



National Weather Service

Storm Data and Unusual Weather Phenomena



July 1999

Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Property Damage	Crops	Character of Storm
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MARYLAND, Central

Brunswick in Frederick County to cancel their annual Great River Race. For the first time water was released from the Randolph and Little Seneca Reservoirs near the Potomac headwaters on July 11th and 15th respectively to help maintain a safe water level for wildlife and human consumption. By July 31st, the Jennings Randolph Reservoir was 13.8% below capacity and the Little Seneca Reservoir was down 4 inches. The Cranberry Reservoir serving the Westminster area was near record low flow. In the city of Cumberland, Lake Gordon and Lake Koon were both 11 inches below the spillway. Officials in Frostburg reported the Piney Dam was 8 inches low. Liberty Reservoir, one of the main water sources for 1.8 million people in the Baltimore area, was 24 feet below normal and was holding less than half of its 43 billion gallon capacity. The Pretty Boy Reservoir was down 18 feet and the Loch Raven Reservoir was down 5 feet. A combination of water from these three reservoirs showed only a 35 day supply of water left for the Baltimore area by the end of July. The two main reservoirs serving Montgomery, Howard, and Prince Georges Counties, the Tridelphia and T. Howard Duckett Reservoirs were down 35% and 58% respectively by July 31st. Nearly 60 communities across the state instituted mandatory or voluntary water restrictions. Several Frederick County towns and the town of Bel Air imposed mandatory water restrictions to reduce the strain on reservoirs and wells. About 12% of Maryland's population depend on wells for water. The community of Point of Rocks had to pull two of its four wells off-line because sediment appeared in the water. In Harford County, 30 homes experienced well failures and Deer Creek was at a critically low level. The total fresh water flow into the Chesapeake Bay from tributaries has been below average for the past 11 months and hovered around a record low for a third consecutive month. The deficit of fresh water resulted in an increase of salinity levels in the bay and had a noticeable impact on wildlife. Hundreds of fish died from lack of fresh water and the jellyfish population was much higher than normal. A popular swimming beach at Greenbriar State Park near Hagerstown had to be closed for the summer after rain never came to fill the 50 acre reservoir. Closing the beach for the summer resulted in \$120,000 in lost revenues.

The lack of precipitation was devastating to the agricultural community. 68% of pasture land, 36% of corn, 19% of sorghum, 24% of tobacco, and 17% of soybeans across the state were reported in poor or very poor condition. 87% of topsoil and 92% of subsoil were reported as short or very short of moisture by the end of the month. Washington County reported 80% of the county's crop land was under moderate to severe drought stress. Frederick County reported at 90% loss of crops and Howard County reported a loss of 60%. Vegetable farmers in Carroll County reported crop losses of 50%. Harford County was hit especially hard because agriculture is the number one industry. County officials reported a 60% pasture loss, 60% sweet corn loss, and 50% loss of fruits and vegetables. Corn was only a third of its normal size and was not pollinating. Cows suffered from the lack of water and persistent heat and produced 20% less milk. In addition to agricultural lands, forests and rural vegetation were also dangerously dry. The number of wild fires doubled across Maryland from last year because of the drought.

MDZ002>007-009>011-013>014-016>018

Allegany - Washington - Frederick - Carroll - Northern Baltimore - Harford - Montgomery - Howard - Southern Baltimore - Prince Georges - Anne Arundel - Charles - St. Mary'S - Calvert

04	0400EST	15	241	Excessive Heat
07	1200EST			

High pressure sat off the Mid-Atlantic coast from the 4th through the 7th, acting like a heat pump drawing in extremely warm and humid air. Temperatures on the 4th through early on the 7th were oppressively hot, and extremely humid conditions added to the misery. These conditions continued until a cold front swept through the area during the afternoon of the 7th, ushering cooler and much less humid air. The mercury soared into the upper 90s to lower 100s during the period. Dew points were in the lower to middle 70s, creating heat indices between 100 and 115 degrees. Nighttime lows only dipped into the 70s and heat index values remained in the upper 70s to middle 80s. Heat index values only dropped to between 85 to 90 degrees in downtown Baltimore. Record high temperatures were recorded at Baltimore/Washington International Airport (BWI) on the 5th and 6th. At BWI the mercury soared to 98 degrees on the 4th, 102 degrees on the 5th and 101 degrees on the 6th. Afternoon highs at the Maryland Science Center at Inner Harbor Baltimore rose to 99 degrees on the 4th, 101 degrees on the 5th, and 102 degrees on the 6th. The heat index only dropped to 90 degrees at Inner Harbor on the morning of the 6th. Other high temperatures from the 4th included 101 degrees at Bryans Road, 100 degrees at Ridge, 99 degrees at Williamsport, Smithsburg, and Oxon Hill; and 98 degrees at Cumberland, Hagerstown, and Olney. On the 5th, temperatures soared to 102 degrees at Oxon Hill and Ridge, 101 degrees at Smithsburg, 100 degrees at Cumberland, South Bowie, and Millersville, 99 degrees at Laurel, Hollywood, and Glenmont; and 98 degrees at Gaithersburg, Rockville, Sharpsburg, and Hagerstown. Highs on the 6th included 103 degrees at Ridge, 102 degrees at Lothian, 101 degrees at Olney, Rockville, and Glenmont, 100 degrees at Forest Glen and Hagerstown, and 99 degrees at Millersville, Laurel, Gaithersburg, and California.

Because of the 4th of July holiday weekend, many people were inconvenienced by the oppressive conditions. Many holiday events had low attendance, with the exception of the late evening fireworks displays which occurred after the temperatures fell below 90 degrees. Those who spent considerable time outdoors or in non-air conditioned buildings were subject to heat related illnesses. The heat wave tragically killed 15 people in the city of Baltimore. The number of people treated for heat related illnesses included 21 in Anne Arundel County, 200 or more in the city of Baltimore, 6 in Montgomery County, 5 in Prince Georges County and Calvert County, 2 in Washington County, and 1 in Allegany and Frederick Counties. Road surfaces and cars also fell victim to the heat. A huge buckle on Columbia Pike in Howard County between Johns Hopkins Road and Route 216 forced the road to be closed. Interstate 70 in Western Maryland was littered with tractor-trailer tire caps as the heat caused the rubber to fly off the tire casings. State police reported 20 vehicles were disabled by the heat, and AAA responded to 600 heat related service calls across the state. Power companies reported record high energy consumption during the late afternoon of the 5th and 6th. High demand for electrical power blew transformers, leading to power outages for 17,000 customers. The city of Baltimore cancelled summer school classes on the 6th because many schools had no air conditioning. Washington County closed summer day camps on the 6th after several campers reported problems dealing with the heat. Baltimore County reported thousands of yellow perch were killed in the Middle River watershed by the extreme rise in water temperature that occurred during



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MARYLAND, Central

the heat wave. ??PH, ??PH

**Frederick County
Monrovia**

18 1748EST 0 0 2K Thunderstorm Wind

Tree limbs downed on power lines

**Frederick County
New Market**

18 1750EST 0 0 2K Thunderstorm Wind

Tree limbs downed on power lines

**Carroll County
Mt Airy**

18 1752EST 0 0 2K Thunderstorm Wind

Tree limbs downed on power lines

A line of thunderstorms moved across North Central Maryland between 6:30 PM EDT and 7:15 PM EDT, producing gusty winds, heavy downpours, and frequent lightning. As the storms moved through southeast Frederick County and southwest Carroll County strong winds knocked tree limbs onto power lines. 2,000 customers in the area lost power as a direct result of the storm.

**Anne Arundel County
Severna Park**

22 2015EST 0 0 15K Lightning

Lightning sparked a garage fire

A very muggy and unstable air mass which was in place during the early morning hours led to the development of thunderstorms producing very heavy rain, gusty winds, and frequent lightening across Central Maryland between 3:00 AM and 5:00 AM EDT. 26,000 customers in Baltimore County the the city of Baltimore lost power after the storms moved through. 1300 customers in Anne Arundel County also lost power as a result of the storm. The Anne Arundel County administration building was without power for over 8 hours forcing officials to close some offices. Another round of thunderstorms developed after 8:00 PM EDT producing another batch of brief heavy rain and frequent lightning. One lightning strike started a 4 car garage on fire around 9:15 PM EDT in Severna Park, resulting in \$15,000 damage. Rainfall totals for the day included 3.95 inches in Brooklyn Park in Anne Arundel County, 3.57 inches at Inner Harbor Baltimore, 2.03 inches at Fullerton, 1.44 inches at Randallstown in Baltimore County, and 1.10 inches at Baltimore/Washington International Airport. Because a significant downpour of rain had not occurred in the area in several months, unusual effects were reported. The heavy rain washed 3 months of sewer and creek-bed trash into Baltimore's Inner Harbor area. Tires, appliances, plastic bottles, and other debris beached paddle boats and resulted in a terrible eyesore for tourists. It took 6 dump trucks to remove the 40 tons of debris which had collected in the harbor.

**Charles County
South Portion**

24 1230EST 0 0 10K Thunderstorm Wind
1300EST

Trees downed in Charlotte Hall, Faulkner, Newburg, Tompkinsville, and Rock Point

**Calvert County
St Leonard**

24 1330EST 0 0 2K Thunderstorm Wind

Trees and power lines downed

**Calvert County
Lusby**

24 1340EST 0 0 10K Thunderstorm Wind

Trees an power lines downed, a fallen tree damaged a home

**St. Mary'S County
Mechanicsville**

24 1350EST 0 0 22K Thunderstorm Wind

Damage to 4 barns and a home, sheep killed by flying debris

**St. Mary'S County
Patuxent River**

24 1355EST 0 0 Thunderstorm Wind (G53)

Measured 61 MPH gust at Patuxent Naval Air Station
Scattered thunderstorms that developed across North Central Virginia moved across the Potomac River and across extreme South Central Maryland between 1:30 PM and 3:30 PM EDT. These storms produced winds in excess of 55 MPH, frequent lightning, and heavy downpours. The storms moved across the southern portion of Charles County between 1:30 PM and 2:00 PM EDT. Severe winds downed trees in Charlotte Hall, Faulkner, Newburg, Tompkinsville, and Rock Point. Electrical wires were also downed in Issue and Cobb Island. In addition, lightening struck electrical transformers in Issue and White Plains. Severe winds moved through Calvert County between 2:00 PM and 2:45 PM EDT. Trees and power lines were downed in St. Leonard. Trees and power lines were also toppled in Lusby, and one home in the Chesapeake Ranch Estates area suffered damage when an uprooted tree fell on the structure. The storms also damaged property near Mechanicsville in St. Mary's County around 3:00 PM



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					Killed	Injured	Property	Crops	

MARYLAND, Central

Trees and power lines downed									
Howard County									
West Friendship	30	1715EST			0	0	5K		Thunderstorm Wind
Trees and power lines downed									
Prince George'S County									
Laurel	30	1735EST			0	0	0.50K		Thunderstorm Wind
Tree downed									
Baltimore County									
Hereford	30	1925EST			0	0			Hail (4.00)
Baltimore County									
1 S Beckleysville to 2 W Evna	30	1930EST 1935EST	3	50	0	0	10K		Tornado (F0)
Baltimore County									
Cockeysville	30	1945EST			0	0			Hail (1.75)
Baltimore City (C)									
Baltimore	30	1950EST			0	0			Hail (1.75)

A thunderstorm producing wind gusts in excess of 55 MPH, heavy downpours, and dangerous lightning developed over Howard County around 6:00 PM EDT. The storm moved to the south and crossed into Prince Georges County by 6:30 PM EDT. As the storm moved through the Clarkesville and West Friendship area of Howard County, trees and power lines were downed. The storm also downed a tree in Laurel as it moved through Prince Georges County. A second severe thunderstorm developed just north of the Mason-Dixon line around 8:00 PM EDT and moved south across Baltimore County and the city of Baltimore through 9:00 PM EDT. As the storm moved through the town of Hereford in Northern Baltimore County, grapefruit sized hail was reported. The storm also produced a weak, short-lived tornado that touched down one mile south of Beckleysville around 8:30 PM EDT. The tornado moved southeast and stayed on the ground for 3 miles until it reached the Mt. Carmel area. Several trees were damaged or downed in the path of the tornado, and weak structures such as lawn furniture and a tent were also blown over. As the storm moved into the southern half of the county it produced golf ball sized hail at Cockeysville and in the city of Baltimore.

VIRGINIA, North

VAZ021-025>031-
036>042-050>057

Highland - Augusta - Rockingham - Shenandoah - Frederick - Page - Warren - Clarke - Nelson - Albemarle - Greene - Madison - Rappahannock - Fauquier - Loudoun - Orange - Culpeper - Prince William - Fairfax - Arlington - Stafford - Spotsylvania - King George

01	0000EST	0	0	83M	Drought
31	2359EST				

High pressure was the dominant weather feature across Northern Virginia during the month. This forced most rain producing storm systems to steer north of the region and resulted in the continuation of the climatological, meteorological, and hydrological drought that had plagued the area since last summer. This was the 2nd warmest July on record, with an average temperature of 82.9 degrees. Record highs were set on the 5th and 6th, and temperatures rose above 90 degrees on average temperature of 82.9 degrees. Record highs were set on the 5th and 6th, and temperatures rose above 90 degrees on 22 of the 31 days. By the last week of July the Palmer Drought Index, a measure of long term drought conditions, indicated Northern Virginia was in an extreme drought except for the Central Shenandoah Valley which was in a severe drought. July was the 10th month in the past 12 months that precipitation was below normal. From August 1998 through July 1999 precipitation was a staggering 10 to 16 inches below average, the 2nd driest 12 months on record. Only 2.56 inches of rain fell at Dulles Airport during the month of July, 0.93 inches below normal. Reagan National Airport in Arlington reported a monthly total of only 1.01 inches, 2.79 inches below normal. Measurable rain only fell on 8 days during the month. The 12 month period from August 1st to July 31st was the driest since record keeping began 58 years ago at the Piedmont Agricultural Research Station in Orange. Additional July rainfall totals included Frederick, Shenandoah, and Clarke County at 2.8 inches; Warren County at 2.3 inches; Rockingham County at 2.4 inches; Orange County at 2.7 inches; Highland County at 1.3 inches; Augusta County at 4.4 inches; Page County at 3.8 inches; Madison and Albemarle County at 3.0 inches; Nelson County at 3.3 inches; Culpeper County at 5.0 inches; Rappahannock County at 5.1 inches; FAuquier County at 3.4 inches; Spotsylvania County at 2.3 inches; and Loudoun County at 2.8 inches.

The lack of rainfall affected water levels along the Potomac River, the main water source for extreme northern Virginia. The flow of water past Washington D.C. has been below average for the last 11 months. During July, the average daily flow of the river was only 18% of the long term average. Many upstream tributaries also reported extremely low water levels. For the first time, water was released from the Randolph and Little Seneca reservoirs near the Potomac headwaters on July 11th and 15th respectively to help maintain a safe water level for wildlife and human consumption. By July 31st, the Jennings Randolph Reservoir was 13.8% below capacity and the Little Seneca Reservoir was down 4 inches. Many stations on the Shenandoah and Rappahannock watersheds reported streamflow at or below the 90 percent exceedence, which rivaled minimum daily mean flow values of the



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VIRGINIA, North

drought of 1980-82. The Shenandoah River dropped to less than 22% of its normal flow and the water level near Strasburg was at the lowest recorded in July since records began 72 years ago. Nearby, a recreational facility at Half Moon Beach reported water levels 12 to 15 feet below normal. Happy Creek in Front Royal was nearly dry by mid month, and Holman's Creek through Southern Shenandoah County went dry west of Forestville by the end of the month. The Rappahannock River was approaching 10% of normal flow, and west of Fredericksburg was flowing with just a few feet of water. Twenty miles upstream of Fredericksburg, the river was too shallow for canoes. Boat trips were only possible on the river 4 weekends out of the past year. By the third week of July, fewer than 40% of small streams in Culpeper County continued to run. The Occoquan Reservoir, the main water source for Southern Fairfax County, was 21% below capacity by the end of the month.

With such low water tables, most locations were forced to begin voluntary water restrictions. Some locations such as Loudoun County began mandatory restrictions. Many residents away from the Washington D.C. suburbs and larger cities depended on water deliveries after wells dried up. The Ni River Reservoir, main water source for Spotsylvania County, dipped 4 inches below the spillway by mid month. Lake Pelham, main water source for the town of Culpeper, was 11 inches below normal, and the Staunton Dam was down two feet. The Stephens City Quarry in Frederick County dropped 32 feet below normal during July, and amount equal to a two month supply of water. The Beaverdam Reservoir in Loudoun County was at 50% capacity, still recovering from being drained to fill Goose Creek Reservoir. This reservoir, the main water source for Loudoun and half of Fairfax County, fell to 2.5 feet below the dam by the end of the month, a level officials called dangerously low. Frederick County declared a drought emergency on the 14th, and Clarke County made the same declaration on the 20th.

The lack of precipitation was devastating for the agricultural community. Crops were dying in the fields, trees were prematurely shedding leaves in orchards, hay and pasture land were wilting, and watering holes and irrigation sources were slowly drying up. 46% of pasture land and 77% of non-alfalfa hay crops across the state were reported in poor or very poor condition. Corn that should have been 6 feet high was only waist-high at best and did not germinate. Some farmers had to reduce their herd sizes in order to stretch hay and water supplies. The Frederick County auction reported cattle sales were five times above normal. In Shenandoah County, extension agents reported 3,000 cattle had died or were sold to slaughter early during the month. Augusta County estimated drought losses at \$20,000,000, with every cash crop reporting a yield loss of at least 70%. The Page County extension office reported more than half of the crops in the county were lost. Loudoun County estimated \$15,000,000 in agricultural losses. Clark County expected \$8,000,000 in losses, citing 75% of corn beyond recovery. Rappahannock County reported \$2,500,000 in losses citing 65,000 acres of devastated pasture land. In addition to agricultural lands, forest and rural vegetation were also dangerously dry. The Virginia Department of Forestry reported a record fire season January through July, 1320 fires burning 6146 acres. This number already exceeded the amount of fires reported in 1998. During the month of July alone, 61 fires burned 280 acres. The Cumulative Severity Index, a measure of fire danger which ranges from 1 to 800, gave Northern Virginia a rating of 628 by month's end. Animal control officials also attributed an increase of wildlife entering populated areas in search of food and water to the drought.

VAZ021-025>031-
036>042-050>057

Highland - Augusta - Rockingham - Shenandoah - Frederick - Page - Warren - Clarke - Nelson - Albemarle - Greene - Madison - Rappahannock - Fauquier - Loudoun - Orange - Culpeper - Prince William - Fairfax - Arlington - Stafford - Spotsylvania - King George

04 0800EST 1 80 Excessive Heat
07 1200EST

High pressure sat off the Mid-Atlantic coast from the 4th through the 7th, acting like a heat pump drawing extremely warm and humid air into Northern Virginia. Temperatures on the 4th through early on the 7th were oppressively hot, and extremely humid conditions added to the misery. These conditions continued until a cold front swept through the area during the afternoon of the 7th, ushering cooler and much less humid air. The mercury soared into the upper 90s to lower 100s during the period. Dew points were in the lower to middle 70s, creating heat indices between 100 and 115 degrees. Overnight lows only dipped into the 70s and heat index values ranged from the upper 70s to upper 80s. The heat index only dropped to 90 degrees at National Airport in the Washington D.C. suburbs on the morning of the 6th. Record highs were broken at Washington National Airport on the 5th and 6th. The record high at Dulles International Airport was broken on the 4th and tied on the 5th. High temperatures on the 3rd included 97 degrees at Winchester, 96 degrees at Woodstock, 95 degrees at Dale Enterprise, and 94 degrees at Sterling. Afternoon readings on the 4th included 103 degrees at Dale Enterprise, 102 degrees at Front Royal, 101 degrees at Woodstock, 100 degrees at Edinburg, 99 degrees at National Airport, 98 degrees at Fredericksburg and Luray, and 97 degrees at Dulles International Airport and Winchester. High temperatures on the 5th included 102 degrees at Washington National Airport, 101 degrees at Edinburg and Fredericksburg, 100 degrees at Orange, 99 degrees at Dulles International Airport and Staunton, and 98 degrees at Culpeper. Highs on the 6th included 103 degrees at Front Royal and National Airport, 102 degrees at Winchester, 101 degrees at Fredericksburg, 100 degrees at The Plains, and 99 degrees at Dulles Airport.

Because of the 4th of July holiday weekend, many people were inconvenienced by the oppressive conditions. Many holiday events had low attendance, with the exception of the late evening fireworks displays which occurred after temperatures fell below 90 degrees. Those who spent considerable time outdoors were subject to heat related illnesses. On the early evening of the 3rd, a 58 year-old man who was hiking for two hours with his family near the Doyles River Trail at Shenandoah National Park in Rockingham County died from a heart attack brought on by heat stress. Rockingham officials reported 6 other heat related injuries from the 3rd through the 7th. The number of persons treated for heat related illnesses in other locations included at least 5 in Augusta County, 1 in Charlottesville, 9 in Fauquier County, 7 in Frederick and Loudoun Counties, 24 in Fairfax County, and 21 in Alexandria. In addition, 6,000 turkeys were killed by the heat wave in Orange County.



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VIRGINIA, North

Road surfaces and cars also fell victim to the heat. A major asphalt buckle occurred on Interstate 395 between King Street and Seminary Road in the Washington D.C. suburbs, closing all southbound lanes for a short time on the 8th. Tar on roads near Community Park and New Market in Shenandoah County melted and had to be covered with gravel. State police reported 30 vehicles were disabled by the heat. Virginia Power reported a record high consumption of energy during the late afternoon of the 5th and 6th. High demand for electrical power blew transformers, leading to widely scattered power outages. Staunton cancelled summer school classes on the 6th due to the heat. The heat also contributed to several wildfires. A fire in Rockingham County sparked by an electric fence burned 60 acres. One firefighter battling the blaze had to be treated for heat problems. In Shenandoah County, an overheated car off Virginia Route 720 ignited a fire that burned 9 acres of barley. The exhaust system of a second car caught fire and sparked another fire in the same field. Another 20 acres burned near Meems Bottom after a spark from farm machinery set a grass field ablaze. People setting off fireworks near Singers Mill set another blaze which burned a quarter acre of field grass and came within 100 yards of a home. M58OU

Fauquier County Delaplane

08	1900EST								
			0	0			3K		Lightning

Livestock killed by lightning strike

Five Angus heifers and one bull, valued at \$3000, were killed by lightning at a Delaplane field on the evening of the 8th.

Clarke County 4 S White Post

09	1330EST 2020EST								
			0	0			92K	6.7K	Wild/Forest Fire

60 acres of wheat, 5 acres of farmland, 2 acres of woodland, and a combine destroyed

A combine moving through a wheat field around 2:30 PM EDT overheated and started a fire that spread rapidly due to extremely dry conditions. Within minutes flames destroyed the combine estimated to be worth about \$92,000 and swept eastward across a field of foot high wheat stubble. The fire was extremely intense, with flames reaching 15 feet in height. Three State Department of Forestry fire fighting units and nine volunteer fire companies from Frederick, Clarke, and Warren Counties battled the blaze. The fire was brought under control by 5:00 PM EDT and completely extinguished at 9:20 PM EDT. Six firefighters were treated for heat exhaustion at the scene during the operation. The fire ended up burning 60 acres of wheat valued at around \$6,700, 5 acres of farmland, and 2 acres of woodland.

Nelson County 3 SW Lovingson

14	1500EST								
			0	0			5K		Hail (1.00)

Hail size estimated from damage report

Nelson County 1 SW Lovingson

14	1500EST								
			0	0			15K		Lightning

Barn hit by lightning damaged by resulting fire

Nelson County 3 SW Lovingson

14	1500EST								
			0	0			100K		Lightning

Vacant house hit by lightning caught fire and burned to the ground

A thunderstorm that moved through Nelson County during the afternoon of the 14th produced large hail, frequent lightning, and brief heavy rain around the Lovingson area. Two separate lightning strikes started fires in the northwest part of the county. The first strike hit a vacant house about 3 miles southwest of Lovingson on Virginia Route 652 near Freshwater Cove. The fire that resulted burnt the home to the ground. As firefighters arrived to battle the blaze they were confronted by 10 to 15 minutes of hail, and officials reported crop damage and dented automobiles from the deluge. The second lightning strike hit an old barn one mile southwest of Lovingson near Thompson's Store. The barn caught fire and was significantly damaged. Lightning also caused power outages in the communities of Nellysford, Roseland, and Piney River, in addition to the immediate Lovingson area. Heavy downpours with the storm were also blamed for a two vehicle accident near the intersection of Highway 29 and Main Street in Lovingson.

Albemarle County North Portion

18	1510EST								
			0	0			5K		Thunderstorm Wind

Trees downed

Greene County 4 S Ruckersville

18	1515EST								
			0	0			1K		Thunderstorm Wind

Trees downed on Route 604 near the Albemarle County line

Loudoun County 2 SE Ashburn

18	1709EST								
			0	0			5K		Thunderstorm Wind



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VIRGINIA, North

Trees downed on Route 606 and Moran Road

Loudoun County 4 SE Ashburn	18	1709EST			0	0			Thunderstorm Wind (G55)
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Dulles Airport ASOS measured wind gust

Fairfax County 1 SW Herndon	18	1725EST			0	0	15K		Thunderstorm Wind
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Minor damage to home under construction and trees downed

A line of thunderstorms producing winds in excess of 55 MPH, frequent lightning, and heavy downpours moved from Central Virginia to Northeast Virginia between 4:00 PM and 6:45 PM EDT. As the storms moved through Albemarle County, severe winds blew down several trees in the northern part of the county around 4:10 PM EDT. Trees were downed on Route 604 in extreme southeast Greene County around 4:15 PM EDT. The storms weakened for a time as they moved into Northern Virginia, then strengthened once again as they moved into Loudoun County. At Dulles International Airport, a gust of 63 MPH was recorded at 6:09 PM EDT. Trees and power lines were downed about 2 miles north of the airport on Route 606 and near the Dulles Post Office on Moran Road. Power outages were reported in the vicinity. As the storms moved into Fairfax County, strong winds tore tar paper and flashings off townhomes under construction a mile southwest of Herndon at 6:25 PM EDT. A few pine trees were also downed nearby.

Culpeper County Culpeper	22	1355EST 1410EST			0	0			Hail (1.00)
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Culpeper County Culpeper	22	1410EST			0	0	5K		Thunderstorm Wind
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Trees and power lines downed

Madison County Elly	22	1450EST			0	0			Hail (1.00)
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Orange County Gordonsville	22	1505EST			0	0			Hail (1.00)
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Very warm and humid air just east of the Appalachian Mountains helped to fire scattered thunderstorms in the mid afternoon hours. One area of storms that moved across Culpeper, Madison, and Orange Counties between 2:45 PM and 4:15 PM EDT produced wind gusts in excess of 55 MPH and 1 inch diameter hail. Trees and power lines were downed in the city of Culpeper around 3:10 PM EDT. Another storm that produced very heavy rain lowered visibilities significantly as it moved across Fairfax County around 3:15 PM EDT which was a contributing factor in two serious multi-car accidents. One 22 car pileup occurred on Interstate 66 near the intersection of Highway 28. Twenty people were injured in the crash and the interstate had to be closed for a short time while emergency personnel attended to the injured and cleared debris. Another multi-car crash, just minutes later, occurred on Interstate 95 between the Lorton and Newington exits, closing the artery for several hours. Eighteen cars were involved and 15 people were injured.

Harrisonburg (C) Harrisonburg	24	1130EST			0	0	10K		Thunderstorm Wind
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Tree downed onto car on Route 11 just north of Harrisonburg

Page County Shenandoah to Stanley	24	1130EST 1145EST			0	0	4K		Thunderstorm Wind
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Trees downed

Madison County Syria	24	1145EST 1200EST			0	0	5K		Thunderstorm Wind
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4 downed trees on Route 600, downed trees on Route 231 and 634, and 6 trees downed in open areas

Culpeper County Countywide	24	1200EST 1230EST			0	0	10K		Thunderstorm Wind
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Numerous trees downed across county and one shed blown over

Fauquier County 1 N Remington	24	1230EST			0	0			Hail (1.00)
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Fauquier County 1 N Remington	24	1230EST			0	0	10K		Thunderstorm Wind
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Barn roof blown off and carried 100 feet



National Weather Service

Storm Data and Unusual Weather Phenomena



July 1999

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Number of Persons Injured	Estimated Damage Property	Estimated Damage Crops	Character of Storm
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VIRGINIA, North

Prince William County

Gainesville 24 1245EST 0 0 10K **Thunderstorm Wind**

Downed trees and power lines blocked Glenkirk Road and Linton Hall Road

Orange County

**2 SE Flatrun to
4 SE Flatrun** 24 1255EST
1257EST 1 75 0 0 50K **Tornado (F1)**

Several trees downed, some damaging homes and scattering debris on a nearby golf course near Route 3

Spotsylvania County

**1 W Wilderness Corner
4 N Concord Hgts** 24 1257EST
1313EST 13 75 0 0 150K **Tornado (F1)**

Hundreds of trees uprooted and snapped and buildings damaged along the Route 3 corridor

Spotsylvania County

North Portion 24 1300EST
1315EST 0 0 20K **Thunderstorm Wind**

Numerous trees downed

Fredericksburg (C)

Fredericksburg 24 1313EST
1318EST 2 75 0 0 20K **Tornado (F1)**

Spotsylvania County tornado crossed over the city of Fredericksburg

Spotsylvania County

**1 W Sylvania Hgts to
Sylvania Hgts** 24 1318EST
1320EST 1 75 0 0 2K **Tornado (F1)**

Trees downed

Spotsylvania County

Four Mile Fork 24 1320EST 0 0 15K **Thunderstorm Wind**

Damage to roof at Fredericksburg Academy

Stafford County

**1 SW Falmouth to
Falmouth** 24 1320EST
1322EST 1 75 0 0 10K **Tornado (F1)**

Trees and power lines downed

King George County

Countywide 24 1330EST
1400EST 0 0 1K **Thunderstorm Wind**

Trees downed

Rockingham County

Elkton 24 1700EST 0 0 68K **Lightning**

Lightning started a fire that burned a 100 year old two story home to the ground

Loudoun County

**Round Hill to
Bluemont** 24 1900EST 0 0 5K **Thunderstorm Wind**

Trees downed between Middleburg and Aldie on Highway 50

Loudoun County

**Middleburg to
Aldie** 24 1910EST
1920EST 0 0 5K **Thunderstorm Wind**

Trees downed on Route 50 between Middleburg and Aldie

Warm and humid air ahead of a cold front combined to produce scattered thunderstorms across the northern half of Virginia from midday through sunset. The first batch of thunderstorms developed over Rockingham County around 12:30 PM EDT and moved eastward to the Potomac River by 3:00 PM EDT. These storms produced winds in excess of 55 MPH, large hail, frequent lightning, and a tornado that crossed parts of Orange, Spotsylvania, and Stafford County. As the storms passed through Harrisonburg, a tree was toppled onto a car on Route 11 and marble sized hail was reported. When the storms crossed Page County, trees were downed in Shenandoah, Stanley, and Luray. Madison County reported fallen trees on Route 634, 4 trees downed across Route 600, and 6 other fallen trees in yards across the county. Another tree that fell across Route 231 caused a vehicle accident. The storms downed several trees in Culpeper County. A car in the city of Culpeper was flattened by an uprooted tree, and severe winds also blew over a shed. The storms crossed Southern Fauquier County and blew a roof off of a 60x100 foot barn and tossed the debris 100 feet near the intersection of Route 28 and 29. The storms were also responsible for extensive damage in the Lake of the Woods area of Northern Orange County. Numerous trees were knocked down, scattering debris on a golf course. Fallen trees also damaged several houses, closed several roads, and knocked out power in the community.



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VIRGINIA, North

A tornado developed near Lake of the Woods in Orange County. It stayed on the ground for 20 miles and moved across northern Spotsylvania County, the city of Fredericksburg, and the northwest portion of Stafford County. The tornado was of F1 strength for most of its path, occasionally weakening to F0 strength in some locations. The tornado entered Spotsylvania County near Wilderness Corner, downing trees near the intersection of Route 3 and 613 and taking shingles off homes. The tornado continued to topple soft and hardwood trees as it moved east to Chancellorville, and damaged the roof of a barn on Route 612 and Johnsons Corner. Siding and shingles were stripped from homes in Stonewall Estates. The tornado remained on the ground moving east just south of Route 3. It damaged trailer classrooms at Salem Elementary School near the intersection of Route 3 and 639. Next, the storm passed directly over the southern half of the city of Fredericksburg, downing several more trees and power lines, blocking roads and knocking power out for 12,000 customers. Nine buildings in the city were significantly damaged. The tornado finally dissipated as it reached Falmouth. Winds gusted over 55 MPH in northern Spotsylvania County just south of the tornado's path, causing more damage. In the city of Spotsylvania trees were downed by the sudden downburst of wind. Near Four Mile Fork, wind gusts blew part of the roof off the Fredericksburg Academy and rainwater falling through the open roof damaged the gym floor. Across all of Spotsylvania County, 45,000 customers lost power as a direct result of the storm. The storm still packed a punch when it moved across Stafford, King George, and Prince William Counties. Severe winds downed trees and power lines on Glenkirk Road and Linton Hall Road in Western Prince William County, leaving 1,000 residents without power. One 80 foot tall tree was uprooted and fell across Route 29 near the intersection of Interstate 66. Parts of Southern Stafford County lost power after downed trees fell onto power lines. Most of the downed trees were in the Falmouth area. Only a few trees were knocked down in King George County, causing minimal damage.

A few additional thunderstorms developed between 6:00 PM and 9:00 PM EDT just east of the Appalachian Mountains. One isolated storm moved across Loudoun County and produced winds in excess of 55 MPH. Trees and power lines were downed between Aldie and Middleburg on Route 50, and on Route 7 between Bluemont and Round Hill. Lightning from a storm over Rockingham County caught a 100 year old house valued at \$68,000 on fire and burned the structure to the ground.

Loudoun County Bluemont	25	2000EST			0	0	5K		Thunderstorm Wind
			Several trees downed blocking driveways and roads						
Loudoun County Aldie	25	2015EST			0	0	5K		Thunderstorm Wind
			Trees downed						
Fairfax (C) Fairfax	25	2020EST			0	0	0.50K		Thunderstorm Wind
			Tree downed onto Prosperity Avenue An area of thunderstorms developed over the Eastern Panhandle of West Virginia and moved across Loudoun and Fairfax Counties between 8:30 PM and 9:30 PM EDT. These storms produced heavy downpours and winds in excess of 55 MPH. Several trees were downed between Round Hill and Bluemont and near Aldie in Loudoun County. A tree was also downed in the city of Fairfax and temporarily blocked Prosperity Avenue.						
Rappahannock County Sperryville	28	1620EST			0	0	2K		Thunderstorm Wind (G52)
			Trees downed						
Fauquier County Opal	28	1645EST			0	0	3K		Thunderstorm Wind
			Trees downed with estimated wind gust of 60-70 MPH						
Rappahannock County West Portion	28	1650EST			0	0	8K		Thunderstorm Wind
			Trees downed in west portion to county along the Hughes River						
Fauquier County Warrenton to 15 SE Warrenton	28	1700EST			0	0	5K		Thunderstorm Wind
			Trees and power lines downed in Warrenton, Summerduck, and Goldvein						
Waynesboro (C) Waynesboro	28	1700EST			1	0	0.50K		Thunderstorm Wind
			48 year old woman killed by falling tree F48UT						
Prince William County Dumfries	28	1715EST			0	0	4K		Thunderstorm Wind



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VIRGINIA, North

Trees and power lines downed along Dumfries Road

**Stafford County
Falmouth**

28 1715EST 0 0 4K Thunderstorm Wind

Trees and power lines downed

Afternoon highs in the 90s and very moist and unstable air combined to produce scattered thunderstorms across the northern portion of Virginia. Several of these storms produced winds in excess of 55 MPH, heavy downpours between 5:00 PM and 6:30 PM EDT. Winds were estimated between 60 and 70 MPH in the community of Opal in Southern Fauquier County around 5:45 PM EDT and a wind gust of 60 MPH was reported at Sperryville in Rappahannock County at 5:20 PM EDT. These severe winds downed trees and power lines in several locations of Rappahannock and Fauquier Counties, and in isolated locations in Prince William and Stafford Counties. An observer in Opal reported 1.22 inches of rainfall in only 30 minutes as the storms passed through. In the city of Waynesboro, a 42 year old woman was killed as winds from a passing thunderstorm toppled a 25 foot tall locust tree onto her as she was trying to free a pet from an outdoor kennel around 6:00 PM EDT.

**Clarke County
White Post**

31 1330EST 0 0 2K Thunderstorm Wind

6 trees downed, some blocked Route 644

**Augusta County
Annex**

31 1500EST 0 0 Hail (0.75)

**Augusta County
Annex**

31 1500EST 0.1 100 0 0 15K Tornado (F1)

Barn destroyed, greenhouse damaged, and trees snapped 5 miles East of Staunton

Scattered thunderstorms developed over the Shenandoah Valley between 2:00 PM and 4:30 PM EDT. One storm moved across Clarke County and produced winds in excess of 55 MPH, downing trees in White Post. Two trees blocked Route 644. A second storm moved through Augusta County around 4:00 PM EDT and produced a short-lived tornado about 5 miles east-southeast of Staunton. The tornado was about 100 yards wide and stayed on the ground for only one tenth of a mile. A large perennial nursery was damaged by the twister. Windows were blown in on the northwest side of a greenhouse. A large barn roof was torn from its foundation and thrown 600 feet. One beam weighing 100 pounds was buried into the ground and the roof itself was rolled into a ball. In addition, several trees on the property were snapped or bent. The storm also produced three quarter inch diameter hail. Lightning from another thunderstorm ignited a forest fire west of Woodstock in Shenandoah County on the 31st.

WEST VIRGINIA, East

WVZ048>055

Grant - Mineral - Hampshire - Morgan - Berkeley - Jefferson - Pendleton - Hardy

01 0000EST 0 0 Drought
31 2359EST

High pressure was the dominant weather feature across the Eastern Panhandle during the month. This forced most rain producing storm systems to steer north of the region and resulted in the continuation of the climatological, meteorological, and hydrological drought that had plagued the area since last summer. By the last week of July the Palmer Drought Index, a measure of long term drought conditions, indicated the Eastern Panhandle was in an extreme drought. July was the 10th month in the past 12 months that precipitation was below normal. This long-lived drought was the worst since 1966 and was very close to conditions during the 1931 drought. From August 1998 through July 1999 precipitation was a staggering 14 inches below average. Rainfall totals across the Eastern Panhandle during the month of July included 2.1 inches in Pendleton County, 2.6 inches in Grant and Berkeley County, 1.5 inches in Hardy County, 1.4 inches in Mineral County, 2.8 inches in Jefferson County, 1.0 inches in Hampshire County, and 2.1 inches in Morgan County.

The lack of precipitation was devastating for the agricultural community. During the first week of July, the governor declared an agricultural emergency across the state. The state also asked residents to conserve water voluntarily by the 20th. The Jennings Randolph Reservoir on the Potomac River near Piedmont was 13.8% below capacity by the 31st. Springs that supply water to Berkeley County residents flowed at half the normal rate during the month. Several other small streams went dry. 35% of farmers had to haul water for livestock, and 34% of wells were dry or in danger of drying up. County extension agents reported 79% of the hay crop and 87% of pasture land was in poor to very poor condition. 82% of the corn crop, 55% of oats, 34% of soybeans, and 60% of the tobacco crop was also in poor or very poor condition. 92% of topsoil was reported short or very short of water by the end of the month. Tomatoes and onions were only half the normal size and dairy production was down 15 to 25%.

WVZ048>055

Grant - Mineral - Hampshire - Morgan - Berkeley - Jefferson - Pendleton - Hardy

04 0400EST 0 3 Excessive Heat
07 1200EST

High pressure sat off the Mid-Atlantic coast from the 4th through the 7th, acting like a heat pump drawing in extremely warm and humid air. Temperatures on the 4th through early on the 7th were oppressively hot, and extremely humid conditions added to the misery. These conditions continued until a cold front swept through the area during the afternoon of the 7th, ushering cooler and



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WEST VIRGINIA, East

much less humid air. The mercury soared into the upper 90s to lower 100s during the period. Dew points were in the lower to middle 70s, creating heat indices between 105 and 115 degrees. High temperatures on the 4th included 101 degrees at Berkeley Springs, 99 degrees at Keyser, 98 degrees at Romney and Charles Town, and 97 degrees at Mathias. Afternoon readings on the 5th included 103 degrees at Berkeley Springs, 101 degrees at Keyser, 100 degrees at Mathias, Moorefield, Charles Town, and Romney; 99 degrees at Martinsburg, and 98 degrees at Wardensville. Highs on the 6th included 102 degrees at Sugar Grove, 100 degrees at Charles Town, Martinsburg, Mathias, Moorefield, Romney, and Keyser; 98 degrees at Wardensville, and 96 degrees at Petersburg.

Because of the 4th of July holiday weekend, many people were inconvenienced by the oppressive conditions. Those who spent considerable time outdoors were subject to heat related illnesses. Three people were treated at Martinsburg City Hospital for heat exhaustion on the 5th. Berkeley County reported a handful of calls from residents complaining of heat related problems. Power compaines reported extremely high energy consumption during the late afternoon on the 5th and 6th.

Berkeley County Martinsburg	24	1650EST			0	0			Hail (0.88)
Berkeley County Martinsburg Arprt	24	1650EST			0	0	2K		Thunderstorm Wind (G55)
Measured gust at Martinsburg Airport, trees and power lines downed									
Berkeley County 1 N Falling Waters	24	1700EST			0	0			Hail (0.75)
Jefferson County Leetown	24	1710EST			0	0	5K		Thunderstorm Wind
Trees and power lines downed Warm temperatures and muggy conditions combined to develop thunderstorms across Berkeley and Jefferson Counties between 5:30 PM and 6:30 PM EDT. The storms produced winds in excess of 55 MPH, large hail, and heavy downpours. Nickel sized hail fell in Martinsburg and a wind gust of 63 MPH was recorded at the city airport. Dime sized hail was reported between Falling Waters and Marlowe. Trees and power lines were downed, knocking out power to 2,500 customers in Charles Town, Back Creek Valley, and Harpers Ferry. Hundreds of dollars in damage occurred at a Leetown nursery when between 50 and 100 plants were damaged by high wind. 2.3 inches of rain fell in Leetown during a two hour period. The North Queen Street underpass was temporarily flooded by the deluge.									
Berkeley County Falling Waters	25	1905EST			0	0			Hail (0.75)
Berkeley County Marlowe	25	1910EST			0	0	2K		Thunderstorm Wind
Trees and power lines downed									
Jefferson County 5 E Kabletown	25	1930EST			0	0			Hail (1.00)
A thunderstorm moved across Berkeley and Jefferson Counties between 7:45 PM and 8:30 PM EDT and produced heavy downpours, large hail, and winds in excess of 55 MPH. Three quarter inch diameter hail was reported in Falling Waters at 8:05 PM and one inch diameter hail was reported in Shannondale around 8:30 PM EDT. Trees and power lines were downed in Marlowe around 8:10 PM EDT.									
Berkeley County Martinsburg	28	1500EST			0	0	20K		Thunderstorm Wind
Trees downed onto power lines, cars, and buildings									
Jefferson County Shepherdstown	28	1515EST			0	0	3K		Thunderstorm Wind
Trees downed Temperatures in the 90s and very muggy air combined to produce thunderstorms across the Eastern Panhandle from 3:30 PM to 5:00 PM EDT. The storms that moved across Jefferson and Berkeley Counties produced winds in excess of 55 MPH, downing several trees. The city of Martinsburg reported several trees downed onto power lines, cars, and buildings. Two cars and a shed were totalled by falling trees as large as 5 feet in diameter. In Shepherdstown, a tree and power line fell onto a moving car. The driver of the vehicle was startled but unhurt. Several other trees in the city were also downed by the storm.									