4.0 NATURE AND EXTENT OF CONTAMINATION

All of the laboratory analyses were conducted by either a contract laboratory in accordance with the EPA standard procedures and protocols for the Contract Laboratory Program (CLP), or by SESD's Analytical Support Branch in accordance with the procedures and protocols specified in their *Analytical Support Branch Operations and Quality Control Manual*, October, 1990. Analytical data reports for each sample collected are presented in Appendix B. Also, summary tables are included in Appendix B indicating all detectable concentrations.

Based upon the *Site Inspection Report for the North Belmont PCE Site*, NCDEHNR, July, 1993, the main contaminants at the Site are tetrachloroethylene (PCE), trichloroethylene (TCE), and cis-1,2 dichloroethylene (CIS-1,2 DCE). The following discussion highlights these constituents as well as any chemical constituents which exceed the National Primary Drinking Water Regulations (NPDWR) Maximum Contaminant Levels (MCLs), the National Secondary Drinking Water Regulations (SMCLs), Federal Ambient Water Quality Criteria (AWQC), EPA Region 3 Risk-Based Concentrations (Smith, 1996) and the North Carolina Groundwater Classification and Standards-Groundwater Quality Standards of the North Carolina Administrative Code (15A NCAC 2L 0202(c)), and North Carolina Water Quality Standards applicable to Surface Waters (15A NCAC 2B 0200).

4.1 SURFACE WATER AND SEDIMENTS

A summary of the main contaminants found in the surface water and sediments are noted in **Table 4-1**. Reference **Figure 2-4** for surface water/sediment locations.

TABLE 4-1. MAIN CONTAMINANTS IN THE SURFACE WATER/SEDIMENT AT THE NORTH BELMONT PCE SITE.

STATION	ALUMINUM Q	IRON	LEAD Q	MANGANESE Q	ZINC Q	BENZO-A-PYRENE Q
SURFACE WATER	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
NB201SW	35 J	270	1 U	43	10 U	10 U
NB201SWS	58	290	1 U	42	8 U	10 U
NB202SW	32 J	370	1 U	77	10 U	10 U
NB203SW	790	2400	4	280	61	10 U
CRITERIA	87[1]	1000 [1][2]	1.32[1], 25[2]	50[2]	58.9[1], 50[2]	NA
SEDIMENT	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
NB201SD	3000000	14000000	4800	240000 J	42000 J	870 U
NB201SDS	3200000	16000000	5300	250000 J	52000 J	440 U
NB202SD	3200000	8600000	25000	140000 J	35000	420 U
NB203SD	1000000	1800000	1300	150000 J	14000	300 J
CRITERIA	78000000 [3]	23000000 [3]	400000 [3]	1800000 [3]	23000000 [3]	88 [3]

STATION	ALUMINUM	Q	IRON	LEAD	Q	MANGANESE	Q	ZINC	Q	BENZO-A-PYRENE	Q
NOTES: (1) RED Values exceed Federal Surface Water Quality Standards; (2) GREEN Values exceed NC Water Quality Standards; (3) BLUE values exceed Region 3 Risk Based Concentration Values; NA = Not Applicable											

4.2 SUBSURFACE SOILS

The subsurface soils were divided into six zones: 5 feet, 10 feet, 15 feet, 20 feet, 30 feet, and 40 to 110 feet below ground surface. A summary of the COC's in the subsurface soils for the 5, 10 15 and 30 feet zones are noted in **Table 4-2** thru **Table 4-5**, respectively; these samples were submitted for full TCL/TAL analysis scan. The subsurface soils encountered at the 20 feet zone and at the 40 to 100 feet zone except for SPT1/82' and MW6/110' were only analyzed for VOCs; SPT1/82' and MW6/110' were also analyzed for extractable organics and pesticides/pcbs. No constituents exceeded the Region 3 Risk Based Concentration Values for these zones. Reference **Figure 2-1** for subsurface soil sample locations.

TABLE 4-2. MAIN CONTAMINANTS AT 5 FOOT ZONE OF SUBSURFACE SOILS AT THE NORTH BELMONT PCE SITE

STATION	IRON	MANGANESE	Q
UNITS	UG/KG	UG/KG	
NB001SSA	50000000	130000	J
NB002SSA	83000000	200000	J
NB003SSA	43000000	97000	J
NB003SSS	44000000	110000	J
NB004SSA	71000000	1800000	J
NB005SSA	100000000	190000	J
NB001HAA	93000000	400000	J
CRITERIA	23000000	1800000	
NOTES: BLUE values exceed Region 3 Risk Based Concentration Values			

TABLE 4-3. MAIN CONTAMINANTS AT 10 FOOT ZONE OF SUBSURFACE SOILS AT THE NORTH BELMONT PCE SITE

STATION	IRON	MANGANESE	Q
UNITS	UG/KG	UG/KG	
NB001HAB	85000000	2300000	J
SPT1/10'	44000000	1300000	
MW6/10'	31000000	210000	
CRITERIA	23000000	1800000	
NOTES: BLUE values exceed Region 3 Risk Based Concentration Values			

TABLE 4-4. MAIN CONTAMINANTS AT 15 FOOT ZONE OF SUBSURFACE SOILS AT THE NORTH BELMONT PCE SITE

STATION	IRON	MANGANESE	Q	VANADIUM
UNITS	UG/KG	UG/KG		UG/KG
NB001SSC	60000000	1700000	J	200000
NB002SSC	43000000	740000	J	150000
NB003SSC	37000000	400000	J	100000
NB004SSC	72000000	190000	J	200000
NB005SSC	91000000	2000000	J	440000
NB001HAC	88000000	5400000	J	600000
CRITERIA	23000000	1800000		550000
NOTES: BLUE values exceed Region 3 Risk Based Concentration Values				

TABLE 4-5. MAIN CONTAMINANTS AT 30 FOOT ZONE OF SUBSURFACE SOILS AT THE NORTH BELMONT PCE SITE

STATION	IRON	MANGANESE	Q
UNITS	UG/KG	UG/KG	
NB001SSE	42000000	1300000	J
NB002SSE	70000000	2500000	J
NB003SSE	36000000	1400000	J
NB004SSE	44000000	2900000	J
NB005SSE	110000000	2600000	J
SPT1/30'	46000000	1300000	
MW6/30'	36000000	750000	
CRITERIA	23000000	1800000	
NOTES: BLUE values exceed Region 3 Risk Based Concentration Values			

4.3 GROUND WATER

4.3.1 Ground Water Plume in 1991

A summary of the chemical constituents observed in the 1991 groundwater sampling event is noted in **Table 4-6**. Concentration isopleths are noted on **Figures 4-1** thru **4-3** for PCE, TCE and cis-1,2 DCE. The concentration isopleths were drawn with the use of Surfer® for Windows version 6 by Golden Software, Inc.

TABLE 4-6. MAIN CONTAMINANTS IN THE GROUNDWATER IN 1991 AT THE NORTH BELMONT PCE SITE.

LANDLOT	PARCEL	OWNER	ADDRESS	PCE	Q	TCE	Q	cis1,2DCE	Q
UNITS				UG/L		UG/L		UG/L	
15-18	1.00	SHOP. CNTR WELL	Woodlawn	1.00		1.00		1.00	
15-18A	2.00	MW-1	MW-1	148.00		7.00		14.00	
15-18A	2.00	MW-2	MW-2	0.50	U	0.50	U	0.50	U
15-18A	2.00	MW-3	MW-3	8.70		0.50	U	3.50	
15-18A	2.00	MW-4	MW-4	0.50	U	0.50	U	0.50	U
15-18A	13.00	MW-5	MW-5	0.50	U	0.50	U	0.50	U
15-18A	14.00	PAYSEUR, BETTY	201 School	0.50	U	0.50	U	0.50	U
15-18A	15.00	LEATHERMAN, J.D.	203 School	0.64		0.50	U	0.50	U
15-18A	19.00	SOLOMAN, PAUL	213 School	0.50	U	0.60		0.80	
15-18A	61.00	FULL GOSPEL CH.	116 School	0.50	U	0.50	U	0.50	U
15-18A	62.00	FUJIKO, DAVID	114 School	0.50	U	0.50	U	0.50	U
15-18A	64.00	RUSSELL, BRENDA	110 School	0.50	U	0.50	U	0.50	U
15-18A	65.00	CONNER,FLETCHER	104 Apricot	1.00		1.00		1.00	
15-18A	66.00	CANIPE, ROMAIEM	106 Apricot	1.00		1.00		1.00	
15-18A	67.00	KEETER, D.	116 Magnolia	0.50	U	0.50	U	0.50	U
15-18A	68.00	DEESE, J.C.	114 Magnolia	0.50	U	0.50	U	0.50	U
15-18A	70.00	GRIFFIN, RENTAL	110 Apricot	36.70		1.90		4.10	
15-18A	71.00	DECKER, MARY	109 Apricot	80.50		7.90		20.20	
15-18A	74.00	HUGHES, ELENE	109 Goshen	15000.00		194.00		664.00	
15-18A	76.01	HUFFMAN, BESSIE	107 Apricot	36.00		1.80		4.40	
15-18A	77.00	SILER, MABLE	105 Apricot	865.00		51.00		111.00	
15-18A	78.00	WALLACE, BOB	103 Apricot	1093.00		59.00		120.00	
15-18A	79.00	SHERRILL, J.D.	101 Apricot	0.50	U	0.50	U	0.50	U
15-18A	80.00	N. BEL. ELEM. SCH.	113 School	570.00		78.00		129.00	
15-18A	84.00	MAHFAFFY, D.	197 Goshen "B"	4500.00		180.00		560.00	
15-18A	85.00	PARKER, FRANKIN	199 Goshen	1.80		1.00	J	1.00	
15-18A	87.00	CLARK, CHARLTON	201 Goshen	12.00		7.80		41.70	
15-18A	87.01	JORDAN, REBECCA	203 Goshen	11.50		6.20		28.70	
15-18A	87.02	CAGLE, BERTHA	205 Goshen	20.80		8.60		66.00	
15-18A	88.00	KUNZMAN, RUTH	204 Goshen	164.50		39.90		126.90	
15-18A	91.00	VAN DYKE, HELEN	115 Magnolia	1.00		1.00		1.00	
15-18A	92.00	GALLOWAY, JULIE	117 Magnolia	3.70		1.00	J	1.00	J
15-18A	94.00	GRIFFIN, BOB	121 Magnolia	10.00		0.50	U	1.40	
15-18A	95.00	MESSER, ALLIE M.	123 Magnolia	0.50	U	0.50	U	0.50	U
15-18A	96.01	COLLETTE, JAMES	2309 Acme	0.50	U	0.50	U	0.50	U
CRITERIA				5[(1)], 0.7[(2)]		5[(1)], 2.8[(2)]		70.00 [(1)]	

NOTES: [(1)] RED Values exceed Primary MCLs or MCLGs; [(2)] BLUE values exceed North Carolina GW Standards

Figures 4-1 thru 4-3

4.3.2 March/April 1996 Groundwater Plume

SESD collected groundwater samples from the on-site permanent monitoring wells and converted residential monitoring wells in March/April, 1996. The wells were sampled to determine the changes in the plume since 1991 and to determine placement of additional permanent monitoring wells for the RI. The results of the sampling are noted in **Table 4-7** and the contaminant isopleth for PCE is shown on **Figure 4-4**.

TABLE 4-7. MAIN CONTAMINANTS IN THE GW IN MARCH/APRIL 1996 AT THE NORTH BELMONT PCE SITE.

LOT	STATION	PCE	Q	TCE	Q	cis1,2DCE	Q	CLFM	Q	PB	Q	AL	Q	MN	Q	FE	Q
		UG/L		UG/L		UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
2	NB001TCF	260.0		7.9		15.0		0.5	J		NA		NA		NA		NA
74	NB002TCG	160.0		4.5	J	15.0		1.0	U		NA		NA		NA		NA
80	NB003TCI	7.4		1.6		1.6		1.0	U		NA		NA		NA		NA
2	NB006MW	2.5		5.0	U	5.0	U	1.8		10	U	74		9.8		12	U
2	NB007MW	68.0		3.6		11.0		5.0	U	10	U	150		47.0		110	
2	NB008MW	5.0	U	5.0	U	5.0	U	5.0	U	10	U	50	U	2.5	U	12	U
48	NB015MW	5.0	U	5.0	U	5.0	U	5.0	U		NA		NA		NA		NA
74	NB025MW	440.0		51.0		25.0		5.0	U		NA		NA		NA		NA
84	NB028MW	5.0	U	5.0	U	5.0	U	5.0	U		NA		NA		NA		NA
84	NB029MW	1100.0		27.0		93.0		5.0	U		NA		NA		NA		NA
87.02	NB030MW	1.7		5.0	U	5.0	U	5.0	U		NA		NA		NA		NA
88	NB031MW	3100.0		270.0		920.0		5.0	U	10	U	50	U	2.5	U	12	U
94	NB032MW	200.0		8.4		13.0		5.0	U		NA		NA		NA		NA
102	NB035MW	5.0	U	5.0	U	5.0	U	5.0	U	13		61		260.0		6800	
102	NB35DMW	5.0	U	5.0	U	5.0	U	5.0	U	100		55	U	33.0		7700	
CRITERIA		5[(1)],0.7[(2)]		5[(1)],2.8[(2)]		70.0[(1)]		0.19[(2)]		15 [(2)]		50-200 [(3)]		50.0[(3)]		300[(3)]	

NOTES:[(1)] RED Values exceed Primary MCLs or MCLGs;[(2)] BLUE values exceed North Carolina GW Standards; [(3)]GREEN Values exceed Secondary MCLs

4.3.3 Shallow Groundwater Plume

SESD collected groundwater samples from shallow temporary monitoring wells in June, 1996. The wells were sampled to determine the shallow groundwater plume. The shallow groundwater plume is approximately 30 to 35 feet below the land surface. The contaminant isopleths for PCE, TCE and cis-1,2 DCE are shown on **Figures 4-5 thru 4-7**, and the results of the sampling are noted in **Table 4-8**.

FIGURES 4-4, **Figures 4-5 thru 4-7**

TABLE 4-8. MAIN CONTAMINANTS IN THE SHALLOW GW PLUME IN JUNE 1996 AT THE SITE.

STATION	PCE	Q	TCE	Q	CIS -1,2 DCE	Q
UNITS	UG/L		UG/L		UG/L	
NB001TWA(STW)	1	U	1	U	1	U
NB002TWA(STW)	1	U	1	U	1	U
NB003TWA(STW)	520		13		130	
NB004TWA(STW)	1	U	1	U	1	U
NB005TWA(STW)	20		1	U	1	U
NB006TWA(STW)	2200		49		1100	
NB007TWA(STW)	1	U	1	U	1	U
NB008TWA(STW)	100		4	U	2.9	J
NB009TWA(STW)	1	U	1	U	1	U
NB010TWA(STW)	1.2		1	U	1	U
CRITERIA	5 (1), 0.7 (2)		5 (1), 2.8 (2)		70 (1)	
NOTES: (1) RED values exceed Primary MCLs or MCLGs; (2) BLUE values exceed North Carolina GW Standards						

4.3.4 Top of Bedrock Groundwater Plume

SESD collected groundwater samples from top of bedrock (TOB) temporary monitoring wells in July/August, 1996. The analytical results of this sampling event are noted on **Table 4-9**. The PCE and TCE plumes were modeled using surfer, and the resulting isopleths aided in the design of the permanent monitoring well system. **Figure 4-8** depicts the PCE plume defined by the temporary top of bedrock wells.

TABLE 4-9. MAIN CONTAMINANTS IN TEMPORARY TOB GW PLUME JULY/AUG 1996 AT THE SITE.

STATION	PCE	Q	TCE	Q	METHYLENE CHLORIDE	Q
UNITS	UG/L		UG/L		UG/L	
SPT1/TOR	1400.0		1	J		NA
TW2	10.0	U	10	U		NA
TW3	460.0	J	19	J	50.0	U
TW3D	560.0	J	24	J	62.0	J
TW4	1.0	U	1	U	5.4	
TW5	1.7		1	U	5.0	U
TW5A	1.0	U	1	U	5.0	U
TW6	2.0		1	U	5.0	U
TW7	10.0	U	10	U		NA
TW8	10.0	U	10	U		NA
TW9	5.1		1	U	5.0	U
TW10	3.1		1	U	5.0	U
TW11	1.0	U	1	U	5.0	U
TW12	1.0	U	1	U	5.0	U
TW13	4.2		1	U	5.0	U
TW14	1.0	U	1	U	5.0	U
CRITERIA	5 (1), 0.7 (2)		5 (1), 2.8 (2)		5 (2)	
NOTES: (1) RED values exceed Primary MCLs or MCLGs; (2) BLUE values exceed North Carolina GW Standards						

FIGURE 4-8

The permanent monitoring wells were sampled in October/November 1996 and the main contaminants are noted in **Table 4-10A and Table 4-10B**. The top of bedrock groundwater plume varies from approximately 35 feet to 110 feet below the land surface. The top of bedrock sampling results were combined for both the temporary and the permanent groundwater monitoring wells to obtain the contaminant isopleths for PCE, TCE and cis-1,2 DCE as shown on **Figures 4-9 thru 4-11**.

TABLE 4-10A. MAIN INORGANIC CONTAMINANTS IN THE PERM TOB GW PLUME OCT 1996 AT THE SITE.

STATION	CD	Q	AL	Q	MN	Q	FE	Q
UNITS	UG/L		UG/L		UG/L		UG/L	
MW2	1	U	160	U	4.0	U	60	U
MW4	1.2	U	62		2.6		500	
MW5	1	U	60	U	1.0	U	20	U
MW6	1.2	U	1100		52.0		1200	
MW7	1.2	U	1300		340.0		1400	
MW8	1.2	U	2700		180.0		1900	
MW9	1.2	U	1600		340.0		2400	
MW10	1.2	U	98		110.0		120	
MW11	7.2		4800		160.0		3400	
MW12	1.2	U	37		130.0		12	U
MW13	1.2	U	38		2.5	U	12	U
CRITERIA	5 [1]		50 - 200 [2]		50 [2]		300 [2]	

NOTES: [1] RED values exceed Primary MCLs or MCLGs and North Carolina GW Standards ; [2] GREEN values exceed Secondary MCLs

TABLE 4-10B. MAIN ORGANIC CONTAMINANTS IN THE PERM TOB GW PLUME OCT 1996 AT THE SITE.

STATION	1,1-DCE	Q	cis-1,2-DCE	Q	CLFM	Q	TCE	Q	PCE	Q
MW2	1.0	UR	1.00	U	2.0		1.00	U	2.00	
MW4	1.0	U	1.00	U	1.0	U	1.00	U	1.00	U
MW5	1.0	UR	1.00	U	1.0	U	1.00	U	1.00	U
MW6	50.0	U	76.00		50.0	U	49.00	J	2500.00	
MW7	2.7	A	0.56	J	1.0	U	0.54	AJ	1.00	U
MW8	1.0	U	1.00	U	1.0	U	1.00	U	1.00	J
MW9	1.0	U	1.00	U	1.0	U	1.00	U	14.00	
MW10	5.0	U	5.00	U	5.0	U	5.00	U	80.00	
MW11	1.0	U	1.00	U	1.0	U	1.00	U	1.70	
MW12	1.0	U	1.00	U	1.0	U	1.00	U	37.00	
MW13	12.0		1.00	U	1.0	U	1.00	U	1.00	U
MW13D	9.4		1.00	U	1.0	U	1.00	U	1.00	U
CW1	20.0	U	53.00		20.0	U	16.00	J	630.00	
CW8	1.0	U	1.00	U	1.0	U	1.00	U	1.00	U
CW8D	1.0	U	1.00	U	1.0	U	1.00	U	1.00	U
CRITERIA	7.0 [1] [2]		70 [1]		0.19 [2]		5 [1], 2.8 [2]		5 [1], 0.7 [2]	

NOTES: [1] RED values exceed Primary MCLs or MCLGs; [2] BLUE values exceed North Carolina GW Standards; CW-8 had concentrations of Heptachlor Epoxide of 0.0097J which exceeds North Carolina GW Standard of 0.004.

FIGURES 4-9, 4-10, 4-11

4.3.5 Bedrock GroundWater Plume

The bedrock groundwater plume was evaluated by using data from the permanent monitoring wells installed within the bedrock aquifer as well as the residential drinking water wells in the study area. SESD sampled all permanent bedrock monitoring wells in October/November 1996. The main contaminants of the bedrock monitoring wells are noted in **Table 4-11A** and **Table 4-11B**. SESD sampled residential drinking water wells during the period of March to September 1996. Based upon the well survey and interviews with residents, the majority of the drinking water wells were drilled into the bedrock aquifer. **Table 4-12** notes the results of the sampling activities with respect to the main contaminants as well as the depth of the well, if available. The contaminant isopleths for PCE, TCE, cis-1,2 DCE and 1,1 DCE were modeled using the data from both the permanent bedrock monitoring wells and the residential drinking water wells; these isopleths are noted on **Figures 4-12** thru **4-14**.

TABLE 4-11A. MAIN ORGANIC CONTAMINANTS IN THE BEDROCK GW PLUME, PERMANENT MONITORING WELLS, OCT/NOV 1996 AT THE NORTH BELMONT PCE SITE.

STATION	cis-1,2-DCE	Q	CLFM	Q	TCE	Q	PCE	Q
UNITS	UG/L		UG/L		UG/L		UG/L	
NB002CW	1.00	U	1.00	U	1.00	U	0.50	J
NB002CWS	1.00	U	1.00	U	1.00	U	0.50	J
NB003CW	13.00		1.00	U	3.00		77.00	
NB003MW	11.00		1.00	U	4.00		69.00	
NB004CW	0.80	J	1.00	U	1.00	U	2.00	
NB005CW	26.00		20.00	U	20.00	U	520.00	
NB006CW	940.00		50.00	U	280.00		3500.00	
NB007CW	9.40		4.00	U	7.40		160.00	
NB009CW	1.00	U	1.00	U	1.00	U	1.00	U
NB014MW	7.10		2.40	J	4.00	U	160.00	
NB015MW	1.00	U	1.00	U	1.00	U	1.00	U
NB016MW	110.00		1.40		30.00		320.00	
NB017MW	1.00	U	1.00	U	1.00	U	1.00	U
NB018MW	1.00	U	1.00	U	1.00	U	1.00	U
NB019MW	1.00	U	1.00	U	1.00	U	4.20	
NB020MW	1.00	U	0.83	J	1.00	U	3.10	
NB021MW	1.00	U	1.00	U	1.00	U	1.00	U
NB022MW	1.00	U	1.00	U	1.00	U	2.00	
NB022MWD	1.00	U	1.00	U	1.00	U	2.00	
CRITERIA	70 [1]		0.19 [2]		5 [1], 2.8 [2]		5 [1], 0.7 [2]	

NOTES: [1] RED values exceed Primary MCLs or MCLGs; [2] BLUE values exceed North Carolina GW Standards

TABLE 4-11B. MAIN INORGANIC CONTAMINANTS IN THE BEDROCK GROUNDWATER PLUME, PERMANENT MONITORING WELLS, OCT/NOV 1996 AT THE NORTH BELMONT PCE SITE.

STATION	CD	Q	PB	Q	ZN	Q	AL	Q	MN	Q	FE	Q
UNITS	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
NB002CW	2	U	3.0	U	7400.0		20	U	25.0		30	U
NB002CWS	2	U	2.0	U	7300.0		20	U	23.0		120	
NB003CW	1	U	15.0		180.0		20	U	20.0		1800	
NB003MW	1	U	2.0	U	20.0	U	30	U	8.0	U	40000	U
NB004CW	1	U	3.0	U	48.0		20	U	29.0		540	
NB005CW	1.2	U	5.3		290.0		50	U	280.0		29000	
NB006CW	1.2	U	1.2	U	2.5	U	50	U	2.5	U	12	U
NB007CW	1.2	U	48.0		520.0		67		17.0		1800	
NB009CW	10		280.0		4400.0		92		100.0		21000	
NB014MW	1.2	U	1.2	U	13.0		810		72.0		2700	
NB015MW	1.2	U	1.2	U	2.5	U	260		230.0		7000	
NB016MW	1.2	U	1.2	U	5.2		1300		170.0		5400	
NB017MW	1.2	U	1.2		18.0		5300		110.0		5800	
NB018MW	1.2	U	1.2	U	8.2		150		180.0		16000	
NB020MW	1.2	U	1.2	U	27.0		160		43.0		1600	
NB021MW	1.2	U	1.2	U	2.5	U	51		12.0		880	
NB022MW	1.2	U	1.2	U	5.7		120		260.0		18000	
NB022MWD	1.2	U	1.2	U	7.7		170		260.0		19000	
CRITERIA	5 [1][2]		15 [2]		2100[2], 5000 [3]		50 - 200 [3]		50 [2][3]		300 [2][3]	

NOTES: [1] RED Values exceed Primary MCLs or MCLGs; [2] BLUE values exceed North Carolina GW Standards; [3] GREEN Values exceed Secondary MCLs

4.3.6 OTHER CONSTITUENTS

During the investigation of the groundwater plume, additional contaminants were found which characterized a second plume. These contaminants were not found in the original site plume; the top of bedrock aquifer contains 1,1-dichloroethene and the bedrock aquifer contains 1,1-dichloroethene, 1,1,1-trichloroethane and trichlorofluoromethane. These compounds were not noted in the above sections because they did not exceed regulatory guidelines or criteria in the groundwater monitoring wells. **Figure 4-15** denotes the concentration of the 1,1-dichloroethene at the respective locations in the top of rock monitoring wells. **Figures 4-16** and **4-17** denote the concentration of 1,1-dichloroethene and trichlorofluoromethane at the respective locations in the bedrock monitoring wells and the residential wells (1,1,1-trichloroethane was not plotted due to its similarity in concentration with 1,1-dichloroethene). The supporting data may be found in the summary tables of Appendix A.

TABLE 4-12A. MAIN ORGANIC CONTAMINANTS IN THE BEDROCK GW PLUME, RESIDENTIAL DRINKING WATER WELLS, MARCH THRU SEPTEMBER 1996 AT THE NORTH BELMONT PCE SITE.

STATION	LOT	PARCEL	DEPTH	CASING	PCE	Q	TCE	Q	1,1DCE	Q	CLFM	Q
UNITS			FT	FT	UG/L		UG/L		UG/L		UG/L	
NB-309-PW	15-18	2.01	510		18.00	A	0.94	AJ	1.00	U	1.00	U
NB-003-PW	15-18	2.01	510		12.00	A	0.68	AJ	5.00	U	5.00	U
NB-004-PW	15-18	3.05	528	400	5.00	U	5.00	U	5.00	U	5.00	U
NB-350-PW	15-18	4.06			1.00	U	1.00	U	1.00	U	1.00	U
NB-351-PW	15-18	4.08			1.00	U	1.00	U	1.00	U	1.00	U
NB-312-PWS	15-18	12			1.00	U	1.00	U	1.00	U	1.00	U
NB-312-PW	15-18	12			1.00	U	1.00	U	1.00	U	1.00	U
NB-305-PW	15-18A	21			36.00		2.20		1.50		1.00	U
NB-011-PW	15-18A	29			5.00	U	5.00	U	5.00	U	5.00	U
NB-046-PW	15-18A	31			5.00	U	5.00	U	5.00	U	0.87	AJ
NB-012-PW	15-18A	39			5.00	U	5.00	U	5.00	U	5.00	U
NB-355-DPW	15-18A	40			1.00	U	1.00	U	1.00	U	1.00	U
NB-355-PW	15-18A	40			1.00	U	1.00	U	1.00	U	1.00	U
NB-047-PW	15-18A	42	70		5.00	U	5.00	U	5.00	U	5.00	U
NB-013-PW	15-18A	43	180	140	50.00	U	50.00	U	50.00	U	50.00	U
NB-001-PW	15-18A	43	180	140	1.00	U	1.00	U	1.00	U	1.00	U
NB-014-PW	15-18A	44			25.00	U	25.00	U	25.00	U	25.00	U
NB-002-PW	15-18A	44			1.00	U	1.00	U	1.00	U	1.00	U
NB-356-PW	15-18A	46	110	80	1.00	U	1.00	U	0.87	AJ	1.00	U
NB-310-PW	15-18A	52			1.00	U	1.00	U	1.00	U	0.58	AJ
NB-017D-PW	15-18A	58			5.00	U	5.00	U	5.00	U	5.00	U
NB-017-PW	15-18A	58			5.00	U	5.00	U	5.00	U	5.00	U
NB-018-PW	15-18A	61			5.00	U	5.00	U	5.00	U	0.66	AJ
NB-019S-PW	15-18A	62			5.00	U	5.00	U	5.00	U	0.64	AJ
NB-019-PW	15-18A	62			5.00	U	5.00	U	5.00	U	0.62	AJ
NB-021-PW	15-18A	65			5.00	U	5.00	U	5.00	U	5.00	U
NB-001-PW	15-10A	78	64		5.00	U	5.00	U	5.00	U	5.00	U
NB-033-PW	15-18A	96.01			480.00		22.00		1.30		5.00	U
NB-033S-PW	15-18A	96.01			320.00		21.00		1.10		5.00	U
NB-034-PW	15-18A	99			5.00	U	5.00	U	5.00	U	5.00	U
NB-352-PW	15-18A	106			1.00	U	1.00	U	4.60	A	1.00	U
NB-307-PW	15-18A	108	100	70	1.00	U	1.00	U	9.40	A	1.00	U
NB-048-PW	15-18A	108	100	70	5.00	U	0.50	AJ	9.40	A	5.00	U
NB-049-PW	15-18A	109.03			5.00	U	5.00	U	5.00	U	5.00	U
NB-308-PW	15-18A	110	130	105	1.00	U	1.00	U	5.40	A	1.00	U
NB-306-PW	15-18A	112			6.80	A	1.00	U	1.00	U	1.00	U
NB-311-PW	15-18A	112.01	>80		1.00	U	1.00	U	1.00	U	1.00	U
NB-353-PW	15-18A	112.02			1.00	U	1.00	U	1.00	U	1.00	U
NB-003-PW	15-18A	112.03			4.30	A	0.80	AJ	3.00	A	1.00	U
NB-037-PW	15-18A	114	130	100	5.00	U	5.00	U	5.00	U	5.00	U
NB-038-PW	15-18A	116	300 - 350		5.00	U	5.00	U	3.00	A	5.00	U
NB-302-PW	15-18A	116	300 - 350		1.00	U	1.00	U	1.00	U	1.00	U
NB-301-PW	15-18A	118	300		1.00	U	0.70	AJ	14.00	A	1.00	U
NB-039-PW	15-18A	118	300		5.00	U	5.00	U	3.40	A	5.00	U
NB-357-PW	15-18A	119	100	60	1.00	U	1.00	U	1.00	U	1.00	U
NB-040-PW	15-18A	121	140	90	5.00	U	5.00	U	5.00	U	5.00	U
NB-042-PW	15-18A	123	105 - 110	60	5.00	U	5.00	U	5.00	U	5.00	U
NB-041-PW	15-18A	123	80	55	5.00	U	5.00	U	5.00	U	5.00	U
NB-303-PW	15-18A	125			1.00	U	1.00	U	1.00	U	1.00	U
NB-304-PW	15-18A	127	64		0.92	J	1.00	U	1.00	U	1.70	U
NB-044-PW	15-18A	128	140		5.00	U	5.00	U	5.00	U	5.00	U
NB-359-PW	15-18A	132	125	90	0.62	AJ	1.00	U	1.00	U	1.00	U
NB-354-PW	15-18A	138			1.00	U	1.00	U	1.00	U	1.00	U
NB-045-PW	15-18A	142			5.00	U	5.00	U	5.00	U	5.00	U
CRITERIA					5 [(1)], 0.7 [(2)]		5[(1)], 2.8 [(2)]		7 [(1)(2)]		0.19 [(2)]	

NOTES: [(1)] RED values exceed Primary MCLs or MCLGs; BLUE values exceed North Carolina GW Standards.

TABLE 4-12B. MAIN INORGANIC CONTAMINANTS IN THE GW PLUME, RESIDENTIAL DRINKING WATER WELLS, SEPTEMBER 1996 AT THE NORTH BELMONT PCE SITE.

STATION	PARCEL NO.	ZN	AL	Q	MN	Q	FE	Q
UNITS		UG/L	UG/L		UG/L		UG/L	
NB-004-PW	3.05	6000	30		59.0		2300	
NB-013-PW	43	27	50	U	2.5	U	20	
NB-038-PW	116	5400	79		31.0		25	U
NB-041-PW	123	150	50	U	2.9		93	
NB-350-PW	4.06	16	40	U	2.1		18	
NB-351-PW	4.08	8.3	42		2		40	
NB-352-PW	106	9.8	59		3.8		97	
NB-353-PW	112.02	400	40	U	2	U	10	U
NB-354-PW	138	3.7	40	U	2	U	10	U
NB-355-PW	40	87	40	U	2	U	10	U
NB-355-PWD	40	86	40	U	2	U	10	U
NB-356-PW	46	31	40	U	2	U	15	
NB-357-PW	119	4.8	40	U	2	U	38	
NB-359-PW	132	2.7	40	U	2	U	63	
CRITERIA		5000 (1)	50 - 200 (1)		50 (1)		300 (1)	
NOTE: (1) GREEN Values exceed Secondary MCLs								

4.4 QUALITY ASSURANCE AND QUALITY CONTROL

Quality Assurance/Quality Control (QA/QC) procedures began in the planing stage and continued through sample collection, analyses, reporting and final review. The field project coordinator had overall responsibility for field QA/QC. All samples were collected in general accordance with Section 5 of the *EISOPQAM*. The QA/QC procedures described in this manual insure that representative samples were collected from the various media sampled. Split/duplicate samples were collected for ten percent of the samples collected. The split samples provided a check on sampling technique and laboratory analysis. The duplicate indicated the variability across the Site. Water trip blanks were prepared with organic free water for volatile organic compound analyses. The trip blanks were handled and stored with the samples collected from the Site. This provided a check to determine if samples may have been contaminated during handling and storage. Equipment rinse blanks were collected from equipment cleaned on site, using organic-free water, and analyzed for the Target Compound List/Target Analyte List (TCL/TAL) compounds. Equipment rinse blanks were collected to insure the sampling equipment was properly field cleaned. **Table 4-13** denotes the results of the analytical results for the QA/QC samples.

TABLE 4-13A. QA/QC SAMPLES AT THE NORTH BELMONT PCE SITE, MARCH/NOVEMBER 1996.

STATION ID	DATE	QA/QC	MATRIX
NB-901-FB	Mar-96	Field	Water
NB-902-TB	Mar-96	Trip	Water
NB-903-WSB	Mar-96	Water Source	Water
NB-904-OFS	Mar-96	Organic Free System	Water
NB-905-ERB	Mar-96	Equipment Rinseate	Water
NB-906-WSB	Mar-96	Water Source	Water
NB-907-ERB	Mar-96	Equipment Rinseate	Water
NB-908-ERB	Mar-96	Equipment Rinseate	Water
NB-909-ERB	Mar-96	Equipment Rinseate	Water
NB-910-TB	Mar-96	Trip	Water
NB-911-PB	Mar-96	Preservative, Nitric	Water
NB-912-TB	Apr-96	Trip	Water
NB-901-TB	Jun-96	Trip	Water
NB-902-OB	Jun-96	Organic Free System	Water
NB-903-FB	Jun-96	Field	Water
NB-904-STB	Jun-96	Trip	Soil
NB-905-RB	Jun-96	Equipment Rinseate	Water
NB-906-FB	Jul-96	Field	Water
NB-907-WTB	Jul-96	Trip	Water
NB-908-STB	Jul-96	Trip	Soil
NB-358-TB	Sept-96	Trip	Water
NB-001-ERB	Oct-96	Equipment Rinseate	Water
NB-001-QC (TPB)	Oct-96	Trip and Preservative	Water
NB-001-TB	Oct-96	Trip	Water
NB-002-QC (WSB)	Oct-96	Water Source	Water
NB-002-TB	Oct-96	Trip	Water
NB-001-EB	Nov-96	Equipment	Water
NB-002-EB	Nov-96	Equipment	Water
NB-003-EB	Nov-96	Equipment	Water
NB-004-EB	Nov-96	Equipment	Water
NB-005-EB	Nov-96	Equipment	Water
NB-006-EB	Nov-96	Equipment	Water
NB-007-SB	Nov-96	Organic Free System	Water
NB-007-SBA	Nov-96	Organic Free System	Water
NB-008-TB	Nov-96	Trip	Water

TABLE 4-13B. QA/QC - VOC SAMPLES AT THE NORTH BELMONT PCE SITE, MARCH/NOVEMBER 1996.

STATION	VINYL CHL	Q	CLFM	Q	BDCLM	Q	DBCLM	Q	TOLUENE	Q	ACETAL-DEHYDE	Q	COMMENTS
NB-901-FB	5.0	U	5	U	5.0	U	5.00	U	5.00	U	5	U	
NB-902-TB	5.0	U	5	U	5.0	U	5.00	U	5.00	U	5	U	
NB-903-WSB	5.0	U	24		5.4		0.70	J	5.00	U	5	U	Water Source; did not treat sample for chlorination
NB-904-OFS	5.0	U	5	U	5.0	U	5.00	U	5.00	U	5	U	
NB-905-ERB	5.0	U	5	U	5.0	U	5.00	U	5.00	U	5	U	
NB-906-WSB	5.0	U	25		5.5		0.69	J	5.00	U	5	U	Water Source; did not treat sample for chlorination
NB-907-ERB	5.0	U	5	U	5.0	U	5.00	U	5.00	U	5	U	
NB-908-ERB	5.0	U	5	U	5.0	U	5.00	U	5.00	U	5	U	
NB-909-ERB	5.0	U	5	U	5.0	U	5.00	U	5.00	U	5	U	
NB-910-TB	5.0	U	5	U	5.0	U	5.00	U	5.00	U	5	U	
NB-912-TB	5.0	U	5	U	5.0	U	5.00	U	5.00	U	5	U	
NB-901-TB	1.0	U	1	U	1.0	U	1.00	U	1.00	U	1	U	
NB-902-OB	1.8	A	1	U	1.0	U	1.00	U	2.00	A	30	JN	Carbon filter breakthrough; changed filter
NB-903-FB	1.0	U	1	U	1.0	U	1.00	U	1.20		1	U	Background; odor observed in air
NB-904-STB	46.0	U	46	U	46.0	U	46.00	U	46.00	U	46	U	
NB-905-RB	1.0	U	1	U	1.0	U	1.00	U	0.97	J	1	U	Background; see field blank NB-903-FB
NB-906-FB	1.0	U	1	U	1.0	U	1.00	U	1.00	U	1	U	
NB-907-WTB	1.0	U	1	U	1.0	U	1.00	U	1.00	U	1	U	
NB-908-STB	56.0	U	56	U	56.0	U	56.00	U	56.00	U	56	U	
NB-358-TB	1.0	U	1	U	1.0	U	1.00	U	1.00	U	1	U	
NB-001-ERB	1.0	U	1	U	1.0	U	1.00	U	1.00	U	1	U	
NB-001-QC	1.0	U	1	U	1.0	U	1.00	U	1.00	U	1	U	
NB-001-TB	1.0	U	1	U	1.0	U	1.00	U	1.00	U	1	U	
NB-002-QC	1	U	32		7.8		1.4		1	U	1	U	Water Source; did not treat sample for chlorination
NB-002-TB	1.0	U	1	U	1.0	U	1.00	U	1.00	U	1	U	
NB-001-EB	1.0	U	1	U	1.0	U	1.00	UR	1.00	U	NA		
NB-002-EB		NA	NA		NA		NA		NA		NA		Sample not received by CLP laboratory, missing
NB-003-EB	1.0	U	1	U	1.0	U	1.00	UR	1.00	U	NA		
NB-004-EB	1.0	U	1	U	1.0	U	1.00	UR	1.00	U	NA		
NB-005-EB	1.0	U	1	U	1.0	U	1.00	UR	1.00	U	NA		
NB-006-EB	1.0	U	1	U	1.0	U	1.00	UR	1.00	U	NA		
NB-007-SB		NA	NA		NA		NA		NA		NA		Sample not received by CLP laboratory; missing
NB-007-SBA	1.0	U	1	U	1.0	U	1.00	U	1.00	U	NA		Organic Free System Blank to replace NB-007-SB
NB-008-TB	1.0	U	1	U	1.0	U	1.00	UR	1.00	U	NA		

TABLE 4-13C. QA/QC - INORGANIC SAMPLES AT THE NORTH BELMONT PCE SITE, MARCH/NOVEMBER 1996.

STATION	AL Q	BA Q	SR Q	ZN Q	CA Q	CR Q	CO Q	CU Q	MG Q	MN Q	FE Q	NA Q	NI Q	K Q	COMMENTS
NB-903-WSB	50 U	11.0	28.0	210.0	3300	2.5 U	2.5 U	2.5 U	1300	2.5 U	21	13000	5 U	1500	Water Source
NB-904-OFS	50 U	2.5 U	2.5 U	2.5 U	120 U	2.5 U	2.5 U	2.5 U	25 U	2.5 U	12 U	500 U	5 U	500 U	
NB-905-ERB	50 U	2.5 U	2.5 U	4.6	120 U	2.5 U	2.5 U	2.5 U	25 U	2.5 U	12 U	500 U	5 U	500 U	
NB-906-WSB	50 U	12.0	28.0	230.0	3100	2.5 U	2.5 U	2.5 U	1300	2.5 U	12 U	13000	5 U	1900	Water Source
NB-907-ERB	50 U	2.5 U	2.5 U	2.7	210	2.5 U	2.5 U	2.5 U	25 U	2.5 U	12 U	500 U	5 U	500 U	Tap water residual; see NB-906-WSB
NB-908-ERB	50 U	2.5 U	2.5 U	6.3	120 U	2.5 U	2.5 U	2.5 U	25 U	2.5 U	12 U	500 U	5 U	500 U	Tap water residual; see NB-906-WSB
NB-909-ERB	50 U	2.5 U	2.5 U	2.9	120 U	2.5 U	2.5 U	2.5 U	25 U	2.5 U	12 U	500 U	5 U	500 U	Tap water residual; see NB-906-WSB
NB-911-PB	50 U	2.5 U	2.5 U	2.5 U	130	2.5 U	2.5 U	2.5 U	25 U	2.5 U	12 U	710	5 U	500 U	Constituents not a concern
NB-902-OB	27 U	1.0 J	NA	9.0 U	80 U	4 U	4 U	3 U	36 U	1 U	20 U	110 U	11 U	700 U	Carbon filter breakthrough; changed filter
NB-905-RB	27 U	1.0 U	NA	47.0	70 U	4 U	5 U	3 U	36 U	1 U	20 U	110 J	11 U	700 U	Tap water residual; see NB-906-WSB
NB-001-ERB	29	2.5 U	2.5 U	140	160	2.5 U	2.5 U	2.5 U	25 U	2.5 U	29	250 U	5 U	500 U	Tap water residual; see NB-906-WSB
NB-001-QC	50 U	2.5 U	2.5 U	3 U	120 U	2.5 U	2.5 U	2.5 U	25 U	2.5 U	12 U	500 U	5 U	500 U	
NB-002-QC	50 U	12	34	170	4000	2.5 U	2.5 U	2.5 U	1600	2.5 U	12 U	18000	5 U	1600	Water Source
NB-001-EB	130 U	4 U	NA	34	380 U	64	2 J	7 J	80 U	50	700	160 U	61	100	Used purging decon versus sampling decon
NB-002-EB	20 U	1 U	NA	23	80 U	7 J	1 U	6 J	18	16	140 U	160 U	6 J	49 J	Used purging decon versus sampling decon
NB-003-EB	20 U	1 U	NA	20 U	80 U	1 U	1 U	2 U	20 U	2 U	20 U	160 U	1 U	37 J	Tap water residual; see NB-002-QC
NB-004-EB	20 U	1 U	NA	26	70 U	1 U	1 U	2 U	20 U	2 U	30 U	160 U	1 U	32 J	Tap water residual; see NB-002-QC
NB-005-EB	20 U	1 U	NA	82	70 U	1 U	1 U	2 U	20 U	3 U	20 U	160 U	1 U	31	Tap water residual; see NB-002-QC
NB-006-EB	20 U	1 U	NA	57	50 U	1 U	1 U	2 U	20 U	1 U	70 U	160 U	2 U	33	Tap water residual; see NB-002-QC
NB-007-SB	20 U	1 U	NA	6 U	20 U	1 U	1 U	2 U	20 U	1 U	20 U	160 U	1 U	22	Tap water residual; see NB-002-QC

TABLE 4-13D. QA/QC -BNA SAMPLES AT THE NORTH BELMONT PCE SITE, MARCH/NOVEMBER 1996.

STATION	CCPD Q	CCHEX Q	DCCHEX Q	CMBF Q	BIS-ETHER Q	BENZO BUTYL PHTH Q	UNKNOWN Q
NB-903-WSB	30 JN	200 JN	60 JN	U	10 U	10 U	U
NB-904-OFS	U	U	U	U	10 U	10 U	U
NB-905-ERB	U	U	U	U	10 U	10 U	U
NB-906-WSB	20 JN	500 JN	200 JN	20 JN	10 U	10 U	U
NB-907-ERB	U	U	U	U	10 U	10 U	U
NB-908-ERB	U	U	U	U	10 U	10 U	U
NB-909-ERB	U	U	U	U	10 U	10 U	U
NB-902-OB	U	U	U	U	1 J	1 J	U
NB-905-RB	25 U	25 U	25 U	25 U	10 U	10 U	U
NB-001-QC	U	U	U	U	2 U	2 U	U
NB-002-QC	U	U	U	U	3 U	3.4 U	U
NB-001-EB	U	U	U	U	5 UJ	5 UJ	U
NB-002-EB	U	U	U	U	5 U	5 U	U
NB-003-EB	U	U	U	U	5 UJ	5 UJ	U
NB-004-EB	U	U	U	U	5 U	5 U	U
NB-005-EB	U	U	U	U	5 U	5 U	U
NB-006-EB	U	U	U	U	5 U	5 U	30 J
NB-007-SB	U	U	U	U	5 U	5 U	U

Figures 4-12 thru 4-17