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September 24, 2002

SEP 2002
Received
Solid Waste
Section

Ms. Cheryl Marks
Hydrogeologist, Groundwater Compliance Unit
Solid Waste Section, Division of Waste Management
North Carolina Department of Environment and Natural Resources
401 Oberlin Road, Suite 150
Raleigh, North Carolina 27605

Re: Watauga County Landfill, Permit #95-02
Assessment Monitoring Program
DAA Job No. 6520-39

Carmen Johnson
Scanned by | Date 6/6/12 | Doc ID # RCO
95-02

Dear Ms. Marks:

Enclosed are preliminary, unvalidated analytical result summary tables for the semiannual Assessment monitoring event conducted at the Watauga County Landfill August 12-14, 2002. The monitoring event was performed in accordance with The Watauga County Landfill Assessment Monitoring Plan (DAA, September 3, 1993) and subsequent monitoring program revisions as approved by the NCDENR. The analytical data obtained from this sampling event is currently being validated and evaluated. A formal, comprehensive report presenting the validated results of the August 2002 Assessment Monitoring event is pending.

A summary of organic parameter results for groundwater is presented in Tables 2A and 2B. Reductive indicator parameters are presented in Table 2C. A summary of organic results for surface water is presented in Table 2D and metal results for groundwater are presented in Table 2E. Groundwater elevation measurements are provided in Table 4. Also enclosed is a site map depicting well locations.

Note that six residential wells and the BREMCO well were tested on this event. All the residential wells sampled in August 2002 (well reference nos. 1, 2, 5, 15, 16 and 24) have been tested on previous events. An updated, four-page cumulative summary table of the potable well sampling program results is also enclosed. The August 2002 results can be found on page 2 and 3 of the potable well cumulative summary table.

Six organic constituents were detected in the sample collected from BREMCO's well (chloroethane, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichlorothene, trichloroethene and dichlorodifluoromethane). All constituents were detected at concentrations consistent with past events and below associated North Carolina groundwater protection standards or EPA MCLs.

1,1-Dichloroethane was detected in the water sample collected from well reference no. 2 at a concentration of 1 µg/l. Methyl-t-butyl-ether was detected in the water sample collected from well reference no. 16 at a concentration of 1.2 µg/l. Methyl-t-butyl-ether is not detected in the groundwater monitoring wells surrounding the landfill; it's source is often leaking underground storage tanks, pipelines, or spills, and to some extent from air deposition.

Three trihalomethanes (chloroform, bromodichloromethane and dibromochloromethane) were detected in the water sample collected from well reference no. 24. Chloroform was detected at a concentration of 38 µg/l. Bromodichloromethane and dibromochloromethane were detected at concentrations of 8.0 µg/l and 1.6 µg/l, respectively. Note that these same three constituents were detected in February 2002. Chloroform was detected at a concentration of 37 µg/l. Bromodichloromethane and dibromochloromethane were detected at concentrations of 4.8 µg/l and 0.8 µg/l, respectively. These concentrations continue to be below the additive EPA MCL for total trihalomethanes of 80 µg/l, but above the more stringent North Carolina groundwater protection standard of 0.19 µg/l.

Trihalomethanes are not detected in the groundwater monitoring wells surrounding the landfill and their presence in potable well samples is often the result of well chlorination. Chloroform, in particular, is frequently detected in chlorinated residential wells.

All other potable well sample results were non-detect. You will be copied when the analytical results are forwarded to the residents. If you should have any questions or comments concerning the enclosed summary tables or upcoming Assessment activities, please do not hesitate to contact me.

Sincerely,
DRAPER ADEN ASSOCIATES

Jeffrey E. Smith
Project Geologist

Attachments

cc: Mr. Robert Nelson, Watauga County Manager (with enclosure)
Mr. James Potter, Watauga County Landfill Manager (with enclosure)
Mr. Michael Lawless, C.P.G., Groundwater Project Manager, DAA

NOT FINAL

Watauga County Landfill
Watauga County, North Carolina
Upgradient Well: MW-1
03/21/01

Table 2A
August 12-14, 2002
Semiannual Monitoring Event
Organic Parameter Analytical Results
Core Groundwater Monitoring Wells

Parameters	Event	Results ug/L(ppb)																				NCS (ug/L)	MCL (ug/L)
		MW-2		MW-3		MW-7		MW-8		MW-9		MW-10		MW-11		MW-12		MW-15		MW-17			
ORGANICS																							
Benzene	8/12-14/02	10	U	**3**	J	1	U	10	U	10	U	1	U	0.5	U	**10**	U	0.5	U	**2**	J	**1**	**5**
Chlorobenzene	8/12-14/02	-		-		1	U	-		-		1	U	0.5	U	-		0.5	U	-		**50**	**100**
1,4-Dichlorobenzene	8/12-14/02	-		-		1	U	-		-		1	U	0.5	U	-		0.5	U	-		**75**	**100**
Chloroethane	8/12-14/02	10	U	21		18		38		10	U	1	U	0.5	U	17		0.5	U	17		-	-
Dichlorodifluoromethane	8/12-14/02	10	U	10	U	1	U	10	U	10	U	1	U	0.5	U	10	U	0.5	U	10	U	**1400**	-
1,1-Dichloroethane	8/12-14/02	14		58		16		42		13		7		0.5	U	47		0.5	U	53		**700**	-
1,1-Dichloroethene	8/12-14/02	**22**		10	U	1	U	10	U	10	U	7		0.5	U	**10**	U	0.5	U	**10**	U	**7**	**7**
1,2-Dichloroethane	8/12-14/02	-		-		1	U	-		-		1	U	0.5	U	-		0.5	U	-		**0.36**	-
1,2-Dichloropropane	8/12-14/02	-		-		2		-		-		1	U	0.5	U	-		0.5	U	-		**16**	**5**
Cis-1,2-Dichloroethene	8/12-14/02	10	U	**110**		5		9	J	11		1	U	0.5	U	**75**		0.5	U	**110**		**70**	**70**
Trans-1,2-Dichloroethene	8/12-14/02	10	U	10	U	1	U	10	U	10	U	1	U	0.5	U	10	U	0.5	U	10	U	**70**	**100**
Methylene Chloride	8/12-14/02	**9**	JB	**9**	JB	1	U	**7**	JB	**9**	JB	1	U	0.5	U	**10**	B	0.5	U	**6**	JB	**5**	**5**
Tetrachloroethene	8/12-14/02	**2**	J	**14**		1	U	**3**	J	**1**	J	1	U	0.5	U	**11**		0.5	U	**15**		**0.7**	**5**
Trichloroethene	8/12-14/02	10	U	**12**	B	1	U	**6**	JB	**4**	JB	1	U	0.5	U	**9**	JB	0.5	U	**12**	B	**2.8**	**5**
1,1,1-Trichloroethane	8/12-14/02	130		10	U	1	U	10	U	10	U	58		0.5	U	10	U	0.5	U	10	U	**200**	**200**
Vinyl Chloride	8/12-14/02	10	U	**5**	J	**2**		10	U	10	U	1	U	0.5	U	**3**	J	0.5	U	**4**	J	**0.015**	**2**

Notes:

U Denotes not detected (the associated numerical value is the Limit of Quantitation).
J Denotes an estimated value.
Shading denotes parameter results that exceed U.S. EPA MCLs.
Bold denotes parameter results that exceed NC Groundwater Quality '2L' Standard.
Organic parameters were analyzed in accordance with EPA SW-846 Method 8260 (25 ml purge).

NCS Denotes North Carolina Groundwater Quality Standard (T15A: 02L .0200)
MCL Denotes EPA Maximum Contaminant Level (EPA 822-R-94-001)
\- Denotes Not Established or Analyzed.

P:\06\500\06520\06520-37\Reports\Aug2002\[TABLE2AB.xls]Core Wells

NOT FINAL

Watauga County Landfill
Watauga County, North Carolina
Upgradient Well: MW-1

09/10/02

Table 2B
August 12-14, 2002
Semiannual Monitoring Event
Organic Parameter Analytical Results
Boundary Groundwater Monitoring Wells

Parameters	Event	MW-1		MW-4		MW-5		MW-13		MW-14		MW-18		MW-19		NCS (ug/L)	MCL (ug/L)
Benzene	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	5
Chlorobenzene	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	50	100
1,4-Dichlorobenzene	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	75	100
Chloroethane	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	-	-
Dichlorodifluoromethane	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1400	-
1,1-Dichloroethane	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	700	-
1,1-Dichloroethene	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	7	7
1,2-Dichloroethane	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.36	-
1,2-Dichloropropane	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.56	5
Cis-1,2-Dichloroethene	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	70	70
Trans-1,2-Dichloroethene	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	70	100
Methylene Chloride	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	5	5
Tetrachloroethene	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.7	5
Trichloroethene	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	2.8	5
1,1,1-Trichloroethane	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	1		0.5	U	0.5	U	200	200
Vinyl Chloride	8/12-14/02	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.015	2

Notes:

NCS Denotes North Carolina Groundwater Quality Standard (T15A: 02L .0200)

MCL Denotes EPA Maximum Contaminant Level (EPA 822-R-94-001)

U Denotes not detected (the associated numerical value is the Limit of Quantitation).

J Denotes an estimated value.

\- Denotes Not Established.

Organic parameters were analyzed in accordance with EPA SW-846 Method 8260 (25 ml purge).

NOT FINAL

Watauga County Landfill

Watauga County, North Carolina

Upgradient Well: MW-1

Table 2C

August 12-14, 2002

Semiannual Monitoring Event

Geochemical Indicator Results

09/18/02

Parameters	Event	Results								
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-7	MW-8	MW-9	MW-10
Dissolved Oxygen (mg/l)	8/12-14/02	6.56	1.87	1.59	6.81	2.20	3.97	1.40	1.73	4.60
Oxidation Reduction Potential (mV)	8/12-14/02	117	63	63	165	129	33	-0.36	535	90
Total Residual Chlorine (mg/l)	8/12-14/02	0.02	0.00	0.07	0.03	0.11	0.02	0.60	0.01	0.12
Conductivity (uS)	8/12-14/02	93.5	271	432.9	48.8	205.6	768.1	1071	353.3	112
pH	8/12-14/02	5.86	7.87	5.84	6.26	6.30	6.84	6.90	5.75	7.20
Temperature (degrees Celsius)	8/12-14/02	11.9	12.3	13.5	11.8	12.2	16.9	14.5	14.2	12.5

Parameters	Event								
		MW-11	MW-12	MW-13	MW-14	MW-15	MW-17	MW-18	MW-19
Dissolved Oxygen (mg/l)	8/12-14/02	1.45	1.54	6.18	5.90	3.50	3.00	6.25	1.50
Oxidation Reduction Potential (mV)	8/12-14/02	143	63	198	163	25	46	81	-161
Total Residual Chlorine (mg/l)	8/12-14/02	0.02	0.03	0.08	0.02	0.01	0.02	0.05	0.04
Conductivity (uS)	8/12-14/02	295.1	4030	125.5	73.6	131.1	332.1	80.9	74.6
pH	8/12-14/02	5.78	6.27	5.46	6.88	7.57	5.98	6.55	7.38
Temperature (degrees Celsius)	8/12-14/02	14.3	12.7	13.1	12.4	13.2	13.4	12.7	14.3

Notes: pH, conductivity and temperatute measured in the field with an Oakton meter,
dissolved oxygen measured in the field with YSI 55 DO meter, and
oxidation reduction potential measured in the field with Hanna ORP meter,
total residual chlorine measured in the field with Hach colorimetric meter,

NOT FINAL

Watauga County Landfill
Watauga County, North Carolina

09/10/02

Table 2D

August 12-14, 2002

Semiannual Monitoring Event

Organic Parameter Analytical Results

Surface Water Monitoring Locations

Parameters	Sampling Date	Results ug/L(ppb) S-1		S-2		S-3		S-4		S-5		S-6		WQS (ug/L)	MCL (ug/L)
ORGANICS															
Benzene	8/12-14/02	DRY		4	J	10	U	10	U	10	U	10	U	71.4	5
Chloroethane	8/12-14/02	DRY		150		10	U	10	U	10	U	10	U	860	-
Dichlorodifluoromethane	8/12-14/02	DRY		10	UJ	10	UJ	10	UJ	10	U	10	UJ	570000	-
1,1-Dichloroethane	8/12-14/02	DRY		17		10	U	10		10	U	10	U	42	-
1,1-Dichloroethene	8/12-14/02	DRY		10	U	10	U	10	U	10	U	10	U	3.2	7
cis-1,2-Dichloroethene	8/12-14/02	DRY		3	J	10	U	22		10	U	10	U	140000	70
Methylene Chloride	8/12-14/02	DRY		9	JB	9	JB	8	JB	10	U	6	JB	1600	5
Tetrachloroethene	8/12-14/02	DRY		10	U	10	U	2	J	10	U	10	U	8.84	5
Trichloroethene	8/12-14/02	DRY		3	JB	2	JB	4	J	10	U	2	JB	92.4	5
1,1,1-Trichloroethane	8/12-14/02	DRY		10	U	10	U	10	U	10	U	10	U	555	200
Vinyl Chloride	8/12-14/02	DRY		10	U	10	U	10	U	10	U	10	U	525	2

Notes:

WQS Denotes North Carolina Class WS-1 Surface Water Quality Standard (T15A: 02B .0200)

MCL Denotes EPA Maximum Contaminant Level (EPA 822-R-94-001)

U Denotes not detected (the associated numerical value is the LOQ).

J Denotes an estimated value.

Organic parameters were analyzed in accordance with EPA CLP Statement of Work OLMO3.2.

~~* Denotes a Secondary MCL for Total Iron.~~

\- Denotes Not Established.

Watauga County Landfill

Watauga County, North Carolina
Upgradient Well: MW-1
09/24/02

Table 3
August 12-14, 2002
Semi-Annual Assessment Monitoring Event
Detected Non-Target Organic Parameters

Tentatively Identified Compounds																	
Parameter	Event	S-2		S-6		MW-2		MW-3		MW-8		MW-9		MW-12		MW-17	
Chlorofluoromethane	8/12-14/02	8	NJJ	ND		ND		ND		ND		ND		ND		ND	
Ether	8/12-14/02	12	NJ	ND		ND		17	NJ	ND		ND		ND		ND	
Ethylbenzene	8/12-14/02	22	NJ	ND		ND		ND		ND		ND		ND		ND	
1,3-Dimethylbenzene	8/12-14/02	36	NJ	ND		ND		ND		ND		ND		ND		ND	
p-Xylene	8/12-14/02	13	NJ	ND		ND		ND		ND		ND		ND		ND	
Hexamethylcyclotrisiloxane	8/12-14/02	ND		22	NJ	30	NJ	ND		10	NJ	9	NJ	ND		ND	
Unknown	8/12-14/02	8	J	ND		ND		12	J	10	J	7	J	11.5	J	10	J

Notes:

ND Denotes Not Detected

- Denotes Not Available

J Denotes an estimated value

N Denotes tentatively identified

Organic parameters were analyzed in accordance with USEPA CLP SOW OLMO 3.2.

Watauga County Landfill

Watauga County, North Carolina

Upgradient Well: MW-1

28-Aug-02

TABLE 4

GROUNDWATER LEVEL DATA

MONITORING WELLS

	REFERENCE ELEVATION								
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9
GROUND	3339.03	3151.24	3182.25	3150.06	3263.81	3262.55	3270.56	3235.39	3356.65
MEASURING POINT	3341.80	3152.94	3183.12	3152.52	3267.69	3266.04	3273.53	3239.77	3359.23
DATE	STATIC WATER LEVEL								
6/20/94	38.00	7.88	18.43	13.48	NM	44.12	23.03	17.68	59.35
9/27/94	39.69	7.51	17.42	10.45	NM	43.99	30.73	17.38	57.79
2/6/95	37.57	5.58	16.20	8.18	50.39	42.85	45.88	15.41	59.54
4/11/95	37.94	6.46	16.85	9.22	48.95	42.81	49.11	16.05	59.30
7/10/95	41.20	6.60	17.43	8.94	50.29	43.73	48.98	17.42	80.17
4/9/96	38.71	5.85	7.01	8.40	49.87	42.87	44.32	16.80	61.28
4/8/97	38.30	5.59	16.35	NM	NM	ABANDON	40.50	17.43	62.47
1/13/98	43.71	7.00	17.51	8.54	55.46	ABANDON	44.18	20.32	63.56
6/23/98	36.84	5.94	14.01	7.98	46.82	ABANDON	43.07	16.92	62.15
1/11/99	44.56	7.66	18.87	8.85	55.11	ABANDON	37.89	22.83	64.39
7/12/99	42.87	6.78	15.16	8.18	53.26	ABANDON	45.79	19.92	64.05
2/1/00	44.10	7.62	17.05	9.12	56.08	ABANDON	41.25	21.40	64.41
8/8/00	42.37	7.42	17.28	9.02	52.96	ABANDON	45.65	21.25	63.70
2/12/01	46.80	8.05	18.92	9.10	58.67	ABANDON	42.72	24.27	64.60
8/7/01	NM	7.16	14.65	NM	NM	ABANDON	NM	19.53	63.94
2/11/02	44.79	6.92	16.25	8.00	58.41	ABANDON	44.11	22.75	63.99
8/12/02	44.66	9.14	18.63	10.99	57.04	ABANDON	47.34	NM	64.24
DATE	GROUNDWATER ELEVATION								
6/20/94	3303.80	3145.06	3164.69	3139.04	NM	3221.92	3250.50	3222.09	3299.88
9/27/94	3302.11	3145.43	3165.70	3142.07	NM	3222.05	3242.80	3222.39	3301.44
2/6/95	3304.23	3147.36	3166.92	3144.34	3217.30	3223.19	3227.65	3224.36	3299.69
4/11/95	3303.86	3146.48	3166.27	3143.30	3218.74	3223.23	3224.42	3223.72	3299.93
7/10/95	3300.60	3146.34	3165.69	3143.58	3217.40	3222.31	3224.55	3222.35	3279.06
4/9/96	3303.09	3147.09	3176.11	3144.12	3217.82	3223.17	3229.21	3222.97	3297.95
4/8/97	3303.50	3147.35	3166.77	NM	NM	ABANDON	3233.03	3222.34	3296.76
1/13/98	3298.09	3145.94	3165.61	3143.98	3212.23	ABANDON	3229.35	3219.45	3295.67
6/23/98	3304.96	3147.00	3169.11	3144.54	3220.87	ABANDON	3230.46	3222.85	3297.08
1/11/99	3297.24	3145.28	3164.25	3143.67	3212.58	ABANDON	3235.64	3216.94	3294.84
7/12/99	3298.93	3146.16	3167.96	3144.34	3214.43	ABANDON	3227.74	3219.85	3295.18
2/1/00	3297.70	3145.32	3166.07	3143.40	3211.61	ABANDON	3232.28	3218.37	3294.82
8/8/00	3299.43	3145.52	3165.84	3143.50	3214.73	ABANDON	3227.88	3218.52	3295.53
2/12/01	3295.00	3144.89	3164.20	3143.42	3209.02	ABANDON	3230.81	3215.50	3294.63
8/7/01	NM	3145.78	3168.47	NM	NM	ABANDON	NM	3220.24	3295.29
2/11/02	3297.01	3146.02	3166.87	3144.52	3209.28	ABANDON	3229.42	3217.02	3295.24
8/12/02	3297.14	3143.80	3164.49	3141.53	3210.65	ABANDON	3226.19	NM	3294.99

	REFERENCE ELEVATION									
	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19
GROUND	3202.18	3156.44	3156.82	3117.39	3117	3117.15	3141.42	3181.14	3117.12	3125
MEASURING POINT	3203.87	3159.6	3159.15	3119.72	3120	3120.65	3142.72	3183.62	3119.63	3140
DATE	STATIC WATER LEVEL									
6/20/94	8.18	13.35	11.04	19.66	7.94	11.92	5.32	17.93	17.93	-
9/27/94	8.09	13.22	10.78	19.57	7.89	11.82	5.68	17.83	17.86	-
2/6/95	7.73	13.22	10.61	19.39	7.52	11.55	4.61	17.05	17.58	-
4/11/95	7.90	13.00	10.58	19.53	7.75	11.87	5.11	17.48	17.65	-
7/10/95	7.91	12.53	10.48	19.62	7.74	11.96	4.54	18.11	17.94	-
4/9/96	7.67	12.73	10.38	19.56	7.59	11.85	4.67	17.78	17.81	-
4/8/97	7.67	12.28	9.48	NM	NM	11.91	ABANDON	17.17	NM	4.85
1/13/98	8.25	12.48	9.65	19.75	7.44	11.74	ABANDON	18.60	18.32	10.21
6/23/98	7.32	11.82	9.11	NM	7.49	11.79	ABANDON	14.83	17.53	2.67
1/11/99	8.68	12.41	9.46	20.05	7.19	11.79	ABANDON	19.84	18.56	9.34
7/12/99	8.25	11.37	8.75	19.64	NM	NM	ABANDON	17.08	18.10	9.75
2/1/00	8.41	12.38	9.18	20.31	7.72	12.18	ABANDON	17.77	18.77	11.90
8/8/00	8.54	11.79	8.94	20.60	7.45	11.9	ABANDON	17.86	17.63	NM
2/12/01	9.13	12.40	9.23	20.03	7.68	12.09	ABANDON	19.21	18.23	24.45
8/7/01	NM	NM	8.77	NM	NM	NM	ABANDON	15.47	NM	NM
2/11/02	8.65	12.03	8.86	19.81	7.42	11.85	ABANDON	17.10	18.05	24.65
8/12/02	9.36	12.16	9.17	20.11	8.23	12.54	ABANDON	20.04	18.27	25.09
DATE	GROUNDWATER ELEVATION									
6/20/94	3195.69	3146.25	3148.11	3100.06	3112.06	3108.73	3137.40	3165.69	3101.70	-
9/27/94	3195.78	3146.38	3148.37	3100.15	3112.11	3108.83	3137.04	3165.79	3101.77	-
2/6/95	3196.14	3146.38	3148.54	3100.33	3112.48	3109.10	3138.11	3166.57	3102.05	-
4/11/95	3195.97	3146.60	3148.57	3100.19	3112.25	3108.78	3137.61	3166.14	3101.98	-
7/10/95	3195.96	3147.07	3148.67	3100.10	3112.26	3108.69	3138.18	3165.51	3101.69	-
4/9/96	3196.20	3146.87	3148.77	3100.16	3112.41	3108.80	3138.05	3165.84	3101.82	-
4/8/97	3196.20	3147.32	3149.67	NM	NM	3108.74	ABANDON	3166.45	NM	3120.15
1/13/98	3195.62	3147.12	3149.50	3099.97	3112.56	3108.91	ABANDON	3165.02	3101.31	3114.79
6/23/98	3196.55	3147.78	3150.04	NM	3112.51	3108.86	ABANDON	3168.79	3102.10	3122.33
1/11/99	3195.19	3147.19	3149.69	3099.67	3112.81	3108.86	ABANDON	3163.78	3101.07	3115.66
7/12/99	3195.62	3148.23	3150.40	3100.08	NM	NM	ABANDON	3166.54	3101.53	3115.25
2/1/00	3195.46	3147.22	3149.97	3099.41	3112.28	3108.47	ABANDON	3165.85	3100.86	3113.10
8/8/00	3195.33	3147.81	3150.21	3099.12	3112.55	3108.75	ABANDON	3165.76	3102.00	NM
2/12/01	3194.74	3147.20	3149.92	3099.69	3112.32	3108.56	ABANDON	3164.41	3101.40	3115.55
8/7/01	NM	NM	3150.38	NM	NM	NM	ABANDON	3168.15	NM	NM
2/11/02	3195.22	3147.57	3150.29	3099.91	3112.58	3108.80	ABANDON	3166.52	3101.58	3115.35
8/12/02	3194.51	3147.44	3149.98	3099.61	3111.77	3108.11	ABANDON	3163.58	3101.36	3114.91

1) ALL MEASUREMENTS IN FEET.

2) ALL ELEVATIONS REFERENCE MEAN SEA LEVEL.

3) MEASURING POINT (M.P.) IS FROM THE TOP OF WELL CASING.

4) NM - NOT MEASURED

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POTABLE WELL TESTING - WATAUGA COUNTY, NC
RESULTS OF VOLATILE AND SEMIVOLATILE ANALYSIS

date:

CONSTITUENT	MARCH 5, 1993*	MARCH 18, 1993*	MARCH 24, 1993*	JUNE 23, 1993**	JULY 13, 1994**	NCS	MCL
Carroll Residence (12)	**WELL ABANDONED IN 1995**						
Benzene	2.1	1.7		1.9		1.0	5
Chloroethane	173.4	74.5		**ND**		---	---
Chloromethane	**ND**	14.8		**ND**		---	---
Dichlorodifluoromethane	30.6	**ND**		**ND**		1400	---
1,1-Dichloroethane	20.9	17.4		**ND**		700	---
1,1-Dichloroethene	4.1	1.5		**ND**		7	7
cis-1,2-Dichloroethene#	1.2	0.9		<1.0		70	70
2,2-Dichloropropane#	1.2	0.9		**ND**		---	---
4-Isopropyltoluene	**ND**	0.2	NS	**ND**	NS	---	---
Isopropylbenzene	0.6	**ND**		**ND**		---	---
Methylene Chloride	**ND**	43.0 (T)		138.2		5	5
Styrene	2.8	0.5		**ND**		0.014	100
Tert-Butyl Methyl Ether	**ND**	**ND**		2.4		200	---
Tetrachloroethene	5.4	4.7		4.2		0.7	5
Toluene	**ND**	0.6 (T)		**ND**		1000	1000
1,1,1-Trichloroethane	19.7	15.7		29.4		200	200
Trichloroethene	7	5.5		7.0		2.8	5
Trichlorofluoromethane	37.1	20.2		**ND**		2100	---
Vinyl Chloride	1.7 (T)	**ND**		**ND**		0.015	2
p and m-Xylene	**ND**	**ND**		<1.0		400	10,000
o-Xylene	**ND**	3.4		2.9		400	10,000
Nissan-Mazda Dealership (4)	**WELL ABANDONED IN 1995**						
Carbon Tetrachloride	0.2		**ND**		**ND**	0.3	5
Chloroethane	19.1		**ND**		**ND**	---	---
Dichlorodifluoromethane	8.2		8.7		**ND**	1400	---
1,1-Dichloroethane	98.5		63.1		104.3	700	---
1,2-Dichloroethane	**ND**		0.5		**ND**	0.38	---
1,1-Dichloroethene	5.4		3.7		4.7	7	7
cis-1,2-Dichloroethene#	22.2		13.0		23.7	70	70
1,2-Dichloropropane	0.5		0.3		**ND**	0.56	5
2,2-Dichloropropane#	22.2	NS	13.0	NS	**ND**	---	---
Tetrachloroethene	21.8		28.1		30.9	0.7	5
Toluene	**ND**		0.8(T)		**ND**	1000	1000
1,1,1-Trichloroethane	14.7		19.3		22.9	200	200
Trichloroethene	11.2		9.1		12.6	2.8	5
Trichlorofluoromethane	0.4		**ND**		**ND**	2100	---
o-Xylene	0.4		0.5(T)		**ND**	400	10,000

NOTE: All Concentrations are in ppb (ug/L). (Other footnotes located on page 4)

POTABLE WELL TESTING - WATAUGA COUNTY, NC
RESULTS OF VOLATILE AND SEMI-VOLATILE ANALYSIS

date:

CONSTITUENT	3/5/93*	4/6/94**	8/2/94**	12/7/94**	4/26/95**	10/24/95**	4/9/96**	10/9/96**	6/4/97**	2/10/98**	8/17/98**	2/18/99**	5/22/00**	8/7/01***	2/11/02***	8/14/02****	NCS	MCL
Blue Ridge Electric Membership Company - (BREMCO) (5)																		
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.2 (J)	trace	trace	trace	ND	ND	ND	1	5
1.1-Dichloroethane	0.7	<1.0	1.4	1.0	1.2	1.8	1.5	1.5	2.0	3.2 (J)	1.6	1.5	5.0	6	6	7.7	700	---
1,1,1-Trichlorothane	0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	trace	trace	trace	trace	ND	ND	ND	200	200
Trichloroethene	0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2 (J)	0.5	trace	0.6	0.8	0.6	0.72	2.8	5
1,1-Dichloroethene	ND	1.0	1.9	<1.0	1.1	1.7	1.0	<1.0	1.7	3.9 (J)	2.6	ND	2.7	2	ND	1.6	7	7
cis-1,2-Dichloroethene	ND	<1.0	ND	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.5 (J)	trace	trace	0.5	0.9	1	1.4	70	70
Tetrachloroethene	ND	<1.0	<1.0	trace	<1.0	<1.0	<1.0	<1.0	<1.0	trace	trace	trace	trace	ND	ND	ND	0.7	5
Cloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	trace	ND	ND	ND	ND	0.19	100
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	ND	ND	ND	---	---
Methyl-t-butyl-ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	trace	ND	ND	ND	---	---
Tetrahydrofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5 (J)	ND	ND	ND	ND	ND	---	---
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5	1	1.3	---	---
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	1	1.6	1400	---
Bolick rental resident (2)																		
tert-Butylbenzene	1.1	ND				ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	---	---
Isopropylbenzene	0.7	ND				ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	---	---
Trichloroethene	0.5	ND				ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	2.8	5
1,3,5-Trimethylbenzene	0.7	ND	NS	NS	NS	ND	ND	ND	ND	ND	NS	ND	ND	ND	ND	ND	---	---
1,1-Dichloroethane	ND	trace				<1.0	trace	<1.0	trace	ND		<1.0	0.6	ND	0.7	0.99	700	---
1,1-Dichloroethene	ND	trace				trace	ND	trace	ND	ND		ND	trace	ND	ND	ND	7	7
cis-1,2-Dichloroethene	ND	ND				ND	ND	ND	ND	ND		ND	trace	ND	ND	ND		
Methyl Ethyl Ketone	ND	trace				35.3	ND	ND	ND	ND		ND	ND	ND	ND	ND	170	---
Tetrahydrofuran	ND	ND				42.3	ND	ND	ND	ND		ND	ND	ND	ND	ND	---	---

CONSTITUENT	5/11/93**	6/23/93**	3/30/94**	8/2/94**	12/7/94**	4/26/95**	10/24/95**	5/20/96**	10/9/96**	2/10/98**	8/17/98**	6/9/99**	9/6/00**	5/24/01**	2/11/02***	8/14/02****	NCS	MCL
Ward residence (24)																		
Methylene Chloride	3.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5	5
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200	200
Trichloroethene	trace	trace	<1.0	ND	trace	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.8	5
Tetrachloroethene	ND	trace	<1.0	ND	trace	trace	<1.0	<1.0	trace	ND	trace	ND	ND	ND	ND	ND	0.7	5
Carbon Tetrachloride	ND	ND	<1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3	5
1,1-Dichloroethane	ND	ND	<1.0	ND	<1.0	<1.0	trace	<1.0	ND	ND	trace	trace	ND	trace	ND	ND	700	---
Chloroform	ND	ND	trace	ND	ND	trace	trace	ND	ND	ND	trace	ND	ND	ND	37	38	0.19	80
Bromodichloromethane				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.8	8.0	0.19	80
Dibromochloromethane				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.81	1.6	0.19	80
1,2-Dibromoethane (EDB)	ND	ND	ND	ND	ND	ND	trace	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0004	0.05

CONSTITUENT	3/18/93*	4/6/94**	12/7/94**	2/19/01**	8/7/01***	2/11/02***	8/14/02****	NCS	MCL
Greer residence (15)									
Benzene	ND	<1.0	ND	ND	ND	ND	ND	1.0	5
Toluene	ND	6.4	ND	ND	ND	ND	ND	1000	1000
Tetrachloroethene	ND	trace	ND	<1.0	ND	ND	ND	0.7	5
Ethylbenzene	ND	trace	ND	ND	ND	ND	ND	29	700
p and m - Xylene	ND	<1.0	ND	ND	ND	ND	ND	400	10,000
Styrene	ND	trace	ND	ND	ND	ND	ND	0.14	100

CONSTITUENT	3/5/93*	6/23/93**	3/30/94**	10/9/96**	NCS	MCL
Perry Residence (11) Connected to public water in 2000.						
Dichlorodifluoromethane	2.5	ND	ND	ND	1400	---
Naphthalene	0.7	ND	ND	ND	---	---
Chloromethane	<9	ND	ND	ND	---	---
Methylene Chloride	<0.6	ND	ND	ND	5	5
Chloroform		ND	<1.0	NDT	0.19	80

	3/18/93*	2/21/96**	2/14/02***	8/14/02****	NCS	MCL
Bolick residence (1)						
Total Xylenes	ND	ND	0.7	ND	400	10000

POTABLE WELL TESTING
WATAUGA COUNTY, NC
RESULTS OF ANALYSIS

CONSTITUENT	3/5/93**	4/26/95**	4/9/96**	2/10/98**	NCS	MCL
Chevrolet dealership (7) Connected to public water in 2000.						
Chloroform	ND	ND	ND	39.7	0.19	100
Bromodichloromethane	ND	ND	ND	5	---	100
Methyl-t-butyl-ether	ND	24.4	2.5	ND	200	---

CONSTITUENT	3/18/93*	5/11/93**	9/21/93**	11/2/99**	9/6/00**	NCS	MCL
Shared Well #1 (8 Houses) (13)							
sec-Butylbenzene	0.2	ND	ND	ND	ND	---	---
Carbon Tetrachloride	0.1	ND	ND	ND	ND	0.3	5
Methylene Chloride	1.5	ND	ND	ND	ND	5	5
alpha-Chlordane	0.4	ND	ND	ND	ND	0.27	2
gamma-Chlordane	0.3	ND	ND	ND	ND	0.27	2
1,4-Dichlorobenzene	ND	ND	ND	trace	ND	---	---
2-Butanone	ND	ND	ND	ND	2.3J	170	---
Chloroform	ND	ND	ND	trace	ND	0.19	100

CONSTITUENT	3/18/93*	3/30/94**	1/12/95**	10/24/95**	4/9/96**	10/9/96**	6/12/97**	2/10/98**	6/9/99**	NCS	MCL
Shared Well #2 (4 Houses) (14) Connected to public water in 2000.											
1,4-Dichlorobenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	---	---
1,1-Dichloroethane	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	ND	700	---
1,1-Dichloroethene	ND	<1.0	<1.0	ND	ND	ND	ND	ND	ND	7	7
Tetrachloroethene	ND	ND	ND	trace	ND	trace	ND	ND	ND	0.7	5
1,1,1-Trichoroethane	ND	<1.0	ND	trace	ND	ND	ND	ND	ND	200	200
Chloroform	ND	trace	ND	9.0	ND	ND	ND	ND	ND	0.19	100
Bromodichloromethane	ND	ND	ND	1.4	ND	ND	ND	ND	ND	---	100
Dibromochloromethane	ND	ND	ND	<1.0	ND	ND	ND	ND	ND	---	---
2-Chlorotoluene	ND	ND	ND	1.2	ND	ND	ND	ND	ND	---	---
4-Chlorotoluene	ND	ND	ND	1.0	ND	ND	ND	ND	ND	---	---
Methyl Ethyl Ketone	ND	ND	ND	24.6	ND	ND	ND	ND	ND	170	---
Tetrahydrofuran	ND	ND	ND	13.4	ND	ND	ND	ND	ND	---	---

CONSTITUENT	3/23/93**	5/20/96**	10/9/96**	6/12/97**	6/9/99**	NCS	MCL
Simko residence (20) Connected to public water in 2000.							
1,1,1-Trichloroethane	trace	trace	trace	trace	ND	---	200
Methyl-t-butyl-ether	ND	ND	ND	ND	<1.0	200	---
Chloroform	<1.0	<1.0	NDT	ND	<1.0	0.19	100

CONSTITUENT	5/11/93**	5/20/96**	6/12/97**	2/10/98**	11/2/99**	5/22/00**	NCS	MCL
Johnson residence (23)								
Chloroform	trace	<1.0	<1.0	ND	trace	trace	0.19	100
Methyl-t-butyl-ether	ND	ND	ND	ND	ND	trace		
Toluene	ND	ND	ND	ND	trace	ND	1000	1000
Ethyl Benzene	ND	ND	ND	ND	trace	ND	29	700
Xylenes	ND	ND	ND	ND	trace	ND	400	10000
1,4-Dichlorobenzene	ND	ND	ND	ND	trace	ND	---	---

CONSTITUENT	3/23/93**	2/19/01**	8/7/01***	1/11/02***	8/14/02****	NCS	MCL
Williamson residence (16)							
Methyl-t-butyl-ether	ND	<1.0	ND	ND	1.2	200	---
Tetrachloroethene	ND	<1.0	ND	ND	ND	0.7	5

CONSTITUENT	5/11/93**	11/2/99**	2/11/02***	NCS	MCL
Younce residence (25)					
Tetrahydrofuran	ND	1.2 J	ND	---	---

CONSTITUENT	8/9/93**	10/20/93**	9/21/94**	NCS	MCL
McClintock residence (33) Connected to public water in 2000.					
1,2-Dichloroethane	<1.0	<1.0	ND	700	---
Chloroform	<1.0	ND	<1.0	0.19	100

CONSTITUENT	10/20/93**	2/21/96**	8/19/98**	2/18/99**	9/6/00**	NCS	MCL
Meadowridge condominiums (38)							
Chloroform	<1.0	ND	ND	ND	ND	0.19	100
trans-1,2-Dichloroethene	<1.0	ND	ND	ND	ND	70	70
1,1,1-Trichloroethane	trace	ND	ND	ND	ND	200	200
Trichloroethene	trace	ND	ND	ND	ND	2.8	5

NOTE: All Concentrations are in ppb (ug/L) (Other footnotes located on page 4)

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POTABLE WELL TESTING - WATAUGA COUNTY, NC
WELLS SHOWING NO DETECTED ORGANIC COMPOUNDS

SAMPLING LOCATION	SAMPLING DATES
Mack Brown rental residence (3)	March 5, 1993*, July 3, 1994** and Feb. 19, 2001
Hollar and Green Produce (6)	March 5, 1993*, August 19, 1998** and May 24, 2001**
Vannoy residence (8)	March 5, 1993*
Martin High Country Rentals #1 (9)	March 5, 1993*
Martin High Country Rentals #2 (10)	March 5, 1993*
Suddreth residence (17)	3/18/1993*, 9/21/1993**, 73/1994**and 10/12/1999**
Taylor residence (18)	March 18, 1993*, October 9, 1996** and November 2, 1999*
Hodges residence (19)	March 18, 1993* and October 12, 1999**
Findt residence (21)	March 18, 1993* and May 22, 2000**
Rusher residence (22)	March 23, 1993* and October 12, 1999**
McLean residence (26)	June 23, 1993**
Medloin residence (27)	June 23, 1993**
Rector residence (28)	June 23, 1993**
Robinson residence (29)	June 23, 1993**
Yates residence (30)	August 3, 1993**
Cook residence (31)	August 3, 1993**
Animal Control Office (32)	August 3, 1993**
Brook Hollow Trailer Park (37)	October 11, 1993**
Green residence (34)	October 20, 1993**
Shared well #3 (35)	October 20, 1993**
BREMCO residence (36) **REMOVED**	September 21, 1993**
Isaacs residence (39)	November 16, 1994** and August 7, 2001***
Austin residence (40)	January 12, 1995**
Norris residence (41)	January 12, 1995**
Meadowridge Condominiums (42)	February 16&17, 1998**
Meadowridge Condominiums (43)	February 16&17, 1998**
Meadowridge Condominiums (44)	August 19, 1998**
Bill Winkler residence (45)	October 12, 1999** and August 7, 2001***
Beade residence (46)	February 19, 2001** and August 7, 2001***
Eggers residence (47)	May 24, 2001**
Critcher residence (51)	August 7, 2001***
Steward residence (52)	August 7, 2001***
Holladay residence (48)	August 7, 2001***
Hartley residence (53)	August 7, 2001***
Teague residence (50)	August 7, 2001***
Hays residence (49)	August 7, 2001***
Wil Winkler residence (54)	February 14, 2002***

TABLE NOTES:

The sampled well reference number as presented on the Vicinity Map (Figure 1) is denoted in parentheses following the sampling locations name.

* Laboratory analysis performed by Central Virginia Laboratories and Constultants (CVLC) utilizing EPA Methods 502.2 (Volatiles) and 525.1 (Semi-Volatiles).

** Laboratory Analysis performed by NCDENR Division of Laboratory Services utilizing EPA Method 502.2 (Volatiles).

*** Laboratory Analysis performed by Severn Trent Services utilizing EPA Method 524.2 (Volatiles).

**** Laboratory Analysis performed by Toxikon utilizing EPA Method 524.2 (Volatiles)

NSC - North Carolina Water Quality Standard (DEHNR-15A NCAC 2L.0202)

MCL - EPA Primary Drinking Water Standard Maximum Contaminant Level

ND denotes no compounds detected for entire analytical scan.

NDT denotes compound detected in trip blank at same concentration as well sample.

NS denotes not sampled on that date.

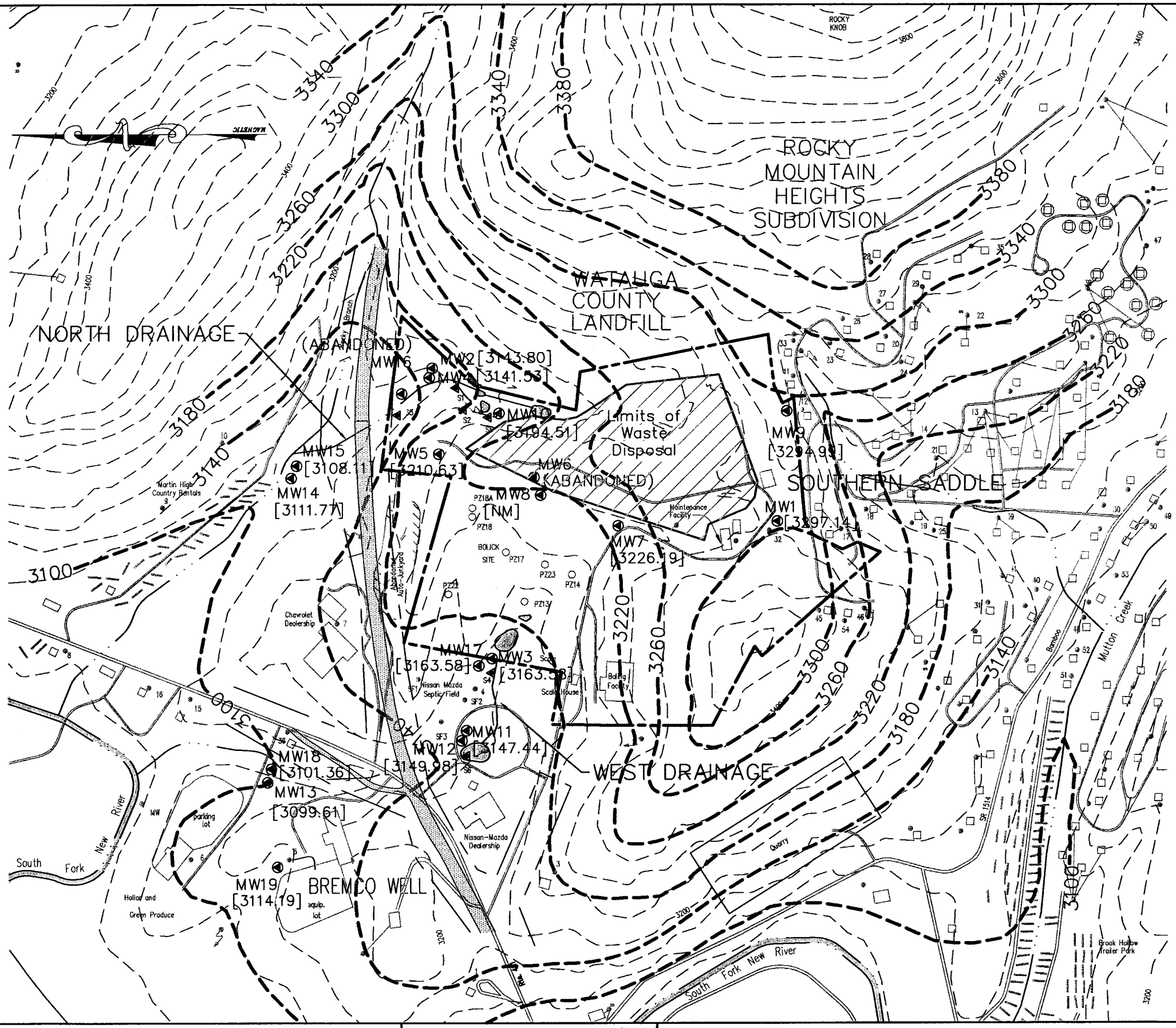
NA denotes compound not analyzed on that date.

(J) denotes estimated result. # denotes compound co-elutes.

(T) denotes found in Trip Blank. trace = < 0.5 ppb (ug/l)

Note that chloroform was detected in the residential wells 17, 18, 19, 22, 26, 30, 40, 45 and 46. Chloroform has not been detected in any of the landfill assessment monitoring wells to date, and is likely a transformation product resulting from the chlorination of the well systems.

Martin High Country Rentals (9 and 10) was connected to public water in 2000.



LEGEND

- MW–1 ASSESSMENT MONITORING WELL
- SURFACE WATER SAMPLING LOCATION
- F1 SEPTIC FIELD MONITORING WELL
- SPRING
- GAS MONITORING PROBE
- EXISTING RESIDENCE/MULTI–UNIT RESIDENCE
- EXISTING MOBILE HOME
- S SPRING USED AS POTABLE WATER SOURCE
- 31 EXISTING POTABLE WELL/SAMPLED WELL REF. NO.
- 31 WELLS REPLACED WITH PUBLIC WATER
- EXISTING GROUND
- STREAM
- POND
- RT. 421 IMPROVEMENTS
- RT. 421 RIGHT–OF–WAY
- 3100 GROUNDWATER POTENTIOMETRIC ELEVATION (INFERRED FROM STATIC WATER LEVEL DATA OBTAINED ON AUGUST 12, 2002) CONTOUR INTERVAL 40'

NOTE: ALL ELEVATIONS IN FEET ABOVE SEA LEVEL.

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DRAWN	DRW
CHECKED	
DATE	03/05/02

GROUNDWATER AND SURFACE WATER MONITORING PROGRAM MAP
WATAUGA COUNTY LANDFILL
WATAUGA COUNTY, NORTH CAROLINA

SCALE: 1" =500'±

PLAN NO. 6520–39

FIGURE 2

6520–39_FIG 1–2.dwg