Water-Data Report 2010

02086624 KNAP OF REEDS CREEK NEAR BUTNER, NC

Neuse Basin
Upper Neuse Subbasin

LOCATION.--Lat 36°07′40″, long 78°47′55″ referenced to North American Datum of 1927, Granville County, NC, Hydrologic Unit 03020201, on left bank, 1.5 mi downstream of bridge on Secondary Road 1120, 2.3 mi west of Butner, and 2.5 mi upstream from mouth.

DRAINAGE AREA.--43 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1982 to September 1995, February 2006 to current year.

GAGE.--Water-stage recorder. Datum of gage is 254.56 ft above North American Vertical Datum of 1988. Satellite telemetry at streamgage.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Some diurnal fluctuation at low flow. The town of Butner diverted an average of 5.2 ft^3/s for municipal water supply upstream from station and returned an average of 3.3 ft^3/s upstream from station as treated effluent.

02086624 KNAP OF REEDS CREEK NEAR BUTNER, NC—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	e5.4	e67	23	45	43	29	33	5.0	26	4.3	6.3	3.4
2	e5.0	e17	115	39	50	25	28	4.7	21	3.3	5.3	3.2
3	e4.8	e9.9	604	31	244	29	25	4.8	17	3.1	4.8	3.2
4	e4.4	e7.4	147	28	223	26	23	5.4	13	2.8	4.5	2.9
5	e4.5	e7.0	133	27	269	26	21	6.8	9.3	3.0	22	2.8
6	e4.6	e5.7	118	24	619	24	18	7.3	7.1	3.9	23	3.0
7	e4.5	e5.5	60	23	e98	21	16	4.9	6.1	3.7	5.9	3.2
8	e4.2	e5.5	47	23	e63	22	13	5.1	5.4	3.4	4.4	3.3
9	e3.9	e5.6	432	22	e59	21	17	3.9	4.4	3.1	4.3	3.1
10	e3.9	e8.3	245	20	e63	20	11	4.2	4.4	3.0	4.0	3.0
11	e3.9	386	77	19	e57	32	8.9	3.6	3.9	2.9	3.8	2.9
12	e4.7	544	50	20	e51	103	9.2	3.8	3.6	3.2	3.7	3.2
13	e6.7	495	88	19	e47	172	8.2	3.3	4.1	3.3	3.7	e3.0
14	e4.7	145	141	18	e43	146	7.4	3.1	4.3	9.8	3.3	e3.0
15	e6.2	59	69	19	e38	88	6.2	3.5	3.8	4.0	3.2	e2.5
16	e5.1	36	49	17	e36	52	5.8	7.2	37	3.4	3.5	e3.0
17	e4.5	30	37	238	e32	37	5.3	63	27	18	3.7	e3.5
18	e4.4	34	35	205	e29	36	5.3	159	11	17	4.5	e4.0
19	e4.6	71	302	73	43	32	4.9	31	6.7	50	5.3	e4.0
20	e4.4	86	184	49	33	27	4.4	19	4.9	7.4	6.6	e4.0
21	e4.8	40	104	50	34	24	6.4	9.5	4.6	5.3	3.8	e4.0
22	e4.2	28	75	211	42	24	12	21	4.4	4.7	3.4	e2.5
23	e4.2	302	60	94	58	22	8.2	430	4.2	4.3	3.8	e2.5
24	e10	246	50	58	49	20	8.0	216	4.0	4.1	7.7	e2.5
25	e7.3	65	190	496	54	19	12	73	3.9	3.7	8.0	e2.5
26	e5.1	40	430	225	42	21	13	37	3.6	4.0	5.1	e3.6
27	e5.1	39	131	84	34	18	9.6	26	3.5	17	4.0	e36
28	e31	31	73	57	31	18	8.8	26	3.8	8.4	3.4	e18
29	e11	25	51	46	---	239	7.1	304	3.8	4.8	3.3	20
30	e8.1	23	40	58	---	109	6.0	56	4.3	7.5	3.6	200
31	e7.6	---	43	49	---	46	---	31	---	4.1	3.3	---
Total	192.8	2,863.9	4,203	2,387	2,484	1,528	361.7	1,578.1	260.1	220.5	175.2	355.8
Mean	6.22	95.5	136	77.0	88.7	49.3	12.1	50.9	8.67	7.11	5.65	11.9
Max	31	544	604	496	619	239	33	430	37	50	23	200
Min	3.9	5.5	23	17	29	18	4.4	3.1	3.5	2.8	3.2	2.5
Cfsm	0.14	2.22	3.15	1.79	2.06	1.15	0.28	1.18	0.20	0.17	0.13	0.28
In.	0.17	2.48	3.64	2.07	2.15	1.32	0.31	1.37	0.23	0.19	0.15	0.31

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2010 [a], BY WATER YEAR (WY)

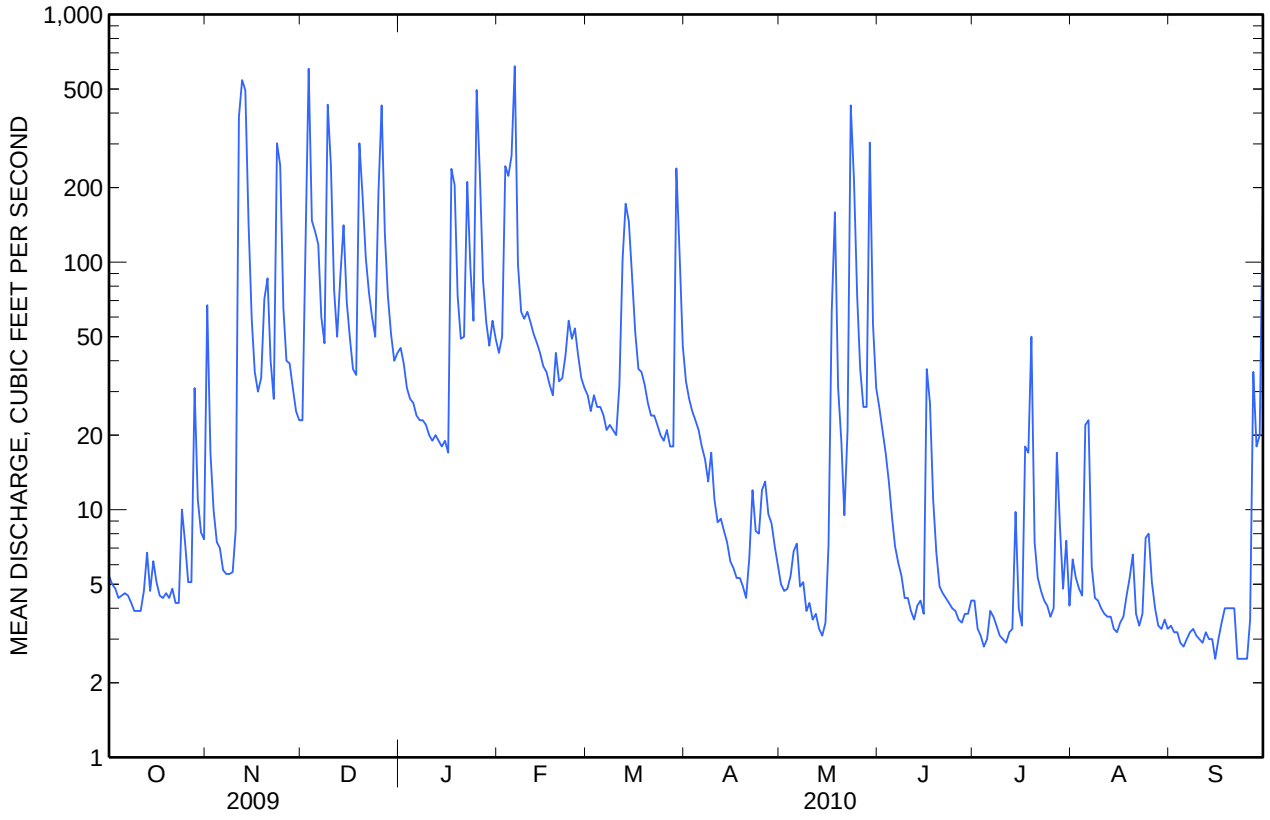
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	15.8	31.5	45.3	62.4	71.5	101	59.5	32.7	19.4	22.6	15.9	9.46
Max	105	147	136	164	170	253	190	109	151	166	113	65.8
(WY)	(1990)	(1986)	(2010)	(1991)	(1983)	(1993)	(1993)	(1989)	(1995)	(1989)	(1989)	(2008)
Min	3.65	3.72	6.43	6.00	14.8	6.57	5.83	5.33	2.41	2.12	3.04	2.44
(WY)	(1985)	(2008)	(2008)	(1989)	(1988)	(2006)	(1995)	(1986)	(1986)	(1985)	(1993)	(1984)

02086624 KNAP OF REEDS CREEK NEAR BUTNER, NC—Continued

SUMMARY STATISTICS

	Calendar Year 2009		Water Year 2010		Water Years 1983 - 2010 [a]	
Annual total	14,826.1		16,610.1			
Annual mean	40.6		45.5		41.3	
Highest annual mean					78.9	1989
Lowest annual mean					13.2	1988
Highest daily mean	604	Dec 3	619	Feb 6	2,920	Mar 4, 1993
Lowest daily mean	2.4	Sep 13	2.5	Sep 15	0.99	Jun 12, 2008
Annual seven-day minimum	3.2	Sep 10	2.9	Sep 10	1.2	Jun 9, 2008
Maximum peak flow			1,060	Dec 3	5,800	Mar 4, 1993
Maximum peak stage			7.29	Dec 3	8.31	Mar 4, 1993
Instantaneous Low Flow			Not determined		Not determined	
Annual runoff (cfsm)	0.945		1.06		0.960	
Annual runoff (inches)	12.83		14.37		13.05	
10 percent exceeds	87		111		75	
50 percent exceeds	12		13		8.3	
90 percent exceeds	4.2		3.4		2.9	

[a] See Period of Record.



02086624 KNAP OF REEDS CREEK NEAR BUTNER, NC—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1983-87, 1989-95, 2006-10.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1982 to September 1985.
WATER TEMPERATURE: October 1982 to September 1985.

INSTRUMENTATION.--Water-quality monitor from October 1982 to September 1985.

REMARKS.--Station operated to define water quality as part of a regional surface-water quality assessment. Samples for October 1994 and April 1995 were collected by the North Carolina Department of Environment, Health and Natural Resources. A GC/FID scan for trace organic compounds was performed on these samples the the U.S. Geological Survey Water Quality Lab. Results are available at the North Carolina Water Science Center, Raleigh, NC.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum recorded, >1,100 microsiemens, August 25, 30, 31, 1984; minimum recorded, 39 microsiemens, March 7, 1984.
WATER TEMPERATURE: Maximum recorded, 31.5°C, August 15, 1985; minimum recorded, 1.0°C, January 21, 29, February 9, 1985.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 1 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO3, calcium carbonate; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated]

Date	Sample start time	Medium name	Sample type	Barometric pressure, mm Hg (00025)	Color, water, filtered, platinum cobalt units (00080)	Discharge, instantaneous, ft³/s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	Dissolved oxygen, water, unfiltered, % saturation (00301)	pH, water, unfiltered, field, standard units (00400)
11-11-2009	0945	Surface water	Regular	--	200	432	8.7	--	6.3
06-28-2010	*1015*	*QC sample - Artificial*	*Blank*	--	--	--	--	--	--
06-28-2010	*1130*	*QC sample - Artificial*	*Blank*	--	--	--	--	--	--
09-30-2010	1000	Surface water	Regular	746	100	410	7.0	81	6.5

02086624 KNAP OF REEDS CREEK NEAR BUTNER, NC—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 2 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO3, calcium carbonate; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated]

Date	Specific conduc tance, water, unfiltered, µS/cm at 25 °C (00095)	Tempera ture, water, °C (00010)	Dissolved solids dried at 180 °C, water, filtered, mg/L (70300)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, filtered, mg/L (00915)	Magne sium, water, filtered, mg/L (00925)	Potassium, water, filtered, mg/L (00935)	Sodium, water, filtered, mg/L (00930)	ANC, water, unfiltered, inflection-point, incremental titration method, field, mg/L as CaCO3 (00419)
11-11-2009	95	13.8	102	31.7	7.80	2.96	4.23	11.7	24.7
06-28-2010	--	--	--	*< .18*	*< .04*	*< .016*	*< .06*	*< .10*	--
06-28-2010	--	--	--	*< .18*	*< .04*	*< .016*	*< .06*	*< .10*	--
09-30-2010	92	21.7	82	25.8	6.17	2.52	3.46	8.98	23.5

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 3 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO3, calcium carbonate; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated]

Date	Bi carbonate, water, unfiltered, inflection-point, incremental titration method, field, mg/L (00450)	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)	Silica, water, filtered, mg/L as SiO2 (00955)	Sulfate, water, filtered, mg/L (00945)	Ammonia plus organic nitrogen, water, unfiltered, mg/L as N (00625)	Ammonia, water, filtered, mg/L as N (00608)	Nitrate plus nitrite, water, filtered, mg/L as N (00631)	Nitrite, water, filtered, mg/L as N (00613)
11-11-2009	30.1	11.6	< .08	9.24	11.6	1.6	.167	.946	.020
06-28-2010	--	*< .12*	*< .08*	*< .06*	*< .18*	*< .10*	*E .014*	*< .016*	*< .002*
06-28-2010	--	*< .12*	*< .08*	*< .06*	*< .18*	*< .10*	*E .020*	*< .016*	*< .002*
09-30-2010	28.6	7.66	.14	9.03	9.37	1.3	.039	.719	.009

02086624 KNAP OF REEDS CREEK NEAR BUTNER, NC—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 4 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO3, calcium carbonate; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated]

Date	Orthophosphate, water, filtered, mg/L as P (00671)	Phosphorus, water, unfiltered, mg/L as P (00665)	Aluminum, water, unfiltered, recoverable, µg/L (01105)	Cadmium, water, unfiltered, µg/L (01027)	Chromium, water, unfiltered, recoverable, µg/L (01034)	Cobalt, water, unfiltered, recoverable, micrograms per liter (01037)	Copper, water, unfiltered, recoverable, µg/L (01042)	Iron, water, unfiltered, recoverable, µg/L (01045)	Lead, water, unfiltered, recoverable, µg/L (01051)
11-11-2009	.234	.482	2,300	.08	7.9	5.2	9.1	3,540	4.74
06-28-2010	*< .008*	*< .008*	*< 6*	*< .04*	*< .42*	*E .02*	*< 1.4*	*< 9*	*< .06*
06-28-2010	*< .008*	*< .008*	*< 6*	*< .04*	*< .42*	*< .04*	*< 1.4*	*< 9*	*< .06*
09-30-2010	.197	.353	2,260	.10	6.2	4.6	11.2	3,380	4.78

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 5 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO3, calcium carbonate; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated]

Date	Manganese, water, unfiltered, recoverable, µg/L (01055)	Mercury, water, unfiltered, recoverable, µg/L (71900)	Molybdenum, water, unfiltered, recoverable, micrograms per liter (01062)	Nickel, water, unfiltered, recoverable, µg/L (01067)	Silver, water, unfiltered, recoverable, µg/L (01077)	Zinc, water, unfiltered, recoverable, µg/L (01092)	Arsenic, water, unfiltered, µg/L (01002)	Selenium, water, unfiltered, µg/L (01147)	Organic carbon, water, unfiltered, mg/L (00680)	Suspended sediment concentration, mg/L (80154)
11-11-2009	450	.017	2.3	7.8	.02	30.2	.91	.17	21.3	233
06-28-2010	*< .8*	*< .010*	*< .1*	*< .36*	*< .02*	*< 2.0*	*< .18*	*< .10*	*< .6*	--
06-28-2010	*< .8*	*< .010*	*< .1*	*< .36*	*< .02*	*< 2.0*	*< .18*	*< .10*	*< .6*	--
09-30-2010	388	.018	.7	6.9	.04	24.2	1.1	.15	20.2	214