reason why isn't clear. Scientists know that the fish are

spawn, and that they're producing viable eggs and sperm. And while the hard, bare habitats where sturgeon prefer to spawn have become scarcer over the years, plenty of suitable sites still exist. The James, in fact, used to be the country's second-biggest sturgeon producer thanks to its intersection with the fall line, a circumstance that produces plenty of rock surfaces perfect for spawning.

Various theories for the absence of the juveniles in the James have been floated: there might be an unidentified chemical in the water. The overly abundant blue catfish population might be outcompeting the juvenile sturgeon for food. Shipping could be harming the species' numbers.

"We have to think about every possible issue until we can find something we can sink our teeth into," Balazik said. But so far, "There's no evidence to really support anything, and that's what's driving us crazy. There's no smoking gun to really find any strong leads."

A further complicating matter stems from the way in which sturgeon spawn. Sturgeon are known as anadromous, meaning that they live in ocean waters but travel up freshwater rivers to breed. Young tend to stay at the spawning site for several years before venturing out into deeper waters, and increas-

ing the river's youthful sturgeon are.

"We're learning brand new data that's never been documented before," said Balazik. "Hopefully they'll lead us to where the sturgeon will be."

—Sarah Vogelsong may be reached at svogelsong@progress-index.com or

any strong leads."

—Matt Balazik, VCU researcher

them to spawn, they will return to the same location where they were born.

Because of this habit which itself is imperfectly understood, sturgeon from different areas develop particular genetic strains that are adapted to their environment.

Consequently, said Balazik, "if your main spawning stock isn't recruiting, you're going to lose the unique genetics that formed in that river for a reason."

"A St. Lawrence fish might not be able to survive in the James River," he explained.

While the two juveniles recovered this November aren't enough to signal a recovery in the James' juvenile population, they will allow researchers a clearer glimpse into what is happening beneath the surface of the river's waters.

Thanks to transponders inserted into the fish before their release back into the wild, scientists will be able to track the juveniles' movements throughout the Bay, a capability that may help solve the mystery of where all the river's youthful sturgeon are.

"We're learning brand new data that's never been documented before," said Balazik. "Hopefully they'll lead us to where the sturgeon will be."

—Sarah Vogelsong may be reached at svogelsong@progress-index.com or

Local briefs for Sunday, Dec. 18

🕒 09.14.14

Public input sought on natural disaster plan

CHESTERFIELD — The 26 localities of the Richmond Regional Planning District Commission and Crater Planning District Commission will hold a meeting to inform the public about and obtain input on the Richmond-Crater Multi-Regional Hazard Mitigation Plan. Citizens' comments will be addressed and, as appropriate, be incorporated in the updated plan.

Hazard mitigation is the effort to reduce loss of life and property by lessening the potential impact of future disasters. The 26 localities of the Richmond and Crater regions are working together to update the current plan that was adopted in 2011. This plan must be updated every five years in order to apply for Federal Emergency Management Agency Hazard Mitigation Assistance Grant programs. Area local governments will be considering the plan for re-adoption during the spring of 2017.

The meeting will be from 6 to 8 p.m. Monday at the Libbie Mill Library, 2100 Libbie Lake East Street in Henrico. Additional information about the plan, process, study area and schedule can be found at www.richmondregional.org/HMP.

Sturdivant to take helm as Petersburg fire chief

PETERSBURG — Deputy Fire Chief Brian E. Sturdivant will take over as fire chief in Petersburg when Chief T.C. Hairston retires at the end of the year, the city announced last week.

Sturdivant has been with the Petersburg Fire Department since 2005. Prior to his service with Petersburg, he was fire department battalion chief at the Fulton County, Ga., Fire Department.

"I am committed to increasing internal and external customer service with a focus on efficient emergency services delivery," Sturdivant said in a news release.

Instructors sought for Hanover summer program

HANOVER — Hanover County Parks and Recreation is seeking instructors with special talents they can share with the community during the summer of 2017.

Parks and Recreation is accepting proposals for recreational experiences for adults, youths, toddlers and activities designed for people over 50 years old. Recreational experiences can be physical activities, hobbies or skills. More information can be found at www.hanoverparksrec.com.

Henrico to offer free Christmas tree recycling

HENRICO — Henrico County will accept Christmas trees for recycling between Dec. 26 and Jan. 8.

The service, offered through the Keep Henrico Beautiful Committee and the county's Department of Public Utilities, is free and available only to Henrico residents. Trees must be free of tinsels, ornaments, tree stands and water bowls.

Trees can be dropped off at:

- Henrico Government Center, 4301 E. Parham Road, in the lower parking lot
- Eastern Government Center, 3820 Nine Mile Road, in the front parking lot;
- Springfield Road Public Use Area, 10600 Fords Country Lane, near Nuckols Road and Interstate 295; and
- Charles City Road Public Use Area, 2075 Charles City Road.

Trees can be dropped off anytime at the Henrico Government Center and Eastern Government Center and from 7:30 a.m. to 7 p.m. daily at the Springfield Road and Charles City Road public use areas.



RICHMOND REGIONAL PLANNING DISTRICT COMMISSION

9211 FOREST HILL AVENUE, SUITE 200
RICHMOND, VIRGINIA 23235
(804) 323-2033

MEDIA ADVISORY

For Immediate Release
Friday, December 9, 2016

Media Contact: Chuck Gates
office: (804) 323-2033
cell: (804) 370-6835
cgates@richmondregional.org

RICHMOND AND CRATER REGIONS SEEKING PUBLIC INPUT ON PLAN TO REDUCE NATURAL DISASTER IMPACTS

Richmond, VA – The 26 localities of the Richmond Regional Planning District Commission and Crater Planning District Commission are holding three public meetings to inform the public about and obtain input on the *Richmond-Crater Multi-Regional Hazard Mitigation Plan*. Citizens' comments will be addressed and, as appropriate, be incorporated in the updated plan.

Hazard mitigation is the effort to reduce loss of life and property by lessening the potential impact of future disasters. The 26 localities of the Richmond and Crater regions are working together to update the current plan that was adopted in 2011. Every five years, local governments must review and update the mitigation plan to remain eligible for Federal Emergency Management Agency Hazard Mitigation Assistance Grant programs. Area local governments will be considering the plan for re-adoption during the spring of 2017.

The three public meetings will be held as follows:

Tuesday, December 13
6 p.m. to 8 p.m.

Appomattox Regional Library
209 East Cawson Street
Hopewell VA 23860

Friday, December 16
10 a.m. to 2 p.m.

Richmond Regional PDC
9211 Forest Hill Ave, Suite 200
Richmond VA 23235

Monday, December 19
6 p.m. to 8 p.m.

Libbie Mill Library
2100 Libbie Lake East Street
Henrico VA 23230

A brief overview of the plan update process will be given to attendees as well as information on changes to risk and vulnerability. Citizen input on areas of concern and ideas for future projects to reduce the impact of natural disasters will be taken.

"This planning effort will help our community assess its vulnerability to natural hazards and identify activities to reduce the impact of future natural disasters in our communities," said Jackie Stewart, the project manager with the Richmond Regional Planning District Commission. "We encourage public participation and input in this important effort to ensure we are minimizing the risks of damage or injury in future natural hazards."

Additional information about the plan, process, study area, and schedule can be found on the project website at www.richmondregional.org/HMP.

###

The Richmond Regional Planning District Commission and Crater Planning District Commission are intergovernmental agencies that facilitate collaboration among the local jurisdictions in their respective regions. The RRPDC includes nine localities in central Virginia – the Town of Ashland, the City of Richmond, and the Counties of Charles City, Chesterfield, Goochland, Hanover, Henrico, New Kent, and Powhatan. The CPDC includes 11 localities south central Virginia – the cities of Colonial Heights, Emporia, Hopewell and Petersburg, and the counties of Charles City, Chesterfield, Dinwiddie, Greensville, Prince George, Surry and Sussex.

WWW.RICHMONDREGIONAL.ORG

TOWN OF ASHLAND CITY OF RICHMOND COUNTY OF CHARLES CITY COUNTY OF CHESTERFIELD
COUNTY OF GOOCHLAND COUNTY OF HANOVER COUNTY OF HENRICO COUNTY OF NEW KENT COUNTY OF POWHATAN

Richmond-Crater 2017 Hazard Mitigation Plan

Public Outreach Meeting

December 13, 2016

Sign-In

Name

Organization

Beverley Brandt
Heather Barrar

City of Colonial Hts
Chesterfield County

Richmond-Crater 2017 Hazard Mitigation Plan

Public Outreach Meeting

December 16, 2016

Sign-In

Name	Organization
Danielle Progen	DEM
Bill Lawson	RVA OEM
Tory Mays	Richmond DEC
William Andrews	City of Richmond, Fire Marshal's office
Debbie Hunter	Prince George Ave/EMS E.M.
Adele Balmer	
DAVID McNeil	City of Richmond
Emily Ashley	Charterfield EM
Travis Giles	Charterfield EM

Public Outreach Meeting

Sign-In

Organization

Chris Brackett	NR Fire-Rescue (EM/EOC)
Robert DeJong	Citizen
Anna McKay	Henrico County OEM
John Owens	Citizen 804-370-9582
James Owens	Citizen john.m.owens@outlook.com



www.richmondgov.com

CITY OF RICHMOND



For Immediate Release

Tuesday, December 13, 2016

City Encourages Hazard Mitigation Planning

December 16 meeting to help identify actions for risk reduction

Richmond, VA – The City of Richmond’s Office of Emergency Management invites public comment on a regional Hazard Mitigation Plan that is presently being updated. A meeting will be held on **Friday, December 16, 2016, from 10 a.m. to 2 p.m.** at the Richmond Regional PDC, Board Room, 9211 Forest Hill Ave, Suite 200, Richmond VA 23235.

Disasters can devastate a community’s economic, social, and environmental well-being. Hazard mitigation is the effort to reduce loss of life and property by lessening the potential impact of future disasters.

Mitigation planning is a key process to break the cycle of disaster damage, reconstruction, and repeated damage. It positions local leaders to take action prior to a disaster, to reduce impacts when a disaster occurs. Using local knowledge and expertise to plan today, allows localities to plan, design, and build their community and builds partnerships for risk reduction throughout the community.

Having a hazard mitigation plan will:

- increase awareness of hazards, risk, and vulnerabilities;
- identify actions for risk reduction;
- focus resources on the greatest risks;
- communicate priorities to state and federal officials; and
- increase overall awareness of hazards and risks.



The 26 localities of the Richmond and Crater regions work together to update the *Richmond-Crater Multi-Regional Hazard Mitigation Plan* to identify vulnerabilities associated with natural disasters and develop long-term strategies to reduce or eliminate long-term risks.

(more)

While nothing can be done to prevent natural hazard events from occurring, the region is poised to minimize the disruption and devastation that so often accompanies disasters, increasing the region's resiliency.

Attend the meeting below to help break the cycle of disaster damage, reconstruction, and repeated damage. Please come to provide comment on the plan.

Friday, December 16
10 a.m. to 2 p.m.

Richmond Regional PDC, Board Room
9211 Forest Hill Ave, Suite 200
Richmond VA 23235

For additional information please contact Bill Lawson, Emergency Planner, Office of Emergency Management, at 804-646-5281 or William.Lawson@Richmondgov.com.

###

The City of Colonial Heights has been working with our regional partners to update our Regional Hazard Mitigation Plan. This document helps us develop projects and identify resources to guide the regional emergency preparedness efforts. The Richmond/Petersburg Planning District Commission will be coordinating meetings to get your input and feedback on the document. Please join us at one of three meetings that are open to the public, and visit <http://www.richmondregional.org/hmp/> for more information on this project.

Communities in our region are working together now to anticipate and reduce the impact of disasters in the future.

Join us.

www.richmondregional.org/HMP



HAZARD MITIGATION

Hazard Mitigation Meetings

Tuesday, December 13
6 p.m. to 8 p.m.
Hopewell

Friday, December 16
10 a.m. to 2 p.m.
Richmond

Monday, December 19
6 p.m. to 8 p.m.
Henrico

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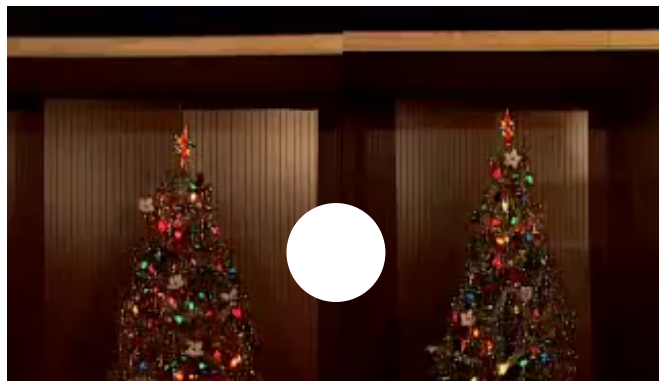
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Write a comment...



Colonial Heights Fire, EMS & Emergency Management shared [National Fire Protection Association \(NFPA\)'s video](#).
December 8, 2016 ·



Chat (13)

Colonial Heights Fire, EMS & Emergency Management



Jackie Home

1 3

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National Fire Protection Association (NFPA)
December 8, 2016 ·

Like Page

Have you been watering your tree regularly? Watch: dry #Christmas trees burn much faster than well-watered trees: <http://ow.ly/EJsJ306VSVJ>

Like Comment Share

9



Write a comment...



Colonial Heights Fire, EMS & Emergency Management added [6 new photos](#).
December 8, 2016 ·

Thank you Colonial Heights Healthcare for the first responder recognition breakfast! We value your partnership in the health care of our community!



Delegate Riley Ingram

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Delegate Riley Ingram

December 12, 2016 ·

The Crater Planning Commission asked if I could put this out on any soical media I use. If you have any questions, please call the Commission and I know they would be glad to talk with you.

Richmond and Crater Regions seeking public input on plan to reduce natural disaster impacts

Richmond, VA – The 26 localities of the Richmond Regional Planning District Commission and Crater Planning District Commission are holding three public meetings to inform the public about and obtain input on the Richmond-Crater Multi-Regional Hazard Mitigation Plan. Citizens' comments will be addressed and, as appropriate, be incorporated in the updated plan.

Hazard mitigation is the effort to reduce loss of life and property by lessening the potential impact of future disasters. The 26 localities of the Richmond and Crater regions are working together to update the current plan that was adopted in 2011. Every five years, local governments must review and update the mitigation plan to remain eligible for Federal Emergency Management Agency Hazard Mitigation Assistance Grant programs. Area local governments will be considering the plan for re-adoption during the spring of 2017.

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9211 Forest Hill Ave, Suite 200

Richmond VA 23235

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Libbie Mill Library

2100 Libbie Lake East Street

Henrico VA 23230

A brief overview of the plan update process will be given to attendees as well as information on changes to risk and vulnerability. Citizen input on areas of concern and ideas for future projects to reduce the impact of natural disasters will be taken.

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Chat (12)

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1/6

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Ingram

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are minimizing the risks of damage or injury in future natural hazards.”

Additional information about the plan, process, study area, and schedule can be found on the project website at www.richmondregional.org/HMP.

###

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Charles E. Gates, Jr., JD

Manager, Community Affairs

Richmond Regional Planning District Commission

Office: (804) 323-2033 x111 | Cell: (804) 370-6835 | Fax: (804) 323-2025

Mailing: 9211 Forest Hill Ave.; Ste 200 | Richmond, VA 23235

cqates@richmondregional.org | www.richmondregional.org



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Write a comment...



Delegate Riley Ingram

January 21 at 4:18pm ·

Normally on Fridays, I miss seeing visitors because of my committee meetings. But this past Friday, I was in my office to meet with a group from the Virginia Dental Association. Also visiting were representatives from the VCU Dental School.



Chat (12)



Hazard Mitigation Meetings

Tuesday, December 13

6 p.m. to 8 p.m.

Hopewell

Friday, December 16

10 a.m. to 2 p.m.

Richmond

Monday, December 19

6 p.m. to 8 p.m.

Henrico



Dinwiddie Fire & EMS and Dinwiddie Emergency Management

[Like This Page](#) · December 8, 2016 ·

Hazard mitigation is the effort to reduce loss of life and property by lessening the potential impact of future disasters. Mitigation planning is a key process to break the cycle of disaster damage, reconstruction, and repeated damage. The 26 localities of the Richmond and Crater regions (including Dinwiddie County) are working together to update the Richmond-Crater Multi-Regional Hazard Mitigati... [See More](#)

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Nichole and 6 other friends like this.

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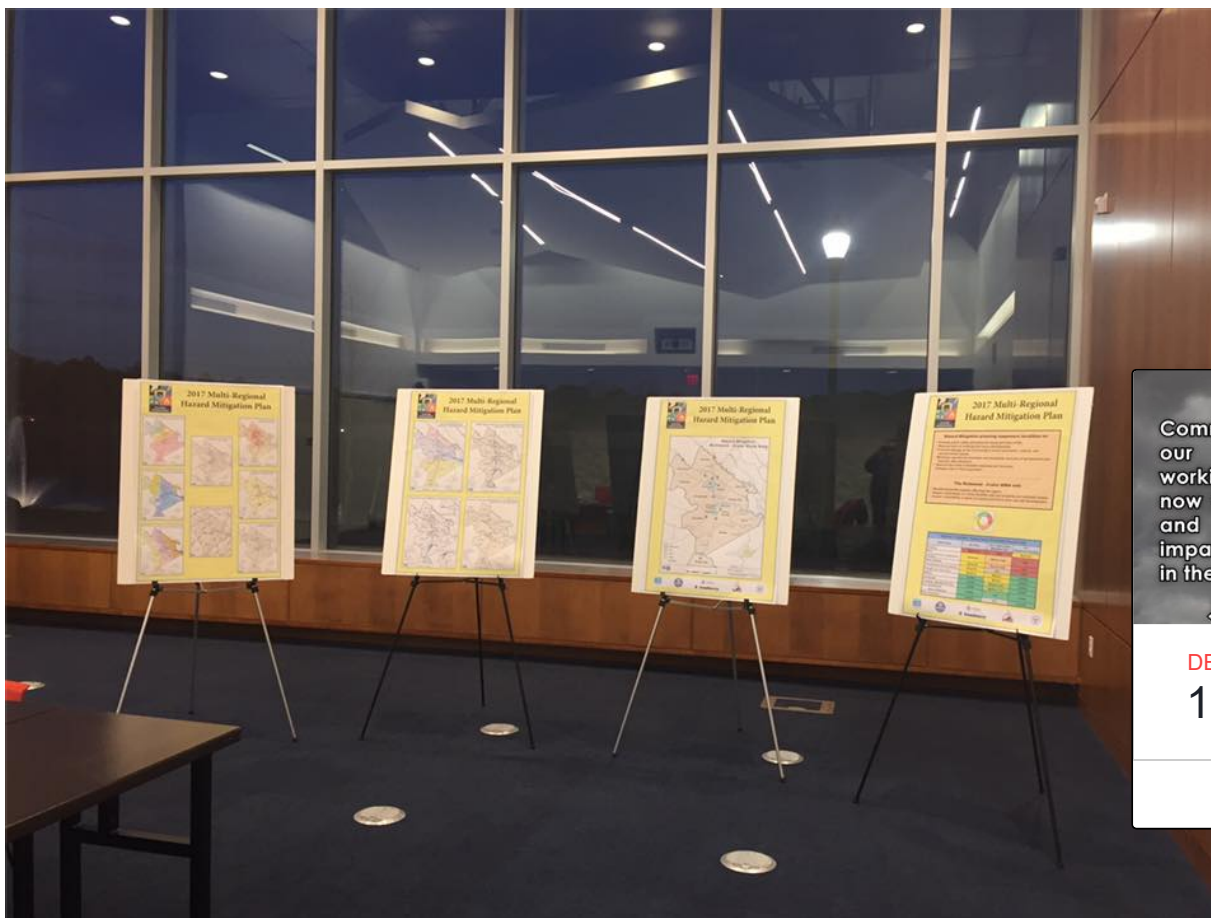
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Henrico County Office of Emergency Management

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All set up for the 3rd and final information session on the Richmond-Crater Regional Hazard Mitigation Plan. This session is open to the public and we welcome your input on this important plan. — attending [Regional Hazard Mitigation Plan Public Feedback Meeting at Libbie Mill Library](#)

Communities in our region are working together now to anticipate and reduce the impact of disasters in the future.

Join us.

HAZARD MITIGATION

Hazard Mitigation Meetings

Tuesday, December 13
6 p.m. to 8 p.m.
Hopewell

Friday, December 16
10 a.m. to 2 p.m.
Richmond

Monday, December 19

DEC 19 **Regional Hazard Mitigation Plan Public...**
Mon 6 PM · Libbie Mill Library
Hosted by Henrico County Office of Emergency M...

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Parker C. Agelasto



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Parker C. Agelasto

December 13, 2016 ·

City Encourages Hazard Mitigation Planning

December 16 meeting to help identify actions for risk reduction

Richmond, VA – The City of Richmond's Office of Emergency Management invites public comment on a regional Hazard Mitigation Plan that is presently being updated.

A meeting will be held on Friday, December 16, 2016, from 10 a.m. to 2 p.m. at the Richmond Regional PDC, Board Room, 9211 Forest Hill Ave, Suite 200, Richmond VA 23235.

Disasters can devastate a community's economic, social, and environmental well-being. Hazard mitigation is the effort to reduce loss of life and property by lessening the potential impact of future disasters.

Mitigation planning is a key process to break the cycle of disaster damage, reconstruction, and repeated damage. It positions local leaders to take action prior to a disaster, to reduce impacts when a disaster occurs. Using local knowledge and expertise to plan today, allows localities to plan, design, and build their community and builds partnerships for risk reduction throughout the community.

Having a hazard mitigation plan will:

- increase awareness of hazards, risk, and vulnerabilities;
- identify actions for risk reduction;
- focus resources on the greatest risks;
- communicate priorities to state and federal officials; and
- increase overall awareness of hazards and risks.

The 26 localities of the Richmond and Crater regions work together to update the Richmond-Crater Multi-Regional Hazard Mitigation Plan to identify vulnerabilities associated with natural disasters and develop long-term strategies to reduce or eliminate long-term risks.

While nothing can be done to prevent natural hazard events from occurring, the region is poised to minimize the disruption and devastation that so often accompanies disasters, increasing the region's resiliency.

Attend the meeting below to help break the cycle of disaster damage, reconstruction, and repeated damage. Please come to provide comment on the plan.

Friday, December 16

10 a.m. to 2 p.m.

Richmond Regional PDC, Board Room

9211 Forest Hill Ave, Suite 200

Richmond VA 23235

For additional information please contact Bill Lawson, Emergency Planner, Office of Emergency Management, at 804-646-5281 or William.Lawson@Richmondgov.com. ~aer

Government Official



Very responsive to messages



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Parker C. Agelasto serves as the City Council member representing Richmond's Central 5th District. This page provides general news about the district and city.



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Justin Doyle and 7 other friends like this

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(804) 646-6050



Typically replies within minutes

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www.parkerforcitycouncil.com/



Government Official

Visitor Posts



Randy Ashcraft

February 11 at 1:59pm

Parker I hope you vote in the affirmative on Monday night for the 2016-RO92!

Like · Comment



Maypop music & Arts festival

January 29 at 5:46pm

looking for support <http://www.maypopfest.com/what-is-maypopfest>

Like · Comment



Julie Wilson

Chat (12)

Richmond–Crater Multi-Regional Hazard Mitigation Plan (2017 update)

Disasters can devastate a community's economic, social, and environmental well-being. Hazard mitigation is the effort to reduce loss of life and property by lessening the potential impact of future disasters. Mitigation planning is a key process to break the cycle of disaster damage, reconstruction, and repeated damage.

The 26 localities of the Richmond and Crater regions are working together to update the *Richmond-Crater Multi-Regional Hazard Mitigation Plan* to identify vulnerabilities associated with natural disasters and develop long-term strategies to reduce or eliminate long-term risks.



Federal hazard mitigation planning requirement

The federal Disaster Mitigation Act of 2000 requires state and local governments to adopt hazard mitigation plans as a precondition for receiving certain non-emergency disaster assistance from the Federal Emergency Management Agency (FEMA). Each jurisdiction must update and submit their hazard mitigation plans every five years to maintain eligibility for federal grant programs that support emergency warning systems, critical utility hardening, acquisition of flood-prone homes, elevation of flood-prone buildings, and outreach programs.

Federal law allows local governments to elect to develop their own mitigation plan or participate in a multi-jurisdictional mitigation plan. Multi-jurisdictional planning is most effective when jurisdictions face the same threats or hazard of concern, operate under similar authorities, have similar needs and capabilities, and have successfully partnered in the past. Since 2003, the Commonwealth of Virginia has encouraged its 21 planning districts to lead the development of regional hazard mitigation plans.

IDENTIFY
THE HAZARDS
ASSESS
VULNERABILITIES
REDUCE
THE RISKS

A multi-regional plan

The coordination, development, and drafting of the 2017 plan update is led by staff from the Richmond Regional Planning District Commission and Crater Planning District Commission, with contracted assistance from Dewberry Consulting. The effort is guided by the Hazard Mitigation Technical Advisory Committee (HMTAC) consisting of emergency management staff from each of the 26 localities (appointed by each locality's chief administrative official).

The HMTAC will meet several times during the course of the planning process, working with the staff and consultants to develop the 2017 plan update. Public input will be sought throughout the process in accordance with FEMA requirements. At the conclusion of the planning process, the governing body of each jurisdiction will be

asked to adopt the updated plan in order to remain eligible for FEMA Hazard Mitigation Assistance Grant programs.



Local Mitigation Planning Process

The mitigation planning process itself is as important as the resulting plan because it encourages communities to integrate mitigation with day-to-day decision-making regarding land use planning, floodplain management, site design, and other functions.

Public Involvement

Effective mitigation planning includes efforts to solicit and consider input from diverse interests and promote discussion about creating a safer, more disaster-resilient community. Involving emergency management experts and local stakeholders is essential to building community-wide support for the plan.

After the draft plan update is prepared, staff will solicit comments from the public. In addition, the HMTAC and staff will host at least two public meetings in the region.

Hazard Identification and Risk Assessment

The Hazard Identification and Risk Assessment (HIRA) lays out the region's vulnerability to natural hazards so that mitigation strategies, activities, and projects can be developed to minimize hazard risks. It includes the identification of natural hazards and risks that are likely to impact the region based on

Elements of effective mitigation planning:

- Public Involvement
- Hazard Identification and Risk Assessment
- Capability Assessment
- Mitigation Strategy

historical experience, an estimate of the frequency and magnitude of potential disasters, and an assessment of potential loss to life and property.

Severe wind events, such as hurricanes and tornadoes, have

The Richmond-Crater HIRA will:

- Identify and profile hazards affecting the region
- Assess vulnerability of critical facilities and real property and estimate losses
- Assess vulnerability in terms of current and future land use and development

historically affected the planning area. Generally, tropical and sub-tropical storms can cause more impact from wind and localized flooding than high level floods. The region is also impacted by localized tornadoes.

Winter storms are likely to create major impacts in the region. Since 2011, two winter storms in the Richmond-Crater region resulted in federal disaster declaration. Winter storms are especially impactful in causing power outages, school and organization closings, and transportation disruption.

Floods in the mitigation planning area occur primarily along three major rivers in the region – the York, James, and Chowan Rivers. Historically, flooding occurs most frequently in May, August, and September.

In the 2017 plan update, emphasis will be placed on hazards with a high likelihood of occurring, significant level of impact, or both. The table below summarizes the results of the 2011 HIRA, the 2015 Commonwealth of Virginia State Hazard Mitigation Plan hazard vulnerability rankings, and the 2017 preliminary rankings made by the HMTAC.

Richmond-Crater Multi-Regional Hazard Vulnerability Planning Levels			
Hazard Type	2011 Plan	2015 Virginia State Mitigation Plan	2017 Preliminary Ranking
Flooding	Significant	High	Moderate
Wind (includes Hurricanes, Thunderstorms, Tornadoes)	Moderate	Medium-High	High
Winter Weather	Moderate	Medium-High	High
Thunderstorm (hail and lightning)	Moderate	N/A	High
Drought (with extreme heat)	Moderate	Medium	Limited
Wildfire	Limited	Medium	Limited
Earthquake	Limited	Medium-Low	Limited
Landslide, Shoreline Erosion	Limited	Medium-Low	Limited
Land Subsidence, Karst, Sinkholes	Limited	Low	Limited
Mass Evacuation	Limited	N/A	Limited

Capability Assessment

A capability assessment will evaluate the current capacity of the communities of the Richmond-Crater region to mitigate the effects of the natural hazards identified in the HIRA. By providing a summary of each jurisdiction's existing capabilities, the capability assessment serves as the foundation for designing an effective hazard mitigation strategy. It will be presented in the final 2017 plan update.

Mitigation Strategy

Based on identified risks and available capabilities, the HMTAC has developed mitigation goals and objectives as part of a strategy for mitigating

hazard-related losses. The strategy will outline mitigation activities that are technically feasible, environmentally-sound, and cost-effective, while allowing strategic investment of limited resources.

In addition, the HMTAC identified and prioritized mitigation actions for the region. Each jurisdiction's priorities were developed from data collected on past damages, existing exposure to risk, community goals, and ability to implement mitigation strategies, actions and projects. Local meetings will be conducted with each participating government during the fall of 2016 to facilitate updating local mitigation efforts and actions.

Mitigation Strategy Goals

- Goal 1: Reduce loss of life, injuries, and personal property loss.
- Goal 2: Develop and maintain public and private infrastructure to ensure continued service delivery.
- Goal 3: Educate and train residents regarding their vulnerability to regional hazards.
- Goal 4: Enhance the capabilities of local government to influence and lessen the impacts of hazards.

Implementation and Monitoring

History shows that hazard mitigation planning and the implementation of risk reduction activities can significantly reduce the physical, financial, and emotional losses caused by disasters. Putting the plan into action will be an ongoing process. Monitoring the plan's implementation helps to ensure it remains relevant as community priorities and development patterns change.

The 2017 plan update will outline a procedure for implementation, maintenance, and plan updates. The HMTAC will reconvene as



appropriate during the five-year plan scope. The RRPDC and Crater PDC will be responsible for monitoring the plan and will request an annual progress update

from local governments each January. Annual progress reports will be consolidated and shared with VDEM.

In accordance with FEMA regulations, a written update will be submitted to the commonwealth and FEMA Region III every five years from the original date of the plan, unless circumstances (e.g., Presidential disaster declaration, changing regulations) require a formal update earlier. The public will be continually informed of changes to the plan as they occur.

Plan Adoption Process

Local governments must adopt the 2017 update to the **Richmond-Crater Multi-Regional Hazard Mitigation Plan** to remain eligible for FEMA Hazard Mitigation Assistance Grant programs. Once the draft of the plan update is submitted to VDEM for review, but prior to submittal to FEMA, a Resolution of Adoption template will be sent to each participating local governments. Once VDEM and FEMA conditionally approve the plan, the governing body of each locality will be asked to adopt the plan.



Benefits of Hazard Mitigation

Hazard mitigation is an investment in our community's future safety and resiliency. Mitigation planning allows local leaders to take action now, before a disaster, to reduce impacts when a disaster occurs. Using local knowledge and expertise to plan today, allows localities to plan, design, and build their community and builds partnerships for risk reduction throughout the community.

Having a hazard mitigation plan will increase awareness of hazards, risk, and vulnerabilities; identify actions for risk reduction; focus resources on the greatest risks; communicate priorities to state and federal officials; and increase overall awareness of hazards and risks.

The ***Richmond-Crater Multi-Regional Hazard Mitigation Plan*** embodies the continued commitment and dedication of the local governments and community members of the Richmond-Crater region to enhance the safety of residents and businesses by taking actions before a disaster strikes. While nothing can be done to prevent natural hazard events from occurring, the region is poised to minimize the disruption and devastation that so often accompanies disasters, increasing the region's resiliency.



Hazard mitigation planning empowers localities to:

- Protect public safety and prevent injury and loss of life.
- Reduce harm to existing and future development.
- Maintain community continuity and strengthen the social connections that are essential for recovery.
- Prevent damage to the community's unique economic, cultural, and environmental assets.
- Minimize operational downtime and accelerate recovery of government and business after disasters.
- Reduce the costs of disaster response and recovery.
- Reduce risks to first responders.

FAQs

What will the Hazard Mitigation Plan cost?

This project is funded by a grant from the Virginia Department of Emergency Management. Staffing support by the RRPDC and Crater PDC is supported through the annual local contributions to the RRPDC and Crater PDC. As such, the only cost to the 26 localities is the dedication of committee members' time and energy.

How is this different from other emergency plans?

Although there is some overlap, different plans serve different functions in helping a community cope with natural hazards. A Hazard Mitigation Plan focuses on reducing exposure to risk before a natural disaster occurs, while other emergency plans focus on response during and recovery after an emergency or disaster event.

What about man-made hazards or terrorism?

The Richmond-Crater HIRA focuses on mitigating risks of *natural* disasters. A Threat and Hazard Identification and Risk Assessment (THIRA) is a broader tool that includes all hazards – natural, human-caused, and technological.

In addition to this hazard mitigation planning process, the RRPDC will be developing a THIRA for the Central Virginia Emergency Management Alliance (CVEMA) area over the next 18 months under a separate grant from FEMA.

Contact Information

For more information on the 2017 update to the ***Richmond-Crater Multi-Regional Hazard Mitigation Plan***, contact your local emergency manager or your respective regional project manager.



Jackie Stewart
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Commission
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Mark Bittner
Crater Planning District Commission
mbittner@craterpdc.org
(804) 861-1666 x237

Richmond–Crater Multi-Regional Hazard Mitigation Plan

Hazard mitigation is the effort to reduce loss of life and property by lessening the potential impact of future disasters. Mitigation planning is a key process to break the cycle of disaster damage, reconstruction, and repeated damage. The 26 localities of the Richmond and Crater regions are working together to update the *Richmond-Crater Multi-Regional Hazard Mitigation Plan* to identify vulnerabilities associated with natural disasters

IDENTIFY
THE HAZARDS

ASSESS
VULNERABILITIES

REDUCE
THE RISKS

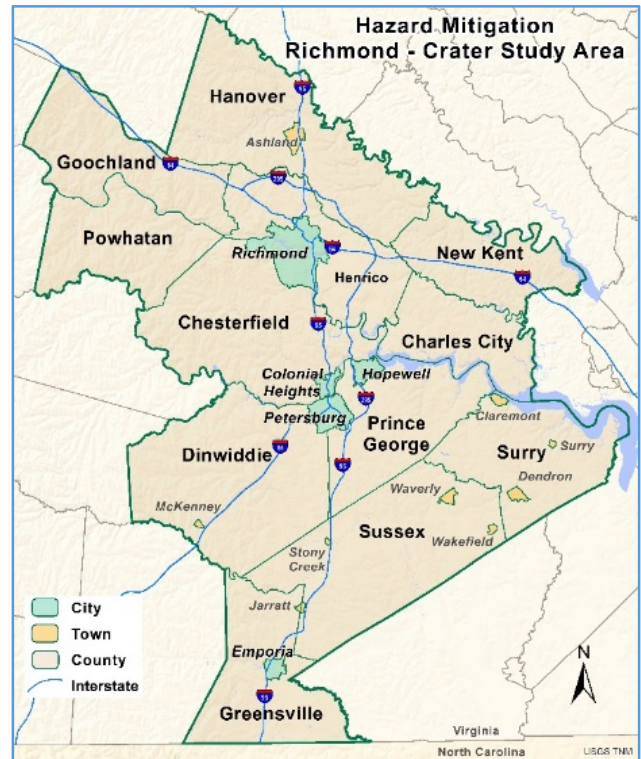
and develop long-term strategies to reduce or eliminate long-term risks.

The federal Disaster Mitigation Act of 2000 requires state and local governments to adopt and update hazard mitigation plans as a precondition for

receiving certain non-emergency disaster assistance from the Federal Emergency Management Agency (FEMA). Federal law allows local governments to develop their own plan or participate in a multi-jurisdictional plan. Since 2003, Virginia has encouraged localities to develop regional plans within their respective regional planning district.

Benefits of hazard mitigation planning:

- Protects public safety and prevents injury and loss of life.
- Reduces harm to existing and future development.
- Prevents damage to the community's unique economic, cultural, and environmental assets.
- Minimizes operational downtime and accelerate recovery of government and business after disasters.
- Reduces the costs of disaster response and recovery.
- Reduces risks to first responders.



Hazard mitigation planning uses local knowledge and expertise to allow local leaders to take action now to reduce the risks of impacts from a disaster. The mitigation planning process encourages communities to integrate mitigation into day-to-day decision-making.

While nothing can be done to prevent natural hazard events from occurring, the *Richmond-Crater Multi-Regional Hazard Mitigation Plan* allows our region to minimize the disruption and devastation that so often accompanies disasters.

Local Mitigation Planning Process

Public Involvement

Involving emergency management experts and local stakeholders is essential to building community-wide support for the plan. As part of the planning process, the staff will solicit input from the public and host three public meetings in the region (see info on back or online at www.richmondregional.org/HMP).

Hazard Identification and Risk Assessment

The Hazard Identification and Risk Assessment (HIRA) lays out the region's vulnerability to natural hazards so that mitigation strategies, activities, and projects can be developed to minimize hazard risks. It includes the identification of natural hazards and risks that are likely

to impact the region based on historical experience, an estimate of the frequency and magnitude of potential disasters, and an assessment of potential loss.

The 2017 plan update will place emphasis on the following hazards with a high likelihood of occurring, significant level of impact, or both:

- severe wind events;
- winter storms;
- thunderstorms; and
- flooding.

Capability Assessment

A capability assessment will evaluate the current capacity of the communities of the Richmond-Crater region to mitigate the effects of the natural hazards identified in the HIRA.

Mitigation Strategy

The strategy will outline mitigation activities that are technically feasible, environmentally-sound, and cost-effective, while allowing strategic investment of limited resources.

Mitigation Strategy Goals

- Goal 1: Reduce loss of life, injuries, and personal property loss.
- Goal 2: Develop and maintain public and private infrastructure to ensure continued service delivery.
- Goal 3: Educate and train residents regarding their vulnerability to regional hazards.
- Goal 4: Enhance the capabilities of local government to influence and lessen the impacts of hazards.

Adoption, Implementation and Monitoring

Each local government must adopt the 2017 update to the *Richmond-Crater Multi-Regional Hazard Mitigation Plan* to remain eligible for FEMA Hazard Mitigation Assistance Grant programs. Hazard mitigation planning and risk-reduction activities can significantly reduce the



physical, financial, and emotional losses caused by disasters. Putting the plan into action will be an ongoing process. The 2017 plan update will outline a procedure for implementation, maintenance, and plan updates.

FAQs

What will the Hazard Mitigation Plan cost?

This project is funded by a grant from the Virginia Department of Emergency Management. Staffing support by the RRPDC and Crater PDC is supported through the annual local contributions to the RRPDC and Crater PDC. As such, the only cost to the 26 localities is the dedication of committee members' time and energy.



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Contact Information

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Crater Planning District Commission
mbittner@craterpdc.org
(804) 861-1666 x237

Public Meetings

Tuesday 12/13 (6 p.m. to 8 p.m.)
Appomattox Regional Library
209 East Cawson Street
Hopewell VA 23860

Friday 12/16 (10 a.m. to 2 p.m.)
Richmond Regional PDC, Board Room
9211 Forest Hill Ave, Suite 200
Richmond VA 23235

Monday 12/19 (6 p.m. to 8 p.m.)
Libbie Mill Library
2100 Libbie Lake East Street
Henrico VA 23230

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Richmond Regional Planning District Commission

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Richmond Regional Planning District Commission via Central Virginia Emergency Management Alliance

December 8, 2016 ·

Communities in our region are working together to reduce the potential impact of future disasters. Attend one of the meetings below to help break the cycle of disaster damage, reconstruction, and repeated damage.

Tuesday 12/13 (6 p.m. to 8 p.m.)

Appomattox Regional Library

209 East Cawson Street

Hopewell VA 23860

Public Services & Government in Richmond, Virginia

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Bikeable Richmond



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The RRPDC is an intergovernmental agency that encourages and facilitates local government cooperation in addressing issues that impact its nine jurisdictional members in Central Virginia.



199 Likes

Kelly King Horne and 6 other friends like this

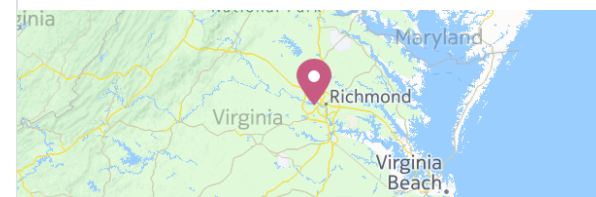


28 people have been here.

Cathy Dowd Pemberton has been here

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Libbie Mill Library
2100 Libbie Lake East Street
Henrico VA 23230

More info at www.richmondregional.org/HMP. #rvacraterhmp



Multi-Regional Hazard Mitigation Plan | RRPDC

Disasters can devastate a community's economic, social, and environmental well-being. Hazard mitigation is the effort to reduce loss of life and property by lessening the potential impact of future disasters. RICHMONDREGIONAL.ORG

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Kelly King Horne and 2 others



Write a comment...



Richmond Regional Planning District Commission via The Capital Region Collaborative

December 7, 2016 ·

Two great recommendations from Virginia Department of Rail and Public Transportation for improving passenger rail in the #RVA region!

(1) Full-service high-speed rail stops both at Richmond Main Street Station and at Staples Mill Road.

(2) Additional time to do in-depth study of the best way to get high-speed rail through the Ashland/Hanover area.

Public Services & Government in Richmond, Virginia

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Bikeable Richmond



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The RRPDC is an intergovernmental agency that encourages and facilitates local government cooperation in addressing issues that impact its nine jurisdictional members in Central Virginia.



199 Likes

Kelly King Horne and 6 other friends like this

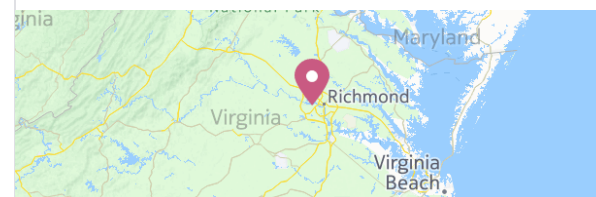


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Cathy Dowd Pemberton has been here

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(804) 323-2033

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Chat (13)

Twitter (704 followers):



Richmond OEM
@RichmondReady

Come on by the Richmond @RRPDC today
From 10am - 2pm to provide input on the
Hazard Mitigation Plan. More Here:
richmondregional.org/HMP

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7:12 AM - 16 Dec 2016



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2



Richmond OEM
@RichmondReady

Our community is working to reduce the
potential impact of future disasters. Please join
us Dec 14. Info at richmondregional.org/HMP.



**Disasters can devastate our
community's economic, social,
and environmental well-being.**

We're partnering with other communities in
our region to reduce the potential impact
of future disasters. Mitigation planning
helps break the cycle of disaster damage,
reconstruction, and repeated damage.

**Join the effort at:
www.richmondregional.org/HMP**

RETWEET

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12:58 PM - 12 Dec 2016



1



Facebook (351 likes):



**Office of Emergency Management Richmond VA**December 12 at 11:27am · 🌐



Neighbors,


Please join us on Friday December 16th at the Richmond Regional Planning District Commission to review the updates and changes to the Regional Hazard Mitigation Plan. For a copy of the plan, meeting information, and other documentation, please go to:
www.richmondregional.org/HMP


Here are the details for the meeting:... [See More](#)




1,292 people reached [Boost Post](#)

 Vic Buisset 2 Comments 3 Shares 

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**John Wayne** Who's going?
Like · Reply · Message · December 14 at 9:58am

**Office of Emergency Management Richmond VA** It is a regional meeting, so it could include representation from local government from around Central VA. Emergency Management Staff from Richmond will be there in the morning. It is an opportunity to review and comment on the Hazard Mitigation Plan. Anyone is welcome!
Like · Reply · Commented on by Oem Bill Richmond [?] · December 14 at 1:02pm · Edited

 Write a comment...  

Nextdoor (19,726 people):



Hazard Mitigation Plan Update - Public Involvement

Emergency Planner [Bill Lawson](#) from Richmond Office of Emergency Management · 4d ago



Neighbors,

Please join us this Friday, December 16, at the Richmond Regional Planning District Commission to review the updates and changes to the Regional Hazard Mitigation Plan. For a copy of the plan, meeting information, and other documentation, please go to: www.richmondregional.org/HMP

Here are the details for the meeting:

Friday, December 16

10 a.m. to 2 p.m.

Richmond Regional PDC, ... [View more](#)

Shared with Richmond Office of Emergency Management in General

★ [Chull, Richard & Kathleen, Jane](#), and [10 others](#) thanked you

This discussion has been closed.

Appendix B – HIRA

Please note:

Historic flood and wind information for historic storms is often included with historic tropical depressions, hurricanes and severe storms.

Contents:

- *B-1 Declared Disasters*
- *B-2 History Tables*
 - *History of Hurricane Events and Damages, 1827–2010*
 - *History of Tornado Events and Damages, 1790–2010*
 - *History of Hail/Lightning Events and Damages, 1993–2010*
 - *History of Winter Storm Events and Damages, 1940–2010*
 - *Historical Wildfire Information*
- *B-3 Previous HIRA Tables*
 - *Structures at Risk*
 - *Critical Facilities*
 - *Jurisdictional Risk*
 - *Risk and Loss Estimation*
- *B-4 TEIF 2.0 Images*

Appendix B-1 Declared Disasters

Table B-1. Declared Disasters

Disaster Type	Disaster Number	Incident Type	Title	Incident Begin Date	IH	IA	PA	HM	County/City
DR	4265	Snow	SEVERE WINTER STORM AND SNOWSTORM	1/22/2016			√	√	Sussex (County)
DR	4262	Snow	SEVERE WINTER STORM AND SNOWSTORM	1/22/2016			√	√	Henrico (County)
DR	4241	Flood	SEVERE STORMS AND FLOODING	10/1/2015	√		√	√	Chesterfield (County)
EM	3373	Severe Storm(s)	SEVERE STORMS AND FLOODING	10/1/2015			√		Chesterfield (County)
DR	4166	Severe Ice Storm	SEVERE WINTER STORM	2/10/2014			√	√	Chesterfield (County)
EM	3369	Severe Ice Storm	SEVERE WINTER STORM	2/10/2014			√		Chesterfield (County)
DR	4092	Hurricane	HURRICANE SANDY	10/26/2012	√		√	√	New Kent (County)
					√		√	√	Surry (County)
DR	4090	Hurricane	HURRICANE SANDY	10/27/2012			√	√	Sussex (County)
DR	4086	Hurricane	HURRICANE SANDY	10/26/2012	√		√	√	Sussex (County)
EM	3359	Hurricane	HURRICANE SANDY	10/26/2012			√		Colonial Heights
							√		Emporia
							√		Hopewell
							√		Petersburg
							√		Richmond
							√		Charles City (County)
							√		Chesterfield (County)
							√		Dinwiddie (County)
							√		Goochland (County)
							√		Greensville (County)
							√		Hanover (County)
							√		Henrico (County)
							√		New Kent (County)
							√		Powhatan (County)
							√		Prince George (County)
							√		Surry (County)

Table B-1. Declared Disasters

Disaster Type	Disaster Number	Incident Type	Title	Incident Begin Date	IH	IA	PA	HM	County/City
							√		Sussex (County)
EM	3357	Hurricane	HURRICANE SANDY	10/27/2012			√		Sussex (County)
EM	3354	Hurricane	HURRICANE SANDY	10/26/2012			√		Sussex (County)
DR	4072	Severe Storm(s)	SEVERE STORMS AND STRAIGHT-LINE WINDS	6/29/2012			√	√	Dinwiddie (County)
							√	√	New Kent (County)
							√	√	Powhatan (County)
DR	4048	Severe Storm(s)	SEVERE STORM	10/29/2011			√	√	Sussex (County)
DR	4042	Earthquake	EARTHQUAKE	8/23/2011	√		√	√	Goochland (County)
DR	4039	Severe Storm(s)	REMNANTS OF TROPICAL STORM LEE	9/28/2011			√	√	Sussex (County)
DR	4037	Hurricane	HURRICANE IRENE	8/25/2011			√	√	Sussex (County)
DR	4024	Hurricane	HURRICANE IRENE	8/26/2011			√	√	Colonial Heights
							√	√	Emporia
							√	√	Hopewell
							√	√	Petersburg
							√	√	Richmond
							√	√	Charles City (County)
							√	√	Chesterfield (County)
							√	√	Dinwiddie (County)
							√	√	Greensville (County)
							√	√	Hanover (County)
							√	√	Henrico (County)
							√	√	New Kent (County)
							√	√	Powhatan (County)
							√	√	Prince George (County)
							√	√	Surry (County)
							√	√	Sussex (County)
DR	4021	Hurricane	HURRICANE IRENE	8/27/2011	√		√	√	Sussex (County)
EM	3336	Hurricane	HURRICANE IRENE	8/26/2011			√		Sussex (County)
EM	3332	Hurricane	HURRICANE IRENE	8/26/2011			√		Sussex (County)
EM	3329	Hurricane	HURRICANE IRENE	8/26/2011			√		Richmond
							√		Henrico (County)
							√		New Kent (County)

Table B-1. Declared Disasters

Disaster Type	Disaster Number	Incident Type	Title	Incident Begin Date	IH	IA	PA	HM	County/City
							√		Surry (County)
							√		Sussex (County)
DR	1896	Snow	SEVERE WINTER STORMS AND SNOWSTORMS	2/5/2010			√	√	Sussex (County)
DR	1874	Snow	SEVERE WINTER STORM AND SNOWSTORM	12/18/2009			√	√	Hanover (County)
DR	1862	Severe Storm(s)	SEVERE STORMS AND FLOODING ASSOCIATED WITH TROPICAL DEPRESSION IDA AND A NOR'EAST	11/11/2009			√	√	Surry (County)
DR	1694	Severe Storm(s)	SEVERE STORMS AND INLAND AND COASTAL FLOODING	4/14/2007	√	√	√	√	Sussex (County)
DR	1661	Severe Storm(s)	TROPICAL DEPRESSION ERNESTO, SEVERE STORMS AND FLOODING	8/29/2006			√	√	Richmond
							√	√	Charles City (County)
							√	√	Dinwiddie (County)
							√	√	Greensville (County)
							√	√	Surry (County)
							√	√	Sussex (County)
DR	1653	Severe Storm(s)	SEVERE STORMS AND FLOODING	6/23/2006	√	√	√	√	Sussex (County)
DR	1654	Severe Storm(s)	SEVERE STORMS AND FLOODING	6/23/2006			√	√	Sussex (County)
EM	3263	Hurricane	HURRICANE KATRINA EVACUATION	8/29/2005			√		Sussex (County)
EM	3257	Hurricane	HURRICANE KATRINA EVACUATION	8/29/2005			√		Sussex (County)
EM	3240	Hurricane	HURRICANE KATRINA EVACUATION	8/29/2005			√		Colonial Heights
							√		Emporia
							√		Hopewell
							√		Petersburg
							√		Richmond
							√		Charles City (County)
							√		Chesterfield (County)

Table B-1. Declared Disasters

Disaster Type	Disaster Number	Incident Type	Title	Incident Begin Date	IH	IA	PA	HM	County/City
							√		Dinwiddie (County)
							√		Goochland (County)
							√		Greensville (County)
							√		Hanover (County)
							√		Henrico (County)
							√		New Kent (County)
							√		Powhatan (County)
							√		Prince George (County)
							√		Surry (County)
							√		Sussex (County)
EM	3233	Hurricane	HURRICANE KATRINA EVACUATION	8/29/2005			√		Chesterfield (County)
EM	3222	Hurricane	HURRICANE KATRINA EVACUATION	8/29/2005			√		Surry (County)
DR	1588	Severe Storm(s)	SEVERE STORMS AND FLOODING	4/1/2005	√	√		√	Sussex (County)
DR	1566	Hurricane	TROPICAL STORM FRANCES	9/6/2004	√	√		√	Chesterfield (County)
DR	1563	Severe Storm(s)	SEVERE STORMS AND FLOODING	9/18/2004	√	√	√	√	Sussex (County)
DR	1544	Severe Storm(s)	SEVERE STORMS, FLOODING AND TORNADOES ASSOCIATED W TD GASTON	8/30/2004	√	√	√	√	Colonial Heights
					√	√	√	√	Hopewell
					√	√	√	√	Petersburg
					√	√	√	√	Richmond
					√	√	√	√	Charles City (County)
					√	√	√	√	Chesterfield (County)
					√	√	√	√	Dinwiddie (County)
					√	√	√	√	Hanover (County)
					√	√	√	√	Henrico (County)
					√	√	√	√	New Kent (County)
					√	√	√	√	Prince George (County)
DR	1494	Hurricane	HURRICANE ISABEL	9/18/2003	√	√	√	√	Sussex (County)
DR	1491	Hurricane	HURRICANE ISABEL	9/18/2003	√	√	√	√	Colonial Heights
					√	√	√	√	Emporia

Table B-1. Declared Disasters

Disaster Type	Disaster Number	Incident Type	Title	Incident Begin Date	IH	IA	PA	HM	County/City
					√	√	√	√	Hopewell
					√	√	√	√	Petersburg
					√	√	√	√	Richmond
					√	√	√	√	Charles City (County)
					√	√	√	√	Chesterfield (County)
					√	√	√	√	Dinwiddie (County)
					√	√	√	√	Goochland (County)
					√	√	√	√	Greensville (County)
					√	√	√	√	Hanover (County)
					√	√	√	√	Henrico (County)
					√	√	√	√	New Kent (County)
					√	√	√	√	Powhatan (County)
					√	√	√	√	Prince George (County)
					√	√	√	√	Surry (County)
					√	√	√	√	Sussex (County)
EM	3181	Snow	SNOW	2/16/2003			√		Sussex (County)
EM	3183	Snow	SNOW	2/14/2003			√		Sussex (County)
DR	1411	Severe Storm(s)	SEVERE STORMS, TORNADOES, AND FLOODING	4/28/2002		√	√	√	Emporia
						√	√	√	Greensville (County)
						√	√	√	Prince George (County)
EM	3169	Fire	FIRES AND EXPLOSIONS	9/11/2001			√		Sussex (County)
EM	3156	Other	WEST NILE VIRUS	5/30/2000			√		Sussex (County)
DR	1337	Severe Storm(s)	SEVERE STORMS, FLOODING AND MUDSLIDES	8/12/2000		√	√	√	Sussex (County)
DR	1318	Severe Storm(s)	SEVERE WINTER STORMS	1/25/2000			√	√	Colonial Heights
							√	√	Emporia
							√	√	Hopewell
							√	√	Petersburg
							√	√	Richmond
							√	√	Charles City (County)
							√	√	Chesterfield

Table B-1. Declared Disasters

Disaster Type	Disaster Number	Incident Type	Title	Incident Begin Date	IH	IA	PA	HM	County/City
									(County)
							√	√	Dinwiddie (County)
							√	√	Goochland (County)
							√	√	Greensville (County)
							√	√	Hanover (County)
							√	√	Henrico (County)
							√	√	New Kent (County)
							√	√	Powhatan (County)
							√	√	Prince George (County)
							√	√	Surry (County)
							√	√	Sussex (County)
DR	1313	Severe Storm(s)	SEVERE WINTER STORM	1/22/2000			√	√	Chesterfield (County)
DR	1299	Hurricane	HURRICANE FLOYD MAJOR DISASTER DECLARATIONS	9/14/1999		√	√	√	Chesterfield (County)
DR	1293	Hurricane	HURRICANE FLOYD MAJOR DISASTER DECLARATIONS	9/13/1999		√	√	√	Colonial Heights
						√	√	√	Emporia
						√	√	√	Hopewell
						√	√	√	Petersburg
						√	√	√	Richmond
						√	√	√	Charles City (County)
						√	√	√	Chesterfield (County)
						√	√	√	Dinwiddie (County)
						√	√	√	Greensville (County)
						√	√	√	Hanover (County)
						√	√	√	Henrico (County)
						√	√	√	New Kent (County)
						√	√	√	Prince George (County)
						√	√	√	Surry (County)
						√	√	√	Sussex (County)
EM	3148	Hurricane	HURRICANE FLOYD EMERGENCY DECLARATIONS	9/16/1999			√		Sussex (County)

Table B-1. Declared Disasters

Disaster Type	Disaster Number	Incident Type	Title	Incident Begin Date	IH	IA	PA	HM	County/City
EM	3147	Hurricane	HURRICANE FLOYD EMERGENCY DECLARATIONS	9/13/1999			√		Sussex (County)
EM	3145	Hurricane	HURRICANE FLOYD EMERGENCY DECLARATIONS	9/14/1999			√		Chesterfield (County)
DR	1205	Severe Storm(s)	SEVERE WINTER STORMS, HIGH WINDS, AND FLOODING	1/28/1998			√		Sussex (County)
DR	1135	Hurricane	HURRICANE FRAN AND ASSOCIATED SEVERE STORM COND	9/5/1996		√	√	√	Emporia
						√	√	√	Hopewell
						√	√	√	Charles City (County)
						√	√	√	Chesterfield (County)
						√	√	√	Dinwiddie (County)
						√	√	√	Goochland (County)
						√	√	√	Greensville (County)
						√	√	√	Henrico (County)
						√	√	√	New Kent (County)
						√	√	√	Powhatan (County)
						√	√	√	Prince George (County)
						√	√	√	Surry (County)
DR	1103	Snow	WINTER STORM	2/2/1996			√	√	Surry (County)
DR	1086	Snow	BLIZZARD OF 96 (SEVERE SNOW STORM)	1/6/1996			√	√	Colonial Heights
							√	√	Emporia
							√	√	Hopewell
							√	√	Petersburg
							√	√	Richmond
							√	√	Charles City (County)
							√	√	Chesterfield (County)
							√	√	Dinwiddie (County)
							√	√	Goochland (County)
							√	√	Greensville (County)
							√	√	Hanover (County)
							√	√	Henrico (County)

Table B-1. Declared Disasters

Disaster Type	Disaster Number	Incident Type	Title	Incident Begin Date	IH	IA	PA	HM	County/City
							√	√	New Kent (County)
							√	√	Powhatan (County)
							√	√	Prince George (County)
							√	√	Surry (County)
							√	√	Sussex (County)
DR	1087	Snow	BLIZZARD OF 96	1/6/1996			√	√	Surry (County)
DR	1088	Snow	BLIZZARD OF 96 (SEVERE SNOW STORM)	1/7/1996			√	√	Sussex (County)
DR	1082	Snow	BLIZZARD OF 96 (SEVERE SNOW STORM)	1/6/1996			√	√	Sussex (County)
DR	1021	Severe Storm(s)	SEVERE WINTER ICE STORM	3/1/1994			√	√	Emporia
							√	√	Goochland (County)
							√	√	Hanover (County)
DR	1017	Severe Storm(s)	SEVERE ICE STORMS AND FLOODING	2/8/1994			√	√	Sussex (County)
DR	1014	Snow	SEVERE ICE STORMS, FLOODING	2/8/1994			√	√	Petersburg
							√	√	Richmond
							√	√	Chesterfield (County)
							√	√	Dinwiddie (County)
							√	√	Goochland (County)
							√	√	Hanover (County)
							√	√	Henrico (County)
							√	√	New Kent (County)
							√	√	Powhatan (County)
							√	√	Prince George (County)
							√	√	Surry (County)
							√	√	Sussex (County)
DR	1007	Severe Storm(s)	SEVERE STORMS AND TORNADOES	8/6/1993		√			Petersburg
EM	3112	Snow	SEVERE WINTER STORM	3/13/1993			√	√	Colonial Heights
							√	√	Emporia
							√	√	Hopewell
							√	√	Petersburg

Table B-1. Declared Disasters

Disaster Type	Disaster Number	Incident Type	Title	Incident Begin Date	IH	IA	PA	HM	County/City
							√	√	Richmond
							√	√	Charles City (County)
							√	√	Chesterfield (County)
							√	√	Dinwiddie (County)
							√	√	Goochland (County)
							√	√	Greensville (County)
							√	√	Hanover (County)
							√	√	Henrico (County)
							√	√	New Kent (County)
							√	√	Powhatan (County)
							√	√	Prince George (County)
							√	√	Surry (County)
							√	√	Sussex (County)
EM	3111	Snow	SEVERE SNOWFALL & WINTER STORM	3/13/1993			√	√	Sussex (County)
EM	3106	Snow	SEVERE BLIZZARD	3/13/1993			√	√	Sussex (County)
EM	3110	Snow	SEVERE SNOWFALL & WINTER STORM	3/13/1993			√	√	Surry (County)
DR	976	Coastal Storm	SEVERE COASTAL STORM & FLOODING	12/11/1992			√	√	Sussex (County)
DR	933	Flood	SEVERE COASTAL STORM	1/4/1992			√	√	Sussex (County)
DR	844	Hurricane	HURRICANE HUGO	9/21/1989		√	√	√	Surry (County)
DR	843	Hurricane	HURRICANE HUGO	9/21/1989		√	√	√	Chesterfield (County)
DR	755	Flood	SEVERE STORMS & FLOODING	11/9/1985		√	√	√	Richmond
						√	√	√	Chesterfield (County)
						√	√	√	Goochland (County)
						√	√	√	Henrico (County)
						√	√	√	Powhatan (County)
						√	√	√	Surry (County)
DR	700	Tornado	SEVERE STORMS & TORNADOES	3/28/1984		√	√	√	Chesterfield (County)
EM	3083	Drought	WATER SHORTAGE	10/19/1980			√	√	Sussex (County)

Table B-1. Declared Disasters

Disaster Type	Disaster Number	Incident Type	Title	Incident Begin Date	IH	IA	PA	HM	County/City
DR	605	Flood	SEVERE STORMS & FLOODING	9/29/1979		√	√	√	Surry (County)
EM	3049	Drought	DROUGHT	8/11/1977			√	√	Surry (County)
EM	3046	Drought	DROUGHT	7/23/1977			√	√	Charles City (County)
							√	√	Chesterfield (County)
							√	√	Dinwiddie (County)
							√	√	Goochland (County)
							√	√	Greensville (County)
							√	√	Hanover (County)
							√	√	Henrico (County)
							√	√	New Kent (County)
							√	√	Powhatan (County)
							√	√	Prince George (County)
EM	3033	Snow	DROUGHT & FREEZING	3/2/1977			√	√	Surry (County)
DR	525	Freezing	ICE CONDITIONS	1/26/1977		√			Colonial Heights
						√			Hopewell
						√			Petersburg
						√			Richmond
						√			Charles City (County)
						√			Chesterfield (County)
						√			Henrico (County)
						√			New Kent (County)
						√			Prince George (County)
						√			Surry (County)
EM	3018	Drought	DROUGHT	10/15/1976			√	√	Chesterfield (County)
							√	√	Dinwiddie (County)
							√	√	Goochland (County)
							√	√	Hanover (County)
							√	√	Powhatan (County)

Table B-1. Declared Disasters

Disaster Type	Disaster Number	Incident Type	Title	Incident Begin Date	IH	IA	PA	HM	County/City
DR	477	Flood	HEAVY RAINS, HIGH WINDS, HAIL & TORNADOES	7/23/1975		√	√	√	Sussex (County)
DR	359	Flood	SEVERE STORMS & FLOODING	10/10/1972		√	√	√	Chesterfield (County)
						√	√	√	Dinwiddie (County)
						√	√	√	Powhatan (County)
						√	√	√	Sussex (County)
DR	339	Flood	TROPICAL STORM AGNES	6/23/1972		√	√	√	Colonial Heights
						√	√	√	Hopewell
						√	√	√	Petersburg
						√	√	√	Richmond
						√	√	√	Charles City (County)
						√	√	√	Chesterfield (County)
						√	√	√	Goochland (County)
						√	√	√	Hanover (County)
						√	√	√	Henrico (County)
						√	√	√	Powhatan (County)
						√	√	√	Surry (County)
DR	310	Flood	HEAVY RAINS & FLOODING	9/4/1971		√	√	√	Sussex (County)
DR	274	Hurricane	SEVERE STORMS & FLOODING	8/23/1969		√	√	√	Chesterfield (County)
						√	√	√	Goochland (County)
						√	√	√	Hanover (County)
						√	√	√	Henrico (County)
						√	√	√	Powhatan (County)
DR	205	Drought	WATER SHORTAGE	8/18/1965		√	√	√	Sussex (County)
DR	207	Drought	WATER SHORTAGE	8/18/1965		√	√	√	Sussex (County)

Appendix B-2 History Tables

History of Hurricane Events and Damages, 1827–2010

Table B-2. History of Hurricane Events and Damages, 1827–2010

Date	Damages
August 24, 1827	The hurricane occurring on this date was severe on the coast and inland to the mountains and caused damage from Charleston to Baltimore.
October 22, 1878	The hurricane's eye made landfall at Cape Fear, moved north across Richmond and Washington, D.C. and seemed to lose little strength. The storm was thought to resemble that of Hurricane Hazel in 1954. Winds downed trees and fences and unroofed homes.
September 29, 1896	A hurricane killed 16 people and did almost \$4 million in damages up the Eastern Seaboard. On June 14, 1951 after a tornado had struck the city, the Richmond News Leader wrote, "Tornado recalls windstorm of 1896 to older residents..." Speaking of September 29, "torrential rain and very high wind for several hours in the evening. Wind estimated at 80 mph caused a steeple to fall." Damage in Richmond was estimated at approximately \$4 million.
August 23, 1933	<p>On the evening of August 22, 1933, a tropical storm entered Virginia producing strong winds with gusts up to 80 mph and rain that continued into August 23. This storm event caused no injuries but significant damage due to high winds and heavy rain. Telephone and electric service were disrupted throughout all areas. Damage was mostly to trees, roofs, and awnings. Falling debris was a major concern. Many trees were uprooted causing damage to residences, blocking roads, and knocking down fences and utility lines. Trees also downed high-tension electric lines in the City of Petersburg causing manufacturing plants to be idle. Many houses suffered flood damage. Crops (e.g., corn, tobacco) and fruit trees were destroyed due to the high winds and rain. Other areas in the Tidewater region had significantly more damage. Storm surge in the bay and tidal estuaries was the highest of record and coincided with astronomical high tide. The water level reached a maximum of 8 feet in Hampton Roads.</p> <p>City of Hopewell: The Richmond Petersburg Highway was covered with several feet of water and several boats were washed away or severely damaged.</p> <p>Surry County: Heavy damage to towns and beaches along the James River were reported. The pier at Jamestown Surry Ferry was severely damaged. Almost all of the cottages and stores at Burwell's Bay were completely destroyed. The Claremont Ferry dock was swept away. The Crouch's Creek bridge was destroyed. Many houses had flood damage and several boats were damaged or washed up on land.</p> <p>Sussex County: High winds blew off several roofs. One-fourth of the trees were uprooted in Stony Creek.</p> <p>(Sources: The Progress-Index and the Sussex-Surry Dispatch)</p>
September 5, 1935	<p>"The Great Labor Day Hurricane." Heavy rains fell over central Virginia from the storm and a major flood resulted on the James River in Richmond.</p> <p>Richmond: Water level at the Richmond locks reached 23.7 feet, which is more than 15 feet above flood stage.</p>

Table B-2. History of Hurricane Events and Damages, 1827–2010

Date	Damages
August 15, 1940	<p>Several days of rainfall produced record rising waters in the James, Appomattox, and Nottaway Rivers. The James River crested at 25 feet and the Appomattox River rose to 19.6 feet above typical levels, higher than the Johnstown Flood of 1889.</p> <p>This flood blocked main highways in all directions of Petersburg. Many arterials and secondary roads were closed. Highway closures included Routes 1, 15, 26, 31, 32, 35, 39, 40, 42, 45, 49, 56, 58, 117, 158, 195, 196, 301, 304, 312, 460, 501, and Campbell's Bridge. The bridge over Stony Creek was washed out. Riverfront properties were flooded. Union Station was flooded and several platforms washed out. About 4,000 feet of railroad track was under water. Crops were severely damaged. Tobacco and peanut crops suffered most in Southside counties with greatest losses for Dinwiddie, Surry, Sussex, and Greenville Counties. The Appomattox and Buffalo Rivers isolated Farmville. Sewer lines along South Street broke leaving large craters. The canal under Fleet Street overflowed flooding Fleet Street and neighboring homes.</p> <p>Damages were estimated at \$100,000.</p> <p>City of Emporia: Meherrin River rose causing flooding on Main Street. The town exhausted its drinking supply.</p> <p>City of Hopewell: The city had 10.05 inches of rain.</p> <p>City of Petersburg: River Street was flooded from a 30-foot gap in the Appomattox River's south bank. Electric service was disrupted, many buildings flooded, and docks were covered with water.</p> <p>Surry County: This flood event caused the largest damage to crops.</p> <p>Sussex County: This flood event caused the largest damage to crops (2,000 acres destroyed), flooding fields and destroying several mills.</p> <p>(Sources: The Progress-Index and the Sussex-Surry Dispatch)</p>
October 15, 1954	<p>Hurricane Hazel produced record wind gusts over the eastern portion of Virginia and Maryland. Gusts to around 100 mph were common east of Richmond and Fairfax. In Virginia, 13 people died and statewide damage was conservatively estimated at \$15 million. Peanut crops and farm buildings throughout the region were damaged. Thousands were without phone service during this event. Livestock were destroyed.</p> <p>City of Colonial Heights: Damages were similar to the City of Petersburg.</p> <p>City of Emporia: One person died and another was injured. Trees knocked out electric and telephone service for 48 hours.</p> <p>Greenville County: The Greenville County Courthouse was badly damaged.</p> <p>City of Hopewell: Damages were similar to the City of Petersburg with boats swamped. Damages were estimated at \$18,000.</p> <p>City of Petersburg: There were no deaths but several injuries due to this event. Damages included torn-off roofs, smashed windows, wrecked signs, twisted antennas, uprooted trees, broken limbs, and damaged utility lines and autos hit by falling trees and limbs. Trees falling on high-tension electric lines disrupted power service. Telephone service was disrupted. Schools and businesses closed. There was considerable damage to parks and Blandford Cemetery in Petersburg.</p> <p>City of Richmond: The city experienced 68 mph winds with a maximum gust to 79 mph. Four people died when a tug capsized on the James River about 25 miles from Richmond.</p> <p>Surry County: Wharves at Claremont were almost completely demolished.</p> <p>(Sources: The Progress-Index and the Sussex-Surry Dispatch)</p>
August 20, 1969	<p>The remnants of Hurricane Camille caused major flooding as a bulge of water moved down the James River into Richmond. Statewide damage was estimated at \$113 million</p>

Table B-2. History of Hurricane Events and Damages, 1827–2010

Date	Damages
	(1969 dollars).
June 23, 1972	<p>On June 23, a severe storm system entered Virginia that was primarily a rainstorm with some locally strong winds. In Richmond, the James River crested at 36 feet above flood stage while the Appomattox River crested at 16 feet. The Crater PDC area received little rain and wind but experienced river flooding from upstream rains. Farmville was severely flooded with its highest flooding on record at 30 feet.</p> <p>Chesterfield County: The area had nominal damage except for flooded homes along Falling Creek and the Matoaca Bridge, disruption, and backup of sewage in the Matoaca Bridge area and the shutdown of a local power station from flooding. Skinquarter Road and River Road were closed. U.S. Route 360 had one lane open.</p> <p>City of Hopewell: The Appomattox River flowed over docks and was 150 feet inland.</p> <p>City of Petersburg: The Richmond-Petersburg Turnpike and the Huguenot Bridge were closed due to flooding. The area had nominal damage (its divergent channel held), except for a few low-lying businesses being flooded.</p> <p>(Sources: The Progress-Index and The News-Journal)</p>
October 10, 1972	<p>Heavy rains on October 5 and 6, 1972, concentrating in the mountainous region of northwest Virginia and in the James and Appomattox River basins, swelled these and other rivers (notably the Nottoway and Meherrin Rivers) out of their banks. The Tri-Cities Area received from 4 to 6 inches of rain. The James River crested at 28 feet in Richmond and the Appomattox River crested at 18 feet in Petersburg. Homes in Matoaca along the Appomattox were flooded and evacuated. Area utility and public works companies were hard hit. A natural gas line along U.S. Highway 1 ruptured cutting off gas service; the Manoaca sewer station ceased operation. Power and telephone service was disrupted for the region.</p> <p>Damages were estimated to be greater than \$1 million for the Tri-City Area.</p> <p>Chesterfield County: In Chesterfield County, County Campbell's Bridge, Route 36, U.S. Route 360, eight secondary roads and Archer Avenue in Colonial Heights were flooded.</p> <p>City of Colonial Heights: In Chesterfield County, County Campbell's Bridge, Route 36, U.S. Route 360, eight secondary roads and Archer Avenue in Colonial Heights were flooded.</p> <p>Dinwiddie County: In Dinwiddie County, Interstate 85, U.S. Highway 1, 24 secondary roads were flooded. Schools were closed.</p> <p>City of Emporia: The river swelled and rushed over a dam flooding the Emporia roads of U.S. Highway 301; Center, Cleveland, Monroe, High, and Shilo Streets; and ten secondary roads. Along the Meherrin River, homes were damaged. Sewage service was disrupted and discharged into the river. The mayor of Emporia died searching for children in the river.</p> <p>Greensville County: The Meherrin River crested at 30 feet above normal low water level. Damages were estimated at \$250,000 for cropland in Greensville County.</p> <p>City of Hopewell: The city experienced nominal flooding.</p> <p>City of Petersburg: This event caused the worst flooding in 32 years. Petersburg and surrounding areas experienced flooding streets, businesses, and homes in low-lying areas of the city. In Petersburg, Highway 36, River Street, Old Street, East Bank Street, Bollingbrook, Grove Avenue, Plum Street, Fleet Street, and River Street were flooded. Schools were closed. The Petersburg electric substation was deactivated.</p> <p>Sussex County: In Sussex County, 14 roads were closed. U.S. Highway 301, Routes 40, 46, 58, and 630 were flooded. Schools were flooded and closed. Ten families in Sussex County were evacuated. Stony Creek was hardest hit with about 6,000 acres flooded. Cropland was flooded and some water damage occurred especially in the Claremont area,</p>

Table B-2. History of Hurricane Events and Damages, 1827–2010

Date	Damages
	<p>flooding cottages. Damages were estimated at \$2 million for cropland, houses, and business areas.</p> <p>(Sources: The Progress-Index and The News-Journal)</p>
September 6, 1996	<p>On September 6, a severe storm system entered Virginia from North Carolina producing heavy winds gusting between 40 and 50 mph with moderate rainfall. The Meherrin River crested at 24.3 feet, 11 feet above flood stage.</p> <p>City of Emporia: Emporia experienced flooding of Center Street by the Meherrin River. Roofs were peeled up and awnings ripped off. Schools were closed.</p> <p>Greensville County: Damages were not as large as expected and were caused mostly from high winds; county damage was limited to broken tree limbs.</p> <p>Surry and Sussex Counties: Damages were not as large as expected and were caused mostly from high winds, uprooting trees that fell onto homes, trailers, and roads. Power and telephone service was disrupted. Three hundred acres of crops were damaged from flooded fields.</p> <p>(Sources: The Sussex-Surry Dispatch and The Independent Messenger)</p>
September 15, 1999	<p>On the afternoon of September 15, Hurricane Floyd entered Virginia producing high winds and rain. Throughout the region, trees and power lines were brought down, roads were blocked and washed out, and homes were damaged and flooded. The storm dumped more than 10 inches of rainfall over much of the area. Power was disrupted and water service was impaired.</p> <p>Chesterfield County: Several Ettrick and Matoaca homes were flooded and several roads were blocked. Crop damages were estimated at \$50,000.</p> <p>City of Colonial Heights: Several apartment complexes were evacuated from flood conditions.</p> <p>Dinwiddie County: Ferndale Road, northbound I-85, Route 40, and U.S. Highway 58 were flooded. Seven state routes were closed for several weeks. Crop damages were estimated at \$420,000 in Dinwiddie County.</p> <p>City of Emporia: The area was drenched with about 10 inches of rain. Damages were estimated at \$60,000.</p> <p>Greensville County: The greatest amount of damage was to agriculture, with 1,500 acres underwater. The Meherrin River was 4 feet above flood stage. A graveyard flooded, causing caskets to float out of their vaults into surrounding streets. Schools and public buildings were closed. A section of Skippers was evacuated. Interstate 95; Routes 46, 58, and 301; Independence Church Road; Moores Ferry Road; Little Lowground Road; Brunswick Road; and the Hicksford Bridge were closed. Center Street, Halifax Street, Reese Street, Waterwheel Road, and Brink Road in Emporia were closed. Forty residents sought shelter. Crop damages were estimated at \$800,000.</p> <p>City of Petersburg: Woodmere Lake overflowed, causing residents to evacuate from nearby apartment complexes. Low-lying sections were flooded. The sewer system overflowed in West Petersburg. Twenty-two residents sought shelter. Damages were estimated at \$782,000.</p> <p>Prince George County: U.S. Route 301 and I-95 were closed. Three state routes were closed for several weeks. Walton Lake Road and the homes along it were flooded. Trees collapsed onto 15 homes. Fifty residents sought shelter.</p> <p>City of Richmond: Damage from the storm was estimated at nearly \$1.5 million in Richmond and Hanover, Henrico, and New Kent Counties.</p> <p>Surry County: The area received 14 inches of rain with particular damage occurring in the Claremont District, Sunken Meadow Beach, and Claremont Beach. Poplar Lawn Road,</p>

Table B-2. History of Hurricane Events and Damages, 1827–2010

Date	Damages
	<p>Spring Grove Road, College Run, and New Design Road were completely washed out. Routes 460 and 10 were closed. Routes 646, 637, and 635 had massive sinkholes. Crop damages were estimated at \$1.15 million.</p> <p>Sussex County: Wakefield received 12.73 inches of rain. This event caused the greatest flooding in 60 years. Two hundred people were evacuated from Stony Creek where homes and businesses were partially submerged by the rising Nottoway River. Portions of the Towns of Waverly and Wakefield were completely flooded. U.S. Route 460 had a massive sinkhole and other portions were flooded. Roads were washed out on Harrell's Mill Road and Brittle's Mill Road. Interstate 95 was closed. Crop damages were estimated at \$1 million in Sussex County.</p> <p>(Sources: The Progress-Index, Sussex-Surry Dispatch, and The Independent Messenger)</p>
September 18, 2003	Hurricane Isabel – Wind gusts of more than 74 mph were felt well inland with an unusually large windfield associated with the hurricane. The wind resulted in thousands of downed trees, damaged buildings, and snapped power and telephone poles. Millions of customers experienced power outages, making it one of the most extensive outages in Virginia; in many instances the outages lasted for several days. Richmond experienced storm surge of greater than 8 feet. See full description in Flood section.
August 30, 2004	Tropical Storm Gaston – See full description in Flood section.
September 1, 2006	Hurricane Ernesto made landfall as a strong tropical storm just west of Cape Fear, North Carolina. Torrential rainfall of greater than 5 inches was common across the region and resulted in the flooding of roadways. Wind gusts of more than 40 mph were observed. Power lines and trees were downed as a result.
September 6, 2008	Tropical Storm Hanna made landfall near the North Carolina–South Carolina border. The system tracked northeast and into southeastern Virginia spreading heavy rainfall and gusty winds across the region, before continuing on into the Northeast and New England. Rainfall of between 1 and 4 inches and wind gusts of 35 mph and in some cases higher were reported. Generally, only minor damage to trees was reported.

History of Tornado Events and Damages, 1790–2010**Table B-3. History of Tornado Events and Damages, 1790–2010**

Date	Damages
April 6, 1790	On April 6, 1790, a tornado struck Charles City and Dinwiddie Counties, destroying four mills and blowing down four houses at the New Glass Manufactory.
July 27, 1816	<p>Henrico County: A tornado touched down near Manchester, killing two people and injuring three more. It was on the ground for about 14 miles.</p> <p>(Source: Watson, Barbara McNaught. <i>Virginia Tornadoes</i>. Retrieved from http://www.vdem.state.va.us/library/vatorn/va-tors.htm)</p>
June 4, 1817	A tornado touched down in Henrico County, moved east from the southern part of Chickahominy (about 15 miles north of downtown Richmond), and across Henrico County to the Pamunky River in King William County, causing widespread destruction. The tornado was about 200 to 300 yards wide. It swept over several plantations. One person was killed and four injured in Hanover County and another was killed in King William

Table B-3. History of Tornado Events and Damages, 1790–2010

Date	Damages
	County. (Source: <i>Virginia Tornadoes</i>)
September 12, 1878	A hurricane spawned tornadoes including one in Henrico County where one death and seven injuries occurred. A tornado hit Goochland County near Dover Mills and was on the ground for 28 miles.
March 28, 1932	Goochland County: At just past midnight, a home was destroyed by an F2 tornado near Centerville. Four people were critically injured.
June 1, 1951	City of Richmond: A severe tornado (F3) cut through the heart of Richmond (pop. 230,000). It left a 4-mile path of damage that sent a dozen people to the hospital, injured scores more, and left more than a hundred homeless. Thirty-five buildings were destroyed and 126 received major damage; 1,000 buildings in all were damaged. Damages were estimated at more than \$1 million. The tornado was seen tossing a car 30 to 40 feet into the air. Eyewitness accounts were reported in the next day's Richmond Times-Dispatch (Vol. 101, No. 165): "It came on fast. It sounded to me like an earthquake. I saw rooftops flying through the air. Pieces of tin and trees were falling on South Granby Street. When it hit my house, the back of the house came down. All the houses along here got hit in the back, and they all were half ripped down." - Perl Price, 1835 Rosewood Avenue. "I had spotted the twister when I was near the Jefferson Hotel. It was a great swirling mass of wind, and I thought at first that there was a huge fire somewhere. There wasn't any cone or funnel, like you expect with a tornado. The wind seemed to swirl and swoop up everything from the edges, carrying leaves and debris in and up. The air seemed to be full of all kinds of objects." - Louis J. Patterson, Richmond Times-Dispatch photographer. And from the Richmond News Leader came this quote by John L. Walker: "Four different clouds – all funnel-shaped – were rushing toward the city. Each one had a tail like a kite. Then the four came together in the shape of a huge auger that picked up everything in front of it." This report suggests that it was a multi-vortex tornado with, at one point, four vortices visible. (Sources: NCDC; <i>Virginia Tornadoes</i>)
May 8, 1962	Goochland County: An F2 tornado touched down in the county killing one person and injuring two others.
March 24, 1969	City of Richmond: An F2 tornado injured one person and caused an estimated \$250,000 in damage.
July 9, 1977	Goochland County: A tornado caused an estimated \$250,000 in damage.
October 13, 1983	Goochland County: An F1 tornado occurred at 4 p.m. It tracked 25 miles into Louisa County. A few buildings and trees were destroyed or damaged. Damages were estimated at \$25,000.
May 8, 1984	City of Hopewell/Charles City County: A severe storm system tracked across Virginia producing a tornado near Cavalier Square Shopping Center. It tracked through downtown Hopewell to Appomattox Manor in City Point. Damage was primarily to businesses rather than homes and was estimated at \$1.36 million. The Seaboard Coast Line Railway Office was demolished. Fifteen people were injured in Hopewell. It crossed the James River into Charles City County adding another 15 miles to its path of destruction. Maximum strength was F2 and it was about 300 yards wide. (Sources: NCDC; <i>The Progress-Index</i>)
May 29, 1984	Chesterfield County: Although few details are available, an F2 tornado touched down in the county and caused approximately \$2.5 million in damage.
April 2, 1990	Chesterfield County: A strong F2 tornado hit an auto dealership on U.S. Routes 1 and 301 causing extensive damage to the building and 25 cars. Total damages were estimated at

Table B-3. History of Tornado Events and Damages, 1790–2010

Date	Damages
	\$2.5 million.
August 6, 1993	<p>Tornadic thunderstorms tracked across southern Chesterfield County through the Tri-Cities and Prince George County and north into Charles City. The thunderstorms produced several tornadoes across the Tri-Cities Area: City of Colonial Heights (F2), City of Petersburg (F3), Dinwiddie County, Sussex County, and City of Hopewell (F1). On Pocahontas Island, a tornado damaged 58 residences. The island lost power and sewage treatment. An estimated 7.8 million gallons of sewage flowed into the Appomattox River.</p> <p>Chesterfield County: A tornado uprooted trees in Matoaca and overturned tractor trailers on the I-295 bridge connecting Henrico and Chesterfield Counties, causing hours of delays. Interstate 95 was shut down.</p> <p>City of Colonial Heights: A tornado destroyed the Wal-Mart, severely damaged other major retail stores in the area, and damaged 25 stores in the Southpark Mall area. Vehicles in the parking lot were piled on top of each other. Three deaths and 200 injuries were reported at Wal-Mart. Damages were estimated at above \$11 million.</p> <p>Dinwiddie County: High windstorms and tornadoes generated damage in Church Road, Ford, and Old Pine. In Ford, a high wind storm knocked down trees, power lines, and debris, damaging cars and homes from Wells Road to Baltimore Road. The roof of a mobile home was removed. In Old Pine, a farmhouse imploded. In the county these events caused some injuries, destroyed three homes, and damaged eight others. Large sections of the county were without power.</p> <p>Greensville County: In Greensville County, high winds and torrential rains ripped through the Town of Jarratt. Damages included demolished trailers and power outages.</p> <p>City of Hopewell: An F1 tornado hit a 20-block area in the northwest corner of Hopewell causing damage to industrial buildings and causing heavy damage to Riverside Park Apartments. One hundred people were evacuated and 60 people were homeless. Damages were estimated at more than \$1.2 million.</p> <p>City of Petersburg: A tornado generating winds over 206 mph produced massive damage to the Old Towne and surrounding areas. Gas, electric, telephone, and sewage service was disrupted. In Old Towne, the tornado leveled several buildings, blew out car windows, and tossed roofs and electrical lines. The South Side Station Flea Market and Mini-Mall, restaurants, and businesses were in ruins. Roofs were blown off of several businesses on the Old Towne fringe. Many people at a lumber yard were injured. Thirty-six buildings were severely damaged in Old Towne. In Petersburg, 120 businesses and 50 homes were damaged. One hundred forty people were evacuated from an apartment complex. Damages were estimated at greater than \$11.1 million in Petersburg and \$10 million in Old Towne.</p> <p>Prince George County: In Prince George County, a tornado caused the collapse of a concrete plant in Tarmac, severely injuring one person.</p> <p>Sussex County: In Sussex County, a tornado in Waverly snapped and uprooted trees, and damaged homes and buildings from one end of town to the other. A peanut warehouse on U.S. Route 460 was destroyed. Power was disrupted in Stony Creek and Waverly.</p> <p>(Sources: The Progress-Index, The Sussex-Surry Dispatch, and The Independent Messenger)</p>
April 1, 1998	Hanover County: A tornado touched down near Coatesville and tracked to about 2 miles east/southeast of Noel. The twister was rated an F3 with winds of more than 139 mph and caused approximately \$800,000 in damage.
June 15, 2001	Henrico County: A tornado damaged trees and a few buildings, including a Bank of America building. Total damages were estimated at \$5,000.
April 28,	Greensville County: An F1 tornado destroyed three mobile homes, damaged 50 other

Table B-3. History of Tornado Events and Damages, 1790–2010

Date	Damages
2002	homes, one business, and an apartment complex. Total damages were estimated at \$750,000.
May 5, 2002	<p>On May 1, coupled with a thunderstorm, a tornado approached from Brunswick County and touched down in several places in Greensville County along U.S. Route 301 and in the City of Emporia. This thunderstorm continued to the Tri-Cities Area producing heavy rain and wind gusts of up to 80 mph. In the Tri-Cities Area trees and power lines were knocked down, and street lights were out.</p> <p>City of Colonial Heights: Pressure from the storm punched a hole in the side wall of a store.</p> <p>City of Emporia: The tornado touched down around the Dry Bread-Allentown Road area damaging two site-built houses and damaging 14 other homes. An industrial plant had its roof torn off and a garage door fell on a pickup truck. Fourteen apartments and more than 30 trees toppled at the Gardens of Emporia Cemetery. Forty tombstones were damaged. Two mobile homes in a trailer park were destroyed. Two other mobile homes received major damage and 18 others had minor damage. Three minor injuries were reported. Numerous trees and power lines fell. Interstate 95 was blocked from fallen trees. A transfer truck was overturned. Nineteen families were displaced and the Red Cross housed 46 people. Damages were estimated at approximately \$700,000.</p> <p>Greensville County: Damages were estimated at less than \$1 million.</p> <p>(Sources: The Progress-Index and The Independent Messenger)</p>
April 28, 2008	<p>City of Colonial Heights: An F1 tornado touched down in spots beginning near the end of the football field close to Colonial Heights Middle School. The tornado then continued across I-95 and into the Dimmock Square Shopping Center. The most significant damage occurred with the final touchdown in the Dimmock Square strip mall. A string of four stores, around 75–80 yards in width, had ceiling tiles blown out, roofs peeled off, and windows blown out. Several cars were damaged as some had windows shattered from flying debris. Other vehicles were flipped and tossed about in piles. Damage was estimated at \$2 million.</p> <p>Prince George County: A tornado lifted and crossed Temple Avenue from Colonial Heights into Prince George County. The tornado touched down briefly near Flexon Drive, Fine Drive, and Puddleduck Drive. Several trees were uprooted, a few were snapped off, and several homes were damaged.</p>
July 9, 2008 (See Figure 5-17)	City of Petersburg: A tornado briefly touched down at the intersection of Farmer Street and Fairgrounds Road in the west section of Petersburg. There was extensive damage to a warehouse, including the roof being blown off the building. Total damage was estimated at \$500,000.
October 27, 2010	<p>City of Richmond: One person was injured as an EF1 tornado downed trees and power lines, and produced siding and roof damage to homes. Many structures sustained damage from the tornado, with the most significant damage occurring as a result of trees and/or large branches falling on homes. Several homes were declared uninhabitable as a result. Most of the damage was EF0 in intensity, with a few areas in the western half of the tornado path reaching low-end EF1 intensity. Maximum wind speeds were estimated at approximately 90 mph. The tornado moved from the City of Richmond into Henrico County.</p> <p>Henrico and Hanover Counties: The tornado described above moved from the City of Richmond into Henrico County continuing its path of damage. The tornado moved into Hanover County from Henrico County just before lifting. The total path length of the tornado was approximately 11 miles. The total damage from the twister is estimated at approximately \$1.5 million.</p>

*History of Hail/Lightning Events and Damages, 1993–2010**Table B-4. History of Hail/Lightning Events and Damages, 1993–2010*

Date	Damages
August 3, 1993	Chesterfield County: a man was struck and killed by lightning while mowing grass in his backyard.
May 25, 1994	Henrico County: a 26-year-old person was struck and killed by lightning while standing under a tree at Glenwood Golf Course. Storms also produced golf ball-sized hail and caused approximately \$5,000 in damage.
July 27, 1995	Henrico County: lightning sparked two separate house fires that caused approximately \$135,000 in damage.
June 24, 1996	Chesterfield County: Lightning sparked fires that damaged four homes and a large shed. Damage was estimated at \$77,000.
May 8, 1998	City of Hopewell: A 12-year-old boy was injured when he was struck by lightning at Carter G. Woodson school.
August 18, 2001	Prince George County: Hail, up to the size of baseballs, was reported near Disputanta. An estimate of damage was not available.
May 9, 2003	Sussex County: Hail, larger than softballs (approximately 4.25 inches in diameter), caused an estimated \$15,000 in damage near the Town of Jarratt. Dinwiddie County: Hail, up to 2.75 inches in diameter (baseball-sized), was reported near the intersection of U.S. Route 1 and Route 650. The hail caused approximately \$5,000 in damage.
April 20, 2009	City of Emporia: Ping pong ball-sized hail damaged 164 cars and trucks at a General Motors dealership.
August 12, 2010	Hanover County: Hail, two inches in diameter, damaged vehicles in the county east of Old Cold Harbor.

*History of Winter Storm Events and Damages, 1940–2010**Table B-5. History of Winter Storm Events and Damages, 1940–2010*

Date	Damages
January 23–24, 1940	A major winter storm dumped more than 2 feet of snow across parts of the region with drifts reaching more than 4 feet high in some areas. Businesses were closed for two days and some schools were closed for a week.
January 22, 1943	An ice storm impacted the region with a glaze of ice approximately 1 inch thick. Thousands of trees were damaged and power lines downed due to the weight of the ice, resulting in power and telephone outages.
March 7–8, 1962	A major Nor'easter that the U.S. Weather Bureau termed the "Great Atlantic Storm" (also referred to as the "Ash Wednesday" storm) impacted the region. The storm produced heavy rain closest to the coast and more than 2 feet of snow in some areas well inland. Gale-force winds and near-record tides sent rivers and the Atlantic Ocean surging over sea walls and beaches. This event flooded low-lying coastal areas and caused destruction inland along rivers and bays. Power was knocked out to thousands and total damages for six impacted states totaled hundreds of millions of dollars.

Table B-5. History of Winter Storm Events and Damages, 1940–2010

Date	Damages
	(Source: The Progress-Index)
January 26, 1977	<p>Several weeks of ice, snow (11.1 inches), and record low temperatures produced one of the coldest winter seasons. The James River and Chesterfield County rivers were frozen. Residences and businesses experienced frozen and burst pipes. Ice and freezing temperatures caused nuclear plant shutdowns. Ice in the James River stopped ferry service.</p> <p>Chesterfield County: These conditions produced icy roads and sidewalks, and closed railroads and schools in the county. The event caused 75 accidents, several pedestrian injuries, and several drowning deaths.</p> <p>City of Colonial Heights: The event caused numerous accidents, several pedestrian injuries, and several drowning deaths.</p> <p>Dinwiddie County: See overall event description.</p> <p>City of Emporia: Heating fuel supply and distribution was slowed, causing brownouts and major power outages. This reduced heating fuel supply, forced state-ordered bans of all non-essential natural gas use, curtailed business hours, and reduced business thermostats to 65 degrees. This ban generated numerous layoffs and unemployment claims.</p> <p>Greensville County: These conditions produced icy roads and sidewalks, closed railroads, and closed schools for four days.</p> <p>City of Hopewell: This event caused numerous accidents with several pedestrian injuries and several drowning deaths.</p> <p>City of Petersburg: These conditions produced icy roads and sidewalks, closed railroads, and closed schools. The event caused 21 accidents, s. several pedestrian injuries, and several drowning deaths.</p> <p>Sussex County: This event caused numerous accidents, with several pedestrian injuries and several drowning deaths.</p> <p>(Sources: The Progress-Index, The Independent-Messenger, and Sussex-Surry Dispatch)</p>
February 18–19, 1979	On President’s Day, heavy snowfall came down across the region at the rate of 1 to 3 inches per hour at times. Total snow accumulations ranged from 6 to as much as 20 inches.
February 10–11, 1983	<p>The “Blizzard of ‘83” set snowfall records through much of central and southwestern Virginia. Over a foot of snow fell in many areas. The costs of clearing the snow from state roads were estimated at \$9 million.</p> <p>City of Richmond: The city recorded 18 inches of snow.</p>
December 23, 1993	<p>On December 23 and 25, the Crater region received 14 inches of snow, with freezing rain on December 27. Primary and secondary roads were covered with snow, ice, and slush. Public transit was shut down and various businesses closed early. This event caused 232 traffic accidents in the Crater region.</p> <p>Chesterfield County: This event caused 109 traffic accidents in the county.</p> <p>Dinwiddie County: Governments closed early in Dinwiddie County.</p> <p>City of Hopewell: This event caused 232 accidents in the city. Interstate 295 near Hopewell had significant ice.</p> <p>Prince George County: This event caused 30 traffic accidents in the county. The county government closed early.</p> <p>(Source: The Progress-Index)</p>
March 13–	Termed “The Storm of the Century,” this system impacted nearly all of the East Coast from

Table B-5. History of Winter Storm Events and Damages, 1940–2010

Date	Damages
14,1993	Florida to New England. The storm brought strong winds and rain that changed to snow over the area. The heaviest accumulations were found over western portions of the region and into the Appalachians.
February 8 through February 12, 1994	<p>A severe ice storm hit the Tri-Cities Area from February 8 through February 12 helping to produce the harshest winter in a decade.</p> <p>Chesterfield County: The roof of the county library and several school buildings were damaged, with estimates at \$300,000.</p> <p>Dinwiddie County: More than 3,000 homes were without power. Damages were estimated at \$10,000.</p> <p>Surry County: In Surry County this ice storm damaged a water tower for the school system, knocking out heating and cooling for 30 hours. Damages were estimated at \$30,000.</p> <p><u>(Sources: The Sussex-Surry Dispatch and The Independent Messenger)</u></p>
March 1 through March 5, 1994	<p>A severe ice storm that hit the Tri-Cities Area from March 1 through March 5, contributed to the harshest winter in a decade. This ice storm had a separate disaster declaration from the February 1994 ice storm. This ice storm produced 50-knot winds and tides up to 3.5 feet above normal, suspending ferry service across the James River. There was a significant increase in the number of potholes later in the spring on state highways due to this event and the February events.</p> <p>City of Emporia: Emporia had \$20,000 of damage to street and road surfaces.</p> <p>Surry County: Roads were flooded, trees were knocked down onto roads, and schools closed early.</p> <p><u>(Sources: The Sussex-Surry Dispatch and The Independent Messenger)</u></p>
January 13, 1996	<p>From January 6 through January 15, two snow storms, striking first from the south and then from the north, produced large and prolonged snowfall. Snow and rain froze on roads, producing hazardous conditions and numerous accidents. School systems throughout the region were closed for five days. Businesses were closed and 360 customers were without power in the Town of Stony Creek, City of Hopewell, and Disputanta. Numerous minor injuries were reported from car accidents and falls. Several residents were hospitalized for pneumonia. People sought shelter in hotels and local shelters (51 in Emporia).</p> <p>Chesterfield County: School systems were closed for five days.</p> <p>City of Colonial Heights: School systems were closed for five days. Roofs collapsed due to the weight of snow.</p> <p>Dinwiddie County: School systems were closed for five days.</p> <p>Greensville County: School systems were closed for five days. Snow removal costs were estimated at \$32,000.</p> <p>City of Hopewell: School systems were closed for five days. Roofs collapsed due to the weight of snow.</p> <p>City of Petersburg: More than 2 feet of snow fell in the city. School systems were closed for five days. Roofs collapsed due to the weight of snow in the Cities of Colonial Heights and Hopewell. Snow removal was an issue in Petersburg, with removal costs estimated at \$42,000.</p> <p>Prince George County: School systems were closed for five days.</p> <p>Surry County: More than 14 inches of snow fell in the county.</p> <p>Sussex County: More than 14 inches of snow fell in the county.</p> <p><u>(Sources: The Progress-Index, The Independent-Messenger, and Sussex-Surry Dispatch)</u></p>

Table B-5. History of Winter Storm Events and Damages, 1940–2010

Date	Damages
December 23, 1998	<p>A severe ice storm hit the Tri-Cities Area December 23 through December 27. Warm, moist air from the south mixed with icy cold air from the north and drenched the region with freezing rain. The precipitation covered roads, power lines, and trees with ice and caused numerous accidents, trees and power poles to topple, and power outages from utility lines crashing to the ground. It was the worst ice storm in five years and hit the Tri-Cities Area hard. This ice storm produced the worst power outages electric companies had seen. Power was out for several days. Sewage and water service was disrupted. Residents sought shelter in local motels instead of shelters. Telephone service was sporadic. Though numerous accidents occurred, especially along I-295, there were no serious injuries. Recovery was slowed due to workers off for the holiday and thawing trees knocking down previously repaired power lines.</p> <p>City of Colonial Heights: Eighty-five percent of residents were without power.</p> <p>Dinwiddie County: The county had no power and no water.</p> <p>Greensville County: Eighty-one percent of residents were without heat and power.</p> <p>City of Hopewell: Eighty percent of residents were without power.</p> <p>City of Petersburg: Customers without power totaled 60,200.</p> <p>(Sources: The Sussex-Surry Dispatch, The Tidewater News, and The Independent Messenger)</p>
January 19–30, 2000	<p>During a one-week period in January, two winter storms produced major snowfall (13 to 18 inches with 3.5-foot drifts), blizzard conditions, and damaging ice accumulations. Ice accumulations on January 30 topped one-half inch in spots. This event iced and uprooted trees, disrupted power, and closed schools for several days. Contractors were hired to service several communities. A tractor-trailer overturned on I-95.</p> <p>Chesterfield County: Cold temperatures froze pipes, causing them to burst throughout the county. Snow removal costs were estimated at more than \$115,000.</p> <p>City of Colonial Heights: This event iced and uprooted trees, disrupted power, and closed schools for six days. Cold temperatures froze pipes and caused them to burst. Snow removal costs were estimated at more than \$32,000.</p> <p>Dinwiddie County: This event iced and uprooted trees, disrupted power, and closed schools for eight days.</p> <p>City of Emporia: Snow machinery breakdowns and low temperatures hindering salt effectiveness hampered removal. Snow removal costs were estimated at more than \$50,000.</p> <p>Goochland County: The county recorded 9.5 inches of snow.</p> <p>Greensville County: This event iced and uprooted trees, disrupted power, and closed schools for eight days.</p> <p>City of Petersburg: Cold temperatures froze pipes, causing them to burst. Snow removal costs were estimated at more than \$380,000.</p> <p>Prince George County: This event iced and uprooted trees, disrupted power, and closed schools for seven days. Cold temperatures froze pipes, causing them to burst.</p> <p>City of Richmond: Richmond International Airport closed during the snow event when 10 to 13 inches of snow fell. During the January 30 ice event, more than 300,000 residents in and around the city were without power. Two people were injured.</p> <p>New Kent County: The county recorded 16 inches of snow. .</p> <p>(Sources: The Progress-Index, Sussex-Surry Dispatch, and The Independent Messenger)</p>
January 22, 2005	<p>Freezing rain accumulated to between 0.25 and 0.75 inches across the region. In addition to causing numerous accidents on slippery roadways, the ice brought down power lines</p>

Table B-5. History of Winter Storm Events and Damages, 1940–2010

Date	Damages
	and tree branches resulting in power outages throughout the region.
December 18–19, 2009	The first of a series of winter storms to impact the region during the 2009–2010 winter season dumped heavy snow through portions of the area. The heaviest snow fell over the northern and western sections of the region where 12 to 16 inches blanketed Hanover, Goochland, and Powhatan Counties. Amounts were in the 2- to 4-inch range south over Greenville County and the City of Emporia and generally less than 2 inches over Surry and Sussex Counties.
January 30, 2010	A major winter storm impacted the area bringing significant snowfall and gusty winds. Low pressure tracked from the Southeastern U.S. off the Carolina coast, developing into a powerful coastal storm. Snow totals ranged from 7 to 14 inches through most of the area with a few spots reporting higher amounts.
February 5–6, 2010	Yet another snow storm impacted the region, bringing heavy snowfall. The snow was heaviest across northern portions of the region, with a total of more than 10 inches near the Town of Ashland and through Goochland County, 6 to 7 inches in the City of Richmond and vicinity, and 1 to 3 inches in Greenville, Sussex, and Surry Counties. Northern Virginia and the Washington, D.C. metro area received more than 2 feet in some spots. The snow was accompanied by winds that gusted more than 30 mph which caused considerable blowing and drifting and very hazardous travel.

*Historical Wildfire Information**Table B-6. Wildfire Damage Summary, 1995–2001*

Fire Year	1995		1996		1997		1998		1999		2000		2001	
Jurisdiction Name	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage
Charles City County	120.8	\$600	1.2	\$0	9.3	\$1,300	4.6		7.3		8.2	\$100	53.20	\$1,400
Chesterfield County	50.6	\$600	32.1	\$1,275	83.9	\$1,920	64	\$1,610	42.5	\$3,400	19.7	\$1,675	60.40	\$4,200
City of Colonial Heights													3.00	\$500
Dinwiddie County	36.4	\$1,800	8.95	\$500	12.8	\$1,500	9.9	\$10,500	72.4	\$17,200	35.6		9,895.40	\$52,600
<i>Town of McKenney</i>														
City of Emporia									1				0.25	\$100
Goochland County	33	\$50,200	23.2	\$0	17	\$300	16.8	\$1,300	22		14.4	\$3,300	52.90	\$65,000
Greensville County	6	\$2,000	12.1	\$400	17.9	\$15,275	6	\$100	14	\$400	5.1	\$2,500	71.10	\$4,700
<i>**Town of Jarratt</i>											0.5			
Hanover County	69.6	\$1,050	8.3	\$400	5	\$350	63.1	\$1,775	24.9	\$2,030	37.4	\$425	13.10	\$1,000
Town of Ashland														
Henrico County	27.2	\$1,050	5	\$400	70.7	\$1,240	11.6	\$50	18.2	\$800	60.4	\$600	26.20	\$600
City of Hopewell													0.10	
New Kent County	37.5	\$100	5.7	\$0	22.2	\$650	54.1		14.2	\$250	6.4	\$100	7.90	\$100
City of Petersburg													0.30	
Powhatan County	25.2	\$34,500	13	\$10,500	24.7	\$63,250	22.1	\$20,000	11.1	\$2,600	6.8	\$4,800	31.90	\$31,450
Prince George County	92.05	\$1,350	1.55	\$100	64.95	\$7,000	54.05	\$3,000	77	\$1,500	1.4	\$3,190	26.00	\$1,400
City of Richmond					3	\$100					3			
Surry County	14.6	\$1,600	21.25	\$200	11.2	\$0	34.75	\$2,700	12.2	\$11,350	1.1	\$500	9.00	\$1,000

Table B-6. Wildfire Damage Summary, 1995–2001

Fire Year	1995		1996		1997		1998		1999		2000		2001	
Jurisdiction Name	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage
<i>Town of Claremont</i>														
<i>Town of Dendron</i>														
<i>Town of Surry</i>														
Sussex County	157.45	\$17,775	15.6	\$710	7.85	\$685	94.1	\$6,650	153.6	\$15,600	39		267.60	\$34,150
<i>**Town of Jarratt</i>											0.5			
<i>Town of Stony Creek</i>														
<i>Town of Wakefield</i>														
<i>Town of Waverly</i>									0.1	\$75			0.10	
Total	670.4	\$112,625	147.95	\$14,485	350.5	\$93,570	435.1	\$47,685	470.5	\$55,205	239.5	\$17,190	10,515.45	\$197,700

Source: Virginia Department of Forestry.

Table B-7. Wildfire Damage Summary, 2002–2008

Fire Year	2002		2003		2004		2005		2006		2007		2008	
Jurisdiction Name	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage
Charles City County	134.2	\$88,884	11	\$18,590	6	\$22,341	34	\$57,022	54	\$33,707	33.2	\$73,220	15.6	\$94,164
Chesterfield County	169	\$13,842					113	\$4,616	2	\$9,235			4	\$14,777
City of Colonial Heights														
Dinwiddie County	34.2	\$135,727	6	\$12,267	21.8	\$65,576	25	\$61,710	116.1	\$107,497	122.3	\$163,769	2,800.2	\$112,990
<i>Town of McKenney</i>														
City of Emporia														

Table B-7. Wildfire Damage Summary, 2002–2008

Fire Year	2002		2003		2004		2005		2006		2007		2008	
Jurisdiction Name	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage	Total Acres	Total Damage
Goochland County	6.1	\$21,219	1	\$7,081	1	\$21,267	1.2	\$17,674	37.3	\$35,535	10	\$47,193	104.7	\$36,648
Greensville County														
<i>**Town of Jarratt</i>														
Hanover County	46.1	\$23,814	4.1	\$6,906	27.6	\$24,528	7.5	\$21,063	24.8	\$61,086	14.2	\$103,840	106.7	\$106,473
<i>Town of Ashland</i>														
Henrico County	16	\$28,500	2	\$7,135	4	\$17,855	18.3	\$21,459	0.1	\$7,161	1.3	\$19,321	73.5	\$25,028
City of Hopewell														
New Kent County														
City of Petersburg	89.9	\$2,400	16.7	\$300	78.3	\$670	33.2	\$1,850	67.6	\$2,250	14.5	\$1,150	165.6	\$5,900
Powhatan County														
Prince George County														
City of Richmond	1340.7	\$259,000	17.7	\$0	11.3	\$3,650	22.5	\$2,000	151.3	\$1,900	579.1	\$1,400	4069.8	\$1,999,400
Surry County	180.9	\$40,077	0.5	\$4,458	7.5	\$13,380	61.2	\$17,854	15.5	\$17,870	195	\$31,017	187	\$34,884
<i>Town of Claremont</i>														
<i>Town of Dendron</i>														
<i>Town of Surry</i>														
Sussex County	63.9	\$3,800	44.4	\$2,020	18.5	\$6,500	19.5	\$4,150	39.2	\$2,600	52.3	\$1,200	257.3	\$13,200
<i>**Town of Jarratt</i>														
<i>Town of Stony Creek</i>														
<i>Town of Wakefield</i>														
<i>Town of Waverly</i>														
Total	2081	\$617,263	103.4	\$58,757	176	\$175,767	335.4	\$209,398	507.9	\$278,841	1021.9	\$442,110	7,784.4	\$2,443,464

Source: Virginia Department of Forestry.

Appendix B-3 Previous HIRA Tables

Table B-8. Structure Value Vulnerability and Annualized Structure and Contents Loss Estimates from 2006 Hazard Mitigation Plans

County/City	Jurisdiction	Total Structure Value Vulnerability	Total Annualized Structure and Contents Loss Estimate
Charles City County	Charles City County	\$32,359,600	\$6,275,160
Chesterfield County	Chesterfield County	\$591,339,760	\$2,413,476
City of Colonial Heights	City of Colonial Heights	\$64,958,630	\$378,209
Dinwiddie County	Dinwiddie County	\$278,148,090	\$368,084
	<i>Town of McKenney*</i>	<i>No published FIRMs available</i>	
City of Emporia	City of Emporia	\$16,566,880	\$111,049
Goochland County	Goochland County	\$391,814,000	\$67,859,340
Greensville County	Greensville County	\$10,983,500	\$101,546
	<i>Town of Jarratt*</i>	<i>\$137,720</i>	<i>\$442</i>
Hanover County	Hanover County	-	-
	<i>Town of Ashland</i>	<i>\$6,875,500</i>	<i>\$1,168,835</i>
Henrico County	Henrico County	\$2,443,679,900	\$529,985,100
City of Hopewell	City of Hopewell	\$25,673,340	\$220,589
New Kent County**	New Kent County	\$198,760,900	\$37,612,380
City of Petersburg	City of Petersburg	\$28,999,190	\$126,101
Powhatan County***	Powhatan County	-	-
Prince George County	Prince George County	\$302,775,770	\$1,013,300
City of Richmond	City of Richmond	\$567,026,200	\$210,490,680
Surry County	Surry County	\$40,122,060	\$187,185
	<i>Town of Claremont*</i>	<i>\$4,942,190</i>	<i>\$32,898</i>
	<i>Town of Dendron*</i>	<i>\$50,160</i>	<i>\$161</i>
	<i>Town of Surry*</i>	<i>No published FIRMs available</i>	
Sussex County	Sussex County	\$32,214,490	\$226,034
	<i>Town of Jarratt*</i>	<i>\$137,720</i>	<i>\$442</i>
	<i>Town of Stony Creek*</i>	<i>\$5,439,600</i>	<i>\$53,719</i>
	<i>Town of Wakefield*</i>	<i>\$987,690</i>	<i>\$3,164</i>
	<i>Town of Waverly*</i>	<i>\$85,140</i>	<i>\$273</i>

Table B-8. Structure Value Vulnerability and Annualized Structure and Contents Loss Estimates from 2006 Hazard Mitigation Plans

County/City	Jurisdiction	Total Structure Value Vulnerability	Total Annualized Structure and Contents Loss Estimate
Total		\$5,032,297,810	\$858,537,068

*Denotes town values that are also included in totals for the respective county.

**Only total assessed value available. Use or zoning type unavailable. Type of owner identified using owner name from available data.

***No structures with significant value are within the floodplain.

Table B-9. Federal Insurance Administration Depth-Damage Data Used in FEMA Benefit-Cost Analysis Tools

Building Type	1 Story without Basement	2 Story without Basement	Split Level without Basement	1 or 2 Story with Basement	Split Level with Basement	Mobile Home	Other
Flood Depth (feet)	Percent Damaged (% of Building Value)						
-2	0	0	0	4	3	0	0
-1	0	0	0	8	5	0	0
0	9	5	3	11	6	8	0
1	14	9	9	15	16	44	0
2	22	13	13	20	19	63	0
3	27	18	25	23	22	73	0
4	29	20	27	28	27	78	0
5	30	22	28	33	32	80	0
6	40	24	33	38	35	81	0
7	43	26	34	44	36	82	0
8	44	29	41	49	44	82	0
>8	45	33	43	51	48	82	0

*Table B-10. Annualized Flood Loss Calculation Assumptions**

FEMA Flood Zone	Flood Depth (feet)	Annual Probability	Percent Damaged*
Floodway, VE	6	0.0100	40%
AE	2	0.0100	22%
A, AO, AH	1	0.0100	14%
0.2% annual chance (500-year)	1	0.0020	14%
Note: *Based on one-story building without basement.			

Table B-11. 2011 Total Building and Content Value, and Exposure to Flooding

County/City	Jurisdiction	Number of Households	Total Building Value*	Total Content Value*	Building Exposure	Content Exposure
Charles City County	Charles City County	2,670	\$754,472	\$463,571	\$379,933,229	\$233,244,110
Chesterfield County	Chesterfield County	93,772	\$27,888,806	\$17,295,934	\$18,362,515,467	\$11,335,305,418
City of Colonial Heights	City of Colonial Heights	7,027	\$2,583,866	\$1,718,001	\$1,377,051,825	\$941,562,433
Dinwiddie County	Dinwiddie County	9,107	\$3,206,137	\$1,841,859	\$1,298,210,009	\$782,102,005
	<i>Town of McKenney</i>	<i>183</i>	-	-	-	-
City of Emporia	City of Emporia	2,226	\$902,558	\$685,705	\$425,111,002	\$333,706,001
Goochland County	Goochland County	6,158	\$3,114,606	\$2,023,143	\$1,336,033,662	\$854,527,108
Greensville County	Greensville County	3,375	\$769,783	\$499,770	\$464,995,980	\$306,014,062
	<i>Town of Jarratt</i>	<i>293</i>	<i>\$4,889</i>	<i>\$3,390</i>	<i>\$345,726</i>	<i>\$254,152</i>
Hanover County	Hanover County	31,121	\$20,975,556	\$14,599,418	\$6,836,436,415	\$4,593,588,136
	<i>Town of Ashland</i>	<i>2,445</i>	<i>\$511,086</i>	<i>\$498,458</i>	<i>\$19,373,552</i>	<i>\$14,730,697</i>
Henrico County	Henrico County	108,121	\$53,913,720	\$36,570,079	\$20,392,970,187	\$13,635,821,489
City of Hopewell	City of Hopewell	9,055	\$4,747,308	\$3,608,826	\$1,347,778,163	\$904,288,472
New Kent County	New Kent County	4,925	\$2,851,976	\$1,782,502	\$884,510,655	\$541,118,162
City of Petersburg	City of Petersburg	13,799	\$6,185,958	\$4,757,099	\$2,529,326,495	\$2,014,640,198
Powhatan County	Powhatan County	7,258	\$4,232,653	\$2,440,507	\$1,358,486,080	\$816,459,447
Prince George County	Prince George County	10,159	\$3,605,786	\$2,162,772	\$1,858,953,863	\$1,108,297,717
City of Richmond	City of Richmond	84,549	\$29,740,100	\$22,936,159	\$15,424,439,445	\$11,264,611,954

Table B-11. 2011 Total Building and Content Value, and Exposure to Flooding

County/City	Jurisdiction	Number of Households	Total Building Value*	Total Content Value*	Building Exposure	Content Exposure
Surry County	Surry County	2,619	\$837,067	\$504,148	\$361,624,660	\$221,967,768
	<i>Town of Claremont</i>	<i>240</i>	<i>\$13,222</i>	<i>\$7,056</i>	<i>\$1,678,762</i>	<i>\$868,128</i>
	<i>Town of Dendron</i>	<i>121</i>	<i>\$1,202</i>	<i>\$602</i>	<i>\$1,340,326</i>	<i>\$704,845</i>
	<i>Town of Surry</i>	<i>119</i>	-	-	-	-
Sussex County	Sussex County	4,126	\$1,166,824	\$720,049	\$562,536,784	\$369,010,766
	<i>Town of Jarratt</i>	<i>293</i>	<i>\$4,889</i>	<i>\$3,390</i>	<i>\$345,726</i>	<i>\$254,152</i>
	<i>Town of Stony Creek</i>	<i>118</i>	<i>\$40,137</i>	<i>\$30,663</i>	<i>\$17,912,404</i>	<i>\$14,751,271</i>
	<i>Town of Wakefield</i>	<i>485</i>	<i>\$14,689</i>	<i>\$8,209</i>	<i>\$1,778,613</i>	<i>\$1,122,152</i>
	<i>Town of Waverly</i>	<i>960</i>	<i>\$1,451</i>	<i>\$862</i>	<i>\$143,683</i>	<i>\$90,984</i>
Total		400,067	\$167,477,176	\$114,609,542	\$75,200,913,922	\$50,256,265,245
*Thousands of dollars. Town totals included in county estimates. Source: HAZUS 2000 census block data.						

Table B-12. 2011 Total and Annualized Losses Due to Flooding

County/City	Jurisdiction	Damage	Annualized Damage
Charles City County	Charles City County	\$3,631,907	\$36,088
Chesterfield County	Chesterfield County	\$130,151,732	\$1,301,514
City of Colonial Heights	City of Colonial Heights	\$13,724,368	\$137,244
Dinwiddie County	Dinwiddie County	\$10,072,730	\$98,387
	<i>Town of McKenney</i>	-	-
City of Emporia	City of Emporia	\$10,482,849	\$92,387
Goochland County	Goochland County	\$15,216,147	\$142,550
Greensville County	Greensville County	\$4,768,907	\$46,601
	<i>Town of Jarratt</i>	\$48,402	\$484
Hanover County	Hanover County	\$88,466,288	\$867,844
	<i>Town of Ashland</i>	\$4,070,203	\$39,129
Henrico County	Henrico County	\$206,301,698	\$1,890,205
City of Hopewell	City of Hopewell	\$10,503,381	\$100,333
New Kent County	New Kent County	\$14,348,526	\$135,482
City of Petersburg	City of Petersburg	\$25,082,393	\$227,802
Powhatan County	Powhatan County	\$11,424,097	\$109,825
Prince George County	Prince George County	\$21,036,100	\$210,348
City of Richmond	City of Richmond	\$115,359,850	\$934,242
Surry County	Surry County	\$4,748,223	\$47,300
	<i>Town of Claremont</i>	\$369,328	\$3,693
	<i>Town of Dendron</i>	\$187,646	\$1,876
	<i>Town of Surry</i>	-	-
Sussex County	Sussex County	\$10,338,645	\$96,660
	<i>Town of Jarratt</i>	\$48,402	\$484
	<i>Town of Stony Creek</i>	\$3,603,161	\$31,306
	<i>Town of Wakefield</i>	\$249,006	\$2,490
	<i>Town of Waverly</i>	\$20,116	\$201
Total		\$695,657,841	\$6,474,812

Structures at Risk

The previous versions of the hazard mitigation plans provided structural loss estimates based on available tax parcel and were supplemented with census block information. This information varied dramatically by locality but was determined to still have merit in assessing structure-specific vulnerability, and has been included for this purpose. A flood loss analysis was completed for the 2011 revision based on census blocks and is summarized in the Jurisdictional Risk section that follows (Tables 5-13 and 5-14).

The impact of flooding on structures was estimated based on best available data for floodplains and structures for each community. Sources for the structure values used in the flood-loss analysis varied by locality. Chesterfield, Dinwiddie, Prince George, and Surry Counties provided GIS tax parcels with building values. In general, if tax parcel-level information on property value was available, this information was used in the flood loss analysis. If such information was not available, average structural value per census block from HAZUS-MH was used as a substitute. This analysis has not been updated from the 2011 plans as this is currently the best available data.

Flood vulnerability was determined for each locality based on the intersection of floodplain mapping and structure-value mapping. The exact methodology varied by community based on the available data. In communities like Chesterfield where building footprints for structures were known, the intersection analysis showed which structures were partially or entirely within the floodplain. If a community only had parcel mapping, the mapping intersection determined which parcels were partially or entirely in the floodplain. When only census block mapping was available, the mapping intersection showed which census blocks were partially or entirely within the floodplain. Based on the mapping intersection and the number of households and housing units in the census block, an estimate was made of the total structures flooded in each census block.

Table 5-9 lists the total replacement value of structures vulnerable to flooding (both partially and entirely within the floodplain) in each community. The replacement values for structures were calculated as 10% greater than the assessed improvement values from community parcel data or from the HAZUS-MH census block average values. For communities without parcel-level property values, these values are underestimates, especially for any non-residential structures in the floodplain. The total vulnerability, derived from combining results from the two 2006 plans, is more than \$5 billion with \$858 million in estimated structure loss due to flooding.

Residential uses tend to dominate within the floodplain. Henrico County has a large percentage of high-value commercial and industrial development on parcels that are partially within the floodplain. Since the exact location of the buildings is unknown, the true risk to these facilities is unknown and the exposure figures could be skewed to a higher

number. Also, as noted previously, the only structures in the floodplain in Powhatan County are outhouses and barns having little to no value.

Critical Facilities

Critical facility analysis was updated during the 2011 revision using data provided by the Richmond PDC. Similar to the previous analysis, facilities located within or in proximity to the FEMA-designated floodplain were determined. Table 5-10 summarizes the facility type and related jurisdiction. The majority of the facilities in the floodplain, for the 2011 analysis, include the Virginia Department of Transportation (VDOT) fuel tanks and cell and radio towers. One medical facility, two police stations, and three fire and EMS stations are also located within the floodplain. Figure 5-5 shows the location of the critical facilities within the FEMA-mapped floodplains; Figure 5-6 shows the locations of all the critical facilities in relation to the floodplain.

During the 2011 HIRA results presentation, City of Hopewell representatives noted that their pumping station has flooded and lost power in the past and should be included as a critical facility at risk. A mitigation action has been developed to address the risk to this facility.

The Crater PDC 2006 plan used a dataset that included facilities in the floodplain that are not included in the dataset used for the 2011 analysis. These include: Enon Fire Station in Chesterfield County, Lakeview Elementary School in the City of Colonial Heights, Hopewell Health Care Center in the City of Hopewell, McKeever Assisted Living Facility in the City of Petersburg, VA Dominion Power Nuclear Power Plant in Surry County, and the Stony Creek Fire and Rescue squads in Sussex County. The previous plan also noted that a large number of manufacturing critical facilities are within the floodplain. These types of facilities were not considered in the update.

The Richmond PDC 2006 plan also used a dataset that included facilities found to be in the floodplain that are not included in the dataset used for the 2011 analysis. These include a Goochland County school and one fire station in Henrico County. Most of the sites identified are Superfund sites (38 total sites). The environmental implications of these highly polluted sites should be considered in the planning process.

The impacts of floodwaters on critical facilities, such as police and fire stations, medical facilities, and schools, can greatly increase the overall effect of a flood event on a community.

It should be noted that these facilities have been determined to be in the floodplain using a planning level analysis, and should be used only as a planning tool. In order to accurately determine if a structure is actually located in the floodplain, site-specific information must be available. In addition, this dataset is limited by the GIS data available.

Jurisdictional Risk

The 2006 plans provided structural-loss estimates based on available tax parcel and census block information. This information varies dramatically by locality. To be able to compare each of the localities and to provide a more consistent loss estimate, potential flood loss for jurisdictions was determined by intersecting the FEMA DFIRMs and census block data in a method similar to that used for the 2010 Virginia State Hazard Mitigation Plan. To calculate annualized loss, determination of building value per unit area and reasonable flood depths for calculating the percentage of building damage was required. Annualized flood loss was mapped at the census block level.

Total building exposure in each census block was derived from the HAZUS census data geodatabase (from 2000). Building value (in dollars) per unit area was calculated by dividing the total value of building exposure by the census block area. FEMA flood maps were intersected with the census blocks to determine the percentage of each census block in each Special Flood Hazard Area (SFHA). Table 5-6 shows the FIRM sources used for the analysis. The flood data provided by VDEM did not have flood zones attributed within all zones; e.g., Zone AE with floodways was not distinguished from Zone AE without floodways. The 2010 demographic information for census blocks was not yet available when this analysis was performed.

Building type scenarios (see Table 5-11) developed using Federal Insurance Administration (FIA) depth-damage curves for the Benefit-Cost Analysis toolkit¹ were then used to determine probabilities and depths of flooding in order to calculate annualized flood loss. An assumption was made that any building within an SFHA would be subject to 100-year flooding. A one-story building without a basement was deemed a good representation for building stock in Virginia in the 2010 Virginia State Hazard Mitigation Plan and this assumption was also applied here. Table 5-12 shows the flood-depth assumptions that were made as part of this analysis. Based on the flood data provided by VDEM, no distinction of Zone AE with floodways could be made for this analysis. As a result, Zone AE with floodways has been assigned the values for Zone AE without floodways.

Census block data was used to determine damages to buildings and contents. Table 5-13 summarizes the total building and content value and flood exposure based on the percentage of the census tract in the floodplain. The Towns of McKenney and Surry do not have any values recorded because they have not mapped floodplains within their limits.

¹ [Benefit-Cost Analysis Toolkit Technical Flood Manuals, 2006.](#)

Risk and Loss Estimation

Results of this method of flood analysis estimate that on an annual basis, roughly \$6.5 million in damage can be attributed to flooding in the region. The potential for loss is greatest in Henrico County (\$1,890,205 annually), followed closely by Chesterfield County (\$1,301,514 annually). Table 5-14 summarizes potential total and annualized losses due to flooding. Figure 5-7 shows annualized flood losses by census blocks.

The region can expect, on a yearly basis, \$6.5 million in flood damages. Henrico County accounts for almost 30% of the damages, followed by Chesterfield County (18.5%) and the City of Richmond (16.4%). As shown in the Repetitive Loss section of this plan, these jurisdictions also represent a large fraction of the properties and losses paid by the NFIP. Chesterfield County and the City of Hopewell indicated that they have strong floodplain ordinances in place.

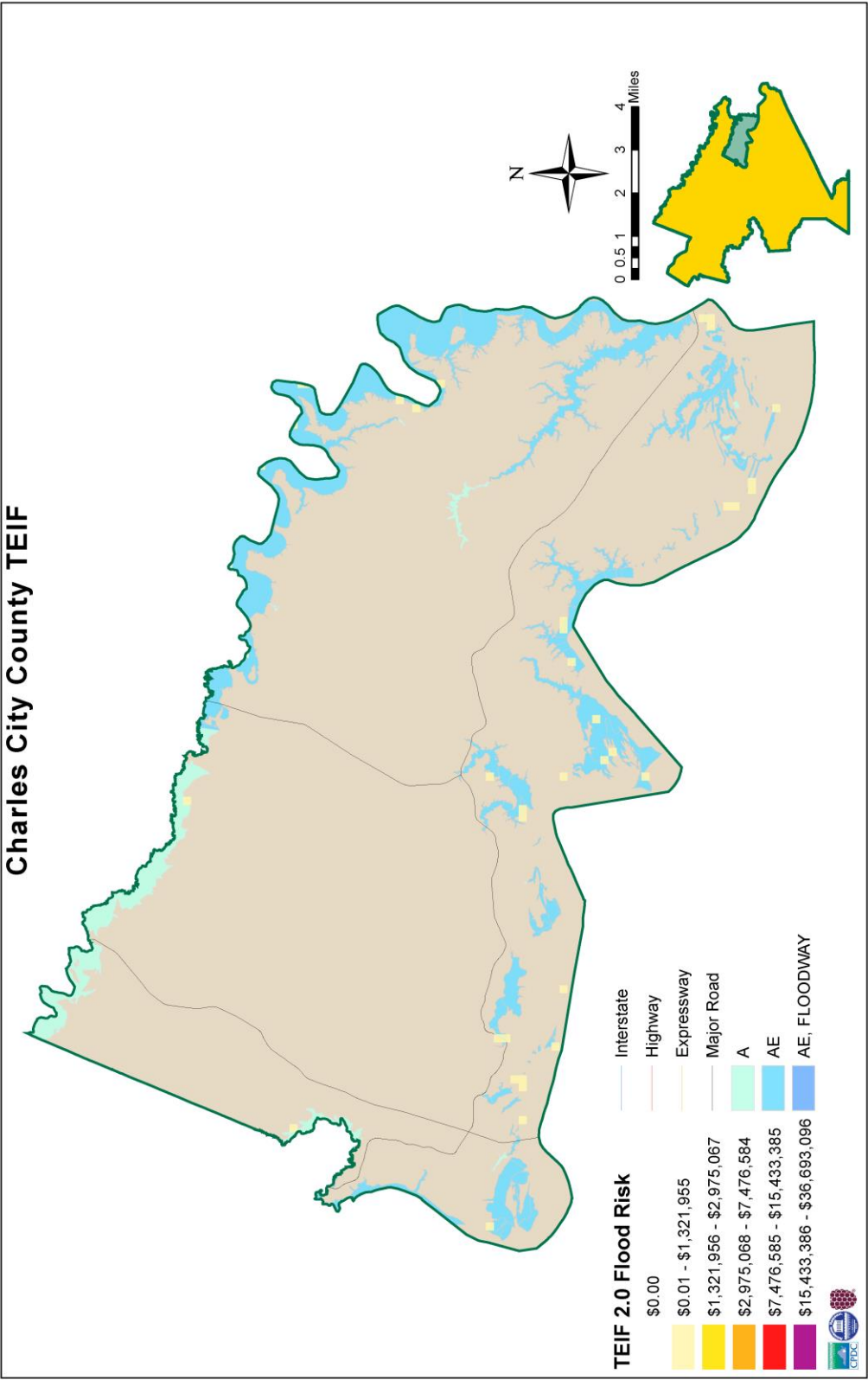
During the HIRA results presentation, MAC members from the City of Colonial Heights commented that they would not expect losses along the northern boundary where there are cliffs and are zoned open space. The census block analysis assumes equal distribution throughout a census block and therefore equal flood loss throughout the census block. To address the city's comment, the census blocks within open space, as specified by the National Land Cover database, were taken out of the overall loss values and are updated in Table 5-14.

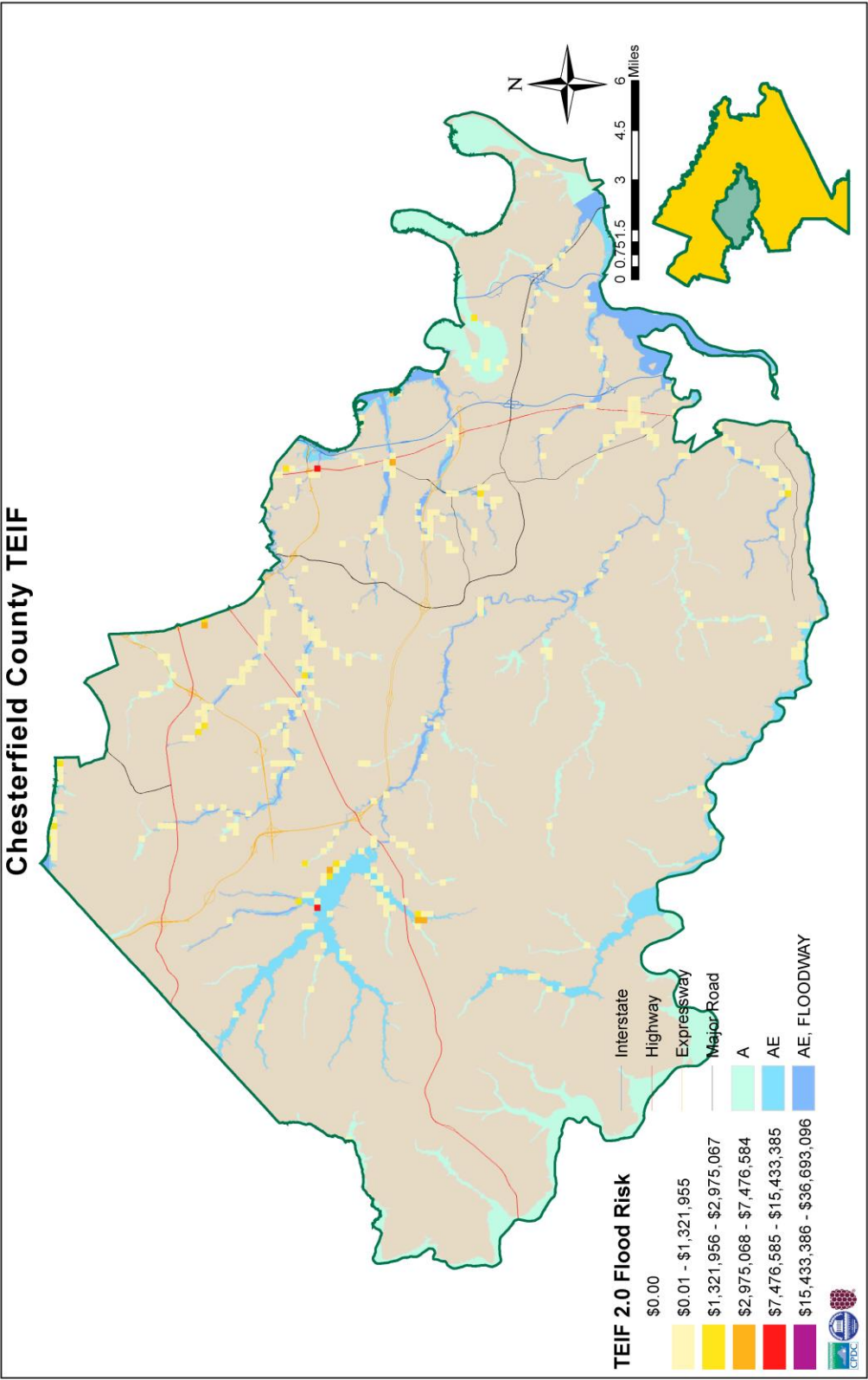
The jurisdictional executive summaries highlight hazards and vulnerability within the community.

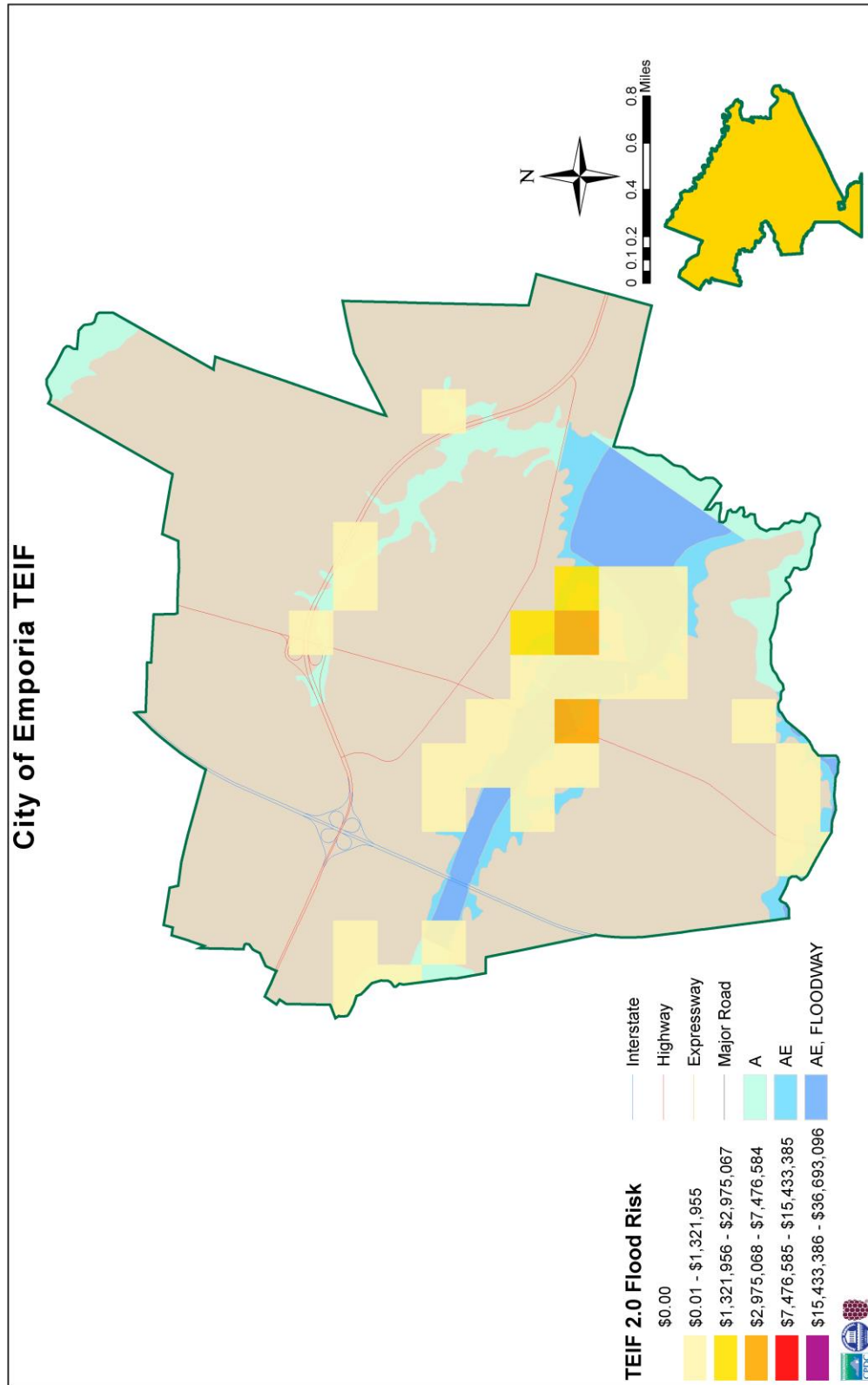
Appendix B-4 TEIF 2.0 Images

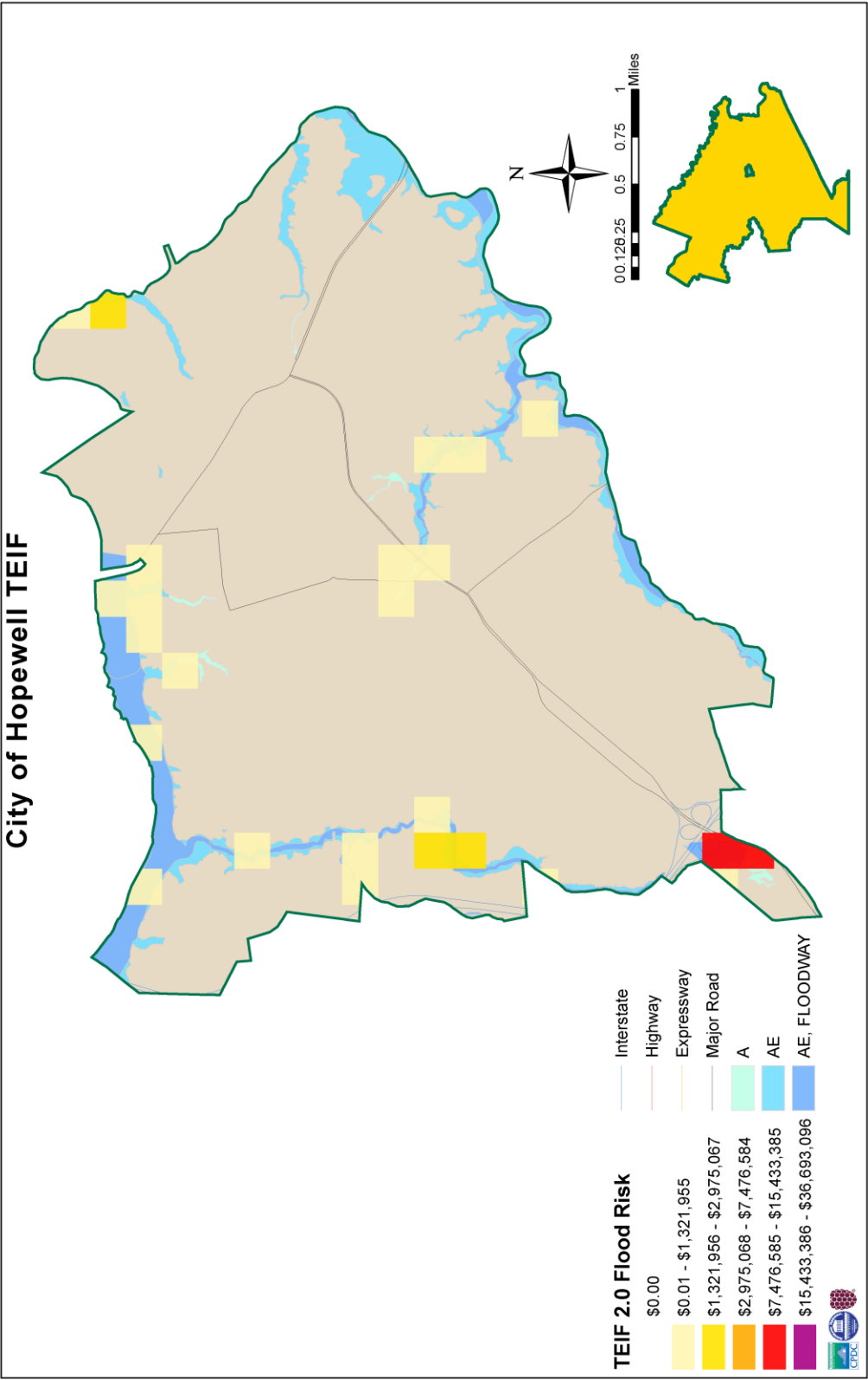
The following pages are the Total Exposure in Floodplain (TEIF) maps used for analysis in Section 5.0 Hazard Identification and Risk Assessment (HIRA).

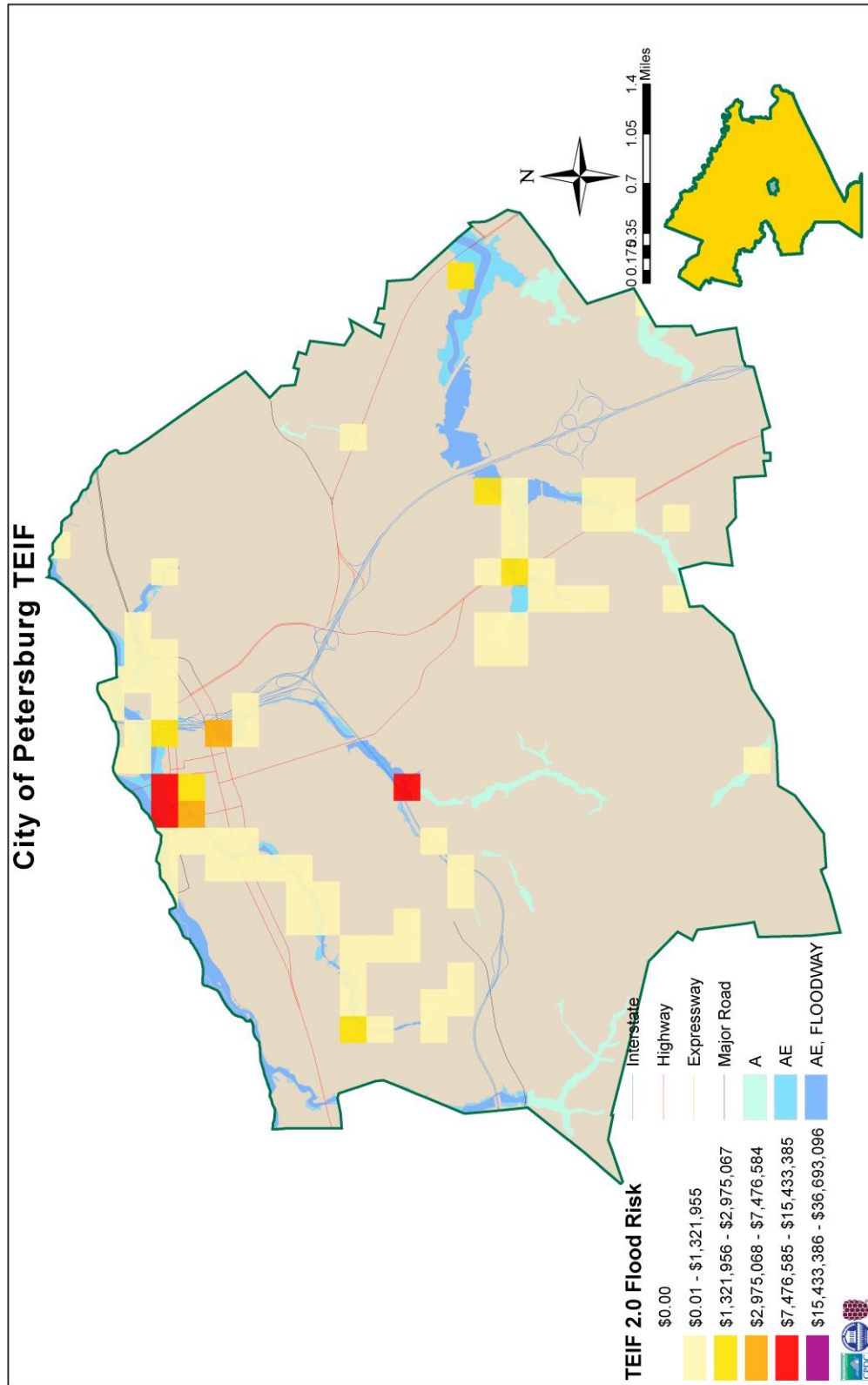
TEIF 2.0 not performed in Colonial Heights because GIS Building Footprints were not available. There is no Colonial Heights map.

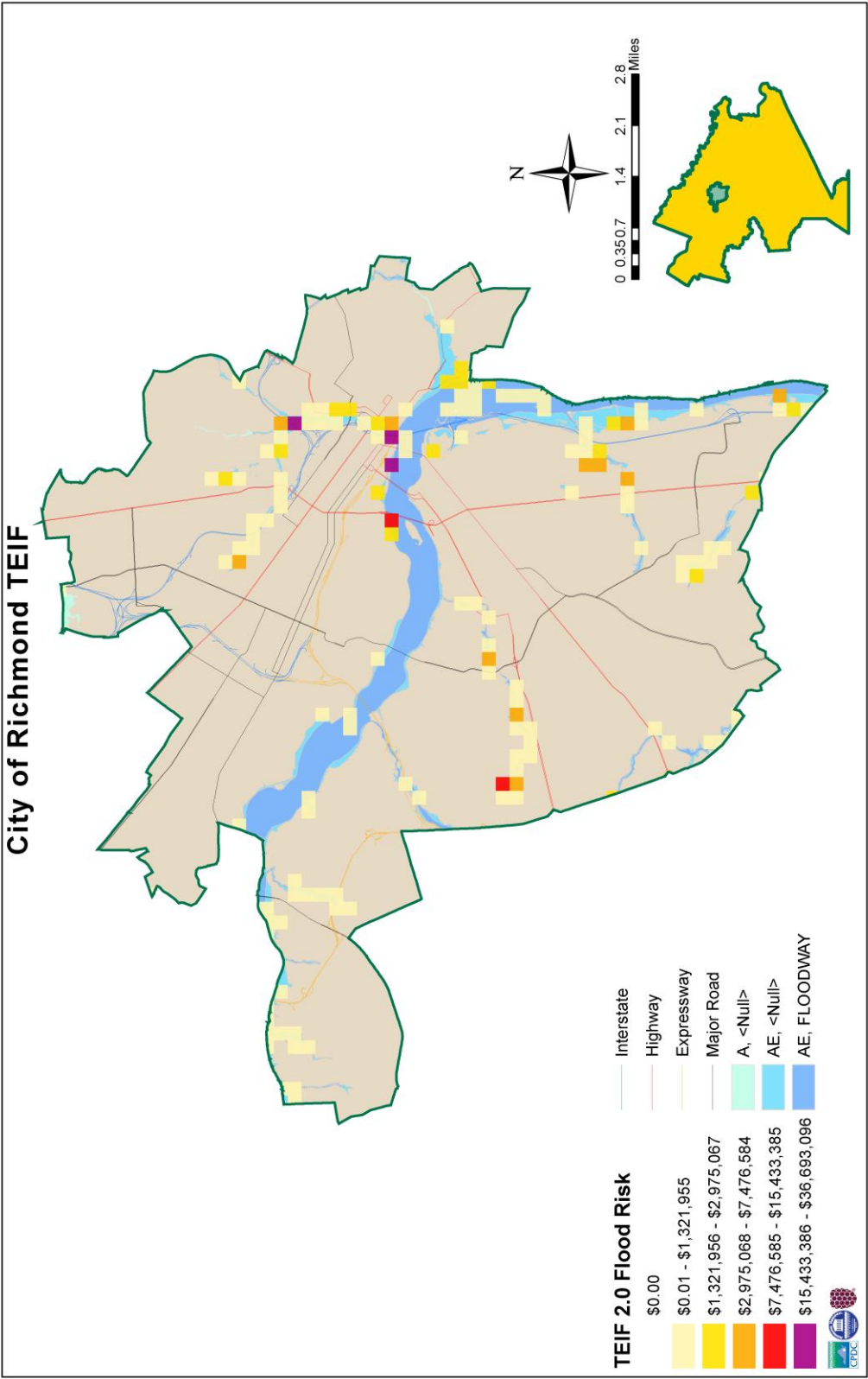


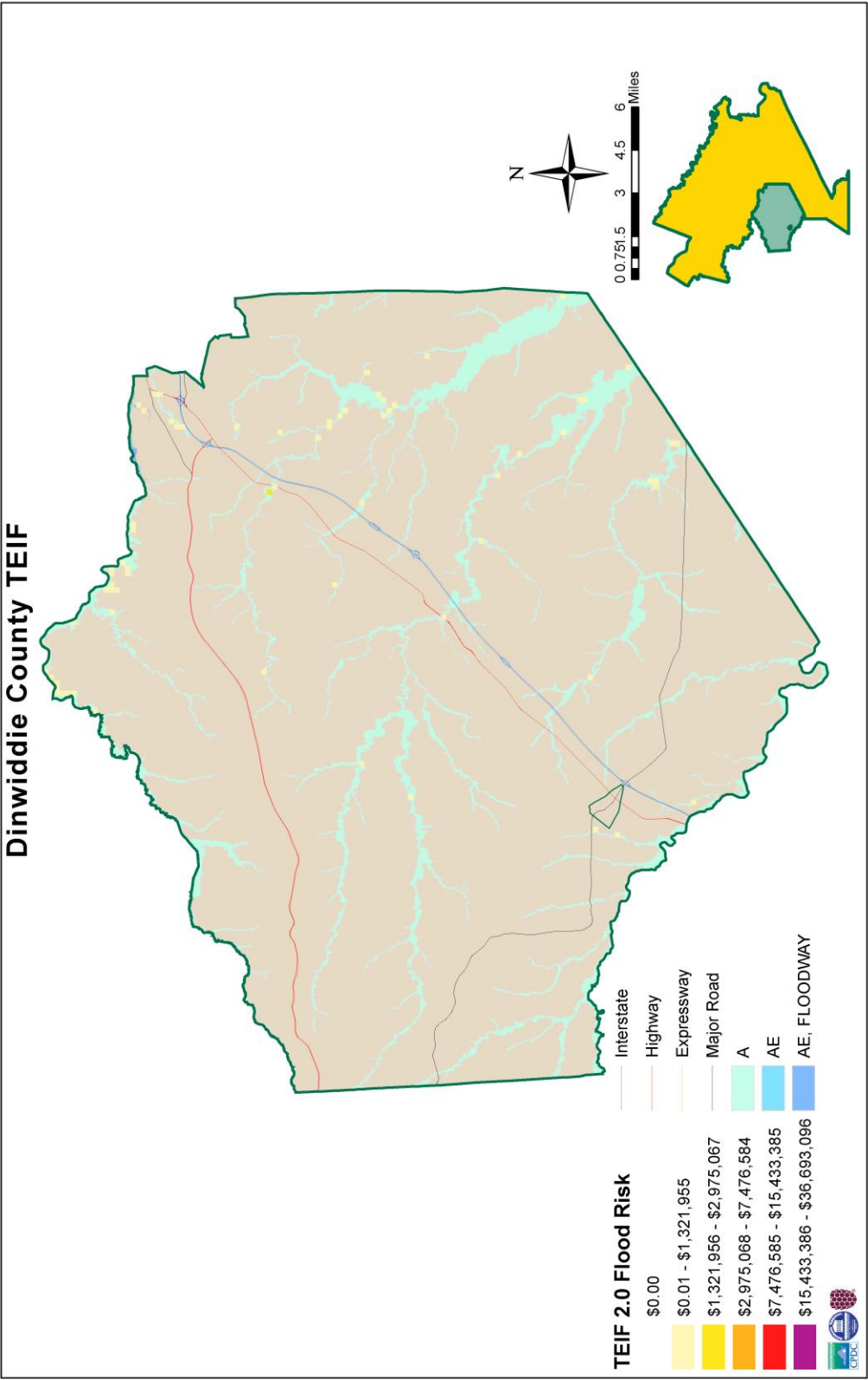


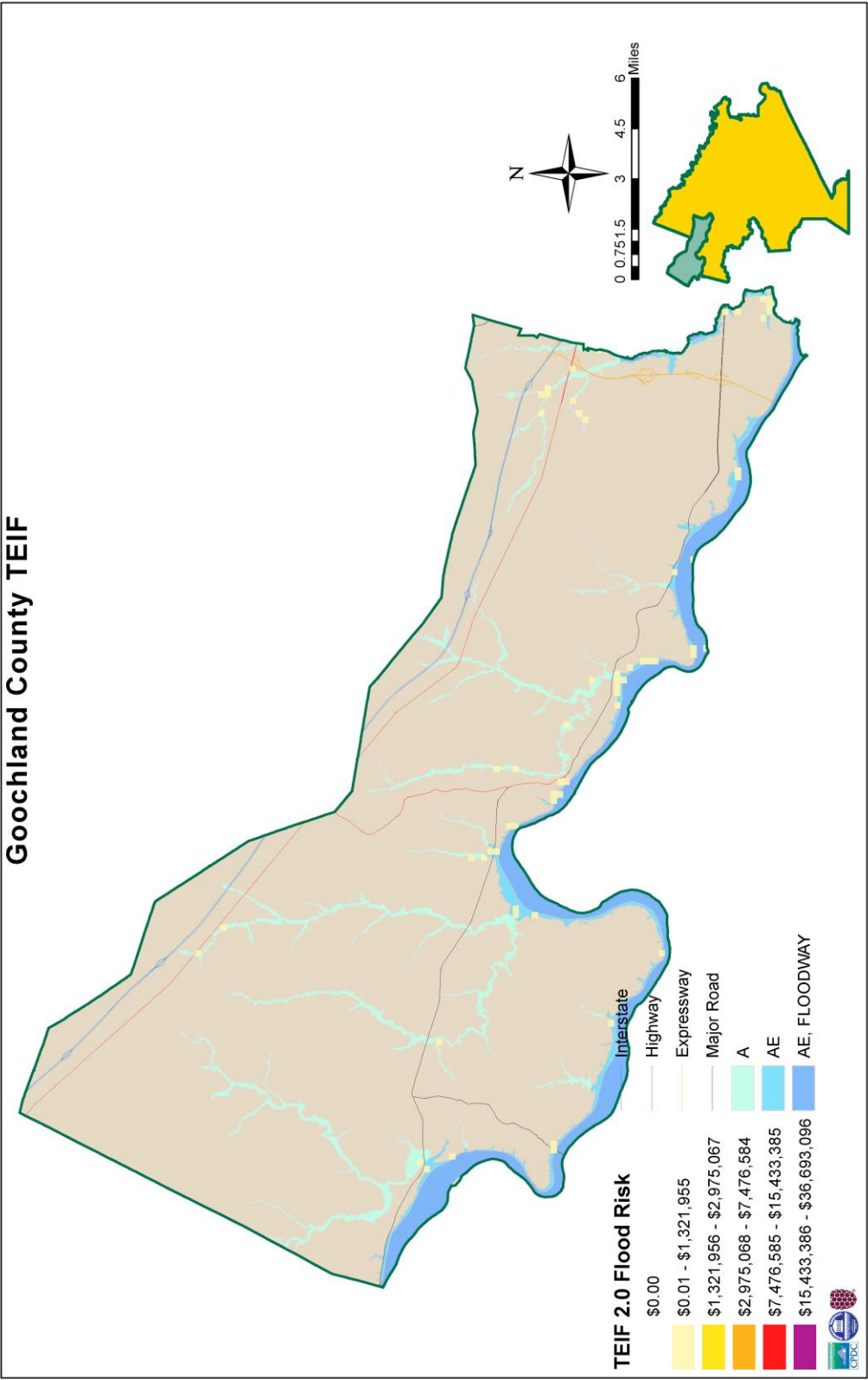


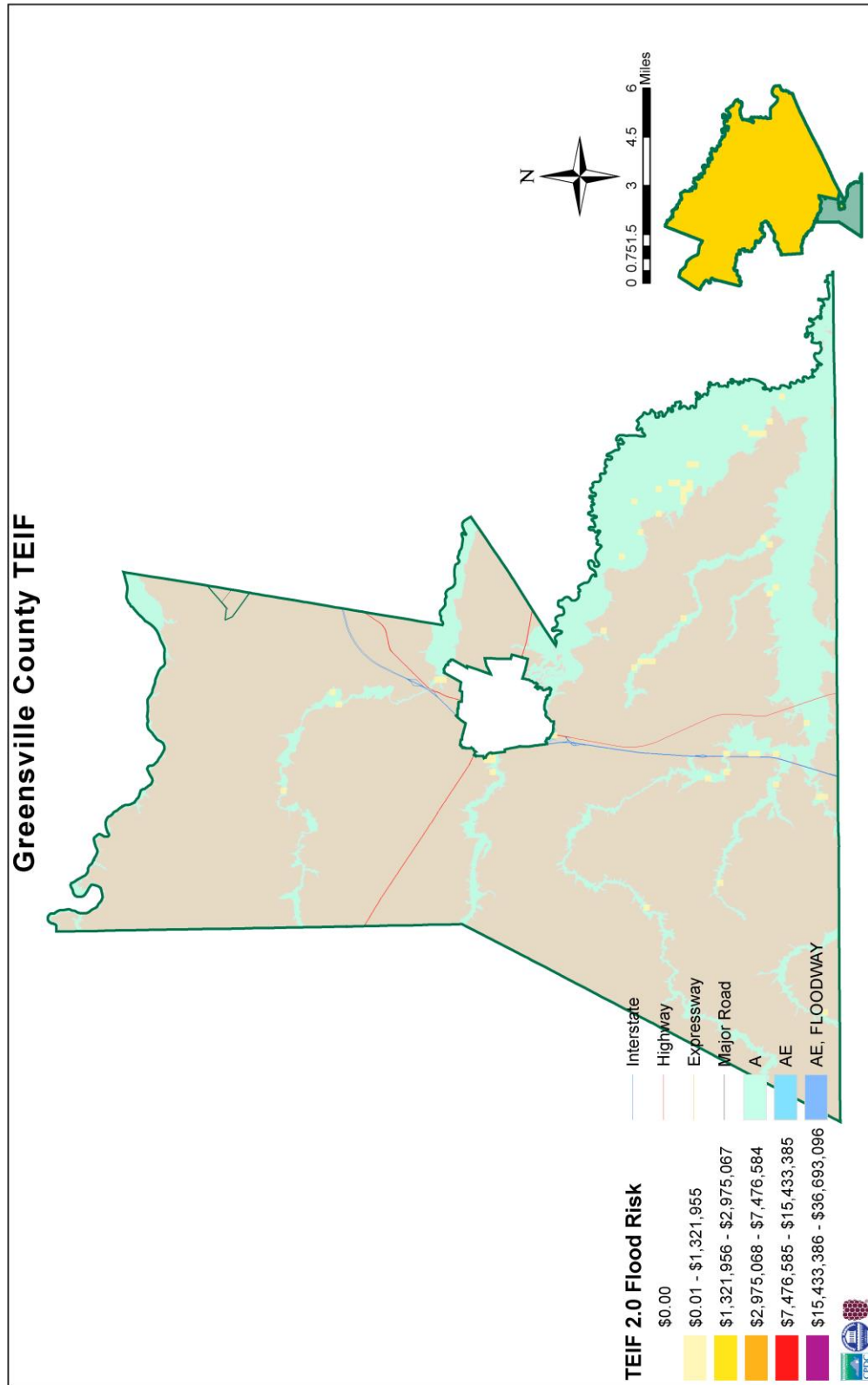


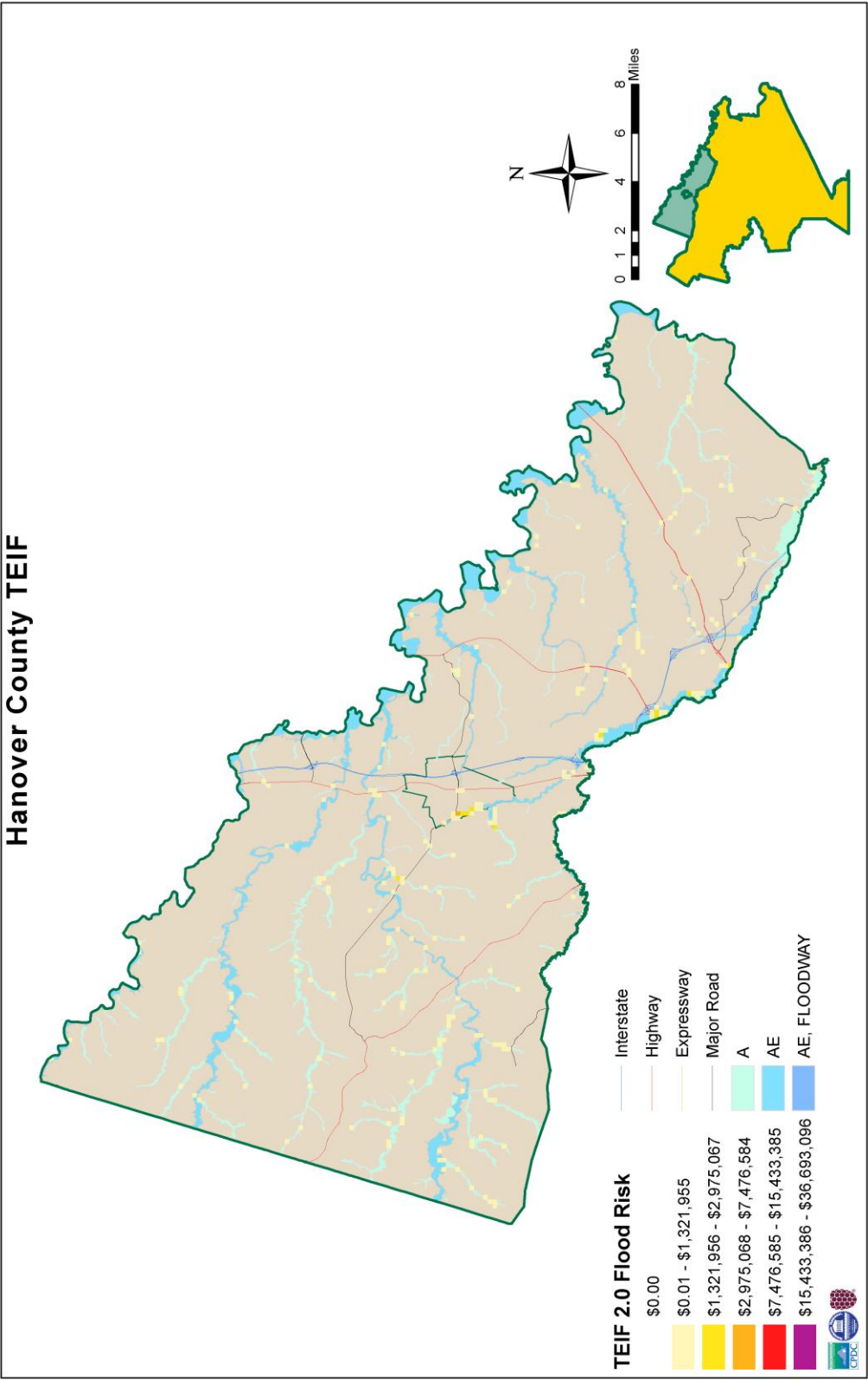


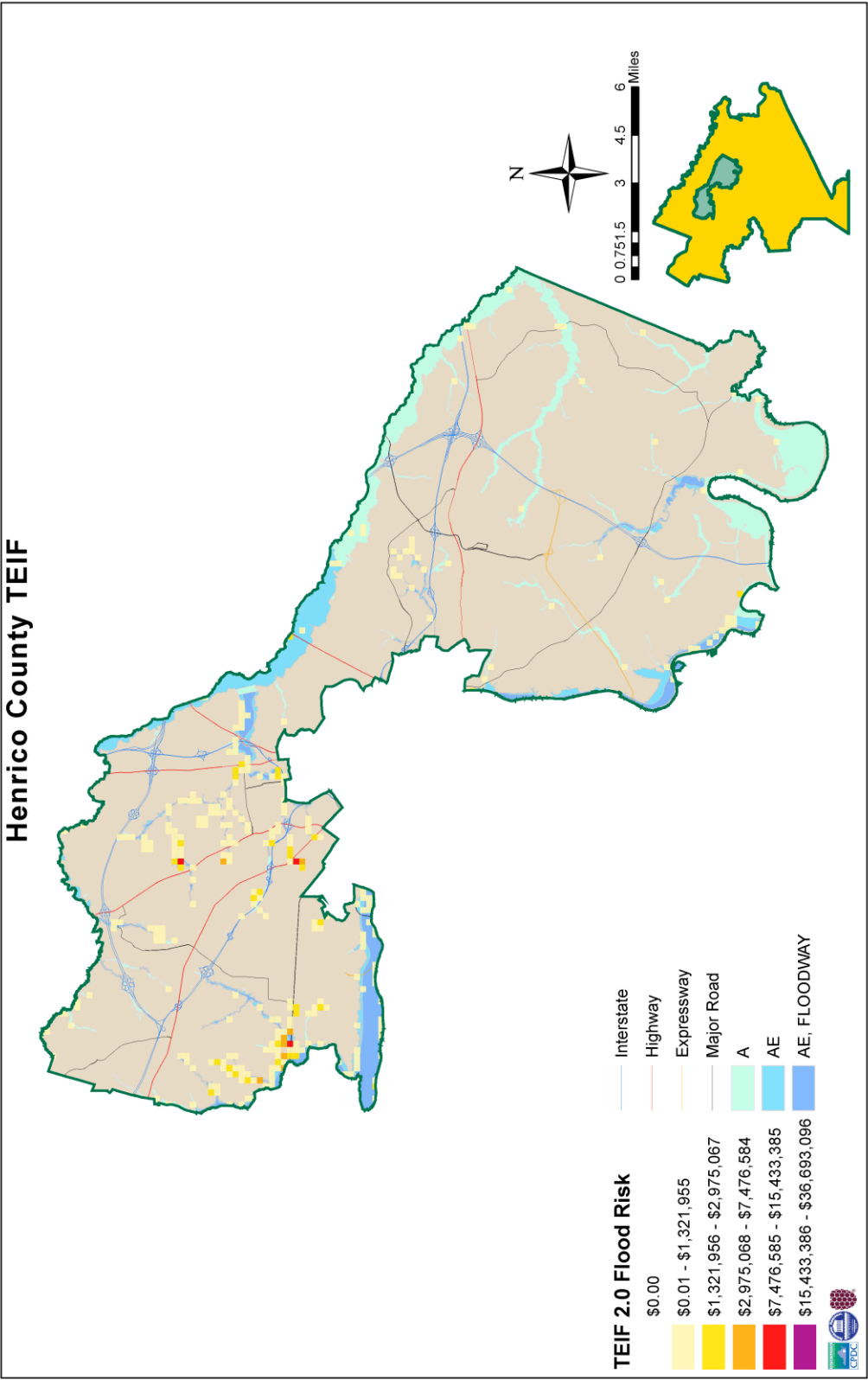


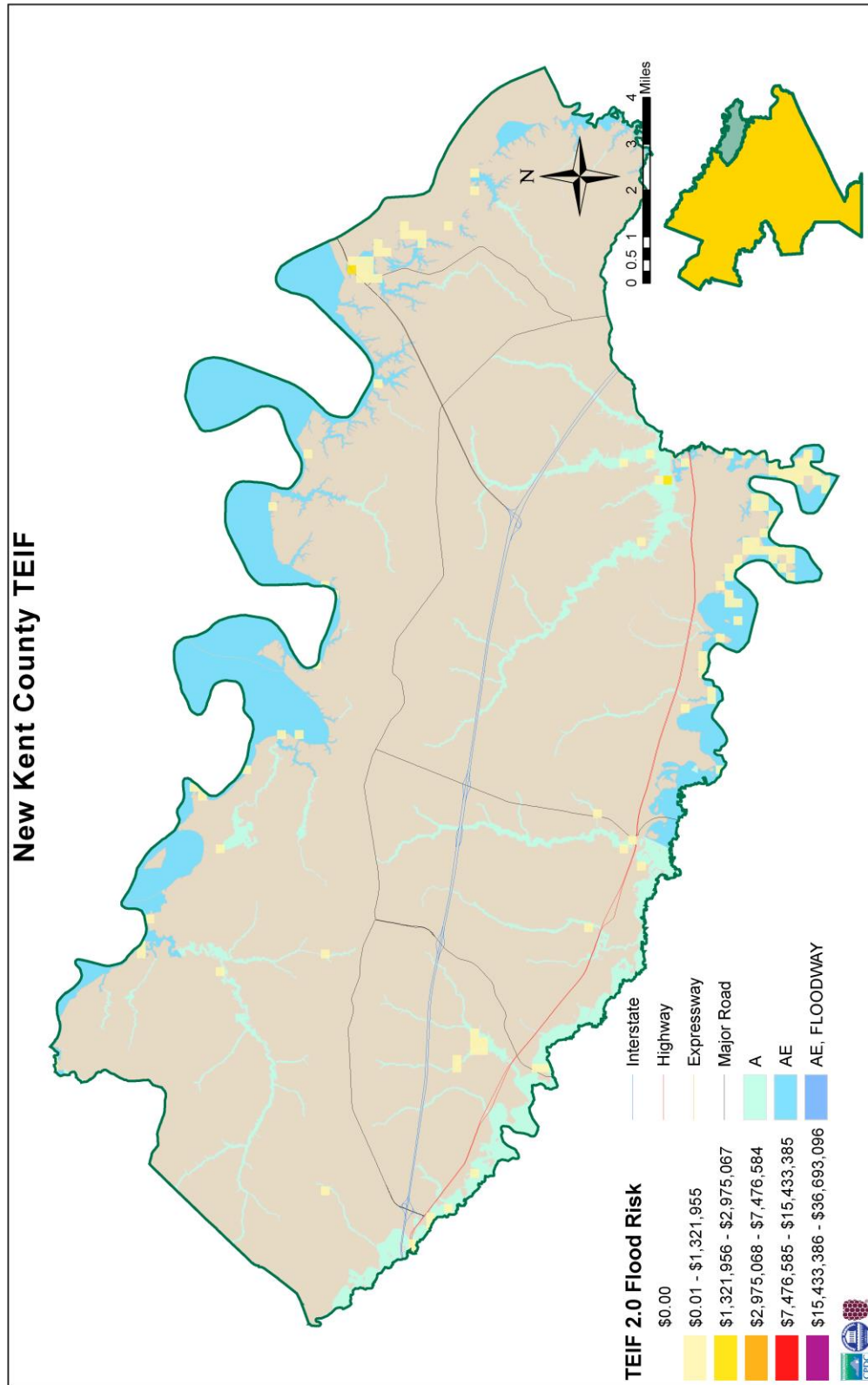


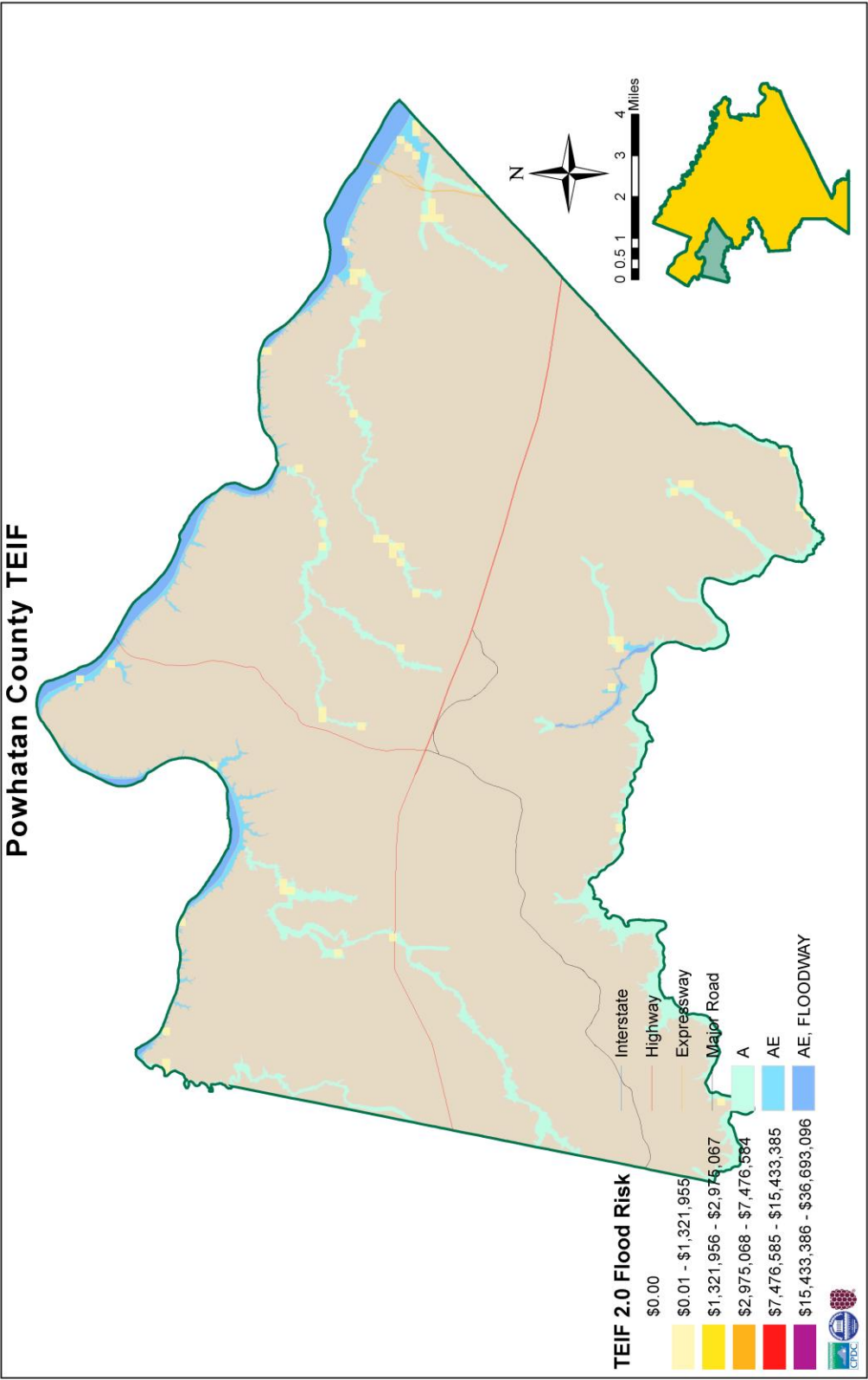


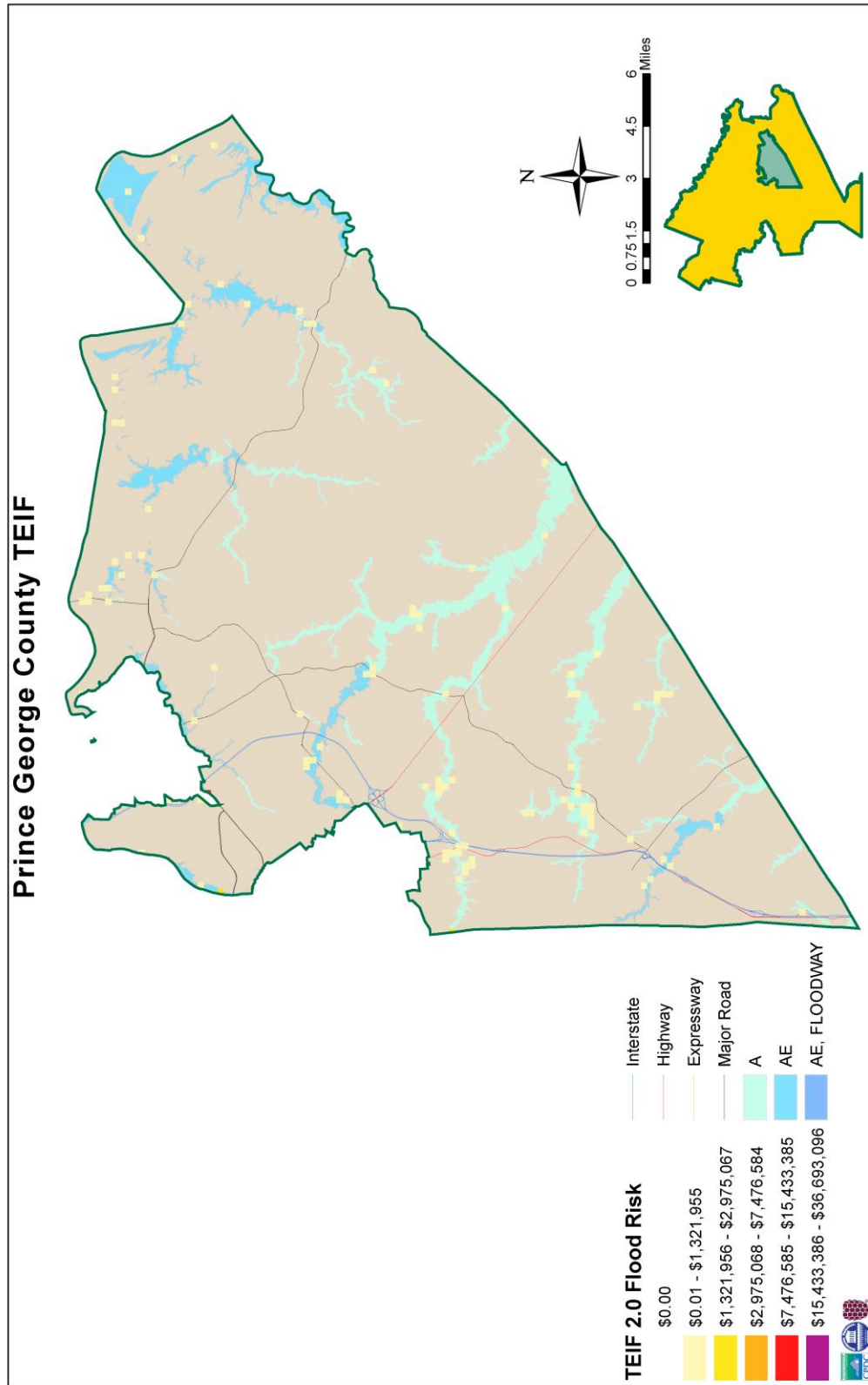


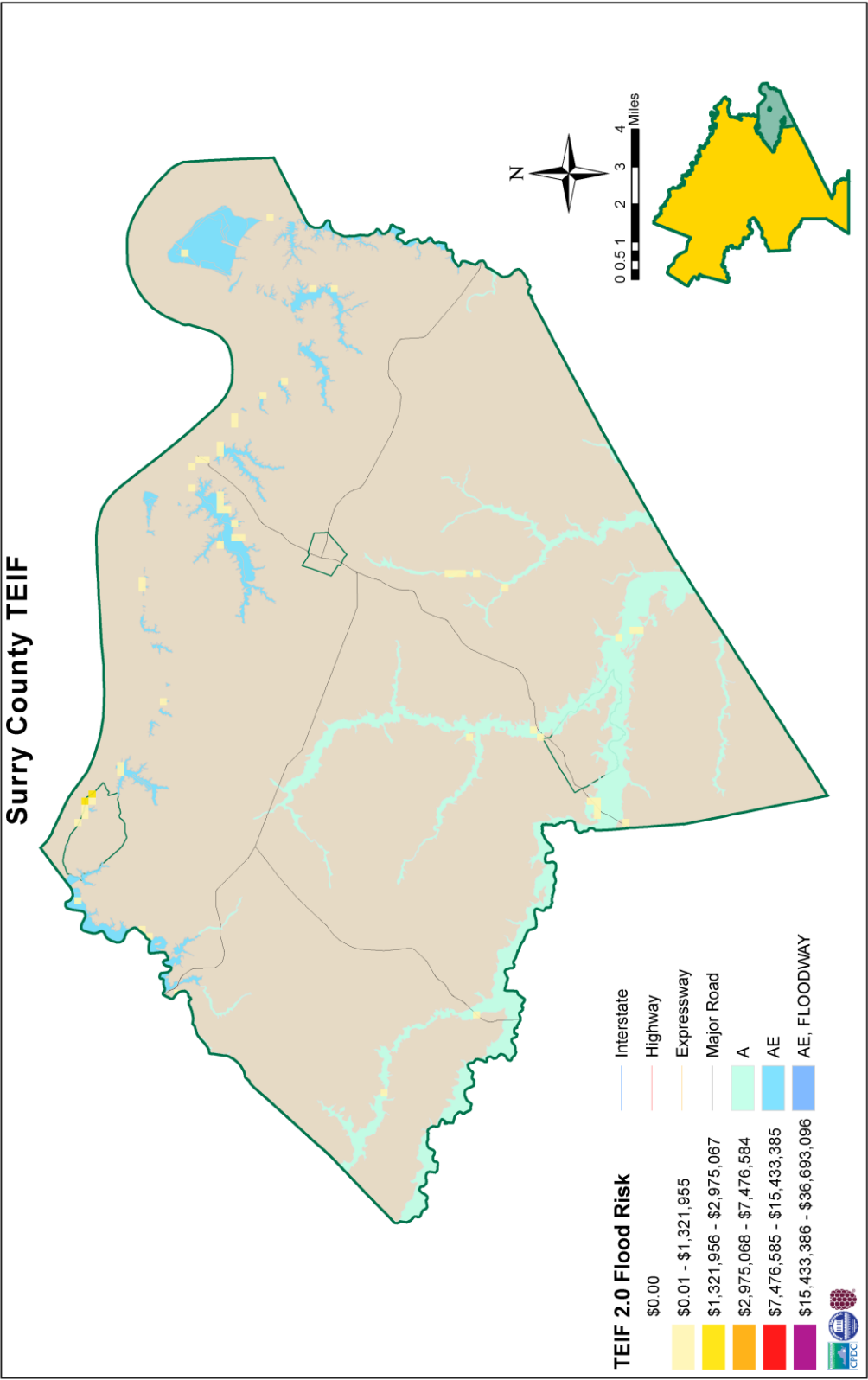


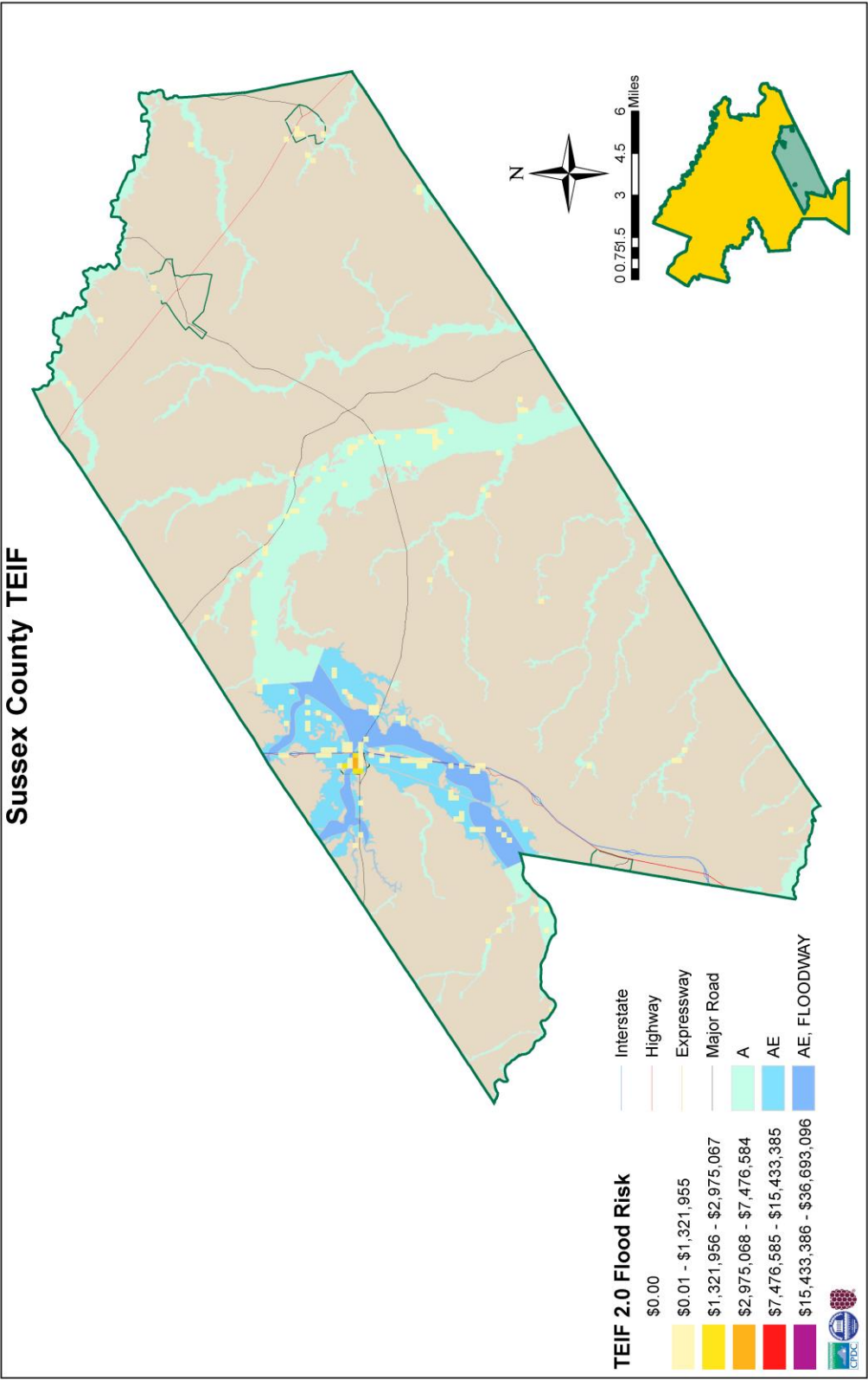












Appendix C – 2011 Actions

The following tables provide detailed updates to the actions committed to by the participating jurisdictions in the 2011 Richmond Regional – Crater PDC Hazard Mitigation Plan. The updates are provided by county in alphabetical order. Towns are included with their respective counties.

The “Status” column is coded as follows:

C = Complete

CT = Continue as 2017 – 2022 action

N/A = Funds Not Available

D = Discontinue/Delete

No information means jurisdiction did not provide more information.

Some communities did not respond to repeated email, calls and letters requesting a status update on 2011 plan actions. This is indicated for those specific actions.

In other instances, the status “comments” record is not complete because more information was not provided by the community.

Charles City County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Charles City-1	Complete adoption of new subdivision ordinance.	Planning Department	Medium	C	New Ordinance adopted in April 2015
Charles City-2	Listing and Review of Repetitive Loss and Severe Repetitive Loss structures	Planning	Low	CT	No current properties. Ongoing.
Charles City-3	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	CT	CERT and Survivor Day training. Ongoing.
Charles City-4	Implement FIREWISE wildfire education program.	Fire	Low	CT	Low due to staffing challenges; need to check with DOF.
Charles City-5	Include an assessment and associated mapping of the municipalities' vulnerabilities to location-specific hazards and make appropriate recommendations for the use of these hazard areas in the next comprehensive plan.	Emergency Management	Medium	CT	Incorporated into 2017 Action #2.
Charles City-6	Install flood level markers and work with NOAA to obtain related GIS data.	Emergency Management	Medium	CT	Continue in 2017 Actions.

Charles City County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Charles City-7	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Planning	Medium	CT	Continue in 2017 Actions.
Charles City-8	Revise comprehensive plan to discourage private roads in future development.	Planning Department	Low	CT	Not current policy and cannot be addressed until Comprehensive Plan update in 2019.
Charles City-9	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Emergency Management	Medium	CT	Continue in 2017 Actions.
Charles City-10	Encourage new facilities such as banks, gas stations, and pharmacies to have back-up generators when they are constructed.	Emergency Management	Medium	Delete	There are no resources to incentivize this initiative.
Charles City-11	Harden local utilities to improve recovery time.	Public Works	Medium	CT	Incorporated into 2017 Action #1.
Charles City-12	Work with private utilities to keep right-of-way clear.	Public Works	Medium	CT	Ongoing

Charles City County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Charles City-13	Work with the state to improve traffic management issues/concerns from Hampton Roads evacuation.	Planning Department Emergency Mgmt	Low	C	Route 5 is not a designated evaluation route for the Hampton Roads area.
Charles City-14	Work with Dominion Virginia Power to educate residents on how to install and hook up home generators safely. Provide assistance with hook-ups on case-by-case basis.	Public Works	Medium	Delete	Dominion does not provide this type of assistance. County cannot provide this service.

Appendix C: Status Update of 2011 Actions from the Richmond-Crater Multi-Regional Hazard Mitigation Plan

Chesterfield County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Chesterfield-1	Complete adoption of new digital FIRMs.	Environmental Engineering	Medium	C	Completed.
Chesterfield-2	Continue to evaluate existing stormwater system and maintain adequacy for current flood risk.	Environmental Engineering	Medium	CT	Remove and incorporate into new #13
Chesterfield-3	Continue to work with VDEM and FEMA to mitigate repetitive and SRL properties as grant funds are available and owners demonstrate interest in participation.	Emergency Management	Low	CT	Request annual SRL/RL data from VDEM/DCR. Provided 11.04.2016.
Chesterfield-4	Enhance and coordinate use of GIS to gather damage assessment information by all county agencies including establishing naming conventions and data categories.	GIS	Low	CT	A group looked into this in 2012/2013 timeframe but was not well established due to staff changes and time commitments with departmental work. Keep as a goal.
Chesterfield-5	Implement citizen notification system (e.g., Reverse 911).	Emergency Management	Low	C	Completed. Everbridge was implemented in 2014 as the county's notification system which enables users to "opt in" and choose way to be notified.
Chesterfield-6	Include 2011 Hazard Mitigation Plan in the reference manual of the Chesterfield Countywide Comprehensive Plan, 2011.	Planning	Low	CT	This was not done. We did not end up publishing a "reference manual" as part of the comp plan update as we thought we were when this action was created. Let's change this to something along the lines of "Include hazard mitigation in the comprehensive plan update in 2017 by linking concepts in the planning process that would accomplish hazard

Chesterfield County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
					mitigation". The rest of the categories would remain the same.
Chesterfield-7	Install quick connects for generators at critical facilities. Work with the Urban Areas Security Initiative (UASI) to retrofit any facilities not funded with UASI grants.	Emergency Management	Medium	CT	Reword this to be more general to "address critical facility infrastructure through potential grant funding with the possibility of quick connects". The region is no longer a UASI and our critical infrastructure needs are listed through county's CIP.
Chesterfield-8	Provide training opportunities to county/municipal enforcement staff. Educate them on damage assessment, mitigation techniques, and other related topics.	Emergency Management	Low	CT	Reword to "provide training opportunities to educate all county staff with a role in disaster recovery through training, mitigation techniques and long term recovery best practices."
Chesterfield-9	Maintain Storm Ready certification.	Emergency Management	Low	CT	Last update was 2014.
Chesterfield-10	Continue to implement a channel maintenance program consisting of routine inspections and subsequent debris removal to ensure free flow of water in local streams and watercourses. Identify funding opportunities.	Environmental Engineering	Medium	CT	Remove and incorporate into new #13
Chesterfield-11	Inspect and clear debris (or encourage VDOT to) from stormwater drainage system.	Environmental Engineering	Medium	CT	Remove and incorporate into new #13

Chesterfield County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Chesterfield-12	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	CT	Reword to "encourage whole community preparedness through education of hazards affecting the community and steps to reduce the vulnerability."
Chesterfield-13	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Emergency Management	Low	CT	Remove and combine with goal #3.
Chesterfield-14	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Inspections	High	CT	Continued in 2017 Actions.
Chesterfield-15	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	CT	Continued in 2017 Actions.
Chesterfield - 16	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Emergency Management	Medium	CT	The can be removed and combined with another goal that includes the RL/SRL. The goal can be broader. This is redundant and unnecessary.
Chesterfield-17	Discuss with mobile home park owners and operators construction of community safe rooms.	Emergency Management	Medium	C	Offered targeted communities "Survivor Day" programs, other relevant outreach was conducted.

Chesterfield County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Chesterfield-18	Determine, in concert with Chesterfield School District, if schools identified as potential shelter sites require retrofitting (e.g., safe rooms, wind load increases).	Emergency Management	Medium	C	A shelter for "Employee Worker Dependents" was considered but determined to be inappropriate due to funding constraints.
Chesterfield-19	Review county telework policy pilot and determine effect on ensuring county continuity of government.	Emergency Management	Medium	C	COOP policy is in place.
Chesterfield-20	Consider adopting land development policies specific to wildland-urban interface fire (e.g., Firewise principles) and/or requiring review of proposed development plans by VDOF.	Building Inspections	Low	C	Remove.
Chesterfield-21	Work with Virginia Department of Mines, Minerals and Energy to continue to refine the Locations of Abandoned Mines in the Greater Richmond Area maps. Use these maps to guide zoning, development, and building inspection decisions.	Inspections; Environmental Engineering	Medium	CT	Including Planning as a listed department since they have a working relationship with DMME.
Chesterfield-22	Expand Community Emergency Response Team program to target recruitment of county staff.	Emergency Management	Low	C	Remove, this is covered under staff training.
Chesterfield-23	Enhance building permitting system (POSSE) to include disaster-related information to more comprehensively capture damage assessment data.	GIS; Inspections	Medium	CT	Modify to say "Provide disaster job for building permit applications in new Enterprise Land Management System (ELM) to comprehensively capture damage assessment data.

City of Colonial Heights 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Colonial Heights-1	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Building Department	High	CT	Ongoing.
Colonial Heights-2	Review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	CT	Change strategy to: Review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.
Colonial Heights-3	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Emergency Management	Medium	CT	No funding.
Colonial Heights-4	Install flood warning sign (including flood level) at railroad bridge crossing of the Boulevard at Old Town Creek. Language possibilities include "Caution: possible water on roadway ahead when lights flashing," "Caution: this road subject to flash flooding," "Caution: road subject to flooding. Indicators show depth."	Emergency Management	Medium	C	Complete.
Colonial Heights-5	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	CT	Ongoing.
Colonial Heights-6	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Emergency Management	Low	CT	Ongoing.

City of Colonial Heights 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Colonial Heights-7	Install quick connects for generators at critical facilities. Work with UASI to retrofit any facilities not funded with UASI grants.	Emergency Management	Medium	D	Delete strategy
Colonial Heights-8	Continue to enhance and build Community Emergency Response Team program.	Emergency Management	Low	D	Delete strategy, no funding.
Colonial Heights-9	Work with VDEM to facilitate discussions with state and federal agencies to address environmental planning issues that impact the ability of the city to mitigate Old Town Creek (i.e., Newcastle Ave).	Emergency Management	Low	D	Delete strategy.
Colonial Heights-10	Complete purchase of NOAA weather radios for public facilities.	Emergency Management	Medium	CT	Ongoing.
Colonial Heights-11	Work with VDEM to identify local resources that can be used to support state sheltering efforts in response to Hampton Roads incoming evacuees. Encourage coordination with western counties.	Emergency Management	Low	D	Delete strategy.

Dinwiddie County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Dinwiddie-1	Complete adoption of new floodplain ordinance.	Planning/Zoning	Low	C	Completed in 2011.
Dinwiddie-2	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning/Zoning	Low	CT	No properties on the list.
Dinwiddie-3	Continue to work with VDOT to evaluate and mitigate at-risk roads.	Emergency Management	Medium	CT	Some progress like culvert replacement. Ongoing.
Dinwiddie-4	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	CT	Ongoing.
Dinwiddie-5	Finalize Continuity of Operations Plan.	Emergency Services	Medium	C	Completed. Exercise in 2017.
Dinwiddie-6	Finalize debris management plan.	Emergency Management	Medium	CT	Completed. Pursuing Dinwiddie-specific contract, using state contract now.

Dinwiddie County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Dinwiddie-7	Improve communications coordination with railroad.	Emergency Management	Medium	CT	Completed.
Dinwiddie-8	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	CT	Ongoing.
Dinwiddie-9	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Emergency Management	Medium	CT	Ongoing.
Dinwiddie-10	Work with the National Weather Service (NWS) to promote the "Turn Around, Don't Drown" public education campaign.	Emergency Management	Medium	C	Completed.
McKenney-1	Distribute pamphlets, brochures, and use the local cable television access channel to educate the public regarding preparedness and mitigation. Continue to work with Dinwiddie County and participate in annual preparedness days.	Mayor	Medium	CT	Ongoing.
McKenney-2	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Mayor	Medium	CT	Ongoing.

Dinwiddie County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
McKenney-3	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Mayor	Medium	CT	Ongoing.

City of Emporia 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Emporia-1	Add staff to Emergency Management Office, Building Inspections Office, and/or Zoning Office.	Emergency Services	Medium	D	No plans to do this; should be removed.
Emporia-2	Complete improvements to utility lines.	Public Utilities	High	CT	Water lines within the City need to be replaced; water treatment plant completed Dec 2016.
Emporia-3	Complete replacement of Halifax Street Bridge.	Public Works	Medium	CT	Working with VDOT.
Emporia-4	Consider participating in FEMA's CRS.	Emergency Services	Low	D	Elected not to participate; should be removed.
Emporia-5	Continue to review and make recommendations for improvements to the stormwater system.	Emergency Services	High	CT	No further information.
Emporia-6	Finalize Continuity of Operations Plan.	Administration	High	CT	No further information.

City of Emporia 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Emporia-7	Identify grant to support geo-coded damage assessment data collection.	Emergency Services	Medium	D	No further information.
Emporia-8	Install additional gauges on Meherrin River.	Emergency Services	Medium	CT	River gauges are ok, need additional rain gauges connected to NWS; no new gauges installed; want automated gauges.
Emporia-9	Integrate data from new flood gauges into citizen notification system.	Emergency Services	Medium	CT	Currently done by an individual.
Emporia-10	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Emergency Services	Medium	CT	Replace with more comprehensive action.
Emporia-11	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Zoning Administrator	Medium	CT	Up-to-date with federal standards.
Emporia-12	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Services	Low	CT	No further information.

City of Emporia 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Emporia-13	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Zoning Administrator	Low	CT	None in Emporia.

Goochland County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Goochland-1	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Emergency Management	Low	N/A	No repetitive loss properties listed. Last reported loss was in 1972.
Goochland-2	Continue coordination with VDEM on incoming evacuee issues.	Emergency Management	Medium	CT	Continued in 2017 Actions.
Goochland-3	Continue to consider the use of proffers for road improvements including flood mitigation measures in the next comprehensive plan.	Planning and Zoning	Low	D	Change in state law may effect this.
Goochland-4	Continue to coordinate with City of Richmond and Department of Corrections to address wastewater capacity issues.	Public Utilities	High	CT	Continued in 2017 Actions.
Goochland-5	Continue to identify and fulfill need for backup generators, communications, and/or vehicles at critical public facilities.	Public Utilities	Medium	C	This strategy was integrated into 2017 Action 7.
Goochland-6	Continue to provide training opportunities to county staff.	Emergency Management	Medium	CT	Continued in 2017 Actions.

Goochland County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Goochland-7	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	CT	Continued in 2017 Actions.
Goochland-8	Identify means to coordinate, collect, and store damage assessment data in GIS format for each natural hazard event which causes death, injury, and/or property damage.	Emergency Management/IT	Medium	CT	Continued in 2017 Actions.
Goochland-9	Promote the "Turn Around, Don't Drown" public education campaign.	Emergency Management	Medium	C	This strategy was integrated into 2017 Action 4.
Goochland-10	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	C/CT	Comprehensive Plan and floodplain management ordinance were recently reviewed.
Goochland-11	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Emergency Management	Medium	CT	Continued in 2017 Action 7.

Greenville County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Greenville-1	Complete development of Continuity of Operations plan.	Public Safety	Medium	CT	No Information provided.
Greenville-2	Complete implementation of citizen notification system.	Public Safety	Medium	CT	No Information provided.
Greenville-3	Complete study of county FEMA maps to fill in missing flood map sections.	Department of Planning and Zoning	Medium	completed	No Information provided.
Greenville-4	Consider participating in "Turn Around, Don't Drown" public education campaign.	Public Safety	Medium	CT	No Information provided.
Greenville-5	Continue to install the necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at key critical public facilities as funding permits.	Public Safety	Medium	completed	No Information provided.
Greenville-6	Improve GIS layers and track storm damages.	Public Safety	Medium	CT	purchased digital camera that imports photos into GIS

Greenville County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Greenville-7	Work with VDOT to establish additional flood level markers along creeks and rivers in potential flood-prone areas.	Public Safety	Medium	CT	No Information provided.
Greenville-8	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Public Safety	Medium	completed	Cannot build in floodplain unless 1 foot above high water mark.
Greenville-9	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Department of Planning and Zoning	Medium	CT	No Information provided.
Greenville-10	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Public Safety	Medium	CT	Neighborhood Watch and schools used to distribute information.
Greenville-11	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Department of Planning and Zoning	Low	NA	No Information provided.
Jarratt-1	Distribute brochures and use other means (i.e., local media) to educate the public regarding preparedness and mitigation. Conduct annual preparedness days of hazards to include flood, wind, and earthquake.	Mayor	Medium	NA	Community did not respond to status update request.

Greensville County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Jarratt-2	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Mayor	Medium		Community did not respond to status update request.
Jarratt-3	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Mayor	Medium		Community did not respond to status update request.
Jarratt-4	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Mayor	Low		Community did not respond to status update request.

Hanover County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Hanover-1	Complete installation of necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at key critical facilities.	Emergency Management	Medium	CT	Hanover High School is the County's shelter - wiring for generator added to test; switched installed. Purchased 36kw generator. Now included in 2017 Action # 7.
Hanover-2	Complete review and adoption of subdivision ordinance.	Planning and Community Development	Low	C	Ingress, egress and stormwater management is regulated in subdivision ordinance.
Hanover-3	Complete review and adoption of zoning ordinance.	Planning and Community Development	Low	C	Completed.
Hanover-4	Develop a more advanced flood warning system to increase the ability to locally and specifically forecast flood events and flood depths. Partner with other organizations including the NWS, U.S. Geological Survey (USGS), and local watershed organizations.	Emergency Management	High	CT	Continued in 2017 Actions.
Hanover-5	Integrate hazard mitigation into new comprehensive plan.	Planning and Community Development	High	C	Completed.
Hanover-6	Work with the NWS to promote the "Turn Around, Don't Drown" public education campaign.	Public Safety	High	CT	Complete and will continue; multiple social media messaging using Facebook, Twitter, County website and Code Red purchased in 2011.

Hanover County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Hanover-7	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Planning and Community Development	Medium	CT	Continued in 2017 Actions.
Hanover-8	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Emergency Management	Medium	CT	Continued in 2017 Actions.
Hanover-9	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	CT	During the reporting period, Hanover County has sponsored Survivor Days, CERT classes, emergency preparedness and mitigation outreach, National Night Out, Neighborhood Watch and related emergency management community awareness through use of social media.
Hanover-10	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning and Community Development	Low	CT	No current RL/SRL properties. One DCR-owned dam - Springfield Lake. Hanover conducts annual table top exercises on open and closed dam releases.
Ashland-1	Evaluate and make improvements, as needed, to stormwater system to ensure adequacy to handle major rain events.	Public Works	Medium	CT	Continue in 2017 Actions.
Ashland-2	Consider participating in FEMA's Community Rating System (CRS).	Planning and Community Development	Medium	CT	Certified during 2016.

Hanover County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Ashland-3	Develop Continuity of Operations plan.	Police	Low	CT	All operations plans are in ICS format.
Ashland-4	Continue to enhance capabilities to use GIS for emergency management.	Planning and Community Development	Low	CT	Coordination with Hanover GIS for emergency management GIS systems.
Ashland-5	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA Hazard Mitigation Assistance (HMA) programs, where appropriate.	Planning and Community Development	Medium	CT	Accomplished through on-going administration of floodplain code administration and CRS program.
Ashland-6	Review locality's compliance with the NFIP with an annual review of the Floodplain Ordinances and any newly permitted activities in the 100-year floodplain.	Planning and Community Development	Medium	CT	Accomplished and on-going administration of floodplain code.
Ashland-7	Distribute brochures and use other means (e.g., local media) to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Police	Medium	CT	Preparedness information is placed on the police and Town web site in addition to the use of social media sites using Twitter and Facebook. Sponsored National Night Out, table top exercises and Neighborhood Watch.
Ashland-8	Request list from VDEM or VA Department of Conservation and Recreation (DCR) and conduct annual review of repetitive loss (RL) and severe repetitive loss (SRL) property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning and Community Development	Low	CT	Accomplished through on-going administration of floodplain code administration and CRS program.

Henrico County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Henrico-1	Conduct site inspections of schools and help to identify areas for use as tornado safe rooms.	Emergency Management	Medium	CT	Ongoing as a part of annual site safety audits. However, frequent site updates would benefit preparedness efforts.
Henrico-2	Continue to implement channel maintenance program.	Public Works	Medium	CT	Continued in 2017 Actions.
Henrico-3	Enhance availability of Community Emergency Response Team training to targeted populations.	Emergency Management	Low	CT	Combine for 2017.
Henrico-4	Enhance water availability for wildfire fighting in eastern portion of the county.	Fire	Low	CT	Continued in 2017 Actions.
Henrico-5	Ensure stormwater system remains adequate for flood hazards.	Public Utilities	Medium	CT	Continued in 2017 Actions.
Henrico-6	Identify and secure pre-event shelter sites (not flood-prone, not subject to wind damage) and ensure compliance with national shelter standards.	Emergency Management	Low	CT	Initiated reaching out to faith-based and private organizations.

Henrico County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Henrico-7	Identify new site for Emergency Operations Center (EOC) and identify viable alternate site. Second floor of building is vulnerable to wind damage and is located near major road and hospital; there is potential for hazmat exposure. Also EOC is not a dedicated facility.	Emergency Management	Low	CT	Continued in 2017 Actions.
Henrico-8	Incorporate mitigation into existing standing regional planning groups.	Emergency Management	Low	CT	Continued in 2017 Actions.
Henrico-9	Install electrical hook-ups, wiring, and switches to allow quick connects at county-owned critical facilities (focus on properties not funded through BZCP and UASI programs).	Emergency Management	Medium	CT	Completed for one site; additional sites identified and will continue in 2017 Actions.
Henrico-10	Invest in staff capacity to enhance ability to implement mitigation programs throughout the county.	Emergency Management	Low	CT	Continued in 2017 Actions.
Henrico-11	Investigate feasibility of installing tide gauge on James River at Osbourne Landing.	Emergency Management	Low	CT	Funded from 2016 SHSGP funds.
Henrico-12	Maintain relationships with Dominion Virginia Power, Comcast, Verizon (and other utility service providers), and VDOT to ensure swift removal of debris and continued maintenance of lines to minimize future debris.	Emergency Management	Medium	CT	Continued in 2017 Actions.

Henrico County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Henrico-13	Participate in Great Shakeout and other wide-scale disaster drills.	Emergency Management	Low	CT	Combine 3, 13, 14 and 18 into a single public outreach action.
Henrico-14	Complete participation in the Storm Ready program sponsored by the NWS.	Emergency Management	Low	CT	Combine for 2017.
Henrico-15	Target FEMA's RL properties for specialized outreach and mitigation activities.	Emergency Management	Medium	C	Completed.
Henrico-16	Incorporate mitigation principles into local comprehensive, emergency management, and recovery plans.	Emergency Management	Low	CT	Continued in 2017 Actions.
Henrico-17	Work with DOF to increase number of fire danger signs in WUI.	Emergency Management	Low	C	Completed.
Henrico-18	Distribute brochures and use other means (e.g., local media) to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	CT	Combine for 2017.

Henrico County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Henrico-19	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Emergency Management	Low	CT	Continued in 2017 Actions.
Henrico-20	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Inspections	High	CT	Continued in 2017 Actions.
Henrico-21	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Public Works	Medium	CT	Continued in 2017 Actions.
Henrico-22	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Emergency Management	Medium	CT	Continued in 2017 Actions.

City of Hopewell 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Hopewell-1	Integrate the jurisdiction's mitigation plan into future capital improvement plans to ensure that new city facilities are located out of harm's way.	Emergency Management	High	CT	Ongoing.
Hopewell-2	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Development	High	CT	Continue.
Hopewell-3	Target FEMA's RL properties for specialized outreach and mitigation activities.	Emergency Management	Medium	CT	Two houses previously eligible might fall off list.
Hopewell-4	Inspect and clear debris from stormwater drainage system.	Public Works	Medium	CT	No further information provided.
Hopewell-5	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Development	Medium	CT	FEMA wants internal audit for and permits issued in floodplain
Hopewell-6	Support mitigation of priority flood-prone structures through promotion of acquisition/demolition, elevation, and floodproofing projects where feasible using FEMA HMA programs, where appropriate.	Emergency Management	Medium	CT	Continue.

City of Hopewell 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Hopewell-7	Consider participating in FEMA's CRS.	Development	Medium	CT	May require too much manpower.
Hopewell-8	Relocate public safety facility outside of 0.5 mile evacuation zone for industrial plants and as far as possible from train yards/tracks.	Emergency Management	High	CT	Effort is underway.
Hopewell-9	Discuss with owners opportunities to harden industrial facilities.	Emergency Management	Medium	CT	Continue.
Hopewell-10	Flood proof First Street sewer pump station to reduce flood damage.	Wastewater Treatment	High	C	Continue effort to address issue.
Hopewell-11	Raise and make permanent the floodwall at pump station (0 Riverside Avenue).	Virginia American Water Company	Medium	C	Completed.
Hopewell-12	Increase capacity of Cabin Creek drainage system including 1) debris clearing and revetment, and 2) if necessary, re-alignment of channel.	Public Works	High	C	1) has been completed; 2) is ongoing
Hopewell-13	Develop a debris removal plan.	Public Works	Medium	CT	Portions are complete

City of Hopewell 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Hopewell-14	Review and revise, if needed, local floodplain ordinances.	Development	Medium	C	New ordinance completed in 2015
Hopewell-15	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Emergency Management	Low	CT	Continue.
Hopewell-16	Distribute brochures and use other means to educate the public regarding preparedness and mitigation.	Emergency Management	Medium	CT	Continue.
Hopewell-17	Install NWS-grade tide gauge at confluence of James and Appomattox Rivers. Include acoustic water-level sensor, protective well components, data collection platform, GOES satellite telemetry, enclosure, stand, batteries, antenna, and solar panels.	Emergency Management	Low	CT	Continue.
Hopewell-18	Complete continuity of operations plan.	Emergency Management	Low	CT	Continue.
Hopewell-19	Identify means to coordinate, collect, and store damage assessment data in GIS format for each natural hazard event which causes death, injury, and/or property damage.	Development	Low	CT	Being done to some extent; would like to improve and make more efficient; new software or app(s) needed.

City of Hopewell 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Hopewell-20	Identify training opportunities for staff to enhance ability to use GIS for emergency management needs.	Emergency Management	Low	CT	Being done to some extent; would like to improve and make more efficient; new software or app(s) needed.

New Kent County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
New Kent-1	Complete initial application for Storm Ready program.	Emergency Management	Medium	C	Complete, continuing compliance.
New Kent-2	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Emergency Management	Low	CT	Ongoing as needed; weather based due to lack of available staff.
New Kent-3	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Inspections	High	CT	Continue in 2017 Actions.
New Kent-4	Continue to incorporate hazard mitigation techniques into new community facilities to minimize damages.	Building Development Office	Medium	CT	Homebuilders Associations prefer more lightweight/flammable materials which are more combustible creating a building fire hazard.
New Kent-5	Continue to participate in FEMA's CRS and achieve higher rating as possible.	Emergency Management	Medium	D	County discontinued participation in program due to lack of interest from community.
New Kent-6	Continue to work with the NWS to promote the "Turn Around, Don't Drown" public education campaign.	Emergency Management	Medium	CT	Change Priority Level

New Kent County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
New Kent-7	Continue to work with VDOF to implement the FIREWISE program in New Kent County.	Emergency Management	Medium	CT	Continue in 2017 Actions.
New Kent-8	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	CT	County uses social media.
New Kent-9	Encourage new facilities such as banks, gas stations, and pharmacies to have back-up generators as they are developed.	Building Development Office	Medium	CT	Continue in 2017 Actions.
New Kent-10	Evaluate stormwater system to determine if it is adequate for existing (or future) flood hazard.	Planning	Medium	CT	Ongoing. Continue in 2017 Actions.
New Kent-11	Harden local utilities to improve recovery time.	Public Utilities	Medium	CT	Dominion Virginia Power has been a good partner to clear overhead right-of-ways.
New Kent-12	Identify existing flood-prone structures that may benefit from mitigation measures such as elevation.	Emergency Management	Low	CT	Continue in 2017 Actions.

New Kent County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
New Kent-13	Increase staff resources for emergency management and floodplain management.	Emergency Management	High	CT	Continue in 2017 Actions.
New Kent-14	Increase woodland community and wildfire planning county-wide.	Planning	Medium	CT	Continue in 2017 Actions.
New Kent-15	Investigate manufactured homes and trailers to evaluate their resistance to wind and flood hazards.	Building Development Office	Low	CT	Continue in 2017 Actions.
New Kent-16	Mitigate road construction in Fannies Creek area.	Emergency Management	Medium	C	Completed by VDOT.
New Kent-17	Reinstitute a luncheon for architects and engineers to talk about various issues.	Emergency Management	Low	D	Program cancelled due to lack of staff to head up.
New Kent-18	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	CT	Continue in 2017 Actions.

New Kent County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
New Kent-19	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Emergency Management	Low	CT	Continue in 2017 Actions.
New Kent-20	Use fee simple and/or permanent easement to prevent development in the highest priority undeveloped floodplain (and/or wetlands) areas. Use these areas as public open space for passive recreational uses or utility easements.	Community Development	Medium	CT	Continue in 2017 Actions.
New Kent-21	Work with private utilities to keep right-of-way clear.	Public Utilities	Medium	CT	Change to High priority. Continue to work with Dominion Power on this initiative.
New Kent-22	Work with state to improve traffic management issues/concerns from Hampton Roads evacuation.	Planning	High	CT	Continue in 2017 Actions.

City of Petersburg 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Petersburg-1	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Building Department	High	CT	Continue.
Petersburg-2	Partner with parent-teacher associations and local schools to implement existing curriculum related to natural hazards (e.g., Masters of Disaster, Risk Watch).	Emergency Management	Low	CT	Continue.
Petersburg-3	Complete application for Storm Ready Program.	Emergency Management	Low	CT	Continue.
Petersburg-4	Consider participating in FEMA's CRS.	Public Works	Medium	CT	Continue.
Petersburg-5	Inspect and clear debris (or encourage VDOT to) from stormwater drainage system.	Public Works	High	CT	Continue.
Petersburg-6	Finish implementation of Reverse 911 system.	Emergency Management	Medium	CT	Continue.

City of Petersburg 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Petersburg-7	Establish flood-level markers along bridges and other structures to indicate the rise of water levels along creeks and rivers in potential flood-prone areas.	Public Works	Medium	NA	Continue.
Petersburg-8	Investigate all public utility lines to evaluate their resistance to flood, wind, and winter storm hazards.	Public Works	Medium	CT	Continue.
Petersburg-9	Work with VDOT, private utilities, and/or private homeowners to trim or remove trees that could down power lines.	Public Works	Low	CT	Continue.
Petersburg-10	Distribute brochures and use other means to educate the public regarding preparedness and mitigation.	Emergency Management	Medium	CT	Continue.
Petersburg-11	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning/ Assessor	Low	No Action	Waiting for funding for Pictometry.
Petersburg-12	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	CT	Continue.

City of Petersburg 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Petersburg-13	Support mitigation of priority flood-prone structures through promotion of acquisition/demolition, elevation, and floodproofing projects where feasible using FEMA HMA programs, where appropriate. Targets include properties on McKeever Street.	Emergency Management	Medium	CT	McKeever St.
Petersburg-14	Conduct stormwater utility fee feasibility study.	Public Works	Low	C	Completed April 2014
Petersburg-15	Install quick connects for generators at critical facilities.	Emergency Management	Medium	NA	Continue.
Petersburg-16	Continue to support development of Tri-City incoming evacuee management plan.	Emergency Management	Low	C	Developed the Tri-Cities Framework. This is a regional all hazard/emergency management plan. Exercised and implemented in 2014.

Powhatan County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Powhatan-1	Complete adoption of new floodplain ordinance.	Planning and Community Development	Low	C	Completed.
Powhatan-2	Consider installing "Turn Around, Don't Drown" road signs.	Emergency Management	Medium	D	No funds available to complete the project.
Powhatan-3	Continue implementation of community emergency response and other public outreach programs.	Emergency Management	Medium	CT	Continued in 2017 Actions.
Powhatan-4	Continue implementation of citizen notification system.	Emergency Management	Medium	D	Covered by Powhatan-1.
Powhatan-5	Continue to develop means to geo-code damage assessment information.	Emergency Management	Medium	CT	Continued in 2017 Actions.
Powhatan-6	Continue to identify and fulfill need for backup generators, communications, and/or vehicles at critical public facilities.	Emergency Management	Medium	D	Covered by Powhatan-1.

Powhatan County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Powhatan-7	Continue to incorporate mitigation principles into local comprehensive, emergency management, and recovery plans.	Planning and Community Development	High	CT	Use "lessons learned" to inform incorporation of mitigation into plans.
Powhatan-8	Continue to install flood gauges and road signs as funding permits.	Emergency Management	Medium	D	No funds available to complete the project.
Powhatan-9	Continue to support efforts to implement improvements to electrical grid.	Utilities/General Services	Medium	D	Not implementable.
Powhatan-10	Enhance and encourage creation of an active community emergency response program.	Emergency Management	Medium	D	No funds available to complete the project.
Powhatan-11	Increase staffing for emergency management.	Emergency Management	Medium	C	No further information.
Powhatan-12	Study Village County Building and junior high school for potential quick connects.	Emergency Management	Medium	D	Covered by Powhatan-1.

Powhatan County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Powhatan-13	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Planning and Community Development	Medium	CT	Continued in 2017 Actions.
Powhatan-14	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Emergency Management	Medium	D	Covered by Powhatan-1.
Powhatan-15	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	CT	Continued in 2017 Actions.
Powhatan-16	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning and Community Development	Low	CT	Continued in 2017 Actions.

Prince George County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Prince George-1	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Building Department	High	CT	Continue.
Prince George-2	Include an assessment and associated mapping of the municipality's vulnerability to location-specific hazards and make appropriate recommendations for the use of these hazard areas in a future comprehensive plan.	Planning Department	Medium	CT	Continue.
Prince George-3	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other types of projects where feasible using FEMA HMA programs, where appropriate.	Emergency Management	Medium	CT	Continue.
Prince George-4	Evaluate existing stormwater system to determine if it is adequate for existing (or future) flood hazard.	Public Works	Medium	CT	Continue.
Prince George-5	Target FEMA's RL properties for specialized outreach and mitigation activities.	Emergency Management	Medium	CT	Continue.
Prince George-6	Consider participating in the Storm Ready program sponsored by the NWS.	Emergency Management	Low	C	County is part of Storm Ready (NOAA) community system.

Prince George County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Prince George-7	Identify means to coordinate, collect, and store damage assessment data in GIS format for each natural hazard event which causes death, injury, and/or property damage.	Emergency Management	Low	CT	Continue.
Prince George-8	Increase capacity of fire department by purchasing additional specialized wildfire units (4-wheel drive vehicle with water tank and foam supplies) and pre-position around the county.	Emergency Management	Medium	C	No further information given
Prince George-9	Coordinate drought contingency plans with County Extension Office.	Emergency Management	Low	CT	No further information given
Prince George-10	Distribute brochures and use other means to educate the public regarding preparedness and mitigation.	Emergency Management	Medium	CT	Survivor Day
Prince George-11	Staff Emergency Management Office, Building Inspections Office, and/or Zoning Office at adequate levels.	County Administrator/ agency heads	Low	CT	Continue.
Prince George-12	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Emergency Management	Low	CT	Continue.

Prince George County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Prince George-13	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	CT	Continue.

City of Richmond 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Richmond-1	Add additional emergency management staff.	Emergency Management	Medium	CT	Added one Shelter Manager position during the period.
Richmond-2	Complete implementation of the "Turn Around, Don't Drown" public education campaign. Install along German School Road and Gillis Creek.	Emergency Management	Medium	C	Major construction project completed 2014 to mitigate flooding along German School Road corridor, Department of Public Works project.
Richmond-3	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning and Development Review	Low	CT	Sent to Richmond on 11.08.2016.
Richmond-4	Consider participating in FEMA's CRS.	Planning and Development Review	Medium	C	CRS rating currently 8. Revise to pursue a lower rating.
Richmond-5	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Planning and Development Review	High	CT	Continue
Richmond-6	Continue to improve real-time data about flood depths.	Emergency Management	High	CT	Added three grant-supported gauging stations during the reporting period.

City of Richmond 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Richmond-7	Develop a more advanced flood warning system to increase the ability to locally and specifically forecast flood events and flood depths. Tie into I-FLOWS and citizen notification system.	Emergency Management	High	C	Implemented a new notification system which will include a smart phone app.
Richmond-8	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	CT	Used an "all hazards approach" during annual "Survivor Day" events.
Richmond-9	Encourage construction of tornado safe rooms.	Emergency Management	High	D	Delete - lack of funding and adequate safe areas in schools and public buildings.
Richmond-10	Encourage purchase of NOAA radios by citizens. Provide NOAA weather radios to public facilities.	Emergency Management	Medium	CT	Continue
Richmond-11	Identify training opportunities for staff to enhance ability to use GIS for emergency management needs.	Emergency Management	Medium	CT	Continue.
Richmond-12	Investigate all primary and secondary schools to evaluate their resistance to all natural hazards.	Emergency Management	Medium	NA	Primary and secondary schools are the responsibility of the RPS Emergency Planner. Will continue coordination with school system's emergency planner.

City of Richmond 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Richmond-13	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning and Development Review	Medium	CT	Contractor will email current list to City staff.
Richmond-14	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Emergency Management	Medium	CT	Planning and Development Review; used mitigation grant funds to support gauging station projects.
Richmond-15	Identify and target an outreach program to industrial facilities (particularly hazardous facilities) to discuss hazards and mitigation alternatives.	Emergency Management	Medium	CT	Change "industrial facilities" to "businesses."
Richmond-16	Install quick connects for generators at critical facilities. Work with UASI to retrofit any facilities not funded with UASI grants.	Emergency Management	Medium	D	The identified city facility was extremely costly to install quick connects for generators.

Surry County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Surry-1	Add building and other attributes to building footprint GIS data layer.	Emergency Services	Medium	C	Completed.
Surry-2	Increase staff resources for emergency management.	Emergency Services	Medium		Further Information not provided.
Surry-3	Work with VDOT to establish additional flood-level markers along creeks and rivers in potential flood-prone areas.	Emergency Services	Medium		Further Information not provided.
Surry-4	Identify means to coordinate, collect, and store damage assessment data in GIS format for each natural hazard event which causes death, injury, and/or property damage.	Emergency Services	Medium		Further Information not provided.
Surry-5	Develop Continuity of Operations plan.	Emergency Services	Medium	C	Completed.
Surry-6	Review citizen notification system and identify ways to improve notification.	Emergency Services	Medium	C	Completed - alert system is in place.

Surry County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Surry-7	Continue to install the necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at key critical public facilities, as funding permits.	Public Safety	Medium	CT	Continue.
Surry-8	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Public Safety	Medium	D	County wants to remove this due to limits of financial liability.
Surry-9	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Department of Planning and Zoning	Medium	C	Completed.
Surry-10	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Public Safety	Medium	CT	Continue.
Surry-11	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Department of Planning and Zoning	Low	CT	Continue.
Claremont-1	Continue to work with VDOT to develop an alternative ingress/egress to Claremont Beach.	Mayor	High	Ongoing	Continue.

Surry County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Claremont-2	Conduct annual review of repetitive loss and severe repetitive loss property list provided by VDEM to ensure accuracy. Review will include verification of the geographic location of each repetitive loss property and determination if that property has been mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Mayor	Medium	Ongoing	Continue.
Claremont-3	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Mayor	Medium	Ongoing	Continue.
Claremont-4	Review locality's compliance with the National Flood Insurance Program with an annual review of the Floodplain Ordinances and any newly permitted activities in the 100-year floodplain.	Mayor	High	Complete	Continue.
Claremont-5	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA Hazard Mitigation Assistance (HMA) programs, where appropriate.	Mayor	Medium	Ongoing	Continue.
Surry (town)-1	Review storm drainage system and identify funding opportunities for improvements.	Mayor	High		Community did not respond to status update request.
Surry (town)-2	Work with local sewer provider to ensure continual operations and identify funding opportunities for grants to help ensure continuity of operations (quick connects, raised systems, etc.)	Mayor	High	Ongoing	Town is in negotiations with Hampton Roads Sanitation District (HRSD) to take over management of sewage treatment plant.

Surry County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Surry (town)-3	Conduct annual review of repetitive loss and severe repetitive loss property list provided by VDEM to ensure accuracy. Review will include verification of the geographic location of each repetitive loss property and determination if that property has been mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Mayor	Medium		Community did not respond to status update request.
Surry (town)-4	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Mayor	Medium		Community did not respond to status update request.
Surry (town)-5	Review locality's compliance with the National Flood Insurance Program with an annual review of the Floodplain Ordinances and any newly permitted activities in the 100-year floodplain.	Mayor	High		Community did not respond to status update request.
Surry (town)-6	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA Hazard Mitigation Assistance (HMA) programs, where appropriate.	Mayor	Medium		Community did not respond to status update request.

Sussex County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Sussex-1	Add staff to Emergency Management Office, Building Inspections Office, and/or Zoning Office.	Public Safety	Medium	Continue	2011 - 1 part-time code compliance officer; 1 position serves as floodplain manager with many other duties.
Sussex-2	Continue to enforce zoning and building codes to prevent/control construction within the floodplain.	Building Inspections/ Department of Planning and Zoning	High	Continue	Ongoing - County obtained Arc GIS; will begin training.
Sussex-3	Continue to evaluate the floodplain manager's roles and responsibilities in each local jurisdiction.	Department of Planning and Zoning	High	Continue	Ongoing - emphasis on Stoney Creek.
Sussex-4	Continue to identify funding opportunities to replace vulnerable or undersized culvert stream crossings with bridges or larger culverts to reduce flood hazards.	Public Safety	Medium	Continue	Ongoing/ 2011 - worked with VDOT and made some progress including some increase in culvert sizes.
Sussex-5	Continue to pursue a federal/state project to elevate I-95 bridge and widen channel at Stony Creek.	Public Safety	Medium	Continue	No progress as it requires an expensive mitigation action. During extensive flooding a re-route of I-95 is required.
Sussex-6	Develop GIS capabilities.	Public Safety	Medium	Continue	Ongoing - County obtained Arc GIS; will begin training.

Sussex County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Sussex-7	Increase capacity of stormwater system in conjunction with towns of Wakefield and Waverly.	Public Safety	Medium	Continue	Ongoing - some progress after Ernesto when culverts and drains clogged.
Sussex-8	Investigate using non-conforming or substantial damage provisions to require hazard retrofitting of existing development.	Department of Planning and Zoning	Medium	Not applicable - Delete	Not applicable.
Sussex-9	Target FEMA's RL properties for specialized outreach and mitigation activities.	Public Safety	Low	Continue	Target Stoney Creek residences on list during new planning cycle.
Sussex-10	Work with the NWS to promote the "Turn Around, Don't Drown" public education campaign.	Public Safety	Medium	Continue	2011 - No action to date.
Sussex-11	Work with VDOT to address at-risk roads as funding is available.	Public Safety	Medium	Continue	Ongoing, some progress but there will always be a need.
Sussex-12	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA HMA programs, where appropriate.	Public Safety	Medium	Continue	No grant activity during last planning cycle.

Sussex County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Sussex-13	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Department of Planning and Zoning	Medium	Continue	2016 new maps, adopted new ordinance.
Sussex-14	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Public Safety	Medium	Continue	Some opportunities for continuation.
Sussex-15	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Department of Planning and Zoning	Low	Continue	Continue.
Stony Creek-1	Review potential grant options to reduce repetitive and general flood damages to homes in town.	Mayor	Medium		Community did not respond to status update request.
Stony Creek-2	Work with the VDOT/VDEM/USACE to identify funding sources to improve the channel or bridge at I-95 and U.S. Route 301.	Mayor	Medium		Community did not respond to status update request.
Stony Creek-3	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Mayor	Medium		Community did not respond to status update request.

Sussex County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Stony Creek-4	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Mayor	Medium		Community did not respond to status update request.
Stony Creek-5	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Mayor	Low		Community did not respond to status update request.
Stony Creek-6	Mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Mayor	Medium		Community did not respond to status update request.
Wakefield-1	Review storm drainage system and identify funding opportunities for improvements.	Mayor	High		Community did not respond to status update request.

Sussex County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Wakefield-2	Review quick connection options for Town Hall and local 1st responders.	Mayor	High		Community did not respond to status update request.
Wakefield-3	Work with the NOAA on a possible Turn-Around, Don't Drown Campaign for streets (also include VDOT).	Mayor	High		Community did not respond to status update request.
Wakefield-4	Conduct annual review of repetitive loss and severe repetitive loss property list provided by VDEM to ensure accuracy. Review will include verification of the geographic location of each repetitive loss property and determination if that property has been mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Mayor	Medium		Community did not respond to status update request.
Wakefield-5	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Mayor	Medium		Community did not respond to status update request.
Wakefield-6	Review locality's compliance with the National Flood Insurance Program with an annual review of the Floodplain Ordinances and any newly permitted activities in the 100-year floodplain.	Mayor	High		Community did not respond to status update request.
Wakefield-7	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA Hazard Mitigation Assistance (HMA) programs, where appropriate.	Mayor	Medium		Community did not respond to status update request.

Sussex County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Waverly-1	Review storm drainage system and identify funding opportunities for improvements.	Mayor	High		Community did not respond to status update request.
Waverly-2	Review quick connection options for Town Hall and local 1st responders.	Mayor	High		Community did not respond to status update request.
Waverly-3	Work with Sussex Sewer Authority to ensure continual operations and identify funding opportunities for grants to help ensure CO (quick connects, raised systems, etc.)	Mayor	High		Community did not respond to status update request.
Waverly-4	Conduct annual review of repetitive loss and severe repetitive loss property list provided by VDEM to ensure accuracy. Review will include verification of the geographic location of each repetitive loss property and determination if that property has been mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Mayor	Medium		Community did not respond to status update request.
Waverly-5	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Mayor	Medium		Community did not respond to status update request.
Waverly-6	Review locality's compliance with the National Flood Insurance Program with an annual review of the Floodplain Ordinances and any newly permitted activities in the 100-year floodplain.	Mayor	High		Community did not respond to status update request.

Sussex County 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Waverly-7	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, floodproofing, and other mitigation projects where feasible using FEMA Hazard Mitigation Assistance (HMA) programs, where appropriate.	Mayor	Medium		Community did not respond to status update request.

Richmond Regional PDC 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Regional-1 (Richmond Regional PDC)	Leverage regional partnerships (e.g., law enforcement) to better use their data to inform mitigation planning and project development.	Local Emergency Managers	High	CT	This strategy is an ongoing practice that PDCs continue to perform. Most PDC work involves relationships and partnerships with varied entities.
Regional-2 (Richmond Regional PDC)	Work with state partners and neighboring regions to expand planning efforts regarding regional strategy for incoming evacuees (topics to include traffic management, shelters, information sharing, etc.).	Local Emergency Managers	Low	CT	This strategy is an ongoing practice that PDCs continue to perform. Most PDC work involves relationships and partnerships with varied entities.
Regional-3 (Richmond Regional PDC)	Work with state partners and neighboring localities to monitor and implement Next Generation 911 GIS data standards.	PDC, Local GIS Managers	High	Ongoing	Ongoing

Crater PDC 2011 Mitigation Action Plans					
Number in 2011 Plan	Strategy	Responsible Department	Priority	2016 Status	Comments
Regional-1 (Crater)	Leverage regional partnerships (e.g., law enforcement) to better use their data to inform mitigation planning and project development.	Local Emergency Managers	High	CT	This strategy is an ongoing practice that PDCs continue to perform. Most PDC work involves relationships and partnerships with varied entities.
Regional-2 (Crater)	Work with state partners and neighboring regions to expand planning efforts regarding regional strategy for incoming evacuees (topics to include traffic management, shelters, information sharing, etc.).	Local Emergency Managers	Low	CT	This strategy is an ongoing practice that PDCs continue to perform. Most PDC work involves relationships and partnerships with varied entities.
Regional-3 (Crater)	Work with state partners and neighboring localities to monitor and implement Next Generation 911 GIS data standards.	PDC, Local GIS Managers	High	CT	Work has begun and will continue into plan update cycle.

Appendix D – 2017 to 2022 Mitigation Actions

The following tables provide the new and updated actions committed to by the participating jurisdictions in the 2017 Richmond Regional-Crater PDC Hazard Mitigation Plan. The updates are provided by county in alphabetical order. Towns are included with their respective counties.

Charles City County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Charles City - 1	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation .	Planning and Emergency Management	High	1, 2, 4, 5, 7	All	Ongoing	Grants, CIP
Charles City - 2	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Planning and Emergency Management	Medium	1, 2	All	Ongoing	In-kind hours
Charles City - 3	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	1	Flooding	Ongoing	In-kind hours
Charles City - 4	Work with private utilities to keep right-of-way clear.	Public Works	Medium	1, 3, 6	Severe storm, wind, winter storm	Ongoing	In-kind hours
Charles City - 5	Explore opportunities to reduce risk form fire in rural settings through increased resources such as dry hydrants, drafting, equipment and tankers.	Administration	High	1, 2, 3, 6	Wildfire, structure fire	Ongoing	Grants, CIP

Chesterfield County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Chesterfield - 1	Based on annual RL/SRL county data, continue to work with VDEM and FEMA to mitigate repetitive and SRL properties as grant funds are available and owners demonstrate interest in participation.	Emergency Management	Low	1, 2	Flooding, severe storm	Ongoing	Grant Funds
Chesterfield - 2	Enhance and coordinate use of GIS to gather damage assessment information by all county agencies including establishing naming conventions and data categories.	GIS	Low	2, 3, 5, 6	All	Ongoing	Local GIS Staff
Chesterfield - 3	Include hazard mitigation in the comprehensive plan update in 2017 by linking concepts in the planning process that would accomplish hazard mitigation.	Planning	High	2, 6	All	2017 Comp Plan Update Process	Planning Department
Chesterfield - 4	Address critical facility infrastructure through potential grant funding with the possibility of quick connects.	Emergency Management	Medium	1, 4	All	Grant funding as available	Local Staff
Chesterfield - 5	Provide training opportunities to educate all county staff with a role in disaster recovery through training, mitigation techniques and long term recovery best practices.	Emergency Management	High	2, 5	All	Annually/Ongoing	EM Staff
Chesterfield - 6	Encourage whole community preparedness through education of hazards affecting the community and steps to reduce the vulnerability.	Emergency Management	High	1, 2, 7	All	Annually/Ongoing	Local Staff

Chesterfield County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Chesterfield - 7	Work with Virginia Department of Mines, Minerals and Energy to continue to refine the Locations of Abandoned Mines in the Greater Richmond Area maps. Use these maps to guide zoning, development, and building inspection decisions.	Inspections; Environmental Engineering; Planning	Medium	2, 3,	Land subsidence	Ongoing	Community Development Staff
Chesterfield - 8	Provide disaster job for building permit applications in new Enterprise Land Management System (ELM) to comprehensively capture damage assessment data.	GIS; Inspections	Medium	5, 6	All	Ongoing	Community Development Staff
Chesterfield - 9	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Inspections	High	1, 2, 4	Flood, other hazards	Ongoing	Community Development Staff
Chesterfield-10	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	1, 2, 4	Flood	Ongoing	Local Staff
Chesterfield - 11	Maintain Storm Ready certification (last certification 2014).	Emergency Management	Low	1, 2, 3, 4, 6	All	Ongoing	EM Staff
Chesterfield - 12	Incorporate hazard mitigation potential in decision making for acquiring new park land and open space easements.	Parks and Rec	Low	2, 4	All	Ongoing	Local Staff

Chesterfield County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Chesterfield - 13	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation.	Community Development	High	1, 2, 4, 5, 7	All	Ongoing	Community Development Staff
Chesterfield - 14	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Emergency Management	Medium	1, 2	All	Ongoing	Local Staff

City of Colonial Heights 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Colonial Heights - 1	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Building Inspection Department	High	2, 4	All	Ongoing	Staff
Colonial Heights - 2	Review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Planning Department	Medium	2	Flooding	Ongoing	Staff
Colonial Heights -3	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Emergency Management	Medium	1, 2, 4, 5, 7	All	Ongoing	Staff
Colonial Heights - 4	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	2	All	Ongoing	Staff
Colonial Heights - 5	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list. Create a GIS layer to identify RL and SRL properties.	Emergency Management	Low	1	Flooding, Severe Storms	Annually	Staff
Colonial Heights - 6	Complete purchase of NOAA weather radios for public facilities.	Emergency Management	Medium	1, 2, 6, 7	All	Within 5 years	Grants, city budget
Colonial Heights - 7	Obtain building footprint data in cooperation with Crater PDC to enable flood hazard analysis using TEIF2.0 analysis method	GIS/CPDC	High	2, 5	Flooding	Within 3 years	Grants, staff, Crater PDC staff

City of Colonial Heights 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Colonial Heights - 8	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Emergency Management/ Planning	Medium	2	All	Ongoing	Staff

Dinwiddie County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Dinwiddie - 1	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning/Zoning	Low	1, 2, 4	Flood	Annually	Staff
Dinwiddie - 2	Continue to work with VDOT to evaluate and mitigate at-risk roads.	Emergency Management	Medium	1, 2	Flood, winter storm, wildfire	Ongoing	Staff
Dinwiddie - 3	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	1, 2	All - emphasis flooding, earthquake and wind	Ongoing	Staff
Dinwiddie - 4	Continue to refine and update Continuity of Operations Plan. Exercise Plan in 2017.	Emergency Services	Medium	3	All	2017	Staff
Dinwiddie - 5	Implement Debris Management Plan; consider County-specific on-call debris management contractors.	Emergency Management	Medium	1, 2, 3, 5	All	Ongoing	Staff
Dinwiddie - 6	Incorporate CVEMA data into County CAD system (road and RR crossings, etc.) for 911 dispatchers. Correlate crossing numbers to location.	Emergency Management	High	1, 2, 3, 5, 6, 7	All	Ongoing	Staff
Dinwiddie - 7	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	1, 2	Flood	Annually	Staff
Dinwiddie - 8	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater	Emergency Management	Medium	1, 2, 4, 5, 7	All	Ongoing	FEMA Grants

Dinwiddie County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
	management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation						
Dinwiddie - 9	Increase water/wastewater treatment systems resiliency with County, McKinney and two private water systems.	Dinwiddie County Water Authority, private systems	High	1, 4, 7	All	Ongoing	Grants, authority funds
Dinwiddie - 10	Continue to incorporate Master State Assistance Guide (MSAG) information into 911 dispatcher resources to more accurately locate interstate incidents and facilitate response resources.	Emergency Management	High	1, 2, 3, 4, 5, 6, 7	All	Ongoing	Staff
Dinwiddie - 11	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Planning, Emergency Management	High	1, 2	All	Ongoing	Planning and other staff
McKenney - 1	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning/Zoning	Low	1, 2, 4	Flood	Annually	Staff
McKenney - 2	Continue to work with VDOT to evaluate and mitigate at-risk roads.	Emergency Management	Medium	1, 2	Flood, winter storm, wildfire	Ongoing	Staff
McKenney - 3	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	1, 2	All - emphasis flooding, earthquake and wind	Ongoing	Staff

Dinwiddie County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
McKenney - 4	Increase water/wastewater treatment systems resiliency with County, McKenney and two private water systems.	Dinwiddie County Water Authority, private systems	High	1, 4, 7	All	Ongoing	Grants, authority resources
McKenney - 5	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	No information provided.	No information provided.	1, 2, 4, 5, 7	All	Ongoing	FEMA Grants
McKenney - 6	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	No information provided.	No information provided.	1, 2	All	Ongoing	Planning staff

City of Emporia 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Emporia-1	Complete improvements to utility lines.	Public Utilities	High	1, 2, 4, 5	Flooding, wind, severe storm	Ongoing	No Further Information
Emporia-2	Complete replacement of Halifax Street Bridge.	Public Works	Medium	1, 7	All	Long-term	No Further Information
Emporia-3	Continue to review and make recommendations for improvements to the stormwater system.	Emergency Services	High	1, 7	Flooding	Ongoing	No Further Information
Emporia-4	Finalize Continuity of Operations Plan.	Administration	High	2, 3, 5, 6	All	Ongoing	Staff
Emporia-5	Identify grant to support geo-coded damage assessment data collection.	Emergency Services	Medium	3, 5, 6, 7	All	Ongoing	Staff
Emporia-6	Install additional gauges on Meherrin River.	Emergency Services	Medium	1, 3, 6, 7	Flooding	Ongoing	FEMA grants
Emporia-7	Integrate data from new flood gauges into citizen notification system.	Emergency Services	Medium	2, 3	Flooding	Ongoing	Staff, VDEM Inflows manager
Emporia-8	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Emergency Services	Medium	1, 2, 4, 5, 7	All	Ongoing	FEMA grants

City of Emporia 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Emporia-9	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Zoning Administrator	Medium	2	Flooding	Annually	Staff
Emporia-10	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Services	Low	1, 2, 3, 4	All	Ongoing	Staff
Emporia-11	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Zoning Administrator	Low	1	Flooding	Annually	Staff
Emporia-12	Install warning sirens.	Emergency Services	Medium	1, 3, 6, 7	All	Ongoing	FEMA grants
Emporia - 13	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Planning	Medium	1, 2	All	Ongoing	Staff

Goochland County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Goochland - 1	Continue coordination with VDEM on incoming evacuee issues.	Emergency Management	Medium	4, 5, 6, 7	All	Ongoing	Included in normal workflow.
Goochland - 2	Continue to coordinate with City of Richmond and Department of Corrections to address wastewater capacity issues.	Public Utilities	High	7	All	Ongoing	Regular meetings with City of Richmond and other utility partners.
Goochland - 3	Continue to provide training opportunities to county staff.	Emergency Management	Medium	2, 3, 4, 6, 7	All	Ongoing	In-house staff
Goochland - 4	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	1, 2, 4, 7	All	Ongoing	In-house staff
Goochland - 5	Identify means to coordinate, collect, and store damage assessment data in GIS format for each natural hazard event which causes death, injury, and/or property damage.	Emergency Management/ IT	Medium	2, 3, 5, 6, 7	All	Ongoing	EM and IT staff
Goochland - 6	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	1, 2	Flooding	Ongoing	Storm water management team
Goochland - 7	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning	All county agencies	High	1, 2, 4, 5, 7	All	Ongoing	County staff

Goochland County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
	systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation.						
Goochland - 8	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	All county agencies	High	1, 2	All	Ongoing	County staff

Greenville County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Greenville-1	Complete development of Continuity of Operations plan.	Public Safety	Medium	1, 2, 5, 6, 7	All	No Information given	Staff
Greenville-2	Complete implementation of citizen notification system.	Public Safety	Medium	1, 2, 5, 6, 7	All	No Information given	Staff
Greenville-3	Consider participating in "Turn Around, Don't Drown" public education campaign.	Public Safety	Medium	1, 2, 5	Flooding	Ongoing	Staff
Greenville-4	Improve GIS layers and track storm damages.	Public Safety	Medium	1, 5, 6	All	Ongoing	Staff
Greenville-5	Work with VDOT to establish additional flood level markers along creeks and rivers in potential flood-prone areas.	Public Safety	Medium	1, 2, 5	Flooding	Ongoing	Staff
Greenville-6	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Department of Planning and Zoning	Medium	2	Flooding	Annually	Staff
Greenville-7	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Public Safety	Medium	1, 2, 4, 6, 7	All	Ongoing	Staff
Greenville-8	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Department of Planning and Zoning	Low	1, 2	Flooding, severe storm	Annually	Staff
Greenville-9	Work with state partners and neighboring localities to monitor and implement Next Generation 911 GIS data standards. Explore 911 consolidation with Emporia.	GIS Manager, PDC	High	1, 2, 3, 6, 7	All	Ongoing	Staff

Greenville County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Greenville - 10	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	No information provided.	No information provided.	1, 2, 4, 5, 7	All	Ongoing	FEMA grants
Greenville - 11	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	No information provided.	No information provided.	1, 2	All	Ongoing	Staff
Jarratt - 1	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Community did not respond to status update request.	Community did not respond to status update request.	1, 2, 4, 5, 7	All	Ongoing	FEMA grants

Greenville County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Jarratt - 2	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Community did not respond to status update request.	Community did not respond to status update request.	1, 2	All	Ongoing	staff

Hanover County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Hanover - 1	Complete installation of necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at key critical facilities.	Emergency Management	Medium	1, 7	All	Ongoing	Grants and incorporated as part of any new construction
Hanover - 2	Develop a more advanced flood warning system to increase the ability to locally and specifically forecast flood events and flood depths. Partner with other organizations including the NWS, U.S. Geological Survey (USGS), and local watershed organizations.	Emergency Management	High	1, 2, 3, 6	Flooding	Ongoing	NWS, USGS, grants
Hanover - 3	Work with the NWS to promote the “Turn Around, Don’t Drown” public education campaign.	Public Safety	High	1, 2	Flooding	Ongoing	Staff
Hanover - 4	Review locality’s compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Planning and Community Development	Medium	2	Flooding	Annually	Staff
Hanover - 5	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	1, 2, 4, 7	All	Annually	Staff
Hanover - 6	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning and Community Development	Low	1, 2	Flooding, severe storm	Annually	Staff
Hanover - 7	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of	Emergency Management, Public Works, Planning and Community Development	High	1, 2, 4, 5, 7	All	Ongoing	FEMA grants

Hanover County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
	existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation.						
Hanover - 8	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Planning and Community Development	High	1, 2	All	Ongoing	Staff
Ashland-1	Evaluate and make improvements, as needed, to stormwater system to ensure adequacy to handle major rain events.	Planning and Utilities	Medium	1, 2, 4, 5	All	Ongoing	Grant and local funding
Ashland-2	Continue CRS activities to reduce flood risk.	Planning and Community Development	Medium	1, 2	Flood	Ongoing	Local staff and funding
Ashland-3	Develop Continuity of Operations plan.	Police	Low	2, 3, 5, 6	All	Long-range	Local staff and funding
Ashland-4	Continue to enhance capabilities to use GIS for emergency management.	Planning and Community Development	Low	2, 3, 5, 5, 7	All	Ongoing	Local staff and funding, including coordination with Hanover County.
Ashland-5	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning	Planning and Community Development	Medium	1, 2, 4, 5, 7	All	Ongoing	Local staff and funding, including coordination with Hanover County. Grants.

Hanover County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
	systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation.						
Ashland-6	Review locality's compliance with the NFIP with an annual review of the Floodplain Ordinances and any newly permitted activities in the 100-year floodplain.	Planning and Community Development	Medium	2	Flooding	Annually	Local staff
Ashland-7	Distribute brochures and use other means (e.g., local media) to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Police	Medium	1, 2, 4, 7	All	Ongoing	Local staff and funds
Ashland-8	Request list from VDEM or VA Department of Conservation and Recreation (DCR) and conduct annual review of repetitive loss (RL) and severe repetitive loss (SRL) property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning and Community Development	Low	1, 2	Flooding, severe storm	Annually	Local staff
Ashland - 9	Coordinate debris management with Hanover County to the degree possible.	Public Works	Low	2, 3 5, 6, 7	All debris generating storms	2-5 years	Town and County Staff
Ashland - 10	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Planning and Community Development	High	1, 2	All	Ongoing	Local staff

Henrico County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Henrico - 1	Conduct site inspections of schools and help to identify areas for use as tornado safe rooms.	Emergency Management	Medium	1, 7	Wind	Completed annually	Fire, Police, HCPS
Henrico - 2	Continue to implement channel maintenance program.	Public Works	Low	1, 2, 7	Flood	Ongoing	Floodplain Management
Henrico - 3	Continue comprehensive Public Outreach program maximizing Community Emergency Resource Team resources to enhance training availability to targeted populations. Participate in Great Shakeout and other wide-scale disaster drills. Complete participation in the StormReady program sponsored by the NWS and leverage "Storm Ready" to maximize participation in the Great Shakeout and other wide-scale disaster drills and annual preparedness days emphasizing flood, wind, wildfire, and earthquake hazard readiness. Continue outreach through brochure distribution and other means (e.g., local media) to educate the public regarding preparedness and mitigation.	Emergency Management	Medium	1, 2, 4, 5, 7	All	Ongoing	HCOEM, HFD, HPD, HCHD personnel and staffing
Henrico - 4	Enhance water availability for wildfire fighting in eastern portion of the county.	Fire	Medium	1,3	Wildfire	Ongoing	HFD CRR resources
Henrico - 5	Ensure stormwater system remains adequate for flood hazards.	Public Utilities	Medium	1, 3, 6, 7	Flood	Ongoing	DPU resources
Henrico - 6	Identify and secure pre-event shelter sites (not flood-prone, not subject to wind damage) and ensure compliance with national shelter standards.	Emergency Management	Low	1, 4, 7	All	Ongoing	Emergency Management
Henrico - 7	Identify new site for Emergency Operations Center (EOC) and identify viable alternate site. Second floor of building is vulnerable to wind damage and is located near major road and hospital; there is potential for hazmat exposure. Also EOC is not a dedicated facility.	Emergency Management	High	1, 7	All	10 years	Emergency Management

Henrico County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Henrico - 8	Incorporate mitigation into existing standing regional planning groups.	Emergency Management	Medium	1, 2, 4, 6	All	Ongoing	Meetings and existing planning efforts
Henrico - 9	Install electrical hook-ups, wiring, and switches to allow quick connects at county-owned critical facilities (focus on properties not funded through BZCP and UASI programs).	Emergency Management	High	1, 7	All	Ongoing	Staff Resources
Henrico - 10	Invest in staff capacity to enhance ability to implement mitigation programs throughout the county.	Emergency Management	Medium	1, 2, 7	All	Ongoing	Staff Resources
Henrico - 11	Install IFLOWS gauges at frequently flooding rivers and water bodies.	Public Utilities, Public Works, Emergency Management	Low	1, 2, 3, 6	Flooding	Ongoing	Resources to support equipment purchases to establish and maintain resources
Henrico-12	Maintain relationships with Dominion Virginia Power, Comcast, Verizon (and other utility service providers), and VDOT to ensure swift removal of debris and continued maintenance of lines to minimize future debris.	Dominion, DPW, DPU, Fire and Police	Medium	1, 3	Flood, wind, winter storm, severe storm	Ongoing	Staff Resources
Henrico-16	Incorporate mitigation principles into local comprehensive, emergency management, and recovery plans.	Emergency Management	Low	1, 2, 3, 4, 5, 6, 7	All	Ongoing	Staff Resources
Henrico - 17	Request list from VDEM or VA DCR and conduct annual review of past listed and current RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Emergency Management	Low	1, 2	Flooding	Annual	Continued staff interaction with VDEM and DCR

Henrico County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Henrico - 18	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Building Inspections	High	2	Flooding	Ongoing	Staff Resources
Henrico - 19	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Public Works	Medium	2	Flooding	Ongoing	Staff Resources
Henrico - 20	Mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation.	Emergency Management, Public Utilities, Public Works, Planning, Permit Center, Building Inspections, Police, Schools, Rec & Parks	High	1, 2, 4, 5, 7	All	Ongoing	Awareness of new grant opportunities to support mitigation projects
Henrico - 21	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Planning and Emergency Management	High	1, 2	All	Ongoing	Awareness of new grant opportunities to support mitigation projects

City of Hopewell 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Hopewell-1	Integrate the jurisdiction's mitigation plan into future capital improvement plans to ensure that new city facilities are located out of harm's way.	Emergency Management	High	1, 2, 4, 7	All+F2F27: H42	Ongoing	Staff
Hopewell-2	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Development	High	1, 2, 4, 7	Flood	Ongoing	Staff
Hopewell-3	Target FEMA's RL properties for specialized outreach and mitigation activities.	Emergency Management	Medium	1, 2	Flood	Ongoing	Staff
Hopewell-4	Inspect and clear debris from stormwater drainage system.	Public Works	Medium	2, 3, 7	Flood, severe storm	Ongoing	Staff
Hopewell-5	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Development	Medium	1, 2	Flood	Ongoing	Staff
Hopewell-6	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation			1, 2, 4, 5, 7	All	Ongoing	FEMA grants
Hopewell-7	Consider participating in FEMA's CRS.	Development	Medium	1, 2	Flood	Ongoing	Staff

City of Hopewell 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Hopewell-8	Relocate public safety facility outside of 0.5 mile evacuation zone for industrial plants and as far as possible from train yards/tracks.	Emergency Management	High	1, 7	All	Short Term	Staff, Capital Improvement budget
Hopewell-9	Discuss with owners opportunities to harden industrial facilities.	Emergency Management	Medium	1	All	Ongoing	Staff
Hopewell-10	Increase capacity of Cabin Creek drainage system including 1) debris clearing and revetment, and 2) if necessary, re-alignment of channel.	Public Works	High	1, 7	Flood, severe storm, wind	Short Term	Staff, Capital Improvement budget
Hopewell-11	Develop a debris removal plan.	Public Works	Medium	2, 3	Flood, severe storm, wind, winter storm	Short Term	Staff
Hopewell-12	Review and revise, if needed, local floodplain ordinances.	Development	Medium	2	Flood	Ongoing	Staff
Hopewell-13	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Emergency Management	Low	1, 2	Flood	ongoing	staff
Hopewell-14	Distribute brochures and use other means to educate the public regarding preparedness and mitigation.	Emergency Management	Medium	1, 2, 4, 6, 7	All	ongoing	staff
Hopewell-15	Install NWS-grade tide gauge at confluence of James and Appomattox Rivers. Include acoustic water-level sensor, protective well components, data collection platform, GOES satellite telemetry, enclosure, stand, batteries, antenna, and solar panels.	Emergency Management	Low	1, 3	Flood	Short Term	NWS, USGS, FEMA grants, VDEM IFLOWs staff

City of Hopewell 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Hopewell-16	Complete continuity of operations plan.	Emergency Management	Low	2, 3, 5, 6	All	Short Term	Staff
Hopewell-17	Identify means to coordinate, collect, and store damage assessment data in GIS format for each natural hazard event which causes death, injury, and/or property damage.	Development	Low	1, 2, 3, 5, 6, 7	All	Short Term	Staff
Hopewell-18	Identify training opportunities for staff to enhance ability to use GIS for emergency management needs.	Emergency Management	Low	2, 3, 4, 5, 6, 7	All	Ongoing	Staff
Hopewell-19	Increase flow capacity of Cattail Creek channel and culverts crossing CSX & Norfolk Southern RR to address repeated flooding and damage to infrastructure.	Public Works	High	1	Flood	Short Term	Staff, Capital Improvement budget
Hopewell-20	Relocate power equipment at Hopewell Marina to minimize potential impacts from flooding.	Public Works	High	1	Flood	Short Term	Staff, Capital Improvement budget
Hopewell-21	Stabilize stream channel and road embankment of City's primary emergency route: Winston Churchill Dr, between High Ave & Arlington Rd. and protect adjacent residences.	Public Works	High	1	Flood	Short Term	Staff, Capital Improvement budget
Hopewell-22	Conduct engineering study and upgrade generator at Hopewell critical facilities.	Public Works	High	1, 4, 7	All	Short Term	Staff, Capital Improvement budget
Hopewell-23	Install audible outside warning system.	Emergency Management	High	1, 2, 3, 4, 5	All	Short Term	Staff, Capital Improvement budget
Hopewell - 24	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Development	Low	1, 2	All	Ongoing	Staff, FEMA grants

New Kent County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
New Kent - 1	Complete initial application for Storm Ready program.	Emergency Management	Medium	1, 2, 3, 5	All	2018	Staff
New Kent - 2	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Emergency Management	Low	1, 2	Flood	Annually	Staff
New Kent - 3	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Inspections	High	2	Flood	Ongoing	Staff
New Kent - 4	Continue to incorporate hazard mitigation construction and landscaping techniques into new community facilities to reduce risk of building fires and wildfire susceptibility.	Building Development Office	Medium	2	Wildfire	Ongoing	Staff
New Kent - 5	Consider participating in FEMA's CRS and achieve as high a rating as possible.	Emergency Management	Medium	1, 2	Flood	Ongoing	Staff
New Kent - 6	Continue to work with the NWS to promote the "Turn Around, Don't Drown" public education campaign.	Emergency Management	Medium	1, 2	Flooding	Ongoing	Staff
New Kent - 7	Continue to work with VDOF to implement the FIREWISE program in New Kent County.	Emergency Management	Medium	1, 2	Wildfire	Ongoing	Staff and DOF
New Kent - 8	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	1, 2, 4, 6, 7	All	Ongoing	Staff
New Kent - 9	Encourage new facilities such as banks, gas stations, and pharmacies to have back-up generators as they are developed.	Building Development Office	Medium	1, 2, 4	All	Ongoing	Staff
New Kent -10	Evaluate stormwater system to determine if it is adequate for existing (or future) flood hazard.	Planning	Medium	1, 2, 7	Flooding	Ongoing	Staff

New Kent County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
New Kent -11	Harden local utilities to improve recovery time including continued cooperation with Dominion VA Power to reduce woody hazards on right-of-ways.	Public Utilities	Medium	1, 2, 7	Flooding, winter storm, wildfire	Ongoing	Staff and Dominion
New Kent -12	Identify existing flood-prone structures that may benefit from mitigation measures such as elevation.	Emergency Management	Low	1, 2	Flooding	Ongoing	Staff
New Kent - 13	Increase staff resources for emergency management and floodplain management.	Emergency Management	High	1, 2, 3, 5, 6, 7	All	Ongoing	Budget and staff plans
New Kent - 14	Increase woodland community and wildfire planning county-wide.	Planning	Medium	1, 2	Wildfire	Ongoing	Staff and DOF
New Kent - 15	Investigate manufactured homes and trailers to evaluate their resistance to wind and flood hazards.	Building Development Office	Low	1, 2	Wind, flooding	Ongoing	Staff
New Kent -16	Mitigate road construction in Fannies Creek area.	Emergency Management	Medium	1, 2	Flooding	Ongoing	Staff and VDOT
New Kent - 17	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	1, 2	Flooding	Annually	Staff
New Kent - 18	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10.	Emergency Management	Low	1, 2, 4, 5, 7	All	Ongoing	FEMA Grants

New Kent County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
	targeted hazard education 11. wastewater and water supply system hardening and mitigation.						
New Kent - 19	Use fee simple and/or permanent easement to prevent development in the highest priority undeveloped floodplain (and/or wetlands) areas. Use these areas as public open space for passive recreational uses or utility easements.	Community Development	Medium	1, 2	Flooding	Ongoing	Staff
New Kent - 20	Work with state to improve traffic management issues/concerns from Hampton Roads evacuation.	Planning	High	2, 3, 4, 5, 6, 7	Hurricane evacuation	Ongoing	Staff, VDEM, VDOT
New Kent - 22	Monitor and asses earthquake vulnerability and potential impacts to vulnerable properties.	Delete	Low	1, 2	Earthquake	Ongoing	Staff
New Kent - 23	Identify additional shelter locations.	Emergency Management	Medium	1, 4	All	Ongoing	Staff
New Kent - 24	Investigate feasibility of I-Flow gauges for Colonies and campground areas near Chickahominy River.	Emergency Management	Low	1, 3, 6	Flooding	Ongoing	Staff, NWS, USGS, VDEM IFLOWs Manager
New Kent - 25	Investigate new campaign for community alert system	Emergency Management	High	1, 2, 3	All	Ongoing	Grants
New Kent - 26	Investigate siren/early warning devices in high population areas	Emergency Management	Low	1, 2, 3	All	Ongoing	Grants
New Kent - 27	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Emergency Management	Medium	1, 2	All	Ongoing	Staff

City of Petersburg 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Petersburg - 1	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Building Department	High	1, 2	Flooding	Ongoing	Staff
Petersburg - 2	Partner with parent-teacher associations and local schools to implement existing curriculum related to natural hazards (e.g., Masters of Disaster, Risk Watch).	Emergency Management	Low	2	All	Ongoing	Staff
Petersburg - 3	Complete application for StormReady Program.	Emergency Management	Low	1, 2, 3, 5	All	2018	Staff
Petersburg - 4	Consider participating in FEMA's CRS.	Public Works	Medium	1, 2	Flooding	Ongoing	Staff
Petersburg - 5	Inspect and clear debris (or encourage VDOT to) from stormwater drainage system.	Public Works	High	4	Flooding	Ongoing	Staff, VDOT
Petersburg - 6	Finish implementation of Reverse 911 system.	Emergency Management	Medium	1, 3, 5, 6, 7	All	Ongoing	City budget, grants
Petersburg - 7	Establish flood-level markers along bridges and other structures to indicate the rise of water levels along creeks and rivers in potential flood-prone areas.	Public Works	Medium	1, 2, 3	Flooding	Ongoing	Grants
Petersburg - 8	Investigate all public utility lines to evaluate their resistance to flood, wind, and winter storm hazards.	Public Works	Medium	7	Flood, wind, winter storm, severe storm	Ongoing	Staff
Petersburg - 9	Work with VDOT, private utilities, and/or private homeowners to trim or remove trees that could down power lines.	Public Works	Low	7	Flood, wind, winter storm, severe storm	Ongoing	Staff, VDOT

City of Petersburg 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Petersburg - 10	Distribute brochures and use other means to educate the public regarding preparedness and mitigation.	Emergency Management	Medium	1, 2, 3	All	Ongoing	Staff
Petersburg - 11	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning/ Assessor	Low	1, 2	Flooding	Annually	Staff
Petersburg - 12	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	1, 2	Flooding	Annually	Staff
Petersburg - 13	Install quick connects for generators at critical facilities.	Emergency Management	Medium	1, 7	All	Ongoing	Grants
Petersburg - 14	Work with state partners and neighboring localities to monitor and implement Next Generation 911 GIS data standards.	GIS Manager, PDC	High	1, 7	All	Ongoing	Staff
Petersburg - 15	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Community did not respond to status update request.	Community did not respond to status update request.	1, 2, 4, 5, 7	All	Ongoing	FEMA Grants

City of Petersburg 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Petersburg - 16	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Community did not respond to status update request.	Community did not respond to status update request.	1, 2	All	Ongoing	Staff

Powhatan County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Powhatan - 1	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation.	Emergency Management	High	1, 2, 4, 5, 7	All	Ongoing	Grants and local funding sources
Powhatan - 2	Continue to incorporate mitigation principles into local comprehensive, emergency management, and recovery plans.	Planning and Community Development	High	1, 2, 3, 5, 6, 7	All	Ongoing	Local Staff
Powhatan - 3	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Planning and Community Development	Medium	1, 2	Flood	Long-Term	Local Staff
Powhatan - 4	Continue implementation of community emergency response and other public outreach programs.	Emergency Management	Medium	1, 2, 3	All	Long-Term	Local Staff
Powhatan - 5	Continue to develop means to geo-code damage assessment information.	Emergency Management	Medium	1, 5	All	Ongoing	Local Staff
Powhatan - 6	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	1, 2	All	Ongoing	Grant Funding, Local Staff

Powhatan County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Powhatan - 7	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Planning and Community Development	Low	1, 2	Flood	Ongoing	Local Staff
Powhatan - 8	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Planning and Community Development	Medium	1, 2	All	Ongoing	Local Staff
Powhatan - 9	Make application and participate in the Community Rating System.	Emergency Management	Medium	1, 2	Flood	Ongoing	Local Staff

Prince George County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Prince George - 1	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Building Department	High	1, 2	Flooding	Ongoing	Staff
Prince George - 2	Include an assessment and associated mapping of the municipality's vulnerability to location-specific hazards and make appropriate recommendations for the use of these hazard areas in a future comprehensive plan.	Planning Department	Medium	1, 2, 3	All	Ongoing	Staff
Prince George - 3	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	??	??	1, 2, 4, 5, 7	All	Ongoing	FEMA grants
Prince George - 4	Evaluate existing stormwater system to determine if it is adequate for existing (or future) flood hazard.	Public Works	Medium	1, 2, 7	Flooding	Ongoing	Staff
Prince George - 5	Target FEMA's RL properties for specialized outreach and mitigation activities.	Emergency Management	Medium	1, 2	Flooding	Ongoing	Staff
Prince George - 6	Identify means to coordinate, collect, and store damage assessment data in GIS format for each natural hazard event which causes death, injury, and/or property damage.	Emergency Management	Low	1, 5	All	Ongoing	Staff
Prince George - 7	Coordinate drought contingency plans with County Extension Office.	Emergency Management	Low	2, 3, 4	Drought	Ongoing	Staff, VEC

Prince George County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Prince George - 8	Distribute brochures and use other means to educate the public regarding preparedness and mitigation.	Emergency Management	Medium	1, 2,	All	Ongoing	Staff
Prince George - 9	Staff Emergency Management Office, Building Inspections Office, and/or Zoning Office at adequate levels.	County Administrator / agency heads	Low	1, 2, 3, 5, 6, 7	All	Ongoing	County budget and Staffing plan
Prince George - 10	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Emergency Management	Low	1, 2	Flooding	Ongoing	Staff
Prince George - 11	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Emergency Management	Medium	1, 2	Flooding	Ongoing	Staff
Prince George - 12	Complete design for Fire Department burn building	Emergency Management	High	1, 2, 7	All hazards (response and recovery)	Ongoing	Capital Improvement Plan
Prince George - 13	Pursue construction of new fire station at Route 10 and Moody Road	Emergency Management	High	1, 2, 7	All hazards (response and recovery)	Ongoing	Capital Improvement Plan
Prince George - 14	Continue implementation of automatic aid agreement with Hopewell	Emergency Management	High	1, 2	All	Ongoing	County and Hopewell
Prince George - 15	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Planning Department; Emergency Management	Medium	1, 2, 7	All	Ongoing	Staff

City of Richmond 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Richmond - 1	Add additional emergency management staff.	Emergency Management	Medium	2, 3, 5, 6, 7	All	Ongoing	Funding
Richmond - 2	Continue implementation of the “Turn Around, Don’t Drown” public education campaign. Install along Gillis Creek.	Department of Public Works & Department of Public Utilities	Medium	1, 2, 3	Flooding	Ongoing	Funding
Richmond - 3	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Department of Public Utilities	Low	1, 2	Flooding	Ongoing	Staff
Richmond - 4	Pursue a higher Community Rating System rating to increase premium savings for flood insurance holders.	Department of Public Utilities	Medium	1, 2	Flooding	Long-term	Staff and Funding
Richmond - 5	Continue to enforce zoning and building codes, with emphasis on floodplain management.	Planning and Development Review & Department of Public Utilities	High	1, 2	Flooding	Ongoing	Staff
Richmond - 6	Continue to improve real-time data about flood depths.	Emergency Management	High	1, 2	Flooding	Long-term	Staff and Funding
Richmond - 7	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Emergency Management	Medium	1, 2, 3	All	Long-term	Funding
Richmond - 8	Encourage purchase of NOAA radios by citizens. Provide NOAA weather radios to public facilities.	Emergency Management	Medium	1, 2, 3	All	Long-term	Funding

City of Richmond 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Richmond - 9	Identify training opportunities for staff to enhance ability to use GIS for emergency management needs.	Emergency Management	Medium	1, 2, 3, 5, 6, 7	All	Long-term	Staff and Funding
Richmond -10	Investigate all primary and secondary schools to evaluate their resistance to all natural hazards in coordination with school system emergency planner.	Emergency Management & Richmond Public Schools	Medium	1, 2, 3	All	Long-term	Staff and Funding
Richmond - 11	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Emergency Management	High	1, 2, 4, 5, 7	All	Ongoing	Staff and Funding
Richmond - 12	Identify and target an outreach program to businesses (particularly those with hazardous materials stored on site) to discuss hazards and mitigation alternatives.	Emergency Management & Richmond Fire and Emergency Services	Medium	1, 2	All	Long-term	Staff
Richmond - 13	Investigate redundant power for identified critical facilities	Emergency Management & Department of Public Utilities	Medium	1, 7	All	Short-term	Staff and Funding

City of Richmond 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Richmond - 14	Expand capability to provide community "human needs" centers during and after an emergency or disaster to include clothes washing trucks, electronic device charging stations, shower facilities, etc.	Emergency Management	Medium	1, 2, 3, 4, 5,	All	Long-term	Funds, Equipment
Richmond - 15	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Emergency Management	Medium	1, 2	All	ongoing	Staff and Funding

Surry County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Surry-1	Increase staff resources for emergency management.	Emergency Services	Medium	1, 2, 3, 5, 6, 7	All	Ongoing	County budget and Staff plan
Surry-2	Work with VDOT to establish additional flood-level markers along creeks and rivers in potential flood-prone areas.	Emergency Services	Medium	1, 2	Flooding	Ongoing	Staff, VDOT
Surry-3	Identify means to coordinate, collect, and store damage assessment data in GIS format for each natural hazard event which causes death, injury, and/or property damage.	Emergency Services, PDC	Medium	1, 5	All	Ongoing	Staff, VDOT
Surry-4	Continue to install the necessary electrical hook-up, wiring, and switches to allow readily accessible connections to emergency generators at key critical public facilities, as funding permits.	Public Safety	Medium	1, 7	All	Ongoing	Grants, CIP
Surry-5	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Public Safety	Medium	1, 2, 3	All	Ongoing	Staff
Surry-6	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Department of Planning and Zoning	Low	1, 2	All	Annually	Staff
Surry-7	Apply for CRS.	Public Safety	Medium	1, 2	Flooding	Ongoing	Staff
Surry-8	Use social media to more effectively inform the public.	Public Safety	Medium	1, 2, 3, 5, 6	All	Ongoing	Staff
Surry-9	Continue to pursue PSAP grant to improve GIS and 911 capabilities.	Department of Planning and Zoning	Low	1, 2, 3, 5, 6, 7	All	Ongoing	Grants

Surry County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Surry - 10	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Community did not respond to status update request.	Community did not respond to status update request.	1, 2, 4, 5, 7	All	Ongoing	FEMA grants
Surry - 11	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Community did not respond to status update request.	Community did not respond to status update request.	1, 2	All	Ongoing	Staff
Claremont - 1	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Mayor	High	1, 2, 4, 5, 7	All	Ongoing.	FEMA grants

Surry County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Claremont - 2	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Mayor	High	1, 2	All	Ongoing.	FEMA Grants
Claremont - 3	Continue to work with VDOT to develop an alternative ingress/egress to Claremont Beach.	Mayor	High	1, 5, 6, 7	All	Ongoing.	Mayor
Claremont - 4	Conduct annual review of repetitive loss and severe repetitive loss property list provided by VDEM to ensure accuracy. Review will include verification of the geographic location of each repetitive loss property and determination if that property has been mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Mayor	Medium	1, 2	Flooding	Ongoing.	staff
Claremont - 5	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Mayor	Medium	1, 2, 4, 6, 7	All	Ongoing.	Staff and volunteers
Surry Town - 1	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. Elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Community did not respond to status update request.	Community did not respond to status update request.	1, 2, 4, 5, 7	All	Ongoing	Community did not respond to status update request.

Surry County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Surry Town - 2	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Community did not respond to status update request.	Community did not respond to status update request.	1, 2	All	Ongoing	Community did not respond to status update request.

Sussex County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Sussex - 1	Add staff to Emergency Management Office, Building Inspections Office, and/or Zoning Office.	Public Safety	Medium	1, 2, 3, 5, 6, 7	All	Ongoing	Budget and staffing Plan
Sussex - 2	Continue to enforce zoning and building codes to prevent/control construction within the floodplain.	Building Inspections/ Department of Planning and Zoning	High	1, 2	Flooding	Ongoing	Staff
Sussex - 3	Continue to evaluate the floodplain manager's roles and responsibilities in each local jurisdiction.	Department of Planning and Zoning	High	1, 2	Flooding	Ongoing	Staff
Sussex - 4	Continue to identify funding opportunities to replace vulnerable or undersized culvert stream crossings with bridges or larger culverts to reduce flood hazards.	Public Safety	Medium	1, 2, 3, 7	Flooding	Ongoing	Staff, grants, VDOT
Sussex - 5	Continue to pursue a federal/state project to elevate I-95 bridge and widen channel at Stony Creek.	Public Safety	Medium	1, 2, 3, 7	Flooding	Ongoing	Staff, grants, VDOT
Sussex - 6	Develop GIS capabilities.	Public Safety	Medium	1, 2, 3, 5, 6, 7	All	Ongoing	Staff
Sussex - 7	Increase capacity of stormwater system in conjunction with towns of Wakefield and Waverly.	Public Safety	Medium	1, 2, 3, 7	Flooding	Ongoing	Staff, towns
Sussex - 8	Target FEMA's RL properties for specialized outreach and mitigation activities.	Public Safety	Low	1, 2	Flooding	Ongoing	Staff, grants
Sussex - 9	Work with the NWS to promote the "Turn Around, Don't Drown" public education campaign.	Public Safety	Medium	1, 2, 3, 7	Flooding	Ongoing	Staff
Sussex - 10	Work with VDOT to address at-risk roads as funding is available.	Public Safety	Medium	1, 2, 3, 7	Flooding	Ongoing	Staff, VDOT

Sussex County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Sussex - 11	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Public Safety	Medium	1, 2, 4, 5, 7	All	Ongoing	FEMA Grants
Sussex - 12	Review locality's compliance with the NFIP with an annual review of the floodplain ordinances and any newly permitted activities in the 100-year floodplain.	Department of Planning and Zoning	Medium	1, 2	Flooding	Annually	Staff
Sussex - 13	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include floods, wind, and earthquakes.	Public Safety	Medium	1, 2 ,3	All	Ongoing	Staff
Sussex - 14	Request list from VDEM or VA DCR and conduct annual review of RL and SRL property list to ensure accuracy. Review will include verification of the geographic location of each RL property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	Department of Planning and Zoning	Low	1, 2	Flooding	Ongoing	Staff
Sussex - 15	Improve flood warning signage	Emergency Manager/VD OT	High	1, 2	Flooding	Ongoing	Grants
Sussex - 16	Support development of a tornado mitigation strategy with HUD	Sussex County; Towns	High	1, 2, 7	Wind	Ongoing	Staff, HUD, towns

Sussex County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Sussex - 17	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Community did not respond to status update request.	Community did not respond to status update request.	1, 2	All	Ongoing	Staff
Stony Creek - 1	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Mayor	Community did not respond to status update request.	1, 2, 4, 5, 7	All	Ongoing	Community did not respond to status update request.
Stoney Creek - 2	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Community did not respond to status update request.	Community did not respond to status update request.	1, 2	All	Ongoing	Community did not respond to status update request.
Wakefield - 1	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater	Community did not respond to status update request.	Community did not respond to status update request.	1, 2, 4, 5, 7	All	Ongoing	Community did not respond to status update request.

Sussex County 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
	management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation						
Wakefield - 2	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Community did not respond to status update request.	Community did not respond to status update request.	1, 2	All	Ongoing	Community did not respond to status update request.
Waverly - 1	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Community did not respond to status update request.	Community did not respond to status update request.	1, 2, 4, 5, 7	Ongoing	Ongoing	Community did not respond to status update request.
Waverly - 2	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as comprehensive plans and capital improvement plans.	Community did not respond to status update request.	Community did not respond to status update request.	1, 2	All	Ongoing	Community did not respond to status update request.

Richmond Regional PDC 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Regional - 1 (Richmond Regional PDC)	Leverage regional partnerships to better use their data to inform mitigation planning and project development.	PDC, State and Local staff	High	1, 2, 3,	All	Ongoing	Staff
Regional - 2 (Richmond Regional PDC)	Work with state partners and neighboring regions to expand planning efforts regarding regional strategy for incoming evacuees (topics to include traffic management, shelters, information sharing, etc.).	PDC, State and Local staff	Low	1, 2, 3, 4, 5	All	Ongoing	Staff, CVEMA, Grants
Regional - 3 (Richmond Regional PDC)	Continue to refine improve the quality and detail of data to prepare usable and effective hazard assessments and vulnerability analysis	PDC, Local GIS Managers	Low	1, 2, 3	All	Ongoing	Staff, Grants
Regional - 4 (Richmond Regional PDC)	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation.	PDC, State and Local staff	Low	1, 2, 4, 5, 7	All	Ongoing	Staff, Grants
Regional - 5 (Richmond Regional PDC)	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as regional economic development, resiliency and transportation plans.	PDC staff	High	1, 2	All	Ongoing	Staff, Grants

Richmond Regional PDC 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Regional - 6 (Richmond Regional PDC)	Seek funding to support 2022 Richmond Regional - Crater PDC Hazard Mitigation Plan update and interim data upgrades and refinements	PDC staff	High	1, 2, 3	All	2020	Staff, Grants

Crater PDC 2017 - 2022 Mitigation Actions							
Number	Strategy	Responsible Department	Priority	Goals Supported	Hazards Addressed	Timeframe	Resources
Regional-1 (Crater)	Leverage regional partnerships (e.g., law enforcement) to better use their data to inform mitigation planning and project development.	Local Emergency Managers	High	1, 2, 3,	All	Ongoing	PDC staff
Regional-2 (Crater)	Work with state partners and neighboring regions to expand planning efforts regarding regional strategy for incoming evacuees (topics to include traffic management, shelters, information sharing, etc.).	Local Emergency Managers	Low	1, 2, 3, 4, 5	All	Ongoing	Local emergency planners
Regional - 3 (Crater)	Support mitigation projects that will result in protection of public or private property from natural hazards. Eligible projects include but are not limited to: 1. acquisition of floodprone property 2. elevation of floodprone structures 3. minor structural flood control projects 4. relocation of structures from hazard prone areas 5. retrofitting of existing buildings, facilities and infrastructure 6. retrofitting of existing buildings and facilities for shelters 7. critical infrastructure protection measures 8. stormwater management improvements 9. advanced warning systems and hazard gauging systems (weather radios, reverse-911, stream gauges, I-flows) 10. targeted hazard education 11. wastewater and water supply system hardening and mitigation	Local governments, PDC staff	Low	1, 2, 4, 5, 7	All	Ongoing	Staff, grant funds
Regional - 4 (Crater)	Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as regional economic development, resiliency and transportation plans.	Localities	Medium	1, 2	All	Ongoing	Staff
Regional-3 (Crater)	Work with state partners and neighboring localities to monitor and implement Next Generation 911 GIS data standards.	PDC, Local GIS Managers	High	1, 2, 7	All	ongoing	Locality funding

Appendix E – Record of Changes

The following is a record of the changes made to the 2011 Richmond-Crater Multi-Regional Hazard Mitigation Plan for the purposes of updating for use in 2017.

2016 Plan Section	Heading Section	Changes Made
SECTION I. EXECUTIVE SUMMARY	Intro 1.1 Hazard Identification and Risk Assessment 1.2 Capability Assessment 1.3 Mitigation Strategy 1.4 Plan Maintenance 1.5 Conclusions	Minor edits Edits and updated table 1.1 summarizing hazard ranking Edits and updated summary table 1.2 on local mitigation capacity self-assessment Edits - major overhaul of Plan Mitigation Goals to track with Central VA Emergency Management Alliance goals Updated using CVEMA and HMTAC as leadership during maintenance period - change from CV UASI which was disbanded due to lack of continued DHS UASI funding No substantive changes
SECTION II. INTRODUCTION	2.1 Mitigation 2.2 The Local Mitigation Planning Impetus 2.3 Organization of the Plan	Stakeholder communities refreshed, Figure 2.1 map of regional added. Condensed history of legislative and regulatory federal mitigation planning requirements Updated plan organization; explained redacting of critical facilities data
SECTION III. PLANNING PROCESS	Introduction 3.1 The Hazard Mitigation Technical Advisory Committee (HMTAC) 3.2 Public Participation and Stakeholder Input 3.3 Incorporation of Existing Plans and Studies 3.4 Method and Schedule for Keeping the Plan Current	Refreshed; added Figure 3.1 planning process flow chart Explained organization and representation of HMTAC; updated HMTAC Table 3.1 members' names, locality, agencies, position titles. Added Table 3.2 Regional Mitigation & Resiliency Partners; Table 3.3 HMTAC Meeting Summary; and Table 3.4 Summary Jurisdiction Participation in the Plan Update Process. Updated to reflect public outreach comment meetings, social media and traditional news release outreach. Updated to list major plans and datasets used in update. Specific information references in Sections 4.0, 5.0 and 6.0 and are documented in Section 9.0 References. References Section 8.0 Plan Maintenance
SECTION IV. COMMUNITY PROFILE	4.1 Introduction 4.2 Physiography 4.3 Hydrology 4.4 Climate	Updated Introduction to reflect new 2015 VA Census data. Corrected the directions of surrounding counties and rivers. No Change No Change

2016 Plan Section	Heading Section	Changes Made
SECTION IV. COMMUNITY PROFILE	4.5 Land Use and Development Trends	Updated to reflect land use as of the publication date of each community's Comprehensive Plan.
	4.6 Population	Updated sections and Table 4.1 to reflect new 2015 TIGER Census data.
	4.7 Housing	Updated section to reflect current estimates from the 2015 TIGER Census data.
	4.8 Business and Labor	Updated section with new data and updated list of major regional employers by County and large cities.
	4.9 Transportation	Updated Section with edits.
	4.10 Infrastructure	Updated Section with edits.
SECTION V. HIRA	5.1 Critical Facilities	Critical Facilities data redacted per HMTAC direction; located in Appendix G - Critical Facilities (redacted)
	5.2 Land Cover and Use	No change. Some relevant material is covered in sections 4.2, 4.3 and 4.5.
	5.3 Data Limitations	Updated.
	5.4 Hazard Identification	Section 5.4.2 table of consideration and hazard level changed with supplemental text. & Section 5.4.3 table of HIRA sources and analysis updated.
	5.5 Major Disasters	Added Tables about Presidentially declared disasters based on type and occurrence in county from 2010-2016 with supplemental text. Older disaster tables located in Appendix B - HIRA.
	5.6 Flooding	Section 5.6.4 Hazard History table updated to 2011-2016 with previous occurrences sent to Appendix B-3. Table of occurrences and damages updated for 1993-2016 with supplemental text. & Section 5.6.7 NFIP participants, policies, and claims tables and dates updated with supplemental text. Section 5.6.9 annualized flood events and losses table updated with supplemental text. Flood analysis for all jurisdictions except Colonial Heights performed using FEMA TEIF 2.0 methodology. Colonial Heights flood analysis performed using HAZUS because building footprint data was not available.

2016 Plan Section	Heading Section	Changes Made
SECTION V. HIRA	5.7 Wind (including Hurricanes and Thunderstorms)	Tornadoes made into new separate section. & Section 5.7.3 Hazard History table updated to 2011-2016 with previous occurrences sent to Appendix B-3. Virginia State Hazard Mitigation Plan updated to 2013 plan. Plan's Hurricanes track figure revised. Table of annualized hurricane events and losses 1993-2016 changed with supplemental text updated. Table of annualized wind events and losses 1956-2016 changed with supplemental text updated based on updated analysis.
	5.8 Tornadoes	Section 5.8.3 Hazard History table updated to 2011-2016 with previous occurrences sent to Appendix B-3. Tables of annualized tornado events and losses 1950-2016 and touchdowns by Fujita Rating 1950-2016 updated with supplemental text and revised figures.
	5.9 Thunderstorms (including Hail and Lightning)	Section 5.9.3 Hazard History table updated to 2010-2016 with previous occurrences sent to Appendix B-3. & Section 5.9.4 Annualized Thunderstorm events and losses 1956-2016 updated with supplemental text and revised figures.
	5.10 Winter Weather	Section 5.10.3 Hazard History table updated to 2010-2016 with previous occurrences sent to Appendix B-3. & Section 5.10.5 Tables of Weather service alerts, alert types, and annualized events and losses 1993-2016 were updated/added with supplemental text changed/added.
	5.11 Droughts and Extreme Heat	Section 5.11.3 Hazard History table updated to 1976-2016 because of such few significant drought events occurred during plan update period. Section 5.11.4 Table of annualized drought events and losses 1993-2016 was updated with supplemental text and revised figures.
	5.12 Mass Evacuation	Updated.
	5.13 Wildfires	Section 5.13.3 Number of wildfires per year was updated with VDOF supplemental text changed to match. & Section 5.13.4 table of wildfire events and losses updated to 1995-2016 with supplemental text. Figure update. VDOF stopped tracking loss data in 2010 so full loss analysis was limited.
	5.14 Landslides	Data and text updated.
	5.15 Land Subsidence / Karst /Sinkholes	Data and text updated.
	5.16 Earthquakes	Data and text updated.
	5.17 Hazard Identification and Risk Assessment	Data and text updated.

2016 Plan Section	Heading Section	Changes Made
SECTION VI. CAPABILITY ASSESSMENT	6.1 Introduction	Minor edits
	6.2 Staff and Organizational Capability	Updated Key Departments Table 6.2 Key Staff Responsible for mitigation based on capability survey and one-on-one jurisdiction interviews.
	6.3 Technical Capability	Updated Table 6.2 Summary Technical Capability Matrix; complete Matrix table in new Appendix I - Capability Assessment
	6.4 Fiscal Capability	Budget figures updated. Updated Table 6.3 Fiscal Capability Matrix with available data.
	6.5 Policy and Program Capability	Updated based on locality surveys to include program highlights in mitigation, emergency operations planning, floodplain management.
	6.6 Legal Authority	Updated based on on-line research and returned jurisdiction capability assessment surveys.
	6.7 Summary	Updated Mitigation Capability Self-Assessment Table based on returned jurisdictional capability assessment surveys. It should be noted that many town functions are performed by county staff or departments through an MOA with the town.
SECTION VII. MITIGATION STRATEGIES	7.1 Setting Mitigation Goals	2010 goals replaced by HMTAC with CVEMA goals + one hazard reduction-specific goal.
	7.2 Selecting Mitigation Action	Edited to reflect prioritization processes.
	7.3 Developing a Mitigation Action Plan	Updated.
	7.4 Selecting Mitigation Actions	Updated with 2017 - 2022 mitigation actions.
SECTION VIII. PLAN MAINTENANCE	8.1 Formal Plan Adoption	Minor edits
	8.2 Implementation	Minor edits
	8.3 Maintenance	Table added

Appendix F – Sample Resolutions

Contents:

Sample Resolution Richmond Regional PDC

Sample Resolution Crater PDC

2017 Richmond-Crater Multi-Regional Hazard Mitigation Plan Update Resolution

Appendix F – Sample Resolution

The following resolution can be used by local jurisdictions to adopt the regional hazard mitigation plan per FEMA requirements.

***MODEL RESOLUTION ADOPTING A MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN FOR the RICHMOND REGIONAL
PLANNING DISTRICT COMMUNITIES:***

WHEREAS, the Disaster Mitigation Act of 2000, as amended, requires that local governments, develop, adopt, and update natural hazard mitigation plans in order to receive certain federal assistance, and

WHEREAS, a Hazard Mitigation Technical Advisory Committee (“HMTAC”) comprised of representatives from the Counties of Charles City, Chesterfield, Goochland, Hanover, Henrico, New Kent and Powhatan, the City of Richmond and the Town of Ashland was convened in order to study the Richmond Regional Planning District Commission’s regional risks from and vulnerabilities to natural hazards, and to make recommendations on mitigating the effects of such hazards on the Richmond Regional Planning District Commission’s Region; and

WHEREAS, a request for proposals was issued to hire an experienced consulting firm to work with the HMTAC to update a comprehensive hazard mitigation plan for the Richmond Regional Planning District; Commission; and

WHEREAS, the efforts of the HMTAC members and the consulting firm of Dewberry, in consultation with members of the public, private and non-profit sectors, have resulted in an update of the Richmond Regional – Crater Planning District Commission Hazard Mitigation Plan Update, including (local jurisdiction name).

NOW THEREFORE, BE IT RESOLVED by the (governing body name) that the Richmond Regional – Crater Planning District Commission Hazard Mitigation Plan Update dated () is hereby approved and adopted for the (jurisdiction name). A copy of the plan is attached to this resolution.

ADOPTED by the (jurisdiction) this ____ day of _____, 2017.

APPROVED:

(Jurisdiction head of governing body)

ATTEST:

Appendix F – Sample Resolution

The following resolution can be used by local jurisdictions to adopt the regional hazard mitigation plan per FEMA requirements.

***MODEL RESOLUTION ADOPTING A MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN FOR the CRATER PLANNING DISTRICT
COMMUNITIES:***

WHEREAS, the Disaster Mitigation Act of 2000, as amended, requires that local governments, develop, adopt, and update natural hazard mitigation plans in order to receive certain federal assistance, and

WHEREAS, a Hazard Mitigation Technical Advisory Committee (“HMTAC”) comprised of representatives from the Counties of Dinwiddie, Greensville, Prince George, Surry and Sussex, the Cities of Colonial Heights, Emporia, Hopewell and Petersburg, and the Towns of Claremont, Dendron, Jarratt, McKenney, Stoney Creek, Surry, Wakefield and Waverly was convened in order to study the Crater Planning District Commission’s regional risks from and vulnerabilities to natural hazards, and to make recommendations on mitigating the effects of such hazards on the Crater Planning District Commission’s Region; and

WHEREAS, a request for proposals was issued to hire an experienced consulting firm to work with the HMTAC to update a comprehensive hazard mitigation plan for the Crater Planning District; Commission; and

WHEREAS, the efforts of the HMTAC members and the consulting firm of Dewberry, in consultation with members of the public, private and non-profit sectors, have resulted in an update of the Richmond Regional – Crater Planning District Commission Hazard Mitigation Plan Update, including (local jurisdiction name).

NOW THEREFORE, BE IT RESOLVED by the (governing body name) that the Richmond Regional – Crater Planning District Commission Hazard Mitigation Plan Update dated () is hereby approved and adopted for the (jurisdiction name). A copy of the plan is attached to this resolution.

ADOPTED by the (jurisdiction) this ____ day of _____, 2017.

APPROVED:

(Jurisdiction head of governing body)

ATTEST:

2017 Richmond-Crater Multi-Regional Hazard Mitigation Plan Update

WHEREAS, the Disaster Mitigation Act of 2000, as amended, requires that local governments, develop, adopt, and update natural hazard mitigation plans to receive certain federal assistance, and

WHEREAS, a Hazard Mitigation Technical Advisory Committee (“HMTAC”) comprised of representatives from the Counties of Charles City, Chesterfield, Dinwiddie, Greensville, Goochland, Hanover, Henrico, New Kent, Prince George, Powhatan, Surry and Sussex, the Cities of Colonial Heights, Emporia, Hopewell, Petersburg and Richmond, and the Towns of Ashland, Claremont, Dendron, Jarratt, McKenney, Stoney Creek, Surry, Wakefield and Waverly was convened to study the Richmond Regional and Crater Planning District Commissions’ risks from and vulnerabilities to natural hazards, and to make recommendations on mitigating the effects of such hazards on this multi-region; and

WHEREAS, a request for proposals was issued to hire an experienced consulting firm to work with the HMTAC to update the 2011 Richmond-Crater Multi-Regional Hazard Mitigation Plan for the Richmond Regional and Crater Planning District Commission; and

WHEREAS, the efforts of the HMTAC members and the consulting firm of Dewberry, in consultation with members of the public, private and non-profit sectors, have resulted in an update of the 2011 Richmond-Crater Multi-Regional Hazard Mitigation Plan, including (*local jurisdiction name*).

NOW THEREFORE, BE IT RESOLVED by the (*governing body name*) that the Richmond–Crater Multi-Regional Hazard Mitigation Plan update dated () is hereby approved and adopted for (*jurisdiction name*).

ADOPTED by the (jurisdiction) this ____ day of _____, 2017.

APPROVED:

(Jurisdiction head of governing body)

ATTEST:

(Jurisdiction representative)

Appendix G – Critical Facilities (REDACTED)

A substantial master workbook of all critical facilities was used as the basis for this summary analysis. It is available upon request from FEMA or VDEM.

Appendix H – List of Abbreviations

Appendix H List of Abbreviations

BFE	Base Flood Elevation
CIP	Capital Improvement Program
COOP	Continuity of Operations
CRS	Community Rating System
DFIRM	Digital Flood Insurance Rate Map
DMA	Disaster Mitigation Act
EAS	Emergency Alert System
EF Scale	Enhanced Fujita Scale
EMS	Emergency Medical Services
EOC	Emergency Operations Center
FEMA	Federal Emergency Management Agency
FHBM	Flood Hazard Boundary Maps
FIRM	Flood Insurance Rate Map
GIS	Geographic Information System
HAZUS-MH	FEMA's loss estimating software for floods, earthquakes, and hurricane winds
HIRA	Hazard Identification and Risk Assessment
HMGP	Hazard Mitigation Grant Program
MAC	Mitigation Advisory Committee
NCDC	National Climatic Data Center
NFHL	National Flood Hazard Layer
NFIP	National Flood Insurance Program
NLCD	National Land Cover Data
NOAA	National Oceanic Atmospheric and Atmospheric Administration
NWS	National Weather Service
PDC	Planning District Commission
PRISM	Parameter-elevation Regressions on Independent Slopes Model
Risk MAP	Risk Mapping, Assessment, and Planning
RL	repetitive loss
SFHA	Special Flood Hazard Area
SRL	severe repetitive loss
STAPLE/E	Social, Technical, Administrative, Political, Legal, Economic, and Environmental
UASI	Urban Areas Security Initiative
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
VA DCR	Virginia Department of Conservation and Recreation
VDEM	Virginia Department of Emergency Management
VDOF	Virginia Department of Forestry
VDOT	Virginia Department of Transportation

Appendix I – Capability Assessment

Programs and Capabilities	Richmond Regional Planning District Commission Communities									Crater Planning District Commission Communities																
	Charles City County	Chesterfield County	Goochland County	Hanover County	Henrico County	New Kent County	Powhatan County	City of Richmond	Town of Ashland	City of Colonial Heights	Dinwiddie County	City of Emporia	Greensville County	City of Hopewell	City of Petersburg	Prince George County	Surry County	Sussex County	Town of Claremont	Town of Dendron	Town of Jarratt	Town of Mckenney	Town of Stony Creek	Town of Surry	Town of Wakefield	Town of Waverly
Comprehensive & Resiliency Plans	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
With Hazard Mitigation Element	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N								
Resiliency Plan	N	N		N	N	N	N	Y	N		Y	N	N	N	Y			N								
Sustainability Plan	N	N		N	N	N	N	Y	N	N	Y		N	N	Y			N								
Capital Improvement Plan	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	Y	Y	Y	Y	Y								
Economic Development Plan	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	N								
Downtown Development/Re-Development Authority	Y	Y	Y	N	Y	Y	N	Y	Y		Y	Y	-	Y	Y	N	Y	N								
Transportation Planning	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Subdivision Regulations (update)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	Y	Y								
Zoning Ordinance (update)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y								
Site Plan Review Procedures	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Building Code Which Addresses Natural Hazards	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y								
Extreme Heat	Y	H		L	H	M	L	M	Y	Y		Y			low			Y								
Extreme Wind	M	H		H	H	H	H	H	L	Y		Y		Y	medium			Y								
Severe Winter Storms	H	H		H	H	H	H	H	H			Y		Y	medium			Y								
Thunderstorms/Lightning	M	H		H	H	L	M	H	H	Y		Y		Y	high			Y								
Tornadoes	M	M		H	M	H	M	M	H	Y		Y		N	high			Y								
Tropical Storms/Hurricanes	L	M		M	M	M	M	H	M			Y		Y	medium			Y								
Flooding	L	M		L	H	M	L	H	H	Y	Y	Y		Y	high			Y								
Wildfires/Wildland-Urban Interface Fires	H	M		L	M	H	M	M	L	Y		Y		N	low			N								
Earthquakes	L	L		L	L	L	L	H	L			Y		Y	low											
Land Subsidence (includes landslides and sinkholes)	L	L		L	L	L	L	Y	L	N		Y	N	Y	N											
Designated Building Official	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y		Y	Y	Y	Y	Y	Y	Y	Y
Regular Inspection Protocols	Y	Y		Y	Y	Y	Y	Y	Y		Y	Y		Y	Y	Y	Y									
Mitigation Projects to Improve Local Plans and Regulations	N	Y		Y	Y	Y	Y	Y	Y	Y		Y			Y		N									
Structure and Infrastructure Mitigation Projects	N	Y		Y	Y	Y	Y	Y	Y	N	N	Y		Y	Y	Y	Y	N								
Private Buildings or Property Protection	N	Y		Y	Y	Y	Y	Y	Y		N	Y	Y	Y	Y	Y	Y	N								
Public Buildings or Property Protection	N	Y		N	Y	Y	Y	Y	N	Y	N	Y	-	Y	Y	Y	N	N								
Critical Facilities Protection	Y	Y		Y	Y	Y	Y	Y	Y		N	Y	-	Y	Y	Y	N	N								
Natural Systems Protection																		N								
Natural or Cultural Resources Inventory	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y	Y	Y								
Open Space	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y	Y	Y								
Parks and Recreation	N	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N								
Greenway and Trails	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N								
Stormwater Management Program	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y		Y		Y								
Total Daily Maximum Load (TMDL) Stream Segments	N	Y		Y	Y	Y	Y	Y	Y		N						N	N								
Watershed Improvement Plans	N	Y	N	Y	Y	Y	N	Y	Y	Y	-	-	-	Y		Y	N	N								
MS4 Permits	N	Y	N	Y	Y	N	Y	Y	Y	Y	N	-	-	Y		Y	N	Y								
SWM Mitigation Projects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y		Y	N	N								
Erosion or Sediment Control Program	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y								
Erosion and Sediment Control Mitigation Projects	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y		Y	Y	N								
Floodplain Management	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y								
Floodplain Administrator	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y								
Participates in NFIP	y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y			Y	
Year Joined																										
Effective FIRM Date	7/6/2015	12/18/2012	12/2/2008	2/2/2008	12/18/2007	8/3/2015	2/6/2008	4/16/2015	12/2/2008	8/2/2012	6/11/2011	7/7/2009	7/7/2009	7/16/2015	2/4/2011	6/2/2015	5/4/2015	7/7/2009	5/4/2015	4/2/2009	7/7/2009	NSFHA	7/7/2009	5/4/2015	7/7/2009	not listed
Additional Freeboard Requirements (ft)	N	1'	N	N	2'	N	N	Y						Y		Y	N	Y								
NFIP Manager	Y	Y	Y	Y	Y	Y	Y	N	Y		Y			Y		Y	Y	Y								
Restrictive Ordinances (higher standards)	N	Y		N	Y	N	N	Y	Y					Y		Y	N	N								
Participates in CRS	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N			N	N								
Floodplain Mitigation (MGMT) Plan (update)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y								
Emergency Operations (MGMT) Plan	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y								

Warning Sirens or warning alert systems	N	N	N	Y	Y	N	N	Y	N	Y	N	Y	N	Y	N	Y	N								
With NOAA Weather Radio	N	Y	Y	Y	Y	Y	Y	Y	Y					Y	Y	Y	Y	Y							
Evacuation Plans	N	Y	N	Y	Y	Y	N	Y	Y					Y	Y	Y	Y	Y							
Shelter and Family Re-Unification Plan	N	Y	Y	Y	Y	Y	Y	Y	Y					Y/N	Y	Y	Y	N							
Special Needs Population Emergency Planning	N	Y	Y	Y	Y	Y	Y	Y	Y					N	Y	Y	Y	N							
Companion Animal Sheltering and Re-Unification Plan	N	Y	Y	Y	Y	Y	Y	Y	Y					Y	Y	Y	Y	Y							
Re-Development-Post-Disaster Recovery Plan	N	Y	N	Y	Y	N	N	Y	N					Y	Y	Y	Y	Y							
Public Information Program	Y	Y	Y	Y	Y	Y	Y		Y					Y	Y	Y	Y	Y							
Education Programs	Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y		Y							
School Facility Plans	Y	Y	Y	Y	Y	Y	Y	Y	Y					Y	Y	Y	Y	Y							
School Emergency Notification, Evacuation and Emergency Planning	Y	Y	Y	Y	Y	Y	Y	Y	Y					Y	Y	Y	Y	Y							
College Campus Plans	N/A	Y	Y	Y	Y	N/A	N/A	Y	Y					-	Y		Y	-							
College/University Emergency Notification, Evacuation and Emergency Planning	N/A	Y	Y	Y	Y	N/A	N/A	Y	Y					-	Y		Y	-							
Additional Capabilities (please specify)	Surry Incident Plan	Debris Mgmt. Plan	Debris plan and North Anna Nuclear Plant incident plans	Debris Mgmt. Plan	Debris Mgmt. Plan	Surry Nuclear Plant incident Plan'	Debris railraad accident spill plan	Debris Mgmt Plan	HMGP projects; stream gauges					-											

Note: many functions for towns are performed by their County