

Executive Summary Riverine Flood Risk Assessment

For Communities of:

Camden-on-Gauley, Clendenin, Marlinton,
Rainelle, Richwood, and White Sulphur Springs

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WV GIS Technical Center
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CUMULATIVE RISK INDEX

- **Clendenin** ranks **1st** in the **top 10%** of all 229 incorporated places with the highest risk index score of 100%. This community is in the top 10% for nine risk indicators and in the top 20% for 15 of them.
- **Marlinton** (ranked **4th**) in the **top 10%** of all incorporated places with a risk index score of 98.6%. It is among the top 10% for nine risk indicators and the top 20% for 14.
- **Richwood** (ranked **18th**) is among the **top 10%** of incorporated places with a cumulative risk index score of 92.5%. This community is in the top 10% for five risk indicators and the top 20% for nine.
- **Rainelle** (ranked **19th**) is in the **top 10%** of incorporated places with a risk index score of 92.1%. It ranks in the top 10% for seven risk indicators and in the top 20% for 13.
- **White Sulphur Springs** (ranked 82nd) has a cumulative risk index score of 64.4%, placing it in the top 10% for two risk indicators and the top 20% for four.
- **Camden-On-Gauley** (ranked 85th) has a risk index score of 63.1%, placing it in the top 10% for two indicators and the top 20% for five.

Cumulative Risk Index Table:

Incorporated Place	CUMULATIVE RISK INDEX				
	Cumulative Index Score (0 to 100%)	Index Rating	Rank in Incorporated Places	Cumulative Top 10% Rank Flags	Cumulative Top 20% Rank Flags
Clendenin	100%	VERY HIGH	1	9	15
Marlinton	98.6%	VERY HIGH	4	9	14
Richwood	92.5%	VERY HIGH	18	5	9
Rainelle	92.1%	VERY HIGH	19	7	13
White Sulphur Springs	64.4%	Relatively High	82	2	4
Camden-On-Gauley	63.1%	Relatively High	85	2	5

Risk Index Legend

- VERY HIGH:** 90% - 100% (Among the top 10% incorporated places)
- Very High: 80% - 100% (Among the top 20% incorporated places)
- Relatively High: 60% - 79.9%
- Relatively Low: 20% - 39.9%
- Moderate: 40% - 59.9%
- Very Low: 0% - 19.9%

FLOODPLAIN CHARACTERISTICS

Floodplain Area Ratio (Statewide avg. for incorporated places: 18.3%)

- **Marlinton** (ranked **25th** with 31.5% of the community area) and **Rainelle** (ranked **28th** with 31.2% of the community area) are among the **top 20%** incorporated places.

Floodplain Length Ratio (Statewide avg. for incorporated places: 0.0059 miles/acre)

None of these communities are among the top 20% for this indicator.

Flood Declared Disasters (Statewide avg. for incorporated places: 17)

- **Clendenin** (24 disasters in Kanawha County) is in the **top 20%** incorporated places.

Flood Depth Median (Statewide med. for incorporated places: 1.8 feet)

- **Clendenin** (ranked **10th** with 6.4 feet) and **Camden-on-Gauley** (ranked **11th** with 6.1 feet) are among the **top 10%** incorporated places.
- **Marlinton** (ranked **35th** with 4.0 feet) is among the **top 20%** incorporated places.

Floodplain Characteristics Category Index

- **Clendenin** (ranked **22nd**) is among the **top 10%** incorporated places for combined floodplain characteristics.
- **Camden-On-Gauley** (ranked **37th**), **Marlinton** (ranked **40th**), and **Rainelle** (ranked **43rd**) are among the **top 20%** incorporated places for combined floodplain characteristics.

Floodplain Characteristics Table:

Incorporated Place	FLOODPLAIN CHARACTERISTICS					
	Floodplain Area Ratio	Floodplain Length Ratio	Flood Declared Disasters	Flood Depth Median	Category Score (0 to 100%)	Category Rank in Incorporated Places
Clendenin	24.1%	0.0039	24	6.4	90.7%	22
Camden-on-Gauley	16.4%	0.0069	17	6.1	84.2%	37
Marlinton	31.5%	0.0063	15	4.0	82.8%	40
Rainelle	31.2%	0.0052	18	2.1	81.5%	43
Richwood	23.1%	0.0046	18	1.8	69.7%	70
White Sulphur Springs	22.0%	0.0049	18	1.5	62.2%	87

BUILDING EXPOSURE

Building Floodplain Count (Statewide avg. for incorporated places: 140)

- **Marlinton** (ranked **12th** with 371 buildings), **Rainelle** (ranked **14th** with 336 buildings), **Clendenin** and **White Sulphur Springs** (ranked **20th** each with 302 structures), and **Richwood** (ranked **22nd** with 286 buildings) are among the **top 10%** incorporated places.

Building Floodway Count (Statewide avg. for incorporated places: 14)

- **Marlinton** (ranked **1st** in all incorporated places statewide with 189 buildings), **Richwood** (ranked **3rd** with 136 buildings), **White Sulphur Springs** (ranked **7th** with 105 buildings), and **Rainelle** (ranked **18th** with 47 structures) are among the **top 10%** incorporated places.

Building Floodplain Ratio (Statewide avg. for incorporated places: 15.5%)

- **Marlinton** (ranked **3rd** in all incorporated places with 55.1% in floodplain), **Clendenin** (ranked **6th** with 52.5% in floodplain), and **Rainelle** (ranked **19th** with 33.7% in floodplain) are among the **top 10%** incorporated places.

Building Density (Statewide avg. for incorporated places: 0.93 /acre)

- **Rainelle** (ranked **32nd** with 1.5 buildings/acre) and **Clendenin** (ranked **46th** with 1.3 buildings/acre) are among the **top 20%** of incorporated places.

Building Exposure Category Index

- **Rainelle** (ranked **3rd**), **Marlinton** (ranked **7th**), **Richwood** (ranked **15th**), **Clendenin** (ranked **18th**), and **White Sulphur Springs** (ranked **21st**) are among the **top 10%** incorporated places for combined building exposure indicators.

Building Exposure Table:

Incorporated Place	BUILDING EXPOSURE					
	Building Floodplain Count	Building Floodway Count	Building Floodplain Ratio	Building Density	Category Score (0 to 100%)	Category Rank in Incorporated Places
Rainelle	336	47	33.7%	1.5	99.1%	3
Marlinton	371	189 (1 st Rank)	55.1%	0.8	97.3%	7
Richwood	286	136	21.3%	1.2	93.8%	15
Clendenin	302	4	52.5%	1.3	92.1%	18
White Sulphur Springs	302	105	18.2%	1.1	91.2%	21
Camden-On-Gauley	21	2	19.6%	0.6	59.2%	94

BUILDING CHARACTERISTICS

Building Median Value (Statewide med. for incorporated places: \$41,500)

None of these communities are among the top 20% for this indicator.

Bldg. Mobile Homes Ratio (Statewide avg. for incorporated places: 18.1%)

- **Camden-on-Gauley** (ranked **39th** with 30.8% related to 4 mobile homes) is among the **top 20%** incorporated places.

Bldg. Subgrade Basements Ratio (Statewide avg. for incorporated places: 23.0%)

None of these communities are among the top 20% for this indicator.

Building 1-Story Ratio (Statewide avg. for incorporated places: 75.3%)

None of these communities are among the top 20% for this indicator.

Bldg. Year Pre-FIRM Ratio (Statewide avg. for incorporated places: 82.1%)

- **Rainelle** (ranked **6th** with 98.8% related to 332 buildings) is among the **top 10%** incorporated places.
- **Camden-on-Gauley** (ranked **25th** with 95.3% related to 20 buildings) is among the **top 20%** incorporated places.

Bldg. Year Minus Rated Post-FIRM Ratio (Statewide avg. for incorporated places: 4.8%)

- **Clendenin** (ranked **27th** with 10.9% related to 33 buildings) is among the **top 20%** incorporated places.

Building Characteristics Category Index

None of these communities are among the top 20% for this category index.

Building Characteristics Table:

Incorporated Place	BUILDING CHARACTERISTICS							Category Rank in Incorporated Places
	Building Median Value	Bldg. Mobile Homes Ratio	Bldg. Subgrade Basements Ratio	Building 1-Story Ratio	Bldg. Year Pre-FIRM Ratio	Bldg. Year Minus Rated Post-FIRM Ratio	Category Score (0 to 100%)	
Clendenin	\$49,000	6.4%	34.8%	75.5%	84.5%	10.9%	78.5%	50
Rainelle	\$38,500	5.9%	6.8%	86.6%	98.8%	0.3%	46.0%	123
White Sulphur Springs	\$53,950	0.8%	18.5%	78.5%	90.7%	1.0%	44.2%	127
Marlinton	\$32,300	8.1%	23.3%	55.0%	89.4%	6.2%	42.5%	132
Richwood	\$19,100	17.2%	11.5%	74.0%	92.3%	0.7%	35.5%	148
Camden-On-Gauley	\$16,700	30.8%	14.3%	66.7%	95.3%	0.0%	28.0%	165

CRITICAL INFRASTRUCTURE

Essential Facilities (Statewide avg. for incorporated places: 2)

- **Marlinton** (ranked **6th** with 6 in floodplain) is among the **top 10%** incorporated places.
- **Richwood** (ranked **43rd** with 6 in floodplain) is among the **top 20%** incorporated places.

Roads Inundated Ratio (Statewide avg. for incorporated places: 15.8%)

- **Clendenin** (ranked **4th** with 51.8% in floodplain) and **Rainelle** (ranked **16th** with 39.1% in floodplain) are among the **top 10%** incorporated places.
- **Camden-on-Gauley** (ranked **27th** with 29.2% in floodplain), **Marlinton** (ranked **38th** with 22.8% in floodplain), and **Richwood** (ranked **42nd** with 21.5% in floodplain) are among the **top 20%** incorporated places.

Critical Infrastructure Category Index

- **Marlinton** (ranked **5th**), **Clendenin** (ranked **13th**), **Richwood** (ranked **17th**), and **Rainelle** (ranked **21st**) are among the **top 10%** incorporated places for combined critical infrastructure indicators.

Critical Infrastructure Table:

Incorporated Place	CRITICAL INFRASTRUCTURE			
	Essential Facilities	Roads Inundated Ratio	Category Score (0 to 100%)	Category Rank in Incorporated Places
Marlinton	6	22.8%	98.2%	5
Clendenin	2	51.8%	94.7%	13
Richwood	3	21.5%	92.9%	17
Rainelle	2	39.1%	91.2%	21
Camden-On-Gauley	1	29.2%	72.3%	64
White Sulphur Springs	1	16.4%	63.1%	84

COMMUNITY ASSETS

Historical Community Assets (Statewide avg. for incorporated places: 14)

- **Clendenin** (ranked **5th** with 54 in floodplain) is among the **top 10%** incorporated places.
- **Richwood** (ranked **23rd** with 9 in floodplain) and **Marlinton** (ranked **29th** with 5 in floodplain) are among the **top 20%** incorporated places.

Non-Historical Community Assets (Statewide avg. for incorporated places: 4)

- **Clendenin** (ranked **5th** with 15 in floodplain), **Marlinton** (ranked **8th** with 13 in floodplain), and **Richwood** (ranked **19th** with 8 in floodplain) are among **top 10%** incorporated places.
- **White Sulphur Springs** (ranked **22nd** with 7 in floodplain) and **Rainelle** (ranked **35th** with 6 in floodplain) are among the **top 20%** incorporated places.

Community Assets Category Index

- **Clendenin** (ranked **4th**), **Marlinton** (ranked **12th**), and **Richwood** (ranked **13th**) are among **top 10%** incorporated places for combined community assets indicators.

Community Assets Table:

Incorporated Place	COMMUNITY ASSETS			
	Community Assets Historical	Community Assets Non-Historical	Category Score (0 to 100%)	Category Rank in Incorporated Places
Clendenin	54	15	98.6%	4
Marlinton	5	13	95.1%	12
Richwood	9	8	94.7%	13
White Sulphur Springs	0	7	72.8%	57
Rainelle	0	6	68.8%	64
Camden-On-Gauley	0	1	25.8%	120

BUILDING DAMAGE LOSS

Substantial Damage Count (Statewide avg. for incorporated places: 7)

- **Clendenin** (ranked **5th** with 46 substantially damaged buildings) is among the **top 10%** incorporated places.
- **Marlinton** (ranked **27th** with 16 substantially damaged buildings) is among the **top 20%** incorporated places.

Substantial Damage Ratio (Statewide avg. for incorporated places: 5.9%)

- **Camden-On-Gauley** (ranked **18th** with 19.0%) is among the **top 10%** incorporated places.
- **Clendenin** (ranked **27th** with 15.2%) is among the **top 20%** incorporated places.

Previous Damage Claims (Statewide avg. for incorporated places: 71)

- **Marlinton** (ranked **2nd** with 585 claims) and **Rainelle** (ranked **21st** with 154 claims) are among the **top 10%** incorporated places.
- **Richwood** (ranked **23rd** with 144 claims), **Clendenin** (ranked **28th** with 122 claims), and **White Sulphur Springs** (ranked **32nd** with 89 claims) are among the **top 20%** incorporated places.

Repetitive Loss Structures (Statewide avg. for incorporated places: 27)

- **Marlinton** (ranked **2nd** with 252 structures) and **Richwood** (ranked **19th** with 66 structures) are among the **top 10%** incorporated places.
- **Rainelle** (ranked **29th** with 35 structures) and **Clendenin** (ranked **39th** with 624 structures) are among the **top 20%** incorporated places.

Building Damage Loss Category Index

- **Marlinton** (ranked **8th**) and **Clendenin** (ranked **9th**) are among the **top 10%** incorporated places for combined building damage loss indicators.
- **Camden-On-Gauley** (ranked **40th**) is among the **top 20%** incorporated places for combined building damage loss indicators.

Building Damage Loss Table:

Incorporated Place	BUILDING DAMAGE LOSS					
	Substantial Damage Count	Substantial Damage Ratio	Previous Damage Claims	Repetitive Loss Structures	Category Score (0 to 100%)	Category Rank in Incorporated Places
Marlinton	16	4.3%	585	252	96.9%	8
Clendenin	46	15.2%	122	24	96.4%	9
Camden-On-Gauley	4	19.0%	21	11	82.8%	40
Richwood	1	0.3%	144	66	78.5%	50
Rainelle	1	0.3%	154	35	78.0%	51
White Sulphur Springs	0	0.0%	89	2	44.7%	127

PEOPLE / SOCIAL VULNERABILITIES

Population in Floodplain Ratio (Statewide avg. for incorporated places: 23.3%)

- **Marlinton** (ranked **8th** with 84.6%) and **Clendenin** (ranked **13th** with 66.8%) are among the **top 10%** incorporated places.
- **Rainelle** (ranked **31st** with 45.6%) is among the **top 20%** incorporated places.

Population Displacement Ratio (Statewide avg. for incorporated places: 16.1%)

- **Marlinton** (ranked **5th** with 76.0%), **Clendenin** (ranked **8th** with 63.0%), and **Rainelle** (ranked **22nd** with 38.3%) are among the **top 10%** incorporated places.

WV Social Vulnerability Index (Statewide avg. for incorporated places: 53.3%)

- **Richwood** (ranked **18th** with 92.5%) is among the **top 10%** incorporated places.
- **Rainelle** (ranked **36th** with 84.6%) is among the **top 20%** incorporated places.

People / Social Vulnerabilities Category Index

- **Rainelle** (ranked **17th**) and **Marlinton** (ranked **23rd**) are among the **top 10%** incorporated places for combined people / social vulnerabilities indicators.
- **Richwood** (ranked **33rd**) and **Clendenin** (ranked **45th**) are among the **top 20%** incorporated places for combined people / social vulnerabilities indicators.

People / Social Vulnerabilities Table:

Incorporated Place	PEOPLE / SOCIAL VULNERABILITIES				
	Population in Floodplain Ratio	Population Displaced Ratio	WV Social Vulnerability Index	Category Score (0 to 100%)	Category Rank in Incorporated Places
Rainelle	45.6%	38.3%	84.6%	92.9%	17
Marlinton	84.6%	76.0%	60.4%	90.3%	23
Richwood	23.8%	16.9%	92.5%	85.9%	33
Clendenin	66.8%	63.0%	36.6%	80.7%	45
Camden-On-Gauley	23.3%	15.9%	27.3%	60.5%	91
White Sulphur Springs	25.8%	17.5%	21.1%	59.6%	93