

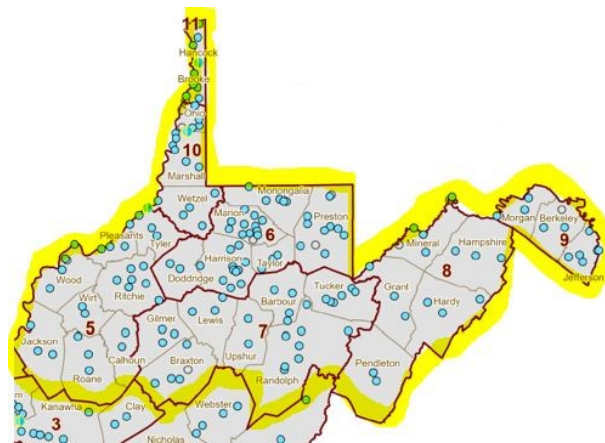
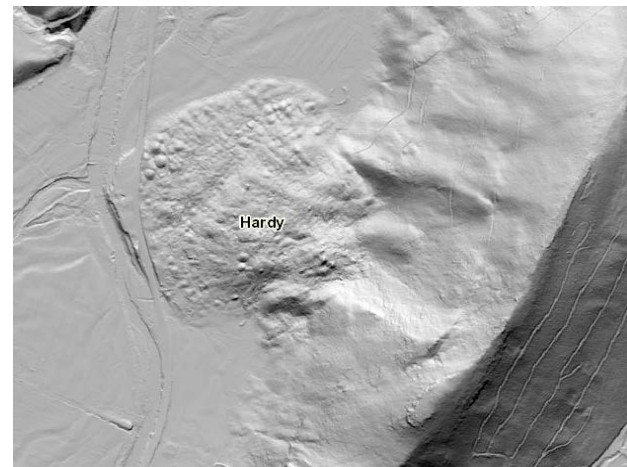


Risk Assessment Kick-Off Meeting

Regions 5 through 11

RISK ASSESSMENT DATA VERIFICATION

WV GIS Technical Center
West Virginia University
April 14, 2021



Multi-Hazard Risk Assessments



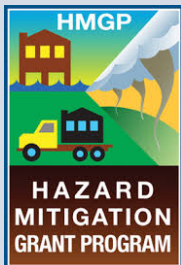
Flood Risk
#1 WV Hazard

Funded from the **Hazard Mitigation Grant Program (HMGP)** by FEMA Region III and the State Hazard Mitigation Office, WVU and its partners are providing technical support to quantify hazard risk that support the following FEMA programs:



Landslide Risk
#2 WV Hazard

- FEMA-approved hazard mitigation plans legally required under provisions of the Stafford Act
- Risk Mapping, Assessment and Planning (Risk MAP)
- National Flood Insurance Program (NFIP) / Community Rating System (CRS)



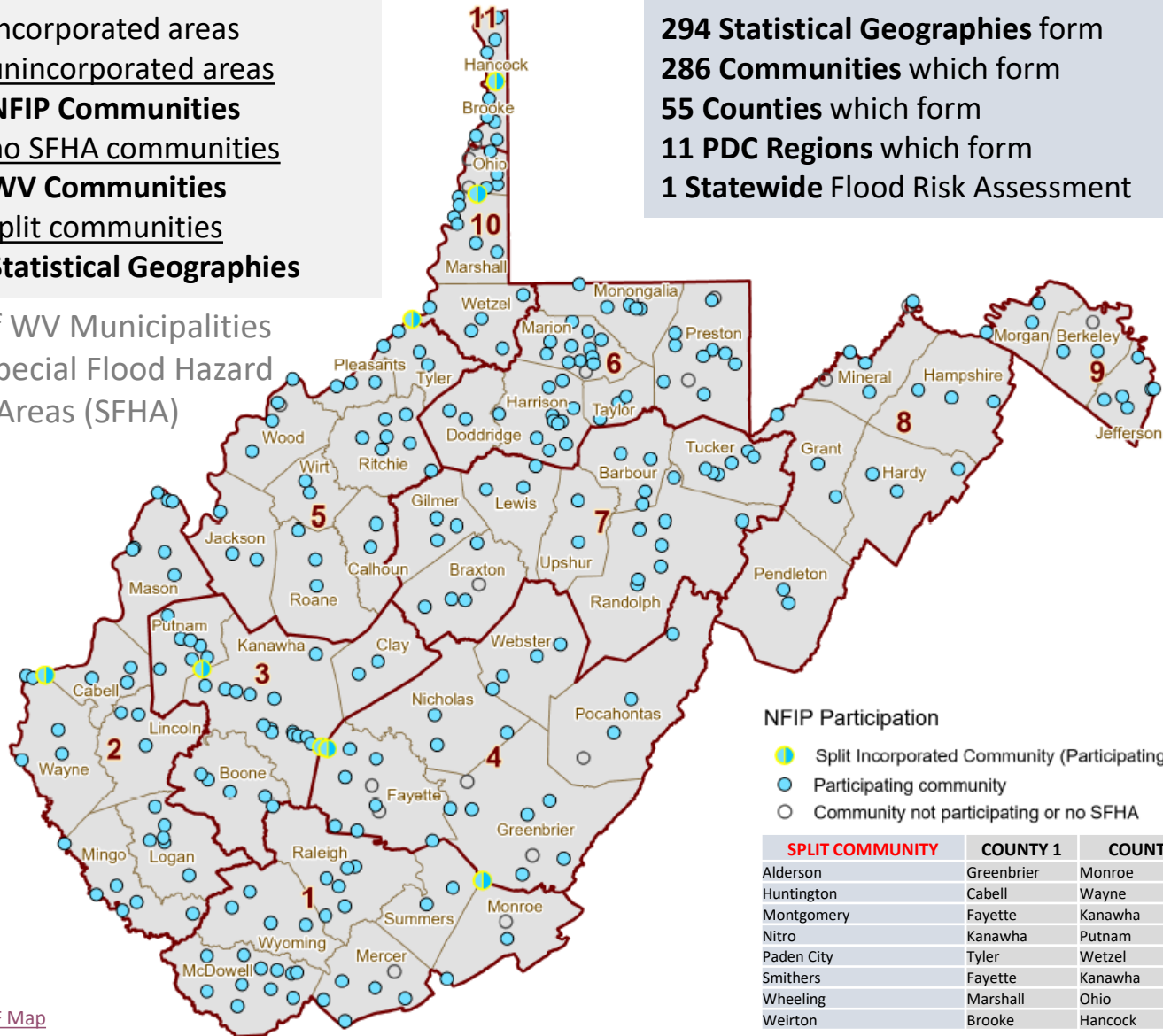
No single agency has all the answers but leveraging multiple programs and perspectives can provide a cohesive solution

Statewide Hazard Assessment

213 incorporated areas
 +55 unincorporated areas
268 NFIP Communities
 +18 no SFHA communities
286 WV Communities
 + 8 split communities
294 Statistical Geographies

294 Statistical Geographies form
286 Communities which form
55 Counties which form
11 PDC Regions which form
1 Statewide Flood Risk Assessment

94% of WV Municipalities
 have Special Flood Hazard
 Areas (SFHA)



NFIP Participation

- Split Incorporated Community (Participating)
- Participating community
- Community not participating or no SFHA

SPLIT COMMUNITY	COUNTY 1	COUNTY 2
Alderson	Greenbrier	Monroe
Huntington	Cabell	Wayne
Montgomery	Fayette	Kanawha
Nitro	Kanawha	Putnam
Paden City	Tyler	Wetzel
Smithers	Fayette	Kanawha
Wheeling	Marshall	Ohio
Weirton	Brooke	Hancock

152 Flood-Prone Communities

7 Regional Planning & Development Councils (34 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>	<i>55</i>	<i>286</i>	<i>8</i>	<i>18</i>	<i>268</i>

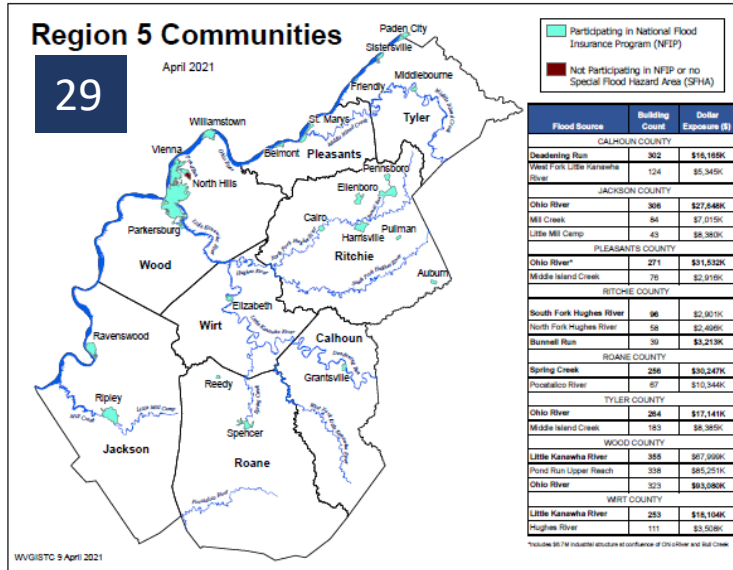
¹ Source: FEMA's Community Status Source Book

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

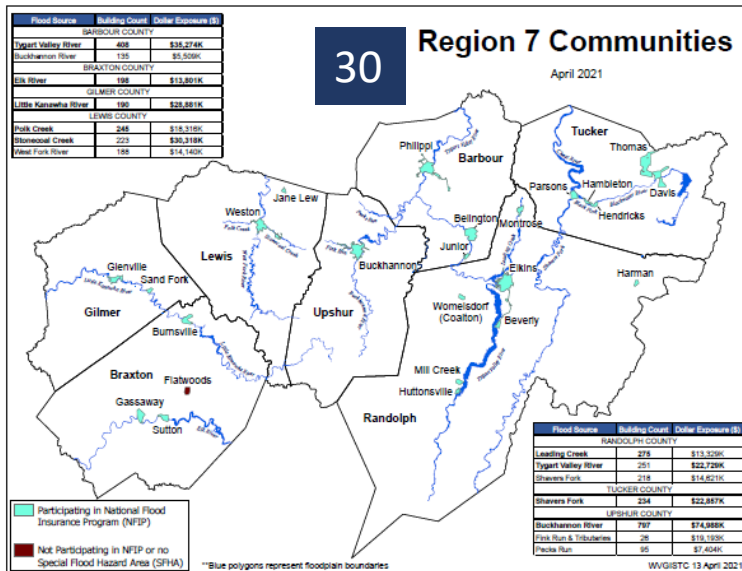
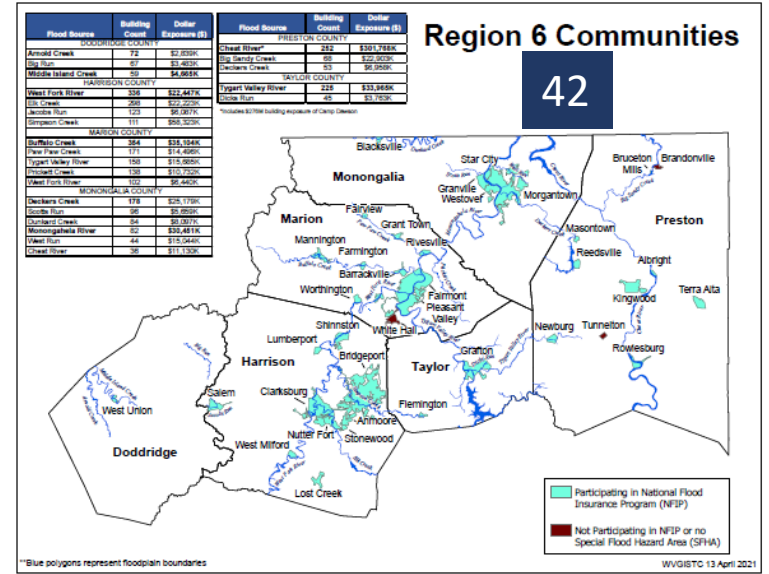
Split Communities **Alderson, Montgomery** and **Smithers** are members of Region 4
 Split Community **Paden City** is a member of Region 5

Regions 5-8: 116 Flood-Prone Communities



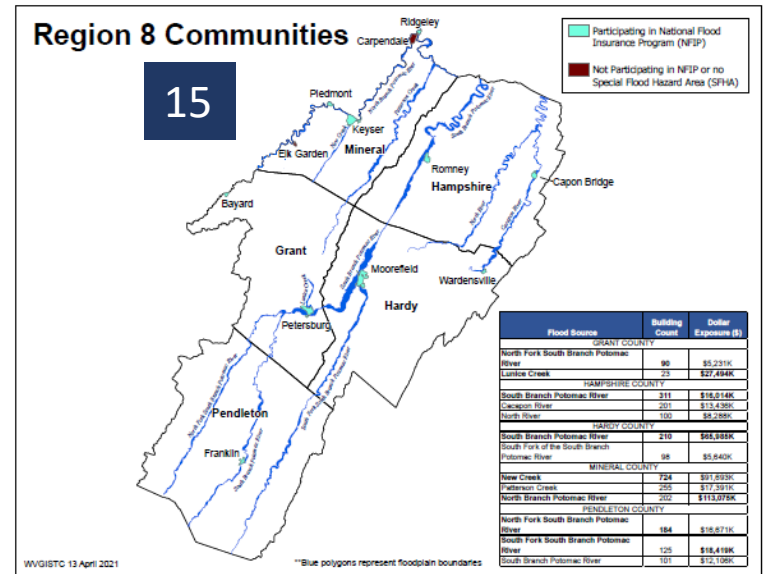
Region 5

Region 6

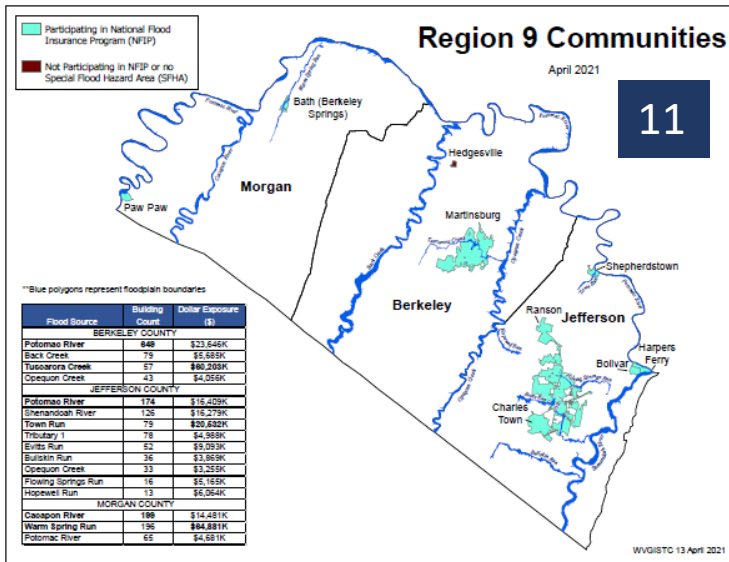


Region 7

Region 8

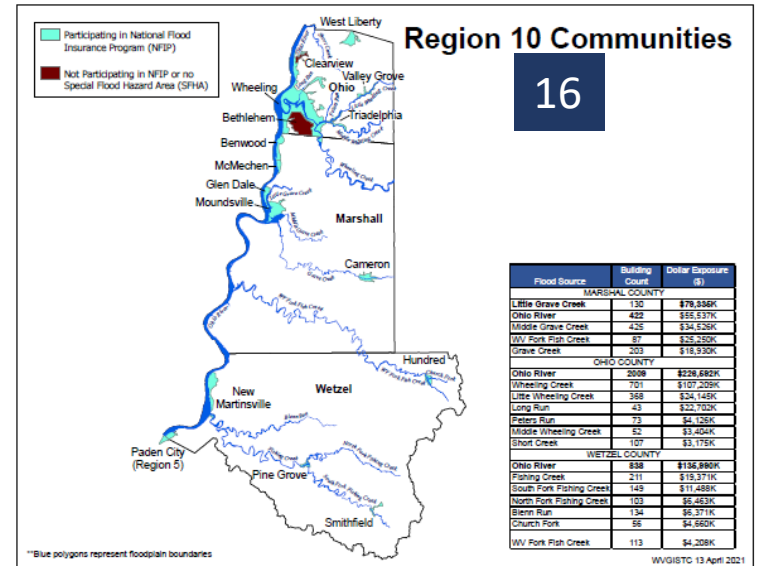


Regions 9-11: 36 Flood-Prone Communities

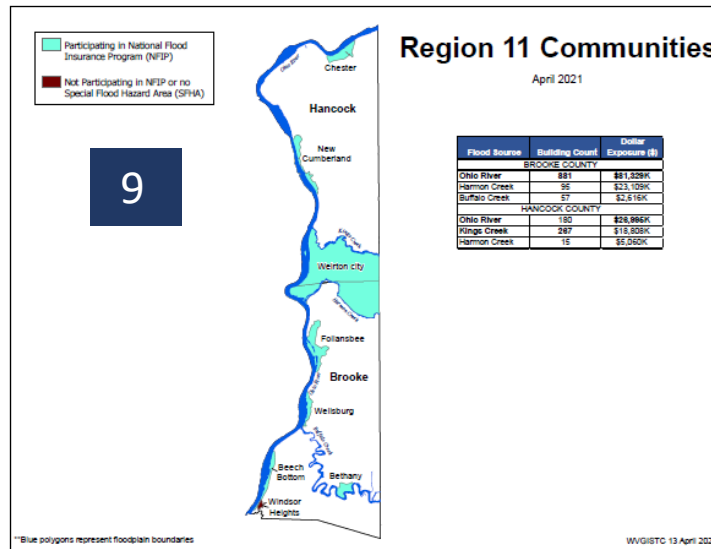


Region 9

Region 10



Region 11



Building Exposure by Region

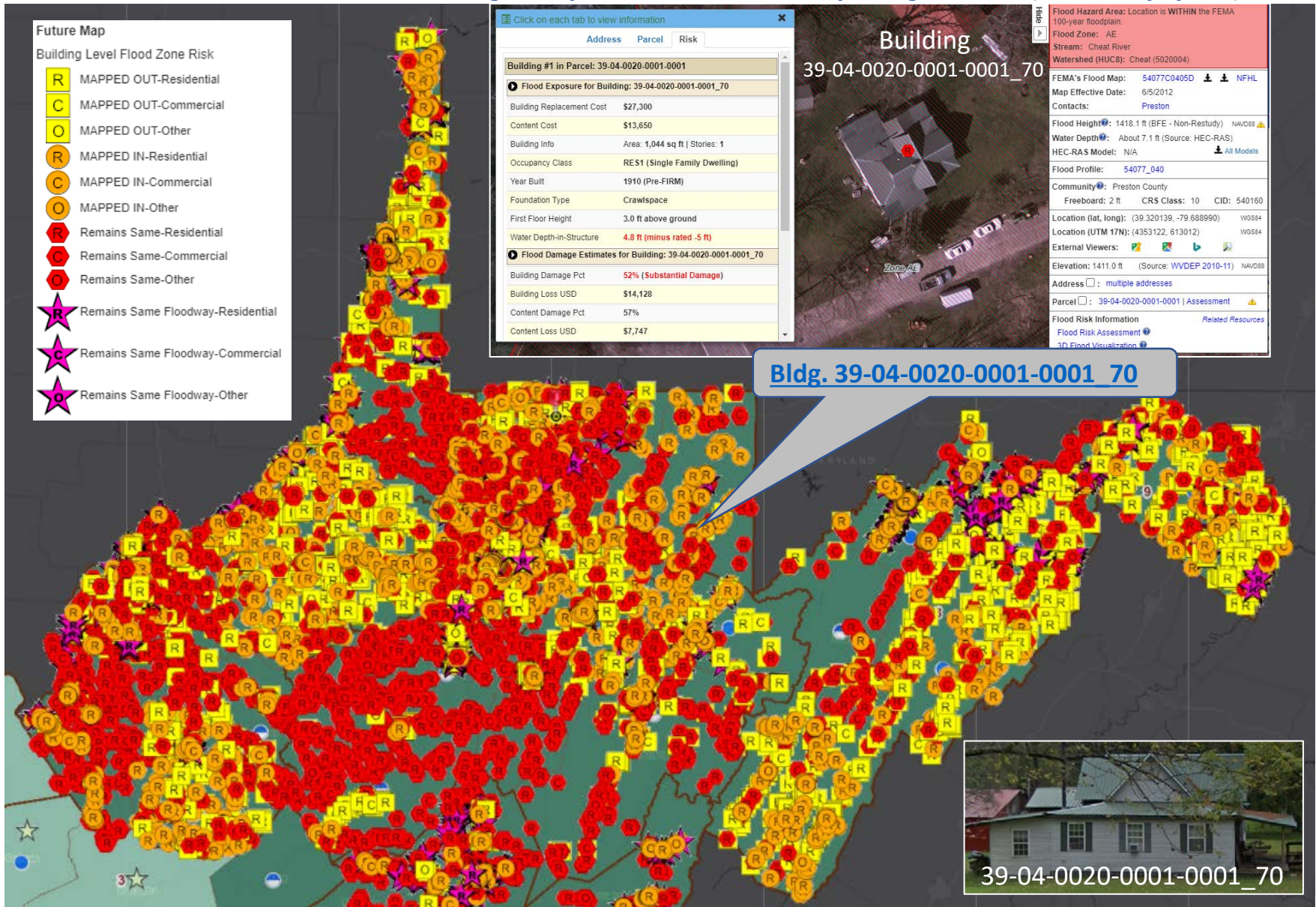
County Subdivision of Rivers/Streams with "Highest" Building Count and Dollar Exposure

Region	BUILDING COUNT				BUILDING DOLLAR (\$) EXPOSURE			
	County	Flood Source	Bldg. Count	Bldg. \$ Value	County	Flood Source	Bldg. Count	Bldg. \$ Value
1	McDowell	<i>Tug Fork</i>	810	\$41,337K	Mercer	<i>Brush Creek</i>	248	\$47,440K
4	Greenbrier	<i>Greenbrier River</i>	533	\$34,028K	Greenbrier	<i>Howard Creek</i>	368	\$80,905K
5	Wood	<i>Little Kanawha River</i>	355	\$67,999K	Wood	<i>Ohio River</i>	323	\$93,080K
6	Marion	<i>Buffalo Creek</i>	354	\$35,104K	Preston	<i>Cheat River*</i>	252	\$301,768K
7	Upshur	<i>Buckhannon River</i>	797	\$74,988K	Upshur	<i>Buckhannon River</i>	797	\$74,988K
8	Mineral	<i>New Creek</i>	724	\$91,693K	Mineral	<i>North Branch Potomac</i>	202	\$113,075K
9	Berkeley	<i>Potomac River</i>	649	\$23,646K	Morgan	<i>Warm Spring Run</i>	196	\$64,881K
10	Ohio	<i>Ohio River</i>	2,009	\$226,592K	Ohio	<i>Ohio River</i>	2,009	\$226,592K
11	Brooke	<i>Ohio River</i>	881	\$81,329K	Brooke	<i>Ohio River</i>	881	\$81,329K

* Includes \$276 million building exposure of Camp Dawson

Building Exposure and Damage Estimates

More than 36,000 structures in high-risk flood zones inventoried for Regions 5-11 (North Half of WV)



Building-Level Flood Risk Assessments

Building-Level Flood Risk Assessments support:

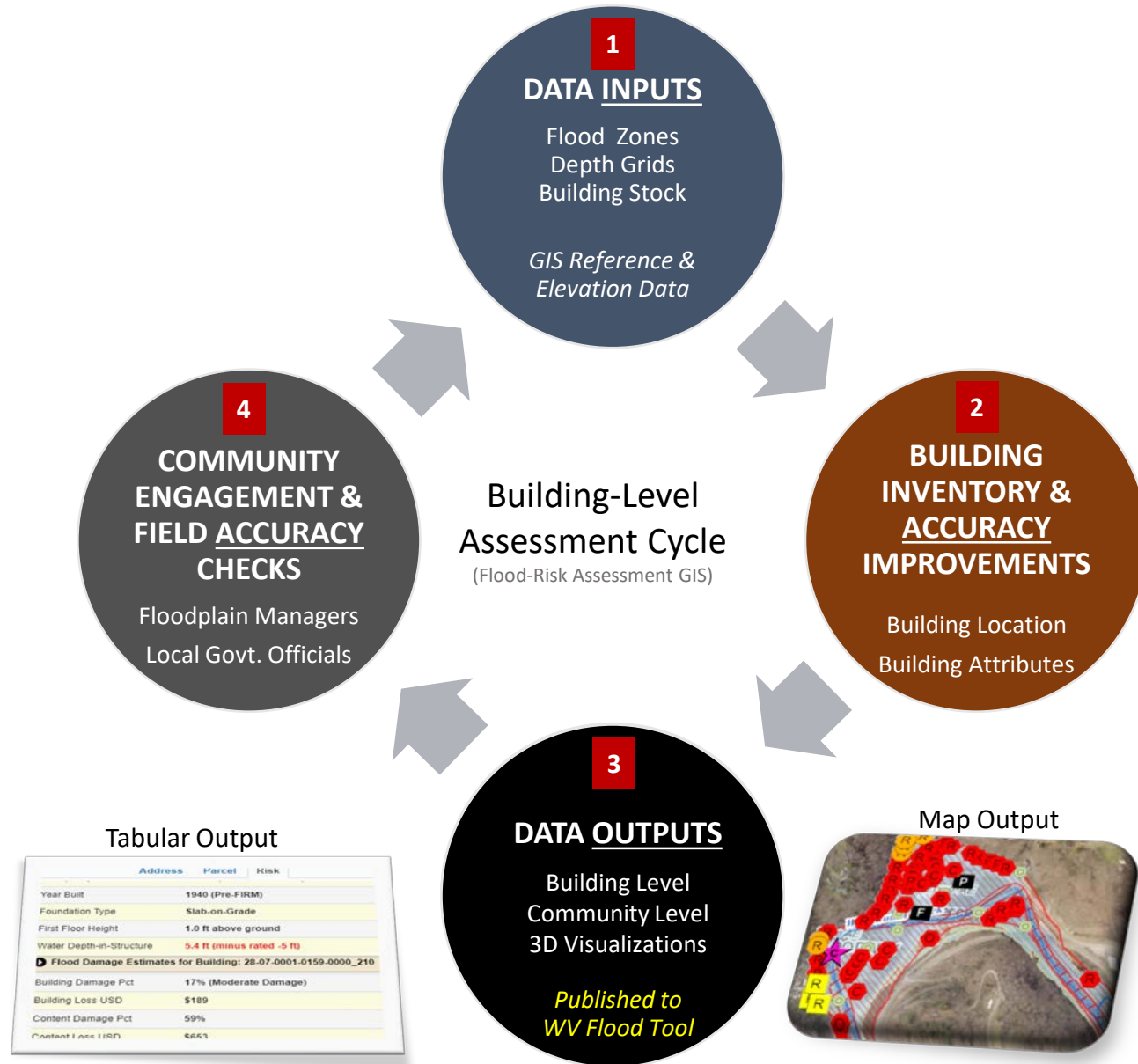
- Hazard Mitigation Plans
- Floodplain Management
- Community Assisted Visits
- Community Rating System

Benefits

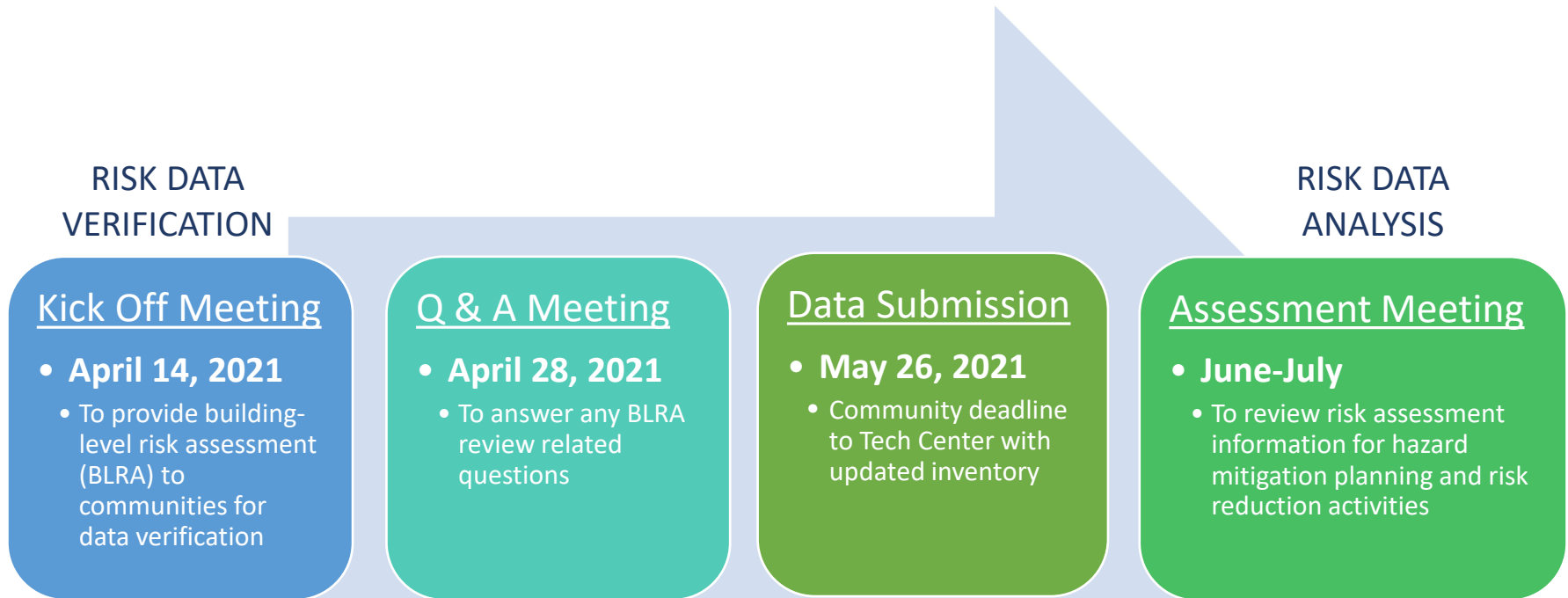
- More detailed and accurate assessments
- Automated scripts generate outputs quickly
- Cost savings through efficiencies
- Helps multiple stakeholders
- Comprehensive Building Risk Database

Methodology

- Consistent methodology statewide
- Semi-automated workflows
- Continuous cycle to improve and update assessments



Timeline for Community-Engagement Process



Communications and Management

- Emails, conference calls
- Online tracking survey
- Log and manage communications

Statewide Hazard Assessment

Expectations

- Floodplain managers and community officials verify at-risk structures in floodplain
 - Provide Elevation Certificates and Building Pictures of floodproofed structures
- Provide shared links of significant flood map errors or unmapped landslides

Benefits to Communities

- Validation of essential facilities and primary structures in flood hazard zones
- Expand on base level information for further hazard reduction and planning efforts
- Use risk assessment information for Community Rating System insurance discounts

Risk Assessment Data Verification

Verification ¹	Flood	Landslide	Description
<input type="checkbox"/> Identified Hazards	X	X	<ul style="list-style-type: none"> Flood Zone Map Errors, High-Water Marks Landslide Incidents
<input type="checkbox"/> Essential Facilities²	X		<ul style="list-style-type: none"> School, Police, Fire, Hospital, Nursing Home, E-911 Office
<input type="checkbox"/> Primary Structures Missing in High-Risk Flood Zones²	X		<ul style="list-style-type: none"> Missing any Noteworthy Structures <ul style="list-style-type: none"> ○ Future Map Conditions ○ Base Flood Depth
<input type="checkbox"/> Building Dollar Exposure³	X		<ul style="list-style-type: none"> High-Value Buildings
<input type="checkbox"/> Building Damage Estimates^{3,4} (1%-Annual-Chance Flood)	X		<ul style="list-style-type: none"> Building Substantial Damage Estimates
<input type="checkbox"/> Post-FIRM Construction^{3,4} (Minus Rated)	X		<ul style="list-style-type: none"> Post-FIRM Construction (new development)
<input type="checkbox"/> Mitigated/Elevated Structures⁴	X		<ul style="list-style-type: none"> Residential Structures > 5 ft. Non-Residential
<input type="checkbox"/> Buyout Properties (Deed Restricted)	X	X	<ul style="list-style-type: none"> Flood Buyout Parcel Landslide Buyout Parcel

¹ Use the Risk MAP View of the [WV Flood Tool](#) for map verification of hazards and structures

² Inventoried primary structures in the effective or advisory 1%-annual-chance (100-year) floodplain. Essential facilities are mapped to the 0.2 percent (500-year) floodplain

³ Targeted record verification. Data extract from Building-Level Risk Assessment (BLRA) inventory

⁴ Provide *Elevation Certificates* and *Building Pictures* for mitigated/elevated structures

What does it mean?

Addendum Slides and other reference documents provide more details

Verification	Flood	Land-slide	What does it mean?
<input type="checkbox"/> Identified Hazards	X	X	<ul style="list-style-type: none"> Improves the accuracy and information about identified flood and landslide hazards Additional hazard information (e.g., high water marks, landslide locations) from communities
<input type="checkbox"/> Essential Facilities	X		<ul style="list-style-type: none"> Identifies essential facilities that should be built to a higher level of flood protection Essential facilities (police and fire stations, E-911 dispatch offices, schools, hospitals, and nursing homes) that provide services to the community and should be functional after a flood
<input type="checkbox"/> Primary Structures Missing in High-Risk Flood Zones	X		<ul style="list-style-type: none"> Answers the question “What is at HIGH RISK to riverine flooding?” Use for Floodplain Management Records: Building characteristics and flood depth exposure (occupancy class, replacement value, grade, building year, foundation type, ownership, flood zone type, water depth-in-structure, etc.). CRS program variable: Building Count in SFHA (bSFHA) Identifies <i>proximity</i> to flood source (floodway), a Risk Rating 2.0 insurance rating factor Can prepopulate structures in FEMA’s damage estimating software to save time during a crisis Reveals Future Map Conditions in which non-regulatory zones likely will become effective from future FEMA Risk MAP studies. Consider “Mapped out SFHA” structures for LOMAs.
<input type="checkbox"/> Building Dollar Exposure	X		<ul style="list-style-type: none"> Identifies high-valued buildings exposed in 1%-annual-chance floodplain Cost to rebuild a home or non-residential structure is a significant insurance rating factor
<input type="checkbox"/> Building Damage Estimates	X		<ul style="list-style-type: none"> Answers the question “What is the DEGREE of HIGH RISK to riverine flooding?” Identifies most vulnerable structures to damage for a 1%-annual-chance or 100-yr. flood event Provides substantial damage estimates (insurance rating factor) in dollars and percent Verify: foundation types, first floor heights; compare with Repetitive Loss and claims data
<input type="checkbox"/> Post-FIRM Construction (Minus Rated)	X		<ul style="list-style-type: none"> Answers question “Are post-FIRM structures compliant with NFIP regulations and Ordinance?” Post-FIRM structures shouldn’t be minus rated if built to code at the time Minus-rated insurance policies don’t receive CRS community discounts Residential buildings must elevate to finished first floors and wet floodproof enclosed areas Commercial buildings have the option to wet floodproof, dry floodproof, or do a combination Verify: foundation types and first floor heights for Post-FIRM construction
<input type="checkbox"/> Mitigated/Elevated Structures	X		<ul style="list-style-type: none"> Identifies floodproofed mitigated structures (e.g., elevation of structure/utilities, proper flood openings) to increase insurance discounts and reduce flood risk vulnerability.
<input type="checkbox"/> Buyout Properties	X	X	<ul style="list-style-type: none"> Identifies open space preserved from mitigation of flood and landslide buyout parcels CRS community credit eligibility

Map Verification – WV Flood Tool

WV Flood Tool (Risk MAP View) for Community Verification

Layers

⚡ Risk ▾
🖼️ Reference ▾
🌐 Basemaps ▾
📍 Address

🔘 BUILDING-LEVEL RISK: 100-YEAR FLOOD

Primary Structure (Future Map) ⓘ ▬

LOMA Verified (In or Out SFHA) ⓘ ▬

Building Exposure Cost ⓘ ▬

Building Year Pre-FIRM & Post-FIRM ⓘ ▬

Foundation Type ⓘ ▬

Elevation Certificates (Building Type) ⓘ ▬

Minus-Rated Structure ⓘ ▬

Building Damage Loss Estimate ▬

Render Map By: Percent ⓘ Value ⓘ

🔘 CRITICAL INFRASTRUCTURE

Essential Facilities ⓘ ▬

Community Assets ⓘ ▬

Historic Structures ⓘ ▬

Future Map

Building Level Flood Zone Risk

- R MAPPED OUT-Residential
- C MAPPED OUT-Commercial
- O MAPPED OUT-Other
- R MAPPED IN-Residential
- C MAPPED IN-Commercial
- O MAPPED IN-Other
- R Remains Same-Residential
- C Remains Same-Commercial
- O Remains Same-Other
- ★ R Remains Same Floodway-Residential
- ★ C Remains Same Floodway-Commercial
- ★ O Remains Same Floodway-Other

Minus Rated Structure

- 🏠 Post-FIRM
- 🏠 Pre-FIRM
- 🏠 Unknown

New Development & Basement

- 🏠 Post-FIRM, Basement
- 🏠 Post-FIRM, No Basement
- 🏠 Pre-FIRM, Basement
- 🏠 Pre-FIRM, No Basement
- 🏠 Unknown, Basement
- 🏠 Unknown, No Basement

Elevation Certificates

- EC Slab-on-Grade
- EC Subgrade
- EC Elevated

Verified LOMA SFHA Determination

- Non-Removal
- Out as Shown
- Removal

Building Exposure Cost

- ▲ >\$1M
- ▲ \$250,000-\$1M
- ▲ \$100,000-\$250,000
- ▲ \$50,000-\$100,000
- ▲ 0-\$50,000

Building Damage Estimate (100-YR Flood)

- ▲ 50-100% (Substantial Damage)
- ▲ 10-50% (Moderate Damage)
- ▲ 1-10% (Slight Damage)
- ▲ <1% or No Depth Value

(1A) Identified Hazards - Flood

The screenshot displays the WV Flood Tool interface. At the top, the logo reads "WV Flood Tool" with the tagline "Remember: When In Doubt, It's Not Out!". The navigation bar includes "Views" (Public, Expert, Risk MAP), "Layers" (Flood, Reference, Basemaps), and a search bar with the address "360 Many Springs Road Princeton WV 24739". A "Shared Link Tool" icon is circled in red in the top right. The map shows a red "High Risk Advisory Zone" and an orange "Flood Zone: A" along Goodwyns Chapel Rd. A blue circle on the map is labeled "Fivemile Creek" with a handwritten "DITCH" and an arrow pointing to the orange zone. The metadata panel on the right lists details for the location, including FEMA's Flood Map ID (54055C0278D), map date (3/2/2005), and coordinates.

Submit Shared Link and Error Description

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-9014532&y=4486968&l=10&v=1>

Map Error Description: Drainage stream along U.S. 460 is misnamed Fivemile Creek. The main channel for Fivemile Creek (red zone) should follow the newly mapped Advisory A Zone (orange zone) along Goodwyns Chapel Road

Location: Near Oakvale, WV (Mercer County)

(1B) Identified Hazard - Landslide



Layers Search

Risk Reference Basemaps Address 293 OAK ACRES CIR, WASHINGTON, WV

- BUILDING-LEVEL RISK: 100-YEAR FLOOD
- CRITICAL INFRASTRUCTURE
- FLOOD DEPTH
- OTHER NATURAL HAZARDS
 - Landslide Incident
 - Landslide Susceptibility
- MITIGATED PROPERTIES & OPEN SPACE
- PRIMARY FLOOD HAZARD LAYERS
- PRELIMINARY/DRAFT FLOOD LAYERS
- OTHER FLOOD ZONE SYMBOLOGY
- MISCELLANEOUS LAYERS

* indicates that data is from FEMA
[Show Legend](#)

WV Flood Tool

Landslide Incident

Wood

Landslide damages Washington Bottom home, threatens others

LOCAL NEWS
APR 26, 2020

MICHAEL ERB
Staff Reporter
meh@wvnewscentral.com

SHARE TWITTER

A landslide Sunday evening damaged a Washington Bottom home and forced the evacuation of several neighboring houses. (Photo by Michael Erb)

April 2020
Landslide

Wood County

*Impacted home moved
from foundation*

Tabular Verification – Download BL Tables

Downloadable Building-Level (BL) Tabular Reports for Community Verification

Verification	Flood	Landslide	Download Table Web Link	Other Resource Documents
<input type="checkbox"/> Identified Hazards	X	X	(1) Identified Hazards Folder <i>(no table)</i>	<< Reference Tables >>
<input type="checkbox"/> Essential Facilities	X		(2) Essential Facilities Folder R5 R6 R7 R8 R9 R10 R11	Occupancy Classes Foundation Types
<input type="checkbox"/> Primary Structures Missing in High-Risk Flood Zones (BLRA)¹	X		(3) BLRA Full List Folder <i>(available if want to review all buildings inventoried)</i> R5 R6 R7 R8 R9 R10 R11	<< Report Tables >> Building Level Community Level
<input type="checkbox"/> Building Dollar Exposure²	X		(4) BLRA Data Extract Folder R5 R6 R7 R8 R9 R10 R11	<< Instructional Resources >>
<input type="checkbox"/> Building Damage Estimates²	X		(5) BLRA Data Extract Folder R5 R6 R7 R8 R9 R10 R11	Instructions Teaching Videos Recorded Presentations
<input type="checkbox"/> Post-FIRM Construction²	X		(6) BLRA Data Extract Folder R5 R6 R7 R8 R9 R10 R11	WV Flood Tool Resource Page
<input type="checkbox"/> Mitigated/Elevated Structures	X		(7) Mitigated Structures R5 R6 R7 R8 R9 R10 R11	<< Data Verification Form >> Online Survey Check Sheet
<input type="checkbox"/> Buyout Properties	X	X	(8) Buyout Properties R5 R6 R7 R8 R9 R10 R11	

¹ Building-Level Risk Assessment (BLRA) full table with 84 data fields

² Targeted record verification. Table data extract from BLRA inventory in 1%-annual-chance flood zone

(2) Essential Facilities – Table Verify

Community Name	Reg.	Facility Name	Building ID	Full Address	Facility Type	Building Appraisal	Flood Tool Link	1% Flood Depth Grid
Wheeling**	10	Wheeling Middle School	35-10-0W78-0041-0000_3500	3500 Chapline Street, Wheeling, WV 26003	School	\$10,300,000	FT	9.3
Wheeling**	10	Wheeling Fire Department Station 5	35-10-0W42-0044-0000_11	11 North Wabash Street, Wheeling, WV 26003	Fire Department	\$693,140	FT	9.1
Benwood	10	Benwood Police Department	25-01-0007-0119-0000_430	430 Main Street, Benwood, WV 26031	Police Department	\$306,800	FT	9
Benwood	10	Benwood Volunteer Fire Department Incorporated	25-01-0007-0122-0000_434	434 Main Street, Benwood, WV 26031	Fire Department	\$230,800	FT	8.1
New Martinsville	10	Wetzel County Sheriff's Office	52-09-0020-0058-0000_210	200 Main Street, New Martinsville, WV 26155	Police Department	\$529,150	FT	7.8
New Martinsville	10	Magnolia High School	52-09-0018-0009-0000_601	601 Maple Avenue, New Martinsville, WV 26155	School	\$10,843,500	FT	7.8
New Cumberland	11	New Cumberland Fire Department	15-05-N26F-0001-0000_303	303 North Chester Street, New Cumberland, WV 26047	Fire Department	\$230,100	FT	7.5



Police Station



Fire Station



E-911 Dispatch



School



Hospital



Nursing Home

(3) Missing Structure – Map Verification

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

Views: Public Expert Risk MAP Risk Reference Basemaps
Layers: Search: Address e.g., 123 street name, city, state, zip
Tools: [Navigation icons]

Information Panel:
Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.
Flood Zone: AE
Stream: Brush Creek
Watershed (HUC8): Middle New (5050002)
FEMA's Flood Map: 54055C0252D [Download] [NFHL]
Map Effective Date: 3/2/2005
Contacts: Mercer
Flood Height: 2389.4 ft (BFE - Non-Restudy) [NGVD29]
Water Depth: About 1.0 ft (Source: HEC-RAS)
HEC-RAS Model: N/A [All Models]
Flood Profile: 54055_025
Community: City of Princeton
Freeboard: 0 ft CRS Class: 10 CID: 540128
Location (lat, long): (37.364323, -81.090731) [WGS84]
Location (UTM 17N): (4135292, 491966) [WGS84]
External Viewers: [Icons]
Elevation: 2387.2 ft (Source: FEMA 2017) [NAVD88]
Address: 708 MAPLE ST, PRINCETON, WV, 24740
Parcel: 28-10-0015-0411-0001 | Assessment [Warning]
Flood Risk Information [Related Resources]
Flood Risk Assessment [Info]
3D Flood Visualization [Info]

Inset Image: Princeton Rescue Squad EMERGENCY SHELTER EDUCATION CENTER. "Help Us, Help You."

New \$3 Million
Princeton Rescue Squad Training
Center and Emergency Shelter

708 Maple
Street

28-10-0015-0411-0001

Shared Link of Missing Structure
<https://www.mapwv.gov/flood/map/?wkid=102100&x=-9026984&y=4490043&l=11&v=2>

(4) Building \$ Exposure – Map Verification

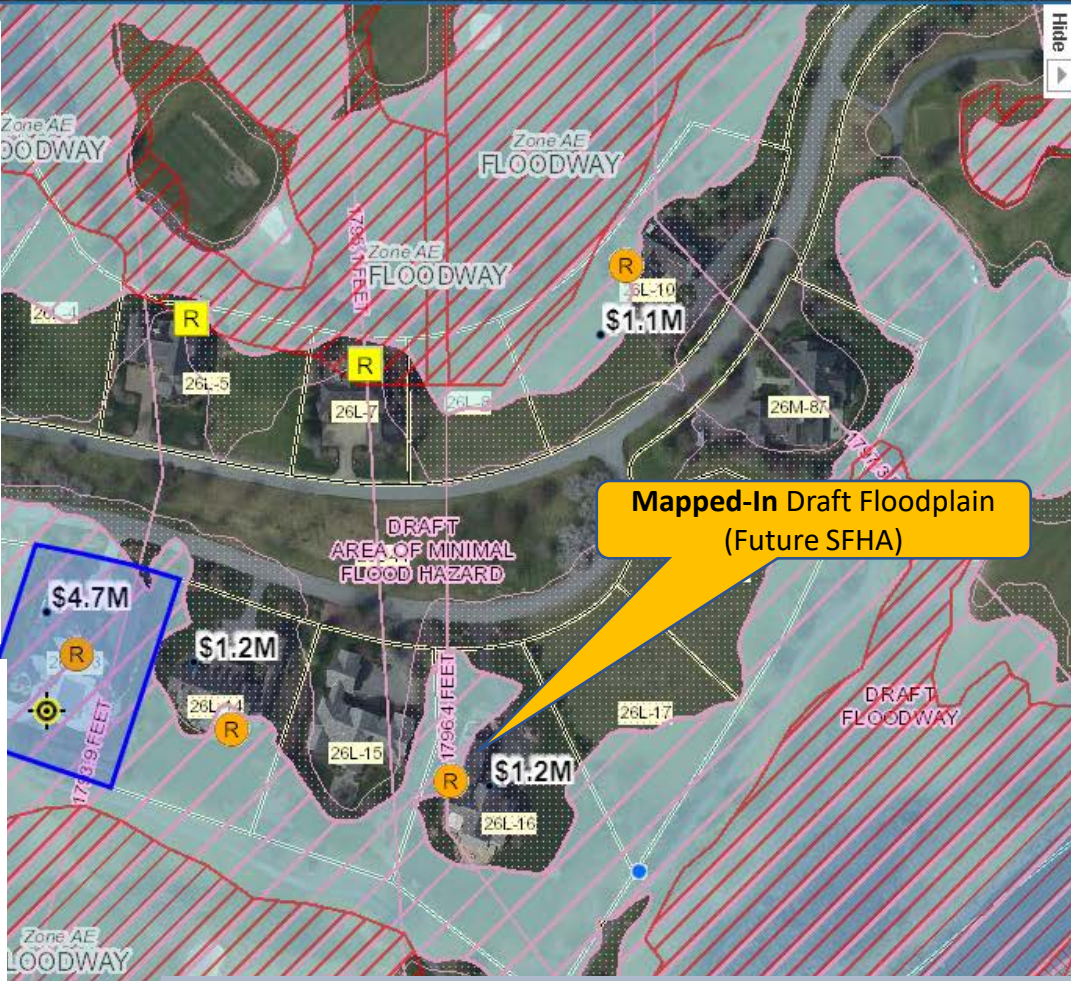
Views: Public | Expert | **Risk MAP** | Risk | Reference | Basemaps | Search: Address e.g., 123 street name, city, state, zip | Tools: [Icons]

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

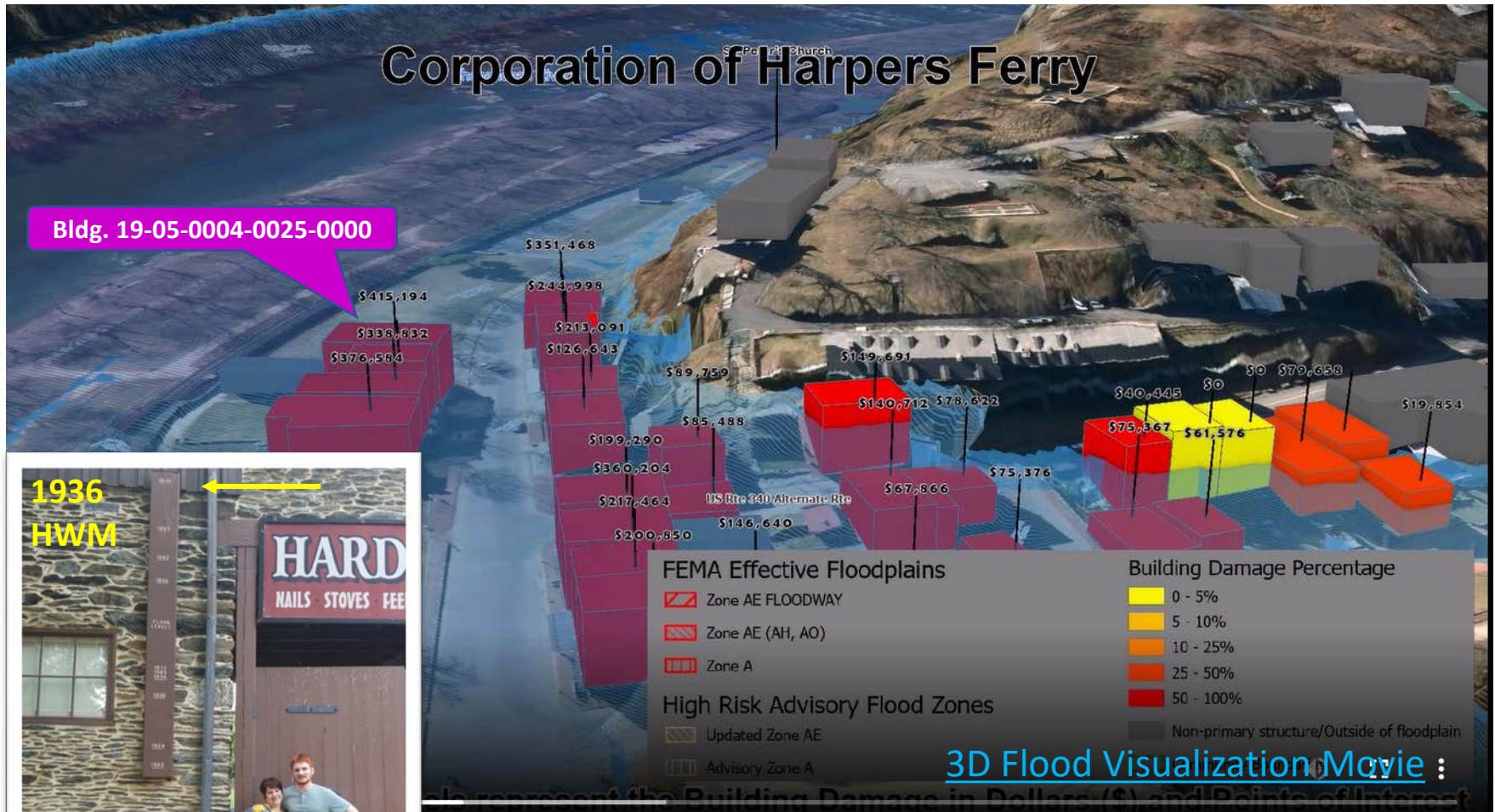
- Floodway
- Zone AE
- Zone A
- 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- AREA OF MINIMAL FLOOD HAZARD
- AREA NOT INCLUDED

100-year High Risk Flood Zones

FEMA Effective Floodplains

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

(5) Building Substantial Damaged



- Historical high-water marks and 1% flood model depths for structures along Shenandoah Street exceed **33 feet**.
- **1936 Flood.** (March 18-19). **36½ feet** – record crest at Harpers Ferry
- <https://www.nps.gov/hafe/learn/historyculture/memorable-floods-at-harpers-ferry.htm>

(5) Building Substantial Damaged

Building Damage Loss Estimate
Render Map By: Percent Value

Public Expert **Risk MAP** Risk Reference Basemaps Building 45-07-021A-0286-0000_284

Click on each tab to view information
Address Parcel Risk

Building #1 in Parcel: 45-07-021A-0286-0000

Flood Exposure for Building: 45-07-021A-0286-0000_284

Building Replacement Cost	\$40,700
Content Cost	\$20,350
Building Info	Area: 912 sq ft Stories: 1
Occupancy Class	RES1 (Single Family Dwelling)
Year Built	1977 (Pre-FIRM)
Foundation Type	Crawspace (View Photo)
First Floor Height	3.0 ft above ground
Water Depth-in-Structure	5.1 ft (minus rated -5 ft)

Flood Damage Estimates for Building: 45-07-021A-0286-0000_284

Building Damage Pct	54% (Substantial Damage)
Building Loss USD	\$21,814
Content Damage Pct	59%
Content Loss USD	\$11,924

Foundation and First Floor Height from Assessment Record are not correct. Needs to be modified.

Substantial Damage of structure not adjusted for 9 ft. elevated First Floor

16 steps x 7" rise = 9 ft.

Building Damage Estimate (100-YR Flood)

- 50-100% (Substantial Damage)
- 10-50% (Moderate Damage)
- 1-10% (Slight Damage)
- <1% or No Depth Value

Substantial Damage of structure not adjusted for 9 ft. elevated First Floor

Large number of substantial damaged structures along Greenbrier River, Summers County

Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.
Flood Zone: AE
Stream: Greenbrier River
Watershed (HUC8): Greenbrier (5050003)

FEMA's Flood Map: 54089C0235C NFHL
Map Effective Date: 2/3/2010
Contacts: Summers

Flood Height: 1465.4 ft (BFE - Non-Restudy)
Water Depth: About 8.3 ft (Source: HEC-RAS)
HEC-RAS Model: N/A
Flood Profile: 54089_022


Community: Summers County
Freeboard: 2 ft
CRS Class: 10
CID: 540186

Location (lat, long): (37.616958, -80.760770)
Location (UTM 17N): (4163343, 5211113)
Elevation: 1457.1 ft (Source: FEMA 2016)

Address: 284 DOC FOX RD, FOREST HILL, WV, 24935
Parcel: 45-07-021A-0286-0000 | Assessment

(7 & 8) Mitigated Properties - Verification

Buckhannon, WV



WV Flood Tool

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

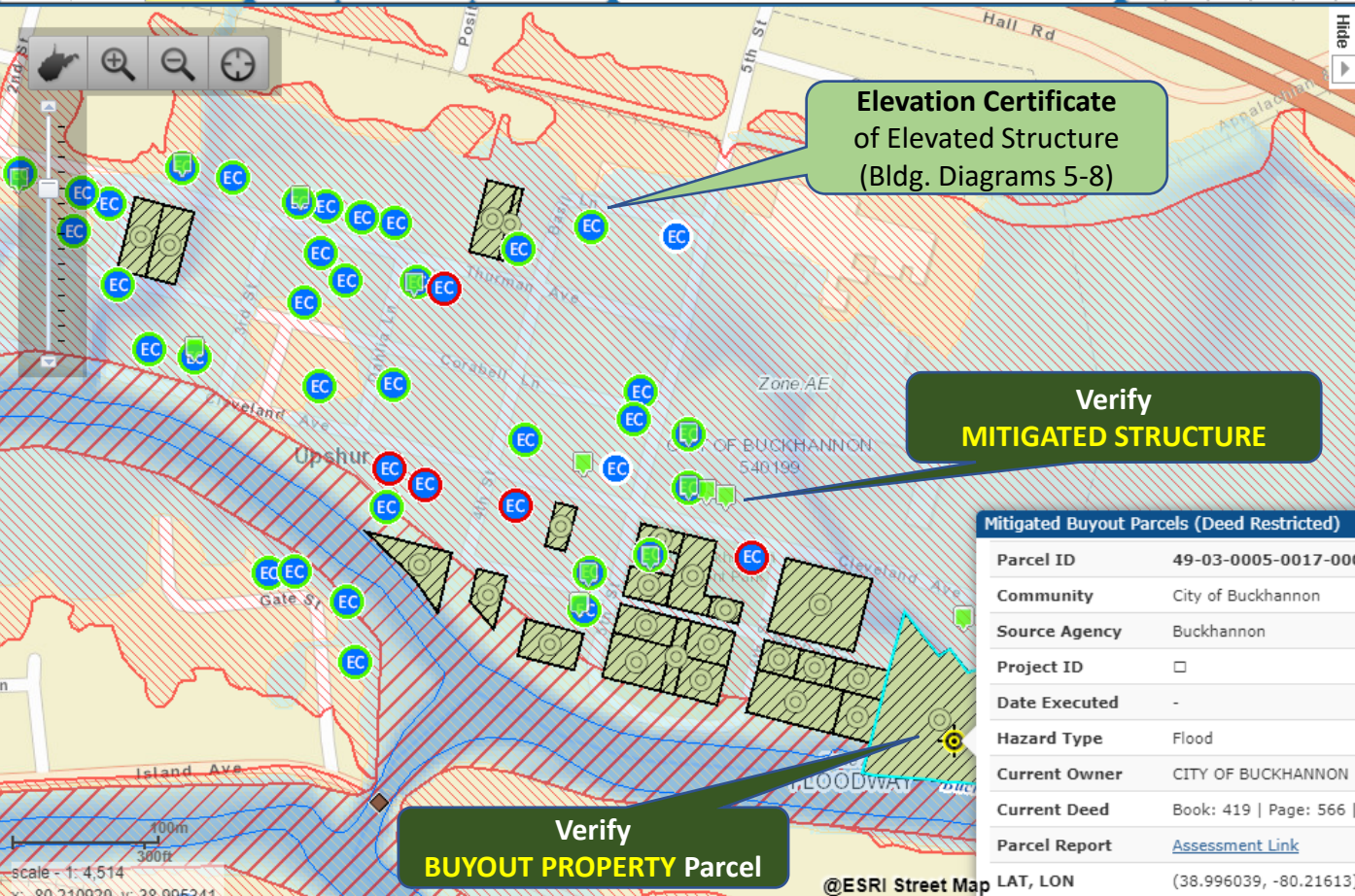
[About](#) [Help](#) [Home](#)

Views: Public Expert **Risk MAP**

Layers: Risk Reference Basemaps

Search: Buckhannon, wv

Tools: [Icons]



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

Flood Zone: AE (Floodway)

Stream: Buckhannon River

Watershed (HUC8): Tygart Valley (5020001)

FEMA's Flood Map: [54097C0127D](#) [NFHL](#)

Map Effective Date: 9/29/2010

Contacts: [Upshur](#)

Flood Height: 1414.7 ft (BFE - Non-Restudy) [NAVD88](#)

Water Depth: About 3.6 ft (Source: HEC-RAS)

HEC-RAS Model: N/A [All Models](#)

Flood Profile: [54097_001](#)

Community: City of Buckhannon

Freeboard: 1.5 ft **CRS Class:** 8 **CID:** 540199

Location (lat, long): (38.995908, -80.216016) [WGSS84](#)

Location (UTM 17N): (4316614, 567891) [WGSS84](#)

External Viewers: [\[Icons\]](#)

Elevation: 1410.6 ft (Source: [SAMS 2003](#)) [NAVD88](#)

Address: N/A

Parcel: [49-03-0005-0017-0000](#) | [Assessment](#)

Flood Risk Information [Related Resources](#)

Flood Risk Assessment: N/A


[3D Flood Visualization](#)

Mitigated Buyout Parcels (Deed Restricted)	
Parcel ID	49-03-0005-0017-000
Community	City of Buckhannon
Source Agency	Buckhannon
Project ID	<input type="checkbox"/>
Date Executed	-
Hazard Type	Flood
Current Owner	CITY OF BUCKHANNON
Current Deed	Book: 419 Page: 566 1.62-ac
Parcel Report	Assessment Link
LAT, LON	(38.996039, -80.21613)

Scale: 1:4,514 | x: -80.210920, y: 38.995341

@ESRI Street Map

(7) Mitigated Structure – First Floor Height



WV Flood Tool

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


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

Views: Public Expert Risk MAP

Layers: Risk Reference Basemap

Use **Elevation Certificates** and **Building Pictures** to identify Residential Elevated Structures > 5 ft.

Base Flood Depth is 6.7 ft.



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

Flood Zone: AE

Stream: Elk River

Flood Height: Refer to FIS report for BFE

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

HEC-RAS Model: N/A

Flood Profile: 54039_065

Community: Town of Clendenin

Freeboard: 2 ft CRS Class: 10 CID: 540075

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

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

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

*A1

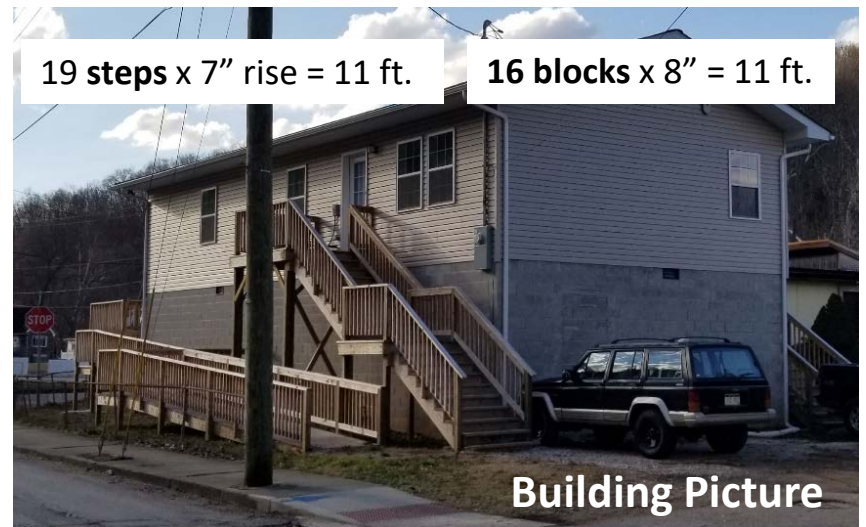
C2. Ele **Elevation Certificate (Diagram 7)** /AO.

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

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

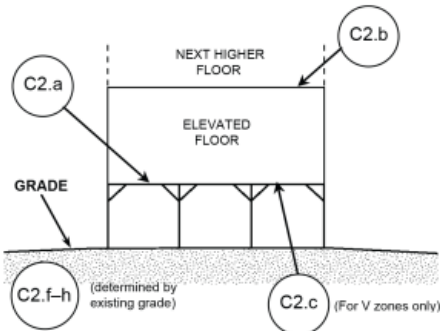


(7) Mitigated Structure – EC Bldg. #5

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

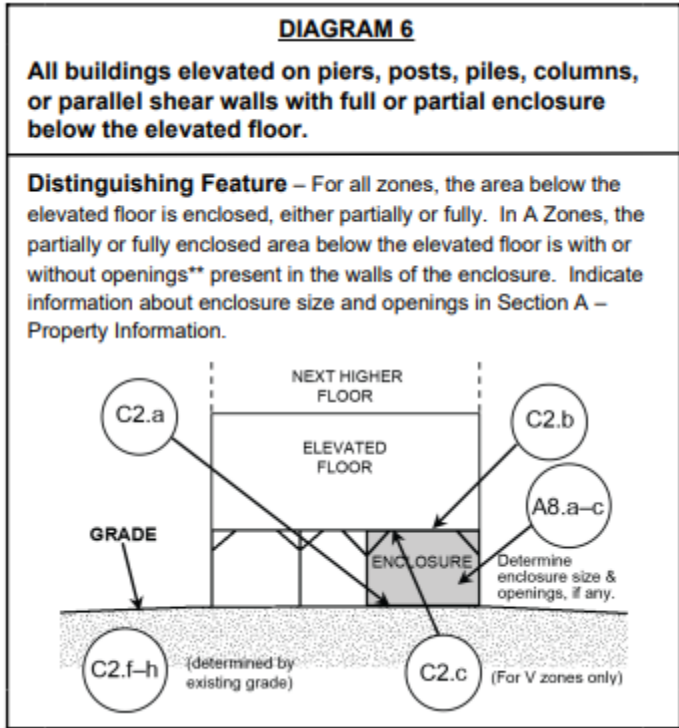


(7) Mitigated Structure – EC Bldg. #6

Building Diagram 6: Elevated Building with Enclosure (using piers, piles, posts)

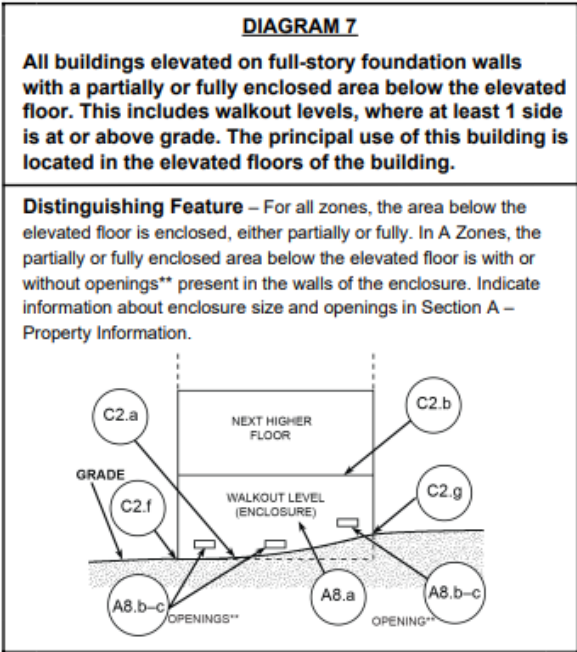


Partial Enclosure



(7) Mitigated Structure – EC Bldg. #7

Building Diagram 7: Elevated Building on Solid Foundation Walls (Full-Story)



(7) Mitigated Structure – EC Bldg. #8

Building Diagram 8: Elevated Building with Crawlspace (Enclosure)

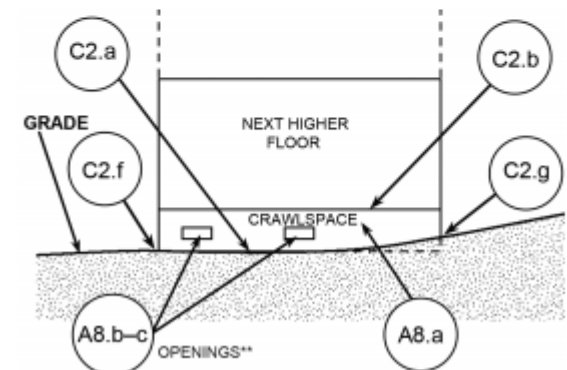


Crawlspace Enclosure

DIAGRAM 8

All buildings elevated on a crawlspace with the floor of the crawlspace at or above grade on at least 1 side, with or without an attached garage.

Distinguishing Feature – For all zones, the area below the first floor is enclosed by solid or partial perimeter walls. In all A zones, the crawlspace is with or without openings** present in the walls of the crawlspace. Indicate information about crawlspace size and openings in Section A – Property Information.



Quick Verification Guide and Survey

7. Validate Building-Level Flood Risk Assessments

	Yes	No	Need Assistance
HAZARD IDENTIFICATION: Provide shared map links of any flood map errors or unmapped landslides.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ESSENTIAL FACILITIES: Confirm essential facilities in high and moderate risk floodplains. Table 2.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MISSING STRUCTURES: Submit map links of missing noteworthy structures in the high-risk floodplain, especially those of significant importance to the community. Table 3 lists all structures inventoried.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
HIGH-VALUE STRUCTURES: Confirm high-value residential and non-residential buildings for correctness. Table 4.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
HIGH-RISK STRUCTURES: Review structures at greatest flood risk: high damage dollar costs (> \$10,000), substantial damaged estimates (> 50%), and Post-FIRM minus-rated structures (lowest floor 1 ft. or more below Base Flood Elevation). Tables 5 & 6.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MITIGATED PROPERTIES: Provide Elevation Certificates (Building Diagrams 5-8) and Building Pictures of residential (elevated > 5 ft.) and non-residential structures, especially those buildings identified at high risk. Verify all deed-restricted buyout properties are shown on WV Flood Tool. Tables 7 & 8.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Provide data edits (e.g., Building ID, Shared Map Link.) in box below. Send edited tables, screen shots, elevation certificates, building pictures, and other supporting documents by email.

Complete [Online Survey Form](#) when Finished

RESPONSIBILITIES

ORGANIZATION(S)	DESCRIPTION	RESPONSIBILITIES
<p style="text-align: center;"><u>FEDERAL</u></p> <ul style="list-style-type: none"> • FEMA (Region III) • FEMA contractors 	<p>Support for FEMA Programs including:</p> <ul style="list-style-type: none"> • State/Local Hazard Mitigation Plans, NFIP Compliance and Visits, CRS Community Eligibility, Grant Sponsorship, Risk MAP Studies, Technical Resources, Training 	<ul style="list-style-type: none"> • Hi-Level Support
<p style="text-align: center;"><u>STATE</u></p> <ul style="list-style-type: none"> • State NFIP, SHMO, CTP • WV Floodplain Management Association 	<p>Support for FEMA Programs:</p> <ul style="list-style-type: none"> • NFIP/CRS • Risk MAP Studies • Hazard Mitigation Plans 	<ul style="list-style-type: none"> • Hi-Level Support • Community Engagement
<p style="text-align: center;"><u>REGIONS</u></p> <ul style="list-style-type: none"> • 11 Regional Planning & Development Councils 	<ul style="list-style-type: none"> • Local Hazard Mitigation Planning • Risk Assessment Verification • Community Vulnerability Analysis 	<ul style="list-style-type: none"> • Administrative Support and Coordination • Community Engagement
<p style="text-align: center;"><u>UNIVERSITY</u></p> <ul style="list-style-type: none"> • WV GIS Technical Center, West Virginia University 	<ul style="list-style-type: none"> • WV Flood Tool • WV Landslide Tool • Multi-Hazard Risk Assessments 	<ul style="list-style-type: none"> • Technical Support • Community Engagement
<p style="text-align: center;"><u>LOCAL COMMUNITIES</u></p> <ul style="list-style-type: none"> • 268 NFIP Participating Communities. Floodplain Managers, Building Code Officials, GIS Specialists, Community Officials, etc. 	<ul style="list-style-type: none"> • Hazard Identification, Assessment, Disaster Response and Planning • Risk Assessment Verification 	<ul style="list-style-type: none"> • Floodplain Management • Support Hazard Mitigation Planning and Risk Reduction Activities

Major Take Away Point



Hazard risk assessments and mitigation planning benefit from community-level input

Contacts

Local Floodplain Managers

<https://www.mapwv.gov/flood/content/wvCountyFloodplainManagersList.htm>

Regional Planning and Development Councils

<https://www.wvregionalcouncils.org/>

Jason Roberts, Executive Director
jasonroberts@regiononepdc.org

John Tuggle, Executive Director
jtuggle@reg4wv.org

WV Offices of the Insurance Commissioner (OIC)

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More Contacts

FEMA Region III	
<p>Matthew McCullough Community Planner FEMA Region III 615 Chestnut St. Philadelphia, PA 19106 Mobile: (215) 268-2144 Matthew.McCullough@fema.dhs.gov</p>	<p>Robert Pierson, COTR III, PMP Mitigation Division, Risk Analysis Branch Civil Engineer Federal Emergency Management Agency Address: 615 Chestnut Street, 6th Floor One Independence Mall, Philadelphia, PA 19106 Office (215) 931-5650 Mobile: (267) 319-6340 robert.pierson@dhs.gov</p>
<p>Betsy Ranson Floodplain Specialist FEMA Region III Office: (304) 532-2089 Mobile: (215) 347-0686 Elizabeth.Ranson@fema.dhs.gov</p>	<p>Will Melville Operations Research Analyst, Mitigation Division FEMA Region III 202-679-1575 William.melvilleiii@fema.dhs.gov</p>

ISO/CRS	WV Floodplain Management Association
<p>Christina Groves, CFM ISO/CRS Specialist ISO Solutions Verisk Insurance Solutions Phone: (270) 754-3646 Cell: (270) 820-7817 Christina.Groves@verisk.com</p>	<p>Ray Perry, CFM President, WVFMA Code Enforcement Officer Logan County Commission, Logan County, WV 304-687-2847 rperry@lccwv.us</p>

WV Emergency Management Division (WVEMD)		
<p>Kelli Batch State Hazard Mitigation Officer WV Emergency Management Division 2403 Fairlawn Avenue, Dunbar, WV 25064 Phone: (304) 957-2572 WVHMGP@wv.gov Kelli.R.Batch@wv.gov</p>	<p>Brian Penix State Hazard Mitigation Project Officer WV Emergency Management Division 2403 Fairlawn Avenue, Dunbar, WV 25064 Phone: (304) 558-5380 Brian.M.Penix@wv.gov</p>	<p>Nuvia E. Villamizar GIS Manager Integrity and Infrastructure Protection WV Emergency Management Division 2403 Fairlawn Avenue, Dunbar, WV 25064 Phone: (304) 558-5380 nuvia.e.villamizar@wv.gov</p>