

**Water Quality Analysis
Upper Piedmont Research Station
N1 Cluster**

Sample ID	Sampling Date	Sampling Depth (feet*)	Dissolved Oxygen (mg/l)	pH WH, Field (standard unit)	pH-Alkalinity Lab (mg/l asCaCO3)	Specific Cond., Field (uS/cm)	Specific Cond., Lab (uS/cm @ 25C)	Water Temp. (deg C)	Fecal Coliform (colonies/100 ml)	Total OrganicCarbon (mg/l)	Turbidity (NTU)
40001000001	12/11/2002	14	3.60	5.91	6.20	150.0	130	14.96	1	<5	44
	6/11/2003		4.63	5.31	5.66	101.0	110	14.16	1	<5	40
	12/8/2003	14	1.25	5.64	7.70	101.6	140	16.20		<5	53
	7/26/2004		2.25	6.12	5.98	118.5	140	15.70			9.5
	3/7/2005	17	2.59	6.38	6.20	131.0	130	12.80		3.2	220
	9/26/2006		4.49	5.22	6.40	136.0	140	17.03		<2	22
	9/18/2007	15	0.50	5.89	6.10	140.0	140	16.52	<1	<2	<1
	9/23/2008	15	1.51	6.23	6.20	140.0	140	16.85	<1	<2	3.6
40001000002	12/11/2002	35	2.20	6.70	7.10	416.0	380	14.80	1	<5	2.2
	6/11/2003		3.25	6.83	6.83	318.0	270	17.55	1	<5	<1
	12/8/2003	35	1.76		6.90	149.0	200	14.80		<5	4.3
	7/26/2004	68	2.85	6.81	6.30	184.1	200	16.40			3.4
	3/7/2005	65	2.48	6.13	6.70	194.6	200	15.20		<2	5
	9/26/2006		2.77	6.04	6.80	163.0	180	15.38		<2	26
	9/18/2007	67	1.93	6.55	7.00	153.0	160	15.86		<2	10
	9/23/2008	55	2.12	6.45	6.67	146.0	140	16.30		<2	5.1
40001000003	12/11/2002	146	0.18	7.79	8.10	238.0	220	15.37	1	<5	4.2
	6/11/2003		0.07	7.31	7.96	241.0	240	16.50	1	<5	<1
	12/8/2003	148	0.06	7.80	7.90	174.8	240	15.70		<5	<1
	7/26/2004	145	0.20	8.35	8.00	216.0	240	15.70			5.2
	3/7/2005	150	0.25	7.91	8.10	249.5	250	15.30		<2	<1
	9/26/2006		0.07	7.85	8.00	247.0	250	16.10		<2	1.3
	9/18/2007	150	0.08	8.58	8.00	229.0	240	15.58		<2	1.1
	9/23/2008	151	0.09	7.65	8.04	248.0	340	15.82		<2	<1
40001000020	12/11/2002	NA/SW	10.84	6.89	7.00	67.0	78	5.76	34	<5	25
	6/11/2003	NA/SW	7.20	7.33	6.88	61.0	64	23.35	29	<5	8.2
	12/8/2003	NA/SW	10.80		7.10	50.0	80	8.40		<5	4.8
	7/26/2004	NA/SW	6.50	7.17	7.30	80.4	88	24.00			3.5
	3/7/2005	NA/SW	11.02	7.87	7.30	79.2	81	9.70			2.4
	9/26/2006	NA/SW	7.11	7.16	7.00	69.0	73	19.50			4.5
	9/18/2007	NA/SW	7.69	6.87	7.30	92.0	92	18.67	37	3.5	3.5
	9/23/2008	NA/SW	7.39	7.25	7.26	88.0	83	19.32	420	3	2.5
NC Groundwater Standards				6.5 - 8.5					1		

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point

Sample ID	Sampling Date	Sampling Depth (feet*)	Suspended Residue (mg/l)	Total Dissolved Solids (mg/l)	PT Color (c.u.)	Carbonate (mg/l)	Bicarbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Fluoride as F (mg/l)	Silica as SiO ₂ (mg/l)
40001000001	12/11/2002	14	260	120	<5	<1	49	3	13	<0.5	39
	6/11/2003		56	76	<5	<1	24	4.2	16	<0.08	24
	12/8/2003	14	37	110	6	<1	40	2.7	15	0.1	44
	7/26/2004		14	120	<5	<1	43	2.7	17	<0.2	31
	3/7/2005	17	110	110	5	<1	38	3.4	22	<0.4	27
	9/26/2006		24	114	5	<1	50	2.9	17	<0.4	38
	9/18/2007	15	<6.2	108	<5	<1	49	2.1	12	0.4	32
9/23/2008	15	<6.2	110	<5	<1	49	3.2	13	<0.4	34	
40001000002	12/11/2002	35	<2.5	280	<5	<1	180	9	17	<0.5	23
	6/11/2003		<2.5	180	<5	<1	110	10	7.4	0.24	34
	12/8/2003	35	4	140	<5	<1	78	9	2.7	0.16	48
	7/26/2004	68	5	160	<1	<1	80	9.9	3.2	<0.2	34
	3/7/2005	65	5	140	<5	<1	78	9.9	3.5	<0.4	38
	9/26/2006		42	132	<5	<1	70	8.4	5.4	<0.4	38
	9/18/2007	67	8.8	123	<5	<1	64	5.7	3.2	<0.4	37
9/23/2008	55	<6.2	118	<5	<1	59	5.3	4.6	<0.4	40	
40001000003	12/11/2002	146	3	140	<5	<1	110	3	<5	1.4	20
	6/11/2003		<2.5	140	<5	<1	110	2.5	5.7	1.4	20
	12/8/2003	148	<2.5	140	<5	<1	110	2.7	5.5	1.2	22
	7/26/2004	145	6	170	<1	<1	120	3.6	6	1.2	18
	3/7/2005	150	<5	150	<5	<1	118	3.8	6.2	1.3	19
	9/26/2006		<2.5	150	<5	<1	110	4.3	6.9	1.2	19
	9/18/2007	150	<6.2	154	<5	<1	110	3.7	5.9	1	20
9/23/2008	151	<6.2	148	<5	<1	110	4.7	8	1	20	
40001000020	12/11/2002		10	65	96	<1	18	5	<5	<0.5	13
	6/11/2003		10	54	52	<1	19	2.8	4.2	0.11	13
	12/8/2003		<2.5	56	27	<1	26	3.8	3.2	0.1	15
	7/26/2004		4	70	12	<1	35	5	2	<0.2	17
	3/7/2005		4	60	22	<1	26	5.1	4.4	<0.4	14
	9/26/2006		6	68	48	<1	25	4.1	3.3	<0.4	16
	9/18/2007		<6.2	72	16	<1	34	4.8	<2	<0.4	18
9/23/2008		<6.2	64	18	<1	30	4.8	3		14	
NC Groundwater Standards				500	15			250	250	2	

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point

Sample ID	Sampling Date	Sampling Depth (feet*)	Calcium as Ca		Magnesium as Mg		Potassium as K		Sodium as Na		Ammonia NH3 as N (mg/l)	
			Total	Filtered (mg/l)	Total	Dissolved (mg/l)	Total	Dissolved (mg/l)	Total	Dissolved (mg/l)		
40001000001	12/11/2002	14		15		6.8		1.6		4.5	<0.02	
	6/11/2003			7.8		6.3		0.63		4.6	0.02	
	12/8/2003	14		13		8.1		1.6		4.5	0.02	
	7/26/2004			13		7.1		1.3		4.5	<0.02	
	3/7/2005	17		9.4	9.1	9	7.6	0.65	0.61	7.5	7.6	0.12
	9/26/2006			14		8.1		1.6		4.9	<0.02	
	9/18/2007	15		12		6.9		1.2		5.5	<0.02	
	9/23/2008	15		14	13	7.7	7.5	1.5	1.3	6.2	6.1	0.1
40001000002	12/11/2002	35		16		7.6		2		64	<0.02	
	6/11/2003			14		6.8		1.8		31	<0.02	
	12/8/2003	35		15		6.6		1.8		14	<0.02	
	7/26/2004	68		15		7.4		1.8		12		
	3/7/2005	65		16	17	7.9	7.9	1.7	1.7	15	15	<0.02
	9/26/2006			14		7.4		1.6		12	<0.02	
	9/18/2007	67		14		6	6.2	1.7		11	<0.02	
	9/23/2008	55		13	13			1.7	1.7	11	11	0.1
40001000003	12/11/2002	146		27		4.8		0.89		18	<0.02	
	6/11/2003			27		4.8		0.81		15	<0.02	
	12/8/2003	148		27		5.1		0.27		14	<0.02	
	7/26/2004	145		29		5.6		0.97		15		
	3/7/2005	150		31	31	5.7	5.7	0.84	0.83	19	19	<0.02
	9/26/2006			29		5.6		0.84		18	<0.02	
	9/18/2007	150		31		5.7		0.87		17	<0.02	
	9/23/2008	151		31	32	5.8	6.1	0.86	0.89	19	19	0.1
40001000020	12/11/2002	NA/SW		4.8		2.6		2.2		3.5	0.06	
	6/11/2003	NA/SW		4.7		2.3		1.9		2.9	0.04	
	12/8/2003	NA/SW		5.5		2.8		2		3.8	0.09	
	7/26/2004	NA/SW		7.3		3.4		1.8		5.1	0.02	
	3/7/2005	NA/SW		5.8		3.1		2.1		5.3	0.03	
	9/26/2006	NA/SW		5.6		2.8		2.7		3.8	0.08	
	9/18/2007	NA/SW		7.3		3.7		2.3		5.9	0.06	
	9/23/2008	NA/SW		7.3	7.3	3.6	3.7	2.4	2.5	5.3	5.5	<0.02
NC Groundwater Standards												

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Sample ID	Sampling Date	Sampling Depth (feet*)	Nitrate&nitrite NO2+NO3 as N (mg/l)	Phosphorous Total as P (mg/l)	Cyanide (mg/l)	Silver as Ag		Aluminum as Al		Arsenic as As		
						Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	
40001000001	12/11/2002	14	0.1	0.07	<0.02	<5		1700		<10		
	6/11/2003		0.02	0.08		<5		3400		<10		
	12/8/2003	14	0.09	0.06		<5		4700		<10		
	7/26/2004		0.05	0.06		<5		540		<10		
	3/7/2005	17	<0.02	0.14		<5	<5	1800	<50	<5	<5	
	9/26/2006		0.06	0.08		<5		580		<5		
	9/18/2007	15	0.06	0.03		<5		<50		<5		
	9/23/2008	15	0.08	0.03		<5	<5	110	<50	<5	<5	
40001000002	12/11/2002	35	0.69	0.04	<0.02	<5		69		<10		
	6/11/2003		1.4	0.05		<5		65		<10		
	12/8/2003	35	2.4	<0.02		<5		280		<10		
	7/26/2004	68	2.2	0.06		<5		270		<10		
	3/7/2005	65	2	0.06		<5	<5	210	<50	<5	<5	
	9/26/2006		0.96	0.1		<5		1100		<5		
	9/18/2007	67	0.47	0.07		<5		360		<5		
	9/23/2008	55	0.19	0.07		<5	<5	210	<50	<5	<5	
40001000003	12/11/2002	146	<0.02	0.02	<0.02	<5		160			17	
	6/11/2003		<0.02	0.48		<5		<50			17	
	12/8/2003	148	<0.02	<0.02		<5		57			17	
	7/26/2004	145	NA	0.04		<5		180			22	
	3/7/2005	150	<0.02	<0.02		<5	<5	<50	<50		25	24
	9/26/2006		<0.02	<0.02		<5		<50			18	
	9/18/2007	150	<0.02	<0.02		<5		<50			22	
	9/23/2008	151	0.05	<0.02		<5	<5	<50	<50	<5	<5	
40001000020	12/11/2002	NA/SW	0.16	0.04		<5		870		<10		
	6/11/2003	NA/SW	0.11	0.04		<5		300		<10		
	12/8/2003	NA/SW	0.14	<0.02		<5		87		<10		
	7/26/2004	NA/SW	0.22	0.03		<5		120		<10		
	3/7/2005	NA/SW	0.24	0.03		<5		510		<5	<5	
	9/26/2006	NA/SW	0.08	0.04		<5		170		<5		
	9/18/2007	NA/SW	0.31	0.05		<5		58		<5		
	9/23/2008	NA/SW	0.17	0.03		<5	<5	<50	<50	<5	<5	
NC Groundwater Standards			11***		0.07	17.5				50		

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*** Groundwater Standard for Nitrate (as N) is 10 mg/l, for Nitrite (as N) is 1 mg/l.

Sample ID	Sampling Date	Sampling Depth (feet*)	Barium as Ba		Cadmium as Cd		Chromium as Cr		Copper as Cu		Iron as Fe total (ug/l)
			Total (ug/l)	Dissolved (ug/l)	Total (ug/l)	Dissolved (ug/l)	Total (ug/l)	Dissolved (ug/l)	Total (ug/l)	Dissolved (ug/l)	
40001000001	12/11/2002	14	22		<2		<25		2.8		2800
	6/11/2003		30		<2		<25		3.8		5600
	12/8/2003	14	41		<2		<25		6.3		7900
	7/26/2004		24		<2		<25		<2		680
	3/7/2005	17	27	11	<2	<2	<25	<25	6.3	<2	1900
	9/26/2006		26		<2		<25		<2		960
	9/18/2007	15	13		<1		<10		<2		<50
	9/23/2008	15	15	14	<1	<1	<10	<10	<2	<2	140
40001000002	12/11/2002	35	16		<2		<25		<2		70
	6/11/2003		17		<2		<25		<2		79
	12/8/2003	35	11		<2		<25		<2		280
	7/26/2004	68	19		<2		<25		<2		160
	3/7/2005	65	13	12	<2	<2	<25	<25	<2	<2	140
	9/26/2006		22		<2		<25		2.5		1500
	9/18/2007	67	12		<1		<10		<2		490
	9/23/2008	55	10	<10	<1	<1	<10	<10	<2	<2	280
40001000003	12/11/2002	146	<10		<2		<25		<2		200
	6/11/2003		<10		<2		<25		<2		<50
	12/8/2003	148	<10		<2		<25		<2		63
	7/26/2004	145	<10		<2		<25		<2		240
	3/7/2005	150	<10	<10	<2	<2	<25	<25	<2	<2	54
	9/26/2006		<10		<2		<25		<2		<50
	9/18/2007	150	<10		<1		<10		<2		<50
	9/23/2008	151	<10	<10	<1	<1	<10	<10	<2	<2	<50
40001000020	12/11/2002	NA/SW	25		<2		<25		2.5		1600
	6/11/2003	NA/SW	24		<2		<25		<2		1500
	12/8/2003	NA/SW	20		<2		<25		<2		1200
	7/26/2004	NA/SW	19		<2		<25		<2		510
	3/7/2005	NA/SW	22		<2		<25		<2		1200
	9/26/2006	NA/SW	12		<2		<25		<2		1400
	9/18/2007	NA/SW	28		<1		<10		<2		590
	9/23/2008	NA/SW	22	21	<1	<1	<10	<10	<2	<2	630
NC Groundwater Standards			2000		1.75		50		1000		300

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Sample ID	Sampling Date	Sampling Depth (feet*)	Iron as Fe		Manganese as Mn		Nickel as Ni		Lead as Pb		Selenium as Se	
			Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	
40001000001	12/11/2002	14			79		<10		<10		<5	
	6/11/2003				56		<10		<10		<5	
	12/8/2003	14			86		<10		<10		<5	
	7/26/2004				30		<10		<10		<5	
	3/7/2005	17	<50		61	20	<10	<10	<10	<10	<5	<5
	9/26/2006				24		<10		<10		<5	
	9/18/2007	15		<10			<10		<10		<5	
9/23/2008	15	<50		10	12	<10	<10	<10	<10	<5	<5	
40001000002	12/11/2002	35			67		<10		<10		<5	
	6/11/2003				17		<10		<10		<5	
	12/8/2003	35			15		<10		<10		<5	
	7/26/2004	68			33		<10		<10		<5	
	3/7/2005	65	<50		44	31	<10	<10	<10	<10	<5	<5
	9/26/2006				87		<10		<10		<5	
	9/18/2007	67			65		<10		<10		<5	
9/23/2008	55	<50		44	24	<10	<10	<10	<10	<5	<5	
40001000003	12/11/2002	146			11		<10		<10		<5	
	6/11/2003			<10			<10		<10		<5	
	12/8/2003	148			10		<10		<10		<5	
	7/26/2004	145			12		<10		<10		<5	
	3/7/2005	150	<50	<10	<10		<10	<10	<10	<10	<5	<5
	9/26/2006			<10			<10		<10		<5	
	9/18/2007	150		<10			<10		<10		<5	
9/23/2008	151	<50	<10	<10		<10	<10	<10	<10	<5	<5	
40001000020	12/11/2002	NA/SW			120		<10		<10		<5	
	6/11/2003	NA/SW			150		<10		<10		<5	
	12/8/2003	NA/SW			71		<10		<10		<5	
	7/26/2004	NA/SW			200		<10		<10		<5	
	3/7/2005	NA/SW			89		<10		<10		<5	
	9/26/2006	NA/SW			130		<10		<10		<5	
	9/18/2007	NA/SW			130		<10		<10		<5	
9/23/2008	NA/SW		400	97	84	<10	<10	<10	<10	<5	<5	
NC Groundwater Standards				50		100		15		50		

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point

Sample ID	Sampling Date	Sampling Depth (feet*)	Zinc as Zn		Organochlorine Pesticides	Organophosphate Pesticides	Nitrogen Pesticides	Acid Herbicide	Semivolatile Organics	Volatile Organics	Radon 222 (pCi/l)
			Total	Dissolved (ug/l)							
40001000001	12/11/2002	14		28							1
	6/11/2003			13							0
	12/8/2003	14		25	2	2	0	8	0	0	
	7/26/2004		<10								
	3/7/2005	17	<10	<10							
	9/26/2006		<10								
	9/18/2007	15	<10								
	9/23/2008	15	<10	<10							210
40001000002	12/11/2002	35		34		3	1	1	0	1	0
	6/11/2003		<10								
	12/8/2003	35	<10								
	7/26/2004	68	<10								
	3/7/2005	65	<10	<10							
	9/26/2006		<10								
	9/18/2007	67	<10								
	9/23/2008	55	<10		41						140
40001000003	12/11/2002	146		170							0
	6/11/2003			140		0	0	0	4	0	0
	12/8/2003	148		54							
	7/26/2004	145		200							
	3/7/2005	150		180	15						
	9/26/2006			180							
	9/18/2007	150	<10								
	9/23/2008	151		19	<10						
40001000020	12/11/2002	NA/SW		14							0
	6/11/2003	NA/SW	<10								3
	12/8/2003	NA/SW	<10								
	7/26/2004	NA/SW	<10								
	3/7/2005	NA/SW	<10								
	9/26/2006	NA/SW	<10								
	9/18/2007	NA/SW	<10								
	9/23/2008	NA/SW	<10	<10							
NC Groundwater Standards				1050							

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point

**Water Quality Analysis
Upper Piedmont Research Station
N2 Cluster**

Sample ID	Sampling Date	Sampling Depth (feet*)	Dissolved Oxygen (mg/l)	pH WH, Field (standard unit)	pH-Alkalinity Lab (mg/l asCaCO3)	Specific Cond., Field (uS/cm)	Specific Cond., Lab (uS/cm @ 25C)	Water Temp. (deg C)	Fecal Coliform (colonies/100 ml)	Total OrganicCarbon (mg/l)	Turbidity (NTU)
40001000004	12/11/2002	10	6.20	5.45	5.90	120.0	110	10.96	2	<5	55
	6/11/2003				5.54		88		3	<5	110
	12/8/2003		0.04	5.38	7.20	92.3	88	13.30		<5	60
	7/26/2004		4.59	6.05	6.00	85.6	81	17.10			40
	3/7/2005		5.80	5.83	6.00	58.0	81	9.90		<2	31
	9/26/2006			5.81	5.70	98.0	100	17.11	<1	<2	4.9
40001000005	12/11/2002	38	0.27	6.35	7.70	192.0	170	13.94	1	<5	<1
	6/11/2003		3.49	7.01	6.71	176.0	180	14.00	1	<5	<1
	12/8/2003	38	0.05	6.43	7.10	180.5	170	13.60		<5	<1
	7/26/2004	42	0.65	6.70	6.60	186.6	170	13.90			<1
	7/26/2004**		0.65		6.40	186.6	180				<1
	3/7/2005	41	0.60	6.61	6.00	140.0	190	14.00		<2	<1
	9/26/2006	41		6.67	6.60	171.0	190		<1	<2	<1
40001000006	12/11/2002	156	0.20	7.12	7.60	281.0	260	14.81	1	<5	4.2
	6/11/2003		0.05	6.80	7.71	290.0	290	15.95	1	<5	<1
	12/8/2003	156	0.02	6.82	7.50	223.5	210	15.70		<5	1.4
	7/26/2004	159	0.18	6.96	6.80	250.2	240	15.40			4
	3/7/2005	159	0.18	6.92	7.00	197.0	250	15.80		<2	3.8
	9/26/2006			6.86	7.10	235.0	240	14.63	<1	<2	2.2
NC Groundwater Standards				6.5 - 8.5					1		

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Suspended Residue (mg/l)	Total Dissolved Solids (mg/l)	PT Color (c.u.)	Carbonate (mg/l)	Bicarbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Fluoride as F (mg/l)	Silica as SiO ₂ (mg/l)
40001000004	12/11/2002	10	62	120	16	<1	59	6	11	<0.5	26
	6/11/2003		74	85	<5	<1	15	5.1	15	0.15	21
	12/8/2003		57	86	<5	<1	22	3.5	8.8	0.09	23
	7/26/2004		33	76	<5	<1	22	4.4	8.2	<0.2	22
	3/7/2005		16	75	6	<1	21	3.7	9.4	<0.4	19
	9/26/2006		3.2	82	<5	<1	28	2.6	10	<0.4	25
40001000005	12/11/2002	38	<2.5	150	<5	<1	92	4	<5	<0.5	32
	6/11/2003		5	120	<5	<1	85	3.4	2.2	0.22	34
	12/8/2003	38	<2.5	110	<5	<1	83	3.2	2.6	0.2	37
	7/26/2004	42	<2.5	130		<1	90	4	3	0.2	30
	7/26/2004**		<2.5	150		<1	86	4.6	3.9	0.27	30
	3/7/2005	41	5	130	<5	<1	90	4.2	3.1	<0.4	31
	9/26/2006	41	<2.5	126	<5	<1	46	4.4	3.4	<0.4	33
40001000006	12/11/2002	156	7	170	88	<1	140	4	<5	0.8	29
	6/11/2003		<5	170	14	<1	130	3.3	3.4	0.92	23
	12/8/2003	156	<2.5	130	<5	<1	95	2.5	5.5	1.2	23
	7/26/2004	159	<2.5	160	<5	<1	130	3.7	4	0.72	23
	3/7/2005	159	<2.5	140	6	<1	112	3.8	5	0.8	26
	9/26/2006		<2.5	153	<5	<1	150	3.3	6.9	1.5	24
	NC Groundwater Standards			500	15			250	250	2	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Calcium as Ca (mg/l)		Magnesium as Mg (mg/l)		Potassium as K (mg/l)		Sodium as Na (mg/l)		Ammonia NH3 as N (mg/l)
			Total	Filtered	Total	Dissolved	Total	Dissolve	Total	Dissolved	
40001000004	12/11/2002	10	7.2		3.3		3.9		6.2		0.12
	6/11/2003		5.8		2.5		3.4		4.9		0.08
	12/8/2003		5.4		2.4		3.4		4.9		0.05
	7/26/2004		5.4		2.2		3.6		5.8		0.05
	3/7/2005		5.6	5.7	2.3	2.2	3.2	3.1	6.2	6.1	<0.02
	9/26/2006		7		2.7		4		5.8		0.03
40001000005	12/11/2002	38	22		7.2		1.7		6.9		<0.02
	6/11/2003		20		7.1		1.8		6.5		<0.02
	12/8/2003	38	19		7.2		1.8		6.5		<0.02
	7/26/2004	42	20		7.6		1.9		7		
	7/26/2004**		21		8.5		2		7.7		
	3/7/2005	41	22	22	8.4	8.5	2	2	7.9	7.9	<0.02
9/26/2006	41	20		7.6		1.7		6.8			
40001000006	12/11/2002	156	35		7.1		2.4		9		<0.02
	6/11/2003		35		6.6		3.6		8.6		<0.02
	12/8/2003	156	25		5.3		1.3		10		<0.02
	7/26/2004	159	28		7		1.6		9.6		
	3/7/2005	159	31	30	7.7	7.5	1.6	1.6	11	11	0.04
	9/26/2006		30		6.2		1.5		14		<0.02
NC Groundwater Standards											

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Nitrate&nitrite NO2+NO3 as N (mg/l)	Phosphorous Total as P (mg/l)	Cyanide (mg/l)	Silver as Ag (ug/l)		Aluminum as Al (ug/l)		Arsenic as As (ug/l)	
						Total	Dissolved	Total	Dissolved	Total	Dissolved
40001000004	12/11/2002	10	0.81	0.06	<0.02	<5		2500		<10	
	6/11/2003		0.02	0.07		<5		2900		<10	
	12/8/2003		0.02	0.04		<5		3700		<10	
	7/26/2004		<0.02	0.09		<5		2100		<10	
	3/7/2005		0.14	0.09		<5	<5	700	<50	<5	<5
	9/26/2006		<0.02	<0.02		<5		180		<5	
40001000005	12/11/2002	38	0.06	<0.02	<0.02	<5		<50		<10	
	6/11/2003		0.05	0.04		<5		160		<10	
	12/8/2003	38	0.07	0.02		<5		<50		<10	
	7/26/2004	42	0.07	0.02		<5		<50		<10	
	7/26/2004**		0.07	0.02		<5		<50		<10	
	3/7/2005	41	0.11	0.03		<5	<5	60	<50	<5	<5
	9/26/2006	41	NA	NA		<5		50		<5	
40001000006	12/11/2002	156	<0.02	<0.02	<0.02	<5		61		<10	
	6/11/2003		<0.02	<0.02		<5		<50		<10	
	12/8/2003	156	0.05	<0.02		<5		<50		<10	
	7/26/2004	159	<0.02	NA		<5		<50		<10	
	3/7/2005	159	0.03	0.02		<5	<5	<50	<50	<5	<5
	9/26/2006		0.02	0.02		<5		<50		<5	
NC Groundwater Standards			11***		0.07	17.5				50	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

*** Groundwater Standard for Nitrate (as N) is 10 mg/l, for Nitrite (as N) is 1 mg/l.

Sample ID	Sampling Date	Sampling Depth (feet*)	Barium as Ba		Cadmium as Cd		Chromium as Cr		Copper as Cu		Iron as Fe total (ug/l)
			Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	
40001000004	12/11/2002	10	83		<2		<25		3.4		4600
	6/11/2003		95		<2		<25		3.9		6700
	12/8/2003		77		<2		<25		3.7		3300
	7/26/2004		76		<2		<25		2.6		10000
	3/7/2005		63	58	<2	<2	<25	<25	<2	<2	1600
	9/26/2006		86		<2		<25		<2		570
40001000005	12/11/2002	38	<10		<2		<25		<2		<50
	6/11/2003		12		<2		<25		<2		170
	12/8/2003	38	<10		<2		<25		<2		<50
	7/26/2004	42	12		<2		<25		<2		<50
	7/26/2004**		15		<2		<25		<2		<50
	3/7/2005	41	<10	<10	<2	<2	<25	<25	<2	<2	50
9/26/2006	41	29		<2		<25		<2		55	
40001000006	12/11/2002	156	<10		<2		<25		<2		160
	6/11/2003		10		<2		<25		<2		51
	12/8/2003	156	<10		<2		<25		<2		120
	7/26/2004	159	14		<2		<25		<2		990
	3/7/2005	159	<10	<10	<2	<2	<25	<25	<2	<2	580
	9/26/2006		<10		<2		<25		<2		330
NC Groundwater Standards			2000		1.75		50		1000		300

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Iron as Fe	Manganese as Mn		Nickel as Ni		Lead as Pb		Selenium as Se		
			Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	
40001000004	12/11/2002	10		470		<10		<10		<5		
	6/11/2003			320		<10		11.00		<5		
	12/8/2003			350		<10		<10		<5		
	7/26/2004			410		<10		<10		<5		
	3/7/2005			760	290	250	<10	<10	<10	<10	<5	<5
	9/26/2006				170		<10		<10		<5	
40001000005	12/11/2002	38		<10		<10		<10		<5		
	6/11/2003				41	<10		<10		<5		
	12/8/2003	38		<10		<10		<10		<5		
	7/26/2004	42		<10		<10		<10		<5		
	7/26/2004**			<10		<10		<10		<5		
	3/7/2005	41	<50	<10	<10	<10	<10	<10	<10	<5	<5	
9/26/2006	41		<10		<10		<10		<5			
40001000006	12/11/2002	156		340		<10		<10		<5		
	6/11/2003			410		<10		<10		<5		
	12/8/2003	156		180		<10		<10		<5		
	7/26/2004	159		1000		<10		<10		<5		
	3/7/2005	159		420	880	830	<10	<10	<10	<10	<5	<5
	9/26/2006				330		<10		<10		<5	
NC Groundwater Standards				50		100		15		50		

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Zinc as Zn		Organochlorine Pesticides	Organophosphate Pesticides	Nitrogen Pesticides	Acid Herbicid	Semivolatile Organics	Volatile Organics	Radon 222 (pCi/l)
			Total	Dissolved (ug/l)							
40001000004	12/11/2002	10		35							0
	6/11/2003			11							4
	12/8/2003			12		3	0	0	4	0	0
	7/26/2004		<10								
	3/7/2005		<10	<10							
	9/26/2006		<10			0	0	0	0	0	0
40001000005	12/11/2002	38		23		0	0	0	0	0	0
	6/11/2003		<10								0
	12/8/2003	38	<10								
	7/26/2004	42	<10								
	7/26/2004**		<10								
	3/7/2005	41		29	<10						
9/26/2006	41	<10							0	0	
40001000006	12/11/2002	156		8900							0
	6/11/2003			6300		0	0	0	3	1	0
	12/8/2003	156		740							
	7/26/2004	159		3100							
	3/7/2005	159		2100	2000						
	9/26/2006			790		0	0	0	0	0	
NC Groundwater Standards			1050								

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

**Water Quality Analysis
Upper Piedmont Research Station
N3 Cluster**

Sample ID	Sampling Date	Sampling Depth (feet*)	Dissolved Oxygen (mg/l)	pH WH, Field (standard unit)	pH-Alkalinity Lab (mg/l asCaCO3)	Specific Cond., Field (uS/cm)	Specific Cond., Lab (uS/cm @ 25C)	Water Temp. (deg C)	Fecal Coliform (colonies/100 ml)	Total OrganicCarbon (mg/l)	Turbidity (NTU)
40001000007	7/29/2004		2.08	6.89	6.80	340.9	310	16.20			140
40001000008	12/12/2002	164	0.17	7.68	8.00	192.0	180	14.90	1	<5	6.3
	6/9/2003	164	0.05	8.35	8.14	174.0	180	15.48	1	<5	13
	12/10/2003	164		7.97	7.80	135.0	200	14.00		<5	2
	7/29/2004	167	0.03	7.75	8.00	197.3	190	15.40			<1
	7/29/2004**		0.03		8.00	197.3	190				<1
	3/7/2005	167	0.33	7.83	7.90	198.0	200	15.47		<2	<1
	9/28/2006		0.04	7.63	7.80	197.0	190	14.58		<2	<1
NC Groundwater Standards				6.5 - 8.5					1		

Sample ID	Sampling Date	Sampling Depth (feet*)	Suspended Residue (mg/l)	Total DissolvedSolid (mg/l)	PT Color (c.u.)	Carbonate (mg/l)	Bicarbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Fluoride as F (mg/l)	Silica as SiO ₂ (mg/l)
40001000007	7/29/2004		150	200		<1	110	9.1	52	0.9	22
40001000008	12/12/2002	164	16	140	<5	<1	84	3	7	2.2	29
	6/9/2003	164	17	120	<5	<1	74	2.5	10	1.9	29
	12/10/2003	164	<2.5	130	<5	<1	80	2.8	9.8	1.7	25
	7/29/2004	167	<2.5	120		<1	89	3.2	10	2	26
	7/29/2004**		<5	140		<1	83	3.3	10	2	25
	3/7/2005	167	<2.5	130	<5	<1	86	3.1	9.4	1.8	27
	9/28/2006		<2.5	134	<5	<1	33	3.5	9.7	1.8	29
NC Groundwater Standards				500	15			250	250	2	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Calcium as Ca (mg/l)		Magnesium as Mg (mg/l)		Potassium as K (mg/l)		Sodium as Na (mg/l)		Ammonia NH3 as N (mg/l)
			Total	Filtered	Total	Dissolved	Total	Dissolved	Total	Dissolved	
40001000007	7/29/2004		30		18		7.1		26		
40001000008	12/12/2002	164	22		5		2.1		8.9		<0.02
	6/9/2003	164	24		5		2.1		9.7		<0.02
	12/10/2003	164	23		5.5		2		9.3		<0.02
	7/29/2004	167	24	28	6.2	6	2.2	2.1	9.9	9.7	
	7/29/2004**		28	27	6.2	6.2	2.2	2.2	10	10	
	3/7/2005	167	24		6.4		2.1		10		<0.02
	9/28/2006		24		6.3		2.1		10		<0.02
NC Groundwater Standards											

Sample ID	Sampling Date	Sampling Depth (feet*)	Nitrate&nitrite NO2+NO3 as N (mg/l)	Phosphorous Total as P (mg/l)	Cyanide (mg/l)	Silver as Ag (ug/l)		Aluminum as Al (ug/l)		Arsenic as As (ug/l)	
						Total	Dissolved	Total	Dissolved	Total	Dissolved
40001000007	7/29/2004					<5		2300		<10	
40001000008	12/12/2002	164	<0.02	<0.02	<0.02	<5		230		<10	
	6/9/2003	164	<0.02	0.02		<5		250		14	
	12/10/2003	164	<0.02	<0.02		<5		<50		<10	
	7/29/2004	167				<5	<5	<50	<50	10	10
	7/29/2004**					<5	<5	<50	<50	10	10
	3/7/2005	167	<0.02	<0.02		<5		<50		12	
	9/28/2006		<0.02	<0.02		<5		<50		9.8	
NC Groundwater Standards			11***		0.07	17.5				50	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

*** Groundwater Standard for Nitrate (as N) is 10 mg/l, for Nitrite (as N) is 1 mg/l.

Sample ID	Sampling Date	Sampling Depth (feet*)	Barium as Ba (ug/l)		Cadmium as Cd (ug/l)		Chromium as Cr (ug/l)		Copper as Cu (ug/l)		Iron as Fe total (ug/l)
			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	
40001000007	7/29/2004			62	<2		<25		7.8		6200
40001000008	12/12/2002	164	<10		<2		<25		<2		190
	6/9/2003	164	<10		<2		<25		<2		200
	12/10/2003	164	<10		<2		<25		<2		<50
	7/29/2004	167	<10	<10	<2	<2	<25	<25	<2	<2	<50
	7/29/2004**		<10	<10	<2	<2	<25	<25	<2	<2	<50
	3/7/2005	167	<10		<2		<25		<2		<50
	9/28/2006		<10		<2		<25		<2		<50
NC Groundwater Standards			2000		1.75		50		1000		300

Sample ID	Sampling Date	Sampling Depth (feet*)	Iron as Fe Dissolved (ug/l)	Manganese as Mn (ug/l)		Nickel as Ni (ug/l)		Lead as Pb (ug/l)		Selenium as Se (ug/l)	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
40001000007	7/29/2004			2800		<10		<10		<5	
40001000008	12/12/2002	164		130		<10		11		<5	
	6/9/2003	164		130		<10		<10		<5	
	12/10/2003	164		140		<10		<10		<5	
	7/29/2004	167	<50	150	150	<10	<10	<10	<10	<5	<5
	7/29/2004**		<50	150	150	<10	<10	<10	<10	<5	<5
	3/7/2005	167		160		<10		<10		<5	
	9/28/2006			140		<10		<10		<5	
NC Groundwater Standards				50		100		15		50	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Zinc as Zn		Organochlorine Pesticides	Organophosphate Pesticides	Nitrogen Pesticides	Acid Herbicide	Semivolatile Organics	Volatile Organics	Radon 222 (pCi/l)
			Total	Dissolved (ug/l)							
40001000007	7/29/2004			86							
40001000008	12/12/2002	164		35							1
	6/9/2003	164		28							0
	12/10/2003	164	<10		6	0	0	1	12		1
	7/29/2004	167	<10	<10							
	7/29/2004**		<10	<10							
	3/7/2005	167	<10								
	9/28/2006		<10								
NC Groundwater Standards			1050								

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

**Water Quality Analysis
Upper Piedmont Research Station
N4 Cluster**

Sample ID	Sampling Date	Sampling Depth (feet*)	Dissolved Oxygen (mg/l)	pH WH, Field (standard unit)	pH-Alkalinity Lab (mg/l asCaCO3)	Specific Cond., Field (uS/cm)	Specific Cond., Lab (uS/cm @ 25C)	Water Temp. (deg C)	Fecal Coliform (colonies/100 ml)	Total OrganicCarbon (mg/l)	Turbidity (NTU)
40001000009	12/9/2002	65	3.50	6.35	6.50	183.0	170	15.59	1	5.4	4.6
	6/9/2003	65	1.80	5.75	6.07	135.0	140	16.75	1	<5	<1
	12/9/2003		3.10	5.85	6.10	142.4	140	13.90	1	<5	<1
	7/29/2004	70	8.26	5.28	5.60	145.6	150	16.50			<1
	3/8/2005	67	0.58	5.56	5.80	161.0	160	14.83		<2	2.2
	9/28/2006		9.10	5.22	5.20	143.0	150	17.70		<2	<1
	9/28/2006**									<2	
	9/18/2007	67	8.07	5.48	5.50	145.0	140	15.61		<2	<1
	9/24/2008	57	9.24	5.10	5.36	136.0	130	16.22		<2	9.1
40001000010	12/9/2002	323	3.37	6.41	6.60	194.0	180	14.56		<5	24
	6/9/2003		3.80	6.43	6.46	185.0	180	16.66	1	<5	22
	12/9/2003	323		5.90	6.90	189.8	190	16.50	1	<5	26
	7/29/2004	150	5.86	6.18	6.50	155.2	160	16.50			4.5
	3/8/2005		5.13	5.91	6.60	185.0	180	15.39		<2	1.5
	9/28/2006		8.02	5.92	6.10	164.0	170	17.14		<2	9
	9/18/2007		4.30	6.34	6.40	175.0	170	15.95		<2	120
	9/24/2008	323	6.65	6.09	6.28	175.0	170	16.98		<2	40
NC Groundwater Standards				6.5 - 8.5					1		

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Suspended Residue (mg/l)	Total Dissolved Solids (mg/l)	PT Color (c.u.)	Carbonate (mg/l)	Bicarbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Fluoride as F (mg/l)	Silica as SiO ₂ (mg/l)
40001000009	12/9/2002	65	183	120	<5	<1	38	12	12	1.6	36
	6/9/2003	65	135	100	<5	<1	14	10	16	3.1	27
	12/9/2003		142.4	81	<5	<1	14	9.8	19	3.6	9
	7/29/2004	70	145.6	150		<1	6.2	14	12	0.88	25
	3/8/2005	67	161	120	<5	<1	8	13	13	1.3	30
	9/28/2006		143	136	<5	<1	4.5	13	14	0.44	31
	9/28/2006**										
	9/18/2007	67	145	138	<5	<1	4.1	12	12	<0.4	30
	9/24/2008	57	20	120	<5	<1	4	12	16	0.4	
40001000010	12/9/2002	323	194	140	<5	<1	43	11	<5	0.6	43
	6/9/2003		185	140	<5	<1	39	13	4.6	0.45	42
	12/9/2003	323	189.8	130	<5	<1	38	13	4.6	0.41	36
	7/29/2004	150	155.2	150		<1	31	14	<5	0.54	38
	3/8/2005		185	140	<5	<1	19	13	4.5	<0.4	42
	9/28/2006		164	151	<5	<1	22	14	5.4	<0.4	45
	9/18/2007		175	148	<5	<1	27	13	5	<0.4	36
	9/24/2008	323	56	156	<5	<1	22	14	8	0.4	
NC Groundwater Standards				500	15			250	250	2	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Calcium as Ca (mg/l)		Magnesium as Mg (mg/l)		Potassium as K (mg/l)		Sodium as Na (mg/l)		Ammonia NH3 as N (mg/l)
			Total	Filtered	Total	Dissolved	Total	Dissolved	Total	Dissolved	
40001000009	12/9/2002	65	15		3.3		3.8		11		0.13
	6/9/2003	65	11		2.8		4.4		4.8		<0.02
	12/9/2003		11		3.8		4.2		4.4		<0.02
	7/29/2004	70	11	10	4.9	4.7	4.8	4.5	9.1	8.6	<0.04
	3/8/2005	67	12		4.2		4.3		8.4		<0.02
	9/28/2006		11		3.1		3.3		8.9		<0.02
	9/28/2006**		12		3.3		3.6		9.4		<0.02
	9/18/2007	67	11		3		3.2		8.9		<0.02
	9/24/2008	57	11	11	2.9	2.3	3.2	3.4	9.2	9.2	<0.02
40001000010	12/9/2002	323	7.5		8.3		2.7		13		0.04
	6/9/2003		7.1		5.7		0.99		11		0.02
	12/9/2003	323	7.9		7		1.2		12		<0.02
	7/29/2004	150	7	7	6.7	6.9	0.84	0.87	11	13	<0.02
	3/8/2005		8.7		7.3		1.1		16		<0.02
	9/28/2006		7.7		7.3		0.85		15		<0.02
	9/18/2007		8.7		10		2		15		0.46
	9/24/2008	323	8.8	8.3	8.9	7.4	1.1	0.89	17	16	<0.02
NC Groundwater Standards											

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Nitrate&nitrite NO2+NO3 as N (mg/l)	Phosphorous Total as P (mg/l)	Cyanide (mg/l)	Silver as Ag		Aluminum as Al		Arsenic as As	
						Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)
40001000009	12/9/2002	65	3.7	0.02	<0.02	<5		110		<10	
	6/9/2003	65	2.7	<0.02		<5		970		<10	
	12/9/2003		3.1	<0.02		<5		1300		<10	
	7/29/2004	70		8.8		<5	<5	220	220	<10	<10
	3/8/2005	67	7.9	<0.02		<5		380		<5	
	9/28/2006		7.5	<0.02		<5		100		<5	
	9/28/2006**		7.4	<0.02		<5		110		<5	
	9/18/2007	67	7.1	<0.02		<5		93		<5	
	9/24/2008	57	6	<0.02		<5	<5	140	<50	<5	<5
40001000010	12/9/2002	323	7.9	0.13	<0.02	<5		3300		<10	
	6/9/2003		7.4	0.04		<5		810		<10	
	12/9/2003	323	7.8	0.08		<5		2000		<10	
	7/29/2004	150	7.6	0.03		<5	<5	190	<50	<10	<10
	3/8/2005		9.3	0.12		<5		1600		<5	
	9/28/2006		8.6	0.05		<5		740		<5	
	9/18/2007		7.5	0.19		<5		4100		<5	
	9/24/2008	323	8.9	0.1		<5	<5	1800	<50	<5	<5
NC Groundwater Standards			11***		0.07	17.5				50	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

*** Groundwater Standard for Nitrate (as N) is 10 mg/l, for Nitrite (as N) is 1 mg/l.

Sample ID	Sampling Date	Sampling Depth (feet*)	Barium as Ba (ug/l)		Cadmium as Cd (ug/l)		Chromium as Cr (ug/l)		Copper as Cu (ug/l)		Iron as Fe total (ug/l)
			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	
40001000009	12/9/2002	65	<10		<2		<25		<2		660.00
	6/9/2003	65	<10		<2		<25		<2		130
	12/9/2003		<10		<2		<25		<2		61
	7/29/2004	70	19	15	<2	<2	<25	<25	5.6	5.7	<50
	3/8/2005	67	<10		<2		<25		6		190
	9/28/2006		29		<2		<25		4.7		<50
	9/28/2006**		31		<2		<25		4.6		<50
	9/18/2007	67	32		<1		<10		3.8		<50
	9/24/2008	57	24	25	<1	<1	<10	<10	2.5	3.5	230
40001000010	12/9/2002	323	37		<2		<25		4.3		5400
	6/9/2003		10		<2		<25		<2		2000
	12/9/2003	323	<10		<2		<25		3.1		5100
	7/29/2004	150	<10	<10	<2	<2	<25	<25	<2	<2	560
	3/8/2005		<10		<2		<25		2.6		2400
	9/28/2006		<10		<2		<25		<2		1400
	9/18/2007		29		<1		<10		4.9		18000
	9/24/2008	323	<10	<10	<1	<1	<10	<10	2.4	<2	5800
NC Groundwater Standards			2000		1.75		50		1000		300

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Iron as Fe Dissolved (ug/l)	Manganese as Mn		Nickel as Ni		Lead as Pb		Selenium as Se	
				Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)
40001000009	12/9/2002	65		2500		<10		<10		<5	
	6/9/2003	65		1500		<10		<10		<5	
	12/9/2003			880		12		<10		<5	
	7/29/2004	70	<50	130	130	<10	<10	<10	<10	<5	<5
	3/8/2005	67		150		<10		<10		<5	
	9/28/2006			25		<10		<10		<5	
	9/28/2006**			26		<10		<10		<5	
	9/18/2007	67		18		<10		<10		<5	
	9/24/2008	57	<50	25	23	<10	<10	<10	<10	<5	<5
40001000010	12/9/2002	323		120		<10		14		<5	
	6/9/2003			36		<10		12		<5	
	12/9/2003	323		69		<10		<10		<5	
	7/29/2004	150	<50	12	<10	<10	<10	<10	<10	<5	<5
	3/8/2005			68		<10		<10		<5	
	9/28/2006			33		<10		<10		<5	
	9/18/2007			190		<10		12		<5	
	9/24/2008	323	<50	61	12	<10	<10	<10	<10	<5	<5
NC Groundwater Standards				50		100		15		50	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Zinc as Zn		Organochlorine Pesticides	Organophosphate Pesticides	Nitrogen Pesticides	Acid Herbicide	Semivolatile Organics	Volatile Organics	Radon 222 (pCi/l)
			Total	Dissolved (ug/l)							
40001000009	12/9/2002	65	30		>10	1	2	>10	25	3	
	6/9/2003	65	<10							1	
	12/9/2003		23							0	
	7/29/2004	70	13	10							
	3/8/2005	67	36								
	9/28/2006		<10								
	9/28/2006**		<10								
	9/18/2007	67	<10								
9/24/2008	57	<10	<10							4810	
40001000010	12/9/2002	323	13000							0	
	6/9/2003		10000		2	0	0	1	0	0	
	12/9/2003	323	11000								
	7/29/2004	150	3100	3200							
	3/8/2005		7100								
	9/28/2006		1000								
	9/18/2007		1700								
	9/24/2008	323	330	140							7470
NC Groundwater Standards			1050								

Notes: Bold data = exceed NC Groundwater Standards; ND = not detected; blank fields = not sampled; * below measure point; ** duplicated sample

**Water Quality Analysis
Upper Piedmont Research Station
S1 Cluster**

Sample ID	Sampling Date	Sampling Depth (feet*)	Dissolved Oxygen (mg/l)	pH WH, Field (standard unit)	pH-Alkalinity Lab (mg/l asCaCO3)	Specific Cond., Field (uS/cm)	Specific Cond., Lab (uS/cm @ 25C)	Water Temp. (deg C)	Fecal Coliform (colonies/100 ml)	Total OrganicCarbon (mg/l)	Turbidity (NTU)
40001000011	12/10/2002	45	6.60	6.87	6.00	191.0	170	9.85	1	<5	270
	6/9/2003			5.87	5.80	174.0	170	16.88	1	<5	160
	12/9/2003	45	7.30	5.45		160.0	180	17.80	1	<5	3.1
	7/28/2004	48	6.68	5.82	5.60	138.1	150	17.50			50
	3/9/2005	47		5.86	6.10	136.7	130	15.20		2.5	13
	9/28/2006	39	6.31	5.82	5.70	121.0	110	16.00		<2	170
40001000012	12/9/2002	200	0.06	7.85	8.10	299.0	280	15.69		<5	1.8
	6/9/2003			7.75	7.74	302.0	300	17.19	1	<5	1.8
	12/11/2003	145	0.56	7.67	7.80	305.0	310	16.70	1	<5	2.1
	7/28/2004	200	2.71	7.75	7.80	271.3	300	18.60			3.8
	3/9/2005	200		7.72	8.20	319.7	290	17.00		<2	<1
	9/28/2006	145	2.38	8.71	8.00	314.0	310	17.20		<2	1.5
	9/28/2006**	145	2.38	8.71			310	17.20			
NC Groundwater Standards				6.5 - 8.5					1		

Sample ID	Sampling Date	Sampling Depth (feet*)	Suspended Residue (mg/l)	Total DissolvedSolid (mg/l)	PT Color (c.u.)	Carbonate (mg/l)	Bicarbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Fluoride as F (mg/l)	Silica as SiO ₂ (mg/l)
40001000011	12/10/2002	45	280	150	<5	<1	23	11	14	<0.5	34
	6/9/2003		190	140	<5	<1	24	10	17	0.14	33
	12/9/2003	45	10	120	<5	<1	15	12	17	0.11	27
	7/28/2004	48	200	120		<1	16	9.6	16	<0.2	30
	3/9/2005	47	61	100	<5	<1	23	6.9	18	<0.4	35
	9/28/2006	39	70	108	<5	<1	23	5.9	19	<0.4	35
40001000012	12/9/2002	200	17	170	<5	<1	93	24	16	3.2	29
	6/9/2003		6	180	<5	<1	87	26	19	3	29
	12/11/2003	145	<2.5	160	<5	<1	81	25	22	2.8	30
	7/28/2004	200	12	200		<1	85	28	22	3.1	17
	3/9/2005	200	<2.5	190	<5	<1	93	26	21	2.9	28
	9/28/2006	145	<2.5	198	<5	<1	45	29	22	2.8	27
	9/28/2006**	145						27	21	2.8	26
NC Groundwater Standards				500	15			250	250	2	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Calcium as Ca		Magnesium as Mg		Potassium as K		Sodium as Na		Ammonia NH3 as N (mg/l)
			Total (mg/l)	Filtered (mg/l)	Total (mg/l)	Dissolved (mg/l)	Total (mg/l)	Dissolve (mg/l)	Total (mg/l)	Dissolved (mg/l)	
40001000011	12/10/2002	45	12		5.1		1.8		14		0.03
	6/9/2003		11		4.7		2		11		0.02
	12/9/2003	45	13		4.8		1.6		10		<0.02
	7/28/2004	48	10	10	4.6	4.4	1.6	1.6	9.2	9	<0.1
	3/9/2005	47	9		3.8		1.6		12		<0.02
	9/28/2006	39	7.2		3.3		16		11		0.09

40001000012	12/9/2002	200	32		6.7		5.5		13		<0.02
	6/9/2003		32		7.8		5.5		11		<0.02
	12/11/2003	145	32		8.6		4.7		12		<0.02
	7/28/2004	200	33	36	10	10	4.3	4.2	12	12	
	3/9/2005	200	36		10		5.5		14		<0.02
	9/28/2006	145	36		10		5.6		13		<0.02
	9/28/2006**	145	20								
NC Groundwater Standards											

Sample ID	Sampling Date	Sampling Depth (feet*)	Nitrate&nitrite NO2+NO3 as N (mg/l)	Phosphorous Total as P (mg/l)	Cyanide (mg/l)	Silver as Ag		Aluminum as Al		Arsenic as As	
						Total (ug/l)	Dissolved (ug/l)	Total (ug/l)	Dissolved (ug/l)	Total (ug/l)	Dissolved (ug/l)
40001000011	12/10/2002	45	10	0.12	<0.02	<5		970		<10	
	6/9/2003		5.1	0.11		<5		3100		<10	
	12/9/2003	45	9.1	<0.02		<5		120		<10	
	7/28/2004	48	6	0.09		<5	<5	1100	<50	<10	<10
	3/9/2005	47	3.1	0.04		<5		460		<5	
	9/28/2006	39	14	0.07		<5		880		<5	

40001000012	12/9/2002	200	0.23	0.03	<0.02	<5		100		<10	
	6/9/2003		0.23	<0.02		<5		80		<10	
	12/11/2003	145	0.12	<0.02		<5		<50		<10	
	7/28/2004	200	<0.02	NA		<5	<5	130	<50	<10	<10
	3/9/2005	200	0.26	0.02		<5		76		<5	
	9/28/2006	145	0.32	<0.02		<5		<50		<5	
	9/28/2006**	145									
NC Groundwater Standards			11***		0.07	17.5				50	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

*** Groundwater Standard for Nitrate (as N) is 10 mg/l, for Nitrite (as N) is 1 mg/l.

Sample ID	Sampling Date	Sampling Depth (feet*)	Barium as Ba		Cadmium as Cd		Chromium as Cr		Copper as Cu		Iron as Fe
			Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	total (ug/l)
40001000011	12/10/2002	45	63		<2		<25		5.3		1600
	6/9/2003		54		<2		<25		2.8		5300
	12/9/2003	45	48		<2		<25		2.8		140
	7/28/2004	48	49	39	<2	<2	<25	<25	<2	<2	1200
	3/9/2005	47	38		<2		<25		<2		350
	9/28/2006	39	41		<2		<25		<2		690

40001000012	12/9/2002	200	12		<2		<25		<2		230
	6/9/2003		16		<2		<25		<2		160
	12/11/2003	145	10		<2		<25		<2		120
	7/28/2004	200	17	10	<2	<2	<25	<25	<2	<2	330
	3/9/2005	200	18		<2		<25		<2		150
	9/28/2006	145	19		<2		<25		<2		140
	9/28/2006**	145			<2		<25				
NC Groundwater Standards			2000		1.75		50		1000		300

Sample ID	Sampling Date	Sampling Depth (feet*)	Iron as Fe	Manganese as Mn		Nickel as Ni		Lead as Pb		Selenium as Se	
			Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)
40001000011	12/10/2002	45		220		<10		<10		<5	
	6/9/2003			460		<10		<10		<5	
	12/9/2003	45		25		<10		<10		<5	
	7/28/2004	48	<50	77	36	<10	<10	<10	<10	<5	<5
	3/9/2005	47		46		<10		<10		<5	
	9/28/2006	39		41		<10		<10		<5	

40001000012	12/9/2002	200		100		<10		<10		<5	
	6/9/2003			130		<10		<10		<5	
	12/11/2003	145		200		<10		<10		<5	
	7/28/2004	200	<50	220	210	<10	<10	<10	<10	<5	<5
	3/9/2005	200		230		<10		<10		<5	
	9/28/2006	145		170		<10		<10		<5	
	9/28/2006**	145									
NC Groundwater Standards				50		100		15		50	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Zinc as Zn		Organochlorine Pesticides	Organophosphate Pesticides	Nitrogen Pesticides	Acid Herbicide	Semivolatile Organics	Volatile Organics	Radon 222 (pCi/l)
			Total	Dissolved (ug/l)							
40001000011	12/10/2002	45	92		6	0	1	0	1	0	
	6/9/2003		66							0	
	12/9/2003	45	40								
	7/28/2004	48	51	24							
	3/9/2005	47	23								
	9/28/2006	39	27								
40001000012	12/9/2002	200	4400								0
	6/9/2003		610		1	2	0	0	1	0	
	12/11/2003	145	240								
	7/28/2004	200	1000	760							
	3/9/2005	200	460								
	9/28/2006	145	270								
	9/28/2006**	145									
NC Groundwater Standards			1050								

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicated sample

**Water Quality Analysis
Upper Piedmont Research Station
S3 Cluster**

Sample ID	Sampling Date	Sampling Depth (feet*)	Dissolved Oxygen (mg/l)	pH WH, Field (standard unit)	pH-Alkalinity Lab (mg/l as CaCO3)	Specific Cond., Field (uS/cm)	Specific Cond., Lab (uS/cm @ 25C)	Water Temp. (deg C)	Fecal Coliform (colonies/100 ml)	Total Organic Carbon (mg/l)	Turbidity (NTU)
40001000013	12/10/2002	36	7.20	6.03	5.70	124.0	120	15.25	1	<5	350
	6/10/2003		5.70	5.00	5.66	128.9	130	15.92	1	<5	16
	12/10/2003			4.99	6.90	142.2	140	15.20		<5	37
	7/27/2004	38	7.68	5.54	5.60	101.6	140	15.80			14
	7/27/2004**	38	7.68	5.54	5.40	101.6	140	15.80			50
	3/8/2005				5.70		140			<2	17
	9/27/2006		6.37	4.49	5.60	144.0	150	15.20	<1	<2	110
	9/19/2007	35	7.16	5.41	5.70	157.0	150	15.58		<2	8.2
9/25/2008	38	7.68	6.19	5.68	101.6	150	15.48		<2	2.5	
40001000014	12/10/2002	42		6.40	6.00	142.0	130	13.46	1	<5	4.2
	6/10/2003		5.35	5.43	5.96	161.2	170	16.00	1	<5	1.3
	12/10/2003			5.22	6.90	163.0	160	15.30		<5	1.3
	7/27/2004	55	8.79	5.60	5.70	134.4	150	16.00			1.3
	3/8/2005	55	7.73	5.66	5.70	152.3	150	15.51		<2	<1
	9/27/2006		7.66	4.98	6.20	152.0	150	15.32	<1	<2	<1
	9/19/2007	53	7.52	5.61	5.90	161.0	160	15.45		<2	<1
	9/25/2008	55	8.25	6.58	5.95	173.0	160	15.70		<2	<1
40001000015	12/10/2002	66	8.01	5.66	6.10	119.0	110	15.49	1	<5	100
	6/10/2003		6.64	5.76	5.90	117.0	130	21.11	1	<5	38
	12/11/2003				6.00		130			<5	60
	7/27/2004	70	7.04	6.00	5.90	129.4	130	17.60			7.4
	3/8/2005		7.41	5.52	6.00	145.0	130	15.51		<2	1.5
	9/27/2006		7.87	5.14	6.10	138.0	140	15.40	<1	<2	2.7
	9/19/2007	70	8.22	5.53	6.10	145.0	140	15.40		<2	1.3
	9/19/2007**	70	8.22	5.53	6.10	145.0	140	15.40		<2	5
	9/25/2008	70	8.55	6.22	5.95	164.0	150	15.73		<2	26
40001000016	12/10/2002	164	5.25	6.33	7.00	164.0	150	15.63		<5	1.3
	6/10/2003				6.43		150			<5	<1
	12/10/2003	159		5.70	6.90	161.0	160	15.60		<5	1.4
	7/27/2004	162	5.87	6.43	6.20	164.3	160	17.00			<1
	3/8/2005		6.63	6.28	6.70	166.0	160	15.50		<2	<1
	3/8/2005**		6.63	6.28	6.30	166.0	160	15.50		<2	<1
	9/27/2006		5.80	5.49	6.40	178.0	170	16.48		<2	2.3
	9/18/2007	162	6.55	6.24	6.40	177.0	170	15.88		<2	<1
	9/25/2008	162	5.91	6.28	6.48	182.0	170	15.79		<2	<1
NC Groundwater Standards				6.5 - 8.5					1		

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Suspended Residue (mg/l)	Total Dissolved Solids (mg/l)	PT Color (c.u.)	Carbonate (mg/l)	Bicarbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Fluoride as F (mg/l)	Silica as SiO ₂ (mg/l)	
40001000013	12/10/2002	36	280	120	<5	<1	17	6	<5	<0.5	40	
	6/10/2003		22	130	<5	<1	13	6.7	<1	0.07	42	
	12/10/2003		170	130	<5	<1	15	7.6	0.44	0.05	42	
	7/27/2004	38	22	170		<1	17	7.4	2.3	<0.2	34	
	7/27/2004**	38	25	210		<1	15	7.6	5.8	<0.2	34	
	3/8/2005		34	130	<5	<1	18	7.4	<2	<0.4	38	
	9/27/2006		86	151	<5	<1	16	9	<2	0.4	39	
	9/19/2007	35	<6.2		152	<5	<1	14	7.9	<2	<0.4	37
	9/25/2008	38	<6.2		139	<5	<1	14	8.3	2	<0.4	39
40001000014	12/10/2002	42	<2.5	120	<5	<1	20	7	<5	<0.5	42	
	6/10/2003		300	130	<5	<1	19	6.3	11	0.06	42	
	12/10/2003		<2.5	140	<5	<1	18	6.7	10	0.07	49	
	7/27/2004	55	<2.5	180		<1	19	6.9	4.5	<0.2	38	
	3/8/2005	55	<2.5	120	<5	<1	19	7	3.2	<0.4	46	
	9/27/2006		<2.5	149	<5	<1	22	8.2	<2	<0.4	44	
	9/19/2007	53	<6.2		154	<5	<1	17	5.9	<2	<0.4	41
	9/25/2008	55	<6.2		144	<5	<1	16	8.6	<2	<0.4	41
40001000015	12/10/2002	66	72	110	<5	<1	25	7	25	<0.5	54	
	6/10/2003		57	120	<5	<1	20	5.2	<1	0.08	48	
	12/11/2003		120	100	<5	<1	20	5.9	0.49	0.08	49	
	7/27/2004	70	13	160		<1	24	6	<2	<0.2	35	
	3/8/2005		8	120	<5	<1	21	6.4	<2	<0.4	44	
	9/27/2006		3.5	143	<5	<1	23	7.7	<2	<0.4	48	
	9/19/2007	70	<6.2		150	<5	<1	21	6.8	<2	<0.4	43
	9/19/2007**	70	<6.2		150	<5	<1	22	6.8	<2	<0.4	42
	9/25/2008	70		59	144	<5	<1	21	8.6	<2	<0.4	46
40001000016	12/10/2002	164	<2.5	130	<5	<1	39	3	<5	<0.5	43	
	6/10/2003		3	140	<5	<1	34	5	1.9	0.15	44	
	12/10/2003	159	<2.5	140	<5	<1	31	5.4	1.8	0.14	49	
	7/27/2004	162	<2.5	210		<1	31	5.9	<2	<0.2	39	
	3/8/2005		<2.5	150	<5	<1	33	5.8	<2	<0.4	46	
	3/8/2005**		<2.5	150	<5	<1	32	5.8	<2	<0.4	44	
	9/27/2006		<2.5	161	<5	<1	35	7.7	2.3	<0.4	46	
	9/18/2007	162	12	154	<5	<1	31	7	<2	<0.4	40	
	9/25/2008	162	<6.2		166	<5	<1	29	8.8	3.4	<0.4	38
NC Groundwater Standards				500	15			250	250	2		

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Calcium as Ca (mg/l)		Magnesium as Mg (mg/l)		Potassium as K (mg/l)		Sodium as Na (mg/l)		Ammonia NH3 as N (mg/l)
			Total	Filtered	Total	Dissolved	Total	Dissolved	Total	Dissolved	
40001000013	12/10/2002	36	5.1		2.3		2.1		14		0.04
	6/10/2003		5.4		1.9		2.1		12		<0.02
	12/10/2003		5.7		2		2		13		0.03
	7/27/2004	38	7	6.3	2.2	2	2.4	2.3	15	14	0.09
	7/27/2004**	38	7	6.2	2.4	2	2.4	2.2	16	18	0.16
	3/8/2005		6.5		2.2		2.2		19		<0.02
	9/27/2006		7.3		2.8		2.4		19		<0.02
	9/19/2007	35	7.1		2.3		2.2		18		<0.02
	9/25/2008	38	7.5	7.9	2.5	2.6	2.3	2.4	19	20	0.1
40001000014	12/10/2002	42	6.8		2.2		1.7		14		<0.02
	6/10/2003		7.7		2.4		1.9		14		<0.02
	12/10/2003		7.4		2.3		1.9		15		<0.02
	7/27/2004	55	7.9	7.9	2.5	2.6	2.1	2.1	18	18	
	3/8/2005	55	7.8		2.5		1.9		19		<0.02
	9/27/2006		8.5		2.7		1.9		19		<0.02
	9/19/2007	53	8.4		2.6		1.9		18		<0.02
	9/25/2008	55	9.1	9.4	2.9	2.9	2.1	2.1	20	20	0.1
40001000015	12/10/2002	66	6.3		2.2		1.1		11		<0.02
	6/10/2003		6.6		2.4		1.3		10		<0.02
	12/11/2003		7.9		3.3		1.6		12		<0.02
	7/27/2004	70	7.8	8.2	2.5	2.5	1.4	1.4	11	12	
	3/8/2005		7.9		2.6		1.3		15		<0.02
	9/27/2006		8.9		2.9		1.4		16		<0.02
	9/19/2007	70	9		2.9		1.4		15		<0.02
	9/19/2007**	70	9		2.9		1.4		15		<0.02
	9/25/2008	70	9.7	9.7	3.5	3.1	1.6	1.5	16	17	<0.02
40001000016	12/10/2002	164	12		4.1		0.87		11		<0.02
	6/10/2003		10		4		0.85		10		<0.02
	12/10/2003	159	11		4		0.84		10		<0.02
	7/27/2004	162	11	11	4.8	4.7	0.99	0.98	12	10	
	3/8/2005		12		5		0.98		14		<0.02
	3/8/2005**		12		5		0.98		14		<0.02
	9/27/2006		13		5.4		1.2		15		<0.02
	9/18/2007	162	13		5.2		0.99		13		<0.02
	9/25/2008	162	14	14	5.7	5.8	1.1	1.2	15	15	<0.02
NC Groundwater Standards											

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Nitrate&nitrite NO2+NO3 as N (mg/l)	Phosphorous Total as P (mg/l)	Cyanide (mg/l)	Silver as Ag (ug/l)		Aluminum as Al (ug/l)		Arsenic as As (ug/l)	
						Total	Dissolved	Total	Dissolved	Total	Dissolved
40001000013	12/10/2002	36	8.1	0.21	<0.02	<5		1300		<10	
	6/10/2003		9.9	0.02		<5		770		<10	
	12/10/2003		9.6	0.34		<5		1300		<10	
	7/27/2004	38	9.4	0.03		<5	<5	820	<50	<10	<10
	7/27/2004**	38	11	0.06		<5	<5	1200	<50	<10	<10
	3/8/2005		10	0.03		<5		580		<5	
	9/27/2006		9.9	0.08		<5		620		<5	
	9/19/2007	35	11	2.2		<5		150		<5	
	9/25/2008	38	12	<0.02		<5	<5	120	<50	<5	<5
40001000014	12/10/2002	42	9.7	0.02	<0.02	<5		54		<10	
	6/10/2003		9.6	0.03		<5		<50		<10	
	12/10/2003		9	<0.02		<5		<50		<10	
	7/27/2004	55	10	0.02		<5	<5	50	<50	<10	<10
	3/8/2005	55	10	<0.02		<5		55		<5	
	9/27/2006		10	<0.02		<5		<50		<5	
	9/19/2007	53	11	<0.02		<5		<50		<5	
	9/25/2008	55	12	<0.02		<5	<5	<50	<50	<5	<5
	40001000015	12/10/2002	66	7	0.1	<0.02	<5		300		<10
6/10/2003			7.1	0.07		<5		1100		<10	
12/11/2003			7.6	0.11		<5		2500		<10	
7/27/2004		70	8	0.04		<5	<5	230	<50	<10	<10
3/8/2005			8.7	0.04		<5		120		<5	
9/27/2006			9	0.03		<5		65		<5	
9/19/2007		70	9.9	0.03		<5		<50		<5	
9/19/2007**		70	9.7	0.03		<5		53		<5	
9/25/2008		70	10	0.09		<5	<5	870	<50	<5	<5
40001000016	12/10/2002	164	8.5	0.08	<0.02	<5		<50		<10	
	6/10/2003		8.6	0.05		<5		<50		<10	
	12/10/2003	159	8.8	0.04		<5		<50		<10	
	7/27/2004	162	9.4	0.05		<5	<5	<50	<50	<10	<10
	3/8/2005		9.8	0.05		<5		<50		<5	
	3/8/2005**		9.8	0.06		<5		<50		<5	
	9/27/2006		9.7	<0.02		<5		<50		<5	
	9/18/2007	162	9.9	0.07		<5		<50		<5	
	9/25/2008	162	11	0.05		<5	<5	<50	<50	<5	<5
NC Groundwater Standards			11***		0.07	17.5				50	

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

*** Groundwater Standard for Nitrate (as N) is 10 mg/l, for Nitrite (as N) is 1 mg/l.

Sample ID	Sampling Date	Sampling Depth (feet*)	Barium as Ba		Cadmium as Cd		Chromium as Cr		Copper as Cu		Iron as Fe total (ug/l)	
			Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)		
40001000013	12/10/2002	36		94		<2		<25		<2		1300
	6/10/2003			57		<2		<25		<2		1000
	12/10/2003			57		<2		<25		<2		1000
	7/27/2004	38		60	57	<2	<2	<25	<25	3.9	<2	280
	7/27/2004**	38		71	53	<2	<2	<25	<25	<2	<2	620
	3/8/2005			57		<2		<25		<2		240
	9/27/2006			84		<2		<25		<2		650
	9/19/2007	35		62		<1		<10		<2		140
9/25/2008	38		65	68	<1	<1	<10	<10	<2	<2	160	
40001000014	12/10/2002	42		40		<2		<25		<2		<50
	6/10/2003			53		<2		<25		<2		<50
	12/10/2003			49		<2		<25		<2		<50
	7/27/2004	55		53	55	<2	<2	<25	<25	<2	<2	<50
	3/8/2005	55		46		<2		<25		<2		<50
	9/27/2006			55		<2		<25		<2		<50
	9/19/2007	53		52		<1		<10		<2		<50
	9/25/2008	55		58	60	<1	<1	<10	<10	<2	<2	<50
40001000015	12/10/2002	66		20		<2		<25		<2		460
	6/10/2003			27		<2		<25		2.8		2200
	12/11/2003			38		<2		<25		6.2		4700
	7/27/2004	70		29	26	<2	<2	<25	<25	<2	<2	230
	3/8/2005			19		<2		<25		<2		110
	9/27/2006			22		<2		<25		<2		54
	9/19/2007	70		20		<1		<10		<2		54
	9/19/2007**	70		20		<1		<10		<2		58
9/25/2008	70		29	23	<1	<1	<10	<10	<2	<2	1600	
40001000016	12/10/2002	164	<10			<2		<25		<2		70
	6/10/2003		<10			<2		<25		<2		74
	12/10/2003	159	<10			<2		<25		<2		<50
	7/27/2004	162	<10	<10		<2	<2	<25	<25	<2	<2	<50
	3/8/2005		<10			<2		<25		<2		<50
	3/8/2005**		<10			<2		<25		<2		<50
	9/27/2006		<10			<2		<25		<2		180
	9/18/2007	162	<10			<1	<1	<10		<2		85
9/25/2008	162	<10	<10				<10	<10	<2	<2	65	
NC Groundwater Standards			2000			1.75		50		1000		300

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Iron as Fe		Manganese as Mn		Nickel as Ni		Lead as Pb		Selenium as Se	
			Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	
40001000013	12/10/2002	36			170		<10		10		<5	
	6/10/2003				58		<10		<10		<5	
	12/10/2003				46		<10		<10		<5	
	7/27/2004	38	<50		16	<10	<10	<10	<10	<10	<5	<5
	7/27/2004**	38	<50		65	<10	<10	<10	<10	<10	<5	
	3/8/2005				12		<10		<10		<5	
	9/27/2006				82		<10		<10		<5	
	9/19/2007	35		<10			<10		<10		<5	
	9/25/2008	38	<50	<10	<10		<10	<10	<10	<10	<5	<5
40001000014	12/10/2002	42			18		<10		<10		<5	
	6/10/2003			<10			<10		<10		<5	
	12/10/2003			<10			<10		<10		<5	
	7/27/2004	55	<50	<10	<10		<10	<10	<10	<10	<5	<5
	3/8/2005	55		<10			<10		<10		<5	
	9/27/2006			<10			<10		<10		<5	
	9/19/2007	53		<10			<10		<10		<5	
	9/25/2008	55	<50	<10	<10		<10	<10	<10	<10	<5	<5
40001000015	12/10/2002	66			67		<10		<10		<5	
	6/10/2003				78		24		<10		<5	
	12/11/2003				140		<10		<10		<5	
	7/27/2004	70	<50		29	22	<10	<10	<10	<10	<5	<5
	3/8/2005				15		<10		<10		<5	
	9/27/2006			<10			<10		<10		<5	
	9/19/2007	70		<10			<10		<10		<5	
	9/19/2007**	70		<10			<10		<10		<5	
	9/25/2008	70	<50		42	<10	<10	<10	<10	<10	<5	<5
40001000016	12/10/2002	164		<10			<10		<10		<5	
	6/10/2003			<10			<10		<10		<5	
	12/10/2003	159		<10			<10		<10		<5	
	7/27/2004	162	<50	<10	<10		<10	<10	<10	<10	<5	<5
	3/8/2005			<10			<10		<10		<5	
	3/8/2005**			<10			<10		<10		<5	
	9/27/2006			<10			<10		<10		<5	
	9/18/2007	162		<10			<10		<10		<5	
	9/25/2008	162	<50	<10	<10		<10	<10	<10	<10	<5	<5
NC Groundwater Standards				50		100		15		50		

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Zinc as Zn (ug/l)		Organochlorine Pesticides	Organophosphate Pesticides	Nitrogen Pesticides	Acid Herbicide	Semivolatile Organics	Volatile Organics	Radon 222 (pCi/l)
			Total	Dissolved							
# of peaks tentatively or identified/individule constituents detected											
40001000013	12/10/2002	36	27								1
	6/10/2003		11		7	0	0	4	0	0	0
	12/10/2003		18								0
	7/27/2004	38	1100	41							
	7/27/2004**	38	130	14							
	3/8/2005		<10								
	9/27/2006		11		0	0	0	1	0	0	0
	9/19/2007	35	<10								
9/25/2008	38	<10	<10								
40001000014	12/10/2002	42	16		0	0	0	0	0	0	0
	6/10/2003		<10								0
	12/10/2003		12								
	7/27/2004	55	<10	<10							
	3/8/2005	55	<10								
	9/27/2006		<10		1	0	0	2	5		
	9/19/2007	53	<10								
9/25/2008	55	<10	<10								
40001000015	12/10/2002	66	28								0
	6/10/2003		<10								0
	12/11/2003		54		6	1	0	3	0		
	7/27/2004	70	10	<10							
	3/8/2005		<10								
	9/27/2006		<10		0	0	0	1	0	0	0
	9/19/2007	70	<10								
	9/19/2007**	70	<10								
9/25/2008	70	<10	<10								
40001000016	12/10/2002	164	4000								0
	6/10/2003		1200								0
	12/10/2003	159	1100		1	0	0	1	0		
	7/27/2004	162	800	780							
	3/8/2005		610								
	3/8/2005**		610								
	9/27/2006		750								
	9/18/2007	162	610								
9/25/2008	162	470	300								
NC Groundwater Standards			1050								

Notes: Bold data = exceed NC Groundwater Standards; blank fields = not sampled; * below measure point; ** duplicate sample

**Water Quality Analysis
Upper Piedmont Research Station
S4 Cluster**

Sample ID	Sampling Date	Sampling Depth (feet*)	Dissolved Oxygen (mg/l)	pH WH, Field (standard unit)	pH-Alkalinity Lab (mg/l asCaCO3)	Specific Cond., Field (uS/cm)	Specific Cond., Lab (uS/cm @ 25C)	Water Temp. (deg C)	Fecal Coliform (colonies/100ml)	Total OrganicCarbon (mg/l)	Turbidity (NTU)
40001000017	12/10/2002	13	0.63	6.15	6.50	316	280	14.98	1	<5	170
	6/10/2003		4.45	6.37	6.46	332	320	14.37	1	<5	180
	12/9/2003	14		6.50	7.40	325	320	15.20		<5	50
	7/28/2004		0.42	6.72	6.40	316	290	16.80		NA	12
	3/9/2005		0.50	6.76	6.50	201	300	10.10		2.5	13
	3/9/2005**			6.76	6.60		290			2.5	13
	9/28/2006		3.22	6.70	6.40	277	280	17.26		<2	10
40001000018	12/10/2002	30	0.10	6.60	6.90	317	280	14.90	1	<5	1.8
	6/10/2003		0.11	6.64	6.89	313	320	14.39	1	<5	2.1
	12/9/2003	30	0.30	6.40	7.70	212	300	14.80		<5	1.4
	7/28/2004	35	0.14	6.89	6.70	301	300	14.60			1.4
	3/9/2005	35	0.50	6.87	7.90	239	300	14.10		<2	1.3
	9/27/2006		3.22	6.70	6.90	277	300	17.26		<2	<1
	40001000019	12/10/2002	132	0.10	6.90	7.10	295	270	15.20	1	<5
6/10/2003			1.23	6.78	7.22	260	270	16.49	1	<5	<1
12/9/2003		132	0.06	6.40	7.70	202	290	15.50		<5	<1
7/28/2004		135	0.13	7.06	6.90	310	300	15.50			1.4
7/28/2004**		135		7.06	6.90		300				1.1
3/9/2005		135	0.20	6.77	7.30	230	300	15.20		2.3	1.1
9/27/2006			0.36	6.85	7.00	302	320	15.00		<2	<1
40001000021		12/10/2002	NA/SW			7.40		200		200	<5
	6/10/2003	NA/SW	7.39	7.14	7.22	128	130	21.77	110	<5	7.3
	12/9/2003	NA/SW	19.20	7.00	7.30	82.4	150	4.7		<5	2.8
	7/28/2004	NA/SW	8.33	7.53	7.20	175.5	170	22.9			33
	3/9/2005	NA/SW	13.80	6.25	7.20	85	140	4.9		4	13
	9/27/2006	NA/SW	10.04	7.23	7.40	149	160	15.4	300	2.2	4.7
	NC Groundwater Standards				6.5 - 8.5					1	

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point

** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Suspended Residue (mg/l)	Total Dissolved Solids (mg/l)	PT Color (c.u.)	Carbonate (mg/l)	Bicarbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Fluoride as F (mg/l)	Silica as SiO ₂ (mg/l)
40001000017	12/10/2002	13	140	210	<5	<1	82	19	41	<0.5	43
	6/10/2003		300	240	6	<1	84	21	43	0.18	38
	12/9/2003	14	48	200	7	<1	90				32
	7/28/2004		10	230	<5	<1	90	18	52	0.26	36
	3/9/2005		34	190	<5	<1	91	16	39	<0.4	38
	3/9/2005**		31	200	<5	<1	90	15	39	<0.4	38
	9/28/2006		11	200	7	<1	89	15	39	<0.4	42
40001000018	12/10/2002	30	<2.5	200	6	<1	80	15	55	<0.5	34
	6/10/2003		<2.5	210	6	<1	74	17	49	0.21	35
	12/9/2003	30	<5	170	27	<1	72	17	53	0.2	31
	7/28/2004	35	<2.5	210	<5	<1	77	12	42	0.21	28
	3/9/2005	35	4	190	15	<1	78	16	52	<0.4	32
	9/27/2006		<2.5	211	11	<1	130	16	51	<0.4	32
40001000019	12/10/2002	132	<2.5	200	<5	<1	72	14	51	<0.5	34
	6/10/2003		8	200	8	<1	64	17	40	0.22	31
	12/9/2003	132	3	160	9	<1	68	17	48	0.26	34
	7/28/2004	135	7	210	<5	<1	71	13	58	0.56	28
	7/28/2004**	135	<2.5	220	<5	<1	73	13	59	0.55	27
	3/9/2005	135	2.5	200	<5	<1	70	14	61	0.4	31
	9/27/2006		<2.5	228	5	<1	70	13	71	0.5	31
40001000021	12/10/2002	NA/SW	<2.5	130	9	<1	38	25	<5	0.6	22
	6/10/2003	NA/SW	5	96	26	<1	32	7.3	12	0.21	24
	12/9/2003	NA/SW	<2.5	98	7	<1	35	14	13	0.18	28
	7/28/2004	NA/SW	34	130	44	<1	32	8.8	33	0.47	14
	3/9/2005	NA/SW	7	90	16	<1	33	13	11	0.4	22
	9/27/2006	NA/SW	5.5	115	15	<1	44	11	16	<0.4	25
NC Groundwater Standards				500	15			250	250	2	

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point

** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Calcium as Ca (mg/l)		Magnesium as Mg (mg/l)		Potassium as K (mg/l)		Sodium as Na (mg/l)		Ammonia NH3 as N (mg/l)
			Total	Filtered	Total	Dissolved	Total	Dissolved	Total	Dissolved	
40001000017	12/10/2002	13	31		18		2.3		7.3		0.24
	6/10/2003		28		17		2.5		8		0.16
	12/9/2003	14	31		16		2.5		8.1		0.1
	7/28/2004		36	36	19	18	2.9	3	8.8	8	0.2
	3/9/2005		31		16		2.3		7.6		0.1
	3/9/2005**		31		16		2.2		7.6		0.09
	9/28/2006		28		15		2.5		7.2		0.18
40001000018	12/10/2002	30	34		12		1.9		8.4		<0.02
	6/10/2003		31		12		1.9		8.2		<0.02
	12/9/2003	30	32		11		1.9		8.6		<0.02
	7/28/2004	35	33	33	12	12	2.3	2.4	8.2	8.1	
	3/9/2005	35	35		13		2		9.6		<0.02
	9/27/2006		33		12		2		9.3		<0.02
40001000019	12/10/2002	132	38		5.4		2.2		11		<0.02
	6/10/2003		31		6.4		2.7		9.5		<0.02
	12/9/2003	132	33		6.8		2.7		10		<0.02
	7/28/2004	135	42	38	7.5	7.8	2.9	3.1	12	12	
	7/28/2004**	135	36	39	7.4	7.2	2.9	2.8	11	11	
	3/9/2005	135	39		8		2.9		13		<0.02
	9/27/2006		44		7.1		2.8		17		<0.02
40001000021	12/10/2002	NA/SW	15		4.8		7.5		12		<0.02
	6/10/2003	NA/SW	10		3.5		2.9		6.3		<0.02
	12/9/2003	NA/SW	12		4		3.4		9.6		<0.02
	7/28/2004	NA/SW	19	16	5.2	5.2	6.4	6.6	9.3	9.9	
	3/9/2005	NA/SW	10		4.2		3		11		<0.02
	9/27/2006	NA/SW	14		4.7		4.1		9.4		<0.02
NC Groundwater Standards											

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point

** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Nitrate&nitrite NO2+NO3 as N (mg/l)	Phosphorous Total as P (mg/l)	Cyanide (mg/l)	Silver as Ag (ug/l)		Aluminum as Al (ug/l)		Arsenic as As (ug/l)	
						Total	Dissolved	Total	Dissolved	Total	Dissolved
40001000017	12/10/2002	13	<0.02	0.31	<0.02	<5		2100		<10	
	6/10/2003		<0.02	0.37		<5		6100		<10	
	12/9/2003	14	<0.02	0.09		<5		1900		<10	
	7/28/2004		NA	0.08		<5	<5	1100	<50	<10	<10
	3/9/2005		<0.02	0.07		<5		710		<5	
	3/9/2005**		<0.02	0.08		<5		570		<5	
	9/28/2006		<0.02	0.05		<5		180		<5	
40001000018	12/10/2002	30	0.68	0.02	<0.02	<5		<50		<10	
	6/10/2003		<0.02	0.02		<5		<50		<10	
	12/9/2003	30	<0.02	<0.02		<5		<50		<10	
	7/28/2004	35	<0.02	<0.02		<5	<5	<50	<50	<10	<10
	3/9/2005	35	<0.02	<0.02		<5		<50		<5	
	9/27/2006		<0.02	<0.02		<5		<50		<5	
40001000019	12/10/2002	132	<0.02	<0.02	<0.02	<5		<50		<10	
	6/10/2003		<0.02	<0.02		<5		<50		<10	
	12/9/2003	132	<0.02	<0.02		<5		<50		<10	
	7/28/2004	135	NA	NA		<5	<5	<50	<50	<10	<10
	7/28/2004**	135	NA	NA		<5	<5	<50	<50	<10	<10
	3/9/2005	135	<0.02	<0.02		<5		<50		<5	
	9/27/2006		<0.02	<0.02		<5		<50		<5	
40001000021	12/10/2002	NA/SW	0.68	<0.02	<0.02	<5		66		<10	
	6/10/2003	NA/SW	0.58	0.03		<5		210		<10	
	12/9/2003	NA/SW	0.9	<0.02		<5		51		<10	
	7/28/2004	NA/SW	0.2	0.07		<5	<5	710	<50	<10	<10
	3/9/2005	NA/SW	0.8	0.03		<5		950		<5	
	9/27/2006	NA/SW	0.42	0.02		<5		92		<5	
NC Groundwater Standards			11***		0.07	17.5				50	

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point; ** duplicate sample
*** Groundwater Standard for Nitrate (as N) is 10 mg/l, for Nitrite (as N) is 1 mg/l.

Sample ID	Sampling Date	Sampling Depth (feet*)	Barium as Ba		Cadmium as Cd		Chromium as Cr		Copper as Cu		Iron as Fe total (ug/l)
			Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	
40001000017	12/10/2002	13	16		<2		<25		16		4800
	6/10/2003		26		<2		<25		14		11000
	12/9/2003	14	11		<2		<25		9.1		3200
	7/28/2004		15	14	<2	<2	<25	<25	5	<2	3200
	3/9/2005		<10		<2		<25		4.2		1600
	3/9/2005**		<10		<2		<25		3.1		1300
	9/28/2006		13		<2		<25		2.3		1700
40001000018	12/10/2002	30	12		<2		<25		<2		830
	6/10/2003		16		<2		<25		<2		810
	12/9/2003	30	12		<2		<25		<2		790
	7/28/2004	35	18	20	<2	<2	<25	<25	<2	<2	840
	3/9/2005	35	13		<2		<25		<2		920
	9/27/2006		13		<2		<25		<2		800
40001000019	12/10/2002	132	18		<2		<25		<2		260
	6/10/2003		25		<2		<25		<2		360
	12/9/2003	132	22		<2		<25		<2		330
	7/28/2004	135	27	28	<2	<2	<25	<25	<2	<2	280
	7/28/2004**	135	30	22	<2	<2	<25	<25	<2	<2	280
	3/9/2005	135	25		<2		<25		<2		320
	9/27/2006		26		<2		<25		<2		290
40001000021	12/10/2002	NA/SW	50		<2		<25		<2		440
	6/10/2003	NA/SW	42		<2		<25		<2		840
	12/9/2003	NA/SW	40		<2		<25		<2		380
	7/28/2004	NA/SW	57	55	<2	<2	<25	<25	<2	<2	1100
	3/9/2005	NA/SW	35		<2		<25		<2		960
	9/27/2006	NA/SW	44		<2		<25		<2		630
NC Groundwater Standards			2000		1.75		50		1000		300

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point

** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Iron as Fe Dissolved (ug/l)	Manganese as Mn		Nickel as Ni		Lead as Pb		Selenium as Se	
				Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)	Total	Dissolved (ug/l)
40001000017	12/10/2002	13		620		<10			13	<5	
	6/10/2003			670		<10		<10		<5	
	12/9/2003	14		570		<10		<10		<5	
	7/28/2004		770	780	690	<10	<10	<10	<10	<5	<5
	3/9/2005			650		<10		<10		<5	
	3/9/2005**			610		<10		<10		<5	
	9/28/2006			740		<10		<10		<5	
40001000018	12/10/2002	30		140		<10		<10		<5	
	6/10/2003			160		<10		<10		<5	
	12/9/2003	30		160		<10		<10		<5	
	7/28/2004	35	870	170	170	<10	<10	<10	<10	<5	<5
	3/9/2005	35		180		<10		<10		<5	
	9/27/2006			170		<10		<10		<5	
40001000019	12/10/2002	132		74		<10		<10		<5	
	6/10/2003			84		<10		<10		<5	
	12/9/2003	132		88		<10		<10		<5	
	7/28/2004	135	290	80	81	<10	<10	<10	<10	<5	<5
	7/28/2004**	135	270	80	84	<10	<10	<10	<10	<5	<5
	3/9/2005	135		86		<10		<10		<5	
	9/27/2006			76		<10		<10		<5	
40001000021	12/10/2002	NA/SW		130		<10		<10		<5	
	6/10/2003	NA/SW		97		<10		<10		<5	
	12/9/2003	NA/SW		110		<10		<10		<5	
	7/28/2004	NA/SW	<50	110	54	<10	<10	<10	<10	<5	<5
	3/9/2005	NA/SW		100		<10		<10		<5	
	9/27/2006	NA/SW		120		<10		<10		<5	
NC Groundwater Standards				50		100		15		50	

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point

** duplicate sample

Sample ID	Sampling Date	Sampling Depth (feet*)	Zinc as Zn		Organochlorine Pesticides	Organophosphate Pesticides	Nitrogen Pesticides	Acid Herbicide	Semivolatile Organics	Volatile Organics	Radon 222 (pCi/l)
			Total	Dissolved (ug/l)							
40001000017	12/10/2002	13		46							0
	6/10/2003			26							3
	12/9/2003	14		16		3	0	2	1	1	0
	7/28/2004		<10	<10							
	3/9/2005		<10								
	3/9/2005**		<10								
	9/28/2006		<10								
40001000018	12/10/2002	30		360							0
	6/10/2003			1700		2	4	1	1	1	2
	12/9/2003	30		1600							1
	7/28/2004	35		1600	1500						
	3/9/2005	35		1900							
	9/27/2006			1100							
40001000019	12/10/2002	132		1300							0
	6/10/2003			730							0
	12/9/2003	132		560	470	2	1	0	0	0	
	7/28/2004	135		490	470						
	7/28/2004**	135		500							
	3/9/2005	135		550							
	9/27/2006			380							
40001000021	12/10/2002	NA/SW		24							0
	6/10/2003	NA/SW	<10								0
	12/9/2003	NA/SW	<10								
	7/28/2004	NA/SW	<10	<10							
	3/9/2005	NA/SW	<10								
	9/27/2006	NA/SW	<10			0	0	0	1	0	1
NC Groundwater Standards			1050								

Notes: Bold data = exceed NC Groundwater Standards; NA/SW = not applicable/surface water; blank fields = not sampled; * below measure point

** duplicate sample