

VIRGINIA DROUGHT MONITORING TASK FORCE

Drought Status Report

September 27, 2010

Statewide precipitation for the current water year, October 1, 2009 September 15 2010 was in the normal range (105% of normal) with all drought evaluation regions greater than 100% normal except the Big Sandy Region (99%), Shenandoah Region (98%), Northern Piedmont Region (95%) and the York-James Region (99%). Normal precipitation is defined as the mean precipitation for a thirty year period of record. Precipitation greater than 85% and less than 115% of normal is considered to be in the normal range. Statewide precipitation is now within the normal range (105%) for the calendar year. Statewide precipitation is 71% of normal since June 1st with all drought evaluation regions except the New River, and Big Sandy Region having less than 85% of normal. All drought regions remain under the “Drought Watch” status announced this July. Appendix A contains precipitation tables for periods dating from July 1, 2009 through September 15, 2010 provided by the Climatology Office of the University of Virginia.

The National Weather Service Climate Prediction Center 6-10 day climatologic outlooks call for below normal temperatures and normal precipitation for the entire Commonwealth. Normal precipitation and normal temperatures are anticipated over the 8-14 day period. The one month outlook calls for equal chances of below normal, normal and above normal precipitation for the entire Commonwealth except the eastern most section of the Coastal Plain which has a 33% chance of above normal precipitation. The one month temperature outlook calls for equal chances of below normal, normal and above normal temperatures statewide except for areas north of Charlottesville which have a 33% chance of above normal temperatures. The three month outlook calls for equal chances of below normal, normal and above normal temperatures and precipitation for the entire Commonwealth.

The latest NOAA U.S. National Drought Monitor indicates “abnormally dry” to “moderate drought” conditions exist in approximately 65% of the Commonwealth. Southwest Virginia is the only area that is not in an “abnormally dry” or “moderate drought” condition. Approximately 30% of Virginia is experiencing “severe drought” conditions, as designated in the U.S. National Drought Monitor. The Seasonal Drought Outlook for the United States from now through December 2010 forecasts “some improvement” in the drought conditions in the Coastal Plain portion of the state that is currently classified as “severe drought”, and forecasts “persistence” in the Northern Virginia, the Piedmont areas currently classified as “severe drought”. (Appendix D).

The number of public water supply systems under some sort of drought related restriction has been increasing. While the Virginia Department of Health (VDH) has not reported any impacts to public water supplies that have compromised their ability to provide the needs of their customers, 18 systems are under voluntary water conservation requirements and 2 systems are under mandatory water conservation requirements. Of the 41 systems listed in the VDH report, one is rated as having a “Better” overall water supply situation, four are rated as having a “Worse” overall water supply situation and all other systems are rated as being in a “Stable” situation (Appendix F).

The Virginia Department of Forestry (VDOP) continues to report an above normal rate of wildfire occurrence, with 122 fires reported in the month of July alone. The DOF is becoming increasingly concerned about the potential for a significant fall fire season.

The Department of Game and Inland Fisheries reports that current drought conditions have minimally affected recreational boating and fishing activities. Lake Chesdin boat access has been restricted due to low lake level. Water supply flows to the trout hatcheries are lower than preferred, but have not affected fish production as yet. Trout stocking at Douthat Lake has been delayed due to high water temperature.

Reports from the Climatology Office of the University of Virginia, the Virginia Department of Environmental Quality, the United States Geological Survey, the Virginia Department of Forestry and the Virginia Department of Agriculture and Consumer Services, follow.

Virginia Department of Forestry Wildfire Conditions

Summertime wildfire activity has remained at more elevated levels than what would be considered normal for Virginia. For the month of July 2010, the VDOF responded to 122 wildfires which burned 543 acres. The leading cause of wildfire continues to be human carelessness.

Observed fire behavior over the last few weeks indicates that wildfire occurrence, rates of spread and fire intensity is much greater than would normally be expected during this time of the year. The low fuel moisture conditions overall make suppression operations more difficult and lead to increased long term monitoring which can place a drain on firefighter resources. This has not been a significant problem up to this point, however it can have significant problem if the drought conditions persist moving in to our normal fall wildfire season

At least 26 counties across the Commonwealth have enacted local burning bans due to the increased risk of wildfire. The Department of Forestry's Cumulative Severity Index (CSI), which is a detailed measure of soil moisture conditions taken at six location across the Commonwealth indicate the driest conditions that we have seen within the last ten years.

The DOF is becoming increasingly concerned about the potential for a significant fall fire season. The official fall wildfire season runs from October 15 – November 30. Current predictions of warmer and drier than normal conditions through December indicate that little relief is expected through the end of the year and that the fall wildfire season could more troublesome than any we have faced in the last ten years. The agency has begun early contingency planning to be better prepared for higher than normal levels of wildfire activity headed into October.

Report of the Climatology Office of the University of Virginia

During the first half of September, rainfall has been exceedingly sparse throughout most of the Commonwealth. Only the far southwestern Drought Region (Big Sandy) has averaged about half of normal for the period, with about one inch of rain. A vast area of central Virginia from north to south has yet to see one-half inch, and many individual locations have received little more than a trace. Domination of the weather by a persistent dome of high pressure has acted to suppress thunderstorm development, while a lack of moisture from tropical systems (or their remnants) has helped keep the air mass over Virginia comparatively dry.

According to preliminary data, this summer (Jun–August) has been the warmest, averaged statewide, in the history of modern recordkeeping—going back to 1895. So far, September temperatures are significantly higher than normal for most observing stations. This has brought correspondingly higher than average evapotranspiration rates. In turn, as the ground surface dries out, less water is available for evaporation and more of the incoming solar energy goes into heating the surface air layer and increasing the daytime high temperature observations.

These factors have led to enhanced drying of topsoil layers, exacerbating the decline in agricultural conditions, and are having an increasing impact on longer-term moisture conditions. The recharge of deeper

moisture reserves brought about by the ample precipitation this past winter has held off many potential problems with water supplies, but even that supply is being significantly diminished.

Conditions are still favorable for the development and strengthening of tropical systems in the Atlantic Basin, but their movements are crucial to bringing moisture to the Commonwealth. Nonetheless, just one or two well-aimed systems, can make a remarkable difference in a brief period of time.

United States Geological Survey Streamflow and Ground Water Levels

Precipitation across the State has been below normal except in the far southwest portion of the State. Because of the limited precipitation, streamflow has continued to decline to levels that can be supported by groundwater discharge. Streamgages in about half the State (primarily central and eastern portions) are recording flows below normal based on August flow statistics. Streamgages in approximately a third of the State within the same area are recording flows well below normal. Because of the wet winter and some patchy summer precipitation, a large number of streamgages are recording flows in the normal and below normal ranges, especially streamgages in the southwest counties.

Groundwater levels continue to mimic surface-water levels with most wells recording levels in the normal to below normal range. Because of significant recharge during the winter, eight out of nineteen wells are recording water levels in the normal range. Five wells are recording water levels well below normal.

Virginia Department of Environmental Quality Conditions of Major Reservoirs

Levels of large reservoirs statewide are dropping below normal ranges and have generally been declining throughout the summer. Four large multi-purpose reservoirs are identified as drought indicators in the *Virginia Drought Assessment and Response Plan* (Plan); Smith Mountain Lake, Lake Moomaw, Lake Anna and Kerr Reservoir. Three of these four of these reservoirs are currently at levels below defined drought watch status. Only Lake Anna remains above its Drought Watch stage of 248 ft by a margin of 0.6 ft. Below is a summary of large reservoir conditions :

- Lake Moomaw on the Jackson River is at 1563.13 feet ASL, and is dropping at a rate of ~0.16 ft per day. Approximately 28.9% of conservation storage remains. Lake Moomaw is 1.87 ft below the Drought Watch level.
- Kerr Reservoir is currently approximately 4.16 ft below the Guide Curve and is anticipated to drop an additional 0.34 ft by October 5th. Drought Watch status is reached at greater than 3 ft below the Guide Curve.
- Smith Mountain Lake is currently at elevation 792.8 ft which is 2.2 ft below full pond . The Drought Watch stage for Smith Mountain Lake is elevation 793 feet and below.
- As of September 28th, Lake Anna was at elevation 248.4 feet (1.6 feet below full) and dropped approximately 0.2 ft since September 7th. The Drought Watch stage for Lake Anna Lake is elevation 248 feet and below.

Virginia Department of Agriculture and Consumer Services Status of Agricultural Drought

Overview

According to the USDA Crop Weather Report released on September 12, 2010, 81% of topsoil moisture ranged from short to very short. Dry weather continues to be the major issue for the agricultural community.

Most producers in the northern, northwestern, eastern and central parts of the state are experiencing severe drought conditions. Southwest Virginia producers have experienced significant variations in the amount of moisture they have received. Some areas of Southwest Virginia appear to have received sufficient rainfall this growing season while other areas of that region are experiencing severe drought conditions with rains passing on either side of them. Water restrictions in some parts of the state and a lack of water sources, have curtailed agricultural irrigation. Producers across the Commonwealth continue to express concern about the condition of pastures and hay availability as winter approaches.

As of September 27, 2010, fifty-six Virginia localities have formally requested the Governor's assistance in obtaining federal agricultural disaster designation due to drought conditions. The USDA/Farm Service Agency has completed the official loss assessment reports (LARs) for 38 of these localities – Albemarle, Amherst, Appomattox, Bedford, Brunswick, Campbell, Caroline, Charlotte, Clarke, Culpeper, Cumberland, Dinwiddie, Essex, Franklin, Frederick, Goochland, Hanover, Isle of Wight, King and Queen, King George, Lancaster, Louisa, Lunenburg, Mecklenburg, Middlesex, Nelson, Northumberland, Nottoway, Patrick, Pittsylvania, Powhatan, Prince Edward, Pulaski, Richmond (County), Rockbridge, Southampton, Surry, and Westmoreland. LARs are pending for the sixteen remaining localities – Amelia, Buckingham, Carroll, Fauquier, Fluvanna, Greene, Greensville, Halifax, James City, King William, Montgomery, Northampton, Orange, Rappahannock, Shenandoah, Spotsylvania, Stafford and Suffolk (City).

Impact on Dairies/Livestock/Poultry

Pastures and hay, which had responded well to the mid-August rains, are starting to show dry weather stress again. In northern, central, and southern Virginia, pastures are severely stressed by the drought, and subsequently hay supplementation to livestock is occurring. Feed supplies will be critical as winter approaches due to the 2010 drought. Many areas are without feed or pasture and have already or are currently selling yearlings and thinning their herds. Feeder sales in many parts of the state have recently had low yearling numbers as evidence that most of them have already been sold. Cow numbers are still strong in livestock markets in an attempt to reduce herd numbers due to dry conditions. Areas such as southwestern Virginia are less affected and are able to purchase cattle for grazing. Veterinarians at the Virginia Maryland Regional College of Veterinary Medicine have reported that they are responding to an increased number of clinical cases of water deprivation in livestock that have resulted from decreased surface water and increased well failures.

Impact on Nurseries/Christmas Trees

The lack of rainfall across most of the state continues to impact the nursery industry resulting in an increased irrigation needs for both containerized and in-ground nursery stock.

Impact on Crops

Crop conditions around the state continue to be significantly impacted by the drought with most areas of the state reporting significant crop loss. Fruit and vegetable producers without irrigation lost a lot of their production while producers with good irrigation have been able to produce good quality product. Most of the production is winding down for the year.

Corn

A number of corn producers have already completed their corn harvest. Most growers have not had to dry corn as they have harvested it right out of the field at 12-15% moisture. Yields have been catastrophic running between 0 – 50 bushels per acre. One farmer in the Hanover area averaged 10 bushels/acre over 900 acres. Some producers are saying that this may be the worst corn crop in the history of the Commonwealth.

Tobacco

The tobacco crop responded well to the mid-August rains, but now needs rain to finish filling out this crop and add some sap which will aid in the quality of the cured leaf. A later than normal frost is needed to assure time to get the tobacco crop harvested.

Soybeans

This year continues to challenge soybean producers. The crop is late-maturing this year, due to hot weather and an unusual amount of corn earworm flower feeding. Additionally, soybean pests are now feeding on the leaves in many fields and leading to defoliation. Drought has returned to many fields that received rain in August and began re-flowering and setting pods. The result of delayed and/or re-flowering is that either the top of the plant has new young pods along with the older pods below, or the entire plant has a respectable number of pods without seed or the seed are just forming. Producers continue to question whether to apply additional sprays to control insects as the yield potential continues to drop daily. Many fields have already begun to yellow and mature. Without some significant rain over the next couple of weeks, the soybean crop could also become another agricultural disaster.

Pumpkins

Pumpkins look fairly good as the dry weather has limited disease. However, groundhogs have been somewhat of a problem as they are using the pumpkins as a source for moisture.

Peanuts

August showers helped with peanut formation under the ground but a little more rain would be very beneficial to the peanut crop. Peanut growers will try to wait as long as possible to allow the peanuts to mature but an early frost could damage the crop. It will be a tough call as to when to dig the peanuts.

Cotton

Cotton plants are very short this year. Cotton plants were able to produce bolls, but most of the boll fruit fell off in the excessive heat and there aren't many bolls on a plant due to the plant height. Virginia cotton is expected to have the lowest yields in the US cotton belt.

Impact on Creeks, Rivers, and Wells

In northern and northwestern parts of the state, low to non-existing surface water flow is occurring. Some farm ponds have dried up. Drinking water for grazing cattle is critical. In some parts of western Virginia, creeks are down to below average and springs have dried up.

APPENDIX A

Precipitation Departures by Drought Evaluation Region

PRELIMINARY PRECIPITATION SUMMARY

Prepared:
09/15/10

DROUGHT REGION	OBSERVED	Sep 1, 2010 NORMAL	- Sep 15, 2010 DEPARTURE	% OF NORM.
1 Big Sandy	0.96	1.73	-0.77	55%
2 New River	0.39	1.71	-1.31	23%
3 Roanoke	0.12	2.12	-1.99	6%
4 Upper James	0.09	1.75	-1.66	5%
5 Middle James	0.15	2.07	-1.92	7%
6 Shenandoah	0.27	1.84	-1.56	15%
7 Northern Virginia	0.54	2.04	-1.49	27%
8 Northern Piedmont	0.18	2.14	-1.96	8%
9 Chowan	0.28	2.22	-1.93	13%
10 Northern Coastal Plain	0.55	2.05	-1.50	27%
11 York-James	0.50	2.45	-1.95	20%
12 Southeast Virginia	0.41	2.22	-1.81	18%
13 Eastern Shore	0.58	1.81	-1.23	32%
Statewide	0.34	2.00	-1.66	17%

DROUGHT REGION	OBSERVED	Aug 1, 2010 NORMAL	- Sep 15, 2010 DEPARTURE	% OF NORM.
1 Big Sandy	6.09	5.56	0.53	110%
2 New River	5.63	5.02	0.62	112%
3 Roanoke	6.55	5.84	0.72	112%
4 Upper James	3.07	5.08	-2.01	60%
5 Middle James	4.34	5.89	-1.55	74%
6 Shenandoah	2.97	5.17	-2.19	58%
7 Northern Virginia	4.81	5.89	-1.08	82%
8 Northern Piedmont	3.58	5.96	-2.38	60%
9 Chowan	4.55	6.53	-1.98	70%
10 Northern Coastal Plain	4.89	5.91	-1.02	83%
11 York-James	2.20	7.32	-5.12	30%
12 Southeast Virginia	3.60	7.34	-3.74	49%
13 Eastern Shore	5.36	5.68	-0.32	94%
Statewide	4.70	5.83	-1.13	81%

DROUGHT REGION	OBSERVED	Jul 1, 2010 NORMAL	- Sep 15, 2010 DEPARTURE	% OF NORM.
1 Big Sandy	9.82	10.04	-0.22	98%
2 New River	8.48	8.81	-0.33	96%
3 Roanoke	9.81	10.23	-0.41	96%
4 Upper James	6.72	9.12	-2.40	74%
5 Middle James	6.20	10.30	-4.10	60%
6 Shenandoah	6.35	8.93	-2.57	71%
7 Northern Virginia	8.27	9.66	-1.38	86%
8 Northern Piedmont	5.91	10.36	-4.45	57%
9 Chowan	6.24	11.04	-4.80	57%

10	Northern Coastal Plain	6.35	10.36	-4.00	61%
11	York-James	5.57	12.42	-6.85	45%
12	Southeast Virginia	7.33	12.41	-5.08	59%
13	Eastern Shore	7.44	9.68	-2.23	77%
	Statewide	7.48	10.17	-2.69	74%

DROUGHT			Jun 1, 2010	- Sep 15, 2010	
REGION	OBSERVED	NORMAL	DEPARTURE	% OF NORM.	
1	Big Sandy	14.60	14.18	0.42	103%
2	New River	11.05	12.66	-1.61	87%
3	Roanoke	11.90	14.12	-2.22	84%
4	Upper James	8.57	12.83	-4.26	67%
5	Middle James	8.07	13.81	-5.74	58%
6	Shenandoah	8.18	12.64	-4.46	65%
7	Northern Virginia	9.61	13.52	-3.90	71%
8	Northern Piedmont	8.32	14.37	-6.05	58%
9	Chowan	8.76	14.69	-5.93	60%
10	Northern Coastal Plain	8.36	13.92	-5.55	60%
11	York-James	6.50	15.83	-9.33	41%
12	Southeast Virginia	10.56	16.02	-5.45	66%
13	Eastern Shore	8.97	12.66	-3.69	71%
	Statewide	9.84	13.96	-4.12	71%

DROUGHT			May 1, 2010	- Sep 15, 2010	
REGION	OBSERVED	NORMAL	DEPARTURE	% OF NORM.	
1	Big Sandy	20.05	19.00	1.05	106%
2	New River	14.86	16.87	-2.01	88%
3	Roanoke	16.54	18.45	-1.90	90%
4	Upper James	12.38	17.11	-4.73	72%
5	Middle James	12.12	18.05	-5.93	67%
6	Shenandoah	11.24	16.48	-5.24	68%
7	Northern Virginia	14.25	17.86	-3.60	80%
8	Northern Piedmont	11.99	18.59	-6.60	64%
9	Chowan	14.18	18.78	-4.60	76%
10	Northern Coastal Plain	10.76	18.08	-7.32	60%
11	York-James	11.39	20.10	-8.71	57%
12	Southeast Virginia	14.77	19.88	-5.11	74%
13	Eastern Shore	11.08	16.18	-5.09	69%
	Statewide	14.01	18.22	-4.21	77%

DROUGHT			Apr 1, 2010	- Sep 15, 2010	
REGION	OBSERVED	NORMAL	DEPARTURE	% OF NORM.	
1	Big Sandy	22.74	22.76	-0.02	100%
2	New River	16.70	20.42	-3.71	82%
3	Roanoke	18.30	22.25	-3.94	82%
4	Upper James	14.08	20.51	-6.43	69%
5	Middle James	13.87	21.39	-7.51	65%
6	Shenandoah	12.59	19.40	-6.81	65%
7	Northern Virginia	15.85	21.16	-5.31	75%
8	Northern Piedmont	13.52	21.88	-8.36	62%

9	Chowan	15.62	22.21	-6.59	70%
10	Northern Coastal Plain	12.35	21.17	-8.81	58%
11	York-James	12.34	23.40	-11.06	53%
12	Southeast Virginia	15.96	23.13	-7.17	69%
13	Eastern Shore	12.27	19.10	-6.83	64%
	Statewide	15.72	21.64	-5.92	73%

DROUGHT REGION		OBSERVED	Mar 1, 2010 NORMAL	- Sep 15, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	25.61	27.01	-1.40	95%
2	New River	20.77	24.09	-3.31	86%
3	Roanoke	23.43	26.52	-3.08	88%
4	Upper James	18.18	24.30	-6.12	75%
5	Middle James	19.01	25.45	-6.44	75%
6	Shenandoah	17.31	22.60	-5.29	77%
7	Northern Virginia	19.59	24.82	-5.22	79%
8	Northern Piedmont	18.45	25.69	-7.24	72%
9	Chowan	20.20	26.58	-6.37	76%
10	Northern Coastal Plain	18.50	25.45	-6.94	73%
11	York-James	17.96	28.09	-10.13	64%
12	Southeast Virginia	22.26	27.33	-5.06	81%
13	Eastern Shore	18.50	23.41	-4.91	79%
	Statewide	20.42	25.68	-5.26	80%

DROUGHT REGION		OBSERVED	Feb 1, 2010 NORMAL	- Sep 15, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	28.38	30.59	-2.21	93%
2	New River	23.19	27.02	-3.83	86%
3	Roanoke	26.09	29.83	-3.74	87%
4	Upper James	20.51	27.15	-6.64	76%
5	Middle James	22.23	28.57	-6.33	78%
6	Shenandoah	20.18	25.01	-4.82	81%
7	Northern Virginia	23.63	27.49	-3.85	86%
8	Northern Piedmont	20.97	28.66	-7.69	73%
9	Chowan	23.45	29.75	-6.29	79%
10	Northern Coastal Plain	21.80	28.59	-6.79	76%
11	York-James	21.65	31.62	-9.97	68%
12	Southeast Virginia	26.01	30.83	-4.81	84%
13	Eastern Shore	22.38	26.60	-4.22	84%
	Statewide	23.39	28.81	-5.42	81%

DROUGHT REGION		OBSERVED	Jan 1, 2010 NORMAL	- Sep 15, 2010 DEPARTURE	% OF NORM.
1	Big Sandy	32.61	34.32	-1.71	95%
2	New River	27.70	30.23	-2.53	92%
3	Roanoke	31.16	33.75	-2.59	92%

REGION	OBSERVED	NORMAL	DEPARTURE	% OF NORM.
1 Big Sandy	43.59	44.12	-0.53	99%
2 New River	42.67	39.14	3.54	109%
3 Roanoke	49.47	44.07	5.40	112%
4 Upper James	39.89	39.99	-0.10	100%
5 Middle James	46.40	42.75	3.65	109%
6 Shenandoah	35.85	36.69	-0.84	98%
7 Northern Virginia	41.33	40.76	0.58	101%
8 Northern Piedmont	40.87	43.25	-2.38	95%
9 Chowan	47.10	43.57	3.54	108%
10 Northern Coastal Plain	46.37	42.27	4.11	110%
11 York-James	45.37	46.05	-0.68	99%
12 Southeast Virginia	50.84	44.90	5.94	113%
13 Eastern Shore	45.85	39.55	6.31	116%
Statewide	44.38	42.30	2.08	105%

DROUGHT REGION	OBSERVED	Sep 1, 2009 NORMAL	- Sep 15, 2010 DEPARTURE	% OF NORM.
1 Big Sandy	48.78	47.58	1.20	103%
2 New River	46.69	42.55	4.14	110%
3 Roanoke	52.53	48.30	4.23	109%
4 Upper James	43.16	43.49	-0.33	99%
5 Middle James	49.57	46.88	2.69	106%
6 Shenandoah	38.06	40.36	-2.29	94%
7 Northern Virginia	43.57	44.83	-1.25	97%
8 Northern Piedmont	43.75	47.53	-3.78	92%
9 Chowan	51.42	48.00	3.42	107%
10 Northern Coastal Plain	49.45	46.36	3.10	107%
11 York-James	51.29	50.95	0.34	101%
12 Southeast Virginia	58.14	49.33	8.81	118%
13 Eastern Shore	52.32	43.16	9.17	121%
Statewide	48.02	46.30	1.72	104%

DROUGHT REGION	OBSERVED	Aug 1, 2009 NORMAL	- Sep 15, 2010 DEPARTURE	% OF NORM.
1 Big Sandy	53.27	51.41	1.86	104%
2 New River	51.20	45.86	5.35	112%
3 Roanoke	56.87	52.02	4.85	109%
4 Upper James	46.54	46.82	-0.28	99%
5 Middle James	53.09	50.70	2.40	105%
6 Shenandoah	41.11	43.69	-2.58	94%
7 Northern Virginia	47.54	48.68	-1.13	98%
8 Northern Piedmont	46.90	51.35	-4.45	91%
9 Chowan	55.26	52.31	2.95	106%
10 Northern Coastal Plain	54.71	50.22	4.49	109%
11 York-James	56.76	55.82	0.94	102%
12 Southeast Virginia	67.59	54.45	13.15	124%
13 Eastern Shore	56.92	47.03	9.90	121%

Statewide	52.19	50.13	2.06	104%
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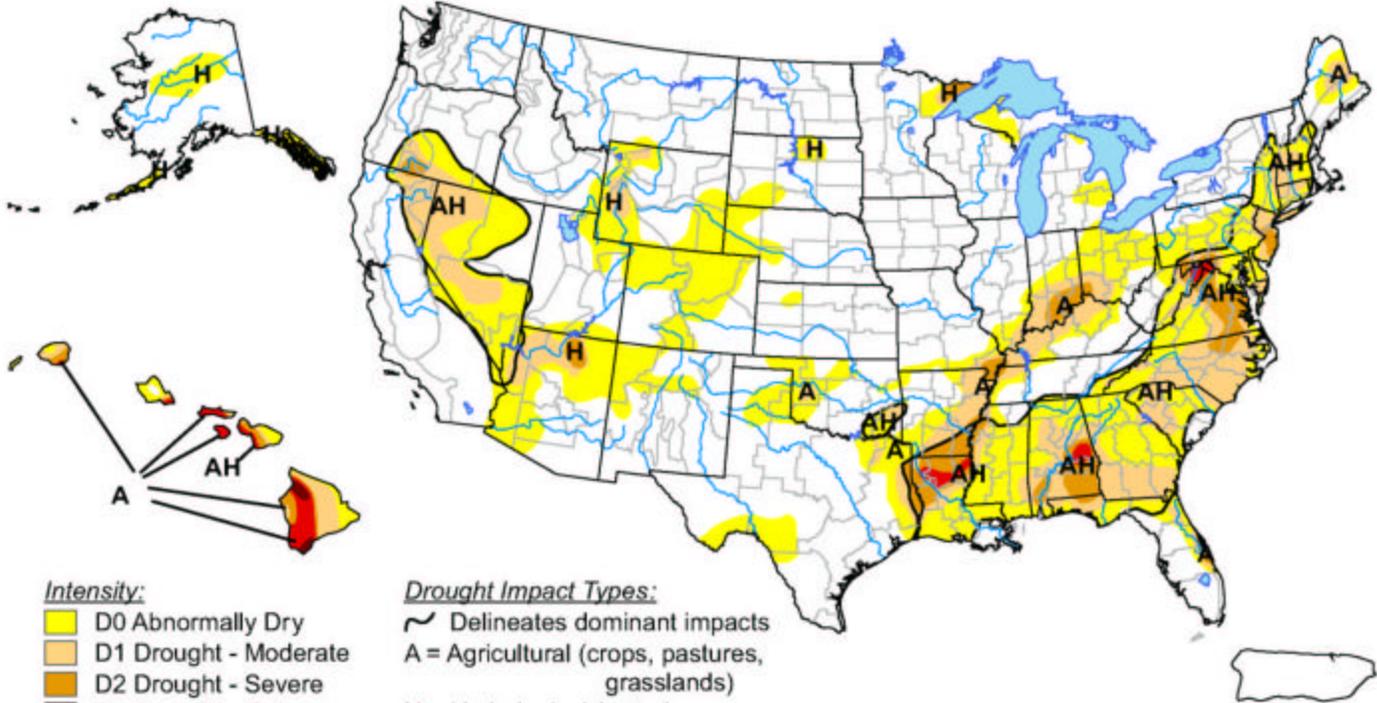
DROUGHT REGION	OBSERVED	Jul 1, 2009 NORMAL	- Sep 15, 2010 DEPARTURE	% OF NORM.
1 Big Sandy	58.87	55.89	2.98	105%
2 New River	55.26	49.65	5.62	111%
3 Roanoke	61.22	56.41	4.82	109%
4 Upper James	51.43	50.86	0.57	101%
5 Middle James	56.58	55.11	1.47	103%
6 Shenandoah	44.05	47.45	-3.40	93%
7 Northern Virginia	49.19	52.45	-3.25	94%
8 Northern Piedmont	49.82	55.75	-5.93	89%
9 Chowan	59.28	56.82	2.46	104%
10 Northern Coastal Plain	59.57	54.67	4.91	109%
11 York-James	62.74	60.92	1.82	103%
12 Southeast Virginia	71.57	59.52	12.06	120%
13 Eastern Shore	62.70	51.03	11.68	123%
Statewide	56.25	54.47	1.78	103%

APPENDIX B

U.S. Drought Monitor

September 21, 2010

Valid 8 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, September 23, 2010

Author: Richard Heim/Liz Love-Brotak, NOAA/NESDIS/NCDC

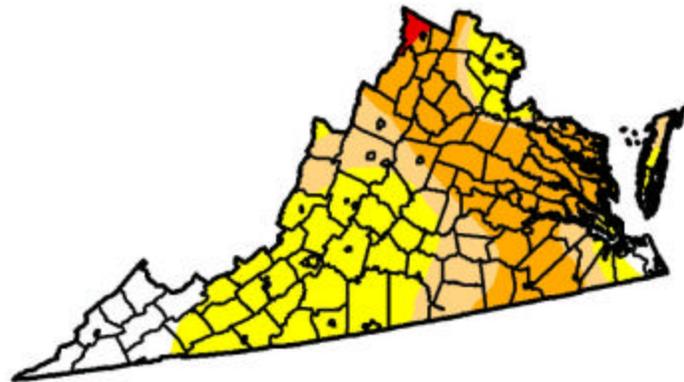
APPENDIX C

U.S. Drought Monitor Virginia

September 21, 2010
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	10.9	89.1	50.3	31.3	0.8	0.0
Last Week (09/14/2010 map)	32.2	67.8	46.3	31.3	0.8	0.0
3 Months Ago (06/29/2010 map)	21.6	78.4	0.5	0.0	0.0	0.0
Start of Calendar Year (01/05/2010 map)	100.0	0.0	0.0	0.0	0.0	0.0
Start of Water Year (10/06/2009 map)	86.9	13.1	0.4	0.0	0.0	0.0
One Year Ago (09/22/2009 map)	50.3	49.7	2.1	0.0	0.0	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, September 23, 2010
Author: Richard Heim, NCDC/NOAA

APPENDIX D

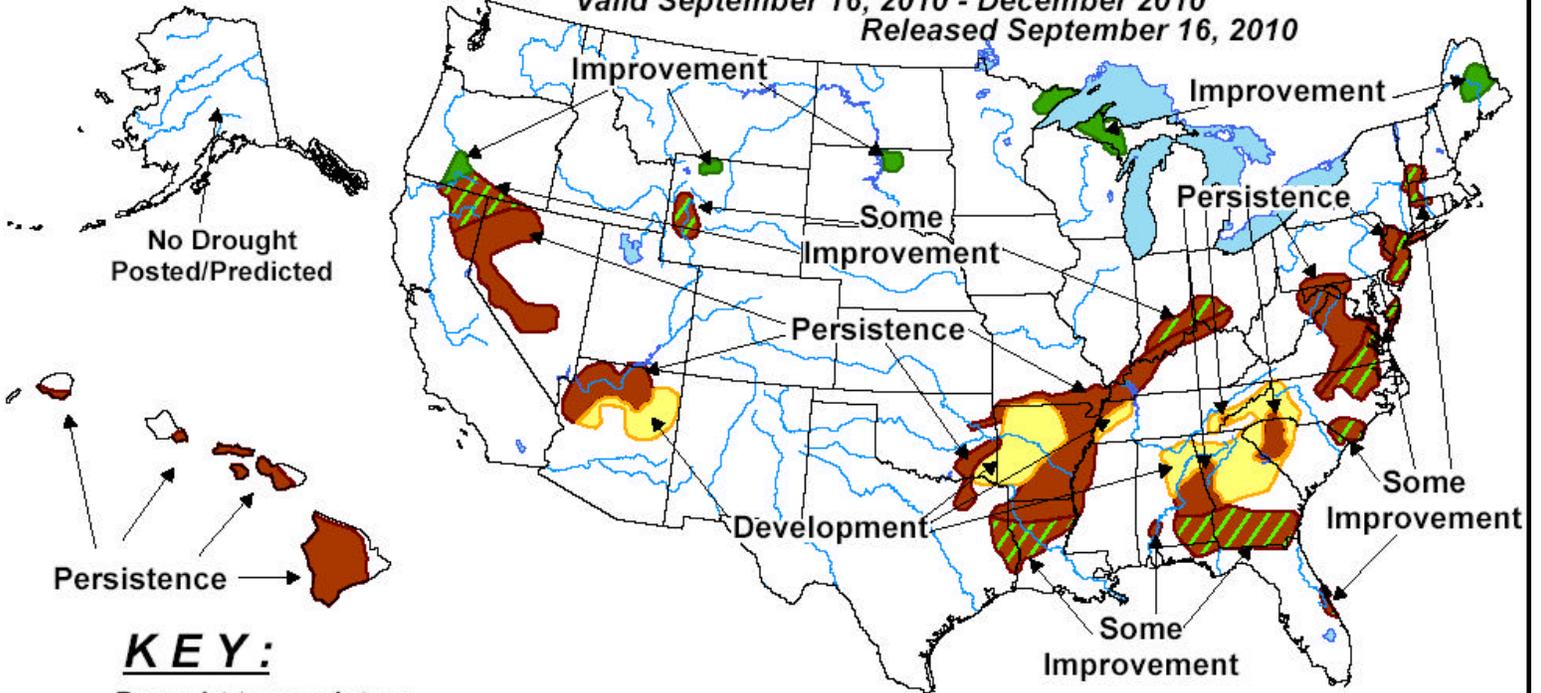


U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid September 16, 2010 - December 2010

Released September 16, 2010



KEY:

-  Drought to persist or intensify
-  Drought ongoing, some improvement
-  Drought likely to improve, impacts ease
-  Drought development likely

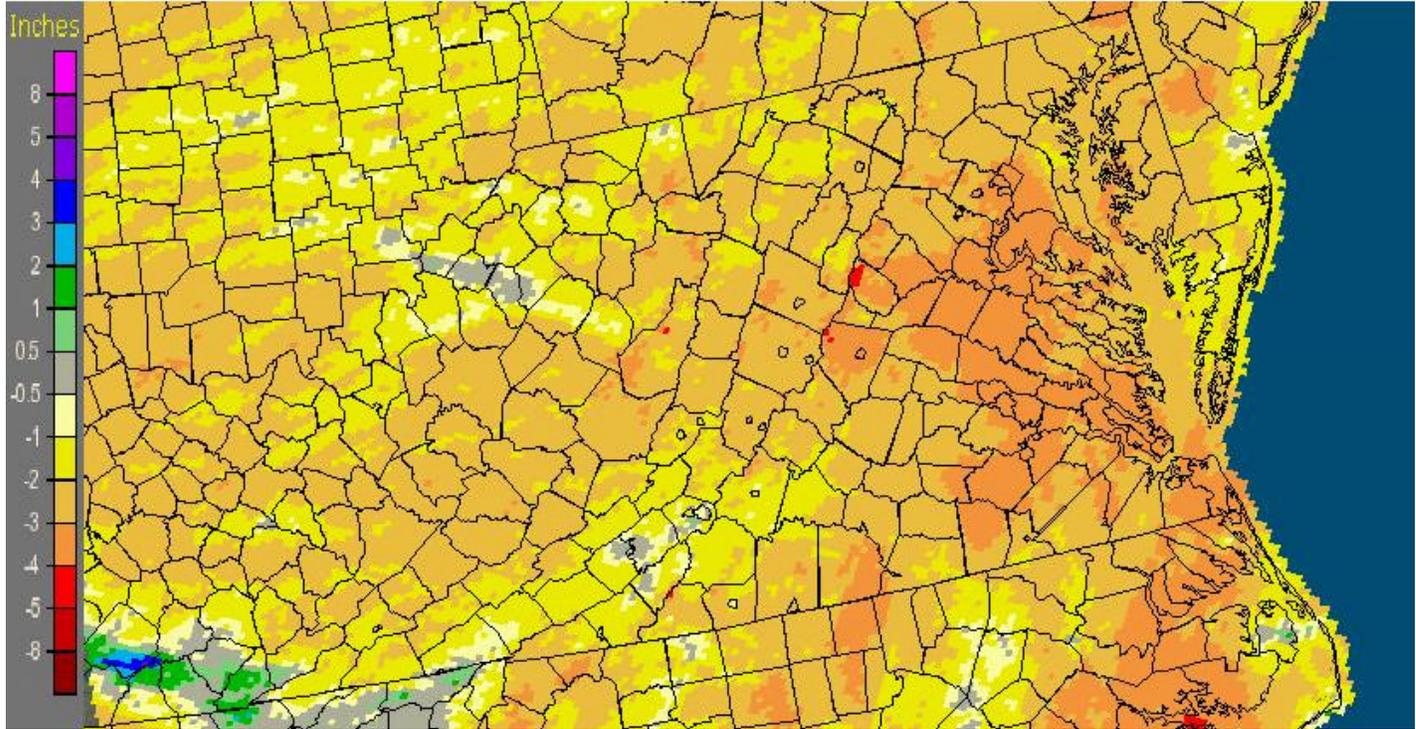
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events – such as individual storms – cannot be accurately forecast more than a few days in advance. Use caution for applications – such as crops – that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

APPENDIX E

30-Day Departure from Normal Precipitation

Virginia: Current 30-Day Departure from Normal Precipitation

Valid at 9/27/2010 1200 UTC- Created 9/27/10 18:16 UTC



APPENDIX F

Condition of Public Water Supplies

August 24, 2010

ODW Drought Situation Report

Date: **8/24/10**

	Restriction totals
Mandatory	2
Voluntary	18
Total	20

N-None
 M-Mandatory
 V-Voluntary
 B-Better
 S-Stable/Same
 W-Worse

PWSID	Waterworks	Source Name	Restrictions	Situation	Population Served
3053280	DCWA Central (Dinwiddie County)	Appomattox River Water Authority (ARWA)	V	S tending towards W - 08/19/2010 - Voluntary restrictions as of 7/12/2010 (but.....DCWA expects ARWA to announce mandatory restrictions in the next couple weeks, if rainfall doesn't increase lake levels quickly)	6,800
3081550	GCWSA - Jarratt	Nottoway River	N	S - 08/19/10 - Waterworks production rate reduced due to lower demand; river level sufficient to allow plant operation at 1.9 mgd. Chief operator noted that river is getting low.	7,190
3093120	Isle of Wight County	Suffolk	V	W - 08/20/10 - Obtains water from Suffolk. Follows Suffolk's lead on conservation.	1,284
3149700	Puddledock Road	ARWA	V	S - 08/19/2010 - Voluntary restrictions as of 7/12/2010.	9,723
3550050	Chesapeake - Western Branch system	City of Portsmouth	V	S -08/20/2010 This portion of the city is consecutive to (receives water from) the city of Portsmouth. City Council voted to go to voluntary conservation city-wide - it took effect on 24 Oct 2007. Still following Portsmouth's lead on	36,642

				conservation.	
3550051	Chesapeake	Northwest River, City of Norfolk Raw Water (Lake Gaston)	N	S -08/20/2010 Through the first 7 months surplus rainfall for 2010 is 13.24 inches. There are no water restrictions in Chesapeake. Chlorides are slightly elevated 69 ppm. the normal range between 30-50 mg/l. Continuing to purchase raw water from Norfolk (7.5 MGD average). NWR averages 4.3 MGD. The Intown Lakes remain full and there are no irregularities in the tidal patterns in NWR.	103,504
3550052	Chesapeake - South Norfolk system	City of Norfolk	V	S -08/20/2010-This portion of the city is consecutive to (receives water from) the city of Norfolk. City Council voted to go to voluntary conservation city-wide - it took effect on 24 Oct 2007. Still following Norfolk's lead on conservation.	38,709
3570150	Colonial Heights	ARWA	V	S - 08/19/10 - Voluntary restrictions currently in place. Generally follow ARWA recommendations on water restrictions.	17,286
3595250	Emporia	Meherrin River	N	S - 08/19/10 - Reservoir level sufficient for normal operation. Power plant & ILUKA also withdrawing from river.	5,600
3670800	Virginia-American Water Company (Hopewell)	Appomattox & James Rivers	N	S - 08/19/2010 - Level at intakes normal and sufficient to supply plant. August rainfall on track to meet monthly average and year-to-date totals slightly below average. Still experiencing taste and odor issues.	28000 - Primary / 45463 Total including Consecutive System (Ft. Lee)

3700500	Newport News	Chickahomony River, Skiffs Creek, Diascand, Little Creek, Harwoods Mill, Lee Hall	N	S - 8/23/10 - Total reservoir capacity at 76%. Chickahominy pumps operating. At current delivery rate of about 46 MGD, there is about 186 days of stored water available.	414,000
3710100	Norfolk	Lake Prince, Lake Burnt Mills, Western Branch reservoir, Nottoway River, Blackwater River, 4 western wells; Little Creek reservoir, Lakes Smith, Lawson, Whitehurst, and Wright. Lake Gaston.	V	S - As of 08/16/10, reservoirs at 86.3% (nearly even with 85.8% on 07/19/10). Historic reservoir capacity is 86.9% at this time of year. Avg. pumping from Lake Gaston = 50.0 MGD. Total Reservoir Storage = 13,048 MG. Approx. 650 days of storage remaining under current demand with 50 MGD pumping from Lake Gaston, and approx. 190 days of storage remaining under current demand with no pumping from Lake Gaston. Current demand is approx. 70 MGD. Called for voluntary conservation 11/1/07.	261,250 - Primary / 755,617 - Total including consecutive systems (Va Beach + military bases).
3730750	Petersburg	ARWA	V	S - 08/19/10 - Voluntary restrictions requested 7/12/2010. Generally follow ARWA recommendations on water restrictions.	33,740
3740600	Portsmouth	Lakes Cohoon, Meade, Kilby, and Speights Run	V	W - As of 08/13/10, reservoirs at 76% (down from 83% on 07/16/10). Median reservoir capacity is 93% for the month and historical average capacity is 90% (period of 1969-2008). The emergency wells are off. Estimated days of storage remaining at current pumpage and rainfall is 173 days (avg. pumpage is 16.6 MGD). Called for voluntary	100,400 - Primary / 120,400 Total including consecutive systems (military bases)

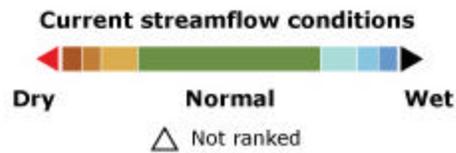
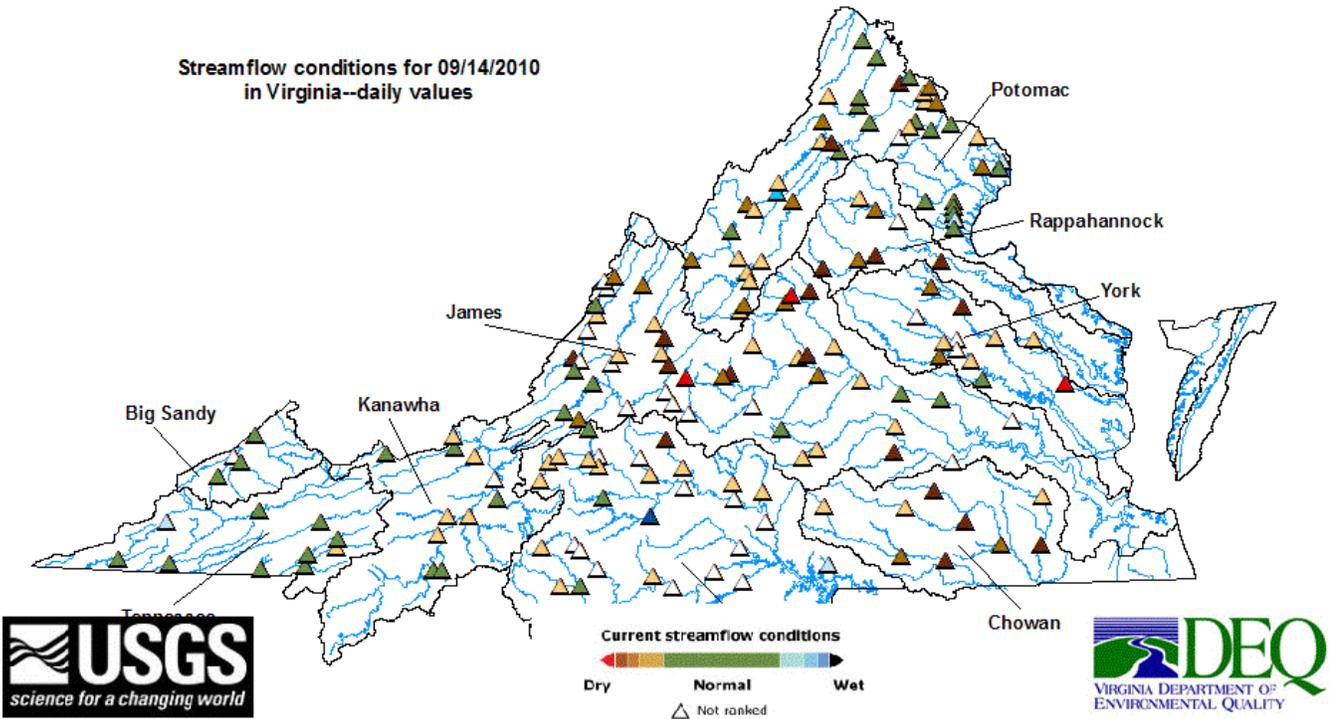
				conservation on 10/10/07.	
3800805	Suffolk	Lone Star Lakes, Cumps Mill Pond	V	<p>W 8/20/2010-Will follow Portsmouth's lead and the region as far as conservation. Average reservoir levels : Southern Lakes at 71.33% capacity, for the Northern Lakes at 73.15% and Crumps Mill Pond at 41.24%. The Southern Lakes are for emergency use only. Overall they are at 61.91% capacity as of July 30, 2010.The reservoirs for the period (May-June 2010) capacity 77.71%. The operator states that they were in better condition last year when compared to 2009 (96.66%) for the same period. No conservation measures implemented at this time but will continue to monitor.</p>	62,562
3810900	Virginia Beach	Norfolk	V	<p>S - 08/16/10 - Obtains water from Norfolk. Called for voluntary conservation on 9/19/07.</p>	423,743
3830850	Williamsburg	Waller Mill Reservoir	N	<p>8/20/2010: 5" below primary spillway - about 86% of usable capacity. 301 days of usable storage based on drawdown rate of the past week of 2.5".</p>	16,400
4041035	APPOMATTOX RIVER WATER AUTHORITY	Surface water; Lake Chesdin	V	<p>W- Wholesaler to Chesterfield County, Prince George County, Dinwiddie County; Cities of Petersburg and Colonial Heights. Reservoir is at 58" below top of dam. Voluntary restrictions continue.</p>	200,000
4041845	CHESTERFIELD CO CENTRAL WATER SYSTEM	Surface water; Swift Creek reservoir; purchases finished water	V	<p>B- Purchases water from the City of Richmond and the Appomattox River Water Authority. Swift Creek Reservoir is at 1.3 feet below top of dam.Voluntary restrictions continue.</p>	286,000

4057800	TAPPAHANNOCK, TOWN OF	Groundwater wells	N	S	2,100
4073311	GLOUCESTER CO WATER TREATMENT PLT	Surface water, Beaverdam reservoir; 2 deep groundwater wells	N	S-Reservoir is full.	8,870
4075283	EASTERN GOOCHLAND CENTRAL WATER SYSTEM	Purchased surface water	N	S-purchases water from Henrico County	2,500
4075735	JAMES RIVER CORRECTIONAL CTR	Surface water; James River	N	S- Conservation at all DOC facilities	9,300
4085398	HANOVER SUBURBAN WATER SYSTEM	Surface water; North Anna River; some groundwater wells; purchases finished water	N	S (see Richmond)	71,000
4085770	SPRING MEADOWS- MEADOW GATE	Groundwater wells	N	S	2,300
4087125	HENRICO COUNTY WATER SYSTEM	Surface water; James River	N	S (see Richmond)	289,000
4101900	WEST POINT, TOWN OF	Groundwater wells	N	S	3,000
4127110	DELMARVA PROPERTIES	Groundwater wells	N	S-New Kent Co. encourages conservation at all county owned waterworks.	7,700
4145675	POWHATAN COURTHOUSE	Groundwater wells	N	S	2,600
4193280	COLONIAL BEACH, TOWN OF	Groundwater wells	N	S	3,300
4760100	RICHMOND, CITY OF	Surface water; James River	N	S- water levels do not affect intake; James River Regional Flow Management Plan set restrictions based on James River level for counties of Henrico, Chesterfield, Goochland, and Hanover counties, which purchase water from the City. Voluntary restrictions not yet necessary, but may become necessary if no substantive rainfall events.	197,000
5011050	Town of Appomattox	Wells	V	S	1,708

6033085	Caroline Utility	Groundwater	M	S - Mandatory water use restriction of High-Level 3 went into effect 7/13/2010 and remain in effect as of 8/23/2010.	3600 primary 3000 consec
6061200	Marshall	Groundwater	M	S - The WSA Alert Messaging Service maintains the Water Use Restriction Notice as of 8/23/2010. The mandatory water use restriction is not directly drought related but depends on water source development.	2,134
6107150	Town of Hamilton	Groundwater	V	S - 8/23/10 Voluntary water use restrictions initiated 7/6/2010	2,000
6107400	Town of Lovettsville	Groundwater	V	S 8/23/10 Voluntary water use restrictions remain in place; however there is no problem with water supply.	1,280
6107600	Town of Purcellville	Surfce water/groundwater	V	S - 8/23/10 All sources returned to service. Voluntary water conservation initiated 7/2/10.	6,300
6107650	Town of Round Hill	Groundwater	V	S - 8/23/10 - No water supply problems. Voluntary water use restrictions effective 7/6/10.	3,156

APPENDIX G

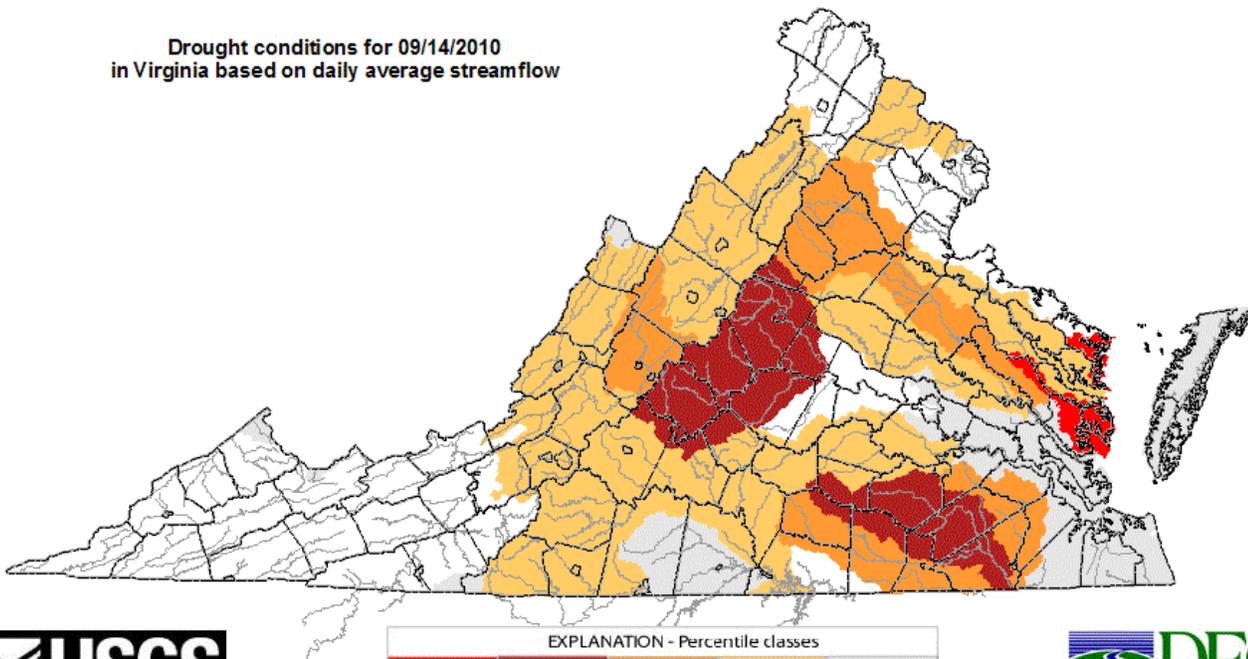
USGS Streamflow Conditions for August 24, 2010



APPENDIX H

Drought Watch -- USGS State Information on Drought Map of below normal daily average streamflow

Drought conditions for 09/14/2010
in Virginia based on daily average streamflow



EXPLANATION - Percentile classes				
Low	<=5	6-9	10-24	Insufficient data
Extreme drought	Severe drought	Moderate drought	Below normal	



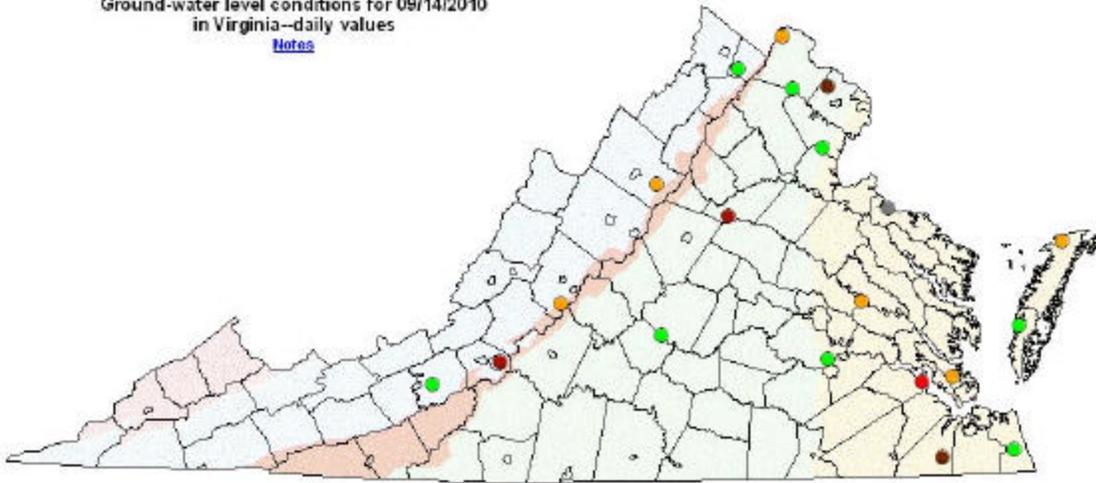
EXPLANATION - Percentile classes				
Low	<=5	6-9	10-24	Insufficient data
Extreme drought	Severe drought	Moderate drought	Below normal	

APPENDIX I

Virginia Climate Response Network

August 24, 2010

Ground-water level conditions for 09/14/2010
in Virginia--daily values
[Notes](#)



Explanation - Percentile classes (symbol color based on most recent daily value.)									
●	●	●	●	●	●	●	●	●	●
New Low	<5	5-10	10-24	25-75	76-90	90-95	>95	New High	Not Ranked
	Well Below Normal		Below Normal	Normal	Above Normal		Well Above Normal		

Explanation - Percentile classes (symbol color based on most recent daily value.)									
●	●	●	●	●	●	●	●	●	●
New Low	<5	5-10	10-24	25-75	76-90	90-95	>95	New High	Not Ranked
	Well Below Normal		Below Normal	Normal	Above Normal		Well Above Normal		