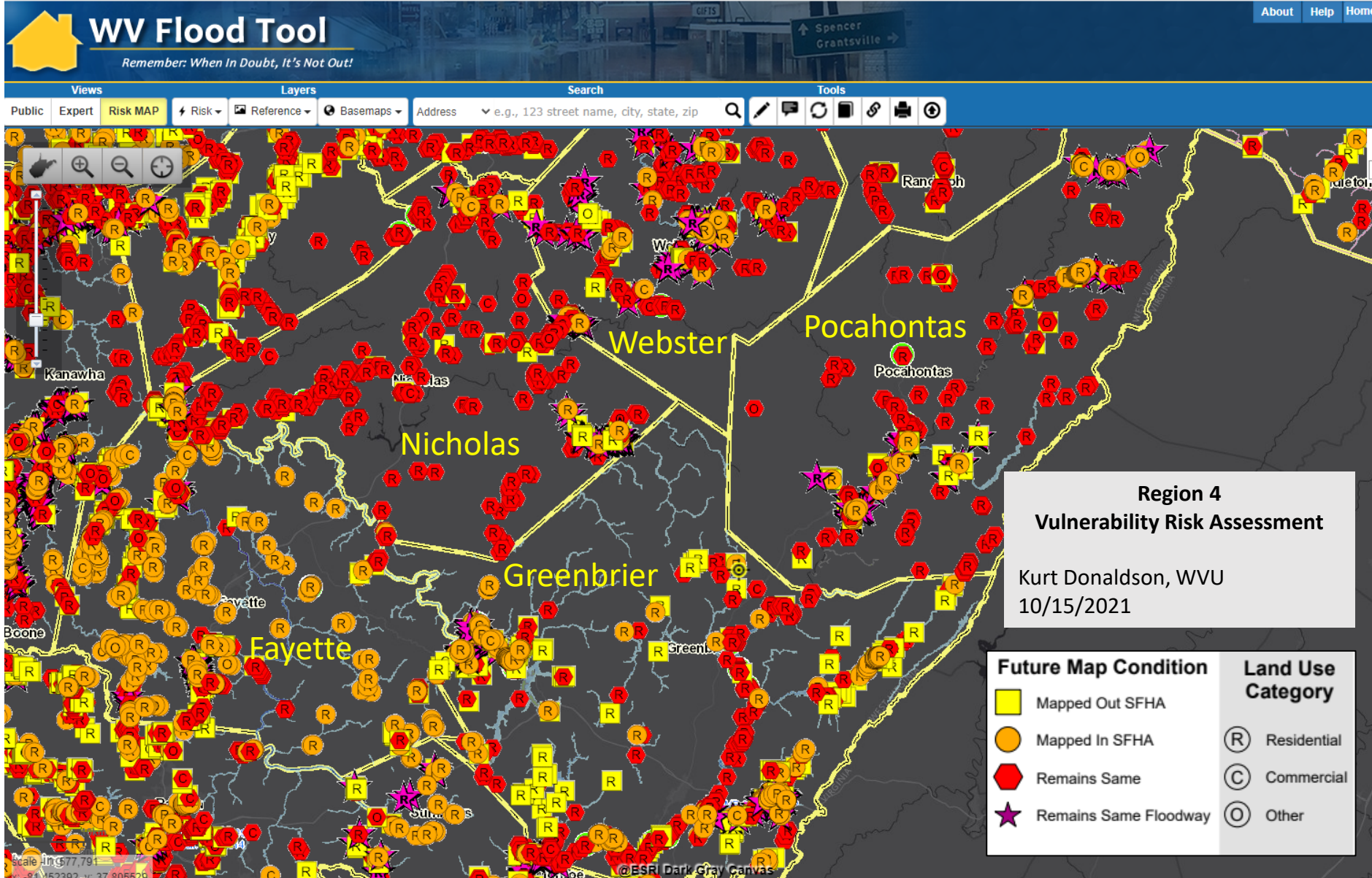
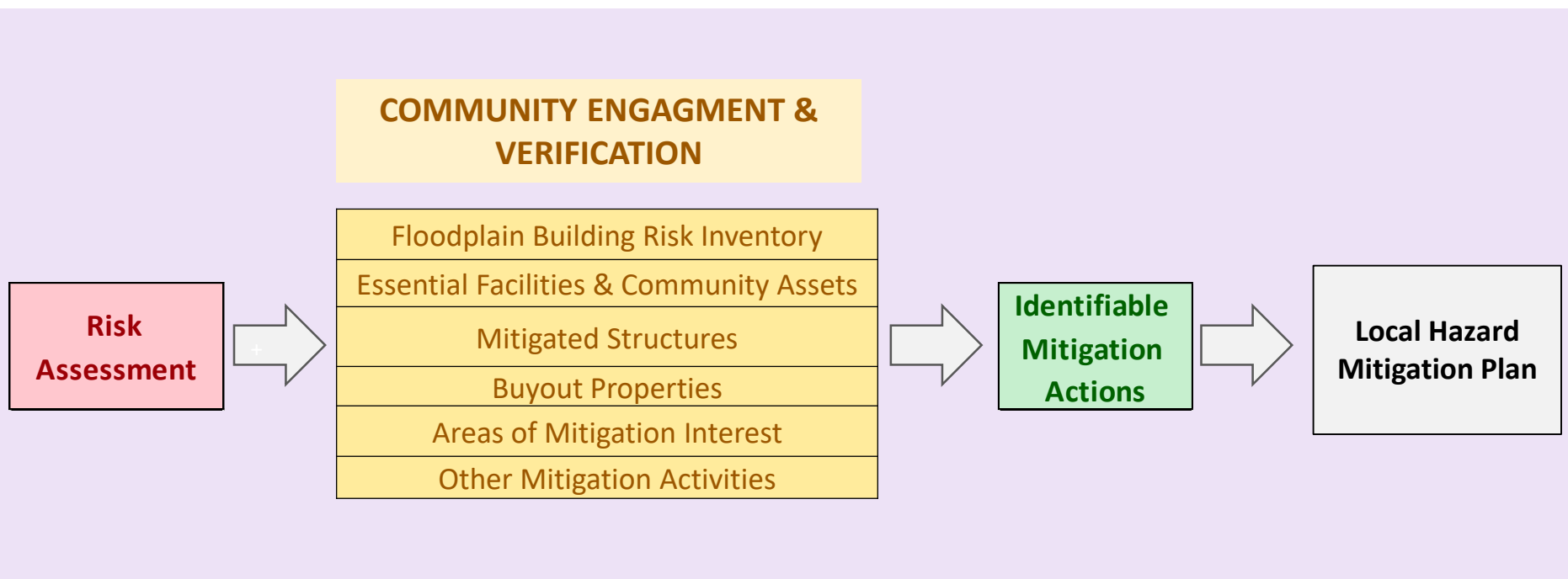


Region 4 Flood Risk Assessment



Local Community Engagement



Risk Assessment Data for Community Engagement, Verification, and Identifiable Mitigation Actions incorporated into Local Hazard Plans

Primary Objective: Incorporating Mitigation Actions in Local Hazard Mitigation Planning

Community Engagement Focus 1-2

Primary Focus Areas of Statewide Risk Assessment	Community Engagement	Specific Activities for Mitigation Plan	Tables		Map	Report	Include Answers to Questions below in Hazard Mitigation Plan
			Community Level (CL)	Bldg. (BL) or Feature (FL) Level	Flood Tool Risk MAP	Report	
Floodplain Building Risk Inventory	Incorporate 1% Annual Chance Floodplain Building Risk Assessment Inventory into Mitigation and NFIP/CRS Management Activities	For pre-disaster planning and emergency preparedness, preload floodplain structures into FEMA's Substantial Damage Estimator Tool		Yes			For each community, <i>quantify</i> the number and <i>type</i> of buildings structures at risk for a 1%-annual-chance flood event to include the <i>degree</i> of flood risk?
		Local outreach to property owners about SFHA changes from new flood studies		Yes			
		Include Community-Level Flood Risk Assessment Profile of Built Environment into Hazard Mitigation Plan	Yes	Yes	Yes	Yes	
Essential Facilities & Community Assets	Identify Mitigation Actions for Essential Facilities and Community Assets	Confirm essential facilities inventoried in high and moderate risk floodplains	Yes	Yes	Yes		Which <i>essential facilities</i> and <i>community assets</i> are most vulnerable to flooding? Which facilities can be mitigated?
		For mitigation plan, identify a minimum of two (2) mitigation actions for essential facilities and community assets for each county	Yes	Yes	Yes	Yes	
		Incorporate essential facility and community assessment risk assessment tables in hazard mitigation plan					

Local Community Engagement

Hazard Mitigation Plan Engagement

Floodplain Building Risk Assessment

Incorporate *Riverine* 1% Annual Chance Floodplain Building Inventory into **Mitigation and NFIP/CRS Management Activities**

- A. *Include Community-Level Flood Risk Assessment Profile of Built Environment into Hazard Mitigation Plan:*** Incorporate into hazard mitigation plan community-level floodplain building counts, SFHA future map building conditions, building dollar exposure, building type (Residential/Non-Residential Occupancy Type, Building Year Pre/Post-FIRM), and building damage estimates (Minus Rated Structures, 1% Damage Loss Flood Models)
- B. *Preload Flood Risk Structures into FEMA's Substantial Damage Estimator Tool:*** Upload building inventory data into SDE. The entire statewide flood risk inventory of 98,000 1% floodplain structures can be preloaded into FEMA's SDE Tool.
- 1) *SDE Assessments:* Install FEMA's Substantial Damage Estimator Tool version 3.0. Preload 1% floodplain countywide residential/non-residential structures into FEMA's damage estimator software. Communities are eligible for CRS credit for preloaded structures in SDE.
<https://www.fema.gov/emergency-managers/risk-management/building-science/substantial-damage-estimator-tool>
 - 2) *As part of pre-disaster planning and emergency readiness, each county should perform a residential and non-residential substantial damage assessment for potential high damage loss structures. Submit damage estimates and feedback for mitigation plan and maintenance.*
 - 3) *Flood Map Restudy (if applicable).* Prepare community outreach communications for flood restudies (mapped into SFHA, mapped out of SFHA). Restudied areas require updating floodplain management ordinance and an opportunity to review state model ordinance and incorporate higher standards.

Floodplain Building Risk (Region 4)

Building Counts and Building Exposure \$ Values by Stream Name

Flood Sources	Building Count	Dollar Exposure (\$)
FAYETTE COUNTY		
Armstrong Creek	275	\$13,334K
Kanawha River	242	\$46,459K
GREENBRIER COUNTY		
Greenbrier River*	528	\$60,728K
Howard Creek*	364	\$94,870K
Sewell Creek*	333	\$14,716K
Dry Creek	197	\$19,183K
NICHOLAS COUNTY		
Cherry River*	374	\$15,719K
POCAHONTAS COUNTY		
Greenbrier River**	418	\$29,097K
Knapp Creek	110	\$13,882K
WEBSTER COUNTY		
Elk River	312	\$16,938K
Gauley River**	106	\$8,420K

Computed for 1% (100-yr) floodplain

* 2016 Disaster Restudy

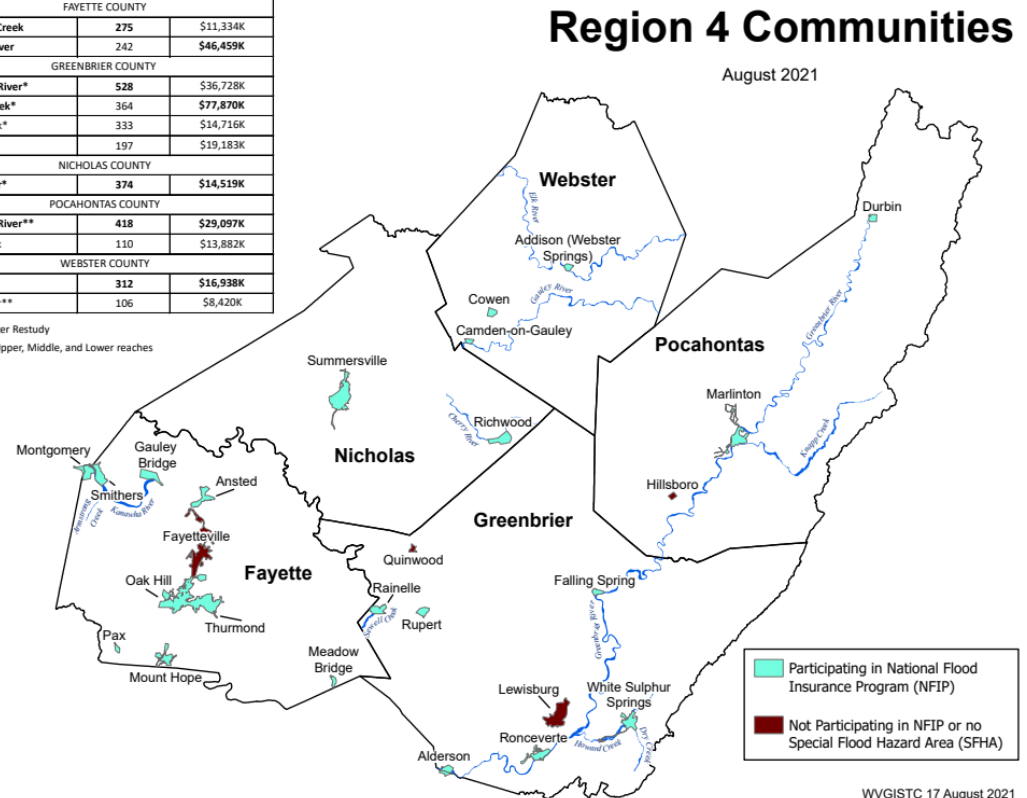
RA Tables: [State Top Streams Overview](#) | [Region 4](#)

Greenbrier River totals for Greenbrier and Pocahontas counties:
946 buildings in 1% floodplain, \$66M dollar exposure

Flood Source	Building Count	Dollar Exposure (\$)
FAYETTE COUNTY		
Armstrong Creek	275	\$11,334K
Kanawha River	242	\$46,459K
GREENBRIER COUNTY		
Greenbrier River*	528	\$36,728K
Howard Creek*	364	\$77,870K
Sewell Creek*	333	\$14,716K
Dry Creek	197	\$19,183K
NICHOLAS COUNTY		
Cherry River*	374	\$14,519K
POCAHONTAS COUNTY		
Greenbrier River**	418	\$29,097K
Knapp Creek	110	\$13,882K
WEBSTER COUNTY		
Elk River	312	\$16,938K
Gauley River**	106	\$8,420K

* 2016 Disaster Restudy

** Includes Upper, Middle, and Lower reaches



WVGISTC 17 August 2021

[Region 4 PDF Map](#) of Primary Flood Sources

268 Flood-Prone Communities

11 Regional Planning & Development Councils (55 Counties)

Region	# Counties	# Communities	Split Communities across County Boundary	Communities not participating in NFIP or no SFHA	# NFIP Communities ¹
Region 1 ²	6	32		Athens, Union	30
Region 2	6	31	Huntington		31
Region 3	4	29	Nitro		29
Region 4	5	31	Alderson, Montgomery, Smithers	Fayetteville ³ , Hillsboro, Lewisburg, Quinwood ³ , Thurmond	26
Region 5	8	30	Paden City	North Hills	29
Region 6	6	45		Brandonville, Tunnelton, White Hall	42
Region 7	7	31		Flatwoods	30
Region 8	5	17		Carpendale, Elk Garden	15
Region 9	3	12		Hedgesville	11
Region 10	3	18	Wheeling	Bethlehem, Clearview	16
Region 11	2	10	Weirton	Windsor Heights	9
<i>total</i>	55	286	8	18	268

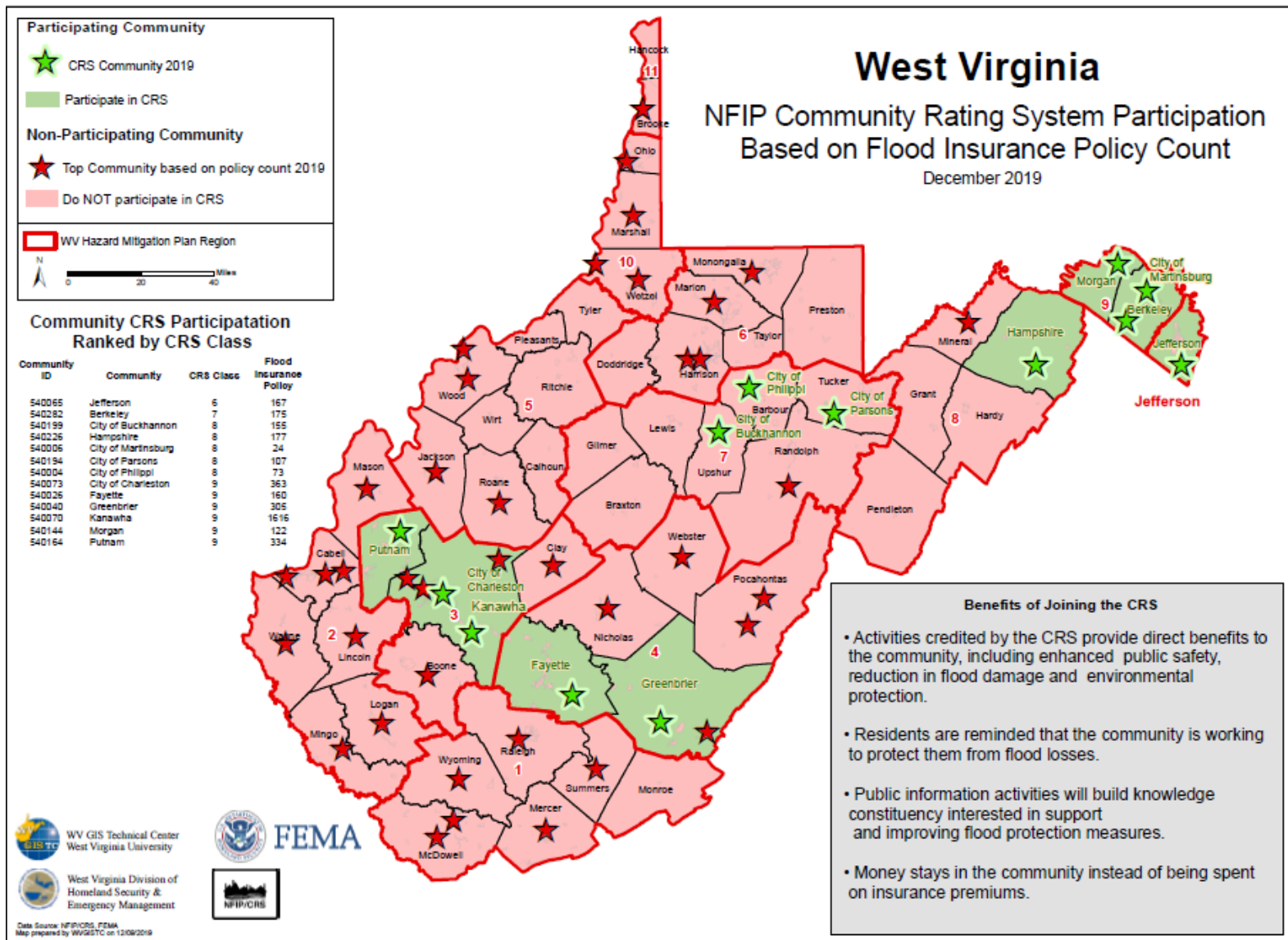
¹ Source: FEMA's Community Status Source Book

² Region 1 dissolved community of Rhodell (Raleigh County) included in NFIP count. Town of Matoaka (Mercer County) is not included.

³ Communities include SFHA or non-regulatory floodplain

Split Communities **Alderson, Montgomery** and **Smithers** are members of Region 4
 Split Community **Paden City** is a member of Region 5

CRS: Fayette & Greenbrier Counties

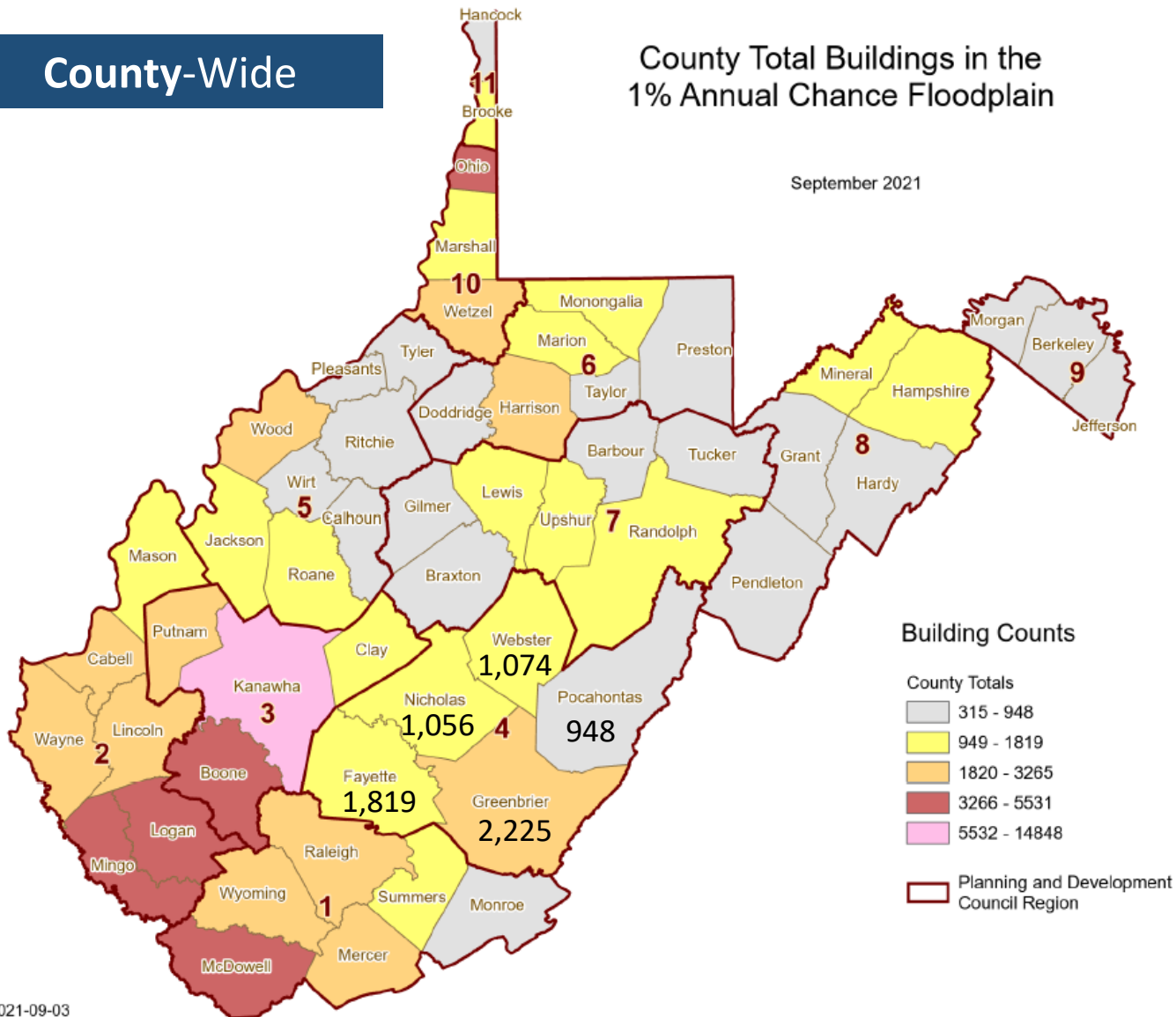


Buildings in 1% Floodplain

County-Wide

County Total Buildings in the 1% Annual Chance Floodplain

September 2021



Building Counts

County Totals

- 315 - 948
- 949 - 1819
- 1820 - 3265
- 3266 - 5531
- 5532 - 14848

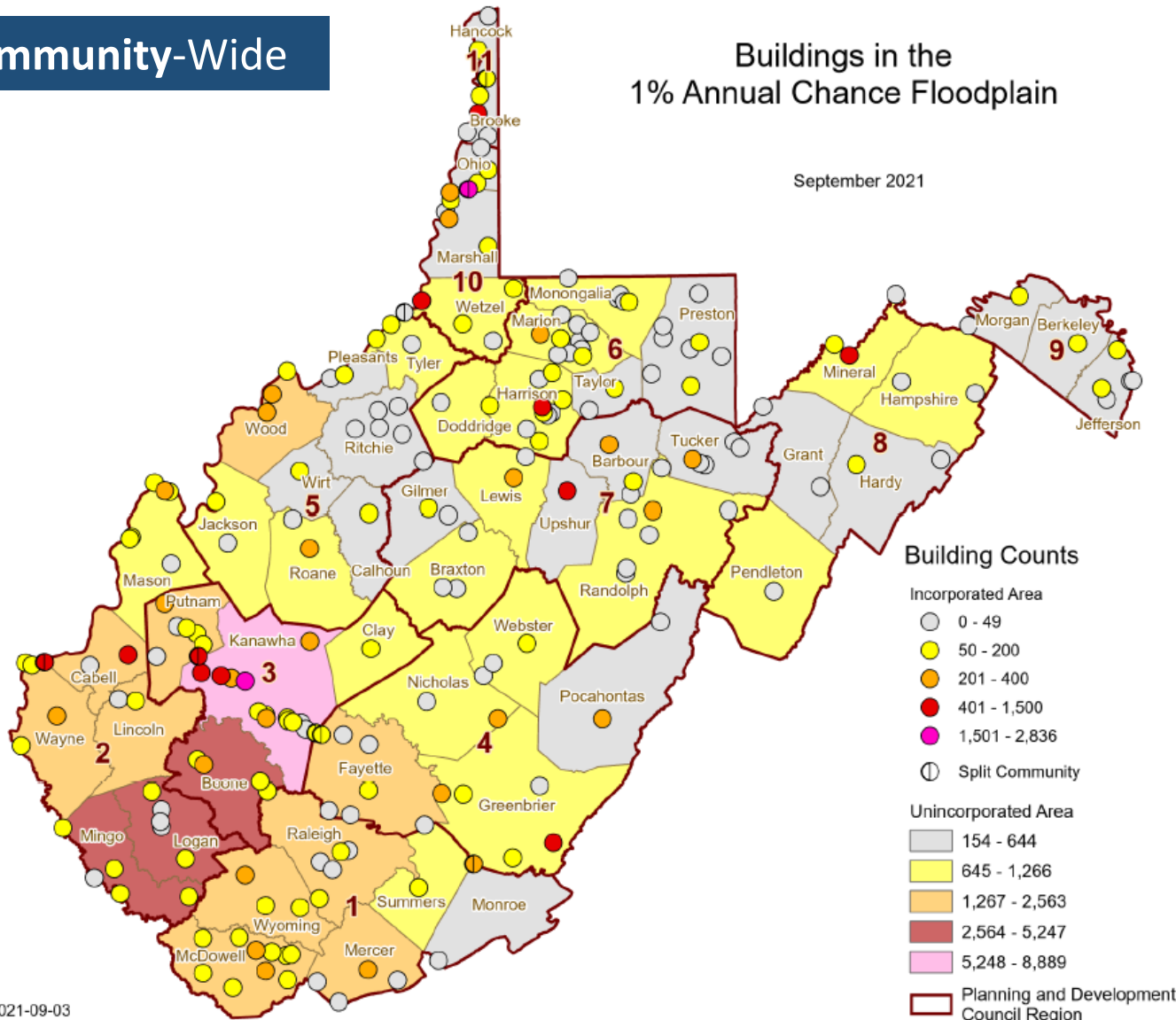
Planning and Development Council Region

Buildings in 1% Floodplain

Community-Wide

Buildings in the 1% Annual Chance Floodplain

September 2021



Residential versus Non-Residential

Community	RESIDENTIAL				COMMERCIAL NON-RESIDENTIAL		OTHER NON-RESIDENTIAL		TOTAL BUILDING VALUE		
Community Name	#	% Count	Value (\$)	% Value	#	Value (\$)	#	Value (\$)	#	Value (\$)	Rank ¹
Ansted	1	100.0%	\$66K	100.0%	0	\$0K	0	\$0K	1	\$66K	18
Fayette County*	1425	93.2%	\$50,385K	75.7%	57	\$6,523K	47	\$9,666K	1529	\$66,575K	2
Gauley Bridge	21	46.7%	\$869K	27.4%	24	\$2,302K	0	\$0K	45	\$3,171K	10
Meadow Bridge	21	91.3%	\$695K	96.8%	2	\$23K	0	\$0K	23	\$718K	15
Montgomery**	13	86.7%	\$1,083K	25.2%	1	\$1,000K	1	\$2,215K	15	\$4,298K	
Mount Hope	32	84.2%	\$787K	65.1%	4	\$101K	2	\$322K	38	\$1,210K	13
Oak Hill	50	90.9%	\$2,262K	95.3%	5	\$111K	0	\$0K	55	\$2,373K	11
Pax	32	82.1%	\$925K	67.9%	3	\$98K	4	\$340K	39	\$1,362K	12
Smithers**	63	85.1%	\$2,064K	55.8%	8	\$837K	3	\$796K	74	\$3,698K	
FAYETTE	1658	91.1%	\$59,136K	70.8%	104	\$10,994K	57	\$13,338K	1819	\$83,469K	2
Alderson**	121	84.6%	\$6,485K	56.7%	17	\$1,028K	5	\$3,931K	143	\$11,443K	
Falling Springs	3	100.0%	\$157K	100.0%	0	\$0K	0	\$0K	3	\$157K	17
Greenbrier County*	1101	93.1%	\$103,297K	88.8%	68	\$6,511K	13	\$6,523K	1182	\$116,332K	1
Rainelle	253	74.4%	\$8,392K	55.4%	78	\$5,751K	9	\$1,006K	340	\$15,149K	3
Ronceverte	34	50.7%	\$1,354K	20.5%	32	\$4,436K	1	\$825K	67	\$6,616K	6
Rupert	58	93.5%	\$2,321K	73.2%	2	\$291K	2	\$561K	62	\$3,173K	9
White Sulphur Springs	375	87.6%	\$18,910K	54.0%	42	\$5,144K	11	\$10,940K	428	\$34,994K	1
GREENBRIER	1945	87.4%	\$140,916K	75.0%	239	\$23,161K	41	\$23,786K	2225	\$187,863K	1
Nicholas County*	624	90.2%	\$21,060K	68.1%	42	\$6,646K	26	\$3,230K	692	\$30,936K	4
Richwood											4
Summersville											8
NICHOLAS											5
Durbin											14
Marlinton											2
Pocahontas County*											5
POCAHONTAS											3
Addison											5
Camden-On-Gauley											16
Cowen	28	80.0%	\$814K	15.4%	4	\$92K	3	\$4,375K	35	\$5,281K	7
Webster County*	839	94.1%	\$25,759K	59.3%	27	\$2,685K	26	\$14,976K	892	\$43,419K	3
WEBSTER	987	91.9%	\$30,690K	50.3%	50	\$5,861K	37	\$24,521K	1074	\$61,072K	4

Residential Home Residential Manufactured Home Residential Apartment Non-Residential Commercial Non-Residential Industrial Non-Residential Other

Single Family Dwellings

Community		SINGLE FAMILY HOME		MANUFACTURED (MOBILE) HOME			SINGLE FAMILY TOTAL		
Community Name	County	Count	Value (\$)	Count	% Count	Value (\$)	Count	Value (\$)	Group Rank ¹
Ansted	FAYETTE	1	\$66K	0	0.0%	\$0K	1	\$66K	18
Fayette County*	FAYETTE	1165	\$44,640K	239	17.0%	\$4,131K	1404	\$48,771K	2
Gauley Bridge	FAYETTE	17	\$619K	1	5.6%	\$10K	18	\$629K	15
Meadow Bridge	FAYETTE	13	\$551K	7	35.0%	\$113K	20	\$664K	13
Montgomery**	FAYETTE	11	\$931K	1	8.3%	\$15K	12	\$945K	3
Mount Hope	FAYETTE	31	\$771K	1	3.1%	\$16K	32	\$787K	12
Oak Hill	FAYETTE	47	\$2,173K	2	4.1%	\$39K	49	\$2,212K	7
Pax	FAYETTE	28	\$827K	4	12.5%	\$97K	32	\$925K	10
Smithers**	FAYETTE	54	\$1,802K	6	10.0%	\$77K	60	\$1,879K	2
	FAYETTE	1367	\$52,379K	261	16.0%	\$4,499K	1628	\$56,877K	2
Alderson**	GREENBRIER	107	\$5,786K	10	8.5%	\$248K	117	\$6,034K	1
Falling Springs	GREENBRIER	2	\$137K	1	33.3%	\$20K	3	\$157K	17
Greenbrier County*	GREENBRIER	822	\$96,262K	264	24.3%	\$6,626K	1086	\$102,888K	1
Rainelle	GREENBRIER	229	\$7,621K	16	6.5%	\$579K	245	\$8,200K	3
Ronceverte	GREENBRIER	29	\$1,138K	0	0.0%	\$0K	29	\$1,138K	9
Rupert	GREENBRIER	45	\$1,974K	11	19.6%	\$329K	56	\$2,302K	6
White Sulphur Springs	GREENBRIER	338	\$15,856K	4	1.2%	\$125K	342	\$15,981K	1
	GREENBRIER	1572	\$128,774K	306	16.3%	\$7,926K	1878	\$136,699K	1
Nicholas County*	NICHOLAS	455	\$17,833K	165	26.6%	\$2,939K	620	\$20,772K	5
Richwood	NICHOLAS					\$630K	259	\$7,356K	4
Summersville	NICHOLAS					\$55K	22	\$1,478K	8
	NICHOLAS					624K	901	\$29,605K	5
Durbin	POCAHONTAS					\$130K	22	\$629K	14
Marlinton	POCAHONTAS					\$354K	266	\$8,617K	2
Pocahontas County*	POCAHONTAS					\$504K	490	\$22,521K	4
	POCAHONTAS					988K	778	\$31,767K	3
Addison	WEBSTER					\$211K	106	\$3,645K	5
Camden-On-Gauley	WEBSTER					\$92K	13	\$263K	16
Cowen	WEBSTER					\$391K	28	\$814K	11
Webster County*	WEBSTER	598	\$20,815K	238	28.5%	\$4,885K	836	\$25,700K	3
	WEBSTER	715	\$24,842K	268	27.3%	\$5,580K	983	\$30,422K	4
SUMMARY		5,004	\$261,756K	1,164	19.6%	\$23,616K	6,168	\$285,371K	

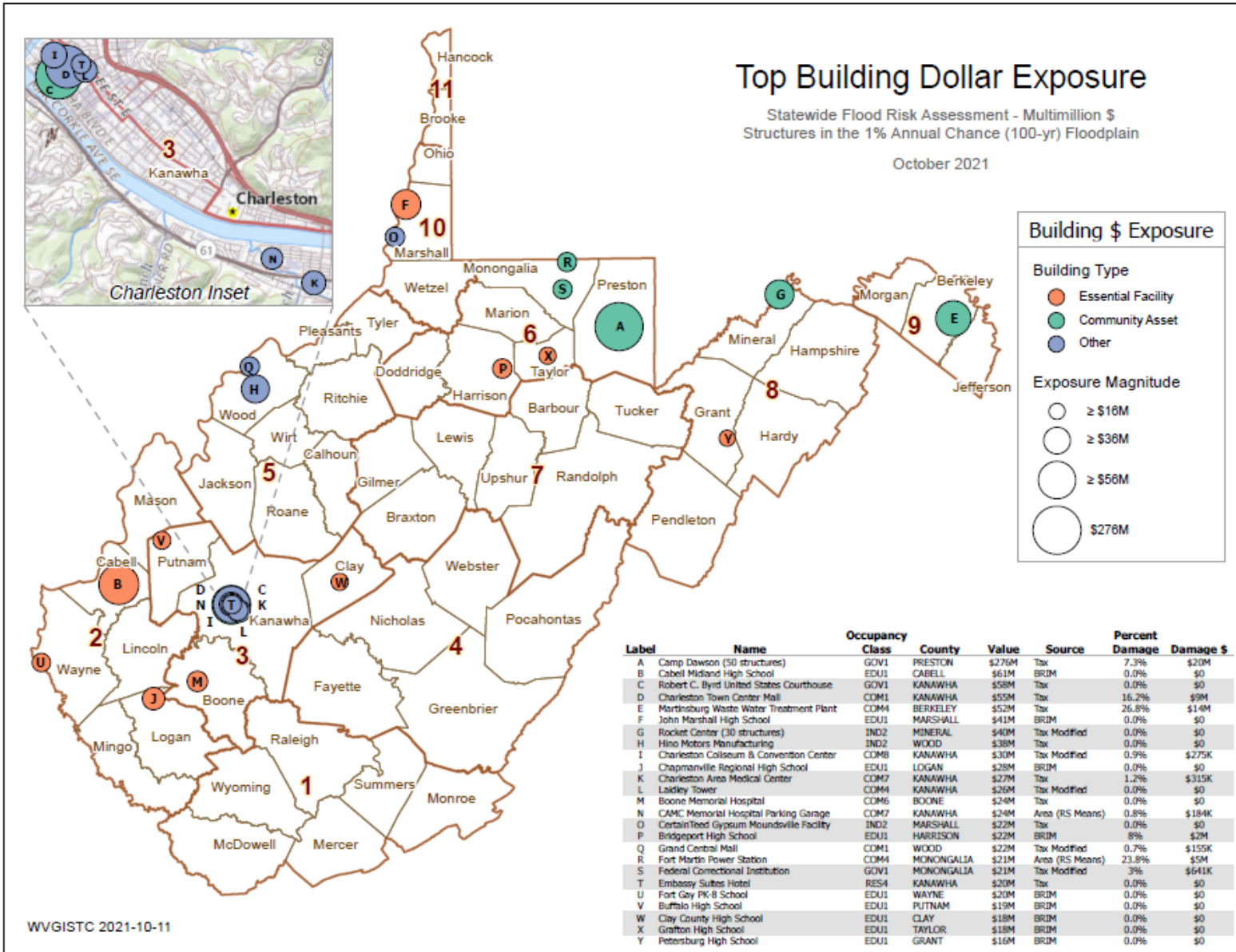


Residential Home



Residential Manufactured Home

Top Building Dollar \$ Exposure



Residential Building Value %

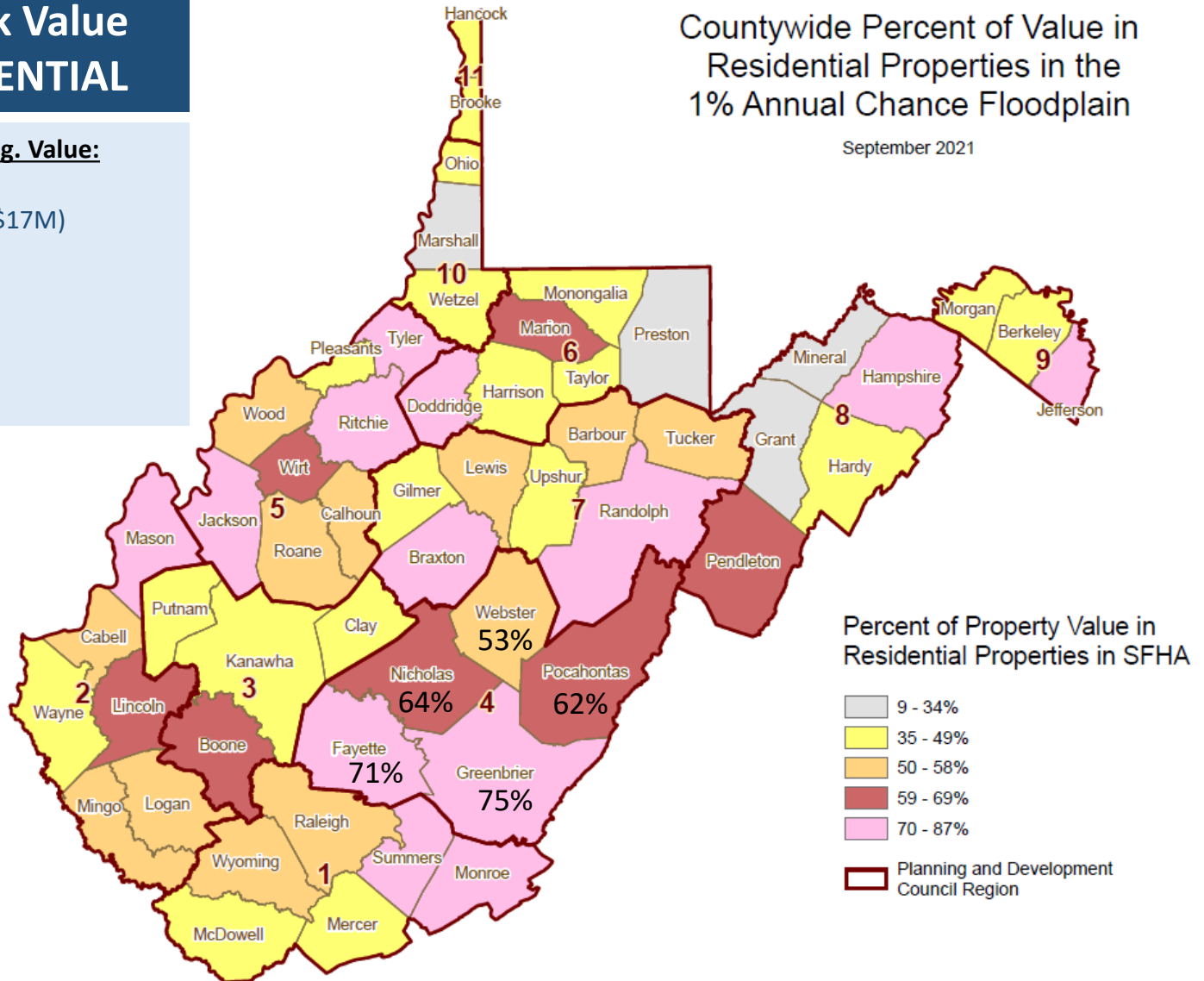
Building Stock Value mostly RESIDENTIAL

Top NON-RESIDENTIAL Bldg. Value:

- Marlinton (\$25M)
- White Sulphur Springs (\$17M)
- Webster Springs (\$8M)
- Rainelle (\$7M)
- Alderson (\$6M)
- Ronceverte(\$5M)
- Richwood (\$5M)

Countywide Percent of Value in Residential Properties in the 1% Annual Chance Floodplain

September 2021



Residential Property Value %

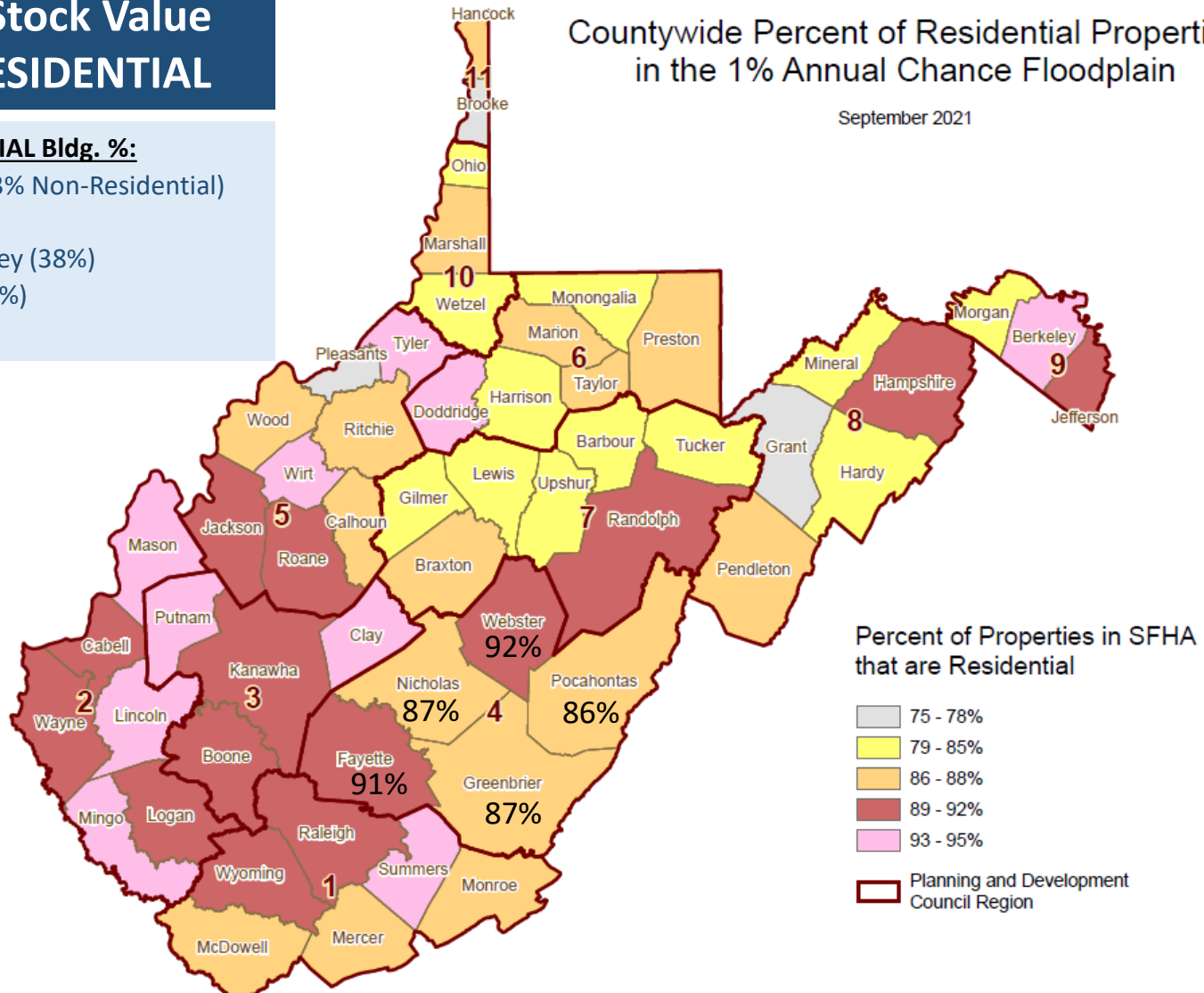
Building Stock Value mostly RESIDENTIAL

Top NON-RESIDENTIAL Bldg. %:

- Gauley Bridge (53% Non-Residential)
- Ronceverte(49%)
- Camden-on-Gauley (38%)
- Summersville (34%)
- Marlinton(25%)

Countywide Percent of Residential Properties in the 1% Annual Chance Floodplain

September 2021

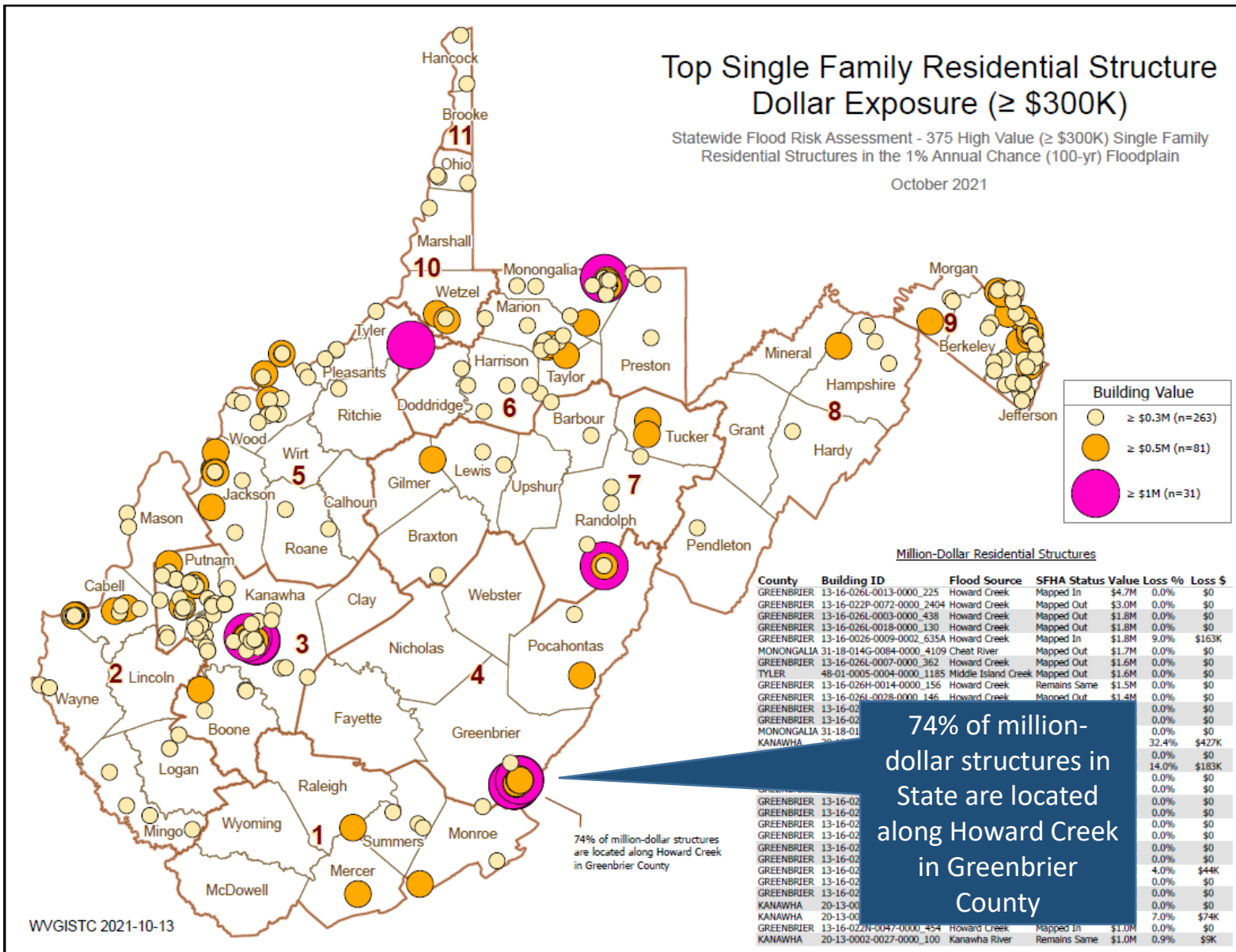


Top Single Family Dwelling \$ Exposure

Top Single Family Residential Structure Dollar Exposure (≥ \$300K)

Statewide Flood Risk Assessment - 375 High Value (≥ \$300K) Single Family Residential Structures in the 1% Annual Chance (100-yr) Floodplain

October 2021



Building \$ Exposure – Map Verification



WV Flood Tool

Remember: When In Doubt, It's Not Out!

Four Homes along *Howard Creek* with Total Building Value of **\$8.2 million** mapped into new Draft Floodplain

Home

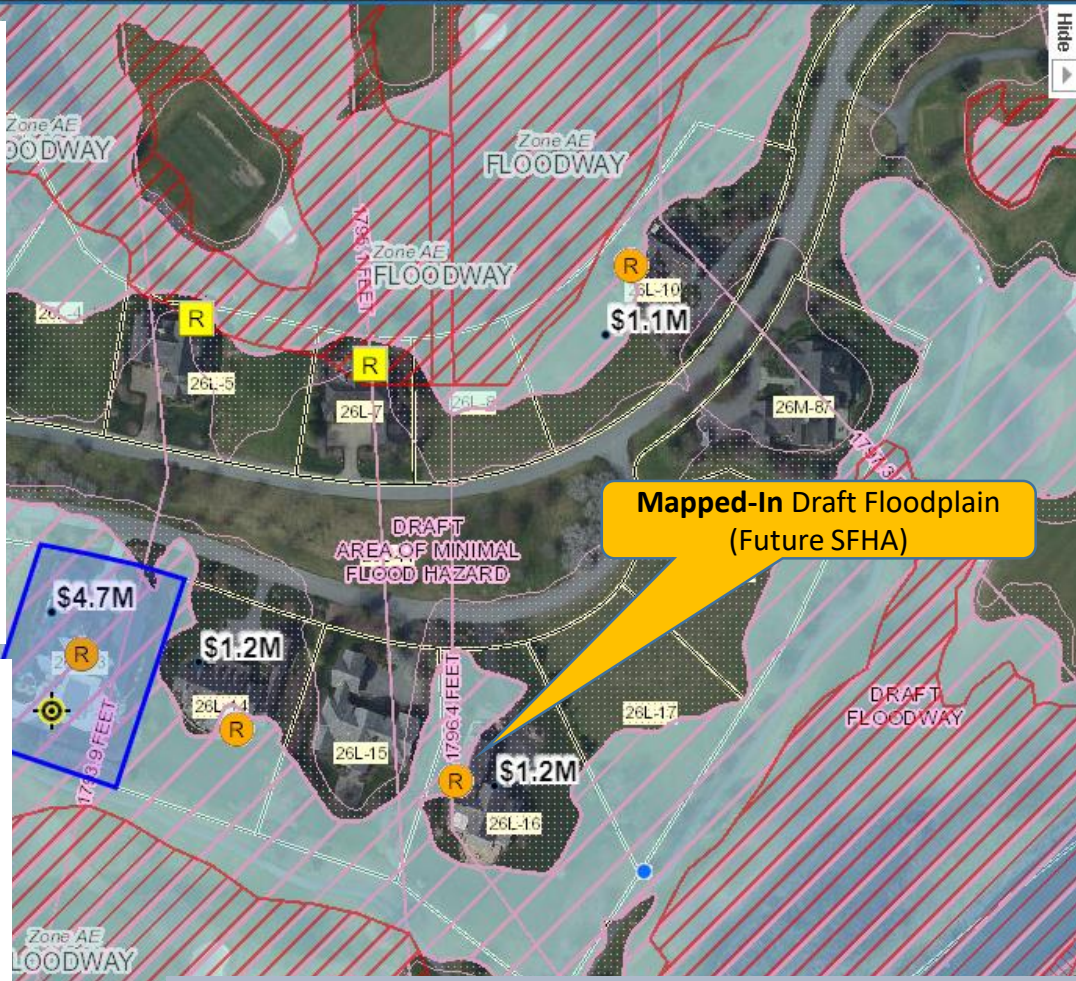
Views: Public | Expert | **Risk MAP** | Risk | Reference | Basemaps | Search: Address: e.g., 123 street name, city, state, zip | Tools: [Icons]

Floodplain Type

- Floodway
- Non-Regulatory
- Regulatory & Non-Regulatory
- Regulatory

Property Type

- C** Commercial
- R** Residential
- O** Other



Flood Hazard Area: Location is **WITHIN** an updated FEMA 100-year flood hazard zone. The flood zone is **DRAFT** and under review to become **PRELIMINARY**.

Flood Zone: Draft Flood Zone (AE)

Stream: Howard Creek

Watershed (HUC8): Greenbrier (5050003)

FEMA's Flood Map: 54025C0665E | NFHL

Map Effective Date: 10/16/2012

Contacts: Greenbrier

Flood Height: 1793.7 ft (BFE-Preliminary) | NAVD88

Water Depth: About 0.1 ft (Source: HEC-RAS)

HEC-RAS Model: N/A | All Models

Community: Greenbrier County

CID: 540040 | **CRS Class:** 9

Location (lat, long): (37.772939, -80.334257) | WGS84

Location (UTM 17N): (4180830, 558631) | WGS84

External Viewers: [Icons]

Elevation: 1794.1 ft (Source: FEMA 2016) | NAVD88

Address: N/A

Parcel: 13-16-026L-0013-0000 | Assessment

Flood Risk Information | Related Resources

- Flood Risk Assessment
- 3D Flood Visualization

Greenbrier County Draft Flood Zones

- Floodway
- Zone AE
- Zone A
- 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- AREA OF MINIMAL FLOOD HAZARD
- AREA NOT INCLUDED

100-year High Risk Flood Zones

FEMA Effective Floodplains

- Zone AE FLOODWAY
- Zone AE (AH, AO)
- Zone A

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-8942775&y=4547402&l=11&v=2>

Building Counts & Value (\$)

BUILDING COUNT RANKING		
Community	Region	State
INCORPORATED		
White Sulphur Springs	1	12
Marlinton	2	15
Rainelle	3	18
Richwood	4	21
Alderson**	5	36
Addison (Webster Springs)	6	63
UNINCORPORATED		
Fayette	1	14
Greenbrier	2	16
Webster	3	25
Nicholas	4	41
Pocahontas	5	42
COUNTY		
Greenbrier	1	15
Fayette	2	18
Webster	3	30
Nicholas	4	31
Pocahontas	5	35

** Split Community
Source: Region 4
Community-Level [Building Exposure](#) Table

BUILDING \$ VALUE RANKING		
Community	Region	State
INCORPORATED		
White Sulphur Springs	1	28
Marlinton	2	29
Rainelle	3	51
Alderson**	4	52
Richwood	5	58
Addison (Webster Springs)	6	59
UNINCORPORATED		
Greenbrier	1	14
Fayette	2	25
Webster	3	33
Nicholas	4	41
Pocahontas	5	42
COUNTY		
Greenbrier	1	17
Fayette	2	31
Pocahontas	3	37
Webster	4	38
Nicholas	5	45

Highest number of primary structures in the 1% floodplain:

- White Sulphur Springs (incorporated)
- Fayette County Unincorporated (unincorporated area)
- Greenbrier County (countywide)

Highest building dollar exposure in the 1% floodplain:

- White Sulphur Springs (incorporated)
- Greenbrier County Unincorporated (unincorporated)
- Greenbrier County (countywide)

Mobile Home %

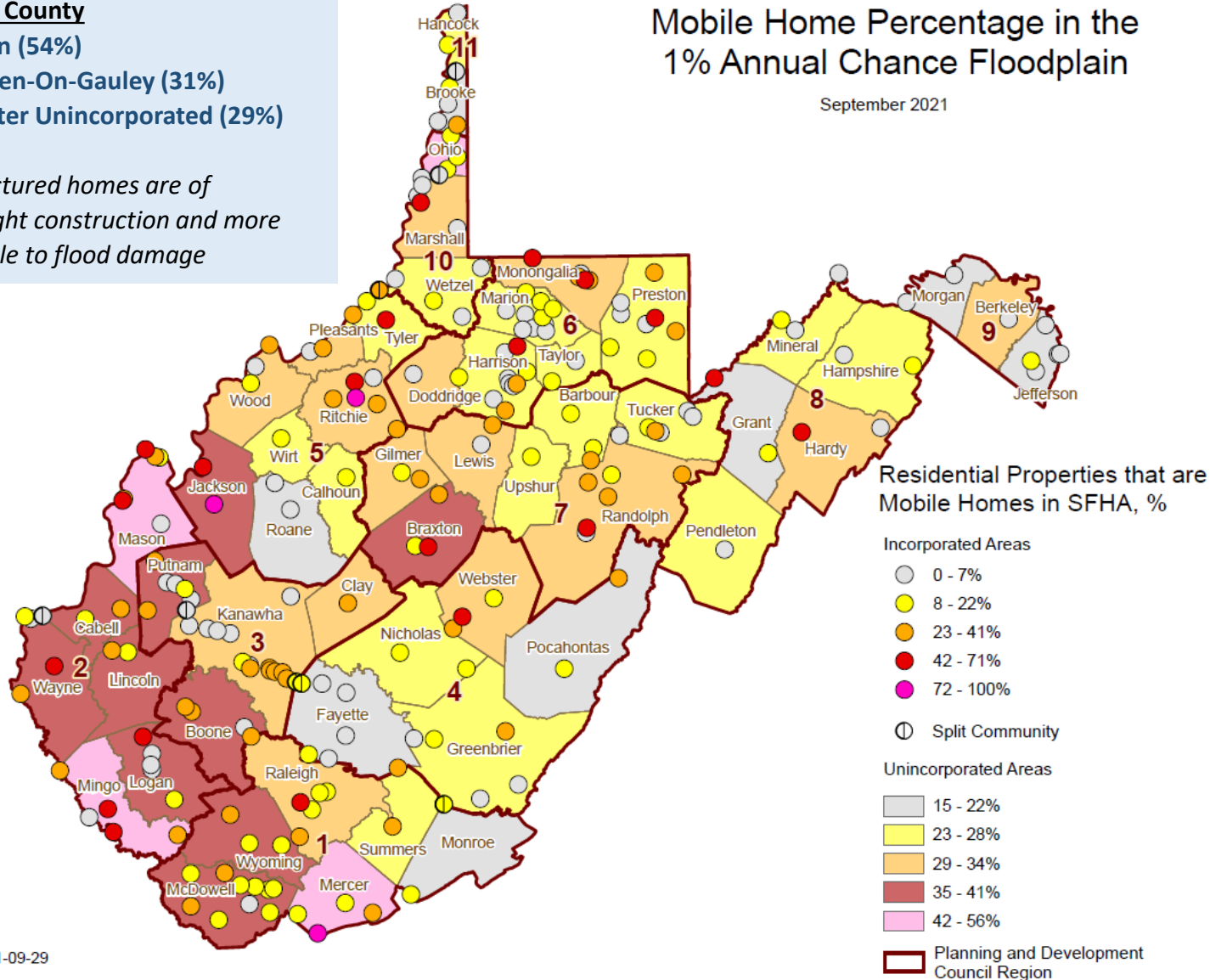
Webster County

- Cowen (54%)
- Camden-On-Gauley (31%)
- Webster Unincorporated (29%)

Manufactured homes are of lightweight construction and more vulnerable to flood damage

Mobile Home Percentage in the 1% Annual Chance Floodplain

September 2021

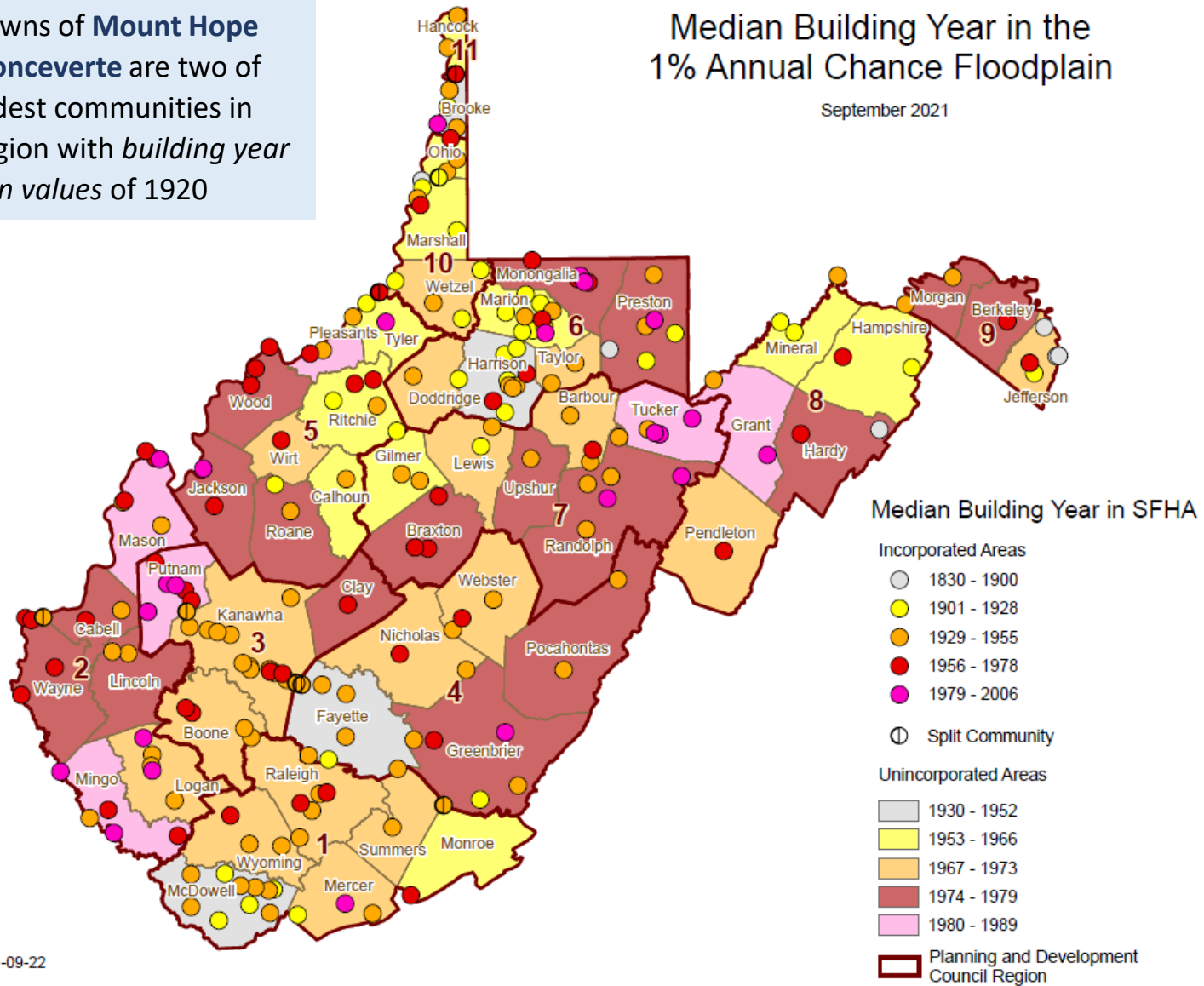


Median Bldg. Year – 1% Floodplain

The towns of **Mount Hope** and **Ronceverte** are two of the oldest communities in the region with *building year median values* of 1920

Median Building Year in the 1% Annual Chance Floodplain

September 2021



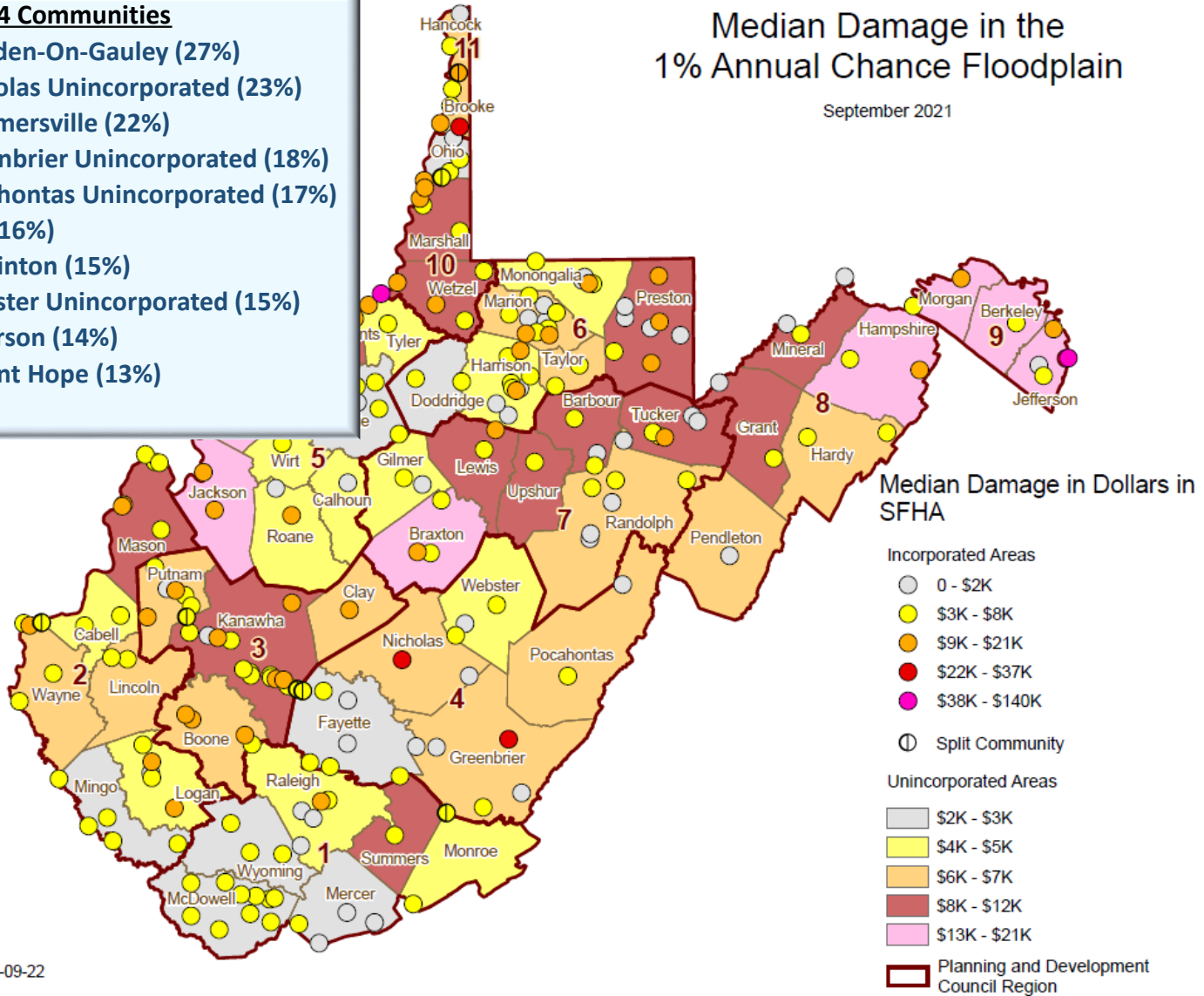
Median Building Damage %

Region 4 Communities

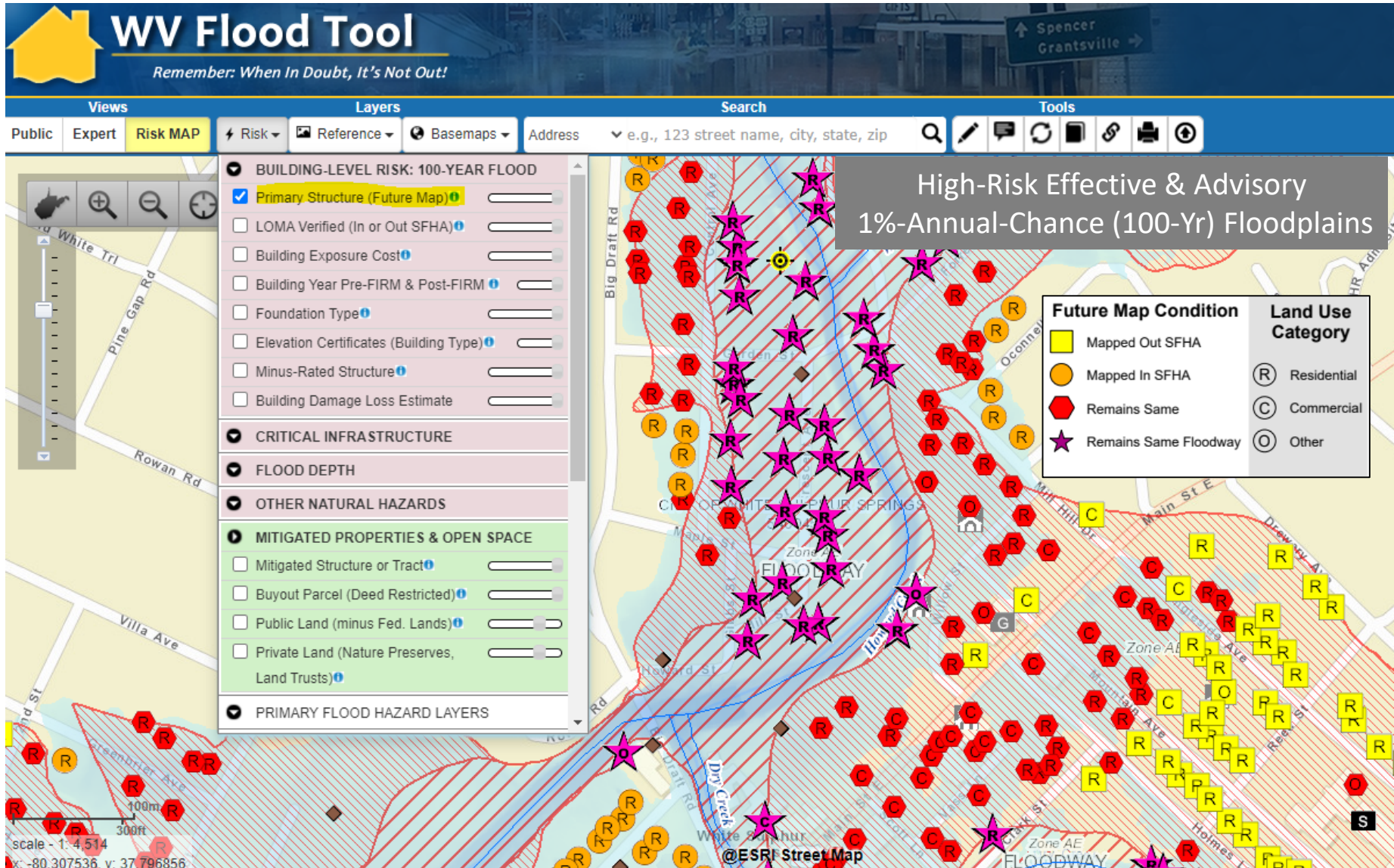
- Camden-On-Gauley (27%)
- Nicholas Unincorporated (23%)
- Summersville (22%)
- Greenbrier Unincorporated (18%)
- Pocahontas Unincorporated (17%)
- Pax (16%)
- Marlinton (15%)
- Webster Unincorporated (15%)
- Alderson (14%)
- Mount Hope (13%)

Median Damage in the 1% Annual Chance Floodplain

September 2021



Floodplain Building-Level Risk



Active Flood Studies

WV Flood Study Project Status

October 2021

<< Future Trends in Mapping >>

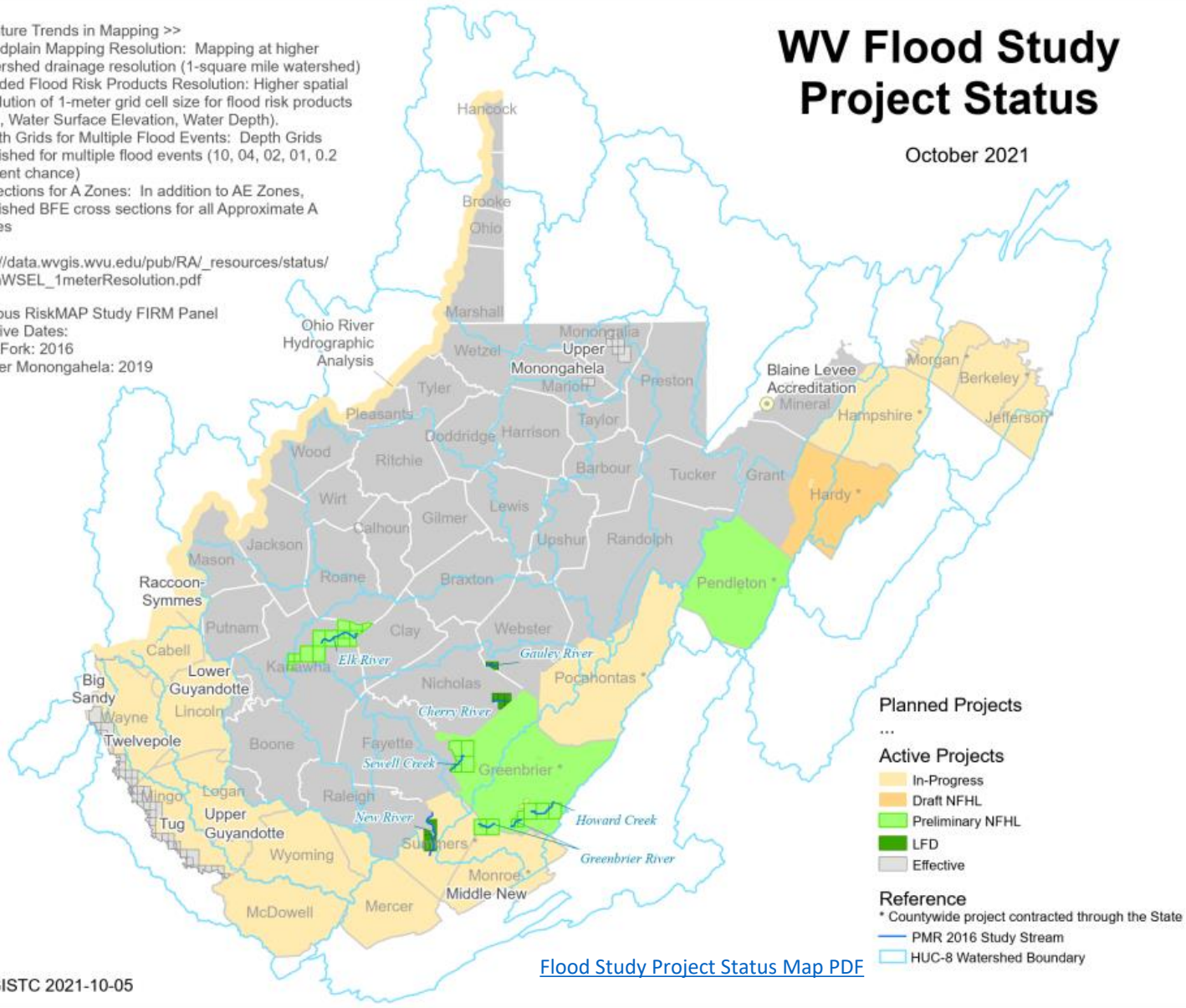
- Floodplain Mapping Resolution: Mapping at higher watershed drainage resolution (1-square mile watershed)
- Gridded Flood Risk Products Resolution: Higher spatial resolution of 1-meter grid cell size for flood risk products (e.g., Water Surface Elevation, Water Depth).
- Depth Grids for Multiple Flood Events: Depth Grids published for multiple flood events (10, 04, 02, 01, 0.2 percent chance)
- X-Sections for A Zones: In addition to AE Zones, published BFE cross sections for all Approximate A Zones

https://data.wvgis.wvu.edu/pub/RA/_resources/status/DepthWSEL_1meterResolution.pdf

Previous RiskMAP Study FIRM Panel

Effective Dates:

- Tug Fork: 2016
- Upper Monongahela: 2019



A Zone 1% Depth Grids

WSEL and Depth Grid Resolution

(1) QL2 Lidar Counties: Berkeley, Hardy, Hampshire, Jefferson, Morgan

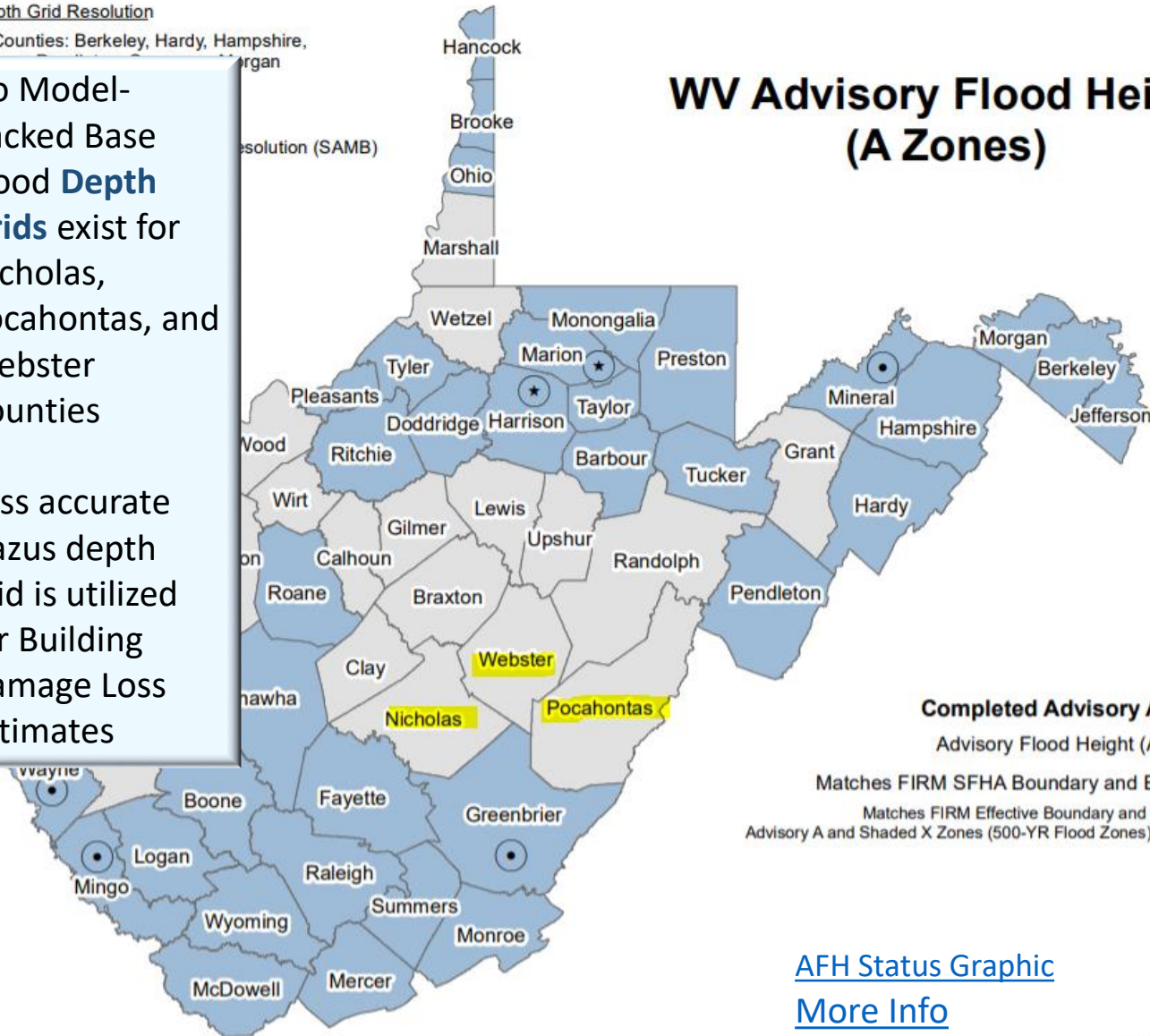
(2) QL3

(3) All other counties resolution (SAMB)

No Model-Backed Base Flood **Depth Grids** exist for Nicholas, Pocahontas, and Webster Counties

Less accurate Hazus depth grid is utilized for Building Damage Loss Estimates

WV Advisory Flood Height (A Zones)



[AFH Status Graphic](#)
[More Info](#)

Future Building Map Conditions

SFHA AND FUTURE MAP CONDITIONS	Select counties have non-regulatory, advisory flood zones (orange zones on WV Flood Tool) that indicate future map conditions of the Special Flood Hazard Area (SFHA).
Floodway	Floodways can be dangerous because water may flow very fast. Development is not allowed unless there is "no rise" in flood elevations, floodway elevations, and floodway widths are certified. Structures in floodways may require special consideration for mitigation measures.
No Change SFHA	No Change in SFHA designation where High-Risk Effective and Advisory Floodplains overlap. When future map restudies are completed and new FIRMs become effective, it is predicted that structures with this designation are neither "mapped in" nor "mapped out" of the SFHA.
Mapped In SFHA	Structures potentially " mapped-in " the SFHA according to mapped High-Risk Advisory Floodplains based on more accurate topography and model-backed A Zones. The "mapped-in" structures most likely will be included in the SFHA when future FEMA Restudies are done and new FIRMS become effective. Communities should review all "mapped-in" structures. Homeowners are at higher risk to flooding and should be contacted about Flood Insurance Preferred Risk Policies and other potential mitigation measures.
Mapped Out SFHA	Structures potentially " mapped-out " the SFHA according to mapped Advisory Floodplains and most likely will NOT be included in the SFHA when the new FIRMs become effective from future Restudies. Communities should review all "mapped-out" structures for LiDAR LOMAs. Although these structures may be mapped to a lesser flood risk designation, property owners should be encouraged to purchase Flood Insurance Preferred Risk Policies at lower premiums. Morgan County example Berkeley County example

Community-Level Building Counts

Community Identification	
Ansted	FAYETTE
Fayette County*	FAYETTE
Gauley Bridge	FAYETTE
Meadow Bridge	FAYETTE
Montgomery**	FAYETTE
Mount Hope	FAYETTE
Oak Hill	FAYETTE
Pax	FAYETTE
Smithers**	FAYETTE
	FAYETTE
Alderson**	GREENBRIER
Falling Springs	GREENBRIER
Greenbrier County*	GREENBRIER
Rainelle	GREENBRIER
Ronceverte	GREENBRIER
Rupert	GREENBRIER
White Sulphur Springs	GREENBRIER
	GREENBRIER
Nicholas County*	NICHOLAS
Richwood	NICHOLAS
Summersville	NICHOLAS
	NICHOLAS
Durbin	POCAHONTAS
Marlinton	POCAHONTAS
Pocahontas County*	POCAHONTAS
	POCAHONTAS
Addison	WEBSTER
Camden-On-Gauley	WEBSTER
Cowen	WEBSTER
Webster County*	WEBSTER
	WEBSTER

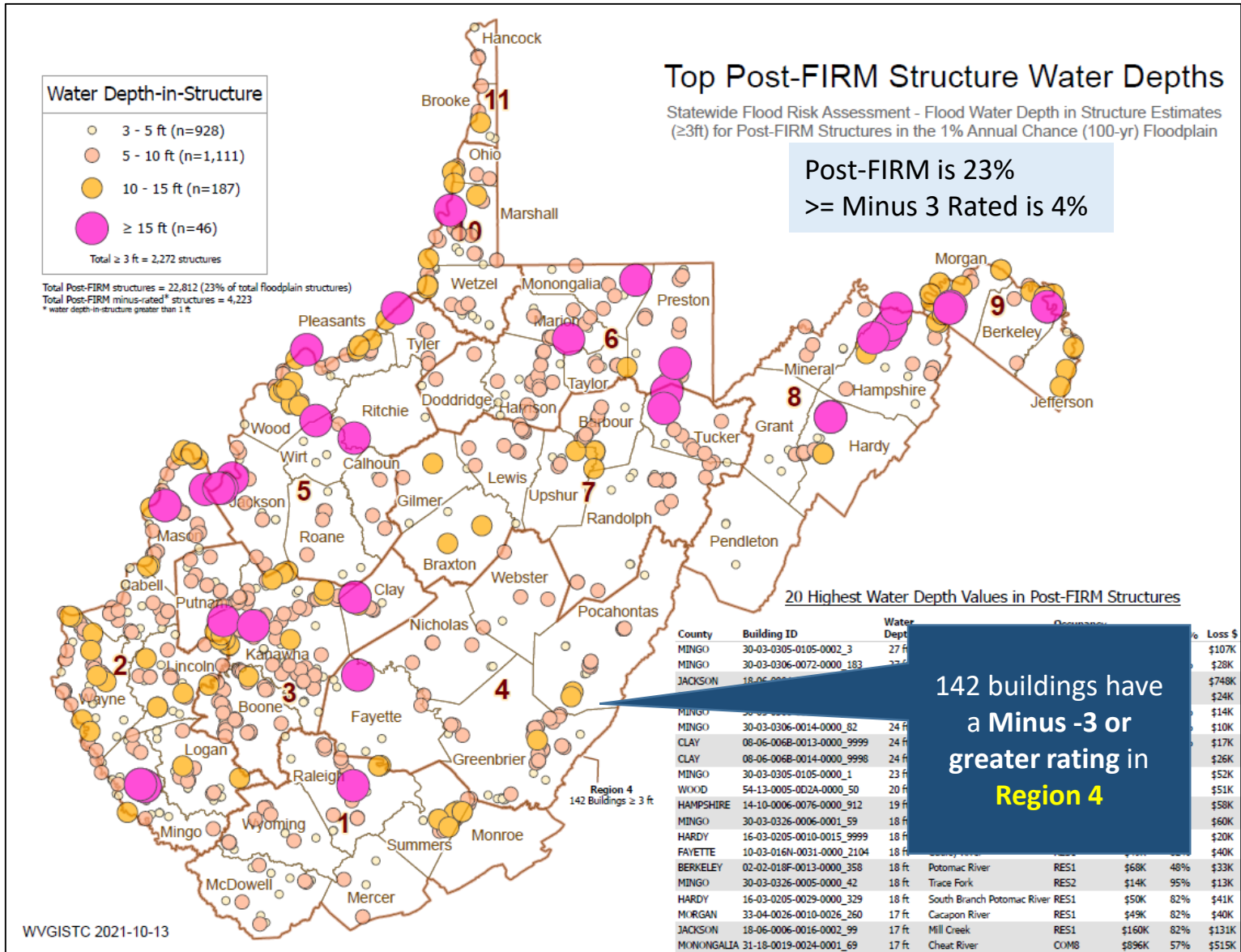
SFHA - FUTURE MAP CONDITIONS				
Flood way	No Change SFHA	Mapped in SFHA	Mapped Out SFHA	
0	0	0	1	
35	699	547	248	
2	20	23	0	
0	18	3	2	
0	12	1	2	
0	30	0	8	
0	23	4	28	
7	30	0	2	
14	44	12	4	
58	876	590	295	
19	111	7	6	
0	3	0	0	
60	652	293	177	
9	0	331	0	
0	47	0	20	
0	22	36	4	
67	175	68	118	
155	1010	735	325	
30	587	25	50	
109	153	30	37	
0	33	0	2	
139	773	55	89	
1	6	20	0	
13	343	20	5	
61	318	127	34	
75	667	167	39	
23	79	4	20	
0	18	3	0	
0	35	0	0	
119	634	55	84	
142	766	62	104	

HIGH-RISK FLOOD ZONES		
Effective	Advisory	Total
1	0	1
982	547	1529
22	23	45
20	3	23
14	1	15
38	0	38
51	4	55
39	0	39
62	12	74
1229	590	1819
136	7	143
3	0	3
889	293	1182
9	331	340
67	0	67
26	36	62
360	68	428
1490	735	2225
667	25	692
299	30	329
35	0	35
1001	55	1056
7	20	27
361	20	381
413	127	540
781	167	948
122	4	126
18	3	21
35	0	35
837	55	892
1012	62	1074

Region 4 Table

[Community-Level Flood Zone Breakdown](#)

Post-FIRM Minus-Rated Structures



Post-FIRM Minus-Rated (Region 4)

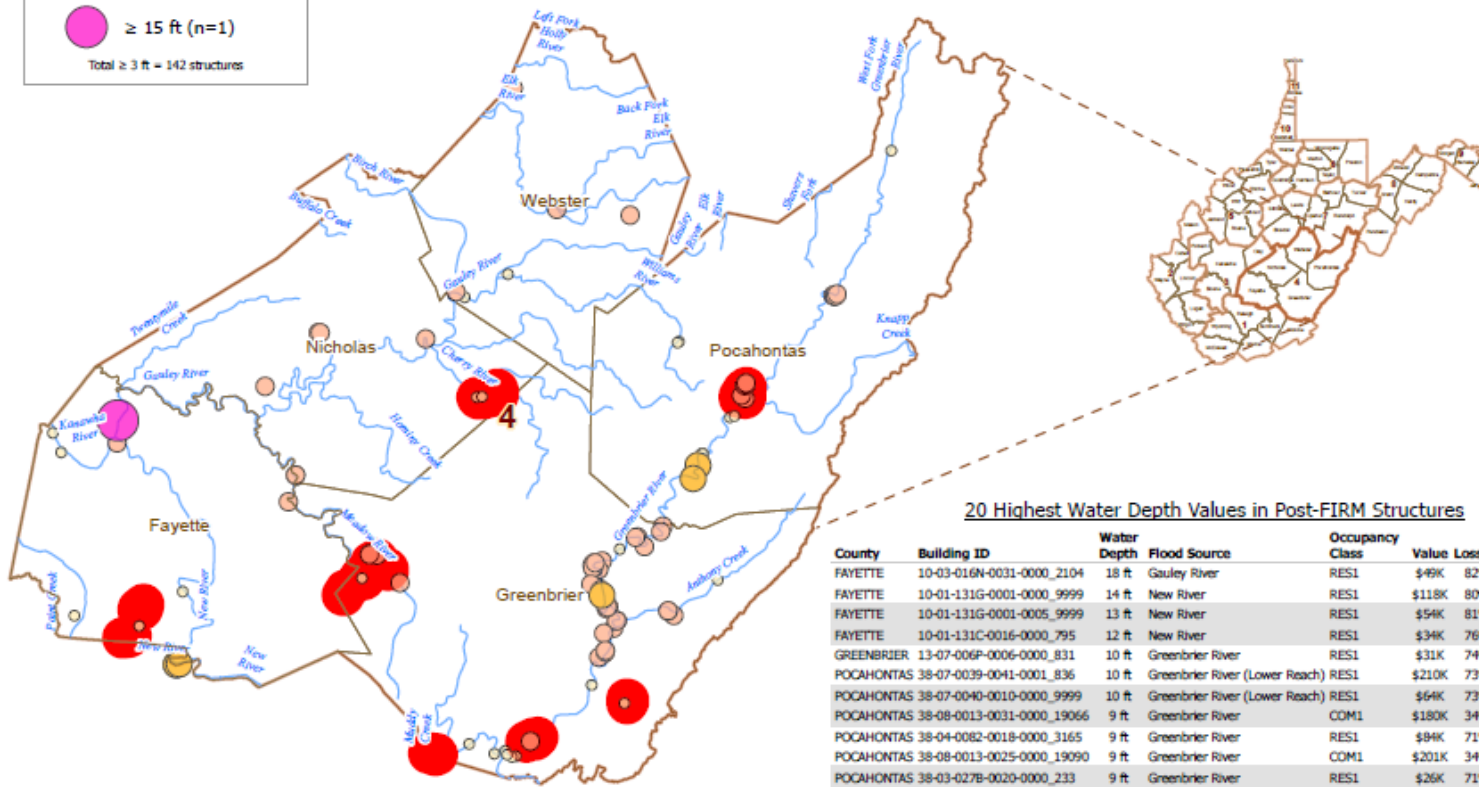
Water Depth-in-Structure

- 3 - 5 ft (n=59)
- 5 - 10 ft (n=76)
- 10 - 15 ft (n=6)
- ≥ 15 ft (n=1)

Total ≥ 3 ft = 142 structures

Top Post-FIRM Structure Water Depths: Region 4

Statewide Flood Risk Assessment - Flood Water Depth in Structure Estimates (≥3ft) for Post-FIRM Structures in the 1% Annual Chance (100-yr) Floodplain
October 2021



■ Area of Mitigation Interest

20 Highest Water Depth Values in Post-FIRM Structures

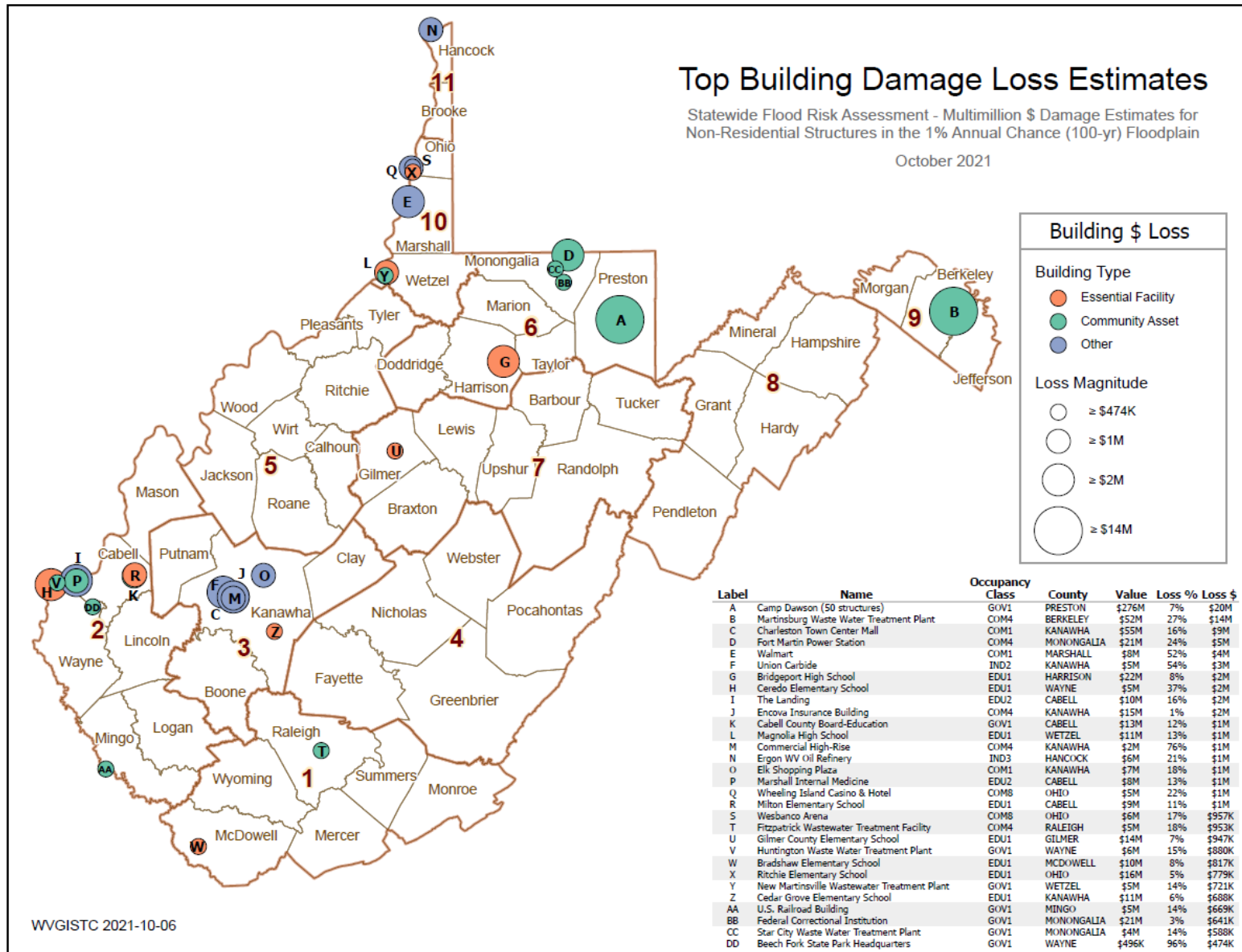
County	Building ID	Water Depth	Flood Source	Occupancy Class	Value	Loss %	Loss \$
FAYETTE	10-03-016N-0031-0000_2104	18 ft	Gauley River	RES1	\$49K	82%	\$40K
FAYETTE	10-01-131G-0001-0000_9999	14 ft	New River	RES1	\$118K	80%	\$95K
FAYETTE	10-01-131G-0001-0005_9999	13 ft	New River	RES1	\$54K	81%	\$44K
FAYETTE	10-01-131C-0016-0000_795	12 ft	New River	RES1	\$34K	76%	\$26K
GREENBRIER	13-07-006P-0006-0000_831	10 ft	Greenbrier River	RES1	\$31K	74%	\$23K
POCAHONTAS	38-07-0039-0041-0001_836	10 ft	Greenbrier River (Lower Reach)	RES1	\$210K	73%	\$153K
POCAHONTAS	38-07-0040-0010-0000_9999	10 ft	Greenbrier River (Lower Reach)	RES1	\$64K	73%	\$47K
POCAHONTAS	38-08-0013-0031-0000_19066	9 ft	Greenbrier River	COM1	\$180K	34%	\$61K
POCAHONTAS	38-04-0082-0018-0000_3165	9 ft	Greenbrier River	RES1	\$84K	71%	\$60K
POCAHONTAS	38-08-0013-0025-0000_19090	9 ft	Greenbrier River	COM1	\$201K	34%	\$68K
POCAHONTAS	38-03-027B-0020-0000_233	9 ft	Greenbrier River	RES1	\$26K	71%	\$19K
GREENBRIER	13-14-0015-0140-0000_270	9 ft	Greenbrier River	GOV1	\$825K	21%	\$172K
GREENBRIER	13-04-054D-0008-0000_1242	8 ft	Greenbrier River	RES1	\$17K	68%	\$11K
GREENBRIER	13-07-006K-0066-0000_565	8 ft	Greenbrier River	RES1	\$34K	68%	\$23K
WEBSTER	51-01-0003-0121-0000_42	8 ft	Coon Creek	RES2	\$15K	83%	\$12K
GREENBRIER	13-04-0066-0002-0000_202	8 ft	Greenbrier River	RES1	\$143K	30%	\$43K
WEBSTER	51-06-006F-0039-0001_9995	8 ft	Right Fork Holly River	RES2	\$39K	83%	\$33K
NICHOLAS	34-07-0019-0110-0001_50	8 ft	Muddlety Creek	COM1	\$443K	30%	\$133K
NICHOLAS	34-02-0019-0024-0000_9999	8 ft	Meadow Creek	RES1	\$13K	67%	\$8K
POCAHONTAS	38-03-027B-0021-0000_261	8 ft	Greenbrier River	RES1	\$22K	67%	\$15K

Top Building Damage Loss Estimates

Top Building Damage Loss Estimates

Statewide Flood Risk Assessment - Multimillion \$ Damage Estimates for Non-Residential Structures in the 1% Annual Chance (100-yr) Floodplain

October 2021



Preload Structures into SDE

Incorporate 1% Floodplain Building Risk Assessment Inventory into **Mitigation** and **NFIP/CRS Management** Activities

STEP 1: Community preloads Floodplain Properties into FEMA's Substantial Damage Estimator software



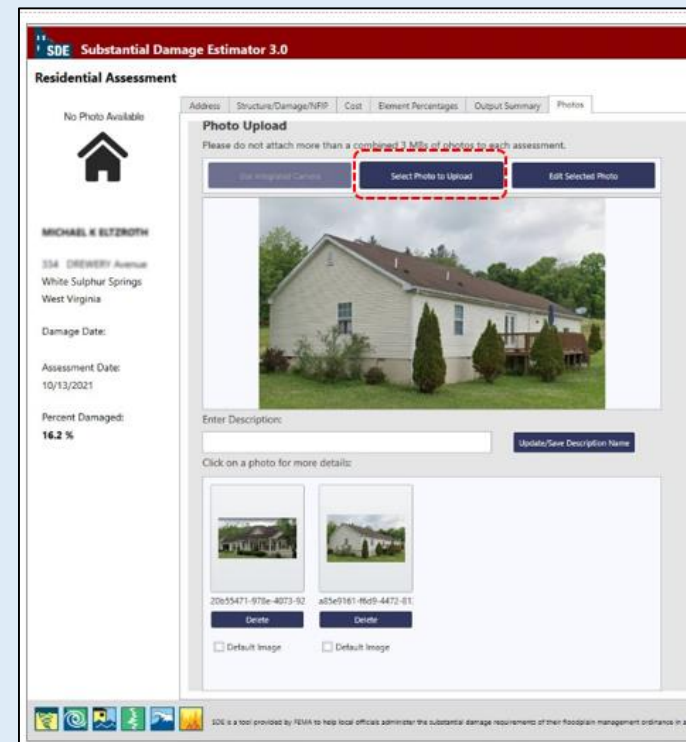
Please Select a Property

Structure Owner Name	Property Address	County/Parish	Parcel Number	Lot Number	Subdivision	Year of Construction
MICHAEL GARFIELD SE.	1836 RORER Road	Greenbrier	13-04-055E-0010-0000	13-04-055E-0010-0000	Greenbrier County	1960
MICHAEL J HONAKER	381 INGLESIDE Avenue	Greenbrier	13-17-0012-0084-0000	13-17-0012-0084-0000	White Sulphur Springs	1930
MICHAEL J SMITH	156 MAPLE AVE	Greenbrier	13-01-0006-0358-0000	13-01-0006-0358-0000	Alderson	2020
MICHAEL K ELZBROTH	334 DREWERY Avenue	Greenbrier	13-17-0009-0383-0000	13-17-0009-0383-0000	White Sulphur Springs	1918
MICHAEL L ARBOGAST	396 HATFIELD HOLLOW	Greenbrier	13-02-0029-0022-0001	13-02-0029-0022-0001	Greenbrier County	1991
MICHAEL LEE ET ALS S.	6886 TUCKAHOE RD	Greenbrier	13-16-0036-0002-0000	13-16-0036-0002-0000	Greenbrier County	1972
MICHAEL LEE ET ALS S.	0 TUCKAHOE Road	Greenbrier	13-16-0036-0002-0000	13-16-0036-0002-0000	Greenbrier County	1972
MICHAEL PAUL TRAINER	156 9FTH Avenue	Greenbrier	13-02-0358-0067-0000	13-02-0358-0067-0000	Greenbrier County	1950
MICHAEL ROBERT ET AL.	349 GREENBRIER Aven.	Greenbrier	13-17-0011-0037-0000	13-17-0011-0037-0000	White Sulphur Springs	1957
MICHAEL SCOTT HILL	691 902 ROCK Trail	Greenbrier	13-06-0019-0091-0000	13-06-0019-0091-0000	Greenbrier County	1999
MICHAEL TOLLEY	324 RIVER EDGE Lane	Greenbrier	13-06-024D-0003-0000	13-06-024D-0003-0000	Greenbrier County	1987
MICHAEL W BRACKENH.	310 MILL CREEK Road	Greenbrier	13-11-055C-0070-0000	13-11-055C-0070-0000	Greenbrier County	1900
MICHAEL W CARRINGT.	252 HOLMES Lane	Greenbrier	13-17-0012-0021-0001	13-17-0012-0021-0001	White Sulphur Springs	1999
MICHAEL W CARRINGT.	282 HOLMES Lane	Greenbrier	13-17-0012-0047-0000	13-17-0012-0047-0000	White Sulphur Springs	1999
MICHAEL W SIMS	429 6TH Street	Greenbrier	13-13-0005-0480-0000	13-13-0005-0480-0000	Rainelle	1975
MICHAEL W SHOCKEY	274 MOUNTAIN Avenue	Greenbrier	13-17-0009-0383-0000	13-17-0009-0383-0000	White Sulphur Springs	1921
MICHAEL WARD	267 LITTLE CREEK Road	Greenbrier	13-02-0040-0028-0000	13-02-0040-0028-0000	Greenbrier County	1970
MICHELLE A DIXON	153 WOODLAND Ave.	Greenbrier	13-17-0011-0011-0000	13-17-0011-0011-0000	White Sulphur Springs	1964
MICHELLE L DRENEN	191 MEADOW RIVERL.	Greenbrier	13-11-055F-0039-0000	13-11-055F-0039-0000	Greenbrier County	1973

Preload using default values.

Greenbrier County has 2,225 Structures that can be uploaded

STEP 2: Community performs Substantial Damage Assessments for Residential and Non-Residential Properties



[SDE Upload Files and Instructions](#)

Flood Study Map Changes

Incorporate 1% Floodplain Building Risk Assessment Inventory into **Mitigation** and **NFIP/CRS Management** Activities



[FEMA Region 3 Toolkit for New Flood Studies](#)

City of White Sulphur Springs

Date: 10/14/2021

Dear SMITH JOHN:

This letter is a test to show the use of mail merge and I have copied the first two paragraphs from the Local Official letter and the last two paragraphs for demonstration purposes.

White Sulphur Springs has 68 buildings being mapped into the SFHA

A multi-year project to re-examine **City of White Sulphur Springs's** flood zones and develop detailed digital flood hazard maps has been completed. The new maps, also known as Flood Insurance Rate Maps (FIRMs), were just released for public view. The new maps reflect current flood risk based on the latest data and a more accurate understanding of our area's topography. As a result, you and other property owners throughout **GREENBRIER COUNTY** will have up-to-date, Internet-accessible information about flood risk to your property.

How will these changes affect you?

Based on the new maps, your property is being mapped into a higher risk flood zone, known as the Special Flood Hazard Area (SFHA). If you have a mortgage from a federally regulated lender and your property is in the SFHA, you are required by Federal law to carry flood insurance when these flood maps are put into effect. We recommend that you use this time to contact your insurance agent to get the most favorable rate and learn about options offered by the National Flood Insurance Program (NFIP) for properties being mapped into higher risk areas for the first time.

You can find your property on the WV Flood tool in one of two ways: first, you can go to the following link in a web browser: <https://mapwv.gov/flood/map/?wkid=102100&x=-8939196.678447664&y=4550352.316266677&l=13&v=2>. Or, you can go to <https://mapwv.gov/> map and enter your address, **177 PATTERSON ST, WHITE SULPHUR SPRINGS, WV, 24986**, in the search bar.

Your property is within the **Howard Creek** flood zone and has a flood depth of **1.0 feet**. Its FIRM status is **Pre-FIRM**.

[Mail Merge Template for SFHA Mapped-in Structures](#)

Essential Facilities & Community Assets

*Identify **Mitigation Actions** for Essential Facilities and Community Assets*

For mitigation plan, incorporate a minimum of two (2) identifiable mitigation actions for essential facilities and community assets for each county.

- 1) Compare existing essential facilities inventoried to previous plan update and denote any mitigation progress.*
- 2) Review top statewide building listing of high-value dollar essential facilities/community assets exposure and substantial damage.*
- 3) Identify socio-economic effects if key facilities are not restored to original function within days after flood event.*
- 4) Review existing emergency action plans.*
- 5) Incorporate into CRS Activity 510 Floodplain Management Planning (FMP)*

Essential Facilities & Community Assets



Residential Home



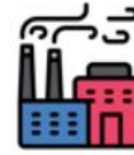
Residential Manufactured Home



Residential Apartment



Non-Residential Commercial



Non-Residential Industrial



Non-Residential Other

Region 4 [Building Type & Exposure](#)



Police Station



Fire Station



E-911 Dispatch



School



Hospital



Nursing Home

Region 4 [Essential Facilities Report](#)



Religious Organization



Educational Building



Emergency Medical Services



Government Building



Utility



National Register Historical Structure

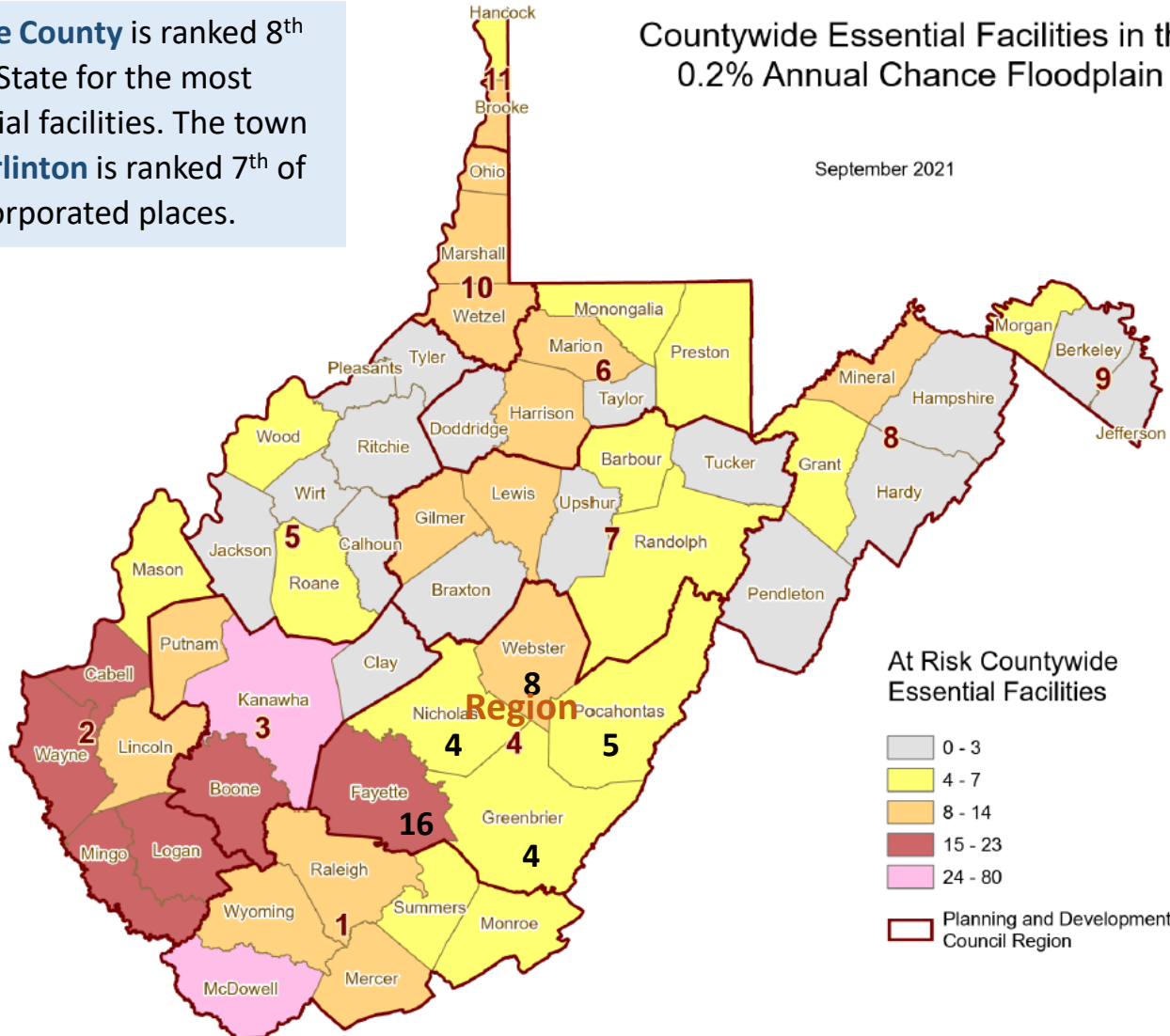
Region 4 [Community Assets Report](#)

Essential Facilities 0.2% Floodplain

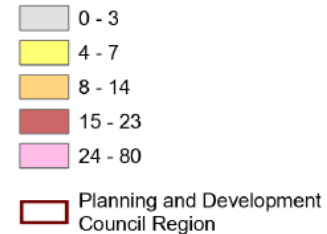
Fayette County is ranked 8th in the State for the most essential facilities. The town of **Marlinton** is ranked 7th of all incorporated places.

Countywide Essential Facilities in the 0.2% Annual Chance Floodplain

September 2021



At Risk Countywide Essential Facilities



Essential Facilities: Community Level

COMMUNITY IDENTIFICATION			ESSENTIAL FACILITIES						
CID	Community Name	County	Police Station	Fire Station	911 Center	School	Hospital	Nursing Home	TOTAL
540027	Ansted	FAYETTE	0	0	0	0	0	0	0
540026	Fayette County*	FAYETTE	0	3	0	2	0	0	5
540294	Gauley Bridge	FAYETTE	1	1	0	0	0	0	2
540028	Meadow Bridge	FAYETTE	0	0	0	0	0	0	0
540029	Montgomery**	FAYETTE	1	0	0	0	1	1	3
540280	Mount Hope	FAYETTE	0	0	0	0	0	0	0
540031	Oak Hill	FAYETTE	0	0	0	0	0	0	0
540032	Pax	FAYETTE	0	1	0	0	0	0	1
540033	Smithers**	FAYETTE	2	1	0	2	0	0	5
SUM	Ranked 8th in State	FAYETTE	4	6	0	4	1	1	16
540041	Alderson**	GREENBRIER	0	0	0	1	0	0	1
540243	Falling Springs	GREENBRIER	0	0	0	0	0	0	0
540040	Greenbrier County*	GREENBRIER	0	0	0	0	0	0	0
540228	Rainelle	GREENBRIER	0	1	0	0	0	0	1
540043	Ronceverte	GREENBRIER	0	0	0	0	0	0	0
540044	Rupert	GREENBRIER	0	0	0	0	0	0	0
540045	White Sulphur Springs	GREENBRIER	1	0	0	1	0	0	2
SUM		GREENBRIER	1	1	0	2	0	0	4
540146	Nicholas County*	NICHOLAS	0	1	0	0	0	0	1
540147	Richwood	NICHOLAS	2	1	0	0	0	0	3
540148	Summersville	NICHOLAS	0	0	0	0	0	0	0
SUM		NICHOLAS	2	2	0	0	0	0	4
540158	Durbin	POCAHONTAS	0	0	0	0	0	0	0
540159	Marlinton (Ranked 7th for all municipalities in State)	POCAHONTAS	2	1	0	1	0	1	5
540283	Pocahontas County*	POCAHONTAS	0	0	0	0	0	0	0
SUM		POCAHONTAS	2	1	0	1	0	1	5
540204	Addison (Berkeley Springs)	WEBSTER	0	1	1	1	0	0	3
540205	Camden-On-Gauley	WEBSTER	1	0	0	0	0	0	1
540206	Cowen	WEBSTER	0	0	0	1	0	0	1
540203	Webster County*	WEBSTER	0	2	0	1	0	0	3
SUM		WEBSTER	1	3	1	3	0	0	8

Community
-Level
Report

*What is at
Risk?*

Essential Facilities: Bldg. Level

Building-
Level
Report

*Degree of
Risk?*

Community Name	County	Facility Name	Facility Type	Flood Tool Link	Flood Depth	Building Damage Percent
Camden-On-Gauley	WEBSTER	Camden on Gauley Police Department	Police Station	FT	6.3	15.6
Alderson**	GREENBRIER	Alderson Elementary School	School	FT	3.5	8.0
Marlinton	POCAHONTAS	Marlinton Police Department	Police Station	FT	2.2	7.6
Marlinton	POCAHONTAS	Marlinton Volunteer Fire Department	Fire Station	FT	2.2	7.7
Fayette County*	FAYETTE	Loup Creek Volunteer Fire Department - Robson	Fire Station	FT	1.1	0.9
Webster County*	WEBSTER	Erbacon Volunteer Fire Department	Fire Station	FT	1.0	0.0
Marlinton	POCAHONTAS	Pocahontas County 911 Center	Police Station	FT	1.0	0.0
Marlinton	POCAHONTAS	Marlinton Elementary School	School	FT	0.8	0.0
Fayette County*	FAYETTE	Armstrong Creek Volunteer Fire Department	Fire Station	FT	0.8	0.0
Fayette County*	FAYETTE	Covenant Promise Christian Academy	School	FT	0.5	0.0
Webster County*	WEBSTER	Hacker Valley Elementary School	School	FT	0.4	0.0
White Sulphur Springs	GREENBRIER	White Sulphur Springs Police Department	Police Station	FT	0.2	0.0
Webster County*	WEBSTER	Hacker Valley Volunteer Fire Department	Fire Station	FT	0.1	0.0
Addison	WEBSTER	Webster County Office of Emergency Services/ E-911	911 Center	FT	0.1	0.0
Richwood	NICHOLAS	Richwood Police Department	Police Station	FT	0.1	0.0
Rainelle	GREENBRIER	Rainelle Volunteer Fire Department	Fire Station	FT	0.1	0.0
Pax	FAYETTE	Pax Volunteer Fire Department	Fire Station	FT	0.1	0.0

* Unincorporated Community

** Split Community

Community Assets



Religious
Organization



Educational
Building



Emergency Medical
Services



Government
Building



Utility



National Register
Historical Structure

Non-Historical Community Assets: **Fayette County** has the largest number of inventoried community resources (n=53) and ranked 12th in the State of which the majority are *religious* buildings. **Fayette Unincorporated** is ranked 10th of all unincorporated areas. The town of **Marlinton** is ranked 8th of all incorporated areas in the State with the most community assets.

Historical Community Assets: **Greenbrier County** is ranked 7th in the State as having the most historical buildings (n=56) in the high-risk floodplain of which the majority are located in the city of **Ronceverte** (ranked 14th of all incorporated areas). The split community of **Alderson** and the city of **Mount Hope** also have significant numbers of historical buildings in the high-risk floodplain (18 and 16 respectively).

Mitigation: A designated historic structure can obtain the benefit of subsidized flood insurance through the NFIP even if it has been substantially improved or substantially damaged so long as the building maintains its historic designation.

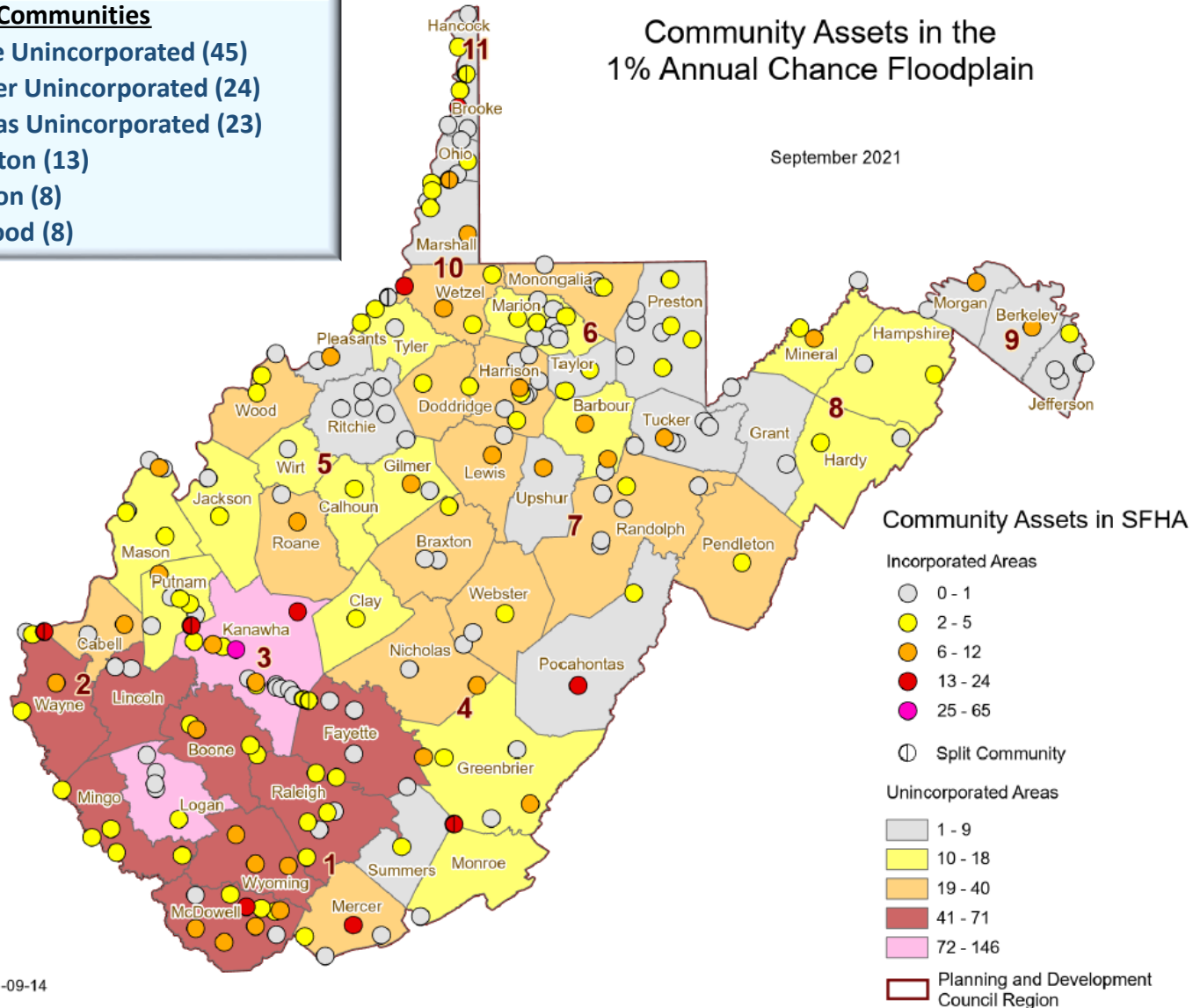
Community Assets (Non Historical)

Region 4 Communities

- Fayette Unincorporated (45)
- Webster Unincorporated (24)
- Nicholas Unincorporated (23)
- Marlinton (13)
- Alderson (8)
- Richwood (8)

Community Assets in the 1% Annual Chance Floodplain

September 2021



Community Engagement Focus 3-5

Primary Focus Areas of Statewide Risk Assessment	Community Engagement	Specific Activities for Mitigation Plan	Tables		Map	Include Answers to Questions below in Hazard Mitigation Plan
			Community Level (CL)	Bldg. (BL) or Feature (FL) Level	Flood Tool Risk MAP	
Mitigated Structures	Validate Mitigated Structures and Post-FIRM Development	Determine if Post-FIRM minus-rated structures are mitigated	Yes	Yes	Yes	Which <i>Post-FIRM</i> structures in the 1% floodplain have been mitigated?
		In the mitigation plan, include a table that describes the number and types of mitigated structures for each flood prone community	Ongoing	Yes	Yes	
Buyout Properties	Confirm Mitigated Buyout Properties	Confirm buyout properties are allowable for open space purposes only	Yes	Yes	Yes	How many mitigated <i>buyout properties</i> in each community exist?
		In the mitigation plan, include a table that lists the number of verified and unverified mitigated buyout properties	Yes	Yes	Yes	
Areas of Mitigation Interest	Evaluate Areas of Mitigation Interest or Repetitive Loss Areas	Determine the mitigation status of Post-FIRM building construction, repetitive loss structures, substantial damage estimates, and buyout properties for designated Areas of Mitigation Interest.		Yes		What are the <i>Areas of Mitigation Interest</i> or Repetitive Loss Areas identified for mitigation?
		In the mitigation plan, include a table that lists and describes the areas of mitigation interest for each community	Ongoing	Yes		

Local Community Engagement

Hazard Mitigation Plan Engagement

Mitigated Structures

Validate **Mitigated Structures** and **Post-FIRM Development**

Mitigation Plan Cross Walk Requirements: For mitigation plan, verify Post-FIRM mitigated structures provided in minus-rated property tables.

- 1) Determine if Post-FIRM minus-rated structures are mitigated. Focus initially on structures with the highest minus ratings (or highest water-in-depth values) and high dollar loss estimates. For each structure of interest identify if a permit and elevation certificate are on file. Annotate permit and elevation certificate information on minus-rated table. Submit building pictures if no elevation certificates exist.*
- 2) In the mitigation plan, include a table that describes the number and types of mitigated structures for each flood prone community.*
- 3) Identify mitigation actions for specific structures, to include outreach/education to community/ homeowners about mitigation best practices, mitigation funding opportunities, NFIP office involvement for non-compliant structures).*

Substantial Damage Estimates



County	Building Count Total	Bldg. Value \$ Total in Floodplain	TEIF Loss Total	TEIF Loss Ratio Total	Debris Damage Total (tons)	High Damage Count & \$ Loss	MINUS-RATED > 2 & POST-FIRM	Average Percent Damage	Median Percent Damage	Average Dollar Damage	Median Dollar Damage
FAYETTE	1819	\$83,469K	\$5,113K	6%	4,540	175	17	19%	12%	\$6K	\$3K
GREENBRIER	2225	\$187,863K	\$11,294K	6%	5,921	348	100	18%	12%	\$9K	\$4K
NICHOLAS	1056	\$46,920K	\$2,414K	5%	2,556	76	9	20%	13%	\$7K	\$3K
POCAHONTAS	948	\$62,779K	\$5,682K	9%	5,068	167	49	21%	16%	\$10K	\$5K
WEBSTER	1074	\$61,072K	\$2,472K	4%	1,661	80	6	20%	15%	\$8K	\$4K

Statewide

17%

\$6K

Generated using FEMA's Hazus flood loss software program for a 1%-annual-chance (100-yr) flood event

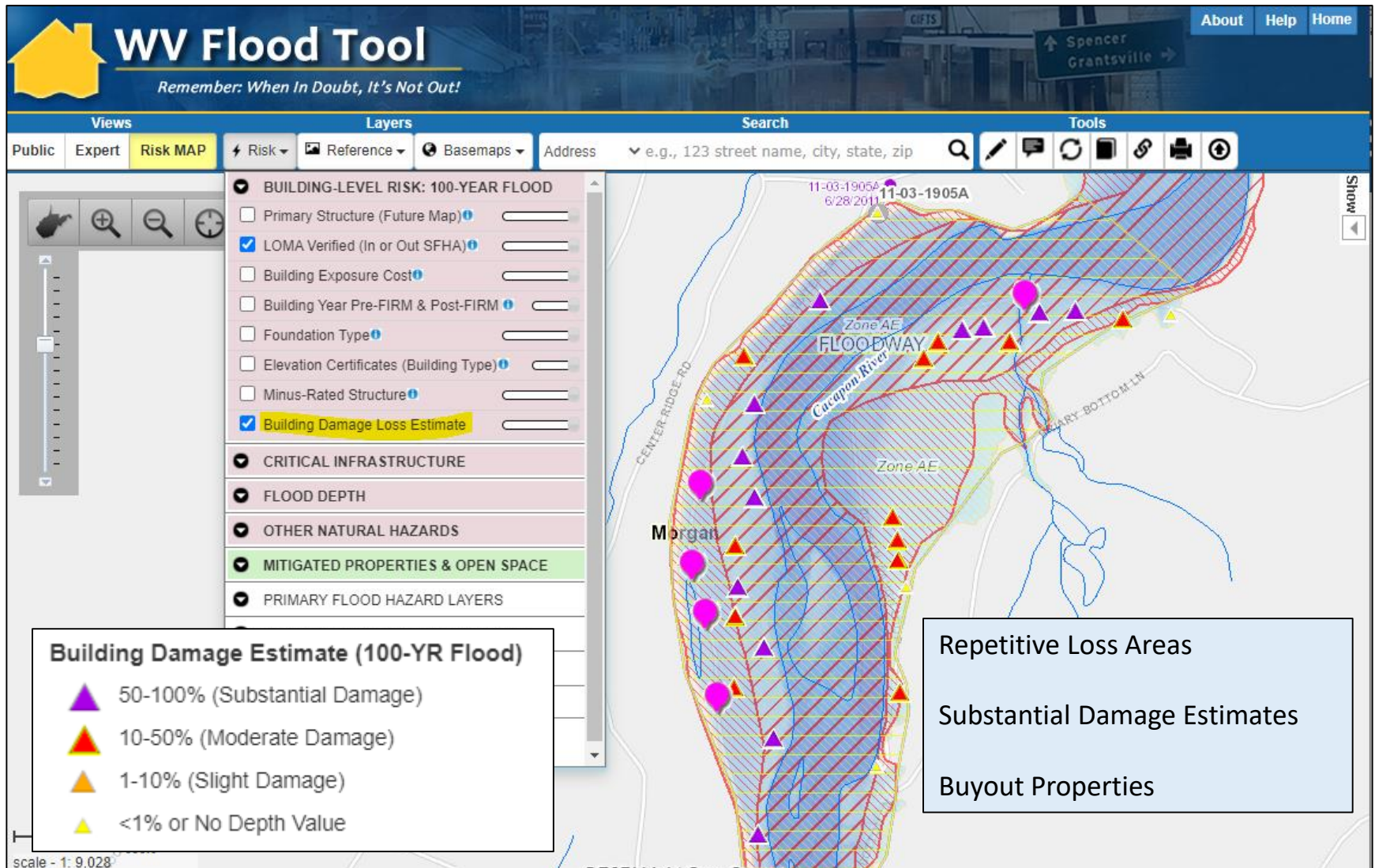
RA Verification Tables

https://data.wvgis.wvu.edu/pub/RA/Region4/BLRA/4-6_BLRA_Extract


MINUS RATED (POST-FIRM)										MAP LINK		FILTER OR SORT			FILTER OR SORT			FILTER OR SORT			PRIMARY
8/18/2021 Table Extract from BLRA												Post-FIRM			Residential			> \$50,000			>= 1 foot
Top percentage of minus-rated Post-FIRM structures												Lookup			Lookup			Lookup			
BERKELEY																					
Building ID	Community Name	Stream Name	GIS Parcel	Full E-911 Address	WV Flood Tool Link	Flood Zone Designation	Floodway	Owner Names	FIRM Status	Year Built	Grade	Hazard Occupancy Code	General Occupancy	Stories	Structure Area	Foundation Type	First Floor Height	Building Appraisal	Building Value Source	Depth Grid	Depth In Structure
02-02-018	Berkeley	Potomac	02-02-018	358 POPS	FT	AE	No	GREEN STERL	Post-FIRM	1990	D	RES1	Residential	2	1568	Slab-on-G	1	\$ 68,300	Assessme	18.8	17.8
02-02-001	Berkeley	Potomac	02-02-001	427 POPS	FT	AE	No	CABLE DANET	Post-FIRM	2000	C-	RES1	Residential	1	784	Slab-on-G	1	\$ 65,600	Assessme	18.0	17.0
02-08-000	Berkeley	Potomac	02-08-000	9999 WHI	FT	AE	No	SCOTT MICHA	Post-FIRM	2012	C	RES2	Residential	1	504	Crawlspac	4	\$ 99,200	Assessme	18.3	14.3
02-02-011	Berkeley	Potomac	02-02-011	162 MALLA	FT	AE	No	CRAMPTON J	Post-FIRM	1997	C	RES1	Residential	1	1089	Slab-on-G	1	\$ 77,200	Assessme	14.6	13.6
02-02-010	Berkeley	Potomac	02-02-010	18 MALLA	FI	AE	No	WEINER SETH	Post-FIRM	2008	C+	RES1	Residential	1	2570	Slab-on-G	1	\$ 302,800	Assessme	13.5	12.5
02-02-011	Berkeley	Potomac	02-02-011	336 MALLA	FT	AE	No	BOWERS TIM	Post-FIRM	1998	C+	RES1	Residential	2	2240	Basement	4	\$ 140,300	Assessme	15.9	11.9
02-02-001	Berkeley	Potomac	02-02-001	442 SLIM L	FT	AE	No	BURANICH DE	Post-FIRM	1993	C+	RES3B	Residential	2	3616	Basement	4	\$ 260,800	Assessme	15.7	11.7
02-02-010	Berkeley	Potomac	02-02-010	80 MALLA	FT	AE	No	FRAZER LARR	Post-FIRM	2000	C	RES1	Residential	1	752	Basement	4	\$ 62,100	Assessme	15.3	11.3
02-02-010	Berkeley	Potomac	02-02-010	8 MALLAR	FT	AE	No	PAYNE DWIG	Post-FIRM	1990	D+	RES1	Residential	1	756	Basement	4	\$ 51,000	Assessme	14.7	10.7
02-04-000	Berkeley	Potomac	02-04-000	413 DARW	FT	AE	No	KLIPPENSTEIN	Post-FIRM	2010	B	RES1	Residential	1	2672	Basement	4	\$ 399,500	Assessme	13.2	9.2
02-02-011	Berkeley	Potomac	02-02-011	424 MALLA	FT	AE	No	STRUNK ALLE	Post-FIRM	1989	C	RES2	Residential	1	960	Crawlspac	4	\$ 51,900	Assessme	11.8	7.8
02-02-010	Berkeley	Potomac	02-02-010	136 SARAH	FT	AE	No	PIERCE MIRIA	Post-FIRM	2001	C	RES2	Residential	1	720	Crawlspac	4	\$ 59,400	Assessme	11.4	7.4
02-08-000	Berkeley	Potomac	02-08-000	175 MISTY	FT	AE	No	ALTER WAYN	Post-FIRM	1990	C+	RES1	Residential	1	1428	Basement	4	\$ 112,000	Assessme	10.2	6.2
02-07-014	Berkeley	Mill Creek	02-07-014	64 COUNT	FT	A	No	RICKETTS JAM	Post-FIRM	1993	D+	RES1	Residential	1	3523	Slab-on-G	1	\$ 161,100	Assessme	6.6	5.6
02-02-011	Berkeley	Potomac	02-02-011	444 MALLA	FT	AE	No	STRUNK ALLE	Post-FIRM	2010	C	RES1	Residential	1	544	Crawlspac	4	\$ 57,300	Assessme	8.6	4.6
02-02-010	Berkeley	Potomac	02-02-010	86 SARAH	FT	AE	No	HOFFMAN DA	Post-FIRM	1998	C	RES1	Residential	1	960	Basement	4	\$ 75,200	Assessme	8.2	4.2
02-06-001	Martinsbu	Tuscarora	02-06-001	500 E JOH	FT	Updated A	No	CITY OF MAR	Post-FIRM	2016	D+	COM4	Commerc	2	29013	Slab-on-G	1	\$ 51,776,300	Assessme	4.8	3.8
02-04-003	Berkeley	Back Cree	02-04-003	64A BOYS	FT	A	No	SALVATION A	Post-FIRM	1990	D+	REL1	Other	1	4677	Slab-on-G	1	\$ 233,600	Assessme	4.7	3.7
02-08-000	Berkeley	Potomac	02-08-000	195 MISTY	FT	AE	No	HAINES JACK	Post-FIRM	1995	B	RES1	Residential	1	2761	Basement	4	\$ 199,100	Assessme	7.6	3.6
02-08-000	Berkeley	Potomac	02-08-000	3382 WHIT	FT	AE	No	CATROW JEA	Post-FIRM	1999	C+	RES1	Residential	2	2592	Crawlspac	4	\$ 216,800	Assessme	5.3	1.3
02-02-018	Berkeley	Potomac	02-02-018	201 VIENN	FT	AE	No	CLIPP WILLIA	Post-FIRM	1989	D+	RES1	Residential	2	2180	Slab-on-G	1	\$ 72,000	Assessme	2.0	1.0

- **High Building Dollar Exposure:** 10% of total counts of county (the same way as determining community counts)
- **High Building Damage Estimates:** All buildings with >50% damage percent and > \$10,000 building loss
- **Minus Rated Post-FIRM:** All buildings with water depth-in-structure > 1 ft. and appraisal value > \$50,000 that are not Pre-FIRM

Repetitive Loss Areas



Mitigated Structure – First Floor Height



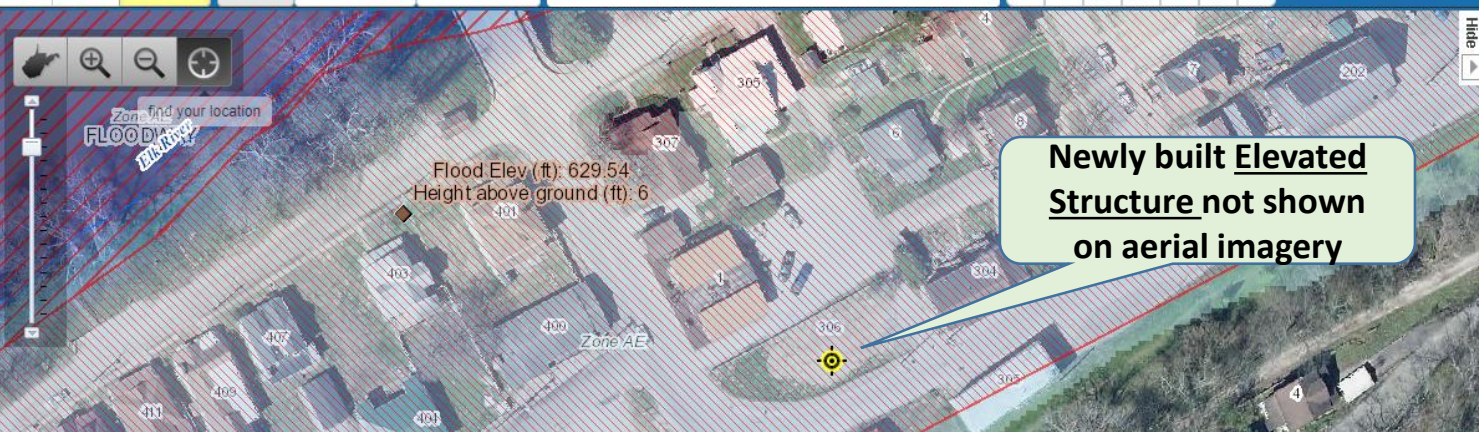
WV Flood Tool

Remember: When In Doubt, It's Not Out!

[About](#) [Help](#) [Home](#)

Views: Public Expert Risk MAP Risk Reference Basema

Layers



Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.

Flood Zone: AE

Stream: Elk River

Base Flood Depth is 6.7 ft.

Flood Height: Refer to FIS report for BFE NAVD88

Water Depth: About 6.7 ft (Source: HEC-RAS)

HEC-RAS Model: N/A All Models

Flood Profile: 54039_065

Community: Town of Clendenin

Freeboard: 2 ft **CRS Class:** 10 **CID:** 540075

Location (lat, long): (38.487290, -81.351969) WGS84

Location (UTM 47N): (4750044, 480204) WGS84

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: Construction Drawings* Building Under Construction* Finished Construction

*A1

C2. Ele **Elevation Certificate (Diagram 7)** /AO.

Col **631.0 ft. (C2b) – 619.0 ft. (C2f) = 12 ft.**

Bei

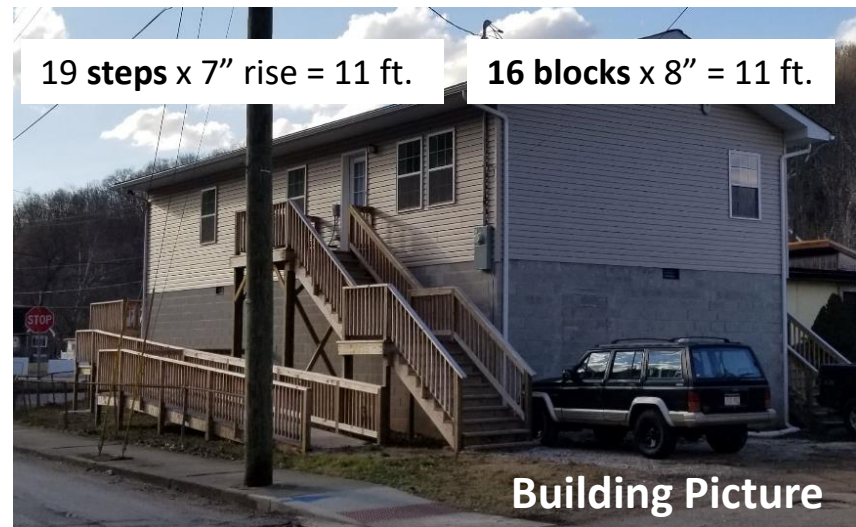
Ind

None None Other:

Datum used for building elevations must be the same as that used for the BFE.

		Check the measurement used.
a) Top of bottom floor (including basement, crawspace, or enclosure floor)	619.0	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
b) Top of the next higher floor	631.0	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
c) Bottom of the lowest horizontal structural member (V Zones only)	N/A	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
d) Attached garage (top of slab)	N/A	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	630.9	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
f) Lowest adjacent (finished) grade next to building (LAG)	619.0	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
g) Highest adjacent (finished) grade next to building (-HAG)	619.4	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	619.0	<input checked="" type="checkbox"/> feet <input type="checkbox"/> meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION



Buyout Properties

Confirm Mitigated **Buyout Properties**

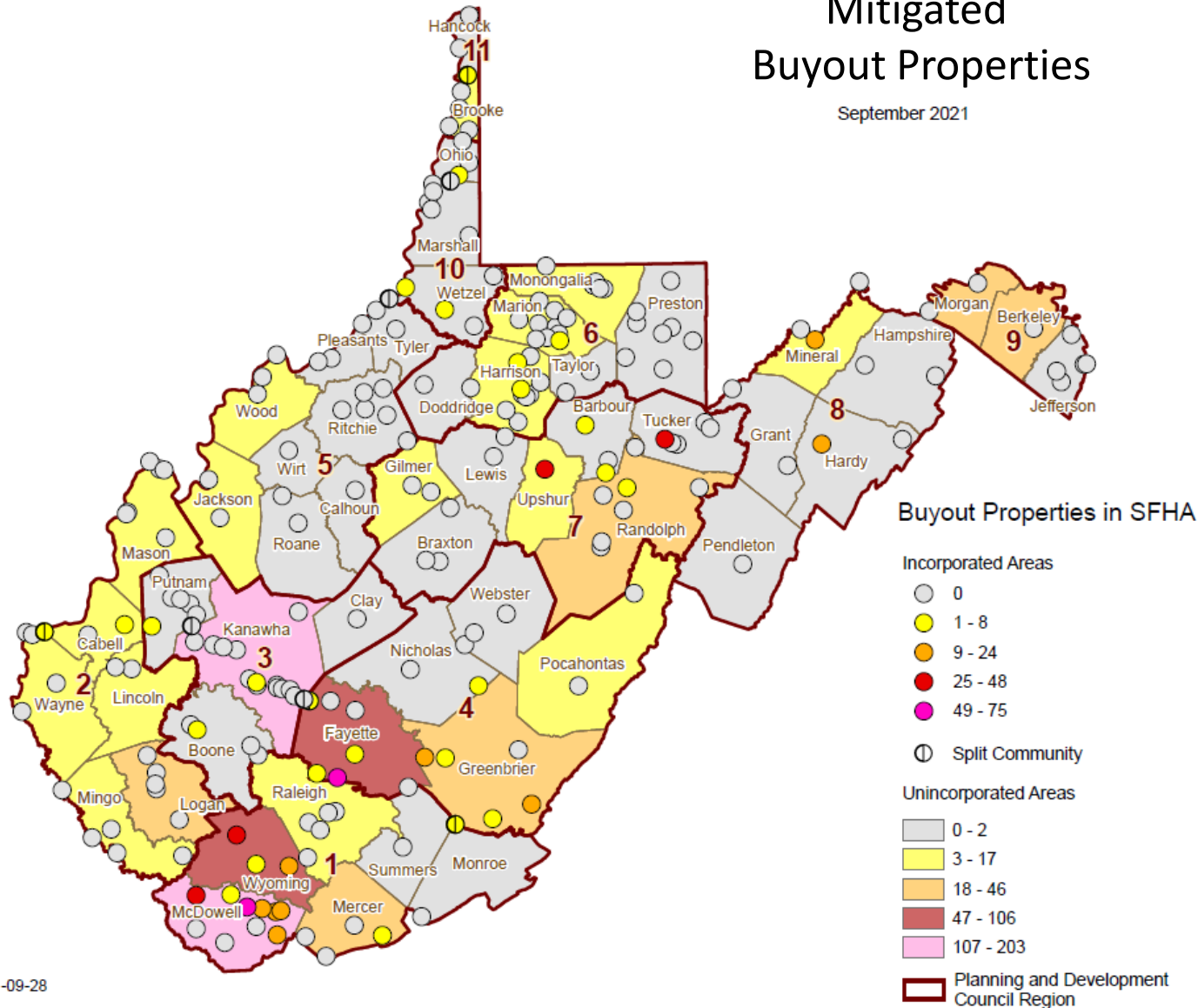
Mitigation Plan Cross Walk Requirements: For mitigation plan, validate verified and unverified properties.

- 1) *Confirm buyout properties are allowable for open space purposes only. Every three years communities are required to inspect and certify that buyout properties are uses only for allowable open space purposes. Source: https://www.fema.gov/sites/default/files/2020-07/fy15_hma_addendum.pdf*
 - *Verify all deed-restricted buyout properties are shown on the WV Flood Tool.*
 - *Unverified properties (possible buyout properties) are compiled from the statewide property tax database where the parcel intersects the high-risk 1% floodplain, maximum building value is \$1000, and part of the owner name contains “commission” or “council” or “city” or “town.”*
- 2) *In the mitigation plan, include a table that lists the number of verified and unverified mitigated buyout properties.*
- 3) *List a minimum of two properties for each county that should be considered for buyout mitigation. Discuss potential properties in mitigation plan.*

Buyout Properties

Mitigated Buyout Properties

September 2021

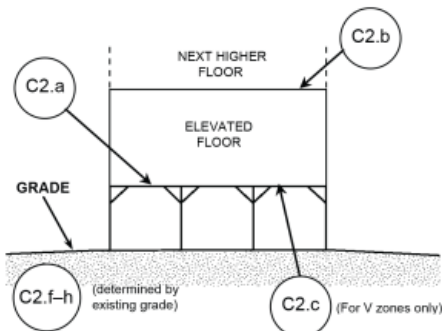


(7) Mitigated Structure – EC Bldg. #5

DIAGRAM 5

All buildings elevated on piers, posts, piles, columns, or parallel shear walls. No obstructions below the elevated floor.

Distinguishing Feature – For all zones, the area below the elevated floor is open, with no obstruction to flow of floodwaters (open lattice work and/or insect screening is permissible).



Building Diagram 5: Elevated Building with no Enclosure



Buyout Properties – Map Verification

WV Flood Tool
Remember: When In Doubt, It's Not Out!

Mount Hope, WV (Fayette County)

Views: Public | Expert | Risk MAP | Flood | Reference | Basemaps

Search: Address 170 Mound Street, Mount Hope, WV

Tools: [Icons for various map functions]

Mitigated Buyout Parcels (Deed Restricted)

Parcel ID	10-08-0006-0160-0000
Community	City of Mount Hope
Source Agency	Unverified
Project ID	WVGISTIC Unverified
Date Executed	-
Hazard Type	Flood
Current Owner	CITY OF MT HOPE
Current Deed	Book: 715 Page: 66 0.1125-ac
Parcel Report	Assessment Link
LAT, LON	(37.896081, -81.161149)
Comments	-

[Zoom to](#)

Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.
Flood Zone: A
Stream: Dunloup Creek
Watershed (HUC8): Lower New (5050004)

FEMA's Flood Map: [54019C0320D](#) | [NFHL](#)
Map Effective Date: 9/3/2010
Contacts: [Fayette](#)

Flood Height: None
Water Depth: N/A
HEC-RAS Model: [dunloupcrk](#) | [All Models](#)

Flood Profile: N/A

Community: City of Mount Hope
CID: 540280 | CRS Class: 10

Location (lat, long): (37.896081, -81.161148) | WGS84
Location (UTM 17N): (4194297, 485832) | WGS84

External Viewers: [Icons for social media sharing]

Elevation: 1691.9 ft (Source: FEMA 2016) | NAVD88

Address: N/A

Parcel: [10-08-0006-0160-0000](#) | [Assessment](#)

Flood Risk Information | [Related Resources](#)
Flood Risk Assessment: N/A
3D Flood Visualization: No Depth Grid Available

Scale: 1:1,128
X: -81.160249, Y: 37.895590
©WVGISTIC Leaf-Off Mixed-Resolution Imagery

Map of Mount Hope, WV

Floodplain Measurements

Floodplain Area (acres)

Community Name	County	Total Community Area (acres)	Total SFHA Area (acres)	Modified Total SFHA Area (acres) ¹	Ratio of aSFHA to Community Area
BERKELEY COUNTY *	BERKELEY COUNTY	201,588	8,837	8,820	4.4%
MARTINSBURG	BERKELEY COUNTY	4,259	139	128	3.0%
HEDGESVILLE, TOWN OF	BERKELEY COUNTY	85	0	0	0.0%
MORGAN COUNTY*	MORGAN COUNTY	146,585	7,231	7,210	4.9%
BATH	MORGAN COUNTY	215	20	20	9.3%
PAW PAW	MORGAN COUNTY	340	119	119	35.0%

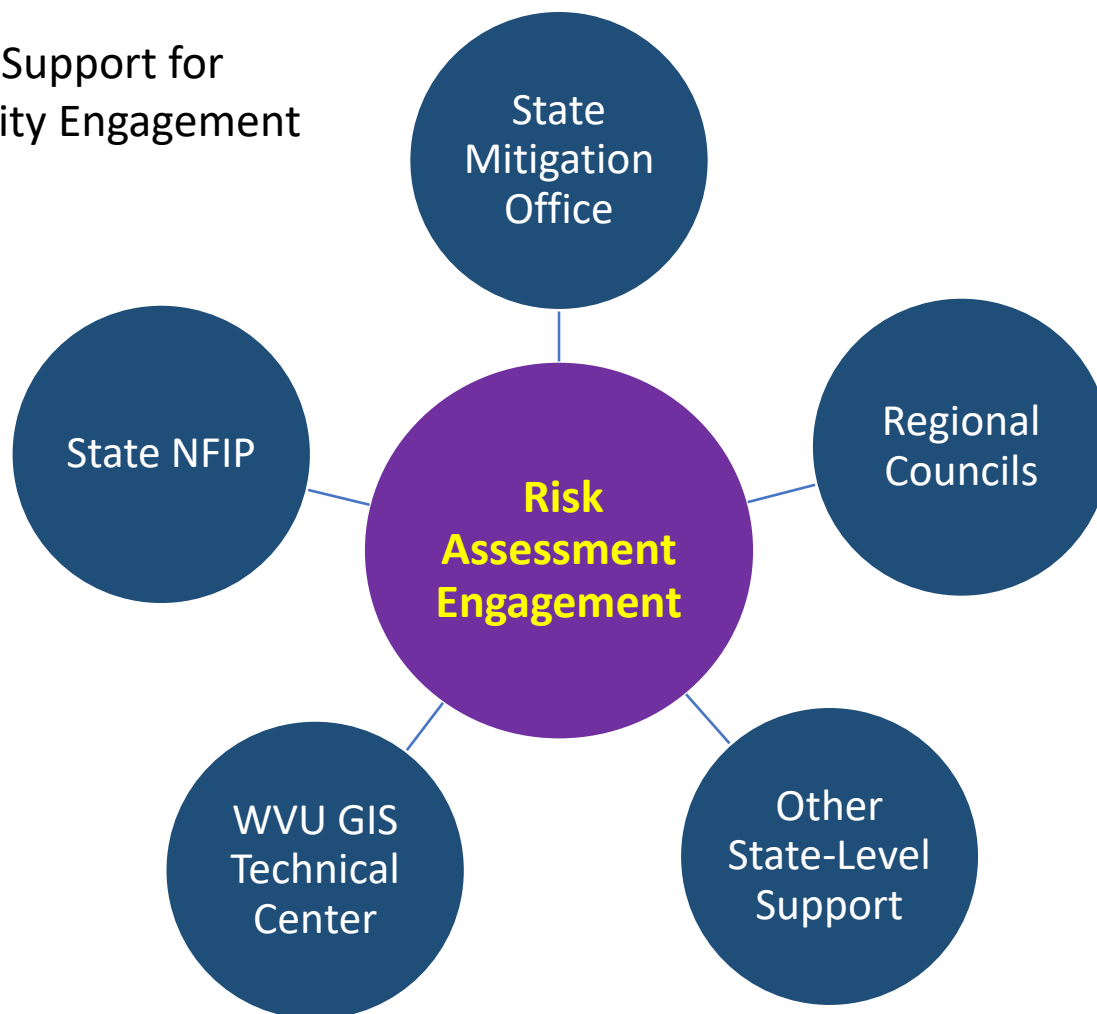
¹ Areas excluded from Total aSFHA: Open water lakes > 10 acres; Large river bank-to-bank > 500 ft.; Federal lands > 10 acres

Floodplain Length (miles)

Community Name	County	Stream Length(mi) - Zones: AE,AH,AO	Stream Length (mi) - Effective A	Stream Length (mi) – Advisory A	Total Length (mi)	Detailed Zone %	Approx. A Zone %	Advisory Zone %
BERKELEY COUNTY *	BERKELEY COUNTY	67.9	90.2	55.6	213.7	32%	42%	26%
MARTINSBURG	BERKELEY COUNTY	4.1	0.5	0.5	5.1	81%	10%	9%
	BERKELEY COUNTY	72.1	90.7	56.0	218.8	33%	41%	26%
BATH	MORGAN COUNTY	1.4	0.0	0.0	1.4	97%	1%	1%
MORGAN COUNTY*	MORGAN COUNTY	36.3	121.4	14.8	172.5	21%	70%	9%
PAW PAW	MORGAN COUNTY	0.2	0.7	0.0	0.9	23%	77%	0%
	MORGAN COUNTY	37.8	122.1	14.8	174.8	22%	70%	8%

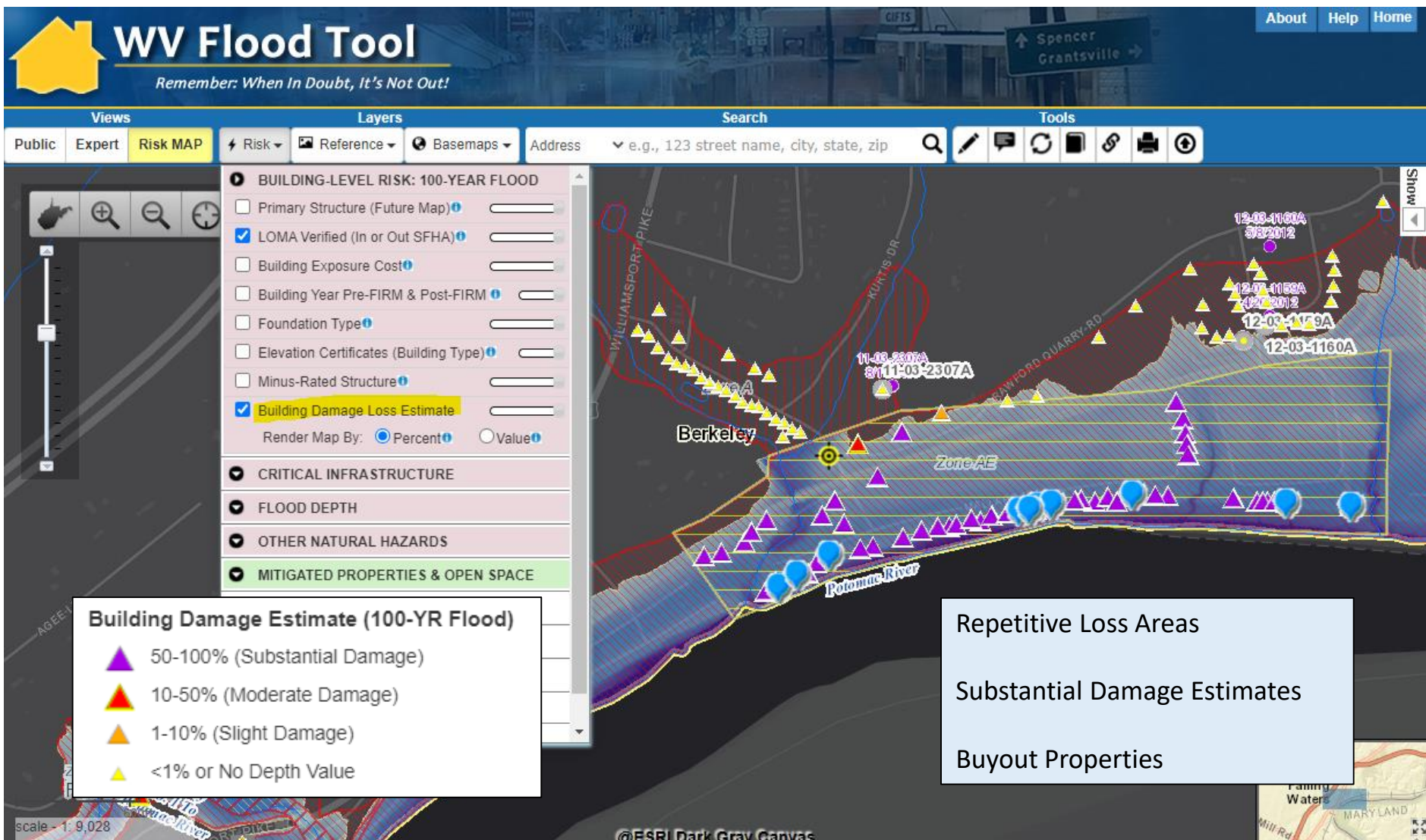
Local Community Engagement

State-Level Support for
Local Community Engagement



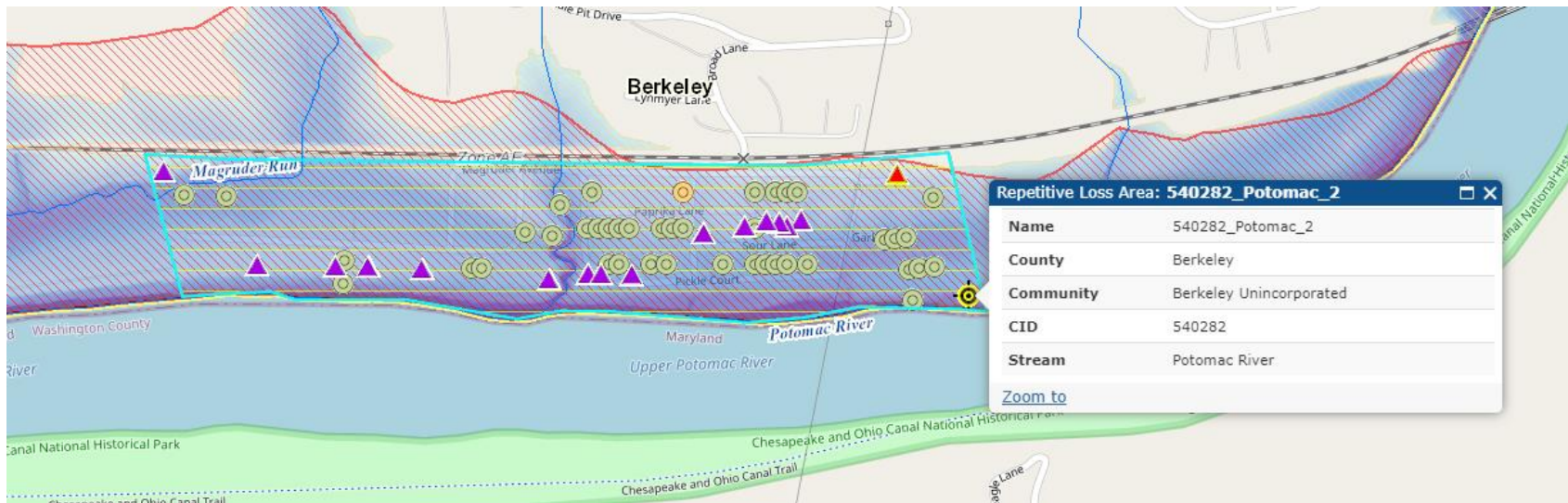
Select local community engagement activities may need to be (1) **group training** focused on a **specific subject matter** or (2) **one-on-one technical assistance**.

Repetitive Loss Areas



Repetitive Loss Areas

Area of Mitigation Interest	County	Community	Stream Name	RL_Area	FT										
540006_Dry_Run_1	Berkeley	Martinsburg	Dry Run	Yes	FT										
540282_Back_Creek_1	Berkeley	Berkeley Unincorporated	Back Creek	Yes	FT										
540282_Potomac_1	Berkeley	Berkeley Unincorporated	Potomac River	Yes	FT										
540282_Potomac_2	Berkeley	Berkeley Unincorporated	Potomac River	Yes	FT										
540282_Potomac_3	Berkeley	Berkeley Unincorporated	Potomac River	Yes	FT										
540282_Potomac_4	Berkeley	Berkeley Unincorporated	Potomac River </tr <tr> <td>540282_Potomac_5</td> <td>Berkeley</td> <td>Berkeley Unincorporated</td> <td>Potomac River</td> <td>Yes</td> <td>FT</td> </tr> <tr> <td>540282_Potomac_6</td> <td>Berkeley</td> <td>Berkeley Unincorporated</td> <td>Potomac River</td> <td>Yes</td> <td>FT</td> </tr>	540282_Potomac_5	Berkeley	Berkeley Unincorporated	Potomac River	Yes	FT	540282_Potomac_6	Berkeley	Berkeley Unincorporated	Potomac River	Yes	FT
540282_Potomac_5	Berkeley	Berkeley Unincorporated	Potomac River	Yes	FT										
540282_Potomac_6	Berkeley	Berkeley Unincorporated	Potomac River	Yes	FT										



Permanent Structures

Building ID: 02-08-0001-0030-0000_3458



Flood Exposure for Building: 02-08-0001-0030-0000_3458	
Building Replacement Cost	\$42,400
Content Cost	\$21,200
Building Info	Area: 840 sq ft Stories: 1
Occupancy Class	RES2 (Mobile Home)
Year Built	2006 (Post-FIRM)
Foundation Type	Crawlspace
First Floor Height	4.0 ft above ground
Water Depth-in-Structure	11.8 ft (minus rated -12 ft)
Flood Damage Estimates for Building: 02-08-0001-0030-0000_3458	
Building Damage Pct	88% (Substantial Damage)
Building Loss USD	\$37,168

Recreational Vehicles

Recreational Vehicles

In a Special Flood Hazard Area, a Recreational Vehicle (RV) must:

- Remain on site for fewer than 180 consecutive days, or
- Be fully licensed and ready for highway use; or
- Meet the permitting, elevation, and anchoring requirements for manufactured homes of the community's Flood Damage Prevention Ordinance.

A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick-disconnect type utilities and security devices, and has no permanently attached additions.

RVs that do not meet these conditions must be installed and elevated like a manufactured home, including a permanent foundation and tie-down (See pages 55 and 56).

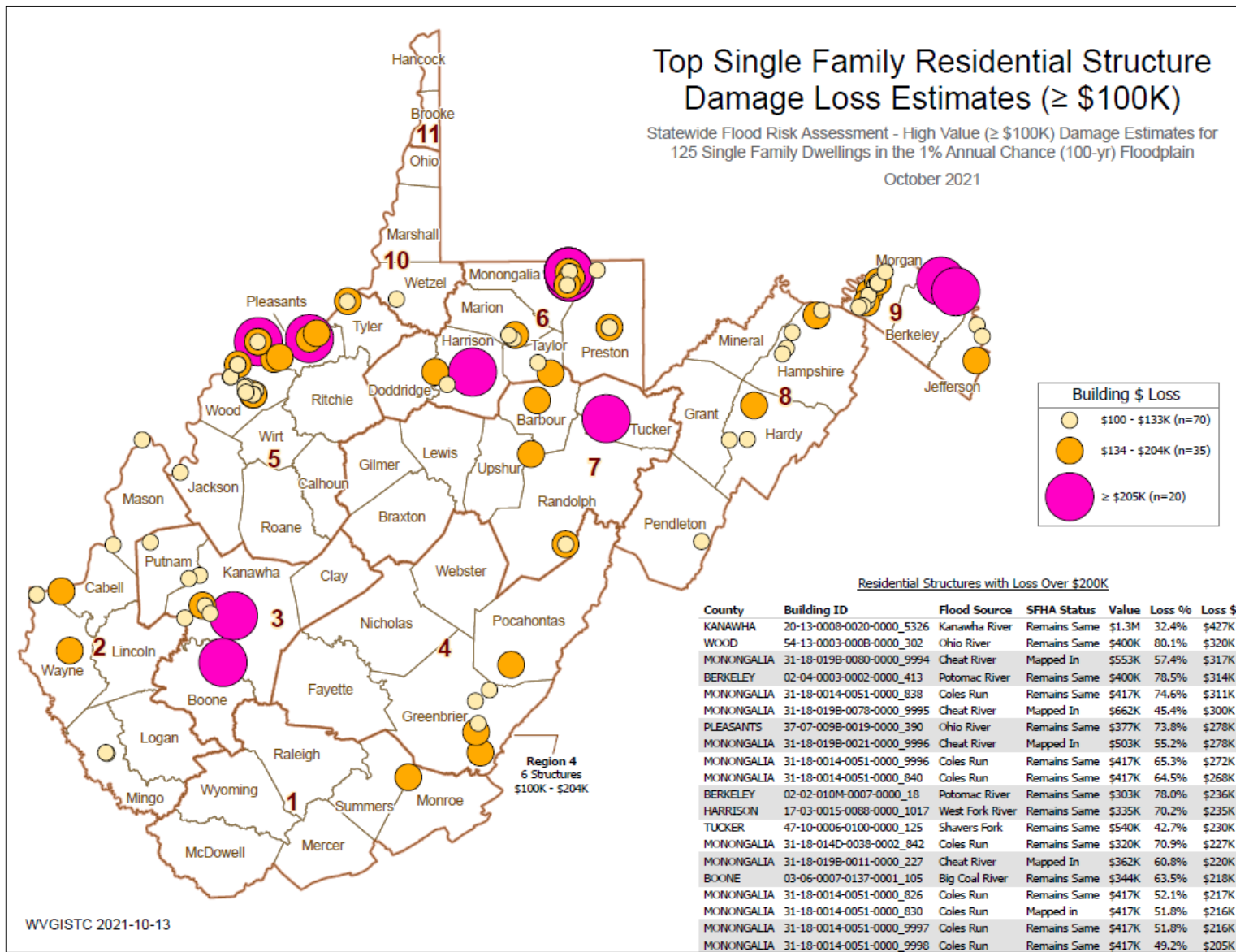


Important

Information

Camping near the water? Ask the campground or RV Park operator about flood warnings and plans for safe evacuations.

Top Single Family Dwelling Loss Estimates

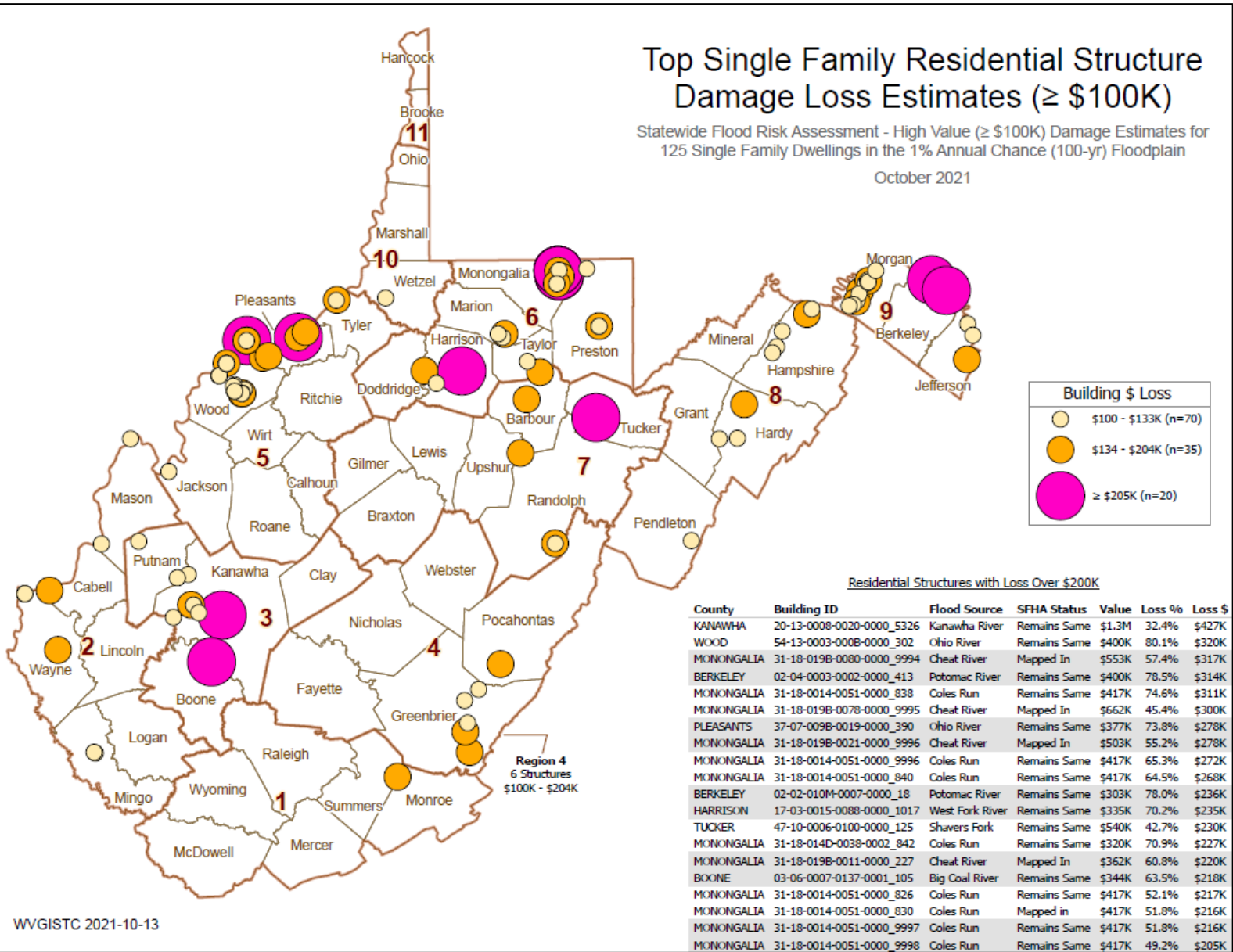


Top Single Family Dwelling Damage Loss

Top Single Family Residential Structure Damage Loss Estimates (≥ \$100K)

Statewide Flood Risk Assessment - High Value (≥ \$100K) Damage Estimates for 125 Single Family Dwellings in the 1% Annual Chance (100-yr) Floodplain

October 2021

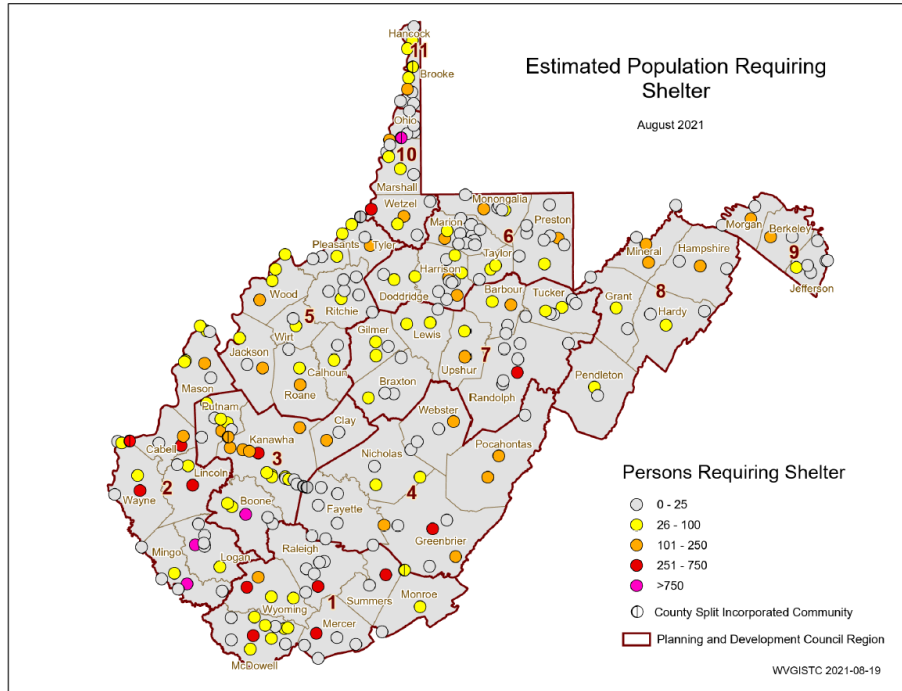


Residential Structures with Loss Over \$200K

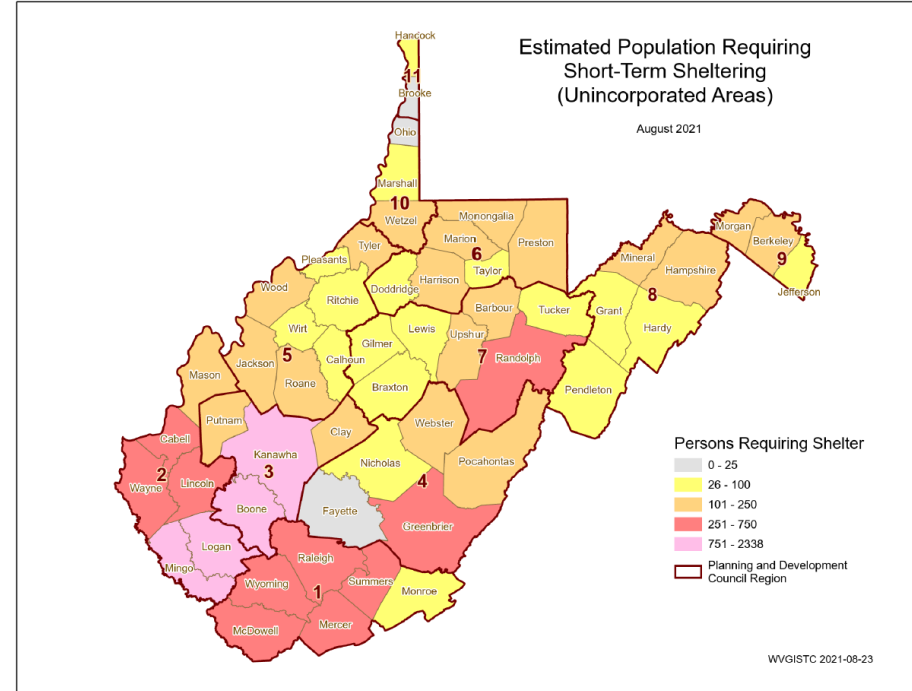
County	Building ID	Flood Source	SFHA Status	Value	Loss %	Loss \$
KANAWHA	20-13-0008-0020-0000_5326	Kanawha River	Remains Same	\$1.3M	32.4%	\$427K
WOOD	54-13-0003-0008-0000_302	Ohio River	Remains Same	\$400K	80.1%	\$320K
MONONGALIA	31-18-0198-0080-0000_9994	Cheat River	Mapped In	\$553K	57.4%	\$317K
BERKELEY	02-04-0003-0002-0000_413	Potomac River	Remains Same	\$400K	78.5%	\$314K
MONONGALIA	31-18-0014-0051-0000_838	Coles Run	Remains Same	\$417K	74.6%	\$311K
MONONGALIA	31-18-0198-0078-0000_9995	Cheat River	Mapped In	\$662K	45.4%	\$300K
PLEASANTS	37-07-0098-0019-0000_390	Ohio River	Remains Same	\$377K	73.8%	\$278K
MONONGALIA	31-18-0198-0021-0000_9996	Cheat River	Mapped In	\$503K	55.2%	\$278K
MONONGALIA	31-18-0014-0051-0000_9996	Coles Run	Remains Same	\$417K	65.3%	\$272K
MONONGALIA	31-18-0014-0051-0000_840	Coles Run	Remains Same	\$417K	64.5%	\$268K
BERKELEY	02-02-010M-0007-0000_18	Potomac River	Remains Same	\$303K	78.0%	\$236K
HARRISON	17-03-0015-0088-0000_1017	West Fork River	Remains Same	\$335K	70.2%	\$235K
TUCKER	47-10-0006-0100-0000_125	Shavers Fork	Remains Same	\$540K	42.7%	\$230K
MONONGALIA	31-18-014D-0038-0002_842	Coles Run	Remains Same	\$320K	70.9%	\$227K
MONONGALIA	31-18-0198-0011-0000_227	Cheat River	Mapped In	\$362K	60.8%	\$220K
BOONE	03-06-0007-0137-0001_105	Big Coal River	Remains Same	\$344K	63.5%	\$218K
MONONGALIA	31-18-0014-0051-0000_826	Coles Run	Remains Same	\$417K	52.1%	\$217K
MONONGALIA	31-18-0014-0051-0000_830	Coles Run	Mapped In	\$417K	51.8%	\$216K
MONONGALIA	31-18-0014-0051-0000_9997	Coles Run	Remains Same	\$417K	51.8%	\$216K
MONONGALIA	31-18-0014-0051-0000_9998	Coles Run	Remains Same	\$417K	49.2%	\$205K

Short-Term Shelter Needs

Incorporated Areas



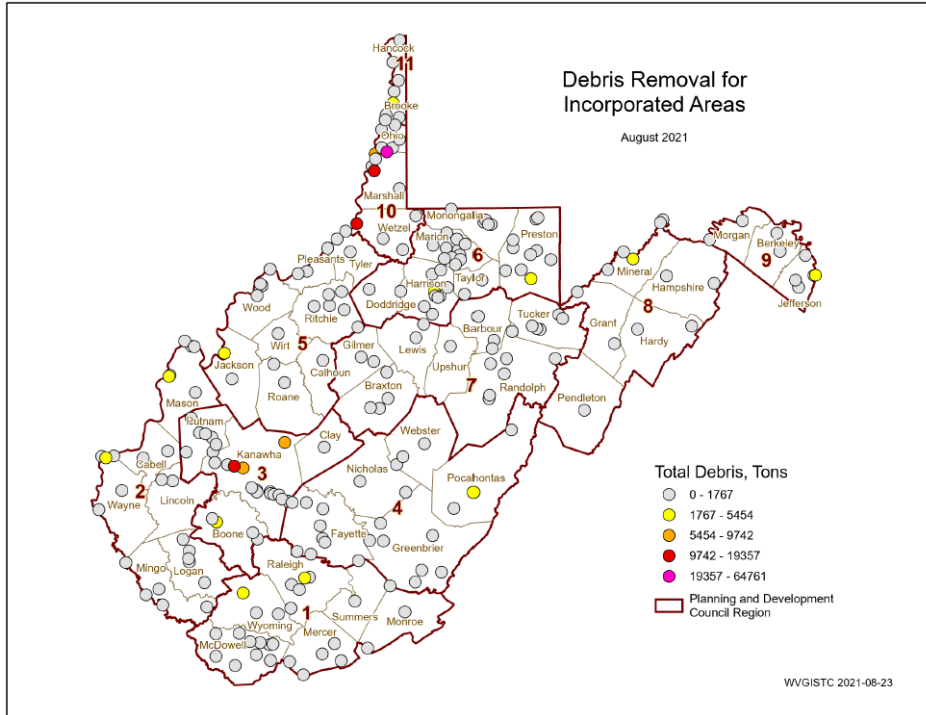
Unincorporated Areas



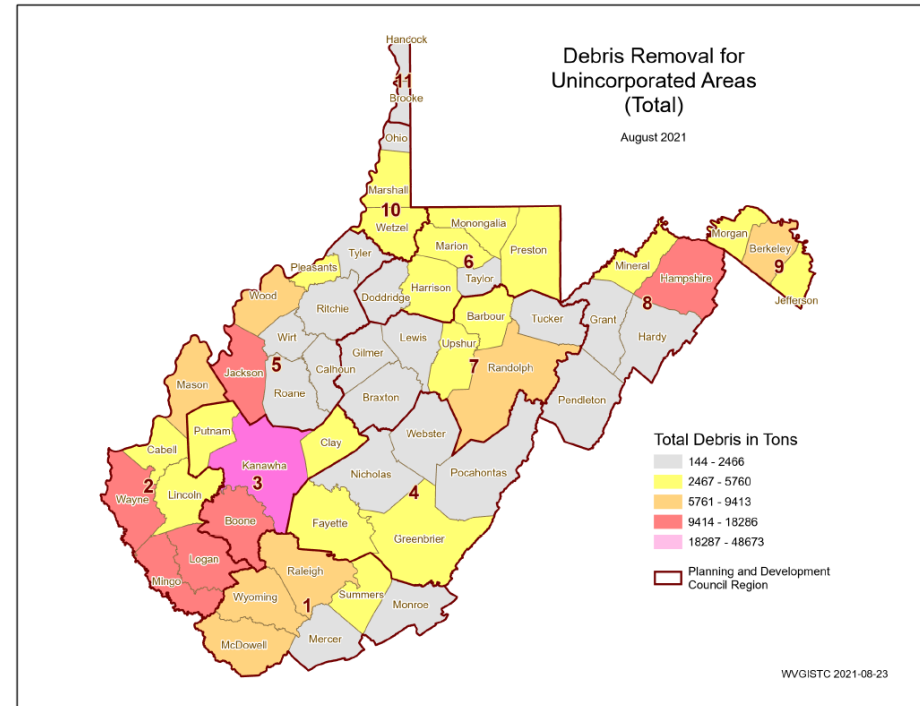
Generated using FEMA's Hazus flood loss guidelines for a 1%-annual-chance (100-yr) flood event

Debris Removal

Incorporated Areas



Unincorporated Areas



Generated using FEMA's Hazus flood loss software program for a 1%-annual-chance (100-yr) flood event

Minus-Rated Structure

<https://msc.fema.gov/portal/availabilitySearch?addcommunity=540133&communityName=MINGO%20COUNTY%20UNINCORPORATED%20AREAS#searchresultsanchor>

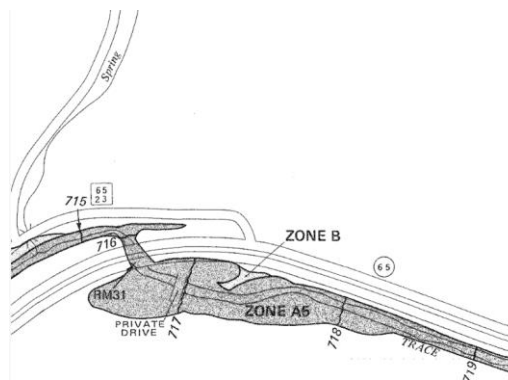
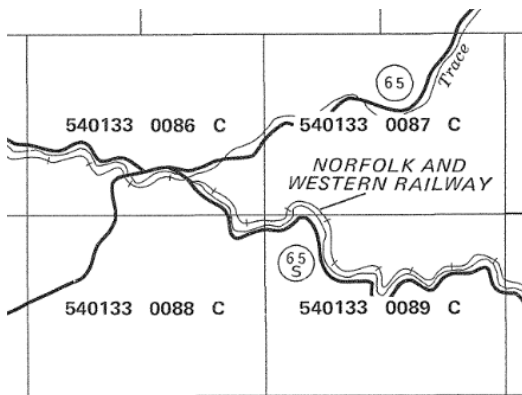
Showing 1 to 100 of 185 entries

Previous 1 2 Next

Product ID	Effective Date	LOMC	Size	Download	View
540133IND0	12/04/1984		1MB	DL	VIEW
540133IND0_0877	08/05/1977		1MB	DL	VIEW
540133IND0_1280	12/02/1980		1MB	DL	VIEW
54059CIND0A	10/02/2012		1MB	DL	VIEW

<https://map1.msc.fema.gov/firm?id=540133IND0>

<https://map1.msc.fema.gov/firm?id=5401330087C>



Road Inundation Models

Community Name	County	Roads in Flood Plain (miles)	Roads Flooded (miles)	Roads Below 1ft (Ratio)	Roads 1 to 3ft (Ratio)	Roads Above 3ft (Ratio)
Berkeley County*	BERKELEY	25.7	17.0	21%	22%	57%
Martinsburg	BERKELEY	0.8	0.5	60%	20%	20%
	BERKELEY	26.5	17.5	22%	22%	55%
Bath	MORGAN	1.7	1.5	7%	47%	47%
Morgan County*	MORGAN	35.7	22.0	13%	17%	70%
Paw Paw	MORGAN	0.7	0.1	0%	0%	100%
	MORGAN	38.1	23.6	13%	19%	69%

1%-annual-chance (100-yr) flood event

Why Water Depth Matters



~1 Foot

Response focused on those who need additional assistance



~3 Feet

Near the limit to use High Profile Vehicles to perform high water rescues



~6 Feet

Boats and helicopters now required to perform high water rescues



~9 Feet

1st Floors completely inundated

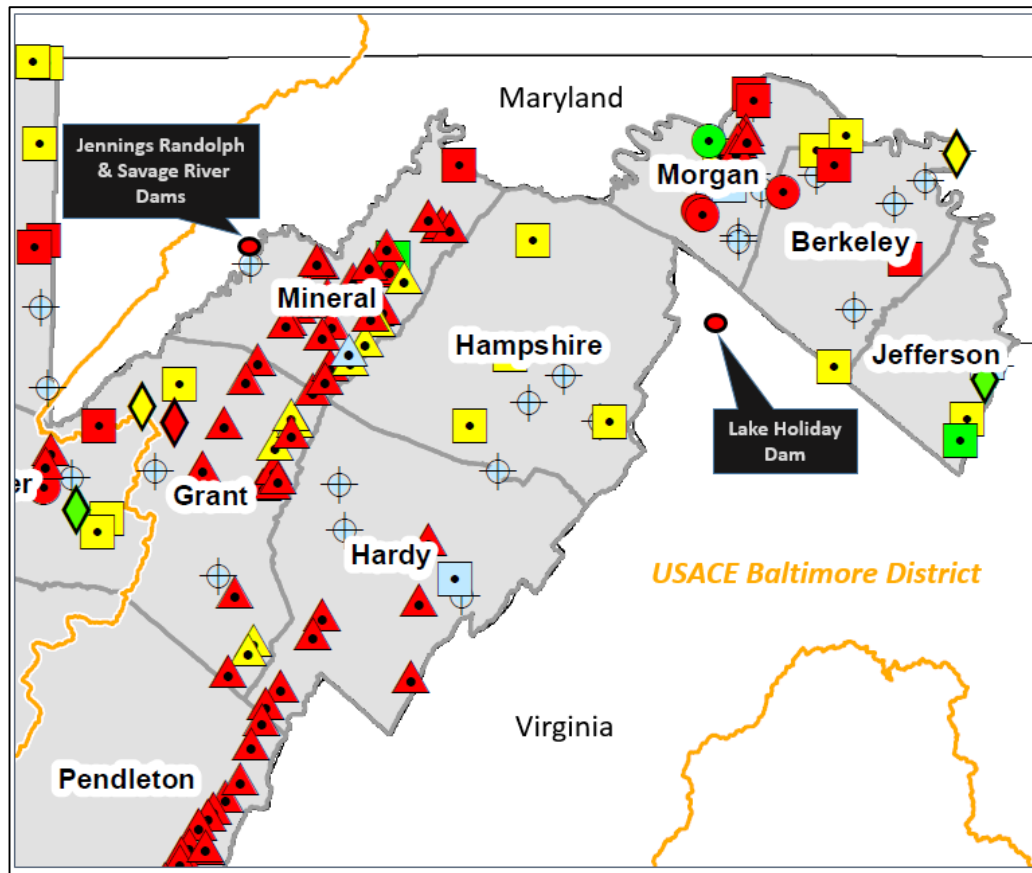
US 522 Warm Spring Run

I-81 Middle Creek

"How many helicopters, boats, and high profile vehicles and where to send them"

- Texas State Operations Center

High Hazard Potential Dams



Legend

USACE Districts

Owner Type:

- Federal
- State
- Local Government
- Public Utility
- Private
- Not Listed

Hazard Level:

- High
- Significant
- Low
- Undetermined

County	Total Count	High Hazard	Significant Hazard	Low Hazard	Undetermined Hazard
BERKELEY COUNTY	11	3	3	0	5
JEFFERSON COUNTY	6	0	1	2	3
MORGAN COUNTY	24	12	3	1	8

Source: National Inventory of Dams 2020 Database

Community-Level Risk Assessment Tables: <https://data.wvgis.wvu.edu/pub/RA/State/CL/>

Downstream Communities

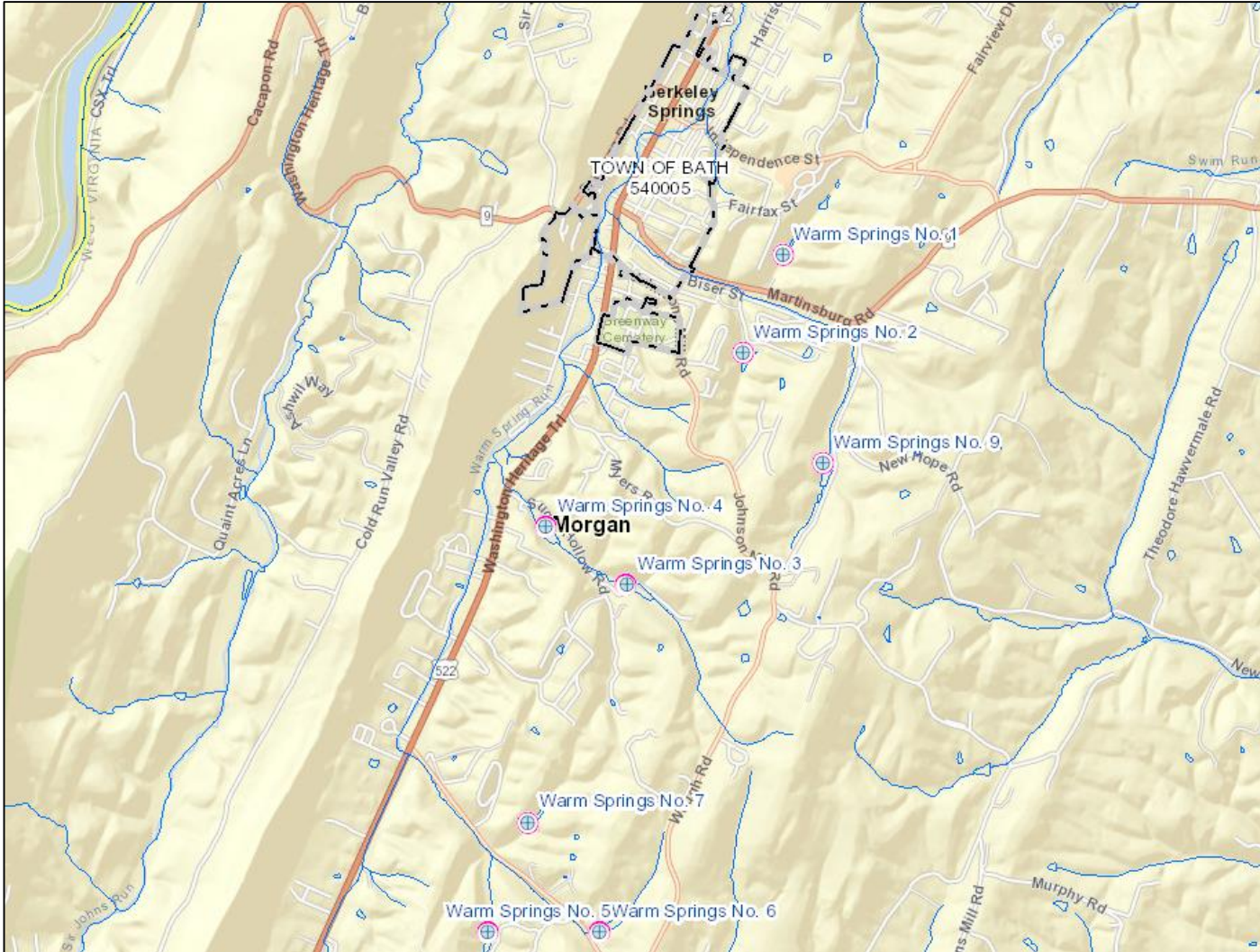
DAM NAME	DAM HEIGHT (Feet)	MAX. STORAGE (Acre-Feet)	HAZARD CLASS	EAP	LINK	DAM JURISDICTION	IN-BETWEEN JURISDICTIONS	FARTHEST ¹ IMPACTED JURISDICTION
JENNINGS RANDOLPH DAM	296	130,900	High	Y	FT	Mineral	Mineral, Piedmont, Keyser, Carpendale, Ridgeley, Hampshire, Morgan, Paw Paw, Berkley, Jefferson, Shepherdstown	Harpers Ferry
SAVAGE RIVER DAM	184	31,800	High	Y	FT	Garrett	Mineral, Piedmont, Keyser, (?)	(?)
LAKE HOLIDAY DAM	129	1,260	High	Y	FT	Frederick	(?)	(?)
SLEEPY CREEK DAM	38	4,890	High	Y	FT	Berkeley	Morgan	(?)
GRASSHOPPER HOLLOW TAILINGS DAM	129	1,260	High	Y	FT	Morgan	Berkeley Springs	(?)

Community Engagement and Verification:

Refer to the WV Flood Tool map and tables to evaluate high-hazard potential dams in which failure is expected to result in loss of life. Review the **Emergency Action Plans (EAP)** and **dam failure inundation maps** of all **high hazard dams** and identify the farthest downstream community impacted.

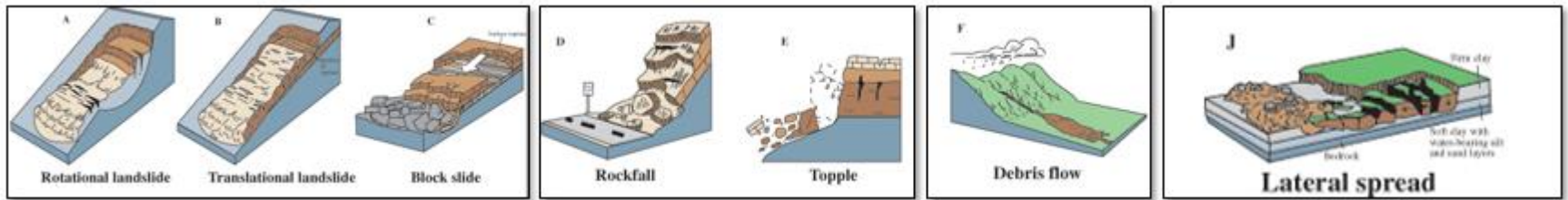
Warm Spring Run Dams (Morgan)

Eight high hazard flood-control dams upstream of Berkeley Springs



Map Link: <https://www.mapwv.gov/flood/map/?wkid=102100&x=-8708803&y=4809463&l=7&v=2>

Landslide Susceptibility



COMMUNITY IDENTIFICATION		LANDSLIDE SUSCEPTIBILITY									TOTALS Med-High	
		High Susceptibility			Medium Susceptibility			Low Susceptibility			Bldg. Count	Bldg. Value
Community Name	County	Total - H Count	Total-H Value	Total-H Percent	Total - M Count	Total-M Value	Total-M Percent	Total - L Count	Total-L Value	Total-L Percent	Total Count	Total Value
Berkeley County*	BERKELEY	6	\$1,277K	0.01%	490	\$53,165K	1.0%	48086	\$6,630,364K	99%	496	\$54,442K
Hedgesville	BERKELEY	0	\$0K	0.00%	2	\$114K	1.1%	177	\$15,352K	99%	2	\$114K
Martinsburg	BERKELEY	1	\$111K	0.01%	17	\$2,694K	0.2%	9273	\$1,073,817K	100%	18	\$2,805K
	BERKELEY	7	\$1,388K	0.01%	509	\$55,973K	0.9%	57536	\$7,719,533K	99%	516	\$57,361K
Bath	MORGAN	0	\$0K	0.00%	19	\$1,733K	3.5%	523	\$65,979K	96%	19	\$1,733K
Morgan County*	MORGAN	9	\$503K	0.07%	328	\$29,704K	2.6%	12073	\$1,136,331K	97%	337	\$30,207K
Paw Paw	MORGAN	0	\$0K	0.00%	0	\$0K	0.0%	345	\$16,166K	100%	0	\$0K
	MORGAN	9	\$503K	0.07%	347	\$31,437K	2.6%	12941	\$1,218,475K	97%	356	\$31,940K

Landslide Risk



WV Flood Tool

Remember: When In Doubt, It's Not Out!

About Help Home

Views

Public Expert Risk MAP

Layers

Risk Reference Basemaps

Search

Address e.g., 123 street name, city, state, zip

Tools

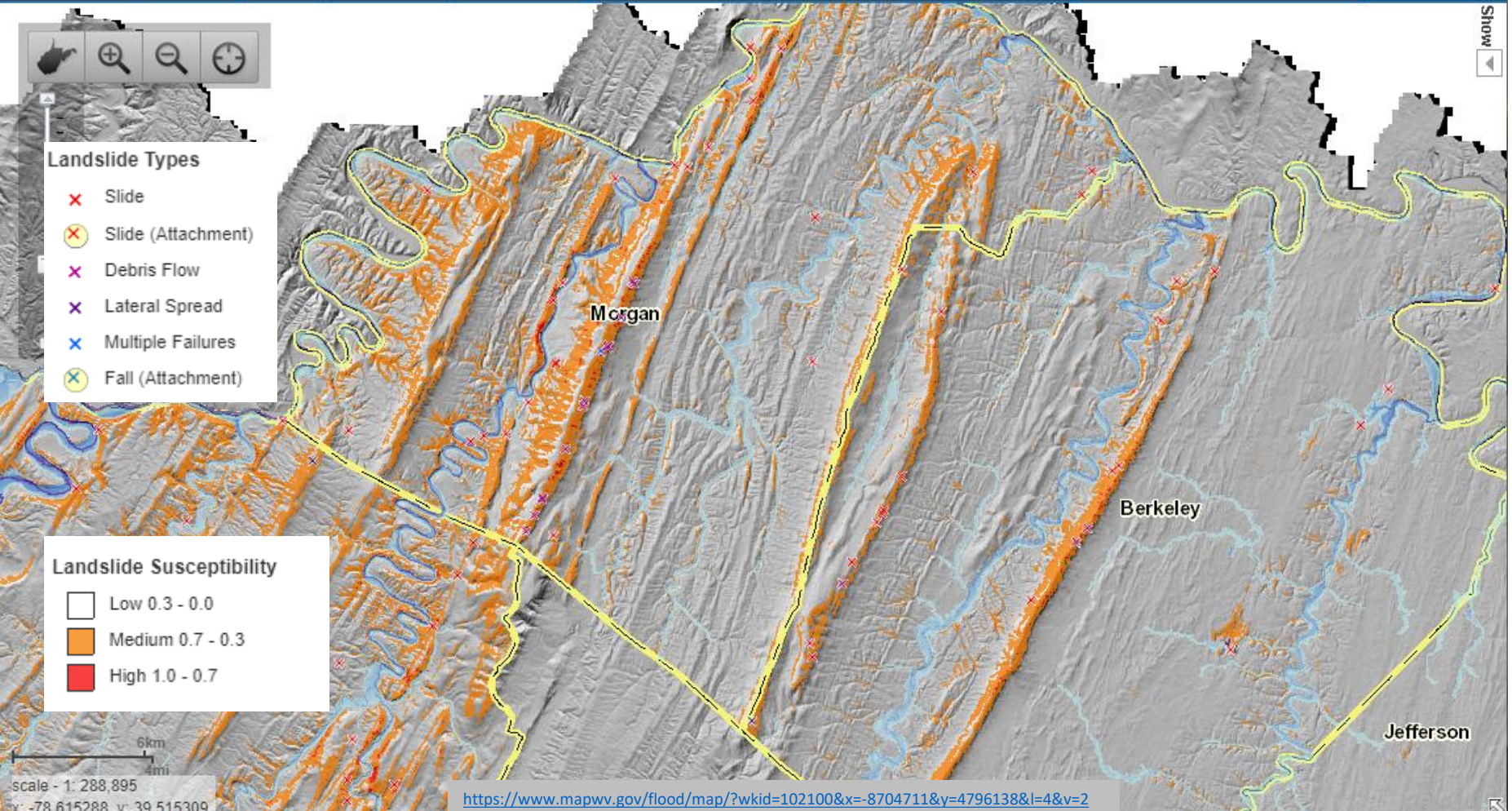


Landslide Types

- Slide
- Slide (Attachment)
- Debris Flow
- Lateral Spread
- Multiple Failures
- Fall (Attachment)

Landslide Susceptibility

- Low 0.3 - 0.0
- Medium 0.7 - 0.3
- High 1.0 - 0.7



scale - 1: 288,895
x: -78.615288, y: 39.515309

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-8704711&y=4796138&l=4&v=2>