



Central Coastal Plain Water Use Study



The Central Coastal Plain Water Use Area (CCPCUA) survey was conducted to document water use for the agricultural sector in Beaufort, Carteret, Craven, Duplin, Edgecombe, Greene, Jones, Lenoir, Martin, Onslow, Pamlico, Pitt, Washington, Wayne, and Wilson counties. CCPCUA and associated rules were created in May, 2001 to help manage water resources within the 15 county area (General Statute 143-215-22H). Because limited information was available on agricultural water use, the North Carolina Department of Agriculture and Consumer Services was requested to collect information from farmers that withdraw 10,000 to 100,000 gallons in any one day. Individual responses remain confidential and are only used in combination with other reports to produce county totals.

Farmers that use in excess of 100,000 gallons in any one day are required to report their water usage directly to the Department of Environment and Natural Resources (DENR), Division of Water Resources. Data for 2003 were furnished by DENR and is summarized on the last page of this report.

Of the farms surveyed in the 15 county area, 223 withdrew between 10,000 and 100,000 gallons of water in any one day. The region's 2003 data reflects a year of bountiful rain and is in sharp contrast to 2002's drought driven data. July was the largest water use month in 2003, averaging 20.9 million gallons daily, with a maximum daily withdrawal of 28.0 million gallons. The largest water use month in 2002 was June, averaging 48.3 million gallons daily.

A questionnaire was mailed at the end of December 2003 to 327 operations which had previously reported large water usage in the 15 county area. Operations that did not respond were sent a second questionnaire and were contacted by telephone if their water use information was not received by mail. Data collection was finalized in early April. The table below quantifies the response of those farms. For the 22 non-response operations and the 7 refusals, the size and type of operation for each was reviewed, and determined that the farms were unlikely to withdraw 10,000 gallons per day.

71	mail
227	phone
7	refusal
22	non-response

For each county, the total number of operations by type with total and average daily withdrawal capacity was summarized by month. The type of operations will not add to the total in all counties, because some operations had irrigated cropland and livestock. The daily withdrawal capacity is the potential amount of ground and/or surface water that could be utilized in a 24 hour period. In nearly all cases, this capacity was never met. Data was not disclosed if there were less than three operations in any category or if one report comprised more than 60 percent of the total. Water use data for Carteret, Craven, Edgecombe, Martin, Pamlico, and Wilson counties were combined and summarized in the Other County table to avoid disclosure of individual data.

Central Coastal Plain Total Water Use by Month 2003

Month	# Operations	Total Avg Daily-Ground	Total Avg Daily-Surface	Total Max Daily-Ground	Total Max Daily-Surface
<i>gallons</i>					
Jan	184	2,624,332	982,245	3,920,838	1,094,330
Feb	185	2,644,546	982,245	3,800,588	1,094,330
March	193	2,903,635	1,897,245	4,252,389	2,009,330
April	195	3,350,055	2,375,904	4,830,178	2,839,000
May	201	3,444,669	4,113,753	5,132,655	5,669,972
June	209	3,999,089	12,767,675	6,066,389	16,816,416
July	212	4,207,479	16,741,924	6,212,764	21,741,429
Aug	206	4,227,678	8,945,604	6,444,119	11,927,361
Sept	192	3,843,712	3,449,101	5,631,319	4,157,267
Oct	189	3,649,289	1,243,691	5,244,423	1,576,564
Nov	188	3,005,937	662,845	4,272,004	874,930
Dec	188	2,735,672	662,345	4,073,040	874,430

Operations:

223
total operations

179
livestock

48
irrigation

5
aquaculture

Daily Withdrawal Capacity (incl. ground and surface) :

46,478,133 total (gallons)

Total Water Use

Central Coastal Plain Total Water Use by Month - Revised 2002 ¹

Month	# Operations	Total Avg Daily-Ground	Total Avg Daily-Surface	Total Max Daily-Ground	Total Max Daily-Surface
<i>gallons</i>					
Jan	176	2,369,221	1,288,790	3,052,623	1,326,000
Feb	183	2,475,708	1,429,550	3,153,464	1,496,000
March	195	2,887,374	1,726,070	3,666,590	1,823,760
April	210	3,303,190	6,048,854	4,189,099	6,489,364
May	237	3,938,320	22,205,908	4,963,797	29,267,388
June	269	5,053,872	43,233,863	6,172,900	50,565,971
July	282	5,617,843	36,993,443	6,830,971	74,498,500
Aug	245	4,820,987	25,283,835	5,987,555	46,987,277
Sept	202	4,202,644	7,644,633	5,317,756	8,779,559
Oct	196	3,417,141	1,381,594	4,530,838	1,726,904
Nov	180	2,776,970	1,368,790	3,607,327	1,432,000
Dec	177	2,596,442	1,666,790	3,316,155	1,728,000

¹ 2002 data was revised to reflect late reports and reclassification of farming operations.

Operations:

314
total operations

171
livestock

151
irrigation

9
aquaculture

Daily Withdrawal Capacity (incl. ground and surface) :

106,274,540 total (gallons)

Total Water Use

Duplin- Water Use by Month 2003

Month	# Operations	Avg # Days	Total Avg Daily-Ground	Total Avg Daily-Surface	Total Max Daily-Ground	Total Max Daily-Surface
<i>gallons</i>						
Jan	105	30	1,426,828	78,735	2,384,979	156,330
Feb	105	28	1,431,630	78,735	2,263,200	156,330
March	105	30	1,540,357	78,735	2,539,535	156,330
April	105	30	1,852,872	78,735	2,935,869	156,330
May	107	30	1,921,633	78,735	3,167,581	156,330
June	106	30	2,031,467	78,735	3,318,904	156,330
July	106	31	2,128,756	78,735	3,452,502	156,330
Aug	106	31	2,130,641	78,735	3,456,636	156,330
Sept	106	29	2,079,481	78,735	3,391,410	156,330
Oct	105	31	2,010,251	78,735	3,160,209	156,330
Nov	105	30	1,645,200	78,735	2,526,528	156,330
Dec	105	31	1,477,819	78,735	2,454,342	156,330

Operations:

107
total operations

105
livestock and aquaculture

4
irrigation

Daily Withdrawal Capacity (incl. ground and surface):

3,857,590 total (gallons)

County Water Use

Greene - Water Use by Month 2003

Month	# Operations	Avg # Days	Total Avg Daily-Ground	Total Avg Daily-Surface	Total Max Daily-Ground	Total Max Daily-Surface
<i>gallons</i>						
Jan	11	31	197,952	0	267,467	0
Feb	11	28	196,047	0	259,519	0
March	12	29	203,748	0	274,657	0
April	12	30	223,327	*	297,626	*
May	13	30	229,365	*	315,944	*
June	15	26	247,089	*	451,663	*
July	13	30	265,051	*	382,449	*
Aug	13	30	283,123	*	375,498	*
Sept	12	30	260,029	*	345,837	*
Oct	11	31	240,544	0	321,397	0
Nov	11	30	210,611	0	289,813	0
Dec	11	31	204,558	0	272,661	0

* disclosure - one operation is greater than 60% of total OR less than 3 operations

Operations:

15
total operations

12
livestock and aquaculture

6
irrigation

Daily Withdrawal Capacity (incl. ground and surface):

6,302,944 total (gallons)

County Water Use

Jones - Water Use by Month 2003

Month	# Operations	Avg # Days	Total Avg Daily-Ground	Total Avg Daily-Surface	Total Max Daily-Ground	Total Max Daily-Surface
<i>gallons</i>						
Jan	7	31	181,396	0	199,612	0
Feb	7	28	182,669	0	198,405	0
March	7	31	197,997	0	216,873	0
April	7	30	229,736	0	250,696	0
May	7	31	250,950	0	277,823	0
June	7	30	279,215	0	310,983	0
July	7	31	300,421	0	334,344	0
Aug	7	31	303,836	0	342,773	0
Sept	7	30	289,131	0	321,436	0
Oct	7	31	264,925	0	290,447	0
Nov	7	30	217,357	0	238,818	0
Dec	7	31	197,732	0	216,471	0

Operations:

7
total operations

7
livestock

Daily Withdrawal Capacity (incl. ground and surface):

287,435 total (gallons)

Lenoir - Water Use by Month 2003

Month	# Operations	Avg # Days	Total Avg Daily-Ground	Total Avg Daily-Surface	Total Max Daily-Ground	Total Max Daily-Surface
<i>gallons</i>						
Jan	5	31	60,661	0	72,128	0
Feb	5	28	61,263	0	72,382	0
March	5	31	59,263	0	70,321	0
April	5	30	67,975	0	78,938	0
May	7	26	72,078	*	85,790	*
June	7	27	80,307	*	98,071	*
July	7	26	92,812	*	115,439	*
Aug	6	29	96,402	*	119,965	*
Sept	6	28	85,843	*	104,903	*
Oct	6	29	76,218	*	90,284	*
Nov	5	30	70,494	0	83,229	0
Dec	5	31	67,441	0	80,346	0

* disclosure - one operation is greater than 60% of total OR less than 3 operations

Operations:

7

total operations

7

livestock and irrigation

Daily Withdrawal Capacity (incl. ground and surface):

2,383,965 total (gallons)

County Water Use

Onslow - Water Use by Month 2003

Month	# Operations	Avg # Days	Total Avg Daily-Ground	Total Avg Daily-Surface	Total Max Daily-Ground	Total Max Daily-Surface
<i>gallons</i>						
Jan	8	31	109,191	*	143,191	*
Feb	8	28	111,051	*	143,191	*
March	9	28	200,257	*	224,654	*
April	9	27	194,736	*	224,654	*
May	8	31	115,376	*	143,191	*
June	7	30	101,459	*	121,191	*
July	7	31	110,601	*	121,191	*
Aug	7	31	108,466	*	121,191	*
Sept	7	30	102,588	*	121,191	*
Oct	9	28	173,884	*	204,288	*
Nov	8	30	118,794	*	143,191	*
Dec	8	31	108,408	*	143,191	*

* disclosure - one operation is greater than 60% of total OR less than 3 operations

Operations:

9
total operations

9
livestock and irrigation

Daily Withdrawal Capacity (incl. ground and surface):

443,191 total (gallons)

County Water Use

Pitt - Water Use by Month 2003

Month	# Operations	Avg # Days	Total Avg Daily-Ground	Total Avg Daily-Surface	Total Max Daily-Ground	Total Max Daily-Surface
<i>gallons</i>						
Jan	7	21	103,242	*	136,370	*
Feb	7	19	104,061	*	137,059	*
March	7	22	115,240	*	151,301	*
April	7	23	125,534	*	166,637	*
May	7	26	138,269	*	183,627	*
June	9	23	165,054	*	222,447	*
July	11	22	186,748	*	253,639	*
Aug	10	23	189,248	*	255,807	*
Sept	7	22	154,290	*	213,111	*
Oct	8	25	139,875	*	189,678	*
Nov	7	24	120,189	*	161,413	*
Dec	7	24	107,569	*	144,618	*

* disclosure - one operation is greater than 60% of total OR less than 3 operations

Operations:

12
total operations

5
livestock

7
irrigation

Daily Withdrawal Capacity (incl. ground and surface):

5,335,857 total (gallons)

County Water Use

Washington - Water Use by Month 2003

Month	# Operations	Avg # Days	Total Avg Daily-Ground	Total Avg Daily-Surface	Total Max Daily-Ground	Total Max Daily-Surface
<i>gallons</i>						
Jan	9	31	129,210	0	219,657	0
Feb	9	28	129,210	0	219,657	0
March	9	31	142,992	0	243,087	0
April	9	30	167,112	0	284,090	0
May	9	31	184,340	0	313,377	0
June	10	28	501,568	0	774,665	0
July	9	31	213,627	0	363,166	0
Aug	9	31	213,627	0	363,166	0
Sept	9	30	206,736	0	351,451	0
Oct	9	31	189,508	0	322,164	0
Nov	9	30	153,329	0	260,660	0
Dec	9	31	136,101	0	231,372	0

* disclosure - one operation is greater than 60% of total OR less than 3 operations.

Operations:

10
total operations

10
livestock and irrigation

Daily Withdrawal Capacity (incl. ground and surface):

795,166 total (gallons)

County Water Use

Wayne - Water Use by Month 2003

Month	# Operations	Avg # Days	Total Avg Daily-Ground	Total Avg Daily-Surface	Total Max Daily-Ground	Total Max Daily-Surface
<i>gallons</i>						
Jan	24	31	355,422	0	426,033	0
Feb	24	28	357,826	0	423,652	0
March	25	30	327,516	*	404,970	*
April	26	28	379,910	*	468,392	*
May	27	29	447,676	*	549,437	*
June	27	28	501,346	*	635,895	*
July	27	29	558,327	*	688,251	*
Aug	26	29	560,911	*	675,923	*
Sept	25	29	563,748	*	667,484	*
Oct	26	29	473,090	*	568,163	*
Nov	25	29	401,476	*	487,278	*
Dec	25	30	375,362	*	454,007	*

* disclosure - one operation is greater than 60% of total OR less than 3 operations

Operations:

27
total operations

25
livestock and aquaculture

3
irrigation

Daily Withdrawal Capacity (incl. ground and surface):

2,790,653 total (gallons)

Other Counties- Water Use by Month 2003 ¹

Month	# Operations	Avg # Days	Total Avg Daily-Ground	Total Avg Daily-Surface	Total Max Daily-Ground	Total Max Daily-Surface
<i>gallons</i>						
Jan	9	24	76,779	*	91,016	*
Feb	10	19	88,411	*	101,931	*
March	12	19	133,268	1,270,000	146,325	1,270,000
April	15	19	129,688	1,706,163	145,737	1,844,874
May	17	23	107,098	2,112,975	123,547	2,645,686
June	22	21	122,033	6,760,388	171,465	9,179,072
July	26	19	388,837	11,425,733	548,690	15,042,074
Aug	23	19	382,540	5,141,131	788,496	6,704,557
Sept	13	25	136,251	2,344,289	157,267	2,618,772
Oct	10	25	111,106	*	131,501	*
Nov	9	24	92,889	*	109,197	*
Dec	9	24	85,393	*	103,734	*

* disclosure - one operation is greater than 60% of total OR less than 3 operations

¹ Other Counties include Beaufort, Carteret, Craven, Edgecombe, Martin, and Wilson

Operations

29

total operations

8

livestock and aquaculture

24

irrigation

Daily Withdrawal Capacity (incl. ground and surface)

24,281,330 total (gallons)

Other Counties Water Use

DENR, Division of Water Resources
Water Use Exceeding 100,000 Gallons Per Day¹ (permit required)

Agricultural operations that use in excess of 100,000 gallons of ground water in any one day are required to obtain a permit from the Division of Water Resources. Forty-nine agricultural operations have applied for these permits. To date, forty-three permits have been issued.

The remaining six operations have permits pending. Four of the pending permits did not report withdrawing water in 2003.

Permits Issued:

25 aquaculture operations with 33,384,440 gallons per day permitted capacity

1,286,201,172 gallons total reported usage in 2003

18 agricultural operations² with 22,907,322 gallons per day permitted capacity

189,553,981 gallons total reported usage in 2003

Pending Permits:

6 aquaculture and agricultural irrigation operations

¹ Data supplied by Department of Environment and Natural Resources. The data is for calendar year 2003.

² Includes operations with a combination of irrigation, aquaculture, and/or livestock.

