

## **Past Hurricanes Influencing the Richmond Area**

**September 16, 1876 – \*\* p. 69**

This storm and its effects of high winds and tidal flooding were comparable to those of Hurricane Isabel in 2003. This storm had near hurricane force winds and destroyed noble shade trees, damaging homes and businesses.

**September 12 1878 at 4:00 PM - \*\* p 72.**

Tornadoes hit Dinwiddie County southeast of Petersburg, Nottoway County, and Goochland County near Dover Mills. A tornado also tore through Henrico County, several miles outside of Richmond at about 4 PM.

**September 29, 1896 \*\* p. 101**

“The hurricane is Richmond’s worst wind storm. Broken windows, damaged roofs and toppled chimneys were legion. Church steeples crashed into adjacent streets and buildings. The east end suffered the greatest harm.” But the rainfall was light in Richmond for a storm of this nature.

**September 5-6, 1935 \*\* p. 157**

This hurricane was known as the “Great Labor Day Hurricane.” The James River crested at 25.5 feet above the 9 foot flood stage at Richmond, VA. The Weather Bureau estimated the total rainfall of September 5-6 at an average of 6.5 inches for the entire James River Basin. The rain however was considerably heavier east of the Blue Ridge Mountains and the river at Lynchburg did not even reach flood stage. The Richmond rainfall was 7.41 inches as a storm total and 4.91 inches fell on September 5, 1935 alone.

**October 15, 1954 \*\* p. 198**

Richmond had sustained winds of 68 mph with a maximum gust recorded at 79 mph and a barometer reading of 28.75 inches a new record at that time. More than 50 homes lost roofs in the Richmond area but only 1.15 inches of rain fell as the storm was traveling northward at a speed of 50 mph.

## Fastest forward speed

Rank	Speed	Name	Year	Day	Time
1	70 mph	<a href="#">Great New Eng. Hurricane</a>	1938	<a href="#">Sept. 15</a>	0600 UTC
2	66 mph	<a href="#">Tropical Storm Four</a>	1970	<a href="#">Aug. 18</a>	1800 UTC
3	65 mph	<a href="#">Hurricane Luis</a>	1995	<a href="#">Sept. 11</a>	1200 UTC
4	63 mph	<a href="#">Hurricane Lisa</a>	1998	<a href="#">Oct. 9</a>	1800 UTC

Hazel was also unusual in terms of her forward speed. We all know that hurricanes usually weaken quickly once they move onshore, but Hazel was moving so fast she outpaced her collapse rate. By the time Hazel pushed into Virginia during the afternoon of October 15, she was moving nearly 50 mph. The storm caused \$15 million in damage in Virginia and eventually spread destruction as far north as Canada. Canadians count Hazel as one of their all-time greatest natural disasters.

This was one of the fastest forward speeds recorded for hurricanes. Most move at speeds no faster 20-30 mph. The record speed was recorded in the New England hurricane of 1938 which had a forward speed of 75 mph.

August 12, 1955 \*\* p. 211

Hurricane Connie was also a flood maker in the Richmond area dumping 8.71 inches of rain on the 12<sup>th</sup>. Connie deposited 5-10 inches of rain within 100 miles of its track but gave Richmond little in the way of wind.

August 17, 1955 \*\* p. 215

Hurricane Diane gave Richmond an additional 2.16 inches after giving 8.79 inches eight days before adding to the problem of flooding in the area. But the flood situation was worse to the west and in the Shenandoah Valley it was the worse flooding

since 1942. This storm caused worse flooding conditions to the north as the Pocono, Catskill and Berkshire Mountains received between ten and twenty inches of rain.

**August 20, 1969 \*\* p. 235**

Camille gave Richmond 2.68 inches of rain but this was nothing compared to what the James River Basin received. More than 25 inches of rain fell in a 5 hour period in Nelson County, VA. This is still a 6 hour period record rainfall amount for the United States. The James River crested at 26 feet in Lynchburg which was the highest since 1877. More than 10 inches of rain fell on Scottsville about 15 miles south of Charlottesville where the James River crested at 30.5 feet eclipsing a 17 foot flood stage. The James River crested in Richmond at 28.6 feet with a flood stage of only 9 feet. This was the highest recorded flood stage for the James River in Richmond in nearly 200 years.

**September 6-7, 1996 \*\* p. 290**

Hurricane Fran gave Big Meadows, VA had the highest wind gust in the state at 71 mph and a rainfall storm total amount of 16.77 inches and Richmond, VA received only 2.1 inches. Page County, VA was the hardest hit in the state and as rainfall amounts were greatest in the Shenandoah Valley it caused more flooding along the Potomac River than the James River. However, the James River reached a crest of 23.8 feet in Richmond which has a flood stage of only 9 feet.

**September 16, 1999 \*\* p. 296**

Hurricane Floyd passed well to the east of Richmond but gave Richmond 4.53 inches of rain on the 16<sup>th</sup> a new daily rainfall record for the date and a storm total of 6.54 inches. Richmond had a maximum wind gust of 51 mph at 10:11 AM on the 16<sup>th</sup> of September. It also gave Norfolk, VA the fourth lowest barometric pressure of 28.85 inches. The top three were Donna 1960 at 28.65 inches, the 1933 storm at 28.68 inches and Hurricane Connie 1955 at 28.77 inches.

**September 18, 2003 \*\* p. 305**

Governor Mark Warner described Isabel as “probably the worst storm in a generation.” Isabel not only affected Richmond but nearly the entire state. Gale force winds uprooted trees and

knocked out power to much of Virginia. Isabel by number: Fatalities 36, Total damage was \$1.9 billion, homes destroyed 1,124, and homes damaged 9, 027, businesses destroyed or seriously damaged 1477. The Richmond International Airport recorded a wind gust of 74 mph and Richmond received 4.32 inches of rain.

## **NAT. WEATHER SERVICE WAKEFIELD VA 910 AM EDT OCT 9 2003**

### **...GENERAL INFORMATION...**

ISABEL BECAME A TROPICAL STORM ON SEPTEMBER 6...EAST OF THE LEEWARD ISLANDS...STRENGTHENING TO A HURRICANE ON SEPTEMBER 7. ISABEL INCREASED TO A CATEGORY 5 HURRICANE ON SEPTEMBER 11...NORTHEAST OF THE LEEWARD ISLANDS...PEAKING IN STRENGTH ON SEPTEMBER 12...WITH 160 MPH WINDS. ISABEL WEAKENED TO A CATEGORY 2 HURRICANE ON SEPTEMBER 18...WHEN LANDFALL OCCURRED NEAR OCRACOCK INLET IN NORTH CAROLINA.

STRONG HIGH PRESSURE OVER NEW ENGLAND AND SOUTHEAST CANADA... PREVENTED ISABEL FROM TAKING THE TYPICAL NORTH TO NORTHEAST TRACK THAT PARALLELS THE EAST COAST OF THE UNITED STATES. INSTEAD THE HIGH PRESSURE SYSTEM DEFLECTED ISABEL TO THE NORTHWEST...THROUGH EASTERN NORTH CAROLINA AND CENTRAL VIRGINIA. BY MIDDAY SEPTEMBER 19...ISABEL HAD TRACKED INTO WESTERN PENNSYLVANIA.

THE WIND FIELD OF ISABEL EXPANDED WELL NORTHWARD AS IT TRACKED THROUGH NORTH CAROLINA AND VIRGINIA...DUE TO THE PRESSURE GRADIENT BETWEEN ISABEL AND THE STRONG HIGH PRESSURE TO THE NORTH. SUSTAINED TROPICAL STORM FORCE WINDS...WITH FREQUENT WIND GUSTS APPROACHING AND EXCEEDING HURRICANE FORCE...WERE OBSERVED OVER AN UNUSUALLY EXTENSIVE AREA OF NORTH CAROLINA...VIRGINIA AND MARYLAND.

THE WINDS ALSO CONTRIBUTED TO THE MOST SIGNIFICANT TROPICAL CYCLONE RELATED STORM SURGE ON THE OUTER BANKS OF NORTH CAROLINA...HAMPTON ROADS...AND THE MAIN STEM RIVERS FEEDING INTO THE CHESAPEAKE BAY...SINCE THE 1933 CHESAPEAKE-POTOMAC HURRICANE. IN SOME CASES...THE STORM SURGE ON THE MAIN STEM RIVERS EXCEEDED THE 1933 STORM SURGE.

HEAVY RAIN CAUSED FLOODING OVER CENTRAL AND SOUTHERN VIRGINIA... CAUSING HIGH WATER ON MANY ROADS UNTIL LATE ON FRIDAY...SEPTEMBER 19.

**ISABEL WILL BE REMEMBERED FOR THE GREATEST WIND...AND STORM SURGE IN THE REGION...SINCE HAZEL IN 1954...AND THE 1933 CHESAPEAKE-POTOMAC HURRICANE.**

**ISABEL WILL ALSO BE REMEMBERED FOR THE MOST EXTENSIVE POWER OUTAGES EVER IN VIRGINIA...AND PERMANENT CHANGE TO THE LANDSCAPE FROM ALL THE FALLEN TREES...AND STORM SURGE.**

A. HIGHEST WINDS...ALL WINDS IN MPH AND TIMES IN UTC  
ANEMOMETER AT CHESAPEAKE BAY BRIDGE TUNNEL AND CHESAPEAKE LIGHT  
ARE AT ROUGHLY 90 FEET ABOVE THE WATER.

LOCATION	SUSTAINED WIND	MAX GUST	MAX GUST TIME
DUCK NC (DUCN7)	73	92	1834 UTC
ELIZABETH CITY NC**	59	74	1543 UTC (KECG)
ROANOKE RAPIDS NC**	37	63	2147 UTC (KRZZ)
BAY BRIDGE TUNNEL (CBBT)	61	74	2048 UTC
CHESAPEAKE LIGHT (CHLV2)	72	93	2137 UTC
KIPTOPEKE VA	45	68	2218 UTC
LANGLEY AFB VA	53	76	1808 UTC (KLFI)
LEWISSETTA VA	53	68	2300 UTC
NEWPORT NEWS INTL ARPT**	44	65	1756 UTC (KPHF)
NORFOLK INTL AIRPORT VA**	47	74	2049 UTC (KORF)
NORFOLK NAVAL STATION	58	83	2110 UTC (KNGU)
OCEANA NAVAL STATION	55	69	2056 UTC (KNTU)
RICHMOND INTL ARPT	38	73	0013 UTC (KRIC)
WALLOPS ISLAND VA	50	62	1747 UTC (KWAL)
GLOUCESTER PT VA (VIMS)	69	91	2200-2300 UTC
CAMBRIDGE MD	45	57	2055 UTC
OCEAN CITY MD	41	53	2252 UTC (KOXB)
SALISBURY MD	37	51	2009 UTC (KSBY)

\*\* - OBSERVATIONS AT THESE LOCATIONS ARE BASED UPON ALL AVAILABLE DATA...AS THESE LOCATIONS LOST POWER AND WERE POTENTIALLY UNAVAILABLE WHEN THE HIGHEST WIND GUSTS OCCURRED.

OTHER WIND GUSTS (ONLY GUSTS AVAILABLE)  
ANEMOMETERS AT MOST OF THESE LOCATIONS ARE NOT AT THE STANDARD 33 FOOT LEVEL. ANEMOMETERS AT HAMPTON AND GWYNNS ISLAND ARE AT THE TOP OF BUILDINGS...POSSIBLY ABOVE THE STANDARD 33 FOOT LEVEL.

LOCATION	GUST SPEED	TIME OF GUST
ELIZABETH CITY NC (FROM CLEMSON UNIV. OBS. SITE IN ELIZ. CITY)	97 MPH	1900-2000 UTC
HAMPTON VA (SPOTTER) (SUSTAINED 67 MPH)	92 MPH	2130 UTC
RICHMOND VA (WWBT-TV)	63 MPH	UNKNOWN
PORTSMOUTH VA (SPOTTER)	55 MPH	1944 UTC
CHASE CITY VA (SPOTTER)	53 MPH	2010 UTC
RICHMOND COUNTY VA (SPOTTER) (SUSTAINED 48 MPH)	65 MPH (ESTD)	UNKNOWN
SMITH ISLAND VA	83 MPH	UNKNOWN
CHINCOTEAGUE VA (USCG STATION)	71 MPH	
ONLEY VA (ACCOMACK CO.)	62 MPH	
PARKSLEY VA (ACCOMACK CO.)	65 MPH	
FIVE FORKS VA (JAMES CITY CO.)	80 MPH	
REEDVILLE VA (MIDDLESEX CO.)	100 MPH	
GWYNNS ISLAND VA (MATHEWS CO.)	107 MPH	0042 9/19
HURLOCK MD (DORCHESTER CO.)	62 MPH	

**B. PRESSURE DATA...ALL TIMES IN UTC (SUBTRACT 4 HOURS FOR EDT)**

NORFOLK VA (ORF)	2151 9/18	29.24 INCHES
OCEANA NAVAL STATION (NTU)	2056 9/18	29.26 INCHES
NEWPORT NEWS VA (PHF)	2237 9/18	29.24 INCHES
HAMPTON VA (LFI)	2348 9/18	29.29 INCHES
WALLOPS ISLAND VA (WAL)	0012 9/19	29.62 INCHES
OCEAN CITY MD (OXB)	2257 9/18	29.71 INCHES
SALISBURY MD (SBY)	0331 9/19	29.68 INCHES

DUCK NC (DUCN7)	1900 9/18	29.06 INCHES
ARROWHEAD BEACH NC (NEAR EDENTON)***	2030 9/18	28.26 INCHES
CHESAPEAKE LIGHT (CHLV2)	2100 9/18	29.26 INCHES
FALSE CAPE (44014)	1900 9/18	29.41 INCHES
DELAWARE BAY BUOY (44009)	0000 9/19	29.74 INCHES
PORTSMOUTH VA	2225 9/18	29.15 INCHES
CHESAPEAKE BAY BRIDGE TUNNEL VA	2154 9/18	29.29 INCHES

\*\*\*DENOTES LOWEST PRESSURE OBSERVATION REPORTED TO NWS WAKEFIELD. THIS OBSERVATION WAS TAKEN WITH UNOFFICIAL EQUIPMENT AND MAY BE SLIGHTLY LOW.

#### C. RAINFALL...STORM TOTALS IN INCHES

LOCATION (COUNTY OR SITE ID)	AMOUNT (INCHES)
AMELIA VA (AMELIA)	5.50
ASHLAND VA (HANOVER)	5.20
BLACKSTONE VA (NOTTOWAY)	7.00
BOWLING GREEN VA (CAROLINE)	4.22
BUMPASS VA (LOUISA)	5.45
CARSON VA (DINWIDDIE)	6.20
CARTERSVILLE VA (GOOCHLAND)	4.91
CHARLES CITY VA	4.90
CHESTER VA (CHESTERFIELD)	5.50
CHESTERFIELD VA (CHESTERFIELD)	5.80
CHINCOTEAGUE VA	1.50
CREWE VA (NOTTOWAY)	5.10
EMPORIA VA (DOWNTOWN)	6.41

**August 30, 2004 \*\* p. 319  
GASTON**

After striking the Carolinas as a minimal Category 1 on August 30, the storm tracked into southern Virginia. Expected to churn through the state as uneventful, it stalled for hours over metropolitan Richmond. Up to 14 inches of rain cascaded down, drowning a forecasted 2-4 inches.

Downpours lasted about five hours. Rainfall rates in some neighborhoods exceeded 4 inches per hour. Richmond International Airport, about eight miles from downtown, had 6.68 inches. Ashland, about 20 miles away, recorded 10.61 inches, including 4.33 inches in one hour. Other totals included: Richmond (West End) 12.60", Mechanicsville 10.70", Sandston 8.10".

Gushing runoff targeted the historic Shockoe Bottom neighborhood, along the James River. Streets on adjacent hillsides became waterslides, simultaneously discharging their contents. The 25-square-block district, home to an age-old farmers market and upscale shops, condominiums and office building, became engulfed in a river. Dozens of cars floated through the streets, some with occupants pleading for rescue. Merchants, residents and tourists scrambled to safety.

Nature seemed to mock the efforts of man. Richmond's James River flood wall, completed in 1994 at a cost of \$135 million, proved useless. Gaston ambushed the city by creating its own James, a watercourse that flowed behind the "protective" barrier. (A bitter irony: Confident that the wall would protect them, many businesses and residents had no flood insurance.)

Gaston struck during rush hour, causing massive traffic jams. Floodwater carried away vehicles, overwhelming roadways within minutes. There were scores of narrow escapes. At least eight people died.

Water reached a critical height at Falling Creek Dam in Chesterfield County, forcing the hasty evacuation of hundreds of families. The structure survived.

Gaston produced several tornadoes in southeastern Virginia. They were weak, short-lived F-0's, inflicting only minor damage.

\*\* [Hurricanes and the Middle Atlantic States.](#)  
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