

## APPENDIX A

I. CSPDC Flooding Hazard History .....	3
Flood of 1870 .....	3
Flood of 1896 .....	4
Flood of 1906 .....	5
Flood of 1936 – “The Great Spring Flood” .....	6
Flood of 1949 .....	7
Flood of 1969 – Hurricane Camille .....	8
Flood of 1972 – Hurricane Agnes .....	10
Flood of 1985 – Hurricane Juan (The Election Day Flood) .....	110
Flood of 1995 .....	13
Flood of 1996 – Hurricane Fran .....	14
Flood of 2003 – Hurricane Isabel .....	15
Sources for Flood History .....	16
Other Sources .....	19
II. CSPDC Critical Facilities located within the FEMA Designated Floodplain....	20



# I. CSPDC Flooding Hazard History

## *Flood of 1870*

The flood of September 28-30, 1870 was one of the earliest floods in the history of the Shenandoah Valley where written accounts are widely available. The flood event occurred throughout the central Valley from the north in Rockingham County and to the south in Rockbridge. The rain was first welcomed after a period of drought and a summer where rivers had been running below normal. As the rain continued, rivers rose to swirling torrents. The Shenandoah River with its expanded and rapid course carried houses, trees, and bridges in Rockingham County and northward. The Village of Port Republic was reportedly under 15 feet of water at one time during the event. An example of destruction caused by this flood could be seen in Harper’s Ferry, West Virginia, the confluence of the Shenandoah and Potomac rivers where 43 people died.

In Augusta and Rockbridge counties, extensive damage occurred. Some reports measured nine inches of rain with this storm. In Staunton, flooding along Lewis Creek caused damage to its downtown and washed away a railroad bridge. The C & O railroad was damaged including another bridge that washed away in Waynesboro. In Rockbridge County, Lexington was particularly hard hit in The Point area where several houses were swept away. Also in Rockbridge County, farms, crops, and fences, were destroyed by the flood event. Throughout the Shenandoah Valley, communication lines and transportation routes were blocked.

With images of the Civil War still fresh in the minds of people, rebuilding from the flood of September 1870, became another challenge in the recovery they were already experiencing. “... some idea may be obtained of the immense destruction which has spread over many portions of our beloved old State, greater, by far, than the devastations of four years war. Our people however, have exhibited in the past a wonderful recuperative power. They will not be downcast now, but will bow with humble resignation to the will of Heaven, and will still hope and strive for the best.” – Staunton Vindicator, October 7, 1870



Richmond under water  
September 1870  
*Richmond Times Dispatch*

## *Flood of 1896*

On the twenty-sixth anniversary to the day, of the Flood of 1870, the Shenandoah Valley was hit by another significant flood event. According to Uniysis Corporation hurricane data, this flood most likely occurred as a result of a tropical storm that was tracking through Virginia during this time. The rain, which fell steadily all day on September 30, 1896, increased in volume through the evening and culminated in torrential flooding that night. “The gentle, soaking rain which gladdened the hearts of Rockingham farmers Tuesday morning, continuing its steady downpour all day long, at night became a raging equinoctial storm which carried death and destruction in its wake.”— Rockingham Register, October 2, 1896

The City of Staunton was the hardest hit locality in the region. Lewis Creek and its tributaries overflowed their banks, devastating Staunton’s downtown. Houses, sheds, and stables were swept away creating a scene that resembled the destruction from an earthquake, not a flood. This flood caused significant damage to the downtown business district including the Crowle building, Ersking Miller and Brothers Coal yards, the Staunton Milling Company and the Virginia Hotel. The archway under Augusta Street and the arch bridge over Middlebrook Road survived but nearby buildings in the vicinity of both were severely undermined and many homes were washed off their foundations. Six lives were lost in Staunton. Residents commented that this flood exceeded the Flood of 1870 and compared it to the Great of Flood of 1889 in Johnstown, Pennsylvania.

While the Flood of 1896 was the most dramatic flood in Staunton’s history, flooding also occurred in other parts of the region, though not at such a level. In Rockingham County, three lives were lost, crops destroyed, railroad and telegraph lines were damaged. In Rockingham, flooding hit Bridgewater, Elkton, and Keezletown. It was estimated that damages to public roads and bridges reached \$20,000 (1896 dollars) in Rockingham County. In Harrisonburg, houses along Black’s Run were flooded. Damage estimates for Harrisonburg were a few hundred dollars (1896 dollars). At the weather station at Dale Enterprise, six and a half inches of rain reportedly fell over an 18-hour period in Rockingham County.

The Flood of 1896, believed to be part of a tropical system, was short lived but during its brief period, was able to drop much rain in the northern part of the Central Shenandoah Region during its visit. The heavy, localized flooding was swift and its damage was difficult to grasp. The Flood of 1896 would become the flood of record for the City of Staunton.



City of Staunton

## *Flood of 1906*

August 1906 was a wet month in the Central Shenandoah Valley. For a period of three to four weeks, rain fell daily in the northwestern part of the Region. The steady rainfall combined with a storm system that stalled against the mountains, caused heavy flooding in Highland County on August 15, 1906. “The damage to growing crops, public roads, farmland, etc. cannot be given nor even intelligently estimated, but the loss of one human life, reported from, Forks of Water, seven miles north of town, is the saddest feature of the storm” – The Recorder, August 17, 1906. Hubert Halterman, 14, who walked with a limp which required him to use a cane, fell while trying to cross a flood swollen creek by using a footbridge.

The storm started with a sustained cloudburst that caused small, mountain streams to rage and over flow their banks. Throughout the Valley, residents coped with the dampness brought on by the repetitive rainfall that month. Farmers, building contractors, and other businesses faced losses because of the long period of rainy weather. In Highland County, and in particular the Town of Monterey, they also faced flood damages including a foot and a half of water in the Monterey Hotel Stables. The Flood of 1906 is an excellent example of a flash flood, where intense rainfall from a stalled storm system causes tremendous damage over a geographically concentrated area. A flash flood event, like other types of flooding, may cause just as much damage and can be just as deadly.



Farm Land in  
Highland County

## ***Flood of 1936 – “The Great Spring Flood”***

The winter of 1935-1936 was a brutal one in Virginia. Across the State that winter, low temperatures and heavy snowfalls were common. March began with milder temperatures, but in mid-March, storms tracked across the eastern parts of the United States, dumping heavy snowfalls and torrential rains in its path. Up to 200 deaths nationwide were attributed to this storm. Damage estimates for the United States reached millions of dollars. In Virginia, the James, Potomac, Rappahannock, Shenandoah and York River watersheds were flooded.

Much of the Central Shenandoah Valley suffered the effects of this storm. In Rockingham County, 3.10 – 6.25 inches of rain fell over a two-day period. In the Shenandoah Watershed, streams and creeks reached record depths in Bridgewater, Brock’s Gap, Rawley Springs, Lynwood, Keezletown and Port Republic. The Town of Elkton was cut off as roads were blocked and bridges washed out. The City of Harrisonburg lost power as Black’s Run flooded areas surrounding Main Street.

In Augusta County, Waynesboro’s Dupont Plant was forced to close due to flooding by the South River. Staunton reported heavy rainfall, at one point recording 2.5 inches of rain in a twelve-hour period. Craigsville reported flooding six feet in depth at an underpass on the Craigsville Fordwick Highway.

Flooding along the James River watershed, hit Rockbridge County, Lexington, Buena Vista, and Glasgow. Lexington escaped heavy damage, but several residents were forced to evacuate their homes and oil company storage plants were flooded. Buena Vista suffered significant damage. “Buena Vista was the scene of a bad flood causing one death and costing the factories, townspeople, it is estimated, about three million dollars in goods and property.” – Lexington Gazette, March 20, 1936 In Buena Vista several industries were damaged by the flood including the Columbia Paper Company, the Majestic Silk Mills, the Buena Vista Throwing Company, and the W.V. Darling Manufacturing Company. In Glasgow, its major manufacturer, the Blue Ridge Company, rug makers, remained dry while Locher and Company, brick manufacturers, did get some water but had little damage. The residential area of Glasgow wasn’t as lucky; many people had to be rescued by boat from their homes. It was reported that water reached between eight and ten feet on the main road through Town.

In March of 1936, flooding, thunderstorms, landslides, and deep snows caused devastation up and down the East Coast of the United States. A harsh winter that was followed by an equally challenging spring wreaked havoc over many states. The Central Shenandoah Region was not exempt from the storms of 1936 that caused what would come to be known as “The Great Spring Flood”.

## *Flood of 1949*

In the Summer of 1949, when the rest of the Central Shenandoah Valley was experiencing the post-World War II economic boom, the Town of Bridgewater was forced to focus its energy and resources on re-building itself after flash flooding ravaged the Town. Parts of Rockingham and Augusta Counties were also struck hard by this storm. On June 17<sup>th</sup>, rain fell steadily throughout the day and into the night. Rising waters turned into floodwaters in the early hours of June 18<sup>th</sup>. Rising floodwaters filled Mossy Creek, Dry River, and Briery Branch. These rivers passed along their floodwaters to the already swollen North River.

The Town of Bridgewater faced the worst flood event in its history. Floodwaters reached the second story in many houses. “A News-Record Reporter covering the story, reported that the roar of the raging river could be heard in the extreme northern end of Bridgewater. ‘It sounds like the roar of Niagara Falls,’ he said.” – Harrisonburg Daily News Record, June 18, 1949. In Bridgewater, three lives were lost, one home was completely washed away, approximately 100 homes and many businesses damaged, and between 25-30 cars were smashed or washed away. Damage estimates were reported to range from \$100,000 to \$1,000,000 (1949 dollars).

To the west, along the North River, parts of Rockingham and Augusta Counties were also hard hit by severe flooding. Up to 15 bridges were removed by flooding. Small roads covering the area were washed out leaving residents stranded. Aerial views of fields revealed that tons of topsoil had been washed away, leaving only red clay to be exposed. Damage to the George Washington National Forest was estimated at \$150,000 (1949 dollars).

In Augusta County, Stokesville experienced a great deal of flood damage. Fortunately, there was no loss of life in Stokesville but more than 12 homes were completely demolished as a result of the flood and many others were heavily damaged. Because of the loss of topsoil, many small farmers were unable to replant crops. Poultry in the thousands and heads of livestock in the hundreds were destroyed in the Stokesville area. In the immediate aftermath of the flood, Stokesville was unable to rebound as quickly as Bridgewater because they faced a tremendous shortage of resources and an inability to get tools and materials needed to clean and make repairs.

The flash flood of June 1949 left the Town of Bridgewater, the community of Stokesville, and parts of Rockingham and Augusta Counties forever changed. The torrents of water came through with such intense velocity, man-made structures were not the only things to suffer the consequences. The natural landscape was re-shaped as well; new channels were carved and soil removed. The 1949 flood once again proved that man is no match for the force of nature.

## *Flood of 1969 – Hurricane Camille*

In the western part of Virginia this name is synonymous with unequalled destruction. The remnants of Hurricane Camille caused flooding during the evening hours of August 19, 1969 and the morning hours of August 20, 1969 that broke all flooding records in modern history along the James and Maury rivers.

On August 17, 1969, Hurricane Camille made landfall on the gulf coast of Mississippi. Camille is one of only two hurricanes on record to make landfall as a Category Five Hurricane – the deadliest type of hurricane. Gusts of up to two hundred miles an hour were reported. The storm surge was the highest ever recorded in the United States. One hundred and forty-three people died as a result of this hurricane on the gulf coast of the United States.

Hurricane Camille had weakened to a tropical depression by the time it had reached the Mississippi/Tennessee border. Rain was forecast for the western part of Virginia but it was the combination of three factors that caused the rain to turn into torrential downpours of unparalleled amounts. “As Camille reached Virginia, it ran into three influences—a westerly flow of cold air, an ‘orthographic lifting’ of air over the mountains, and a stationary cold front over the northern part of the state. The counter clockwise flow of air created by the storm drew moisture, apparently in great amounts, from the Atlantic Ocean into the center of the storm. The ‘orthographic lifting’ or updrafts of air created by the mountains, forced the moisture up to the westerly flow of cold air, where it was cooled to a ‘release point’ and then came down in torrents of rain. The cold front acted as a blocking force, causing the storm to move eastward over the mountains where the updrafts of air continued to force the moisture upward.” – excerpt from the Richmond Times-Dispatch in Hurricane Camille: A Review.

Nelson County was the hardest hit in all of Virginia receiving from between 27 to 31 inches of rain, most of which fell in a five-hour period. This five-hour period occurred during the middle of the night while people were sleeping. Homes in places such as Massie’s Mill and Lovingston were washed off their foundations and completely destroyed. Whole families died either in their homes or as they tried to escape the floodwaters. As the land became saturated, tons of topsoil streamed down the mountainsides, toppling trees and creating mammoth landslides. An example of this devastation could be seen after the flood where for a five-mile stretch of Davis Creek, logs were piled 30 feet high. One hundred and seventeen people died in Virginia and a majority of those people were in Nelson County.

In the Central Shenandoah Region, Rockbridge County was severely impacted by Hurricane Camille. For the City of Buena Vista and the Town of Glasgow, Camille would become their flood of record. Up to eight inches of rain fell in the southeastern part of Rockbridge County. Twenty-three people died in Rockbridge County including three members of the Rion family of Glasgow, eight members of the Clark family in Cornwall. In Buena Vista, 69 year-old Hansford Odell Allen died in Camille also.

Both Buena Vista and Glasgow’s business districts were flooded with six feet and fourteen feet of water respectively. At least 75 homes were damaged in Buena Vista and in Glasgow, a quarter of the residences were damaged by the floodwaters. In Goshen, the Stillwater plant was inundated with water.

Not only were lives lost, homes destroyed, and businesses devastated, but agriculture in Rockbridge County was also affected. One hundred and fifty head of cattle were lost, crops were ravished, and fertile topsoil washed away. Damages in Rockbridge County exceeded thirty million dollars.

Hurricane Camille affected both Mississippi and Virginia. Two hundred and sixty lives were lost as the result of the hurricane and the flash flooding it created. Camille caused a half a billion dollars (1969 dollars) in damages throughout the state of Virginia. The year following Hurricane Camille was full of loss and a struggle to recover for thousands of residents in western Virginia. This struggle is best exemplified through the words on a plaque given by the Lion's Club to the citizens of the City of Buena Vista, "To the citizens of Buena Vista and their good friends from far and near, in grateful recognition of their collective efforts and achievements in the rebuilding of Buena Vista following the flood which came in the wake of Hurricane Camille on August 20, 1969. This plaque expresses appreciation for the labors, moneys, services, supplies, equipment, leadership, and the spirit of cooperation which were extended by individuals, organizations, agencies, and companies; both local and throughout the nation; to relieve the flood devastation and to restore order to our city. In unity lies our strength." Camille, its colossal rainfall, and the total destruction it left in its wake have yet to be surpassed and will be imprinted in the memories of many for a lifetime. The stories of Camille will be passed on for generations.



Camille makes a visit to Buena Vista.



Glasgow's business district flooded by Hurricane Camille. Photo by Ralph Ogden



Rising water in Waynesboro from Hurricane Camille.

## *Flood of 1972 – Hurricane Agnes*

On June 19, 1972 Hurricane Agnes, a weak disorganized hurricane, made landfall in Florida. Barely able to reach hurricane status, it quickly disintegrated to a tropical storm, and quickly a depression. Although it was a weak hurricane, it was a large storm with a diameter of 1,000 miles. It made its way up the Appalachians and exited back out to sea off the coast of North Carolina. Sponging up moisture from the Atlantic Ocean, it regained strength. On June 21, 1972, Agnes now back to tropical storm status reached the Virginia coast and made its way up the Eastern seaboard. Several states received record flooding. From Virginia to New York, several places received rainfall totaling 15 inches or more. An example of the devastation was witnessed in Wilkes-Barre, Pennsylvania where they had built a dike, 37 feet high, to protect them from floods similar to the Flood of 1936, their flood of record, where the Susquehanna River crested at 33 feet above its normal levels. As a result of Agnes, the river crested at 40 feet, pouring water over the dike and flooding the Town. In Kingston, Pennsylvania, only 20 of its 6,600 homes were above water. “ ‘Agnes re-wrote the book on inland flooding and the impact a tropical storm can have hundreds of miles from the coast.’ – Sol Summer, National Weather Service, from Storms of the Century, [www.weather.com](http://www.weather.com)”. Damage from Hurricane Agnes in the United States was 3.1 billion (1972 dollars), the second costliest hurricane in U.S. history and caused 120 deaths.

In Virginia, 13 lives were lost and damages equaled 222 million dollars (1972 dollars). Rivers surpassed their banks throughout the State including the Appomattox, Dan, James, Potomac, and Roanoke Rivers. Like other parts of the State, the Central Shenandoah Region received flooding but not to the levels that had occurred three years earlier with Hurricane Camille.

Waynesboro was one of the hardest areas hit in the Region. Waynesboro’s downtown and Club Court areas were evacuated. At the time, damages to homes and businesses were estimated to be in the hundreds of thousands of dollars. In Rockbridge County, both Buena Vista and Glasgow received flooding. Glasgow, at the confluence of the James and Maury Rivers, received the greatest amount of flooding in Rockbridge County. In Glasgow, damages reached approximately \$150,000 (1972 dollars) and 50 families were evacuated in the small town. In Buena Vista, many homeowners and businesses were evacuated.

Hurricane Agnes was one of the costliest and damaging tropical storms to hit the Eastern United States. In the Central Shenandoah Region, because of the recent memories of Camille, many residents took steps early to evacuate and remove property from homes and businesses. While Agnes did bring along floodwaters, Valley residents were prepared.



Club Court in Waynesboro  
during Hurricane Agnes

## ***Flood of 1985 – Hurricane Juan (The Election Day Flood)***

The Flood of November 1985 will be remembered in Virginia for its flash flooding. Flooding was caused when a slow-moving low pressure system, possibly containing remnants of Hurricane Juan, moved northeasterly through West Virginia and Virginia dumping torrential rains over a four-day period. Known as the “Election Day Flood” because it occurred during election day, the storm caused 22 deaths. Damages across the state reached nearly eight hundred million (1985 dollars). This flood was the worst flood for the City of Roanoke, where the Roanoke River rose seven feet in one hour and eighteen feet in six hours.

Areas all across the Central Shenandoah Region were affected by the flooding. In Rockingham County, the western part of the County was hardest hit. A railroad bridge built in 1896 was washed out in Elkton. The Town of Bridgewater experienced limited damage because of a levy built after the disastrous flood of 1949. Bridgewater did receive damage to roads, their hydroelectric plant, and the athletic field at Bridgewater College. In Highland County, at least 50 homes and 300 farms received damages from the flooding. In Highland County, road damage was estimated at a little over two million dollars (1985 dollars). In Bath County, bridges were washed out, and property damage was estimated in the thousands of dollars (1985 dollars).

Communities in Augusta County were inundated by floodwater. The swollen Middle River damaged homes, property, and roads in areas like Frank’s Mill, Fort Defiance, and Verona. Buffalo Creek washed away bridges and roads in the Buffalo Gap area. Damages to roads in Augusta County were estimated at eight million dollars (1985 dollars) and homes, businesses, and public facilities at seven million dollars (1985 dollars). The rains had minimal affects on the City of Staunton except for the water treatment plant that was damaged and the evacuation of residents of the Beverly Hotel where the flooded basement caused concerns. The City of Waynesboro, on the other hand, experienced significant damages. Waynesboro’s South River created record flood levels and caused damages to 140 homes, 32 mobile homes, and 41 businesses. The City’s sewage treatment plant was also severely damaged. Damage estimated for the City of Waynesboro directly after the flood exceeded three million dollars (1985 dollars).

In Rockbridge County, Goshen, Glasgow, and Buena Vista were the areas most affected by the flooding. Goshen experienced the heaviest damage due to the swiftness of the floodwaters. Damages in Buena Vista and Glasgow equaled or surpassed what they had experienced during Hurricane Camille in 1969. In Buena Vista, three to six feet of water flooded homes and businesses. In Glasgow, almost half of the homes and two-thirds of the businesses were hit by floodwaters. In Lexington, the waste water treatment plant was covered by the waters of the Maury River. Damages in Rockbridge County were estimated at one hundred million dollars (1985 dollars), well exceeding the cost of Hurricane Camille. In the 1985 Flood, 584 homes and 32 businesses were damaged in Rockbridge County.

The November 1985 Flood reached its watery fingers throughout the Central Shenandoah Region, grasping homes, public facilities, and businesses. The three- day period of sustained rains caused flash flooding all over the Region. It is no doubt that the Election Day Flood created one of the lowest poll turnouts in history.



Buena Vista  
November 1985



Glasgow  
November 1985



Waynesboro  
November 1985

## *Flood of 1995*

In June of 1995, a week-long period of ground saturating rains fell over the western part of Virginia, causing flash floods and landslides. The rains began on June 22, 1995 and ended on June 28, 1995. Madison and Greene Counties were the most devastated in the State, when an intense rainfall stalled over the mountains (very similar to what happened in Nelson County in 1969 during Hurricane Camille). On June 27, 1995, in a fifty mile area of Madison county, 30 inches of rain fell in a 16-hour period, with as much as 25 inches falling in a five-hour period in some areas. This caused debris flows and mudslides that uprooted trees, removed topsoil, and caused extensive alterations in the landscape.

In the Central Shenandoah Region, the week of rains caused flash flooding in Augusta and Rockbridge Counties. In Augusta County, the Town of Craigsville was flooded when 12 inches of rain fell over an 11-hour period. Trees were uprooted in yards, basements caved in, and 40 people were forced to evacuate their homes. Damage estimates exceeded five hundred thousand dollars (1995 dollars) for the Town. “Craigsville Mayor Herbert Campbell called Thursday flood much worse than the 1985 flood which caused damage that some residents believed would never be equaled.” – Staunton Daily News Leader, June 24, 1995.

As the rains progressed over the week-long period, and soil became saturated, other communities experienced flooding as well. In the Town of Glasgow, flooding from interior mountain streams became more of a problem than river flooding with this event. At least 42 homes in Glasgow experienced flooding on the first floor of their homes and 64 homes had flooded basements or crawl spaces. In the City of Staunton, Gypsy Hill Park was flooded when Lewis Creek overflowed its banks. The Park’s duck pond also overflowed causing sinkholes and creating other problems.

The floods of June 1995 were not as significant in the Central Shenandoah Valley Region as some that had come before, but to small centralized areas they were quite damaging. The flooding that occurred in Madison County on June 27, 1995 was a 500-year event and rainfall had not been seen there in such a concentrated level over such a short duration since pre-historic times.



Town of Goshen  
Flood of June 1995

## ***Flood of 1996 – Hurricane Fran***

Hurricane Fran made landfall in North Carolina as a Category Three hurricane on September 6, 1996. As it weakened to a tropical storm and its remnants reached the Shenandoah Valley, water not wind left its devastating effect. In the Central Shenandoah Region, the Counties of Augusta and Rockingham were most affected by Fran. Fran dropped eight inches of rain in parts of the Valley and up to thirteen inches of rain in the Big Meadows area of the Shenandoah National Park. Hurricane Fran broke almost all flood records along the Shenandoah River and its tributaries, including those set in 1972 with Hurricane Agnes, and in 1985. Damages in the Shenandoah Valley were estimated at the sixty-million dollar mark (1996 dollars).

The Naked Creek area in Rockingham County, north of Elkton, sustained severe damage by the flood. The flood carved new channels, and filled yards and homes with debris including cars, uprooted trees, and patches of asphalt. Areas in the Town of Bridgewater, also in Rockingham were flooded when the North River overflowed its banks. Broadway, Mount Crawford, and Dayton were among the other communities in Rockingham County that experienced flooding. The City of Harrisonburg received flooding along Blacks Run but damage was minimal in comparison to other areas in Rockingham. More than 125 roads were closed in Rockingham as a result of the floods. In the County, 16 homes and 18 mobile homes were completely destroyed by Fran, and 334 additional structures received damage.

In Augusta County, National Guard troops evacuated people in the Mount Solon and Churchville areas. Buffalo Gap, Augusta Springs, and Sherando were also vulnerable to the high waters caused by the heavy tropical rains. Twenty-nine roads were closed in Augusta County. Two deaths resulted in Augusta County when people tried to cross the flood-swollen Middle River in two separate incidents. Both happened in the early morning hours when it was dark and the depth of the water was probably hard to see. In the City of Staunton, much of downtown was closed due to flooding in the Wharf parking lot area and damage was done to roads at the Frontier Culture Museum. The City of Waynesboro also experienced flooding in their downtown business area when the South River reached flood stage. Waynesboro streets became clogged with debris and tree limbs as the storm progressed.

In the state of Virginia, damage from Hurricane Fran was estimated at 286 million (1996 dollars) and caused eight deaths. Two hundred and thirty-three homes were destroyed and over seven thousand homes were damaged in Virginia. The Central Shenandoah Valley was one of the hardest hit by Fran, in particular Rockingham and August Counties. The Shenandoah River and many of its tributaries had records broken as result of Fran, proving once again that inland flooding can be the worst result of tropical storms.

## *Flood of 2003 – Hurricane Isabel*

As Hurricane Isabel began tracking towards the U.S., it raised the concerns of people in North Carolina and Virginia as its path eerily resembled that of Hurricane Fran. When Hurricane Isabel made landfall on September 18, 2003, along the Outer Banks of North Carolina, her path was similar did not replicate Fran's. Isabel made landfall as a Category 2 Hurricane. It moved northwestward through Virginia and Maryland, finally dissipating near Erie Pennsylvania.

In Virginia, as Isabel passed through, some areas had sustained winds of 100 mph. Also, for twenty-nine hours, tropical storm winds lasted throughout Virginia. Communities located along either the Chesapeake Bay or the Atlantic Coast, felt the effects of a storm surge of 5-8 feet.

In the Central Shenandoah Region, Augusta County received the most rainfall and Rockbridge County received the most damage due to severe flooding along the South River. In Augusta County, the heaviest rain occurred in the Sherando area which is located at the foothills of the Blue Ridge Mountains. The Upper Sherando monitoring station recorded a rainfall total of 20.6 inches.

In Augusta County, damage estimates equaled 1.6 million dollars. For the City of Waynesboro, damages equaled 1 million dollars. In Staunton, damages were minimal but one death occurred as a result of carbon monoxide poisoning from the improper use of a generator. In Rockingham County, damage was mainly confined to roads, downed trees, and agricultural lands. Two deaths were caused a few days after the storm, when a man and his daughter tried to cross a swollen stream in a horse and buggy. In Harrisonburg, downed trees were the major problem as a result of rain soaked soil. A JMU student drowned when his canoe overturned in Black's Run, the morning after the storm.

The northeastern part of Rockbridge County sustained the most damage when the South River flooded along Rt. 608. The South River is fed by the St. Mary's, Big Mary's, and Little Mary's Creeks which flow down the west side of the Blue Ridge Mountains. During Isabel, the South River began rising by 9 p.m. and the River jumped its bank by 11 p.m. Significant damage to property and infrastructure occurred from the northern Rockbridge County border down stream to the South River's confluence with the Maury River. Rt. 608, which parallels the South River was washed out or undermined in several places. Three permanent bridges over the South River were destroyed. An abandoned C&O railroad bridge that was part of the Chessie trail system was washed off its supports as well. In Rockbridge County, property damages were estimated at 6.7 million, damage to South River Road was estimated at 4 million dollars and agricultural losses were estimated at 5 million dollars (which included the loss of 25-30 head of livestock). Amazingly, there were no serious injuries or fatalities in Rockbridge County as a result of this flood event.

In the U.S., forty deaths were attributed to Hurricane Isabel and damages were estimated at over three billion. It was one of the top thirty costliest storms in U.S. history.

## *Sources for Flood History*

<u>Newspaper</u>	<u>Date</u>	<u>Pages</u>
Buena Vista News	03/27/1936	Page 1
Buena Vista News	06/30/1972 (Special Flood Section)	Pages 1-12
Harrisonburg Daily News Record	03/16/1936	Page 5
Harrisonburg Daily News Record	03/18/1936	Pages 1&6
Harrisonburg Daily News Record	03/19/1936	Pages 1,7 &8
Harrisonburg Daily News Record	03/20/1936	Pages 1&6
Harrisonburg Daily News Record	03/21/1936	Pages 1&6
Harrisonburg Daily News Record	03/23/1936	Pages 1,5,7
Harrisonburg Daily News Record	06/18/1949	Page 1&2
Harrisonburg Daily News Record	06/20/1949	Pages 1&2
Harrisonburg Daily News Record	06/21/1949	Pages 1, 9, &12
Harrisonburg Daily News Record	06/22/1949	Pages 1,2,4&9
Harrisonburg Daily News Record	06/23/1949	Page 1, 2,&12
Harrisonburg Daily News Record	06/24/1949	Page 1&16
Harrisonburg Daily News Record	06/27/1949	Page 1, 2, 8, &10
Harrisonburg Daily News Record	08/21/1969	Cover, Page 18 & 19
Harrisonburg Daily News Record	08/22/1969	Cover, Page 8
Harrisonburg Daily News Record	08/23/1969	Cover, Pages 8 & 9
Harrisonburg Daily News Record	08/25/1969	Pages 2 & 6
Harrisonburg Daily News Record	08/26/1969	Cover, Page 2
Harrisonburg Daily News Record	06/22/1972	Cover, Page 12
Harrisonburg Daily News Record	06/23/1972	Cover, Pages 2 & 15

Harrisonburg Daily News Record	11/05/1985	Pages 14 & 18
Harrisonburg Daily News Record	11/06/1985	Cover, Pages 2 & 13
Harrisonburg Daily News Record	09/07/1996	Page 19
Harrisonburg Daily News Record	09/09/1996	Cover, Pages 15 & 17
Harrisonburg Daily News Record	09/10/1996	Cover
Harrisonburg Daily News Record	09/16/1996	Flood of 1996 Section 1-12
Lexington Gazette	03/20/1936	Pages 1&8
The Recorder	11/?/1985	Cover and Page 3
The Recorder	01/26/1996	Cover and Page 2
The Recorder	02/09/2001	Page 17
Richmond Times Dispatch	08/21/1969	Cover, A 4-5, C3 & 5
Richmond Times Dispatch	08/22/1969	Cover, A 5, B 1 & 8
Richmond Times Dispatch	08/23/1969	Cover & A 4
Richmond Times Dispatch	08/24/1969	Cover, A 15, B 1-2
Richmond Times Dispatch	06/20/1972	Cover, Page 2
Richmond Times Dispatch	06/21/1972	A 3
Richmond Times Dispatch	06/22/1972	Cover, Page 2
Richmond Times Dispatch	06/23/1972	Cover, A 4 & A16
Richmond Times Dispatch	06/24/1972	Cover, A 4, 5, 12
Rockingham Register	10/02/1896	Pages 2&3
Rockingham Register	08/21/1906	Cover and Page 3
Staunton Daily News Leader	11/05/1985	Cover and A3
Staunton Daily News Leader	11/06/1985	Cover and A7
Staunton Daily News Leader	11/07/1985	Cover and A5
Staunton Daily News Leader	11/08/1985	Cover
Staunton Daily News Leader	06/23/1995	Cover

Staunton Daily News Leader	06/24/1995	Cover, A5
Staunton Daily News Leader	06/25/1995	Cover
Staunton Daily News Leader	06/29/1995	Cover, A2
Staunton Daily News Leader	06/30/1995	Cover
Staunton Daily News Leader	09/06/1996	Cover, A2
Staunton Daily News Leader	09/07/1996	Cover, A2-3
Staunton Daily News Leader	09/08/1996	Cover, A2
Staunton Daily News Leader	09/09/1996	Cover, A2
Staunton Spectator	10/04/1870	Cover
Staunton Spectator	09/30/1896	Cover
Staunton Vindicator	09/23/1870	Cover
Staunton Vindicator	10/07/1870	Cover
Yosts Weekly	10/02/1896	Cover

## *Other Sources*

<u>Author</u>	<u>Title</u>	<u>Other Info</u>
Buena Vista News	Hurricane Camille- A Review	
Environmental News Network	The Lesson of Agnes Recalled	<a href="http://www.enn.com">www.enn.com</a>
Morgan, B.A. , Wiczorek,	Debris-Flow Hazards In Areas	

## II. CSPDC Critical Facilities located within the FEMA Designated Floodplain

Critical Facility Name	Type	Historical?
Asbury United Methodist Church	Church	
Buffalo Church	Church	
California Church (historical)	Church	historical
Central Church	Church	
Chestnut Grove Church	Church	
Emory Church	Church	
First Apostolic Church of Buena Vista	Church	
Grace Chapel	Church	
Guardian Angel Academy	Church	
Hiner Church	Church	
John Wesley Methodist Church	Church	
Kerrs Creek Church	Church	
Kerrs Creek Church (historical)	Church	historical
McCutcheons Chapel	Church	
Miller Memorial Church	Church	
Mount Sinai Church	Church	
Mountain View Church	Church	
Naked Creek Church (historical)	Church	historical
New Hope Church (historical)	Church	historical
Oakland Grove Church (historical)	Church	historical
Ray Memorial Church	Church	
Riverside Church	Church	
Riverview Baptist Church	Church	
Rockland Mill Church (historical)	Church	historical
Saint Stephens Methodist Church	Church	
Southall Chapel	Church	
Stony Run Church	Church	
Victory Chapel	Church	
Dixie- Deno's Food Mart #10	Commercial	
Dixie Denos Food Mart #6	Commercial	
Houff's Feed & Fertilizer Co.	Commercial	
Ntelos Waynesboro	Commercial	
Augusta County Courthouse	Government	
Augusta County Jail	Government	
VDOT Swoope Area Headquarters	Government	
VDOT Verona Area Headquarters Traffic Paint Storage	Government	
Dixie Gas and Oil Corporation	Industrial	
Dupont Textiles	Industrial	
Reynolds Metals Company, Grottoes Plastics Plant	Industrial	
Schwan's Sales Enterprises - 112120	Industrial	
Verizon Stuarts Draft ESS (VA85032)	Industrial	
Verizon Waynesboro	Industrial	
Bergton School	School	

Critical Facility Name	Type	Historical?
Bridgewater College	School	
Denmark School (historical)	School	historical
Mountain Grove Elementary School (historical)	School	historical
Reunion Creek School (historical)	School	historical
Smith School (historical)	School	historical
Walker School	School	
Wenonah Elementary	School	
Wilderness School (historical)	School	historical
ACSA Middle River Wastewater Treatment Plant	Utilities	