

US EPA ARCHIVE DOCUMENT

1.0 INTRODUCTION

The North Belmont PCE (tetrachloroethylene) Site is located in North Belmont, Gaston County, North Carolina. North Belmont is a small city located west of Charlotte, North Carolina, and east of Gastonia, North Carolina. The North Belmont area is a mixture of residential and industrial properties with light commercial districts. A majority of the people either work in nearby Charlotte or Gastonia, or one of the local textile manufacturing facilities. The North Belmont Site consists of the former locations of two dry-cleaning operations which are believed to be the source of contamination found in private wells and the dominant aquifer in the area. **Figure 1-1** denotes the general location of "Source Area A" and "Source Area B" of the North Belmont PCE Site.

1.1 PURPOSE OF REPORT

The purpose of the Remedial Investigation/Feasibility Study (RI/FS) process is to gather enough information about the Site to support an informed risk management decision on an appropriate remedy for the Site. The RI serves as the mechanism for collecting data to characterize site conditions and to determine the nature of the waste. The baseline risk assessment evaluates risk to human health and the environment. The Feasibility Study serves as the mechanism for development, screening, and detailed evaluation of alternative remedial actions. The baseline risk assessment and the feasibility study will be presented under separate cover.

The specific goals of this RI include the following:

- Determining the nature of, and the areal and vertical extent of contamination (waste types, concentrations, and distributions) in soils, sediments, surface water, groundwater, and local biota at the North Belmont Site;
- Locating the source(s) of contamination associated with the Site;
- Determining the hydraulic characteristics and contaminant transport mechanisms of the underlying aquifer at the Site;
- Evaluating the potential migration rates and pathways of site contaminants;
- Determining the potential receptors of groundwater contamination by performing a well/water use survey within a 1-mile radius of the Site;

FIGURE 1-1



1.2 SITE BACKGROUND

1.2.1 Site Description

The North Belmont PCE Site is located in a residential neighborhood on Woodlawn Avenue in North Belmont, Gaston County, North Carolina (latitude 35°16'24.5" and longitude 81°03'04.5"). During the RI, two source areas were observed which consisted of two previous dry cleaning operations; the former Untz's dry cleaners (Source Area A) located at Roper's shopping center in Land Lot 5, Parcel 15-18A and the former dry cleaners (Source Area B) located at the intersection of Acme Road and Suggs Road in Land Lot 11, Parcel 15-18. **Figure 1-2** shows the approximate RI/FS study area of the North Belmont Site.

1.2.2 Site History

Source Area A was operated by the Untz family from 1960 to 1975 as a dry-cleaning establishment. A boiler located behind the building was used to "distill" the waste dry cleaning solvents. The spent solvent residue from the boiler distillation unit was reportedly disposed onto the ground surface behind the building, and spent solvents were disposed through the on-site septic tank system. Source Area B was also operated by the Untz's family prior to moving the dry cleaning establishment to Roper's Shopping Center. Source Area B was discovered during the site reconnaissance in October 1995 from an interview with a local resident.

In February 1991, the Gaston County Health Department sampled the well that provided water to the North Belmont Elementary School and two single family dwellings. This sampling was associated with an effort by the County to evaluate community water supplies for volatile organic compounds (VOCs) contamination. The results of this sampling indicated significant VOC contamination in the well.

EPA Region 4 Emergency Response was notified. EPA and the Gaston County Health Department sampled 25 drinking water wells. Tetrachloroethene (PCE), trichloroethene (TCE) and cis-1,2-dichloroethene (1,2-DCE) were detected in sixteen samples. PCE concentrations were found as high as 15,000 parts per billion (ppb). The elementary school was immediately connected to the City of Belmont water system. Twenty-nine of the neighborhood drinking water wells were taken out of service and connected to the Belmont city water service. All but 12 of the residential wells were subsequently abandoned by grouting them to the surface; 12 wells remained intact and were proposed as monitoring wells. Seven residences in the neighborhood were informed of the contamination but chose to continue to use their wells and not connect to city water. Wells still in use in the vicinity of the Site were scheduled to be sampled by the Gaston County Health Department. However, these wells were not sampled until EPA's investigation in 1996 (reference the following Section 1.2.3).

FIGURE 1-2



1.2.3 Previous Investigations

In July 1991, the EPA Environmental Response Team/Response Engineering and Analytical Center (ERT/REAC) installed one bedrock and four overburden monitoring wells in the immediate area of Source Area A. Data from these wells was used to characterize the residuum and saprolite, the bedrock lithology and fracturing, and the primary groundwater flow direction at the Site. Sample analyses from the five monitoring wells revealed the presence of volatile organic compounds. **Figure 1-3** depicts the PCE/TCE contaminant plume in 1991.

A Site Inspection Report was prepared by the North Carolina Department of Environment, Health, and Natural Resources (NCDEHNR) Superfund Section in July 1993. A total of eight on-site soil samples and two background soil samples were collected for analysis. **Figure 1-4** indicates the location of these soil samples. Two samples collected from the area of monitoring well MW-01 revealed the presence of acetone at concentrations of 1,212 ppb and 150 ppb. No VOCs were found in the soil samples collected on the Site; therefore, the source of the VOC groundwater contamination was not identified. The State was unable to locate a septic tank on the north side of the shopping center thought to be a possible source of the VOC groundwater contamination.

Elevated levels of the pesticide chlordane were found in several soil samples collected from the elementary school property. Based upon the carcinogenic nature of the compounds detected in the ground-water plume, an Expanded Site Investigation was recommended. Based on the results of the study concerning the school property, the Gaston County Health Department collected an additional 23 soil samples for chlordane analysis. One sample revealed chlordane at a level of 5400 ppb; however, the Gaston County Toxicologist concluded that this level of chlordane in the soil around the school did not pose an unacceptable health risk.

In March 1996, EPA sampled 25 residential wells (seven were converted to monitoring wells in 1991) in the vicinity of the Site (**Figure 1-5**) to update the 1991 analytical results. The results of this sampling event are presented in **Table 1-1**. As a result of these findings, one additional residence (Sample No. 033-PW) was connected to city water. This well did not contain any contaminants in the initial 1991 sampling event.

High levels of trichlorofluoromethane were found in three of the wells, and as a result, this compound may have masked low concentrations of the other volatile organics. Therefore, EPA resampled these wells in April 1996. These results are given in **Table 1-2**.

FIGURE 1-3, 1-4 and 1-5



TABLE 1-1. MARCH 1996 PRIVATE WELL SAMPLING VOA RESULTS FOR THE NORTH BELMONT PCE SITE.

SAMPLE NO	LOT/ADDRESS	PCE	TCE	1,1-DCA	cis 1,2-DCE	1,1,1-TCA	1,1-DCE	CHLOROFORM	TCFM
001-PW	78/2507 Boundary	ND	ND	ND	ND	ND	ND	ND	ND
003-PW	2.01/601 Woodlawn	12A	0.68AJ	ND	0.52AJ	ND	ND	ND	ND
004-PW	3.05/505 Woodlawn	ND	ND	ND	ND	ND	ND	ND	ND
011-PW	29/114 Roper	ND	ND	ND	ND	ND	ND	ND	ND
012-PW	39/2115 Acme	ND	ND	ND	ND	ND	ND	ND	16A
013-PW	43/2205 Acme	ND	ND	ND	ND	ND	ND	ND	720A
014-PW	44/2207 Acme	ND	ND	ND	ND	ND	ND	ND	240A
017-PW	58/101 Roper	ND	ND	ND	ND	ND	ND	ND	ND
018-PW	61/116 School	ND	ND	ND	ND	ND	ND	0.66AJ	ND
019-PW	62/114 School	ND	ND	ND	ND	ND	ND	0.62AJ	ND
021-PW	65/104 Apricot	ND	ND	ND	ND	ND	ND	ND	ND
033-PW	96.01/2309 Acme	480	22	1.3	26	ND	1.3	ND	ND
034-PW	99/104 School	ND	ND	ND	ND	ND	ND	ND	ND
037-PW	114/102 ODaniel	ND	ND	ND	ND	ND	ND	ND	0.66AJ
038-PW	116/2232 Acme	ND	ND	0.60AJ	ND	1.2A	3.0A	ND	2.5A
039-PW	118/2228 Acme	ND	ND	1.2A	ND	1.2A	3.4A	ND	2.9A
040-PW	121/2216 Acme	ND	ND	ND	ND	ND	ND	ND	62A
041-PW	123/2208 Acme	ND	ND	ND	ND	ND	ND	ND	ND
042-PW	123/2208 Acme	ND	ND	ND	ND	ND	ND	ND	ND
044-PW	128/202 Centerview	ND	ND	ND	ND	ND	ND	ND	ND
045-PW	142/118 Thomas Fite	ND	ND	ND	ND	ND	ND	ND	ND
046-PW	31/104 Roper	ND	ND	ND	ND	ND	ND	0.87AJ	ND
047-PW	42/2209 Acme	ND	ND	ND	ND	ND	ND	ND	ND
048-PW	108/105 ODaniel	ND	0.5AJ	0.88AJ	0.52AJ	5.2A	9.4A	ND	4.0A
049-PW	109/2304 Acme	ND	ND	ND	ND	ND	ND	ND	ND

note: TCFM - Trichlorofluoromethane and **BOLD** exceeds primary Maximum Contaminant Levels (MCLs); ND- NOT DETECTED; A - AVERAGE VALUE; J - ESTIMATED VALUE; PPB - PARTS PER BILLION (UG/L)

TABLE 1-2. APRIL 1996 PRIVATE WELL SAMPLING FOR NORTH BELMONT PCE SITE.

WELL NO	LOT/ADDRESS	PCE	TCE	1,1-DCA	cis 1,2-DCE	1,1,1-TCA	1,1-DCE	CHLOROFORM	TCFM
001-PW	43/2205 Acme	ND	ND	ND	ND	ND	ND	ND	810J
002-PW	44/2207 Acme	ND	ND	ND	ND	ND	ND	ND	280J
003-PW	112.03/Dumont	4.3A	0.8AJ	0.66AJ	0.78AJ	ND	3.0A	ND	ND

1.3 REPORT ORGANIZATION

This RI report contains six major sections:

- Executive Summary.
- Section 1 - Introduction.
- Section 2 - Study Area Investigation. Includes field activities associated with site characterization.
- Section 3 - Physical Characteristics of the Study Area. Includes results of field activities to determine physical characteristics.
- Section 4 - Nature and Extent of Contamination. Presents results of site characterization, in soils, ground water, surface water and sediments.
- Section 5 - Contaminant Fate and Transport. Discusses the potential routes of migration.
- Section 6 - Summary and Conclusions.
- Section 7 - References.
- Appendix A - Field Investigation Data.
- Appendix B - Analytical Data.
- Appendix C - Acronyms/Abbreviations.