SDMS US EPA Region V

Imagery Insert Form

Document ID: 180165

Some images in this document may be illegible or unavailable in SDMS. Please see reason(s) indicated below:

☐ Illegible due to bad source documents. Image(s) in SDMS is equivalent to hard copy.

Specify Type of Document(s) / Comments:

☒ Includes __X__ COLOR or __X__ RESOLUTION variations.
Unless otherwise noted, these pages are available in monochrome. The source document page(s) is more legible than the images. The original document is available for viewing at the Superfund Records Center.

Specify Type of Document(s) / Comments:

MAPS & TABLES

☐ Confidential Business Information (CBI).
This document contains highly sensitive information. Due to confidentiality, materials with such information are not available in SDMS. You may contact the EPA Superfund Records Manager if you wish to view this document.

Specify Type of Document(s) / Comments:

☐ Unscannable Material:
Oversized ____ or ____ Format.
Due to certain scanning equipment capability limitations, the document page(s) is not available in SDMS. The original document is available for viewing at the Superfund Records center.

Specify Type of Document(s) / Comments:

☐ Document is available at the EPA Region 5 Records Center.

Specify Type of Document(s) / Comments:

Rev. 07/10/02

1 8016 3

Air Sampling Report (Redacted Version*)

Evergreen Manor Site
Roscoe, Illinois

July 2003

Prepared for

U.S. Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

Prepared by

Weston Solutions, Inc.
750 E. Bunker Court, Suite 500
Vernon Hills, IL 60061-1450

Revision 3: 16 July 2003
Revision 2: 10 June 2003
Revision 1: 06 February 2003
Revision 0: 12 July 2002

*This report is a redacted version of the Air Sampling Report-Revision 3 that does not include name or address information consistent with U.S. EPA Region V confidentiality policy.

This document was prepared in accordance with U.S. EPA Contract No. 68-W7-0026, WESTON Region V Response Action Contract (RAC)

Document Control No. RFW 139-2A-ANOI

AIR SAMPLING REPORT
EVERGREEN MANOR SITE
ROSCOE, ILLINOIS

WORK ASSIGNMENT NO 139-RICO-05MZ

REVISION 3
(REDACTED VERSION)

16 July 2003

Prepared for

U.S. Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

This document was prepared in accordance with U.S. EPA Contract No. 68-W7-0026, WESTON Region V Response Action Contract

AIR SAMPLING REPORT
EVERGREEN MANOR SITE
ROSCOE, ILLINOIS

REVISION 3
(REDACTED VERSION)

U.S. EPA CONTRACT NO. 68-W7-0026
Work Assignment No. 139-RICO-05MZ
Document Control No. RFW139-2A-ANOI

16 July 2003

Prepared and Reviewed By: Deepak Bhojwani, Site Manager — Date: 7/16/03

Approved By: James M. Burton, P.E., Program Manager — Date: 7/16/03

TABLE OF CONTENTS
REDACTED VERSION

Section	Title	Page
1	INTRODUCTION	1-1
	1.1 Project Objectives	1-1
	1.2 Report Organization	1-2
2	SITE BACKGROUND	2-1
	2.1 Site Description	2-1
	2.2 Site Background	2-2
3	ENVIRONMENTAL SETTING	3-1
	3.1 Demography and Land Use	3-1
	3.2 Climate	3-2
	3.3 Ecology	3-2
	3.4 Regional Topography	3-3
	3.5 Regional Geology	3-3
	3.6 Surficial Soil	3-4
	3.7 Regional Hydrogeology	3-5
	3.8 Site Hydrology	3-7
	3.9 Regional Surface Water Hydrology	3-8
	3.10 Evergreen Manor Site Plume & Groundwater Use	3-9
4	SAMPLING RATIONALE AND METHODOLOGY	4-1
	4.1 Air Sampling Areas	4-1
	4.2 Air Sampling Survey	4-1
	4.3 Characteristics of Selected Residences	4-2
	4.4 Analyte Selection	4-4
	4.5 Indoor and Ambient Air Sampling Rationale and Methodology	4-5
	4.6 Soil Gas Sampling Rationale and Methodology	4-7
	4.7 Quality Control Samples	4-8
5	DATA EVALUATION	5-1
	5.1 Comparison of Indoor Air Data and Soil Gas Data with Risk-Based Screening Concentrations	5-2
	5.1.1 Area A -Northern Residential Area Results	5-3
	5.1.1.1 Indoor Air Results	5-3
	5.1.1.2 Soil Gas Results	5-4
	5.1.2 Area B - East Central Residential Area Results	5-4
	5.1.2.1 Indoor Air Results	5-4
	5.1.2.2 Soil Gas Results	5-4

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

TABLE OF CONTENTS
REDACTED VERSION
(Continued)

Section	Title	Page
	5.1.3 Area C - West Central Residential Area Results	5-5
	5.1.3.1 Indoor Air Results	5-5
	5.1.3.2 Soil Gas Results	5-5
	5.1.4 Area D - Southern Residential Area Results	5-5
	5.1.4.1 Indoor Air Results	5-5
	5.1.4.2 Soil Gas Results	5-6
5.2	Comparison of Ambient Air Data with Risk-Based Screening Concentrations	5-6
5.3	Comparison of Indoor Air, Soil Gas, and Ambient Air Data	5-7
	5.3.1 Area A - Northern Residential Area	5-7
	5.3.2 Area B - East Central Residential Area	5-8
	5.3.3 Area C - West Central Residential Area	5-10
	5.3.4 Area D - Southern Residential Area	5-11
5.4	Comparison of Indoor Air and Soil Gas Data with Groundwater Data	5-12
	5.4.1 Air/Groundwater Evaluation - Area A	5-16
	5.4.2 Air/Groundwater Evaluation - Area B/C	5-20
	5.4.3 Air/Groundwater Evaluation - Area D	5-25
5.5	Quality Control Issues	5-29
5.6	Precision and Accuracy of Air Sampling Data	5-30
6	AIR INTRUSION PATHWAY	6-1
6.1	Vapor Migration Pathways	6-2
6.2	Evaluation of Site-Specific Groundwater to Air Pathway	6-4
	6.2.1 Air Constituents Detected Above Target RBCs	6-4
	6.2.2 Air Constituents Detected Below Target RBCs	6-10
7	STREAMLINED RISK EVALUATION	7-1
7.1	Development of Risk-Based Concentrations	7-2
	7.1.1 Preliminary Remediation Goals	7-2
	7.1.2 Vapor Intrusion Guidance (VIG) Values	7-3
7.2	Selection of Chemicals of Potential Concern	7-4
7.3	Exposure Assessment	7-4
7.4	Toxicity Assessment	7-5
7.5	Risk Characterization	7-5
	7.5.1 Estimation of Cancer Risk	7-5
	7.5.2 Estimation of Noncancer Effects	7-6
	7.5.3 Streamlined Risk Evaluation Results	7-6
	7.5.3.1 Overall Evaluation	7-7
	7.5.3.2 Individual Residences	7-9

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

TABLE OF CONTENTS
REDACTED VERSION
(Continued)

Section	Title	Page
8	UNCERTAINTY ANALYSIS	8-1
8.1	Uncertainties Associated with Analytical Parameters and Sampling Frequency	8-1
8.2	Uncertainties Associated with Analytical Methods	8-3
8.3	Uncertainties Due to Property-Or Residence-Specific Factors	8-3
8.4	Uncertainties in Correlating Groundwater Data to Air Data	8-5
8.5	Uncertainties Associated with Estimation of Potential Cancer Risks and Noncancer Health Hazards Analysis	8-8
8.5.1	Risk-Based Screening	8-8
8.5.2	Extraneous Sources of VOCs	8-11
9	CONCLUSIONS AND RECOMMENDATIONS	9-1
9.1	Conclusions	9-1
9.2	Recommendations	9-8
10	REFERENCES	10-1

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

LIST OF TABLES
REDACTED VERSION

Table	Title
4-1	Summary of Residence Information
4-2	Project Required Detection Limits
4-3	Summary of Air Sampling Information
5-1	U.S. EPA Region IX Preliminary Remediation Goals and Vapor Intrusion Guidance Target Levels
5-2	Risk-Based Screening of Soil Gas and Indoor Air Levels- Area A
5-3	Risk-Based Screening of Soil Gas and Indoor Air Levels-Area B
5-4	Risk-Based Screening of Soil Gas and Indoor Air Levels-Area C
5-5	Risk-Based Screening of Soil Gas and Indoor Air Levels-Area D
5-6	Comparison of Ambient Air Data with U.S. EPA Region IX Preliminary Remediation Goals for Ambient Air
5-7	Comparison of Indoor Air, Soil Gas and Ambient Air Data-Area A
5-8	Comparison of Indoor Air, Soil Gas and Ambient Air Data-Area B
5-9	Comparison of Indoor Air, Soil Gas and Ambient Air Data-Area C
5-10	Comparison of Indoor Air, Soil Gas and Ambient Air Data-Area D
5-11	Summary of Detected Compounds in Groundwater by Air Sampling Areas- 2000 RI Data
5-12	Summary of Detected Compounds in Groundwater by Air Sampling Areas- 2002 Investigation Data
5-13	Summary of Detected Compounds in Upgradient Groundwater Data
5-14	Summary of Groundwater Analytical data-All Sources 2000 and 2002 Residential Wells, Temporary CPT Wells, and Monitoring Wells

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

LIST OF TABLES
REDACTED VERSION
(Continued)

Table	Title
5-15	Summary of Groundwater Analytical data-All Sources 2000 and 2002 All Wells Combined
7-1a	Overall Potential Cancer Risk Summary
7-1b	Overall Potential Noncancer Risk Summary
7-2	Individual Residence Results : Area A
7-3	Individual Residence Results : Area B
7-4	Individual Residence Results : Area C
7-5	Individual Residence Results : Area D
8-1	Summary of Uncertainty Analysis

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

LIST OF FIGURES
REDACTED VERSION

Figure	Title
2-1	Project Location Map
2-2	Air and Groundwater Sampling Locations
3-1	North Park Public Water Distribution Network
4-1	Air and Soil Gas Sampling Locations at Area A (Mathew) Residence
4-2	Air and Soil Gas Sampling Locations at Area B (Straw Lane/Blue Spruce) Residence
4-3	Air and Soil Gas Sampling Locations at Area C (Wagon Lane Court.) Residence
4-4	Air and Soil Gas Sampling Locations at Area D (Wagon Lane/Tanawingo) Residence
4-5	Schematic Diagram of Indoor Air and Ambient Air Quality Sampling Set Up
4-6	Schematic Diagram of Soil Gas Sampling Set Up
5-1	Distribution and Concentrations of Air Contaminants In Groundwater, Soil Gas and Indoor Air Exceeding RBCs
6-1	Distribution of PCE Detections in Groundwater and RBCs Exceedances in Air Samples

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

LIST OF APPENDICES
REDACTED VERSION

Appendix	Title
A	Air Sampling Survey - **REDACTED VERSION**
B	Laboratory Data
C	Sampling Field Log Sheets - **REDACTED VERSION**
D	Groundwater Analytical Data from 2000 and 2002 Investigations - **REDACTED VERSION**
E	NPPWD Trihalomethane Data - **REDACTED VERSION**

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

SECTION 1
INTRODUCTION

This Air Sampling Report presents the results of the air sampling program conducted at the Evergreen Manor site in Roscoe Township, Illinois (hereafter referred to as the Evergreen Manor site). Weston Solutions, Inc. (WESTON®) conducted air sampling activities for the United States Environmental Protection Agency (U.S. EPA) in May 2002 in response to concerns expressed by the Winnebago County Health Department regarding the vapor intrusion of site-related contamination into area residences.

Vapor intrusion is a process in which volatile chemicals in buried wastes and/or contaminated groundwater volatilize and migrate through subsurface soils and into indoor spaces of overlying buildings. These vapors, in some cases, may accumulate in dwellings or occupied buildings and reach levels that may pose a human health risk.

1.1 PROJECT OBJECTIVES

In general, the objective of the air sampling program was to measure the concentrations of volatile organic compounds (VOCs) in ambient air, indoor air, and soil gas at four selected residences within different areas of the Evergreen Manor plume. The specific objectives of the air sampling program were: 1) to determine if VOCs related to the site groundwater contamination could be detected in ambient air, soil gas, and indoor air at four selected residences located at different areas within the Evergreen Manor site; 2) to determine if any VOCs detected in ambient air, soil gas and indoor air could pose a current health risk to the residents; and 3) to determine whether a relationship exists between the VOC-containing groundwater contaminant plume and any VOC concentrations measured in ambient air, soil gas, and indoor air. All air sampling activities were conducted in accordance with the *Quality Assurance Project Plan (QAPP), Amendment No. 2, Revision 1 (WESTON, 2002a).*

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

The results of the sampling were evaluated using the following sequence of steps:

- A quantitative comparison of the VOC concentrations reported in indoor air and soil gas samples to the most conservative risk-based concentrations (RBCs) developed from two sources–U.S. EPA Region IX preliminary remediation goals (PRGs) for ambient air (U.S. EPA, 2002a) and vapor intrusion guidance (VIG) values for indoor air and soil gas as established in the *U.S. EPA Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (U.S. EPA 2002b).*

- A quantitative comparison of the VOC concentrations reported in ambient air samples to U.S. EPA Region IX PRGs for ambient air (U.S. EPA, 2002a).

- A comparison of the VOCs reported in indoor air samples, soil gas samples, and ambient air samples.

- A comparison of the VOCs reported in indoor air samples and soil gas samples to VOCs identified in the groundwater plume during the 2000 and 2002 remedial investigations, and other groundwater sampling conducted in the past.

- A human health streamlined risk evaluation (SRE) of the air sampling data. The SRE was conducted to provide a basis for evaluating whether action is warranted to mitigate potential health effects from exposure to contaminants in indoor air as a result of vapor intrusion from the VOC-containing groundwater contaminant plume. The most conservative RBCs developed from two sources–U.S. EPA Region IX PRGs for ambient air (U.S. EPA, 2002a) and U.S. EPA VIG values (U.S. EPA 2002b) were used in this risk evaluation.

1.2 REPORT ORGANIZATION

This Air Sampling Report is divided into the following sections:

Section 1. Introduction: Provides a brief overview of the objective and scope of the air sampling activities.

Section 2. Site Background: Provides a description and history of the Evergreen Manor site.

Section 3. Environmental Setting: Describes the surrounding land use and population, climate, regional soils, surface water features, area drainage and topography, regional geology, regional hydrogeology, and groundwater use in the area.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Section 4, Sampling Rationale and Methodology: Discusses the sampling rationale and methodology used in developing and conducting the air sampling program.

Section 5, Data Evaluation: Presents a comprehensive evaluation of the air sampling results and a comparison of the air sampling data with the historical groundwater data.

Section 6, Air Intrusion Pathway: Presents a treatise on the air intrusion pathway and evaluates the air intrusion pathway.

Section 7, Streamlined Risk Evaluation: Presents the risk analysis of the data collected during this air sampling effort.

Section 8, Uncertainty Analysis: Presents a discussion on the uncertainty associated with the air sampling program and results.

Section 9, Conclusions and Recommendations: Presents conclusions of the air sampling program and recommendations for further air sampling activities.

Section 10, References: Lists all reference sources used in the Air Sampling Report.

The tables and figures are referenced by section numbers and are presented at the end of the report. Where appropriate, figures have been provided in both 11x17 and full size formats.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

SECTION 2
SITE BACKGROUND

This section summarizes the site background and history associated with the Evergreen Manor site.

2.1 SITE DESCRIPTION

The Evergreen Manor site is located approximately 1.5 miles northwest of the Village of Roscoe, Roscoe Township, Winnebago County, Illinois. The site, as defined by the extent of groundwater contamination, extends from the intersection of Rockton Road and Route 251 to two miles southwest through approximately four residential subdivisions to the Rock River. A site layout is provided in Figure 2-1. The site extends over Sections 16, 20, 21, 29, and 32 in Township 46 North, Range 2 East, and is found on the South Beloit, Illinois/Wisconsin Quadrangle. The coordinates of the site are latitude 42° 26' 32.0", longitude 89° 01' 36.0". The site location is shown in Figure 2-1.

The residential subdivisions were farmland prior to development. The Hononegah Heights subdivision was developed between 1940 and 1964; the Tresemer subdivision was developed between 1972 and 1974; the Olde Farm subdivision was developed between 1976 and 1979; and the Evergreen Manor subdivision was developed between 1986 and 1988. With the exception of the Evergreen Manor subdivision, most of the development occurred in the late 1970s and the early 1980s.

The subdivisions are bounded to the south by the Rock River and to the west by the Hononegah Forest preserve. To the east of the subdivisions are agricultural fields and the Hononegah Country Estates subdivision. To the north of the subdivisions is a 1-mile tract of agricultural land, with a smaller residential area and various industries east of the agricultural land, east of Route 251.

Roscoe Rock and Sand, Inc., a gravel pit and concrete mixing facility, is located approximately 0.5 miles northeast of the subdivisions. Roscoe Rock and Sand, Inc. purchased the former Kelley Sand

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

and Gravel property, and is located on the north and south sides of McCurry Road, west of Route 251.

An industrial park is located approximately 2 miles to the northeast of the subdivisions and is located north of Rockton Road and east of Route 251. The industrial park contains the following businesses: Inlander-Steindler Paper Company, Regal-Beloit Corporation, McGuire Brothers Auto Body and Sand Blasting, Makerite Manufacturing Company, Midwest-Precision Grinding, Rockford Steam Boiler Works, Oscar's Auto and Battery Clinic, Dayles Welding, Armour Specialty, Inc. (industrial painting), RD Systems, Electro Cam Corporation, Area Elevator, DGM, Preston 151 (trucking firm), and Indicon Midwest (IEPA, 1992).

The industries located on the south side of Rockton Road, east of Illinois Route 251 include Ecolab and Taylor Design, Inc. Further south along and east of Illinois Route 251 are five other facilities: State Line Foundries, Waste Management Transfer Station , Kenny's Cars, Trucks and Equipment, Stateline Printing Company, and Stateline Storage. Warner Brake and Clutch is located south of McCurry Road on the east side of Route 251 (IEPA, 1992).

2.2 SITE BACKGROUND

Contamination at the Evergreen Manor site was first found in November 1990 when a lending institution required a homeowner to sample and analyze the drinking water. Results of anlayses indicated elevated concentrations of volatile organic compounds (VOCs). The Illinois Department of Public Health (IDPH) undertook further sampling in the area and identified a contamination plume located beneath the Hononegah Heights and Evergreen Manor subdivisions (IEPA, 1992). On 3 August 1991, the Illinois Environmental Protection Agency (IEPA) added the Evergreen Manor site to the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). A Comprehensive Environmental Response and Liability Act (CERCLA) screening site inspection was performed in 1992 and the groundwater contamination was traced to an industrial area near Route 251 and Rockton Road, to the north of the impacted

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

subdivisions. In 1999 and 2000, U.S. EPA connected residences with contaminated wells and surrounding residences to the public water supply. At that time, U.S. EPA also abandoned the private wells of residences connected to the public water supply.

The U.S. EPA conducted additional sampling in 2000 and 2002 to characterize remaining contamination at the site. The risks associated with the site were evaluated in the Remedial Investigation (RI) Report (WESTON, 2001). The identified risk was driven by the inhalation of chloroform, tetrachloroethene (PCE), and trichloroethene (TCE). No ecological risk was identified during the ecological risk assessment. Currently, U.S. EPA is evaluating remedial alternatives for the Evergreen Manor site. The 2000 and 2002 investigations were also conducted to identify risks associated with contamination and to evaluate additional cleanup or remedial options. Figure 2-2 shows the locations of monitoring wells, temporary sampling wells, residential wells, and municipal wells that have been sampled at the Evergreen Manor site. During the 2000 Investigations, a cone penetrometer technology (CPT) rig was used to classify stratigraphy, and sample groundwater without installing permanent wells. During the 2002 investigation, additional permanent monitoring wells were installed and sampled to verify and further evaluate groundwater quality at the site. During each investigation, groundwater samples were collected from existing monitoring wells previously installed by the IEPA.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

SECTION 3

ENVIRONMENTAL SETTING

3.1 DEMOGRAPHY AND LAND USE

The Evergreen Manor site in Roscoe Township, Winnebago County, Illinois includes four residential subdivisions. The site consists of an area of VOC-contaminated groundwater and has been defined by the maximum extent of these detections. The location of the historical and existing groundwater monitoring points, site boundaries, and surrounding physical features is provided on Figure 2-2. According to the 2000 U.S. Census, the Evergreen Manor site is in Census Tract 003902, Block Group 2, and has a total population of 6,244, 3% of whom are minorities. Based on the estimated extent of the VOC contamination plume, the Evergreen Manor site has the potential for affecting 243 homes and an estimated population of 700 persons (IDPH, 1999).

Land use in and around the site is residential, agricultural, commercial and industrial. The land from Hononegah Road to the Rock River is residential. Directly north of Hononegah Road is commercial property with various stores in a strip mall. Between the strip mall and Rockton Road, on the west side of Illinois Route 251, most of the land is agricultural and is actively used during the growing season. This area also includes an area of heavy industrial land use: a sand and gravel quarry and cement mixing facility. To the east of Illinois Route 251, from Hononegah Road to Rockton Road, land use is mixed between commercial, light industrial and residential. This area includes the Ecolab facility, the Waste Management Transfer Station, Kenny's Cars, Trucks, and Equipment, as well as other companies. In the northeast quadrant of Illinois Route 251 and Rockton Road most of the land is light industrial and is occupied by an industrial park.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

3.2 CLIMATE

Winnebago County has a continental climate typical of northern Illinois. This area has hot summers and cold winters, with July being the hottest month and January being the coldest. The average temperature in winter is 23°F and in summer is 71°F. The lowest recorded temperature was -22°F recorded on 21 January, 1970. The highest recorded temperature was 103°F recorded on 27 July, 1955. Annual precipitation averages 38 inches and annual snowfall averages 33 inches. Sixty-six percent of the rainfall occurs between the months of April through September.

3.3 ECOLOGY

The site is located in the Central Lowland geomorphic province, in the eastern broadleaf forest province of the Hot Continental Division in the Humid Temperate Domain (USDA Forest Service, Ecological Subregions of the United States, http://www.fs.fed.us/land/pubs/ecoregions).

The Rock River receives drainage from three major streams - the Pecatonica River, the Kishwaukee River, and the Green River. It is 163 miles long in Illinois, and drains 2,272,000 acres in Illinois. Of the total river miles in this basin, 69 stream miles have "good" overall resource quality and 97.9 miles have "fair" quality. The Rock River enters the Mississippi River at Rock Island (IDNR, http://dnr.state.il.us/lands/education/valerie/end/page6.htm). Dry Creek, a tributary of the Rock River and an intermittent stream, enters the river northwest of the Tresemer Subdivision. West of Dry Creek, the river is classified by the NWI as a riverine wetland and east of the creek, the river is classified as a lacustrine system. Forested wetlands border both the river and the creek west of the site and the river south of the site. There are small areas of emergent wetlands within the Evergreen Manor subdivision.

The U.S. Fish and Wildlife Service (USFWS) was contacted to obtain information on threatened and endangered species within the Evergreen Manor project area. Species that may be present in the area

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

include the endangered Indiana bat (*Myotis sodalis*), the threatened prairie bush clover (*Lespedeza leptostachya*), the threatened bald eagle (*Haliaeetus leucocephalus*).

3.4 REGIONAL TOPOGRAPHY

The topography in Winnebago County has been created in large part by features developed during the advance and retreat of glaciers. This includes till plains that contain kames, drumlins, and eskers (USDA-NRCS, 1980). The Evergreen Manor site is located on a broad, flat terrace, which gently slopes toward the Rock River. Locally, relief is no greater than about 75 feet from the highest area near Rockton Road and IL Route 251 (approximately 770 to 775 feet above mean sea level [amsl]), down to the Rock River elevation of approximately 700 feet amsl.

3.5 REGIONAL GEOLOGY

The geology in the vicinity of the Evergreen Manor site has been most heavily influenced by fluvial and glacial processes. The preglacial Rock River incised a deep bedrock valley that was subsequently buried during glaciation. As the glacier retreated, vast deposits of sand and gravel with lesser amounts of silt and clay were deposited in the river valley. The Evergreen Manor site is located in the preglacial Rock River buried valley.

Surficial Geology

The surficial geology in the vicinity of the Evergreen Manor site consists of windblown sand and silt, lacustrine sand, silts and clays, and sand and gravel outwash deposited within the preglacial Rock River valley. Till deposits are found primarily along the valley margins. The valley was primarily filled with deposits from the Quaternary Period, during the Illinoian and Wisconsinan glacial events. The sand and gravel outwash deposits are the most abundant and most extensive deposits in the

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

buried valley, and can reach a thickness of up to 300 ft. in the vicinity of the Evergreen Manor site (IDENR, 1960).

Bedrock Geology

The bedrock geology in the vicinity of the Evergreen Manor site is characterized by the Ordovician and Cambrian clastic and carbonate rocks. Both the Galena and Platteville dolomite, and the underlying Ancell Groups represent the Ordovician Period in this area. The Ancell Group consists of the Glenwood formation, a sandy shale, and the underlying St. Peter sandstone, a well-sorted sandstone up to 400 ft thick. The ancient Rock River eroded the Galena and Platteville dolomite, and the Glenwood formation, and carved its valley into the St. Peter sandstone (Colten and Breen, 1986).

The Cambrian rocks are dominated by sandstones with lesser thicknesses of shale and dolomite. The Potosi (dolomite) and Franconia (sandy shale) formations lie on top of the Ironton-Galesville sandstone and separate it from the Ordovician rocks. The Ironton-Galesville sandstone has a thickness of up to 170 ft. The thickness of underlying Eau Claire Formation may reach up to 450 ft, and the Mt. Simon sandstone below can reach up to 1600 ft in thickness.

The sedimentary bedrock units in the vicinity of the Evergreen Manor site were deposited on an irregular surface of metamorphic and igneous Precambrian rocks. Beneath the site, the Precambrian consists of a granite (Colten and Breen, 1986).

3.6 SURFICIAL SOIL

The predominant surficial soil type mapped for the site and the surrounding area is the Warsaw loam (USDA-NRCS, 1980). The Warsaw loam is a nearly level to gently sloping soil found on terraces, convex ridges, outwash plains, gravelly kames and stream terraces. Depending on the slope, the

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

surface layer is about 10 to 12 inches thick and consists of a very dark gray to a very dark brown loam. The subsoil is from about 24 to 41 inches thick and consists of loam to gravelly loam and varies in color from dark grayish brown to brown to dark reddish brown. The substratum, to a depth of about 60 inches, consists of yellowish brown, calcareous sand and gravel. The permeability of the Warsaw loam is moderate to rapid, with moderate water capacity, and moderate organic matter content (USDA-NRCS, 1980).

Other soil types exist within the site area. Soil types located near the Rock River and Dry Creek are characterized by higher clay contents and moderate permeabilities. Other soil types, further from the water ways, are characterized by higher sand or sand and gravel contents and rapid permeability (USDA-NRCS, 1980).

3.7 REGIONAL HYDROGEOLOGY

The unconsolidated sand and gravel outwash deposits, the St. Peter, Ironton-Galesville, and Mt. Simon sandstones are the aquifers underlying the site. The sand and gravel outwash deposits have significant permeability and transmissivity and are the predominant local water source for private residences in the vicinity of the preglacial Rock River Valley. Larger wells owned or used by municipalities or developments draw groundwater from both the bedrock aquifers and the shallower glacial drift formations.

The sand and gravel outwash is an unconfined aquifer with more uniform (i.e. better sorted) deposits at depth. Hydraulic conductivity test results were conducted within the shallow sand and gravel outwash aquifer in the 1980's by the Illinois Department of Energy and Natural Resources (IDENR). Pressure tests were conducted at four well clusters, at depths between 40 and 80 feet bgs, and an average hydraulic conductivity was found to be 3.8×10^{-2} cm/sec (Wehrmann, 1984).

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Using hydraulic conductivity estimates, groundwater gradient, and effective porosity estimates, an average linear flow velocity for groundwater in the shallow sand and gravel outwash aquifer was estimated in accordance with Darcy's Law as follows:

$$v = \frac{Ki}{n_e}$$

Where:

v	=	Linear groundwater seepage velocity (cm/sec)
K	=	Hydraulic conductivity (cm/sec)
i	=	Horizontal hydraulic gradient (ft/ft)
n_e	=	Effective porosity

Using a hydraulic conductivity value of 3.8×10^{-2} cm/sec, a gradient of 0.0015 ft/ft, and an estimated effective porosity of 30% for sand and gravel mixtures (Fetter, 1994), an average linear groundwater flow velocity of 1.9×10^{-4} cm/sec (0.54 ft/day) was estimated.

According to the IEPA's Hazard Ranking System Documentation Record (IEPA, 1997), the Galena and Platteville dolomite is a regional aquitard with an estimated hydraulic conductivity of 1×10^{-8} to 1×10^{-11} cm/sec (IEPA, 1997). However, Colten and Breen (1986) recognize the Galena-Platteville as a regional aquifer of importance for small-demand, rural domestic and livestock water supply. In addition, the U.S. EPA site geologist has noted that based on experience, in north-central Illinois, it is more appropriate to consider the Galena-Platteville dolomite a residential water-supply aquifer rather than an aquitard, and that the hydraulic conductivity reported values cited above for the Galena-Platteville are on the low side for this area. However, since most of the flow in the dolomite is through vertically oriented fracture and joint systems (Colten and Breen, 1986), the hydraulic conductivity may vary depending of the amount of fractures and the presence of joint-sets.

The Glenwood formation, consisting of shale overlying a poorly sorted sandstone, has an estimated hydraulic conductivity of 1×10^{-4} to 1×10^{-7} cm/sec (IEPA, 1997).

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

The St. Peter sandstone aquifer underlies the Galena-Platteville aquifer/aquitard and the Glenwood semi-confining unit, except along the axis of the Rock River buried valley, where the overlying bedrock has been removed by erosion. The St. Peter sandstone has an estimated hydraulic conductivity of 1×10^{-4} cm/sec and is widely used as a water source in Winnebago County (IEPA, 1997).

The Ironton-Galesville sandstone is a regionally confined unit and a very productive aquifer. However, due to its depth, few wells are finished in the Ironton-Galesville sandstone (Colten and Breen, 1986). The same holds true for the Mt. Simon sandstone, which can reach a thickness of 1,600 feet, and overlies the Precambrian granite.

3.8 SITE HYDROGEOLOGY

The shallow hydrogeology in the vicinity of the Evergreen Manor site is that of an extensive unconfined sand and gravel outwash aquifer (mostly Henry and Glasford formations). Groundwater elevations were measured to be consistent in the shallow and deep cluster wells, and varied in elevation from 710 to 731 feet above mean sea level (MSL) during the April 2002 Investigation. Groundwater flow at the site is from the northeast to the southwest toward the Rock River. The Rock River is presumed to be the groundwater discharge location for the shallow sand and gravel aquifer. The gradient across the site is fairly uniform, and based on the April 2002 groundwater data, is approximately 0.0015 ft/ft.

The Galena and Platteville dolomite and the Glenwood formation are not present beneath the Evergreen Manor site due to the ancient Rock River carving its valley into the St. Peter Sandstone. From the NPPWD well logs, it is inferred that in the vicinity of the Evergreen Manor site, the glacial outwash aquifer lies directly on top of the St. Peter Sandstone, which is underlain by the Potosi (or Trepealeau) formation.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

3.9 REGIONAL SURFACE WATER HYDROLOGY

The Evergreen Manor site lies in the Lower Rock River drainage basin. The Rock River originates in Wisconsin and enters Illinois south of Beloit. In Illinois, the Rock River flows in a southwesterly direction to its confluence with the Mississippi at Rock Island. In the vicinity of the site, the Rock River flows generally in a north to south direction. Two lakes, Pearl Lake and Victoria Lake, are located north of the site, west of Illinois Route 251. These lakes are former sand and gravel pits.

Dry Creek, a tributary of the Rock River, enters the river northwest of the Tresemer Subdivision and is the only drainage-way that traverses a portion of the site and ultimately flows into the Rock River in the Hononegah Forest Preserve. The Rock River is the southern boundary of the site. In Rockton, the mean daily discharge of the Rock River ranges from 2839 cubic feet per second (cfs) in September to 7375 cfs in April, with an annual mean of 4178 cfs (USGS, CD-ROM, Current Year Discharge, http://www.il.water.usgs.gov/cd04-99/dis_tbl/05437500.htm). Because of the permeable nature of the sand and gravel outwash deposits underlying the site, most of the precipitation is expected to infiltrate into the subsurface and percolate to the groundwater table. However, Dry Creek will also receive surface runoff during wet periods, when rainwater ponds, or during heavy rainfall. The staff gauge reading from the 6 June 2000 RI indicated that the water level in Dry Creek was approximately 11 feet higher than the water table elevation in the closest wells (MW-110S and D). Based on these readings, Dry Creek is not expected to be in direct hydraulic connection with the groundwater table at that location. Dry Creek was classified as a losing stream at the time of the 2000 RI, indicating that it would contribute water to the subsurface. However, since the channel bottom sediments are clay and silt rich, the amount of water that is lost from Dry Creek to the subsurface is expected to be minimal.

In the residential areas, primarily south of Hononegah Road, the surface drainage pattern has been somewhat altered by construction of roadways, driveways, and buildings. Although precipitation

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

will percolate through the lawns in the residential area, a portion will be carried by the ditch system to the Rock River.

3.10 EVERGREEN MANOR SITE PLUME & GROUNDWATER USE

The Hononegah Heights, the Evergreen Manor, the Tresemer and the Old Farm subdivisions are part of Roscoe Township. Roscoe Township is located within the North Park Public Water District (NPPWD), however, not all residences within these subdivisions receive their water from the NPPWD. Prior to 1999, the residences within the subdivisions obtained their water from private residential wells. Based on limited well construction data available for review, these residential wells were completed within the shallow sand and gravel outwash deposits at average depths of 55 to 65 feet bgs, with depths ranging from 43 feet to 105 feet bgs. Upon discovering the presence of the VOC-affected groundwater contained in the shallow aquifer related to the Evergreen Manor site and Warner Electric RCRA site, U.S. EPA connected many of the residences in the area to the NPPWD water supply system, and abandoned the existing private wells at these homes. The boundaries of the Evergreen Manor site have been established using the groundwater data collected 1990 through 2002.

Between 1999 and 2000, the U.S. EPA connected a total of 262 residences located within the Evergreen Manor site to the NPPWD water supply. In addition, 19 of 21 homes included in a "buffer zone" were connected to the NPPWD water supply as a precaution. These residences are depicted on Figure 3-1. It should be noted, however, that due to the uncertainties associated with the exact addresses, not all residences connected to the NPPWD are shown on this figure. At the request of the current landowners, two homes located within the southern perimeter of the "buffer zone" were not connected to the NPPWD water supply. As shown in Figure 3-1, these two residences (one on Valentine Court and one just east of the plume on Cedarbrook Road) are located outside the eastern boundary of the contamination plume. In May 2001, five residences located adjacent to the contamination plume, including one which had previously declined to be connected

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

to the NPPWD water supply (on Valentine Court), were sampled by the IDPH. The results of this sampling indicated that the groundwater in the vicinity of these residences has remained unaffected by the site contamination. Upon review of the NPPWD service records, it is apparent that additional residences and/or commercial properties within the vicinity of the Evergreen Manor Site may be using private wells for potable water.

To reduce the likelihood of exposure to the contaminated groundwater beneath the Evergreen Manor site, Winnebago County has implemented an ordinance that requires all residences to be connected to a public water supply system if they are within 200-feet of a system. In addition, the county requires property owners to obtain well permits for new or existing well repairs. This permit provides the county the opportunity to notify the applicant about the location of a contamination plume and provide recommendations for additional water treatment, as well as require new wells to be drilled to depths believed to be beneath a contamination plume.

Two municipal wells (#6 and #6A) that provide a portion of the water to the NPPWD are located at the corner of Hononegah Road and Cedarbrook Road (Figure 3-1). These wells are installed to a depth of 780 feet bgs. These wells are currently on "standby" status and are only used during periods of peak demand (e.g., summertime or drought conditions). Although well construction details indicate these wells were cased to a depth of 550 feet bgs, recent downhole logging efforts conducted in November 2002 on Well #6 by U.S. EPA show that this well is only cased to 450 feet bgs. Therefore, groundwater is withdrawn from a depth of approximately 450 feet to 780 feet bgs primarily from the Ironton-Galesville Sandstone. Well construction details indicate these wells are outfitted with 60-hp Byron-Jackson submersible pumping equipment rated at 470 gallons per minute (gpm). Pump tests conducted on Well #6A in November 2002 by the U.S. EPA indicate that the average pumping rates for this well were between 380 and 410 gpm.

PCE has been intermittently and inconsistently detected above the MCL of 5 µg/L in these municipal wells since 1985. U.S. EPA investigations have shown that a PCE-based coating material was

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

apparently used on piping within this well during construction and is likely responsible for contaminant levels observed in this well. Sampling results from these wells are discussed in more detail in Deep Well Profiling Report, Revision 1 (WESTON, 2003).

The NPPWD owns and operates six wells within its distribution system, including Wells #6 and #6A. The remaining four wells are installed within shallow sand and gravel deposits, but are located three to six miles from the Evergreen Manor groundwater contamination site; and therefore, do not appear to be threatened by the groundwater plume.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

SECTION 4

SAMPLING RATIONALE AND METHODOLOGY

This section discusses the sampling rationale and methodology used in developing and conducting the air sampling program.

4.1 AIR SAMPLING AREAS

The specific objectives of the air sampling program were: 1) to determine if VOCs related to the site groundwater contamination could be detected in ambient air, soil gas, and indoor air at four selected residences located at different areas within the Evergreen Manor site; 2) to determine if any VOCs detected in ambient air, soil gas and indoor air could pose current health risk to the residents; and 3) to determine whether a relationship exists between the VOC-containing groundwater contaminant plume and any VOC concentrations measured in ambient air, soil gas, and indoor air. Residential Areas A, B, C, and D, shown in Figure 2-1, were selected as the target sampling areas because of their proximity to monitoring well(s) in which one or more VOCs have been detected and because of their location within the previously delineated groundwater plume. Figure 2-1 also shows the locations of the temporary CPT wells, residential wells, and monitoring wells. Figure 2-1 shows that Area A is in close proximity to wells MW-104S, MW-104D, MW-105S, MW-105D, CPT-04, CPT-05, CPT-09, CPT-10, RW-17 and RW-18. Areas B and C are in close proximity to wells MW-01A (replacement for RW-04), MW-02 (replacement for RW-08), RW-01 through RW-16, RW-19, RW-20, RW-21 and RW-22. Area D is in close proximity to MW-03, CPT-01, CPT-02, and CPT-03.

4.2 AIR SAMPLING SURVEY

Four areas were selected to investigate the potential effect of vapor intrusion in different parts of the groundwater plume. Area A was identified to represent the upgradient, northern end of the plume; Area B was identified as the central area of the plume; Area C was chosen to cover an area near the

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

plume boundary; and Area D was chosen to address the downgradient area (south). These boundaries were determined with the consent of the U.S. EPA.

Prior to actual air sampling, representatives of WESTON and the Winnebago County Health Department conducted a survey of several residences. The purpose of this survey was to obtain the resident's consent to sample their home; to facilitate cursory evaluation of potential products, hobbies, or recent activities (such as chemical storage, planned home-improvement activities, smoking, etc.) that may bias and interfere with the sampling results; and, to the extent possible, to facilitate the selection of four homes (one within each area under consideration) that had similar characteristics. Additionally, the purpose of this survey was to identify residences that would most likely show evidence of vapor intrusion due to openings such as sump pump and/or cracks in the foundation. At the time of the survey, many homeowners were not at home or simply did not respond. Only 27 home owners spoke to the survey personnel. Of these 27 residences, five residences are located in Area A; four residences are located in Area B; 13 residences are located in Area C; and five residences are located in Area D. Of the 27 residents, only 13 responded positively. Of these, two residents were from Area A; two residents were from Area B; six residents were from Area C; and three residents were from Area D. Copies of completed survey information are presented in Appendix A.

4.3 CHARACTERISTICS OF SELECTED RESIDENCES

A total of four residences, one each in Areas A, B, C, and D, were chosen based on the completed air sampling surveys. The locations of these residences are shown in Figure 2-2. Some of the criteria used to select the residences included the following:

- Proximity of the residence to a fixed groundwater sampling point (i.e., monitoring well).
- Home configuration, such as the presence or absence of basements.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

- Other factors, such as basement cracks, that would facilitate migration of vapors from the groundwater through the soil and into a house.

- Potential products, hobbies, or recent activities, such as chemical storage, planned home improvement activities, smoking, etc., that may bias and interfere with the sampling results.

Based on the survey, one residence from each area was chosen. Residences that were chosen for the air sampling study included the following:

- Area A (north end) - Mathew Avenue, Roscoe, Illinois
- Area B (central-east) - Straw Lane and Blue Spruce Drive, Roscoe, Illinois
- Area C (central-west) - Wagon Lane Court, Roscoe, Illinois
- Area D (south end) - Wagon Lane and Tanawingo, Roscoe, Illinois

The Area A (north end) residence is approximately 1,800 square feet in size with an unattached two-car garage. The presence of a sump pump was identified in the survey. Some solvents and spray adhesives were stored in the basement at this residence at the time of sampling. A cigarette smoker resides in the household but does not smoke inside the residence.

The Area B (central-east) residence is approximately 1,400 square feet in size, with an attached two car garage. A sump pump and a workshop were present in the basement at the time of the survey. The presence of stain, paint, leather cleaner, linseed oil, denatured alcohol, spray paint, and polyurethane and epoxy compounds were stored in the workroom at the time of sampling.

The Area C (central-west) residence is approximately 1,600 square feet in size with an unattached two-car garage. The presence of a sump pump was noted during the survey. Paint, paint thinner, and cleaning supplies were stored in the basement at the time of sampling.

The Area D (South end) residence is approximately 1,200 square feet in size with an attached two-car garage. The presence of a sump pump and a repaired crack in the basement was noted during

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

the survey. Alcohol and paints were stored in the basement at the time of sampling.

A summary of residence information is included in Table 4-1. An approximate layout of each of the selected residences is shown in Figures 4-1 through 4-4.

4.4 ANALYTE SELECTION

WESTON and U.S. EPA reviewed the historical groundwater data collected in 2000 and 2002 and determined that a total of 14 VOC compounds have been detected in the groundwater at least once during past sampling events. Based on this determination, it was decided that all air samples be analyzed for the 14 VOC compounds detected. These compounds are listed in Table 4-2 and were analyzed using Method TO-15 SIM (selective ion monitoring) employing the lowest reporting limit. In order to meet the low reporting limit requirements (20 parts per trillion by volume [pptv]) established for this investigation, the subcontracting laboratory cleaned each Summa canister.

As shown in Table 4-2, the 14 compounds that were analyzed include cis-1,2-dichloroethene (cis-1,2-DCE), an intermediate breakdown product of TCE and PCE. No other breakdown products were included in the analytical list. PCE's first breakdown product is TCE, which further breaks down into cis-1,2-DCE, trans-1,2-DCE or 1,1-dichloroethene (1,1-DCE). Proportionally, cis-1,2-DCE is the dominant breakdown product of TCE. Cis-1,2-DCE, trans-1,2-DCE and 1,1-DCE degrade into vinyl chloride and, to a lesser extent, to chloroethane. Both vinyl chloride and chloroethane eventually break down into inert compounds such as ethane (or ethanol), ethene, and carbon dioxide. Aside from PCE, TCE, and cis-1,2-DCE, the compound 1,1-DCE is the only other breakdown compound that has been detected historically in groundwater, at an estimated concentration of less than 1 µg/L.

Based on the results of previous groundwater data and because PCE, a chlorinated compound, is unlikely to undergo extensive breakdown as it migrates from groundwater into soil (U.S. EPA,

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

2002b), the list of 14 compounds provided in Table 4-2 was considered to be adequate for the purposes of this study. Nevertheless, a data gap associated with not analyzing for 1,1-DCE exists because 1,1-DCE has been detected in the groundwater at some point in the past. Also, differences in volatility may result in different ratios of PCE degradation products in groundwater and in soil gas or indoor air. Furthermore, many of the breakdown products are more toxic than PCE itself and there is a potential that these breakdown products may become chemicals of potential concern in the future due to natural attenuation processes in groundwater and may subsequently migrate into soil pores. Thus, due consideration should be given to all breakdown products of PCE during any future air sampling events. This is especially true if there is a substantial delay in the planning and implementation of future air sampling.

4.5 INDOOR AIR AND AMBIENT AIR SAMPLING RATIONALE AND METHODOLOGY

VOCs may migrate from contaminated groundwater and soil into buildings (e.g., residences, office buildings) through openings such as sumps or cracks in the basements or foundations. The VOCs may then accumulate in the indoor air of basements or higher floor levels, depending on the degree of ventilation in the enclosed spaces. In order to determine whether such a phenomenon was indeed occurring in residences located within the boundaries of the Evergreen Manor site, one basement air sample and one first-floor air sample were collected from each of the four residences.

Two ambient air samples (one investigative and one duplicate sample) were also collected from the Area C residence (central-west) to represent ambient air quality for the entire air sampling area. The purpose of collecting ambient air samples was to assess the background concentrations of target compounds in the vicinity of the Evergreen Manor site and to determine whether there were any outside influences impacting the indoor air samples and the soil gas. Area C was selected because it is centrally located in an isolated part of the subdivision that has little vehicular traffic. This type of setting ensured that vehicular emissions would have little impact on the quality of the ambient air samples. Due to the relatively small dimensions of the air sampling area (approximately 0.87 mile

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

by 0.53 mile), the fact that gases reach equilibrium almost instantaneously, and the number of samples collected, it was determined that one set of ambient air samples would be adequate to characterize the background concentrations of the target compounds for this study.

All air samples were collected using laboratory-supplied SUMMA canisters and were analyzed in accordance with the QAPP (WESTON, 2002a). Samples were collected using the following procedures:

- In the basement, the canisters were placed in close proximity to the sump and away from any stored chemicals if chemicals were stored in the basement.
- On the first floor, the canisters were placed mostly in the living area (mostly living room) where the canisters would not be disturbed by daily activities, children, and pets.

The approximate indoor air sampling locations are shown in Figures 4-1 through 4-4. In most cases, indoor air samples were collected in the corner of a room away from the walls. Ambient air samples were collected from the middle of the Residence C (central-west) yard, where there is minimal effect from Residence C and from other nearby residences. For indoor air sampling, unused flow meters were attached to the sampling canisters just before they were dropped off at each residence. Prior to entering the residences, the initial pressure of each canister was noted and recorded in the field log sheets and on the canister tags. Following this, flow meters, particulate filters, and metal canes were attached to closed canisters, as shown in Figure 4-5. The purpose of attaching the cane was to collect air samples from the breathing zone (3 to 5 feet from the floor).

At each residence, canisters were placed at appropriate sampling locations after conducting a cursory survey and interviewing the residents regarding the locations of sump pumps, chemical storage practices, etc. The canisters were then opened to allow the air to slowly feed into the canisters. The ambient air sampling occurred in a similar manner except that sampling canisters were placed outdoors.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

The amount of samples collected varied depending on the flow meter. The optimal range of final canister pressure ranged from -4 inches of mercury (Hg) to -12 inches Hg. During the May 2002 sampling effort, between 18 to 26 inches Hg, or approximately 4 liters, of samples were collected per canister. Both the initial and final pressures of each canister were recorded in both field log sheets and chain-of-custody forms. The details of sample information are provided in Table 4-3.

The weather conditions during the air sampling effort were sunny to slightly cloudy. Temperatures ranged from approximately 50 degrees Fahrenheit (°F) to 70°F. No notable wind was observed at the time of sampling. However, because a weather station was not set up during the May 2002 sampling effort, a complete record of site-specific wind directions, wind speed, and temperature data are not available for this sampling event.

Except for some drizzle at the end of the 24- hour soil gas sampling period at Residence D, the last residence from where the samples were collected, no significant precipitation occurred during the sampling event. Thus, it can be concluded that the integrity of the samples was not compromised by rain which could have saturated the pore spaces in the soil and biased the analytical results.

No air conditioning or heating systems appeared to be in operation at any of the homes at the time sampling was conducted. In addition, no open windows were observed during the May 2002 air sampling effort.

4.6 SOIL GAS SAMPLING RATIONALE AND METHODOLOGY

Soil gas samples were collected from the area around the residences to determine the characteristics of the air migrating through the soil and possibly into each home. Samples were also collected to evaluate the potential of VOCs migrating from the contaminated groundwater plume into the soil in the immediate vicinity of the residences under consideration. Four soil gas samples were collected concurrently with the two indoor air samples from each side of the target residences. A Geoprobe®

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

was used to collect soil gas samples from a depth of approximately 8 to 9 feet below ground surface (bgs). In general, the soil gas samples were collected at approximately 10 feet from the external walls of the residences and close to the center of each side of the residence. This 10-foot distance was necessary to avoid damage to utility lines and underlying structures. One exception to this sampling protocol was the sample collected from the east side of Residence A (2002ZG05-S10). This sample was collected at a distance greater than 10 feet due to both the likely presence of utilities and the presence of a parked car in the driveway.

To collect soil gas samples, teflon tubing was attached to a dedicated point tip, equipped with a drive head and adaptor and driven into the ground using a Bobcat-mounted Geoprobe unit. The tubing was then connected to an adaptor piece which in turn was connected to the sampling canister. Figure 4-6 shows a schematic diagram of the sampling set up in two steps. Step 1 shows the punching set up using direct-push technologies (e.g., Geoprobe). Step 2 shows the soil gas sampling set up once the sampler was set at the desired depth. Prior to attaching the sampling canister and in order to minimize the impact of atmospheric air, the entire tubing and the adaptor piece were evacuated using a photo-ionization detector (PID). The canisters were set and left on the ground during the soil gas sampling. Soil was not characterized during this sampling effort.

All samples were collected and analyzed in accordance with the QAPP, Amendment No. 2 (Revision 1; WESTON 2002a). The blanks associated with the indoor air samples were also used as the soil gas blanks.

4.7 QUALITY CONTROL SAMPLES

A total of three blank samples were collected during the 2002 air sampling effort. All of the blank samples were equipment blanks collected from a nitrogen-filled canister through a connection. Each equipment blank canister was prepared as a regular sampling canister with a flow meter and particulate filter. The canister was then connected to an ultra-high purity (UHP) nitrogen-filled (at

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

5 pounds per square inch [psi]) canister using laboratory-cleaned connecting pieces. The connections were checked prior to opening the canisters for sampling. The purpose of collecting equipment blanks was to determine the potential of contamination due to field sampling procedures, the cleanliness of the sampling equipment, and the sampling media. In addition to blank samples, duplicate samples were collected for each sample type.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

SECTION 5

DATA EVALUATION

This section presents an evaluation of the air sampling data collected during the air sampling activities. The results of the sampling were evaluated using the following sequence of steps:

- A quantitative comparison of the VOC concentrations reported in indoor air samples and soil gas samples to the most conservative RBCs developed from two sources–U.S. EPA Region IX PRGs for ambient air (U.S. EPA, 2002a) and U.S. EPA VIG values (U.S. EPA, 2002b). Table 5-1 provides the most conservative RBC value for each target chemical for each effect of interest, cancer and noncancer, and the RBC value used for screening when multiple RBC values are provided.
- A quantitative comparison of the VOC concentrations reported in ambient air samples to U.S. EPA Region IX PRGs for ambient air (U.S. EPA, 2002a).
- A comparison of the VOCs reported in indoor air samples, soil gas samples, and ambient air samples.
- A comparison of the VOCs reported in indoor air samples and soil gas samples to those identified in the groundwater plume during the 2000 and 2002 remedial investigations.

The U.S. EPA Region IX PRGs (U.S. EPA, 2002a) are RBCs expressed as micrograms of contaminant per cubic meter of air ($\mu g/m^3$) that correspond to a cancer risk of 10^{-6} or a hazard quotient (HQ) of 1 based on standardized equations (U.S. EPA, 1989) that combine exposure assumptions with U.S. EPA toxicity data. The PRGs are developed for inhalation exposure to residential ambient air. Generally, PRGs are developed and updated annually by U.S. EPA Region IX.

The U.S. EPA has developed guidance (U.S. EPA, 2002b) for addressing the potential risks from vapor intrusion into a residence. As part of this guidance, U.S. EPA has developed VIG values for evaluating exposure through vapor intrusion. The VIG values for inhalation of indoor vapors are based on a target risk level of 1×10^{-6} for estimating cancer risks and a target hazard quotient (HQ)

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

of 1 for estimating noncancer effects. They were developed based on standard, conservative exposure and chemical-specific toxicity assumptions and are based on adult exposure. An average adult breathes 20 cubic meters per day (m^3/day) of air and weighs 70 kilograms (kg) (U.S. EPA, 1991a). An adult is assumed to live in the residence for 30 years and is expected to spend 350 days of each year in the residence (U.S. EPA, 1991a). The soil gas screening level concentrations were calculated to correspond to the target indoor air concentrations using media-specific attenuation factors. Shallow soil gas (e.g., sub-slab gas and soil gas measured at 5 feet or less from the base of the foundation) is conservatively assumed to intrude into indoor spaces with an attenuation factor of 0.1. Since soil gas samples were collected below ground surfaces, the soil gas screening levels were adjusted using an attenuation factor of 0.1.

One of the objectives of this report was to determine if the VOCs detected in soil gas and indoor air posed a potential health risk to the residents. In this section, soil gas data, indoor air data, and ambient air data collected at each of the four residences were compared with the appropriate RBCs. Four soil gas samples, one basement air sample, and one first-floor air sample were collected from each target residence. In addition, one investigative and one duplicate ambient air sample were collected from Area C as representative samples for the area of interest. Each of these values was compared to the most appropriate RBC to yield a "ratio." If the ratio for a specific VOC exceeded unity (i.e., one), then that VOC was considered to have exceeded its respective RBC and was further evaluated in detail in Section 7. Laboratory data are presented in Appendix B. Field log sheets are presented in Appendix C.

5.1 COMPARISON OF INDOOR AIR DATA AND SOIL GAS DATA WITH RISK-BASED SCREENING CONCENTRATIONS

The screening results for each residence are presented in Tables 5-2 through 5-5. Each table presents the following information:

- Chemicals of potential concern that were analyzed.
- VOCs present in groundwater in wells proximate to the residence.

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

- Soil gas samples and identification number.
- Chemical-specific target soil gas level.
- Ratios of the target (most conservative) RBC to the soil gas data.
- Indoor air levels and identification numbers (first floor and basement).
- Target indoor air concentration.
- Ratios of the target (most conservative) RBC to the indoor air data.

The target levels are flagged according to whether they were based on carcinogenic or non carcinogenic effects. Ratios that exceeded unity are highlighted for ease of discussion. The results are presented in the following subsections. As previously noted, the site was subdivided into evaluation and discussion areas as follows:

- Area A - Northern Residential Area centered around air sampling conducted at a residence on Mathew Avenue.
- Area B - East Central Residential Area centered around air sampling conducted at a residence near Straw Lane and Blue Spruce Drive.
- Area C - West Central Residential Area centered around air sampling conducted at a residence on Wagon Lane Court.
- Area D - Southern Residential Area centered around air sampling conducted at a residence near Wagon Lane and Tanawingo.

5.1.1 Area A -Northern Residential Area Results

5.1.1.1 Indoor Air Results

Table 5-2 presents the indoor air sampling results associated with the Area A (Northern residential area) residence (on Mathew Avenue). Several target chemicals were detected in one or more indoor air samples. Cis-1,2 DCE and TCE were the only chemicals which were not detected in any indoor air samples collected from this residence. Of the chemicals detected, benzene, chloroform, methylene chloride, and PCE concentrations exceeded their respective RBCs. Whereas benzene, chloroform, and PCE concentrations exceeded the target RBC in both the first floor and basement

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

samples, methylene chloride concentrations exceeded their respective RBCs only in the sample collected from the basement.

5.1.1.2 Soil Gas Results

Table 5-2 presents the soil gas results for the Area A residence. Several target chemicals were detected in one or more soil gas samples. Chloroform, cis-1,2-DCE, and TCE were not detected. Of the chemicals detected, only benzene and ethylbenzene exceeded their respective RBCs in one or more samples. Ethylbenzene exceeded the target RBC in two soil gas samples (north and south side of the residence). Benzene exceeded the target RBC in each of the soil gas samples.

5.1.2 Area B - East Central Residential Area Results

5.1.2.1 Indoor Air Results

Table 5-3 presents the indoor air sampling results for the Area B (east central residential area) residence (Straw Lane and Blue Spruce Drive). Several target chemicals were detected in the indoor air samples collected from this residence. TCE and cis-1,2 DCE were the only chemicals not detected. Of the detected chemicals, benzene, chloroform, ethylbenzene, methylene chloride, and PCE concentrations exceeded their respective RBCs in both the first floor and basement samples.

5.1.2.2 Soil Gas Results

Table 5-3 presents the soil gas results for the Area B residence. With the exception of cis-1,2 DCE, all target chemicals were detected in one or more soil gas samples collected from this residence. Benzene, chloroform and TCE exceeded their respective RBCs. Benzene exceeded the target RBC in the soil gas samples collected from the north and west sides of the residence. Chloroform exceeded the target RBC in the soil gas samples collected from the south, north, and east sides of

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

the residence. TCE exceeded the target RBC in one soil gas sample collected on the west side of the residence.

5.1.3 Area C - West Central Residential Area Results

5.1.3.1 Indoor Air Results

Table 5-4 presents the indoor air results for the Area C (west central residential area) residence (Wagon Lane Court). Except for TCE and cis-1,2 DCE, all other target compounds were detected at this residence. Benzene, chloroform, and PCE concentrations exceeded their respective RBCs in both the first floor and basement indoor air samples.

5.1.3.2 Soil Gas Results

A summary of the soil gas sampling results for Area C is also presented in Table 5-4. All target chemicals, with the exception of cis-1,2-DCE, were detected in soil gas samples collected from this residence. Benzene, ethylbenzene, PCE, and TCE concentrations exceeded their respective RBCs in one or more soil gas samples. Benzene exceeded the target RBC in all soil gas samples collected from this residence. Ethylbenzene, PCE, and TCE exceeded the target RBCs in only one of the soil gas samples. Ethylbenzene exceeded the target RBC in a sample collected from the north side while PCE and TCE exceeded the target RBCs in the sample collected from the east side.

5.1.4 Area D - Southern Residential Area Results

5.1.4.1 Indoor Air Results

Table 5-5 presents the indoor air results for the Area D (southern residential area) residence (near Wagon Lane and Tanawingo). All target chemicals with the exception of cis-1,2 DCE and TCE,

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

were detected in the indoor air samples associated with this residence. Benzene, chloroform, ethylbenzene, and PCE exceeded the target RBCs in both the first floor and basement air samples.

5.1.4.2 Soil Gas Results

Table 5-5 also presents the soil gas results for the Area D residence. All target chemicals, with the exception of cis-1,2-DCE, were detected in soil gas samples collected from this location. Chloroform and TCE exceeded the target RBCs in at least one soil gas sample. Chloroform and TCE exceeded the target RBCs in the soil gas sample collected from the south side of the residence.

5.2 COMPARISON OF AMBIENT AIR DATA WITH RISK-BASED SCREENING CONCENTRATIONS

Two ambient air samples (one investigative and one duplicate sample) were collected from Area C residence (central-west) as representative samples for the entire air sampling area. The purpose of collecting ambient air samples was to assess the background concentrations of target compounds in the vicinity of the Evergreen Manor site and to determine whether there were any outside influences impacting the indoor air and the soil gas samples.

Area C was selected because it is centrally located in an isolated part of the subdivision with little vehicular traffic. This type of setting ensured that vehicular emissions would have little impact on the quality of the ambient air samples. Nevertheless, the impact of localized emissions, resulting from the burning of fossil fuel materials, on the quality of the ambient air samples could not be ruled out.

Given the relatively small dimensions of the air sampling area (approximately 0.87 miles by 0.53 miles), the fact that gases reach equilibrium almost instantaneously, and the number of samples collected, it was determined that one set of ambient air samples would be adequate to characterize the background concentrations of the target compounds.

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-6 compares the ambient air data with the RBCs for the purposes of this investigation. Of the chemicals detected in the ambient air samples, only benzene exceeded the U.S. EPA Region IX ambient air standards. 1,1,1-TCA, chloroform, cis-1,2-DCE, methylene chloride, toluene, and TCE were not detected in any of the ambient air samples.

A review of the Toxic Release Inventory and the EnviroMapper information, released by the U.S. EPA, indicates that multiple air emission sources are present within a few miles of the Evergreen Manor site. However, none of these sources released the type of VOCs detected in the ambient samples. Further, in order to establish a firm relationship between an emissions source and the ambient air data, it is pertinent that site-specific meteorological data be thoroughly evaluated and analyzed. Collection of site-specific meteorological data was beyond the scope of work associated with the May 2002 air sampling event.

5.3 COMPARISON OF INDOOR AIR, SOIL GAS, AND AMBIENT AIR DATA

This section compares and discusses the indoor air, soil gas, and ambient air data. Results of the indoor, soil gas, and the ambient air sampling are summarized in Tables 5-7 through 5-10. It should be noted that ambient air samples were collected only from the Area C residence. Therefore, the ambient air data appearing in Tables 5-7 through 5-10 are identical.

5.3.1 Area A - Northern Residential Area

Indoor air, soil gas, and ambient air data for Area A are summarized in Table 5-7. In general, similar chemicals were detected in the soil gas samples, the indoor air samples, and the ambient air samples. Chloroform was detected only in the indoor air samples. Methylene chloride, 1,1,1-TCA, and toluene were detected in both the soil gas and indoor air samples but were not detected in the ambient air samples. Ethylbenzene was detected in all soil gas and indoor air samples and in the duplicate ambient air sample. Cis-1,2 DCE and TCE were not detected in any of the samples.

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Concentrations of chemicals including 2-butanone, acetone, chloroform, and methylene chloride in soil gas samples were consistently lower than their respective concentrations in the indoor air samples. 1,1,1-TCA concentrations in the soil gas sample collected from the east side were higher than the concentrations in the indoor air sample collected from the first floor. The concentrations of gasoline-related compounds including benzene, ethylbenzene, toluene, and xylene (m, p & o) in the soil gas samples were consistently higher than their respective concentrations in the indoor air samples. PCE and Freon 113 concentrations were similar in both the soil gas and indoor air samples.

Among the indoor air samples, concentrations of all but one detected compound (TCE) in the basement sample were higher than the corresponding concentrations in the first-floor sample. Of those, benzene, toluene, ethylbenzene and xylenes were found in soil gas samples at concentrations above the indoor air samples, indicating that these compounds may be migrating from the soil gas to indoor air in an upward fashion.

When compared with the ambient air concentrations, soil gas concentrations were either similar to or higher than the ambient air samples. Exceptions included 2-butanone and acetone which were present at much higher concentrations in one of the ambient air samples. The concentrations of most compounds in indoor air samples were similar to or slightly higher than the corresponding concentrations in the ambient air samples. The only exceptions were 2-butanone and acetone. 2-Butanone was detected in the first-floor sample at a concentration that was lower than its respective average ambient air concentration. The first-floor and basement samples both had lower acetone concentrations than the ambient air sample.

5.3.2 Area B - East Central Residential Area

Table 5-8 summarizes the indoor air, soil gas, and ambient air data for the residence in Area B. 2-Butanone, acetone, benzene, Freon 113, xylene (m, p & o), and PCE were detected in all indoor air, soil gas, and ambient air samples. Chloroform, 1,1,1-TCA, methylene chloride, and toluene were

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

detected in both soil gas and indoor air samples, but were not detected in the ambient air samples. Chloroform was detected in all indoor air samples and in three soil gas samples collected from the south, north, and east sides of the residence. Toluene and 1,1,1-TCA were detected in all indoor air and soil gas samples. Methylene chloride was detected in all indoor air samples and in only one soil gas sample collected from the west side of the residence. TCE was detected at a concentration of 0.52 $\mu g/m^3$ in the soil gas sample collected from the west side of the residence but was not detected in any other soil gas, indoor air, or ambient air sample. Ethylbenzene was detected in all soil gas and indoor air samples, but was detected only in the duplicate ambient air sample. Cis-1,2-DCE was not detected in any of the samples.

General comparison of the soil gas and the indoor air data indicates that xylene (m, p & o), methylene chloride, and toluene concentrations in the soil gas samples were markedly lower than their respective concentrations in the indoor air samples. With some exceptions, PCE concentrations also showed this trend, but to a lesser degree. Chloroform concentrations in three of the four soil gas samples were significantly higher than the corresponding concentrations in the indoor air samples. Chloroform was not detected in the soil gas sample collected from the west side of the residence. A similar trend was also observed for acetone in three of the four soil gas samples. Concentrations of the remaining chemicals in soil gas and indoor air samples were similar. With the exception of PCE and methylene chloride, concentrations of chemicals detected in the first-floor indoor air sample were consistently higher than their respective concentrations in the basement sample.

In general, concentrations of most chemicals in the soil gas samples were markedly higher than the corresponding concentrations in ambient air. Concentrations of 2-butanone in the south and east soil gas samples were higher than the corresponding concentrations in the ambient air. Acetone concentrations in all the soil gas samples were higher than the concentrations in the duplicate ambient air. Acetone concentrations in the soil gas sample collected from the north and the west sides of the residence were lower than the corresponding concentrations in the investigative ambient

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

air sample. Freon 113 was detected at similar concentrations in soil gas and ambient air samples.

With few exceptions, chemical concentrations in indoor air samples were higher than the corresponding concentrations in the ambient air samples. Acetone concentrations in the indoor air samples were lower than concentrations in the ambient air samples. Freon 113 was detected at similar concentrations in both indoor and ambient air samples. Concentration of 2-butanone was higher in the first floor sample than its respective concentration in ambient air. TCE was not detected in either indoor air or the ambient air samples.

5.3.3 Area C - West Central Residential Area

The results of indoor air, soil gas, and ambient air analyses for Area C are summarized in Table 5-9. In general, similar chemicals were detected in the soil gas, indoor air, and ambient air samples. Exceptions included chloroform, ethylbenzene, toluene, TCE, 1,1,1-TCA, and methylene chloride. Chloroform, toluene, 1,1,1-TCA, and methylene chloride were detected in soil gas and indoor air samples, but not in the ambient air samples. Ethylbenzene was detected in all the air samples, except the ambient air sample. TCE was detected only in the soil gas sample collected from the east side of the residence. Cis-1,2 DCE was not detected in any of the samples.

General comparison of the soil and indoor air data indicated that the concentrations of petroleum-type compounds (benzene, toluene, ethylbenzene, and xylene) were higher in the soil gas samples than the corresponding concentrations in the indoor air samples. TCE was detected only in the soil gas sample collected from the east side of the residence. With one exception, 2-butanone was detected at similar concentrations in the soil gas and indoor air samples. Concentration of 2-butanone in the soil gas sample from the east side of the residence was markedly higher than its respective concentrations in the indoor air sample. 1,1,1-TCA and Freon 113 were detected at similar concentrations in both soil gas and indoor air samples. PCE and toluene concentrations in the soil gas sample collected from the east side of the residence were higher than all other samples

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

collected during the May 2002 sampling effort. The rest of the PCE and toluene concentrations in the soil gas samples were similar to or slightly higher than concentrations in the indoor air samples. The acetone concentration was higher in the indoor air samples than in the soil gas samples. Chloroform was detected in one of the soil gas samples and both indoor samples. Methylene chloride was not detected in the indoor basement sample and the soil gas sample collected from the east side of the residence. When detected, methylene chloride concentrations in the soil gas samples were similar to concentrations in the indoor air samples.

Comparison of first-floor and basement indoor air samples indicated that chemical concentrations in the first floor samples were similar to or slightly higher than in the basement samples. Exceptions to this included 1,1,1-TCA, chloroform, Freon 113, and PCE, which were detected at higher concentrations in the basement samples.

With few exceptions, chemical concentrations in the soil gas samples were generally higher than corresponding concentrations observed in the ambient air samples. Acetone concentrations in the soil gas samples were consistently lower than the average ambient air concentration. Concentrations of 2-butanone in three of the soil gas samples were lower than the concentrations in the ambient air samples. Freon 113 was detected at similar concentrations in both the soil gas samples and ambient air samples.

5.3.4 Area D - Southern Residential Area

The results of indoor air, soil gas, and ambient air analyses for Area D are summarized in Table 5-10. Acetone, 2-butanone, benzene, Freon 113, and xylene (m, p, & o) were detected in all soil gas, indoor air, and ambient air samples. Chloroform was detected in two soil gas samples and both of the indoor air samples. TCE was detected in only one soil gas sample. PCE was detected in three of the four soil gas samples. 1,1,1- TCA, methylene chloride, and toluene were detected in all soil gas and indoor samples but were absent in the ambient air samples. Ethylbenzene was detected in

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

all but one ambient air sample (an investigative sample). Cis-1,2 DCE was not detected in any of the samples.

General comparison of the soil gas and indoor air data indicated that concentrations of petroleum-type compounds (BTEX) were significantly higher in the first-floor samples than in the basement or the soil gas samples. Only a few compounds, including 1,1,1-TCA and Freon 113, were detected at slightly higher concentrations in soil gas samples. Acetone and 2-butanone concentrations in indoor air samples were significantly higher than in the soil gas samples. Chloroform and methylene chloride concentrations in indoor air samples were slightly higher than concentrations in the soil gas samples. PCE concentrations were similar in two of the four soil gas samples and in all indoor air samples. PCE was not detected in the soil gas sample collected from the north side of the residence.

In general, concentrations of VOCs in the ambient air samples were lower than concentrations in the soil gas or the indoor air samples. The only exceptions were concentrations of 2-butanone, acetone, and Freon 113. Acetone and 2-butanone concentrations were slightly higher in the ambient air samples whereas Freon 113 concentrations were slightly elevated in the soil gas samples than in the indoor or ambient air samples.

When comparing indoor air and ambient air samples, Freon 113 and TCE were the only compounds that showed different trends. Freon 113 was detected at similar concentrations in the indoor air and ambient air samples. TCE was not detected in any other indoor air or ambient air samples.

5.4 COMPARISON OF INDOOR AIR AND SOIL GAS DATA WITH GROUNDWATER DATA

This subsection summarizes indoor air and soil gas sample data, and compares these data with the groundwater data collected during the 2000 RI and the additional groundwater characterization activities conducted during the 2002 U.S. EPA investigation. Groundwater data from 2000 and 2002 investigations are presented in Appendix D.

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

As stated previously, the specific objectives of the air sampling event were: 1) to determine if VOCs related to the site groundwater contamination could be detected in ambient air, soil gas, and indoor air at four selected residences located at different areas within the Evergreen Manor site; 2) to determine if any VOCs detected in ambient air, soil gas and indoor air could pose a current health risk to the residents; and 3) to determine whether a relationship exists between the VOC-containing groundwater contaminant plume and any VOC concentrations measured in ambient air, soil gas, and indoor the residential indoor air exists. Residential Areas A, B, C, and D, shown in Figure 5-1, were selected as the target sampling areas because of their proximity to groundwater sampling locations in which one or more VOCs have been detected, and because of their location within the previously delineated groundwater plume. The results of the air sampling event (discussed in Subsections 5.1 through 5.3 and summarized on Tables 5-2 through 5-10) indicate that the following chemicals exceeded their respective RBCs in one or more soil gas and/or indoor air samples:

- Benzene - exceeded the target RBC in one or more soil gas samples collected from Areas A, B, and C, and in all indoor air samples.
- Chloroform - exceeded the target RBC in one or more soil gas samples collected from Areas B and D, and in all indoor air samples.
- Ethylbenzene - exceeded the target RBC in one or more soil gas samples collected from Areas A and C, and in one or more indoor air samples collected from Areas B and D.
- Methylene chloride - exceeded the target RBC in one or more indoor air samples collected from Areas A and B.
- PCE - exceeded the target RBC in soil gas samples collected from Area C and in all indoor air samples.
- TCE - exceeded the target RBC in one or more soil gas samples collected from Areas B, C, and D.

Figure 5-1 shows the spatial distribution of all air constituents exceeding target RBCs and all groundwater constituents detected during the 2000 and 2002 investigations across the Evergreen

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Manor site. Groundwater analytical results, summarized in Tables 5-11 through 5-15, indicate that each of the above constituents in air detected above the target RBCs was also detected in groundwater samples at various locations and frequencies across the Evergreen Manor site (see Figure 5-1).

Low levels of benzene, an infrequent groundwater constituent at the site, have been detected at only two upgradient (with respect to residential areas) groundwater sampling locations in the past. Chloroform, also an infrequent groundwater constituent, has been detected at only two locations in a very localized area within the subdivision. Low levels of ethylbenzene have been detected in groundwater once only at an upgradient location. Similarly, low levels of methylene chloride have been detected only once within the southern portion of the residential area. PCE and TCE, the most widespread of the groundwater constituents at the Evergreen Manor site, have been detected at varying levels at multiple locations scattered throughout the Evergreen Manor site. The data presented in Figure 5-1 show that the concentration of PCE in groundwater range from a high of 9.0 µg/L (at MW-103S) to 0.1 µg/L (at MW-03), moving from the upgradient area to the north across the site to the residential Area D in the south. However, the figure also shows that the more toxic TCE concentrations range from a low of 0.24 µg/L (at MW-109) in the upgradient area to 7.2 µg/L (at MW-03) in Area D, demonstrating an increase in concentration of this compound as one moves away from the upgradient area, possibly due to degradation of PCE. At MW-105, in Area A, PCE and TCE concentrations are nearly equal in both the 2000 and 2002 sampling rounds, with PCE concentrations being slightly higher. In all sampling rounds in Area B/C and D, TCE concentrations are significantly higher than PCE concentrations, as shown in the sample collected from RW-04 (Area B/C). In this sample, TCE and PCE concentrations were reported to be 6 µg/L and 2 µg/L, respectively.

In addition to chemical constituents exceeding target RBCs, the following chemical constituents were detected in one or more air samples at levels below their respective RBCs: 1,1,1-TCA, 2-butanone, acetone, Freon 113, xylenes (m, p, & o isomers), and toluene. Cis-1,2-DCE was the only

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

compound that was not detected in any air samples. Low levels of 1,1,1-TCA, 2-butanone, acetone, and toluene have been frequently observed in groundwater across the site. Xylene (m, p, & o isomers) has been infrequently observed in groundwater at low levels. Freon 113 has been found in only one upgradient groundwater sampling location in the suspected source area (Route 251 and Rockton Road).

As discussed previously, the residential air sampling study area has been subdivided into Areas A through D for purposes of air data evaluation. Similarly, the residential area encompassed by the groundwater plume was divided into approximate thirds (northern, central, and southern residential areas) for purposes of air and groundwater data comparison and evaluation. The residential area, covering portions of the Evergreen Manor, Hononegah Heights, Tresemer and Olde Farm subdivisions, which is the subject of this study, extends from approximately Mathew Avenue to the north, to the Rock River to the south over an approximate lateral distance of 4,400 feet (see Figure 5-1). Within this area, groundwater data during the 2000 and 2002 investigations were collected from three general areas: 1) the area between Hononegah and McCurry Roads, representing the northern portion of the affected residential area; 2) the area between Hononegah Road and Straw Lane, representing the approximate middle portion of the affected residential area; and 3) the area along Grainery Road, representing the southern portion of the affected residential area near the Rock River.

The northern portion of the affected residential area corresponds to air sampling Area A (northern residential area), the middle portion of the affected residential area corresponds to combined air sampling Areas B and C (east and west central residential area), and the southern portion of the affected residential area near the Rock River corresponds to air sampling Area D (southern residential area). With some overlap, these evaluation zones encompass groundwater data generated within an approximate 1/4-mile radius of each air sampling residential location. In addition to these three areas, a fourth area, encompassing the upgradient groundwater, was developed. Groundwater data associated with this upgradient area include data generated on the eastern half of McCurry Road

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

up to and including groundwater data generated along Route 251 and Rockton Road. By subdividing the areas in this manner, the areas provide a larger data set for evaluation and is expected to account for any localized variability in vapor migration characteristics in a given area. These data will be used to evaluate the potential impacts of distant groundwater contamination on indoor air and soil gas results of the air sampling event. Figure 5-1 also shows the air-groundwater evaluation areas.

The following subsections evaluate and discuss air and groundwater results within each area. The 2000 RI and the 2002 Investigation results for selected groundwater sampling points (i.e., residential wells, monitoring wells, and/or CPT locations) corresponding to air sampling areas (A through D) are summarized in Tables 5-11 and 5-12, respectively. In addition, Table 5-13 summarizes the groundwater results that were collected from upgradient wells, outside of the general air sampling area. These tables also indicate the reference residential air sampling location(s) for each area and the distance to groundwater samples used for evaluation of the results. Tables 5-14 and 5-15 present the frequency and range of detections, as well as the location of maximum detections, for each organic constituent detected during the 2000 and 2002 investigations. These tables include all groundwater samples collected during the 2000 RI between the suspected source area near the intersection of Route 251 and Rockton Road and the downgradient Rock River. The specific area is identified where the maximum detections fall into a designated air sampling area.

5.4.1 Air/Groundwater Evaluation - Area A

Area A encompasses the residential air and groundwater sampling area between Hononegah and McCurry Roads, representing the northern portion of the affected residential area. The target residential air sample for Area A was collected from a residence located on Mathew Avenue. Two indoor air (first floor and basement) and four soil gas samples (each side of residence) were collected as described in previous subsections.

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

The air quality data were compared to groundwater data collected from a total of 8 groundwater sample locations during the 2000 RI (MW-104S and MW-104D; MW-105S and MW-105D, CPT-04, CPT-05, CPT-09, CPT-10, RW-17, and RW-18) and two groundwater sample locations re-sampled during the 2002 investigation (MW-104S and MW-104D; MW-105S and MW-105D). A total of 38 investigative groundwater samples were collected from the eight locations identified. Each of these locations is within approximately 1/4 mile of the target residence. The groundwater sample locations within Area A were originally installed to evaluate the extent of groundwater contamination at the site rather than to evaluate potential vapor migration characteristics. As a result, some uncertainty does exist. A detailed uncertainty analysis is presented in Section 8.

Data Comparison Within Area A

The following compounds were found to exceed their respective target RBCs with a ratio above unity in air samples collected from the Area A target residence:

- Benzene (exceeded the target RBC in all soil gas and indoor air samples).
- Chloroform (exceeded the target RBC in indoor air samples only; not detected in soil gas samples).
- Ethylbenzene (exceeded the target RBC in soil gas samples only; below the target RBC in indoor air samples).
- Methylene chloride (exceeded target RBC in indoor air samples only; below target RBC in soil gas samples).
- PCE (exceeded target RBC in indoor air samples only; below target RBC in soil gas samples).

Groundwater data, summarized in Tables 5-11 and 5-12, indicate that of the five compounds detected above target RBCs in the soil gas and indoor air samples collected from Area A, benzene and ethylbenzene were detected in only one Area A groundwater sample location (CPT-09; 600 feet

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

north of the residence) during the 2000 RI. Both constituents were detected at a maximum concentration of 0.6 µg/L. TCE was detected in Area A groundwater at three locations (MW-104S at 0.19 µg/L; MW-105S at 1.7 to 2.0 µg/L; and MW-105D at 2.8 to 3.0 µg/L) during both the 2000 and 2002 investigations. Monitoring well clusters MW-104 and MW-105 are located north of the target residence at distances of approximately 200 and 190 feet, respectively. Chloroform and methylene chloride were not detected in Area A groundwater during either the 2000 or 2002 investigations.

Although they did not exceed the target RBCs in air samples, the following chemical compounds were also detected below the target RBCs in soil gas and indoor air samples at the Area A target residence:

- 1,1,1-TCA (soil gas and indoor air)
- 2-Butanone (soil gas and indoor air)
- Acetone (soil gas and indoor air)
- Freon 113 (soil gas and indoor air)
- m, p, & o Xylenes (soil gas and indoor air),
- Toluene (soil gas and indoor air)

1,1,1-TCA has been detected in Area A groundwater samples at five locations (MW-104S, MW-104D, MW-105S, MW-105D, and CPT-10) at concentrations ranging from 0.87 to 3µg/L. 2-Butanone has been detected only once (CPT-05) at a concentration of 16 µg/L. Acetone has been detected at four locations (CPT-04, CPT-05, CPT-09, and CPT-10) at concentrations ranging from 10 to 100 µg/L. Xylenes have been detected only once (CPT-09) at a concentration of 0.7 µg/L. Toluene has been detected at six locations (CPT-04, CPT-05, CPT-09, CPT-10, RW-17, and RW-18) at concentrations ranging from 1 to 2 µg/L. Freon 113 has not been detected in Area A groundwater samples.

The compounds cis-1,2-DCE and TCE were not detected in soil gas or indoor air at the Area A target residence; however, both constituents have been detected in Area A groundwater, as well as in groundwater in the upgradient area and in Areas B/C, and D.

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Data Comparison Outside Area A

When comparing air sample compounds exceeding the target RBCs within Area A to groundwater data collected from outside Area A, it was noted that during the 2002 Investigation, chloroform (above target RBC in indoor air) was detected at a concentration of 0.23 µg/L in monitoring well MW-02 (Area B/C) located approximately 2,400 feet (or 0.5 miles) southwest of Area A. Chloroform was also detected in RW-08 (now sealed), which was replaced by monitoring well MW-02, at a concentration of 0.9 µg/L during the 2000 RI. Tables 5-14 and 5-15 show the frequency and range of chloroform detections during the 2000 RI and the 2002 investigation. These data indicate that chloroform was only detected once in groundwater (i.e., low frequency) during each investigation. The 2002 investigation confirms the presence of chloroform in the central residential area but also indicates this compound appears to be localized. Even though chloroform is not present in groundwater in Area A, it is documented in both groundwater and indoor air at the site; therefore, transport via soil gas may represent a viable contaminant transport pathway for this constituent.

During the 2000 RI, benzene and methylene chloride were detected in groundwater samples collected from temporary CPT wells outside Area A. Benzene was detected at a concentration of 0.5 µg/L in samples collected from CPT–12 (upgradient area), located approximately 4,700 feet (or 0.89 miles) northeast of Area A. Methylene chloride was detected at a concentration of 0.5 µg/L in a sample collected from CPT-03 (Area D), located approximately 3,500 feet (or 0.60 miles) southwest of Area A.

Ethylbenzene (above target RBC in soil gas) was not detected in any groundwater samples outside Area A during either the 2000 or the 2002 investigations.

PCE (above target RBC in indoor air) has been detected at multiple groundwater locations outside

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Area A and is widespread throughout the site, most notably in upgradient groundwater. PCE concentrations vary from 0.1 to 9 µg/L.

Of the constituents detected below target RBCs in Area A soil gas and indoor air samples, 1,1,1-TCA, 2-butanone, acetone, and toluene have been frequently detected at multiple groundwater sampling locations across the site. Freon 113 is not as predominant and has been detected only in two upgradient monitoring wells (MW-103S and MW-103D), approximately 6,200 feet from Area A. Xylenes have been detected at two locations outside Area A, once in Area D (CPT-02) and once at a distant upgradient location (CPT-11).

5.4.2 Air/Groundwater Evaluation - Area B/C

Combined Area B/C encompasses the residential air and groundwater sampling area between Hononegah and Straw Lane, representing the central portion of the residential area. Two target residential air samples were collected from this area; one from a residence located near Straw Lane and Blue Spruce Drive and another from a residence located on Wagon Lane Court. Two indoor air (first floor and basement) sample and four soil gas samples (each side of residence) were collected at each residence as described in previous subsections. For comparison purposes, the air quality data were compared to a total of 20 groundwater sampling locations associated with the 2000 RI (RW-01 through RW-16 and RW-19 through RW-22) and two groundwater sampling locations (MW-01A and MW-02) associated with the 2002 investigations. A total of 22 investigative groundwater samples were collected within approximately 1/4 mile of the target residences. During the 2000 RI, residential well samples within Area B/C were originally collected to evaluate the extent of groundwater contamination at the site rather than to evaluate potential vapor migration characteristics. The two 2002 investigation wells (MW-01A and MW-02) were installed to verify previous groundwater results since all residential wells have since been sealed. The residential air sample locations were selected adjacent to MW-01A and MW-02 so that, to the extent possible, vapor migration characteristics could be qualitatively and quantitatively evaluated. However, some

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

uncertainty remains. For example, no shallow groundwater data are available from near the water table since residential wells and monitoring wells in this area are screened on an average 20 to 40 feet below water table. A detailed uncertainty analysis is presented in Section 8.

Data Comparison Within Area B/C

The following compounds were found to exceed their respective target levels with a ratio above target RBCs in air samples collected from the two Area B/C target residences:

Straw Lane and Blue Spruce Drive

- Benzene (exceeds target RBC in soil gas and indoor air samples)
- Chloroform (exceeds target RBC in soil gas and indoor air samples)
- Ethylbenzene (exceeds target RBC in indoor air samples; below target RBC in soil gas samples)
- Methylene chloride (exceeds target RBC in indoor air samples; below target RBC in soil gas samples)
- PCE (exceeds target RBC in indoor air samples; below target RBC in soil gas samples)
- TCE (exceeds target RBC in soil gas samples; not detected indoor air samples)

Wagon Lane Court

- Benzene (exceeds target RBC in soil gas and indoor air samples)
- Chloroform (exceeds target RBC in soil gas and indoor air samples)
- Ethylbenzene (exceeds target RBC in indoor air samples; below target RBC in soil gas samples)

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

- PCE (exceeds target RBC in indoor air samples; below target RBC in soil gas samples)
- TCE (exceeds target RBC in soil gas; not detected indoor air samples)

With the exception of methylene chloride, the distribution of all other compounds exceeding target RBCs was similar at the two Area B/C target residences. Methylene chloride was not detected in the ambient air samples collected from a residence located on Wagon Lane Court.

Groundwater data, summarized in Tables 5-11 and 5-12, indicate that of the six compounds exceeding target RBCs, only benzene and ethylbenzene were not detected in groundwater within Area B/C. During the 2000 RI, PCE and chloroform were detected at three groundwater sampling locations (residential wells RW–04, RW-08, and RW-19) within Area B/C at maximum concentrations of 2 µg/L and 0.9 µg/L, respectively. Well RW-04 ranges between 500 and 550 feet from the two target air sampling locations. RW-08 is located at distances of 750 to 300 feet from the target residence air sampling locations. RW-19 is located at distances of 300 to 550 feet from the target residence air sampling locations. During the 2002 investigation, chloroform and PCE were detected in groundwater samples collected from monitoring wells MW-02 and MW-01A at concentrations of 0.23 µg/L and 1.7 µg/L, respectively. MW-01A is a replacement well for residential well RW-04 (now sealed), in which PCE was detected at 2 µg/L during the 2000 RI. MW-02 was installed to replace residential well RW-08 (now sealed) where chloroform was detected at a concentration of 0.9 µg/L during the 2000 RI. TCE was detected at three locations (RW-04 at 5 to 6 µg/L, RW-07 at 0.7 µg/L, and RW-19 at 4 µg/L) during the 2000 RI and one location MW-01A at 4.7 µg/L) during the 2002 Investigation.

Although they did not exceed target RBCs in air samples, the following chemical compounds were also detected in soil gas and indoor air samples below target RBCs at the Area B/C target residences:

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

- 1,1,1-TCA (soil gas and indoor air)
- 2-Butanone (soil gas and indoor air)
- Acetone (soil gas and indoor air)
- Freon 113 (soil gas and indoor air),
- m, p, & o Xylenes (soil gas and indoor air)
- Toluene (soil gas and indoor air)

Of the constituents not exceeding target RBCs in air samples collected from Area B and C residences, 1,1,1-TCA has been detected in Area B/C groundwater samples at eight locations (RW-03, RW-04, RW-07, RW-08, RW-11, RW-19, MW-01A, and MW-02). 1,1,1-TCA concentrations at these locations ranged from 1.0 to 2.4 µg/L. Acetone has been detected only once at one location (RW-03) at a concentration of 0.8 µg/L. Toluene has been detected at seven locations (RW-13, RW-14, RW-15, RW-19, RW-20, RW-21, and RW-22) at concentrations ranging from 1 to 2 µg/L. The compounds 2-butanone, xylenes, and Freon 113 have not been detected in any Area B/C groundwater samples.

The compounds cis-1,2-dichloroethene was not detected in soil gas or indoor air at the Area B/C target residences; however, this constituent has been detected in Area B/C groundwater as well as groundwater in Areas A and D, but not in the upgradient groundwater.

Data Comparison Outside Area B/C

Comparison of air sample compounds exceeding target RBCs within Area B/C to groundwater data collected outside Area B/C, indicate that benzene and methylene chloride have been detected in groundwater samples collected from the temporary CPT wells during the 2000 RI. In Area A, benzene has been detected at a concentration of 0.5 and 0.6 µg/L in samples collected from CPT-09 at depths of 35 feet below ground surface (bgs) and 88 feet bgs, respectively. Benzene was also detected in a sample collected from CPT–12 (Upgradient Area; at 81 feet bgs) at a concentration of 0.6 µg/L. CPT-09 is located approximately 2,600 feet (or 0.5 miles) north of Area B/C. CPT–12 is located approximately 6,600 feet (or 1.25 miles) northeast of Area B/C. Methylene chloride has

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

been detected at a concentration of 0.5 µg/L in a sample collected from CPT-03 (Area D) at a depth of 84 feet bgs. CPT–03 is located approximately 1,800 feet (or 0.34 miles) southwest of Area B/C.

Ethylbenzene was detected in only one groundwater sample location outside Area B/C. A detection of 0.6 µg/L was measured in a sample collected from CPT-09 (Area A; 88 feet bgs), approximately 2,600 feet (0.5 miles) north of Area B/C. Chloroform was not detected in groundwater outside of Area B/C.

PCE has also been detected in permanent and temporary wells sampled during the 2000 and 2002 investigations outside of Area B/C. As shown in Table 5-15, PCE was detected in 12 out of 19 groundwater samples during the 2002 investigation. Wells with positive detections of PCE include Area A wells MW-104S, MW-104D, MW-105S, and MW-105D; upgradient wells include MW-103S, MW-103D, MW-107S, MW-107D, MW-109S, MW-109D; and Area D well MW-03. PCE concentrations in these wells ranged from 0.1 µg/L to 9 µg/L. The maximum PCE concentration of 9 µg/L was detected in monitoring well MW-103S (upgradient), which is located approximately 8,400 feet (or 1.6 miles) northwest of Area B/C. During the 2000 RI, PCE was detected in two out of 22 residential well samples, two out of 73 temporary CPT well samples, and five out of 15 monitoring well samples.

Of the constituents detected below target RBCs in Area B/C soil gas and indoor air samples, 1,1,1-TCA, acetone, and toluene have been detected at multiple groundwater sampling locations across the entire site. The compound 2-butanone was detected once in an Area A groundwater sample (CPT-05 at 16 µg/L). Freon 113 is not as predominant and has been detected in only two upgradient monitoring wells (MW-103S and MW-103D) approximately 7,100 feet from Area B/C. Xylenes have only been detected at two locations outside Area B/C - once in Area D (CPT-02) and once at a distant upgradient location (CPT-11).

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

5.4.3 Air/Groundwater Evaluation - Area D

Area D encompasses the residential air and groundwater sampling area between approximately Straw Lane and the Rock River, representing the southern portion of the affected residential area. The target residential air sample for Area D was collected from a residence located near Wagon Lane and Tanawingo. Two indoor air (first floor and basement) and four soil gas samples (each side of residence) were collected as described in previous subsections. For comparison purposes, the air quality data were compared to a total of three groundwater sampling locations during the 2000 RI (CPT-01, CPT-02, and CPT-03) and one groundwater sampling location during the 2002 investigation (MW-03). A total of 23 investigative groundwater samples were collected from the four locations identified.

Temporary CPT well samples from the 2000 RI within Area D were originally collected to evaluate the extent of groundwater contamination at the site rather than evaluate potential vapor migration characteristics. A new well (MW-03) was installed during the 2002 Investigation to verify previous groundwater results. Residential Air Sampling location D was located adjacent to CPT-01/MW-03 so that, to the extent possible, vapor migration characteristics could be qualitatively and quantitatively evaluated. However, some uncertainty remains. For example, even though shallow groundwater samples were collected from CPT -01 located adjacent to the target residence, CPT-01 may only be located on the edge of the groundwater plume, and higher concentrations may be in the groundwater further west of CPT-01. A detailed uncertainty analysis is presented in Section 8.

Data Comparison Within Area D

The following compounds were found to exceed their respective target RBCs with a ratio above unity in air samples collected from the Area D target residence:

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

- Benzene (exceeds target RBC in indoor air samples; below target RBC in soil gas samples)
- Chloroform (exceeds target RBC in soil gas and indoor air samples)
- Ethylbenzene (exceeds target RBC in indoor air samples; below target RBC in soil gas samples)
- PCE (exceeds target RBC in indoor air samples; below target RBC in soil gas samples)
- TCE (exceeds target RBC in soil gas samples; below target RBC in indoor air samples)

Groundwater data summarized in Tables 5-11 and 5-12 indicate that of these five compounds, PCE was detected in an Area D groundwater sample during the 2002 investigation at only one location (MW-03), at a concentration of 0.1 µg/L. TCE was detected in Area D groundwater during both the 2000 and 2002 investigations at two locations (CPT-01 at 4 µg/L and MW-03 at 7.2 µg/L). CPT-01 and MW-03 are in close proximity located adjacent to the target residence. Benzene, chloroform, and ethylbenzene were not detected in Area D groundwater during either the 2000 or 2002 investigation.

Although they did not exceed target RBCs in air samples, the following chemical compounds were also detected in soil gas and indoor air samples below target RBCs at the Area D target residence:

- 1,1,1-TCA (soil gas and indoor air)
- 2-Butanone (soil gas and indoor air)
- Acetone (soil gas and indoor air)
- Freon 113 (soil gas and indoor air)
- m, p, & o Xylenes (soil gas and indoor air)
- Methylene chloride (soil gas and indoor air)
- Toluene (soil gas and indoor air)

1,1,1-TCA was detected in Area D groundwater samples at three locations (CPT-01, CPT-03, and MW-03) at concentrations ranging from 1.0 to 2.1 µg/L. Acetone and toluene were detected at three

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

locations (CPT-01, CPT-02, and CPT-03) at concentrations ranging from 15 to 470 µg/L and 0.7 to 2 µg/L, respectively. Xylenes were detected once (CPT-02) at a concentration of 0.6 µg/L. Methylene chloride was detected at one location (CPT-03) at a concentration of 0.5 µg/L. The compounds 2-butanone and Freon 113 were not detected in Area D groundwater samples.

The compound cis-1,2-DCE was not detected in soil gas or indoor air at the Area D target residence; however, this constituent has been detected in Area D groundwater as well as groundwater in Areas A, B/C, and upgradient.

Data Comparison Outside Area D

When comparing the compounds that were detected in Area D air samples at concentrations exceeding their target RBCs to groundwater data collected outside Area D, benzene was detected at a concentration of 0.5 and 0.6 µg/L in samples collected from CPT-09 (Area A) at depths of 35 feet below ground surface (bgs) and 88 feet bgs, respectively. Benzene was also detected in a sample collected from CPT–12 (Upgradient Area; at 81 feet bgs) at a concentration of 0.6 µg/L. CPT-09 is located approximately 4,440 feet (or 0.8 miles) northeast of Area D. CPT–12 is located approximately 8,400 feet (or 1.6 miles) northeast of Area D.

During the 2002 Investigation, chloroform was detected at a concentration of 0.23 µg/L in monitoring well MW-02, which is located in Area B/C and approximately 1,600 feet (or 0.3 miles) north of Area D. MW-02 was installed to replace residential well RW-08 (now sealed), where chloroform was detected at a concentration of 0.9 µg/L during the 2000 RI.

Ethylbenzene was detected in only one groundwater sample location outside Area D. A detection of 0.6 µg/L was measured in CPT-09 (Area A), approximately 4,300 feet (0.8 miles) north of Area D.

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

PCE has been detected in other permanent and temporary wells sampled during the 2000 and 2002 investigations outside of Area D. As shown in Tables 5-14 and 5-15, PCE was detected in 12 out of 19 groundwater samples during the 2002 Investigation. Historically, wells with positive detections of PCE include Area A wells MW-104S, MW-104D, MW-105S, and MW-105D; upgradient wells MW-103S, MW-103D, MW-107S, MW-107D, MW-109S, MW-109D; and Area B/C wells RW-04, RW-19, and MW-01A. PCE concentrations in these wells ranged from 0.1 µg/L to 9 µg/L. The maximum PCE concentration of 9 µg/L was detected in monitoring well MW-103S (upgradient), which is located approximately 9,000 feet (or 1.7 miles) northwest of Area D. During the 2000 RI, PCE was detected in two out of 22 residential well samples, two out of 73 temporary CPT well samples, and five out of 15 monitoring well samples.

Similarly, TCE has also been detected in other permanent and temporary wells sampled during the 2000 and 2002 investigations outside of Area D. As shown in Table 5-15, TCE was detected in six groundwater samples. Wells with positive detections of TCE include Area A wells MW-105S and MW-105D; upgradient wells MW-101D, MW-109S, MW-109D; and Area B/C wells RW-04, RW-07, RW-19, and MW-01A. TCE concentrations in these wells ranged from 0.24 µg/L to 6 µg/L. The maximum TCE concentration of 6 µg/L was detected in residential well RW-04 (Area B/C), which is located approximately 2,400 feet (or 0.45miles) north of Area D.

Of the constituents detected below target RBCs in Area D soil gas and indoor air, 1,1,1-TCA, acetone, and toluene have been detected at widespread locations in sitewide groundwater. The compound 2-butanone was detected once in an Area A groundwater sample (CPT-05 at 16 µg/L). Freon 113 has only been detected in two upgradient monitoring wells (MW-103S and MW-103D) approximately 9,900 feet from Area D. Xylenes have only been detected at one location outside Area D at distant upgradient location CPT-11.

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

5.5 QUALITY CONTROL ISSUES

Several VOCs were detected in equipment blank R03 collected during the May 2002 air sampling effort. The sample was one of the three equipment blank samples collected during this air sampling effort. All equipment blanks were collected at approximately the same time and under the same conditions. Throughout the 24-hour sampling period, all three samples were handled in more or less the same manner without any major deviations. However, only R03 had VOC detection. This VOC detections could have resulted due to one or more of the following reasons:

1. Leak in the cap during the shipment of the sample canister to WESTON.
2. Leaks in connections of the sampling apparatus.
3. Contaminated nitrogen source (ultra-high purity nitrogen canister shipped from the laboratory).
4. Incomplete seal of the canister during shipment to the laboratory.
5. Incomplete cleaning of the canister before shipment.

The most plausible reason for VOC detection could be leaks from the multiple joints used for assembling the sampling apparatus. The canisters were kept in the field vehicle to minimize the disturbance to the sampling unit. However, the connected canisters had to be rearranged due to the limited space available in the field vehicle, increasing the risk of a leak. This most likely could have led to the weakening of one or more connections, resulting in a leak. Any leaks during the shipment from and to the laboratory are unlikely because the initial and final pressures were consistent in the field and in the laboratory. VOCs due to contaminated nitrogen source is also unlikely because the nitrogen source was the same for all equipment blanks; yet, VOCs were detected only in sample R03. VOC detections due to incomplete cleaning is also unlikely because the analytical laboratory certified each canisters individually for this sampling effort.

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

5.6 PRECISION AND ACCURACY OF AIR SAMPLING DATA

Per the analytical laboratory, the precision or reproducibility of the air data is approximately 25% while the accuracy (how close the value is to the "real concentration") is estimated at somewhere between 60 and 140%. Although accuracy of the data cannot be determined from the field data, the precision of the data appears to be within 30 % using the laboratory duplicate data.

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

SECTION 6

AIR INTRUSION PATHWAY

Vapor intrusion is the result of volatilization of chemicals in buried wastes and/or contaminated groundwater that may migrate through subsurface soils and into indoor spaces of overlying buildings. These vapors, in some cases, may accumulate in dwellings or occupied buildings and reach levels that may pose significant human-health risk. The specific objectives of the air sampling program were: 1) to determine if VOCs related to the site groundwater contamination could be detected in ambient air, soil gas, and indoor air at four selected residences located at different areas within the Evergreen Manor site; 2) to determine if any VOCs detected in ambient air, soil gas and indoor air could pose a current health risk to the residents; and 3) to determine whether a relationship exists between the VOC-containing groundwater contaminant plume and any VOC concentrations measured in ambient air, soil gas, and indoor air.

Based on the generalized conceptual model presented in Appendix B of U.S. EPA's Vapor Intrusion Guidance (U. S. EPA, 2002b), the dominant vapor intrusion pathway appears to be vertical migration of vapors into soil gases and into residences and buildings through cracks and sumps. The rate and directions of vapor migrations can be affected by natural factors including, but not limited, to the local geology as well as seasonal and other variations in the subsurface due to changes in factors such as temperature, precipitation, and barometric pressures. Under certain geological conditions, increased gas production may accelerate and/or change vapor migration patterns. In addition, factors such as the size/number of cracks in the basement, degree of ventilation, presence or absence of utility conduits, and construction of the building also may contribute to the change in the rate and direction of vapor migration.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

6.1 VAPOR MIGRATION PATHWAYS

In general, models such as the Johnson and Ettinger model, used to model vapor intrusion, assume homogeneous geology with dominantly vertical vapor migration. Currently, very few publications address the horizontal components of the vapor migration pathway. U.S. EPA's *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathways from Groundwater and Soils* (U.S. EPA, 2002b) suggests that 100 feet, both laterally and vertically, is a reasonable estimate. This estimate is supported by empirical data from Colorado sites. Since none of the groundwater samples were collected within 100 feet of the residences, this is a data gap that should be considered as part of further sampling. The Vapor Intrusion guidance does not specifically address factors that may affect the degree of horizontal migration. However, some of the chemical- and site-specific factors that may increase or reduce the effect of both vertical and horizontal vapor migration are listed below:

- Water solubility, vapor pressure, Henry's Law constant, organic carbon partition coefficient, degradation rates, etc.
- Variations in subsurface physical properties such as temperature, soil porosity, bulk density, and moisture content.
- Ambient air temperature conditions, wind speed, and direction.
- Hydrogeologic characteristics, such as depth to water table, hydraulic gradients, seasonal fluctuations, flow rates, aquifer vadose zone permeability, presence/absence of confining layers, and recharge/discharge zones.
- The presence and/or magnitude of barriers to indoor vapor intrusion could cause soil gas and/or indoor air levels of a given VOC to vary. This includes both natural features and manmade objects. Winter frostline depths are variable and may also act as temporary barriers and alter normal air flow patterns towards negative pressure zones, such as basements. Similar to the above, the presence of higher-permeability channels (e.g., utility conduits) may channel vapors in any given direction and ground cover (vegetation vs. paved surfaces).
- The presence of geologic stratification such as an extensive fine-grained layers somewhere above the source aquifer, or preferential flow path created by structures

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

such as open fracture systems.

- Gas production, such as methane generation by high biological activity, increasing the vapor travel distances in the subsurface.

- Seismic waves due to earthquakes or vehicle traffic.

During past investigations, a predominantly homogenous sand unit without fine-grained stringers or layers has been observed underneath the Evergreen Manor site. Therefore, the probability of the vertical migration pathway being obstructed by the presence of laterally extensive fine-grained layers appears to be minimal at the site. Increased precipitation may cause the formation of a "barrier" which may obstruct the migration of vapors, reducing the effect of vapor migration/intrusion. On the other hand, increased precipitation may produce an opposite effect where an enhanced vapor migration occurs due to raised water table. For example, an increase in the indoor radon levels from 2 pCi/L to 152 pCi/L in a sand/gravel subsurface has been observed after rainfall (Hoffman and May, 1997). This observation suggests an increase in the horizontal migration of radon in a sand/gravel subsurface vapors with a rise in groundwater levels. Enhanced vapor migration due to gas production is a nonissue at the Evergreen Manor site and therefore, does not require special consideration for the increased vapor travel distances.

One of the major data gaps that appears to require special consideration at the Evergreen Manor site is the seasonal changes in the vapor migration pattern. In winter when the ground is frozen, a slight increase in horizontal migration is expected toward buildings. This effect is expected to stay local (within approximately 100 feet or so) because only a small pressure gradient is expected toward the buildings. In summer, higher temperatures may increase the rate of vapor migration. Considering the depth of the aquifer, it is not anticipated that the temperature of the aquifer varies to the extent that the mobility of vapor is affected significantly. While the change in the horizontal range may have been small, the consequences were not insignificant. Based on the foregoing discussion, it is clear that the significance of seasonal effects can only be determined by conducting seasonal air sampling.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

6.2 EVALUATION OF SITE-SPECIFIC GROUNDWATER TO AIR PATHWAY

The previous section summarized chemical constituents detected by media (i.e., soil gas, indoor air, groundwater) and discussed the spatial aspects of these data. In this section, each chemical constituent detected in air samples is evaluated with respect to site-wide groundwater to determine if a correlation exists between groundwater data and air concentrations at the target residences. The evaluation discusses potential localized correlation within the residential subdivision (i.e., Areas A through D) as well as potential effects of more distant groundwater contamination on air sample data. Brief descriptions of potential data gaps and limitations (e.g, uncertainties) are also included. A detailed discussion on uncertainties is presented in Section 8.

6.2.1 Air Constituents Detected Above Target RBCs

The constituents detected in indoor air and soil gas samples at concentrations above target RBCs are discussed separately in this subsection. These constituents include benzene, chloroform, ethylbenzene, methylene chloride, PCE, and TCE. These constituents are also evaluated further in the Streamlined Risk Evaluation (Section 7).

Benzene

Exposure to benzene represents one of the more prominent potential health risks since it was detected at concentrations exceeding the target RBC in all indoor air samples (see Tables 5-2 through 5-5). Benzene was also found to be present in ambient air samples collected at the site at concentrations above U.S. EPA Region IX ambient air PRGs, indicating a potential extraneous source that may be contributing to indoor air and soil gas concentrations at these residences.

Historically, benzene has not been identified as a major groundwater contaminant at the Evergreen Manor site. Benzene has been only detected at low levels (maximum concentration 0.6 µg/L) in

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

groundwater and is not a widespread contaminant. As indicated in Table 5-15, benzene has only been detected in three out of a total of 127 groundwater samples collected. The only three positive detections, during the 2000 investigation, were in samples collected from temporary CPT wells: two associated with Area A (CPT-09, along McCurry Road at a depth of 35 ft bgs and 88 ft bgs) and one in the upgradient area (CPT-12, along Route 251 near Rockton Road at a depth of 81 ft bgs). Sampling location CPT-09 is located approximately 580 feet, 2,600 feet, 2,350 feet, and 4,300 feet, from Residences A, B, C, and D, respectively. Sampling location CPT-12 is located approximately 4,700 feet, 6,600 feet, 6,600 feet, and 8,300 feet from Residences A, B, C, and D, respectively. These distances are well over 100 feet which is a reasonable estimate for lateral vapor migration. At each of these locations, multiple groundwater samples were collected from varying depths with only one resulting benzene detection each. Benzene has not been detected in residential wells or monitoring wells either during the 2000 RI or the 2002 investigation. Both CPT samples were collected at temporary roadside locations while traffic was present, suggesting the possibility that the detected benzene may have been related to vehicle exhaust.

Given the number of groundwater samples collected across the site and the infrequent benzene detections in distant sampling locations (>100 feet), the likelihood of benzene migrating from groundwater into indoor air of the target residences is minimal. However, elevated benzene levels (greater than the target RBC) in some of the soil gas and indoor air samples indicates that some of the benzene in indoor air measurements may be site related, since groundwater at the water table/vadose zone interface has not been adequately characterized within the residential area. Before concluding that benzene is site related, due consideration must also be given to the relationship between benzene detections in indoor air samples and extraneous sources such as emissions from vehicles driven in and out of the attached garages and gasoline products stored in the garages. Given the known data gaps/limitations, the origin of benzene in soil gas and indoor air samples remains uncertain. Nevertheless, benzene poses significant health risks and is retained and evaluated further in the Streamlined Risk Evaluation (Section 7).

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Chloroform

Chloroform was detected at concentrations exceeding the target RBC in indoor air samples collected from all residences as well as in three soil gas samples collected from Area B residence and in one soil gas sample collected from the Area D residence.

Historically, low levels of chloroform have been detected in the groundwater samples collected from residential well RW-08 (now sealed) and MW-02 (replacement well for RW-08) during the 2000 and 2002 investigations, respectively. These wells are located in Areas B and C (central residential area) and are approximately 100 feet apart from each other. Residential well RW-08, in which chloroform was detected at a concentration of 0.9 µg/L is approximately 2,400 feet, 760 feet, 290 feet, and 2,050 feet from Residences A, B, C, and D, respectively. Monitoring well MW-02, in which chloroform was detected in 0.23 µg/L, is located approximately 2,350 feet, 720 feet, 470 feet, and 1,600 feet from Residences A, B, C, and D, respectively. Since chloroform has been detected in only one of 22 residential wells and one of 11 monitoring well locations, the presence of chloroform appears to be localized. For this reason, and because chloroform was not detected in any wells outside the residential area, chloroform has not been historically associated with the Evergreen Manor site groundwater.

Given the number of groundwater samples collected across the site, the localized presence of chloroform, the location of detected chloroform in groundwater with respect to target residences, and its lack of detections across the Evergreen Manor site, there appears to be minimal potential for chloroform to migrate from groundwater to indoor air of target residences. Chloroform was detected at low levels in soil gas samples collected from Residences C and D, and at higher levels in Area B. In groundwater, however, chloroform has been detected only in the vicinity of Home C. Therefore, the presence of chloroform in indoor air and soil gas samples is most likely due to household related activities such as discharge of wastewater into septic systems and disinfection of private wells with chlorine bleach or tablets. It should be noted that chloroform is widely used in many household

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

disinfection products and is also a byproduct of municipal water chlorination and ultimately finds its way into domestic wastewater. Chloroform has been detected in the NPPWD water distribution system at concentrations ranging from 1 µg/L to 12 µg/L, with trihalomethanes detected as high as 32 µg/L (Appendix E). Also, Region IX PRGs indicate that chloroform in household water can cause a one-in-one-million inhalation risk at a concentration of 0.71 µg/L. However, since chloroform exceeds the target RBC in some soil gas and indoor air samples, it is retained and evaluated further in the Streamlined Risk Evaluation (Section 7).

Ethylbenzene

Ethylbenzene was detected at concentrations exceeding the target RBC in several indoor air and soil gas samples collected from Residences A, B, C, and D. Ethylbenzene was also detected in one of the duplicate ambient air samples. Historically, ethylbenzene was detected in groundwater only once at a concentration of 0.6 µg/L in the sample from CPT-09 (collected at 88 feet bgs) in the 2000 investigation. Sampling location CPT-09 is located approximately 580 feet, 2,600 feet, 2,350 feet, and 4,300 feet from Residences A, B, C and D, respectively. These distances significantly exceed the "reasonable vapor-migration distance" (U.S. EPA, 2002b) of 100 feet.

Given the number of groundwater samples collected across the site, the location of detected ethylbenzene in groundwater with respect to target residences, and the general lack of detected ethylbenzene in groundwater, the likelihood of ethylbenzene migrating from the groundwater into area residences is minimal. However, presence of ethylbenzene at significant levels in the soil gas and indoor air samples, with high soil gas concentrations at some residences, indicates that ethylbenzene may be site related, since groundwater at the water table/vadose zone interface has not been adequately characterized within the residential area. Before concluding that ethylbenzene is site-related, due consideration must also be given to the relationship between ethylbenzene detections in soil gas and indoor air samples, and extraneous sources such as emissions from vehicles driven in and out of the attached garages and gasoline products stored in the garages. Based

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

on conflicting groundwater and air data, it is uncertain whether vapor intrusion pathway for ethylbenzene is complete at the Evergreen Manor site. Therefore, ethylbenzene is retained and evaluated further in the Streamlined Risk Evaluation (Section 7).

Methylene Chloride

Methylene chloride was detected at concentrations exceeding the target RBC in one indoor air sample from the Area A residence and in both of the indoor air samples from Area B residence. Methylene chloride was not detected in either of the ambient air samples collected from Area C. Historically, methylene chloride was detected only once in groundwater at a concentration of 0.5 µg/L in the sample from CPT-03 sample collected at a depth of 84 ft bgs during the 2000 investigation. CPT-03 is located approximately 3,500 feet, 1,550 feet, 1,600 feet and 760 feet from Residences A, B, C and D, respectively.

Given the number of groundwater samples collected across the site, the location of detected methylene chloride in groundwater with respect to target residences, and the general lack of detected methylene chloride in groundwater, there is minimal potential for methylene chloride to migrate from groundwater into indoor air of the target residences. Also, methylene chloride in indoor air was reported in Homes A and B at concentrations that were one to two orders of magnitude higher than concentrations reported in soil gas. Therefore, the presence of methylene chloride in indoor air and soil gas samples is most likely due to household-related activities such as storage of paint and paint strippers, which contain methylene chloride. Nevertheless, since methylene chloride exceeded the target RBC in the indoor air samples, and was found at low levels in soil gas samples, it is retained and evaluated further in the Streamlined Risk Evaluation (Section 7).

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

PCE

PCE was detected at concentrations exceeding the target RBC in all indoor air samples collected from all four residences and in one soil gas sample collected from the Area C residence. PCE was also detected in ambient air samples collected from Area C. PCE has been detected in the Evergreen Manor groundwater at concentrations ranging from 0.6 to 9 µg/L during the 2000 RI and 0.1 to 5.9 µg/L during the 2002 Investigation. During the 2000 and 2002 investigative efforts, the highest PCE concentration was observed in the samples collected from MW-103S (upgradient, closer to the suspected source area). Figure 6-1 shows the distribution of PCE detections in air and groundwater samples. From the figure, a decreasing trend of PCE in groundwater from 2000 and 2002 is apparent. Based on this information, it is possible that PCE in soil gas and indoor air may be related to groundwater contamination underlying the residential areas. However, because potential extraneous sources such as PCE-containing paints, polishes, cleaners, lubricants, etc, stored in the basements and garages of some residences, could also contribute to PCE concentrations and since groundwater at the water table/vadose zone interface has not been adequately characterized within the residential area, it is uncertain whether the presence of PCE in soil gas and indoor air samples is household related or site related (i.e., groundwater). Since PCE exceeded the target RBC in the soil gas and indoor air samples, it is retained and evaluated further in the Streamlined Risk Evaluation (Section 7).

TCE

TCE was detected at concentrations exceeding the target RBC in one soil gas sample collected at each of Area B, Area C, and Area D residences. No TCE was detected in either of the ambient air samples collected from Area C. TCE has been detected in the Evergreen Manor groundwater at concentrations ranging from 0.7 to 6 µg/L during the 2000 RI, and 0.18 to 7.2 µg/L during the 2002 Investigation. During the 2000 RI, the highest TCE concentration was observed in the samples collected from RW-04 (Area B/C) and CPT-01 (Area D). In 2002, the highest concentration was

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

observed in the sample collected from a newly installed monitoring well, MW-03 (Area D). Based on this information, it is possible that TCE in soil gas and indoor air may be related to groundwater contamination underlying the residential areas. However, because potential extraneous sources such as TCE-containing paints, polishes, cleaners, lubricants, etc, stored in the basements and garages of some residences, could also contribute to TCE concentrations and since groundwater at the water table/vadose zone interface has not been adequately characterized within the residential area, it is uncertain whether the presence of TCE in air samples is due to household related activities or site related activities. Since TCE exceeded the target RBC in the soil gas samples, TCE is retained and evaluated further in the Streamlined Risk Evaluation (Section 7).

6.2.2 Air Constituents Detected Below Target RBCs

The constituents detected in indoor air and soil gas samples at concentrations below target RBCs are discussed separately in this subsection. These constituents include 1,1,1-trichloroethane, 2-butanone, acetone, cis-1,2-DCE, Freon 113, xylenes, and toluene. While these constituents did not exceed target RBCs, these constituents are evaluated in the Streamlined Risk Evaluation (Section 7) to ensure that potential cumulative noncancer and cancer effects are considered.

1,1,1-Trichloroethane (1,1,1-TCA)

1,1,1-TCA was detected in all of the soil gas and indoor air samples at concentrations that did not exceed the target RBC. 1,1,1-TCA was not detected in either of the ambient air samples. As shown in Table 5-15, 1,1,1-TCA was detected in 41 out of 127 groundwater samples collected during the 2000 RI and the 2002 Investigation. The maximum concentration observed was 5 µg/L. Although 1,1,1-TCA was detected both in air and groundwater samples, initial comparison of these concentrations with most conservative RBCs showed minimal risk of 1,1,1-TCA on human health.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

2-Butanone

2-Butanone was detected in all the soil gas, indoor air, and ambient air samples at concentrations that did not exceed the target RBC. As shown in Table 5-15, 2-butanone was detected in 11 out of 127 groundwater samples collected during the 2000 and 2002 investigations. The maximum concentration was 16 µg/L. 2-Butanone is a common laboratory contaminant and was also detected in field blank samples at concentrations up to 12 µg/L during 2000 RI investigation, suggesting that these detections may be due to laboratory contamination. Although 2-butanone was detected in both air and groundwater samples, initial comparison of these concentrations with the most stringent RBCs showed minimal risk of 2-butanone on human health.

Acetone

Acetone was detected in all soil gas, indoor air, and ambient air samples at concentrations that did not exceed the target RBC. As shown in Table 5-15, acetone was detected in 34 out of 127 groundwater samples collected during the 2000 RI and the 2002 Investigation. The maximum concentration was 470 µg/L. Acetone is a common laboratory contaminant and was also detected in field blank samples at concentrations up to 12 µg/L during 2000 RI investigation, suggesting that some of the groundwater detections may be due to laboratory contamination. Acetone is also a common household solvent used in products such as nail-polish remover. Although acetone was detected in both air and groundwater samples, initial comparison of these concentrations with the most conservative RBCs indicate minimal risk to human health.

Cis-1,2-DCE

Cis-1,2-DCE was not detected in any of the soil gas, indoor air, or ambient air samples collected in 2002. During the 2000 and 2002 groundwater investigations, cis-1,2-DCE was detected in 12 out of 127 samples at a maximum concentration of 2 µg/L. However, since cis-1,2-DCE was not

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

detected in air and soil gas samples, no risk due to cis-1,2-DCE appears to be present at these residences. Therefore, cis-1,2-DCE was not evaluated further.

Freon 113

Freon 113 was detected in all soil gas, indoor air, and ambient air samples at concentrations that did not exceed the target RBC. As shown in Table 5-15, Freon 113 was detected in 4 out of 127 groundwater samples collected during 2000 and 2002 investigations. The maximum concentration was 300 µg/L. These detections were found in the upgradient wells, but not in the groundwater samples collected within the target residential areas. Although Freon 113 was detected in both air and groundwater samples, initial comparison of these concentrations with the most conservative RBCs showed minimal risk of Freon-113 on human health.

Xylenes (includes m, p & o isomers)

Xylenes were detected in all soil gas, indoor air, and ambient air samples at concentrations that did not exceed the target RBC. As shown in Table 5-15, xylenes were detected in only three out of 127 groundwater samples collected during 2000 and 2002 investigations. The maximum concentration was 0.7 µg/L. Although xylenes were detected in both air and groundwater samples, initial comparison of xylene concentrations with the most conservative RBCs indicate minimal risk of xylene on human health.

Toluene

Toluene was detected in all soil gas and indoor air samples at concentrations that did not exceed the target RBC. A small amount of toluene was detected in both ambient air samples; however, it was validated as nondetect because the concentrations were less than 5 times the concentrations reported in the associated blank sample. As shown in Table 5-15, toluene was detected in 69 out of 127

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

groundwater samples collected during 2000 and 2002 investigations, with the maximum concentration of 3 µg/L. During the 2000 RI investigation, toluene was detected in method and field blanks at concentrations up to 2 µg/L, suggesting that the source of toluene may be extraneous, and not the Evergreen groundwater. Although toluene was detected both in air and groundwater samples, initial comparison of toluene concentrations with the most conservative RBCs indicate minimal risk of toluene on human health.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

SECTION 7
STREAMLINED RISK EVALUATION

This section presents a human health streamlined risk evaluation (SRE) for the air sampling conducted at four residences within the Evergreen Manor site. The SRE was conducted to determine whether there is evidence for migration of VOCs in the groundwater contaminant plume into homes in the area by the vapor intrusion pathway, and whether there is evidence that any of these compounds can be found at highly elevated levels indoors. Risk-based concentrations (RBCs) developed from two sources–preliminary remediation goals (PRGs) for ambient air (U.S. EPA, 2002a) and generic target air screening levels for vapor intrusion to indoor air (U.S. EPA 2002b) - were used in the streamlined risk evaluation.

The SRE represents a conservative, streamlined approach to evaluating potential health impacts and involves using proportion equations to estimate impacts to humans. Using the SRE approach significantly reduces the effort typically required in human health risk assessment (HHRAs) to compile toxicity values and appropriate exposure and intake assumptions, to conduct fate and transport modeling, and to estimate daily intakes, cancer risks, and noncancer adverse health effects. Use of the SRE approach, rather than a baseline HHRA, is appropriate at this time since only one round of sampling was conducted in four homes within the Evergreen Manor groundwater plume.

The following U.S. EPA risk assessment guidance was followed in development of the SRE:

- Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual, (Part A) (U.S. EPA 1989).
- Region IX Preliminary Remediation Goals Memorandum (U.S. EPA 2002a).
- Draft Guidance for Evaluation the Vapor Intrusion into Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance) (U.S. EPA, 2002b).

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

The SRE was conducted specifically to account for potential multi-chemical exposure to VOCs, which was not considered in the preliminary evaluation discussed in Section 5. Though select carcinogenic VOCs and all noncarcinogenic VOCs did not exceed screening levels, all detected VOCs are included in the SRE to evaluate cumulative noncancer and cancer effects. The methods used to conduct the SRE are discussed in the remaining subsections. Risk-based concentrations (RBCs) are discussed in Subsection 7.1, and the four steps of Streamline Risk Evaluation are described in Subsections 7.2 through 7.5. Uncertainties associated with the SRE are discussed in Subsection 8.5.

7.1 DEVELOPMENT OF RISK-BASED CONCENTRATIONS

RBCs developed from two sources–PRGs for ambient air (U.S. EPA, 2002a) and generic target air screening levels for vapor intrusion to indoor air (U.S. EPA 2002b)–were used in the risk evaluation. These RBCs are discussed below.

7.1.1 Preliminary Remediation Goals

U.S. EPA Region IX PRGs (U.S. EPA 2002a) were used to represent RBCs for ambient air. These PRGs represent RBCs, expressed as micrograms of contaminant per cubic meter of air ($\mu g/m^3$), that correspond to a cancer risk of 10^{-6} or a hazard quotient (HQ) of 1 based on standardized equations (U.S. EPA 1989) that combine exposure assumptions with U.S. EPA toxicity data. The PRGs are developed for inhalation exposure to residential ambient air. Generally, PRGs are developed and updated annually by U.S. EPA Region IX.

An attenuation factor of 0.1 was used to convert the ambient air PRG to a soil gas screening level, following methodology (discussed below) used to develop soil gas screening levels in the Vapor Intrusion Guidance (U.S. EPA, 2002b).

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

7.1.2 Vapor Intrusion Guidance (VIG) Values

Vapor intrusion is the migration of volatile chemicals from the subsurface into overlying buildings. Volatile chemicals in buried wastes and/or contaminated groundwater can emit vapors that may migrate through subsurface solid and into air spaces of overlying buildings. In extreme cases, the vapors may accumulate in dwellings or occupied buildings to levels that may pose near-term safety hazards, acute health effects, or aesthetic problems. In most cases, however, the chemical concentrations are low, or depending on site-specific conditions, vapors may not be present at detectable concentrations (U.S. EPA, 2002b).

To address the potential risks from subsurface vapor intrusion into buildings, U.S. EPA (2002b) has developed guidance that addresses potential risks from vapor intrusion into a residence. As part of the guidance, U.S. EPA has developed VIG values for evaluating exposure through vapor intrusion. These values for inhalation of indoor vapors are based on a target risk level of 1×10^{-6} for estimating cancer risks and a target HQ of 1 for estimating noncancer effects. They were developed based on standard, conservative exposure and chemical-specific toxicity assumptions and are based on adult exposure. An average adult breathes 20 cubic meters per day (m^3/day) of air and weighs 70 kilograms (kg) (U.S. EPA, 1991a). An adult is assumed to live in the same residence for 30 years and is expected to spend 350 days of each year in the residence (U.S. EPA, 1991a).

The soil gas screening level concentrations were calculated to correspond to the target indoor air concentrations using media-specific attenuation factors. Shallow soil gas (e.g., subslab gas and soil gas measured at 5 feet or less from the base of the foundation) is conservatively assumed to intrude into indoor spaces with an attenuation factor (AF) of 0.1. Since the soil gas samples collected in this investigation were collected at approximately 8 to 9 feet below ground surface at depths consistent with the base of each home's foundation, it was considered appropriate to adust the soil gas screening levels using an AF of 0.1.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

7.2 SELECTION OF CHEMICALS OF POTENTIAL CONCERN

During the initial screening in Section 5, none of the non-carcinogenic VOCs and only a few carcinogenic VOCs exceeded target indoor air concentrations. While not all VOCs exceeded target indoor air concentrations, all VOCs are used to evaluate cumulative risk in the SRE. The carcinogenic chemicals of potential concern (COPCs) include benzene, chloroform, ethylbenzene, methylene chloride, PCE, and TCE. PCE and TCE are contaminants that are associated with Evergreen Manor groundwater. Noncarcinogenic compounds detected in air samples included 1,1,1-trichloroethane, 2-butanone, acetone, cis-1,2-dichloroethene, Freon 113, m,p-xylene, o-xylene, and toluene.

7.3 EXPOSURE ASSESSMENT

An exposure assessment typically involves a detailed analysis of potentially exposed human receptors, selection of appropriate intake assumptions, estimation of exposure point concentrations (EPCs), and estimation of chemical daily intakes. However, for this SRE, many of these steps have already been incorporated into the development of the RBCs and were therefore not performed specifically as part of the SRE. This subsection is thus limited to a discussion of potentially exposed human receptors, complete and significant exposure pathways, and EPCs.

The potential receptors are the residents inhabiting houses within the Evergreen Manor VOC-contaminated groundwater plume. These residents may be exposed to VOCs in ambient air and from subsurface vapor intrusion. These exposure pathways are consistent with those used to develop PRGs (U.S. EPA, 2002a) and vapor intrusion screening levels (U.S. EPA, 2002b). Both basement level and first-floor air samples were collected from each residence. The maximum detected concentration of a contaminant, regardless of sample location, was used as the exposure point concentration. "Exposure point" describes a location or area, often hypothetical, where human

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

receptors might encounter one or more contaminated environmental media. The concentrations of COPCs assumed to be present at an exposure point are referred to as EPCs.

7.4 TOXICITY ASSESSMENT

The toxicity assessment mainly involves compiling toxicity values. These elements of a toxicity assessment have already been incorporated into the development of the RBCs and are therefore not specifically conducted in the SRE. Toxicity values (inhalation RfDs and inhalation SFs) used by U.S. EPA (2002a; 2002b) to develop PRGs and vapor intrusion screening levels were obtained from the following toxicological sources:

- Integrated Risk Information System (IRIS)
- National Center for Environmental Assessment (NCEA)
- Health Effects Assessment Summary Table (HEAST)

7.5 RISK CHARACTERIZATION

The risk characterization estimates the potential excess lifetime cancer risk and the potential for noncancer adverse health effects for a residential receptor to COPCs in air. This subsection summarizes the methods used to estimate excess lifetime cancer risks and noncancer effects and presents the results of the SRE.

7.5.1 Estimation of Cancer Risk

For cancer risk estimates, the EPC was divided by the RBC concentrations. This ratio was multiplied by 10^{-6} to estimate chemical-specific risk for a reasonable maximum exposure (RME) scenario. For multiple pollutants, the risk for each chemical was added. Note that carcinogens may also have an associated noncancer RBC. Cancer risks were estimated using the following equation:

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

$$CR_i = (EPC_i / cRBC_i) \times 10^{-6}$$

Where:

CR_i	=	Site-related excess lifetime cancer risk for chemical i (unitless)
EPC_i	=	Exposure point concentration for chemical i (mg/kg)
$cRBC_i$	=	Cancer-based RBC (mg/kg)
10^{-6}	=	Value of the RBC cancer risk (the cancer risk associated with all cancer RBCs is 10^{-6}) (unitless)

7.5.2 Estimation of Noncancer Effects

Several of the VOCs evaluated also produce noncancer effects; thus noncancer effects are also considered. Additionally, all noncarcinogenic VOCs were used in calculating noncancer effects. For noncancer hazard estimates, the EPC is divided by its respective noncancer RBC, and ratios for multiple contaminants are summed. The cumulative ratio represents a noncarcinogenic hazard index (HI). A hazard index of 1 or less is generally considered "safe." A ratio greater than 1 suggests the need for further evaluation. Noncancer effects are estimated for each COPC using the following proportion equation:

$$HQ_i = (EPC_i / nRBC_i \text{ at } HQ = 1)$$

Where:

HQ_i	=	Site related hazard quotient for chemical i (unitless)
EPC_i	=	Exposure Point Concentration for chemical i (mg/kg)
$nRBC_i$	=	Noncancer RBC for chemical I (mg/kg).
1	=	Value of the RBC hazard quotient (the hazard quotient for all noncancer RBCs is 1) (unitless).

7.5.3 Streamlined Risk Evaluation Results

This subsection summarizes the SRE results, both overall and by individual residence. To aid in the interpretation of the results, U.S. EPA guidance on risk levels considered protective of human health are presented. In the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), U.S. EPA states that "for known or suspected carcinogens, acceptable exposure levels are generally

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

concentration levels that represent an excess upper bound lifetime cancer risk to an individual between 10^{-4} and 10^{-6} (Title 40 of the *Code of Federal Regulations* [CFR] Part 300.430). Discussions in this SRE are based on 10^{-6} and 10^{-4} as the risk management range for adverse cancer effects. U.S. EPA uses the 10^{-6} level as a point of departure for corrective action goals (called preliminary remediation goals) for cancer risks from contaminated sites. While the 10^{-6} starting point expresses U.S. EPA's preference for setting cleanup levels at the more protective end of the risk range, these levels may be revised within the risk management range based on the consideration of appropriate factors including exposure factors, uncertainty factors, and technical factors. The U.S. EPA directive entitled "Role of Baseline Risk Assessment in the Superfund Remedy Selection Decisions" states that where cumulative cancer risks to an individual based on the RME for both current and future land use is less than 10^{-4} and no adverse noncancer effects exist, immediate action generally is not warranted unless adverse environmental impacts exist (U.S. EPA 1991b). For evaluating noncarcinogens, a segregated noncancer HI of 1 or less indicates that little or no potential exists for adverse health effects (U.S. EPA, 1989).

7.5.3.1 Overall Evaluation

Soil Gas Measurements

The soil gas concentrations of the VOCs detected in the four samples from outside of homes within the Evergreen Manor site relate to a potential indoor cancer risk of 9.7×10^{-6}(almost 1×10^{-5}) to 9.6×10^{-5} (almost 1×10^{-4}) (Table 7-1a). These risks are primarily due to TCE, PCE, and benzene. The potential cancer risks for only TCE and PCE ranged from 1.3×10^{-7} to 8.4×10^{-5}. These risk estimates do not exceed U.S. EPA's trigger levels for immediate action, but are within U.S. EPA's risk management range of 1×10^{-4} to 1×10^{-6} (one additional case of cancer for every 10,000 to one million people similarly exposed). The noncancer HIs did not exceed unity (Table 7-1b).

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Indoor Air Measurements

The indoor air concentration of possibly site-related VOCs detected in the four samples collected inside homes within the Evergreen Manor site relate to a potential cancer risk 2.3×10^{-6} (two additional cases of cancer for every one million people similarly exposed) to 5.7×10^{-5} (five to six additional cases of cancer for every 100,000 people similarly exposed) (Table 7-1a). These risks are primarily due to PCE and benzene. TCE and PCE are known Evergreen Manor groundwater contaminants; the cancer risk for these two constituents alone ranged from 1.0×10^{-6} to 1.6×10^{-5}. These risk estimates do not exceed U.S. EPA's trigger levels for immediate action, but are within U.S. EPA's risk management range 1×10^{-4} to 1×10^{-6} (one additional case of cancer for every 10,000 to one million people similarly exposed).

The overall potential cancer risk from all VOCs detected in the homes ranges from 1×10^{-4} to 1×10^{-5}. These risks are also within U.S. EPA's risk management range. At the home with the greatest risk (i.e., Residence D with a risk estimate of 1×10^{-4}), about 92% of the risk is due to benzene that is believed to be associated with residents parking in and entering their home through an attached garage where two to three containers of petroleum products are stored.

U.S. EPA believes that the majority of benzene detected at this residence is not site-related. Benzene concentrations in this residence were two times higher on the first floor where the door to the attached garage is located than they were in the basement, and benzene concentrations were nine to 13 times higher indoors than benzene concentrations in soil gas (1.5 $\mu g/m^3$ in soil gas versus 9 $\mu g/m^3$ in the basement and 21 $\mu g/m^3$ on the first floor).

Noncancer risks from all VOCs were found at two of the four residences with HIs ranging from 2.3 to 5.46. When household and public-water-supply-related chemicals are excluded at Residence B, noncancer risks were estimated at an HI of 1.13, mostly attributable to benzene on the first floor where the door to the attached garage is located. These residents also park in their attached garage and store three 5-gallon gasoline containers in the garage. These stored containers may be

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

influencing the benzene concentrations inside the residence. However, benzene measurements detected in the basement do not pose a noncancer risk (i.e., HQ = 0.47). Because similar levels of benzene were also detected in soil gas samples collected at this residence, some of the benzene may be site-related. The residence with the noncancer risk of 5.46 also has the highest potential cancer risk. The majority of the risk is believed to be due to household-related activities involving benzene, which had an HQ of 3.55. At all residences, the combined noncancer risks for only TCE and PCE do not exceed an HI of 1.

Non-site-related chemicals contributing to cancer and noncancer risks are methylene chloride, a solvent used in paint strippers, and chloroform, a byproduct of municipal water chlorination and household use of chlorine. Benzene and ethylbenzene may not be not site related.

7.5.3.2 Individual Residences

Residence A (Mathew Avenue)

Potential indoor air cancer risks from VOCs measured in soil gas were 1.6×10^{-5} with no noncancer risks. The risk is primarily due to benzene. Chloroform was not detected in Residence A soil gas. The potential cancer risk for only PCE measured in soil gas was 1.3×10^{-7}.

Potential indoor air cancer risks from VOCs measured in indoor air were 1.5×10^{-5} for all VOCs and 6.4×10^{-6} excluding chloroform and methylene chloride (Table 7-2), which are most likely household and public-water-supply related. The remaining risk is primarily from benzene, which was detected in the soil gas at 27 times the indoor air concentration. The potential cancer risk for only PCE was 1×10^{-6}. No noncancer risks were present.

The soil gas risk estimates for PCE appear to underestimate the actual measured indoor air concentrations and potential risk. This difference may be due to the distance between the house and the soil gas sample location, which is discussed in the uncertainty analysis. In addition, extraneous

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

sources of PCE within the residence may also contribute to the indoor air concentrations of this chemical. Further information on the uncertainty associated with individual residence risk estimates is provided in the uncertainty analysis (Section 8).

Residence B (Straw Lane and Blue Spruce Drive)

Potential indoor air cancer risks from VOCs in soil gas are 1.0×10^{-5} for all chemicals and 6.6×10^{-6} excluding chloroform, which is most likely household and public-water-supply related. The remaining risk is primarily due to benzene and TCE. The potential cancer risk for only PCE and TCE measured in soil gas was 3.7×10^{-6}. No noncancer risks were present.

Potential cancer risks from VOCs measured in indoor air was 8.1×10^{-5} for all chemicals and 5.4×10^{-5} excluding chloroform and methylene chloride (Table 7-1a; Table 7-3), which may be related to household and public-water-supply uses. The remaining risks are mostly due to benzene and PCE. Benzene may be partially household related but was also detected at similar levels in soil gas (5.3 $\mu g/m^3$ in soil gas, 2.9 $\mu g/m^3$ in the basement and 7.0 $\mu g/m^3$ on the first floor). The potential cancer risk for only PCE in indoor air was 1.6×10^{-5}.

The cumulative noncancer risk was found to be 2.3 (Table 7-1b). This risk is primarily from petroleum related chemicals (i.e., benzene, toluene, ethylbenzene, and xylenes, also known as BTEX compounds) on the first floor where the residents park in the attached garage and store three 5-gallon gasoline containers next to the door to the attached garage. However, since similar levels of BTEX compounds were also detected in the soil gas collected at this residence, some of these BTEX compounds may be site-related. Chloroform and the majority of the methylene chloride are not believed to be site-related chemicals. Chloroform is most likely a byproduct of municipal water chlorination. Chloroform has been detected in the municipal water distribution system as high as 12 $\mu g/L$ over the past few years. Indoor air concentrations of methylene chloride were more than two orders of magnitude (120 times) higher than soil gas concentrations. Paints, polishes, cleaners, lubricants, paint removers, spot removers, etc. are stored in the basement at this residence. In

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

addition, methylene chloride concentration was 3.5 times higher in basement than 1st floor (99 and 28 $\mu g/m^3$, respectively), indicating that a source may exist in the basement. When evaluating only site-related chemicals and considering only basement concentrations of BTEX components (to omit household related inputs of these compounds), no noncancer risks were present (Table 7-3b).

The soil gas risk estimates for PCE and TCE appear to underestimate the actual measured indoor air concentrations and potential risk. This difference may be due to the distance between the house and the soil gas sample location, which is discussed in the uncertainty analysis. This could also be due to extraneous sources of PCE within the residence may also contribute to the indoor air concentrations of this chemical. Further information on the uncertainty associated with individual residence risk estimates is provided in the uncertainty analysis (Section 8).

Residence C (Wagon Lane Court)

Potential indoor air cancer risks from soil gas were 9.6×10^{-5} for all chemicals and 9.6×10^{-5} (almost 1×10^{-4}) excluding chloroform. The potential cancer risk for only PCE and TCE measured in soil gas was 8.4×10^{-5}. No noncancer risks were found.

Potential cancer risks from VOCs in indoor air were 1.3×10^{-5} for all chemicals and 9.1×10^{-6} (almost 1×10^{-5}) excluding chloroform (Table 7-4), which is most likely household- and public-water-supply related. The risk due to PCE and benzene was 8.5×10^{-6}. The potential cancer risk for only PCE in indoor air was 4.7×10^{-6}. No noncancer risks were found.

The soil gas risk estimates for PCE and TCE appear to overestimate the actual measured indoor air concentrations and potential risk. This difference may be due to either the distance between the house and the soil gas locations or the attenuation of chemicals once inside a residence, or both. Further information on the uncertainty associated with individual residence risk estimates is provided in the uncertainty analysis (Section 8).

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Residence D (Wagon Lane and Tanawingo)

Potential indoor air cancer risks from soil gas were 9.7×10^{-6} for all chemicals and 9.2×10^{-6} (almost 1×10^{-5}) without chloroform. The remaining risk is primarily due to TCE. The potential cancer risk for only PCE and TCE measured in soil gas was 8.4×10^{-6}. No noncancer risks were found.

Potential cancer risks from all VOCs in indoor air were 1.1×10^{-4} with a noncancer risk of 5.46 for all chemicals (Table 7-5 and Table 7-1b). These values mostly stem from benzene and chloroform that are most likely household and public-water-supply related. Without benzene, ethylbenzene (another household-related petroleum product) and chloroform risks decrease to 2.3×10^{-6} with no noncancer risks. Benzene is not believed to be solely site-related since the maximum indoor air concentration of benzene was 13 times higher than the maximum soil gas concentration at the home (1.6 $\mu g/m^3$ in soil gas compared to 22 $\mu g/m^3$ on the first floor). Also, residents park in the attached garage and store a leaf blower in the garage. In addition, two to three containers of petroleum products are also stored in the garage which were not removed prior to air sampling activities. Benzene concentrations were more than two times higher on the first floor where the door to the garage is closer than they were in the basement (22 $\mu g/m^3$ on the first floor compared to 9.3 $\mu g/m^3$ in the basement). Similarly, the high concentrations of ethylbenzene detected in the indoor air may be due to petroleum products stored in the garage. As in the case with benzene, the maximum indoor ethylbenzene concentration was four times greater than in soil gas (1.9 $\mu g/m^3$ in soil gas and 8.1 $\mu g/m^3$). Ethylbenzene concentration on the first floor (8.1 $\mu g/m^3$) was much higher than the basement (4.8 $\mu g/m^3$). The remaining risk is primarily due to PCE. The potential cancer risk for only PCE in indoor air was 1.9×10^{-6}.

The soil gas risk estimates for PCE and TCE appear to overestimate the actual measured indoor air concentrations and potential risk. This difference may be due to either the distance between the house and the soil gas sampling locations or the attenuation of chemicals once inside a residence, or both. Further information on the uncertainty associated with individual residence risk estimates is provided in the uncertainty analysis (Section 8).

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

SECTION 8

UNCERTAINTY ANALYSIS

This section presents a discussion on the uncertainties associated with a number of factors related to the assessment and evaluation of the air sampling and groundwater data.

8.1 UNCERTAINTIES ASSOCIATED WITH ANALYTICAL PARAMETERS AND SAMPLING FREQUENCY

As shown in Table 4-2, the compounds that were analyzed during the air sampling investigation include cis-1,2-dichloroethene (cis-1,2-DCE), an intermediate breakdown product of TCE and PCE. No other breakdown products were included in the analytical list. PCE's first breakdown product is TCE, which further breaks down into cis-1,2-DCE, trans-1,2-DCE or 1,1-dichloroethene (1,1-DCE). Proportionally, cis-1,2-DCE is the dominant breakdown product of TCE. Cis-1,2-DCE, trans-1,2-DCE and 1,1-DCE degrade into vinyl chloride and, to a lesser extent, to chloroethane. Both vinyl chloride and chloroethane eventually break down into inert compounds such as ethane (or ethanol), ethene, and carbon dioxide. Aside from PCE, TCE, and cis-1,2-DCE, the compound 1,1-DCE is the only other breakdown compound that has been detected historically in groundwater, at an estimated concentration of less than 1 µg/L.

Based on the results of previous groundwater data and because PCE, a chlorinated compound, is unlikely to undergo extensive breakdown as it migrates from groundwater into soil (U.S. EPA, 2002b), the list of 14 compounds provided in Table 4-2 was considered adequate for the purposes of this study. Nevertheless, a data gap associated with the absence of 1,1-DCE results exists because 1,1-DCE has been detected in the groundwater at some point in the past. Also, differences in volatility may result in different ratios of PCE degradation products in groundwater and in soil gas or indoor air. Furthermore, many of the breakdown products are more toxic than PCE itself and there is a potential that these breakdown products may in the future become chemicals of potential concern due to natural attenuation processes in groundwater and may subsequently migrate into soil. Thus, due consideration should be given to all breakdown products of PCE during any future air

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

sampling events. This is especially true if there is a substantial delay in the planning and implementation of future air sampling.

The low sampling number reduces the confidence one has in the accuracy of the air measurements. Additionally, soil gas, indoor air, and ambient air samples represent a "snapshot" in time and, therefore, may not reflect average concentrations over a longer exposure period.

Although the soil gas, indoor air, and ambient air samples represent a continuous measure of what is present in the air over a 24-hour period, repeated measurements would provide a better measure of the average VOC concentrations for each area. Data from a single set of measurements may overestimate or underestimate the average VOC concentrations in the residences. A single measurement may result in an inaccuracy due to influential variables such as temperature (which could influence the degree of volatilization of chemicals), wind forces, indoor ventilation (which could influence the accumulation of VOCs within an enclosed space), and changes in water table at the Evergreen Manor site.

In order to obtain a more accurate measure of longer-term average indoor air levels, sampling should be conducted three or four times over a one-year period to reflect variations occurring as a result of seasonal, temperature, and ventilation fluctuations. The pressure-related flow of site-related volatiles into homes would likely be greater in winter, when frozen ground allows for build-up in the subsurface soil and preferential movement into the home due to local depressurization caused by furnace operation and the stack and wind effects on the home. In the summer, while the volatilization rate may be greater, most of the flow will be to the surface soil with releases to ambient air. However, in summer, the water chlorination rate is much greater and the highest chloroform levels detected in homes have been found during the summer months. The volatilization of gasoline and other solvent stores is also likely to be higher in the summer, so some public-water-supply and household contaminant concentrations may be higher in summer, especially if doors and windows are closed when air-conditioners are operating. For example, higher indoor and outdoor temperatures may result in greater volatilization indoors. The higher degree of volatilization into

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

air could be countered by increased ventilation from open windows and doors. Winter indoor air levels may be a function of decreased volatilization due to temperature but increased concentration due to less ventilation. It is not certain whether a one-time measurement would overestimate or underestimate longer-term average indoor concentrations. However, there is uncertainty in the accuracy of a one-time measurement, the magnitude of which could be affected by simultaneously occurring factors such as changes in temperature and indoor ventilation rates.

8.2 UNCERTAINTIES ASSOCIATED WITH ANALYTICAL METHODS

Additional uncertainty arises from the use of TO-15 SIMS method. As mentioned earlier, the precision of analysis is approximately 30% for this method. This generates uncertainty during the data evaluation and risk analysis because some of the concentration data that appear very different may be within the analytical error. The accepted accuracy level of ± 40% for the contaminant concentration also affects the confidence in the risk estimates, especially when the data are sparse. The uncertainty may be amplified if any of the compounds are not recovered fully from the sampling Summa canister. So far, 1,1-DCE is the only compound (per U.S. EPA) that has been tested for the stability for the TO-15 method. Though it is anticipated that the recovery is within the acceptable range for other compounds, the conclusion cannot be drawn until the compound stability test for all the compounds of interest are completed.

8.3 UNCERTAINTIES DUE TO PROPERTY- OR RESIDENCE-SPECIFIC FACTORS

Property- or residence-specific factors such as the variation in housing construction (e.g., partial basement, multiple floors, presence of fire place, presence other features such as duct-work and other utility openings), use of indoor space and air circulation patterns within the structure and difference in landscaping (affects wind forces) could influence the indoor air concentrations greatly by creating differential build-up of vapor or stack effects. Thus, there is uncertainty whether the residences sampled in each area provide a reasonable characterization of the vapor intrusion in each area.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Variation in construction of homes including, but not limited to, basement structure (e.g. partial-basement vs. full basement) and presence of second and third floor and/or basement may affect the concentrations of VOCs in indoor air and/or soil gas samples (U.S. EPA, 2001b; MADEP 2002). If, for example, a home is constructed with a partial basement, vapor would most likely build up underneath the basement floor and first floor foundations. The degree of this "vapor build up" may be different between the basement and first floor because of the difference in the circulation pattern underneath these floors. The vapor underneath the basement is expected to enter the residence through an opening in the basement in a relatively vertical, upward fashion, whereas the vapor underneath the first floor may behave as stagnant air and/or migrate horizontally (and/or vertically) into the home openings or away from the home depending on the distance from the openings (in the basement) and the pressure gradient between the basement (inside), soil gas, and ambient air. If a negative pressure is observed in the basement, the vapor is more likely to find its way into the basement, resulting in elevated vapor concentrations rather than escaping into the atmosphere.

At Evergreen Manor site, this "differential build-up" is not expected to be a major problem at Residence A, because no partial basement was observed at this residence. "Differential build-up" may be an issue at Residence B. Although the basement at Residence B appeared full, no basement was present underneath the attached garage, potentially creating a similar effect as a partial basement. The soil gas data from west side (where the garage is located) and indoor basement results may be impacted by the differential build-up. At Residence C, this "differential build-up" is not expected to be a major problem because no partial basement was observed at this residence. Although the basement at Residence D appeared full, no basement was present underneath the attached garage, potentially creating a differential build-up. The soil gas data from west side (where the garage is located) and indoor basement results may be affected due to the above. In order to obtain a more accurate measure of the effects of differential buildup, sampling of more than one residence type should be conducted in each area.

In addition, vapor migration may occur into a living space through utility openings or duct-work (which is never completely tight) located under slab or to partial interior foundation walls if the

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

living space is located over a slab. Because blue-prints or construction diagrams of the homes were not obtained during this investigation, the effect of utility openings or duct-work on vapor intrusion could not be evaluated. In order to adequately evaluate the effect of property or residence-specific factors during future sampling events, information regarding various residential features such as basements, sewer lines, utility openings or duct-work should be obtained from as-built construction drawings.

8.4 UNCERTAINTIES IN CORRELATING GROUNDWATER DATA TO AIR DATA

One objective of the study was to relate the presence of VOCs in groundwater, both proximate and distant, to the areas of soil gas and indoor air sampling. Based on the groundwater and air data evaluated in this study, there may be a correlation between some constituents detected in groundwater and corresponding constituents detected above standards in indoor air. However, due to many factors, there remains some uncertainty as to whether a direct correlation exists. Fate and transport mechanisms are not well documented at the site and introduce a degree of uncertainty. In general, environmental transport involves the movement of gases, liquids, and solids within a given medium and across interfaces between air and water. Fate and transport mechanisms can usually be simplified into four basic categories: emission (at what rate contaminants are entering the medium); advection (direction and rate of migration through a medium); dispersion (spreading of contaminants), and attenuation (degree of buffering or attenuation). Each of these mechanisms are documented to different degrees at the Evergreen Manor site and increase the level of uncertainty.

Additionally, the rate and amount of migration of VOCs across the groundwater to soil vapor interface, migration through soil, and subsequent vapor intrusion indoors is also subject to many factors. Vapor-phase levels will be subject to change based on any or all of the following factors, some of which are chemical-specific and some of which are site-specific. Some chemical specific factors for which little data are available include water solubility, vapor pressure, Henry's Law constant, organic carbon partition coefficient, degradation rates, etc. Site-specific factors include the following:

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

- Variations in subsurface physical properties such as temperature, soil porosity, bulk density, and moisture content.

- Ambient air temperature conditions, wind speed, and direction.

- Hydrogeologic characteristics, such as depth to water table, hydraulic gradients, seasonal fluctuations, flow rates, aquifer vadose zone permeability, presence/absence of confining layers, and recharge/discharge zones.

- The presence and/or magnitude of barriers to indoor vapor intrusion could cause soil gas and/or indoor air levels of a given VOC to vary. This includes both natural features and manmade objects. Winter frostline depths are variable and may also act as temporary barriers and alter normal air flow patterns towards negative pressure zones, such as basements. Similarly, the presence of higher-permeability features (e.g., utility conduits) and ground cover (e.g., vegetation vs. paved surfaces) may induce channeling of vapors along preferential flow path.

- Although not expected to be a significant factor based on the relatively uniform lithology at the site, it is also possible that VOCs could migrate laterally through the vadose zone from more distant areas of the plume with higher concentrations towards area residences. Some or all of the factors described in the preceding bullets may induce this type of migration.

- The vertical distribution of contaminants is not consistently documented. Only CPT groundwater locations during the 2000 RI were vertically profiled resulting in a higher degree of confidence about the vertical distribution of contaminants in the water column only in certain areas. Residential wells and monitoring wells result in discrete sampling depths. Usually the screened zones are selected such that the highest permeability strata are open to the well, theoretically yielding the highest levels of contaminants since these represent preferential flow paths within the aquifer; however, there remains the potential that contaminants located above the screened zones (therefore not necessarily represented in the analytical data) may migrate to the vapor phase. Additional uncertainty arises from the fact that the shallow groundwater (at watertable) characterization at the Evergreen Manor site is not complete because the focus of previous investigations was on the characterization of relatively deeper portions of the aquifer rather than the shallow portion (vadose zone and water table, approximately < 30 feet bgs). This lack of data in the shallow aquifers increases the uncertainty in the behavior of volatiles that may originate in the unsaturated zone.

In addition to the uncertainty factors discussed above, some analytical data gaps and limitations that may add to the level of uncertainty also exist. No groundwater characterization work has been

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

performed during the 2002 Investigation for the express purpose of air quality evaluation. Only three groundwater data points were available in selected sections of the residential area for comparison purposes; therefore, a large, current sample population does not exist. Since the four air sampling locations were selected in conjunction with the 2002 groundwater sampling locations, the level of uncertainty is minimized in the immediate vicinity of these locations and groundwater characterization for the purposes of this limited air investigation is adequate. This is reinforced by the expectation that the predominant vapor migration direction is vertical from the water table towards the surface based on the presence of uniform permeability sand and gravel throughout the vadose zone and on the lack of any documented confining silt/clay layers. An exception exists in that these wells were screened below the water table and were designed to mimic and evaluate previous residential well constructions (i.e., draw water from depth horizons similar to former residential wells). Therefore, there is a possibility that contaminants that have not been characterized or quantified may be present near the water table surface in these areas, and a vapor migration potential may exist. Further, the most recent evaluation of the 1990-2002 groundwater data indicates some uncertainty with respect to the horizontal and vertical extent of the Evergreen Manor groundwater VOC plume and the remaining contaminant concentrations within the plume. The vertical extent of the groundwater plume, and in some cases, the horizontal extent of the plume has been inferred due to insufficient data. Further details regarding uncertainties associated with the groundwater conditions in general and the delineation of the horizontal and vertical extent of the groundwater plume in particular can be found in Section 6 of the Groundwater Data Evaluation Report, Revision 1 (WESTON, 2003).

The level of uncertainty increases as the distance from the target residences increases because little or no groundwater or air data have been collected recently. This uncertainty is mitigated to a great extent by using previously collected groundwater data (2000 RI) and inferring air quality characteristics throughout the residential area. Because the levels of groundwater contaminants have consistently decreased over time, using previous well sampling and temporary CPT sampling results increases the areal distance of groundwater characterization. Although groundwater data collected during the RI and previous sampling events were collected to satisfy different objectives

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

(i.e., verify contaminant trends and lateral extent of groundwater contamination), the data are useable for the purposes of this limited vapor intrusion study. Additionally, since the contaminant concentrations have been decreasing with time, the previous groundwater data may be conservative when compared to current groundwater and air data. While a single air measurement may create uncertainty in determining trends and potential relationships with the chemical's presence in groundwater, numerous groundwater samples collected over a period of several years imparts a greater degree of confidence in the groundwater results relative to the soil gas, indoor air, and ambient air results. In addition, 100 feet is assumed to be a reasonable distance for horizontal and vertical migration in the absence of a preferential pathway (U.S. EPA, 2002b). For these reasons, the groundwater data set utilized in this limited vapor intrusion characterization is considered adequate for this study given the limited air quality data set currently available and the understanding that uncertainties remain.

8.5 UNCERTAINTIES ASSOCIATED WITH ESTIMATION OF POTENTIAL CANCER RISKS AND NONCANCER HEALTH HAZARDS ANALYSIS

A number of uncertainties are inherent in the estimation of potential cancer risks and noncancer health hazards. These uncertainties are generally associated with (1) the sampling strategy and site characterization process or (2) the assumptions, models, and extrapolations that make up the risk assessment process. Primary uncertainties related to the SRE include the RBCs used in the screening and the presence of non-site-related volatile compounds.

8.5.1 Risk-Based Screening

The risk estimates are based on maximum concentrations and the most conservative of the RBCs (i.e., the VIG values or the U.S. EPA Region IX PRGs). The risk estimates assume a soil gas to indoor air AF of 0.1

The low sampling number reduces the confidence one has in the accuracy of the air measurements. Soil gas, indoor air, and ambient air samples represent a "snapshot" in time and, therefore, may not

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

reflect average concentrations over a longer exposure period. The screening levels to which samples were compared are based on long-term (chronic) exposure (i.e., 30 years, 24 hours per day, 350 days per year). The pressure-related flow of site-related volatiles into homes would likely be greater in the winter, when frozen ground allows for build-up in the subsurface soil and preferential movement into the home due to local depressurization caused by furnace operation and the stack and wind effects on the home. In the summer, while the volatilization rate may be greater, most of the flow will be to the surface soil with releases to ambient air. However, in summer, the water chlorination rate is much greater and the highest chloroform levels detected in homes have been found during the summer months. The volatilization of gasoline and other solvent stores is also likely to be higher in the summer, so some public-water-supply contaminant and household and concentrations may be higher in summer, especially if the windows and doors are closed when air-conditioners are operating. It is not certain whether a one-time measurement would overestimate or underestimate longer-term average indoor concentrations. However, there is uncertainty in the accuracy of a one-time measurement, the magnitude of which could be affected by simultaneously occurring factors such as changes in temperature and indoor ventilation rates.

The media-specific target concentrations provided in U.S. EPA's Vapor Intrusion Guidance (U.S. EPA, 2002b) were developed considering a generic conceptual model for vapor intrusion. This model consists of a groundwater and/or vadose zone source of volatile vapors that diffuse upwards through unsaturated soils towards the surface. Under the model, the soil in the vadose zone is considered to be relatively homogeneous and isotropic. The receptors at the surface used in the model are residents in homes with poured concrete foundations (e.g., basement or slab on grade foundations or crawlspace homes with a liner or other vapor barrier). The underlying assumption for this generic model is that site-specific subsurface characteristics will tend to reduce or attenuate vapor concentrations as vapors migrate upward from the source and into structures. Site-specific factors may result in unattenuated or enhanced transport of vapors towards a receptor; consequently, these factors are likely to render the use of the secondary screening target concentrations inappropriate.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Factors such as biodegradation that can result in accelerated attenuation of vapors are not considered in the conceptual model. To be conservative, the recommended criteria developed for Vapor Intrusion Guidance have been established assuming that the chemicals do not degrade as they migrate through the vadose zone (U.S. EPA, 2002b). However, many VOCs do biodegrade. For example, petroleum hydrocarbon vapors such as benzene, toluene, ethylbenzene, and xylene (BTEX) compounds will biodegrade in the presence of oxygen. Field studies have shown this biodegradation to be very significant in some settings. The impact of biodegradation can be seen in a three-fold to ten-fold decrease in the AF for BTEX compounds when compared to chlorinated hydrocarbons (U.S. EPA, 2002b). In contrast, analysis of data from sites impacted with chlorinated solvents suggests that degradation is insignificant for these compounds. The impact of biodegradation can be seen in a three-fold to ten-fold decrease in the AF for benzene, toluene, ethylbenzene, and xylene (BTEX) compounds when compared to chlorinated hydrocarbons (U.S. EPA, 2002b). However, it should be noted that although chlorinated solvents biodegrade slowly, they tend to biodegrade to more toxic compounds, not less toxic ones. In addition, the various chlorinated solvent/degradation products have different volatilities that may affect their movement in the subsurface and their measurement in indoor air.

The soil gas sampling points were collected at a distance (up to 10 feet) from the house structures. The Vapor Intrusion Guidance (U.S. EPA, 2002) suggests that soil gas samples be collected below the foundation or immediately adjacent to the structure. The soil gas concentrations under a building (or as close as can be reasonably measured) provides the best indication of the indoor air concentration. Thus, future soil gas samples should be collected as close to the structure as possible.

An AF of 0.1 is a generally a reasonable upper-bound value for shallow soil gas samples collected from 0 to 5 feet below the foundation of the house (U.S. EPA, 2002b, page F-3). This assumes that chemical concentrations in soil gas will dilute by a factor of 10 once inside the residence. Soil gas samples at Evergreen Manor were collected at depths comparable to the bottom of the home's foundation. Subsurface soils at the site include sand and gravel. According to Questions 5a and 5b in U.S. EPA's Vapor Intrusion Guidance (U.S. EPA, 2002b), vapors detected at depths less than 5

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

feet below foundation level typically make it inappropriate to use semi-site-specific attenuation factors (e.g., factors based on the Johnson-Ettinger Model). Thus, the risk estimates from soil gas exposure may be overestimated based on the conservative AF used. The predicted cancer risks based on indoor air concentrations measured in the four homes do not appear significantly lower than those based on the indoor air concentrations predicted from the soil gas measurements using an AF of 0.1; in some cases they are higher. This suggests that the use of an AF of 0.1 is a reasonably good predictor in these homes.

8.5.2 Extraneous Sources of VOCs

Indoor air measurements of VOCs may reflect off-gassing of vapors from commonly available household products, automotive products, cigarette smoke, and heating and cooling equipment. Thus, it is critical to consider the presence of background concentrations in assessing the vapor intrusion pathway. Background concentrations may be impacted by volatile chemicals commonly found in the residence or in local atmospheric emissions. For example, in urban areas, air quality is often affected by multiple atmospheric emission sources. In addition, human activities (e.g., smoking, craft hobbies) or consumer products (e.g., cleaners, paints, and glues) typically found in the home provide additional indoor vapor emission sources that can contribute to increased indoor air concentrations of some chemicals. These two types of sources can contribute to background indoor air levels of VOCs, which should be considered in evaluating the contribution of subsurface contamination to indoor air contamination in dwellings at a cleanup site. In either case, the resulting indoor air concentrations can be similar to or higher than levels that are calculated to pose an unacceptable chronic inhalation risk in screening calculations. In fact, there may be dozens of detectable chemicals in indoor air even in the absence of subsurface (e.g., soil and groundwater) contributions. Thus, the evaluation of existing indoor air data should focus on constituents (and any potential degradation products) present in subsurface sources of contamination. The relative contributions of background sources should be considered in order to properly assess the potential inhalation exposure risks that can be attributed to the subsurface vapor intrusion pathway (U.S. EPA, 2002b).

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Based on the results of the screening comparisons, four chemicals may potentially pose indoor health risks. These chemicals are benzene, chloroform, methylene chloride, and PCE. However, this was only a single sampling of four houses in late spring. Subsequent samples may indicate the presence of other contaminants, especially the chlorinated solvent break-down products that may be preferentially volatilizing into the ambient air in May. Other extraneous sources of these four VOCs are described below.

Benzene is commonly associated with gasoline-related products used in cars, lawn mowers, and other gasoline-powered equipment (ATSDR, 1993; Wallace, 1996) and as a component of most paints, particularly oil-based paints (*EHP Forum*, 2000). Other chemicals associated with benzene include xylenes (gasoline products), ethylbenzene (gasoline), and toluene (gasoline, oil-based paints). Levels of benzene as well as other VOCs found indoors have been extensively studied (as reviewed by Wallace, 1996; Wallace, 1991). Much of this information has resulted from studies by the U.S. EPA *Total Exposure Assessment Methodology* (TEAM) conducted in the mid to late 1980s. Average indoor levels have been measured in various cities around the world, during different seasons, and in rural, suburban, and urban environments. Globally, indoor air benzene levels have been shown range from 7 to 29 $\mu g/m^3$ with an average of approximately 15 $\mu g/m^3$ based on TEAM studies (Wallace, 1996). Based on studies using 24-hour or 48-hour average measurements, mean indoor air levels can be anywhere between 2.7 and 25 $\mu g/m^3$. Summer months typically have yielded the lowest means while the highest means are observed during winter measurements. Smoking has also been shown to be a major contributor to indoor benzene levels, raising "typical" levels by about 15 to 25% (Wallace, 1996). According to a TEAM study that investigated 750 residences in six different urban areas, the mean benzene level in the indoor air of homes in which smokers resided was 90 $\mu g/m^3$ (Wallace, 1991). Benzene is also detected at relatively higher concentrations indoors when homes have attached garages where automobiles and gasoline-powered equipment may be stored. Outdoor ambient air benzene levels taken near homes where the indoor data were collected are consistently lower with mean levels of between 4 and 6 $\mu g/m^3$ (Wallace, 1996). Benzene is not generally associated with the Evergreen Manor site. However, benzene was

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

detected at low levels (less than 1 part per billion [ppb]) in groundwater at two locations and was detected in soil gas at concentrations at 27 to 30 times the indoor air concentrations at two locations.

Chloroform is a byproduct of municipal water chlorination and may be present in some household products such as fire extinguishers and in fumigants (ATSDR, 1994). The same TEAM study that assessed benzene levels in indoor air showed that the mean chloroform level indoors of 750 residences from six urban areas was 3 $\mu g/m^3$ (Wallace, 1991). Chloroform has been detected in the NPPWD water distribution system at concentrations ranging from 1 $\mu g/L$ to 12 $\mu g/L$, with trihalomethanes detected as high as 32 $\mu g/L$ (Appendix E).

Methylene chloride may be a solvent in paint strippers and removers; a propellant in aerosols such as spray paints, automotive products, and insecticides; and a trace contaminant in urethane foams (ATSDR, 1993). Wallace (1991) reviewed a TEAM study in which the mean methylene chloride indoor air level in 750 residences in six urban areas was 6 $\mu g/m^3$.

PCE is used as a dry cleaning solvent, a trace contaminant in textiles, and as a degreasing agent (ATSDR, 1993). Wallace (1991) reviewed a TEAM study in which the mean PCE indoor air level in 750 residences in six urban areas was 15 $\mu g/m^3$.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

SECTION 9

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations of this report, based on the results presented in the previous sections, are presented in the following subsections.

9.1 CONCLUSIONS

Based on information collected during the air sampling program and an evaluation of the air sampling data, the following chemical constituents were detected in soil gas and indoor air at sampled residences above target RBCs: benzene, chloroform, ethylbenzene, methylene chloride, PCE and TCE.

Overall Indoor Air Conclusions

- In indoor air at the four homes that were sampled, potential cancer risks for chemicals possibly related to the Evergreen Manor site, range from 2.3×10^{-6} (two to three additional cases of cancer for every 1 million people similarly exposed) to 5.7×10^{-5} (five to six additional cases of cancer for every 100,000 people similarly exposed). These risks are within U.S. EPA's risk management range of 1×10^{-4} to 1×10^{-6} (1 additional case of cancer for every 10,000 to 1 million people similarly exposed). Risks are primarily due to PCE and benzene. The overall potential cancer risk from all chemicals detected in the homes ranges from 1.1×10^{-4} to 1.3×10^{-5}. These risks are also within U.S. EPA's risk management range.

- In indoor air at two of the four residences, potential noncancer HIs from all VOCs ranged from 2.3 to 5.46. When chloroform and methylene chloride are excluded, the potential noncancer HIs were estimated to be 2.03 at Residence B and 4.49 at Residence D. These risks are mostly due to benzene in indoor air samples collected from the first floor, where the door to attached garage is located (HI = 1.13 at Residence B and 3.55 at Residence D). Benzene measurements detected in the basement samples at Residence B does not pose a noncancer risk, though a potential

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

noncancer risk due to benzene was found at Residence D.

- Benzene at Residence D is not believed to be solely site-related since indoor air concentrations of benzene were 13 times higher than the maximum soil gas concentration at the home (1.6 $\mu g/m^3$ in soil gas compared to 22 $\mu g/m^3$ on the first floor). Residents park in the attached garage and store a leaf blower in the garage. Two to three containers of petroleum products were also stored in the garage and may not have been removed prior to air sampling activities. Benzene concentrations were more than two times higher on the first floor where the door to the garage is than they were in the basement (22 $\mu g/m^3$ on the first floor compared to 9.3 $\mu g/m^3$ in the basement). In contrast, at Residence B, not all benzene can be considered household related. While higher levels of benzene were found on the first floor (7 $\mu g/m^3$), where the door to the attached garage is located, in comparison to the basement (2.9 $\mu g/m^3$), higher levels of benzene were found in soil gas (5.3 $\mu g/m^3$) than in the basement. Similarly, the high concentrations of ethylbenzene detected in the indoor air may also be due to the petroleum products stored in the garages. As in the case with benzene, the maximum indoor ethylbenzene concentration was four times greater than in soil gas (1.9 $\mu g/m^3$ in soil gas and 8.1 $\mu g/m^3$). Ethylbenzene concentration on the first floor (8.1 $\mu g/m^3$) was much higher than the basement (4.8 $\mu g/m^3$).

- The site-related chemicals found in the homes during this single sampling event present a potential elevated risk, but this risk does not exceed U.S. EPA's level for immediate action. (i.e., 1×10^{-4} or 1 additional case of cancer for every 10,000 people similarly exposed).

- Although the potential indoor air cancer risks at the four homes that were sampled were within U.S. EPA's risk management range of 1×10^{-4} to 1×10^{-6} and there were no noncancer risks from site-related chemicals, additional sampling at more homes at different times of the year would be needed to address uncertainties associated with possible property- or residence-specific factors as well as any seasonal variations affecting vapor intrusion.

<u>Overall Soil Gas Conclusions</u>

- Soil gas measurements were used to predict indoor air concentrations in order to determine if there was a potential for volatile chemical migration into residences in the selected Areas. When soil gas concentrations were modeled to predict indoor air concentrations, potential cancer risks due to TCE, PCE, and benzene ranging from

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

6.1×10^{-6} to 9.5×10^{-5} (almost 1×10^{-4}) were suggested. The potential cancer risks for only TCE and PCE range from 8.4×10^{-5} to 1.3×10^{-7}. Potential cancer risks from all chemicals range from 9.6×10^{-5} (almost 1×10^{-4}) to 9.7×10^{-6} (almost 1×10^{-5}). The predicted indoor air concentrations give risk estimates that are within U.S. EPA's risk management range, but suggest the need for additional indoor air measurements to confirm these predictions.

- Indoor air concentrations modeled from soil gas measurements for PCE and TCE both overestimate and underestimate the actual measured indoor air concentrations and associated potential risks. Extraneous sources of these constituents may be present, resulting in elevated concentrations in indoor air. Underestimation of indoor concentrations may also be due to the distance between the house and the soil gas sample location.

- No noncancer risks were identified from soil gas data.

- Although the potential cancer risk associated with indoor air concentrations modeled from soil gas measurements at the four homes that were sampled were within U.S. EPA's risk management range of 1×10^{-4} to 1×10^{-6} and there were no noncancer risks from site-related chemicals, additional sampling at more homes at different times of the year would be needed to address uncertainties associated with possible property- or residence-specific factors as well as any seasonal variations affecting vapor intrusion.

Target Area Residence Conclusions

- The potential cancer risk associated with indoor air measurements at Residence A (Area A) from VOCs were 1.5×10^{-5} for all VOCs, and 6.4×10^{-6} when excluding chloroform and methylene chloride (Table 7-2), which may be household and/or public-water-supply related. The remaining indoor air risk is due primarily to benzene, which was detected in the soil gas at 27 times the indoor air concentration. The potential cancer risk for only PCE was 1×10^{-6}. No indoor air noncancer risks were present.

- The potential indoor air concentrations modeled from soil gas measurements are associated with a cancer risk of 1.6×10^{-5} from all VOCs. The risk is primarily due to benzene. No chloroform was detected in Residence A soil gas. The potential cancer risk for only PCE modeled from soil gas measurements was 1.3×10^{-7}. No soil gas noncancer risks were present.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

- The potential cancer risk associated with indoor air measurements at Residence B (Area B) from VOCs were 8.1×10^{-5} for all chemicals, and 5.4×10^{-5} when excluding chloroform and methylene chloride, which may be household and/or public-water-supply related. The remaining risks are mostly due to benzene and PCE. The potential cancer risk for only PCE in indoor air was 1.6×10^{-5}. A potential unacceptable cumulative noncancer risk of 2.3 was found primarily from petroleum related chemicals (e.g., BTEX compounds) on the first floor where the door to the attached garage is located. When evaluating only site-related chemicals and considering only basement concentrations of BTEX components (to omit household related inputs of these compounds), no noncancer risks were present.

- The potential indoor air concentrations modeled from soil gas measurements are associated with a cancer risk of 1.0×10^{-5} from all VOCs and 6.6×10^{-6} when excluding chloroform. The remaining risk is primarily due to benzene and TCE. The potential cancer risk for only PCE and TCE modeled from soil gas measurements was 3.7×10^{-6}. No soil gas noncancer risks were present.

- The potential cancer risk associated with indoor air measurements at Residence C (Area C) from VOCs were 1.3×10^{-5} for all chemicals and 9.1×10^{-6} (almost 1×10^{-5}) when excluding chloroform (Table 7-4), which may be household and/or public-water-supply related. The potential risk due to PCE and benzene was 8.5×10^{-6}. The potential cancer risk for only PCE in indoor air was 4.8×10^{-6}. No indoor air noncancer risks were found.

- The potential indoor air concentrations modeled from soil gas measurements are associated with a cancer risk of 9.6×10^{-5} from all chemicals, and 9.6×10^{-5} (almost 1×10^{-4}) when excluding chloroform. The potential cancer risk for only PCE and TCE modeled from soil gas measurements was 8.4×10^{-5}. No soil gas noncancer risks were found.

- The potential cancer risk associated with indoor air measurements at Residence D (Area D) from VOCs were 1.1×10^{-4} with a noncancer risk of 5.46 for all chemicals. These values mostly stem from benzene and chloroform. Without benzene, ethylbenzene, and chloroform, potential risks decrease to 2.3×10^{-6} with no noncancer risks. The remaining risk is primarily due to PCE. The potential cancer risk for only PCE in indoor air was 1.9×10^{-6}.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

- The potential indoor air concentrations modeled from soil gas measurements are associated with a cancer risk of 9.7×10^{-6} for all chemicals and 9.2×10^{-6} (almost 1×10^{-5}) when excluding chloroform. The remaining risk was primarily due to TCE. The potential cancer risk for only PCE and TCE modeled from soil gas measurements was 8.4×10^{-6}. No soil gas noncancer risks were found.

Air-Groundwater Relationship Conclusions

- Benzene has only been detected at low levels (maximum concentration 0.6 µg/L) in groundwater and is not a widespread contaminant. Benzene was detected in two sampling locations CPT-09 and CPT-12 during the 2000 investigation, and was not detected in groundwater during the 2002 verification sampling. Sampling location CPT-09 is located approximately 580 feet, 2,600 feet, 2,350 feet, and 4,300 feet, from Residences A, B, C, and D, respectively. Sampling location CPT-12 is located approximately 4,700 feet, 6,600 feet, 6,600 feet, and 8,300 feet from Residences A, B, C, and D, respectively. Given the infrequent benzene detections in distant sampling locations (>100 feet), the likelihood of benzene migrating from groundwater into indoor air of the target residences is minimal. However, elevated benzene levels (> target RBCs) in some of the soil gas and indoor air samples indicates that some of the benzene in indoor air measurements may be site related, since groundwater at the water table/vadose zone interface has not been adequately characterized within the residential area. Before concluding that benzene is site related due consideration must also be given to the relationship between benzene detections in indoor air samples and extraneous sources such as emissions from vehicles driven in and out of the attached garages and gasoline products stored in the garages. Given the known data gaps/limitations, the origin of benzene in air samples remains uncertain. Additional soil gas sampling in the areas where benzene has been found might help to determine if this is a local release, perhaps from leaking vehicles parked out-doors or other some other residential activity, and not related to the site groundwater.

- Historically, chloroform has been detected at low levels at only two groundwater sampling points (at concentrations of 0.9 µg/L in RW-08 [now sealed] and 0.23 µg/L in MW-02). These results are located in Areas B and C (central residential area) and are about 100 feet apart from each other indicating that chloroform is localized because it has not been detected in any other groundwater samples. The location of RW-08 is approximately 2,400 feet, 760 feet, 290 feet, and 2,050 feet from Residences A, B, C, and D, respectively. Monitoring well MW-02 is located approximately 2,350 feet, 720 feet, 470 feet, and 1,600 feet from Residences A, B,

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

C, and D, respectively. Given the localized presence of chloroform and its lack of detections across the Evergreen Manor site, there appears to be minimal potential for chloroform to migrate from groundwater to indoor air of target residences. Chloroform was detected at low levels in soil gas samples from Residences C and D, and at higher levels in Area B, although chloroform has been detected in groundwater only in the close vicinity of Residence C. Therefore, the presence of chloroform in indoor air and soil gas samples is most likely due to household related activities such as discharge of wastewater into septic systems and disinfection of private wells with chlorine bleach or tablets. It should be noted that chloroform is widely used in many household disinfection products and is also a byproduct of municipal water chlorination and ultimately finds its way into domestic wastewater. Chloroform has been detected in the NPPWD water distribution system at concentrations ranging from 1 µg/L to 12 µg/L, with trihalomethanes detected as high as 32 µg/L (Appendix E). Also, Region IX PRGs indicate that chloroform in household water can cause a one-in-a-million inhalation risk at a concentration of 0.71 µg/L.

- Although most of the risk posed by chloroform is believed to be household-related, low levels of chloroform were still found in soil gas and may be site-related and need to be investigated further.

- Historically, ethylbenzene has been detected in groundwater only once at a concentration of 0.6 µg/L in the deep groundwater sample collected from CPT-09 (collected at 88 feet bgs). Sampling location CPT-09 is located approximately 580 feet, 2,600 feet, 2,350 feet, and 4,300 feet from Residences A, B, C and D, respectively. The number of groundwater samples collected across the site, the location of ethylbenzene detections in groundwater with respect to target residences, and the general lack of detected ethylbenzene in groundwater suggests little likelihood of ethylbenzene migrating from the groundwater into area residences. However, presence of ethylbenzene at significant levels in the soil gas and indoor air samples, with high soil gas concentrations at some residences, indicates that ethylbenzene may be site related, since groundwater at the water table/vadose zone interface has not been adequately characterized within the residential area. Before concluding that ethylbenzene is site related, due consideration must also be given to the relationship between ethylbenzene detections in indoor air samples and extraneous sources such as emissions from vehicles driven in and out of the attached garages, and gasoline products stored in the garages. Based on conflicting groundwater and air data, the origins of ethylbenzene is uncertain.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

- In the past, methylene chloride has been detected at very low levels (0.5 µg/L) in only one groundwater sample collected from sampling location CPT-03. CPT-03 is located approximately 3,500 feet, 1,550 feet, 1,600 feet and 760 feet from Residences A, B, C and D, respectively. Given the isolated detection of methylene chloride and its detection in a distant sampling location (> 100 feet), there appears to be minimal potential for methylene chloride to migrate from groundwater into indoor air of the residences under consideration. In addition, at Residences A and B, higher levels of methylene chloride were detected in the basement, where chemical products are stored, than in soil gas or first floor samples. Therefore, the presence of methylene chloride in indoor air and soil gas samples is most likely due to household related such as storage of paint and paint strippers, which contain methylene chloride.

- Although most of the risk posed by methylene chloride is believed to be household-related, low levels of methylene chloride were still found in soil gas and may be site-related and need to be investigated further.

- PCE and TCE are historically associated with groundwater at the Evergreen Manor site and have been frequently detected in groundwater at varying levels at multiple locations across the site. In air sample data, PCE was detected in both indoor air and soil gas samples. The PCE concentration in one soil gas sample was significantly higher than the corresponding concentrations in the indoor air samples suggesting a subsurface source. However, PCE was also detected in ambient air samples (collected from Area C). TCE was only detected in three soil gas samples. Based on this information, it is possible that PCE and TCE in soil gas and indoor air may be related to groundwater contamination underlying the residential areas. However, because potential extraneous sources such as paints, polishes, cleaners, lubricants, etc, which may contain both PCE and TCE, are stored in the basements and garages of some residences and could also contribute to PCE concentrations and since groundwater at the water table/vadose zone interface has not been adequately characterized within the residential area, it is uncertain whether the presence of PCE and TCE in air samples is household related or site related (i.e., from groundwater).

- The origins of BTEX compounds, PCE, and TCE in indoor air and soil gas samples remains uncertain. Toluene and xylene alone account for approximately 38 percent of the site-related noncancer hazard index at Residence B. These chemicals are components of petroleum-related products that generally occur together. These uncertainties are primarily due to data gaps associated with inadequate characterization of the vadose zone and shallow groundwater (for the purposes of assessing vapor intrusion pathway) and limited air sampling data.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

- While chloroform and methylene chloride are most likely present due to household activities, additional sampling should be done to confirm this.

9.2 RECOMMENDATIONS

In order to address the uncertainties discussed in Section 8 and, based on the conclusions presented in Section 9.1, the extent of soil gas and shallow groundwater contamination should be characterized throughout the subdivisions. The soil gas and indoor air monitoring program should target a statistically significant number of homes. The initial sampling should target homes in areas that, historically, have had the highest levels of groundwater contamination (e.g., those along the centerline of the plume), homes in areas where relatively lower level of contamination has been observed, and homes that lie outside the plume. Soil gas sampling in addition to groundwater sampling should be used to help identify areas where vapors may collect or be channeled, even if groundwater concentrations are low (e.g., home on Wagon Lane Court). Soil samples should be collected adjacent to soil gas samples to differentiate contamination from groundwater and contamination from household sources (e.g., spilling gasoline from a lawn mower). The characterization activities, conducted during pre-design, should include:

- Soil gas and shallow groundwater sampling at approximately 50 locations within the subdivisions (20% of homes) to determine the nature and extent of any shallow groundwater and soil gas contamination and target approximately 25 homes for a long-term vapor monitoring program. The actual number of locations could be more or less and would depend on the results of initial soil gas and groundwater results. Approximately three soil gas samples would be collected at each sampling location - one just above the water table, one consistent with the bottom of the home's foundation (about 8 ft), and one in between. Approximately two groundwater samples should be collected at each location - one at the water table and one in the interval below.

- Soil sampling would be needed at locations where groundwater sample results do not correlate well with soil gas sample results to determine whether there are any homeowner-related spills.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

- Septic systems, used by most, if not all of the Evergreen Manor subdivision residents, may be a point-source of certain contamination (e.g., use of chemicals to unclog a drain). Based on the results of the soil gas and shallow groundwater characterization, it may be necessary to collect additional soil, soil gas and shallow groundwater samples in the vicinity of selected septic systems to determine whether the septic sytem is a source of contamination. However, it should also be noted that, prior to the municipal well-hookup, household water obtained from contaminated private well supplies was discharged to septic systems.

- Based on the results of the soil gas and shallow groundwater sampling, approximately 25 homes should be targeted for soil gas and indoor air monitoring. Monitoring should include 24-hour indoor air samples at two to three locations per home and 24-hour samples at four soil gas locations at foundation depth per home four times a year (spring, summer, fall and winter). One of the indoor air samples could be collected in or near an attached garage to evaluate whether any BTEX compounds are homeowner-related or site-related. Soil samples could also be collected for VOC analysis at each soil gas location to determine whether there were any homeowner-related spills during sampling period. Shallow groundwater samples should also be collected at about 10 locations during each sampling period to correlate groundwater concentrations with soil gas findings. The soil gas and indoor air monitoring should continue for two years until baseline indoor air and soil gas concentrations are established. The soil gas and indoor air monitoring should continue until it is confirmed that vapor intrusion via soil gas is not a threat.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

SECTION 10

REFERENCES

ATSDR (Agency for Toxic Substances and Disease Registry). 1995. *Toxicological Profile for Chloroform, Update*, Draft for Public Comment. U.S. Department of Health & Human Services. August 1995.

ATSDR (Agency for Toxic Substances and Disease Registry). 1993. *Toxicological Profile for Benzene*. PBB93-182384. U.S. Department of Commerce, National Technical Information Service. April 1993.

ATSDR (Agency for Toxic Substances and Disease Registry). 1993. *Toxicological Profile for Methylene Chloride*. PBB93-182483. U.S. Department of Commerce, National Technical Information Service. April 1993.

ATSDR (Agency for Toxic Substances and Disease Registry). 1993. Toxicological Profile for Tetrachloroethene. PBB93-182525. U.S. Department of Commerce, National Technical Information Service. April 1993.

Colton, Craig E. and Breen, G.E. 1986. *Historical Industrial Waste Disposal Practices in Winnebago County, Illinois: 1870-1980*. Hazardous Waste Research and Information Center (HWRIC). HWRIC RR 011. September 1986.

Forum, Environmental Health Perspectives. 2000. *Indoor Air Quality - Healthy Indoor Painting Practices*. Environ. Hlth. Pers. 108 (12). December 2000.

Hoffmann, R.L. and M.J. May. 1997. Radon contamination of residential structures III. An overview of factors influencing infiltration rates. 1997 International Radon Symposium, Pre-prints, Nov. 2-5, 1997. Cincinnati, OH. American Association of Radon Scientists and Technologists.

Illinois Department of Energy and Natural Resources, State Geological Survey (IDENR). 1960. Reprinted 1972. *Ground-Water Geology of Winnebago County, Roscoe, Illinois.*

Illinois Department of Public Health (IDPH). 1999. *Public Assessment, Evergreen Manor Groundwater Contamination Site, Winnebago County, Roscoe, Illinois. CERCLIS NO. ILD 984 836 734*. Prepared by IDPH under cooperative agreement with ATSDR. 28 December 1999.

Illinois Environmental Protection Agency (IEPA). 1997. *Hazard Ranking System Documentation Record-Evergreen Manor Groundwater Contamination*. ILD 984 836 734. 29 May 1997.

IEPA. 1992. *Evergreen Manor Groundwater Contamination CERCLA Screening Contamination*. ILD 984 836 734.

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Massachusetts Department of Environmental Protection (MADEP). 2002. *Indoor Air Sampling and Evaluation Guide.* WSC Policy #02-430. April, 2002.

United States Department of Agriculture, Natural Resource Conservation Service (USDA-NRCS). 1980. Soil Survey of Winnebago and Boone Counties, Illinois. Illinois Agricultural Experiment Station Soil Report No. 107.

U.S. Environmental Protection Agency (U.S. EPA). 2002a. U.S. EPA Region 9 Preliminary Remediation Goals (PRG) 2002.@ http://www.epa.gov/region09/waste/sfund/prg/ October.

U.S. EPA. 2002b. *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Soils/Groundwater (Subsurface Vapor Intrusion Guidance).* Office of Solid Waste and Emergency Response November 2002. EPA530-F-02-052.

U.S. EPA. 2002c. Integrated Risk Information System Online Database. Office of Health and Environmental Assessment, National Center for Environmental Assessment.

U.S. EPA. 2001. *RCRA Draft Supplemental Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway (Vapor Intrusion Guidance). Partial Response to "Question 3" of 02/05/99 RCRA Corrective Action Environmental Indicator (EI) RCRIS Code (CA725) " Current Human Exposures Under Control"* . December 2001.

U.S. EPA. 1999. *ACTION MEMORANDUM-Request for a Non-Time Critical CERCLA Removal Action and Consistency Exemption to the $2 Million and 12 Month Statutory Limit at the Evergreen Manor Site, Winnebago County, Illinois.* Memorandum from Michael Ribordy, Remedial Project Manager to William E. Muno, Director, Superfund Division. 2 March 1999.

U.S. EPA. 1997. A Health Effects Assessment Summary Tables@. EPA -540-R-97-036. Office of Research and Development. July.

U.S. EPA. 1995. A Health Effects Assessment Summary Tables (HEAST). Annual FY 1995. Office of Emergency Response and Remedial Response. OERR 9200.6-303 (95-1).

U.S. EPA. 1992. A Guidance for Data Usability in Risk Assessment (Part A).@ Publication No. 9285.7-09A, PB92-963356. Office of Emergency and Remedial Response. Washington, D.C. April.

U.S. EPA. 1991a. *Human Health Evaluation Manual Supplemental Guidance,* "Standard Default Exposure Factors." OSWER Directive 92856-03. 25 March 1991.

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

U.S. EPA. 1991b. Memorandum Regarding the Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions. From Don R. Clay, Assistant Administrator. To Directors, Various Divisions. 22 April 1991.

U.S. EPA. 1989. A Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A).@ EPA Office of Emergency and Remedial Response. Interim Final. EPA/540/1-89/002. December.

Wallace, L. (1996). *Comparison of Risks from Outdoor and Indoor Exposure to Toxic Chemicals.* Environ. Hlth. Pers. 95: 7-13.

Wallace, L. (1991). *Environmental Exposure to Benzene: An Update.* Environ. Hlth. Pers. 104, Suppl. 6, December 1996.

WESTON (Roy F. Weston, Inc.). 2001. *Remedial Investigation Report for the Evergreen Manor Site. Revision 1*

Weston Solutions, Inc. (WESTON). 2002a. *Quality Assurance Project Plan. Amendment No.2- Air Sampling Activities for the Evergreen Manor Site.*

WESTON. 2003. *Groundwater Data Evaluation Report, Revision 1.*

WESTON. 2003. *Deep Well Profiling Report, Revision 1.*

This document was prepared by Weston Solutions, Inc. expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Tables

Table 4-1

Summary of Residence Information
May 2002
Evergreen Manor Site
Roscoe, Illinois

Area	Residence	Floor area (sq ft)	Garage attached ?	Smoker ?	Smoking in the house	Second floor
Area A	Matthew Avenue	1,800	No	Not present	Not applicable	Not present
Area B	Straw Lane/ Blue Spruce	1,400	Yes (closed door)	Present	Not allowed	Not present
Area C	Wagon Lane Court	1,600	No	Not present	Not applicable	Not present
Area D	Wagon Lane/ Tanawingo	1,200	Yes (closed door)	Not present	Not applicable	Not present

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 4-1 (Continued)

Summary of Residence Information
May 2002
Evergreen Manor Site
Roscoe, Illinois

Area	Address	Basement	Sump pump	Comments
Area A	Matthew Avenue	Present; Partially Finishied	Present	Paint, tile and stone sealer, lubricants, thread paste, and spray adhesives were stored in the basemen
Area B	Straw Lane/ Blue Spruce	Present; Finished	Present	Stain paint, leather cleaner, linseed oil, denatured alcohol, spray paint, polyurethan and epoxy were stored in the basemen
Area C	Wagon Lane Court	Present; Unfinished	Present	Paint, paint thinner and cleaning supplies were stored in the basemen
Area D	Wagon Lane/ Tanawingo	Present; Finished	Present	Alcohol and paints were stored in the basement

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 4-2

Project Required Detection Limits
Evergreen Manor Site
Roscoe, Illinois

Parameter	Air (ppbv)
Volatile Organic Compounds	
Acetone	0.5
Methylene chloride	0.1
2-Butanone	0.1
Cis-1,2-dichloroethene	0.02
1,1,1-trichloroethane	0.02
Benzene	0.05
Trichloroethene	0.02
Toluene	0.05
Tetrachloroethene	0.02
Ethylbenzene	0.05
m & p-Xylene	0.05
o-Xylene	0.05
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.02
Chloroform	0.02

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 4-3

Summary of Air Sampling Information
Evergreen Manor Site
Roscoe, Illinois

Sample ID	Sample Area	Residence	Location Identifier	Location Description	Sample type	Canister number
2002ZG05-S01	Area A	Mathew Avenue	EM2-AA01-F	First floor, living room	Indoor air	2787
2002ZG05-S02	Area A	Mathew Avenue	EM2-AA01-B	Basement, near sump pump	Indoor air	2858
2002ZG05-S03	Area B	Straw Lane/ Blue Spruce	EM2-AA02-F	First floor, living room	Indoor air	2911
2002ZG05-S04	Area B	Straw Lane/ Blue Spruce	EM2-AA02-B	Basement, near sump pump	Indoor air	62
2002ZG05-S05	Area C	Wagon Lane Court	EM2-AA03-B	Basement, near sump pump	Indoor air	2978
2002ZG05-D05	Area C	Wagon Lane Court	EM2-AA03-BDP	Basement, near sump pump	Indoor air, duplicate	3026
2002ZG05-S06	Area C	Wagon Lane Court	EM2-AA03-F	First floor, living room	Indoor air	2463
2002ZG05-S07	Area D	Wagon Lane/ Tanawingo	EM2-AA04-F	First floor, living room	Indoor air	2748
2002ZG05-S08	Area D	Wagon Lane/ Tanawingo	EM2-AA04-B	Basement, near sump pump	Indoor air	152
2002ZG05-S09	Area A	Mathew Avenue	EM2-GS01-S	South side	Soil gas	9408
2002ZG05-S10	Area A	Mathew Avenue	EM2-GS01-E	East side	Soil gas	904
2002ZG05-S11	Area A	Mathew Avenue	EM2-GS01-W	West side	Soil gas	9565
2002ZG05-S12	Area A	Mathew Avenue	EM2-GS01-N	North side	Soil gas	2703
2002ZG05-S13	Area B	Straw Lane/ Blue Spruce	EM2-GS02-S	South side	Soil gas	3157
2002ZG05-S14	Area B	Straw Lane/ Blue Spruce	EM2-GS02-N	North side	Soil gas	13671
2002ZG05-S15	Area B	Straw Lane/ Blue Spruce	EM2-GS02-E	East side	Soil gas	1616
2002ZG05-S16	Area B	Straw Lane/ Blue Spruce	EM2-GS02-W	West side	Soil gas	5403
2002ZG05-S17	Area C	Wagon Lane Court	EM2-GS03-N	North side	Soil gas	12080
2002ZG05-S18	Area C	Wagon Lane Court	EM2-GS03-E	East side	Soil gas	5362
2002ZG05-S19	Area C	Wagon Lane Court	EM2-GS03-W	West side	Soil gas	20938
2002ZG05-S20	Area C	Wagon Lane Court	EM2-GS03-S	South side	Soil gas	11889
2002ZG05-D20	Area C	Wagon Lane Court	EM2-GS03-SDP	South side	Soil gas, duplicate	30836
2002ZG05-S21	Area C	Wagon Lane Court	EM2-AAFB03-01	Back yard	Ambient air	3117
2002ZG05-D21	Area C	Wagon Lane Court	EM2-AAFB03-02	Back yard	Ambient air, duplicate	2705
2002ZG05-S22	Area D	Wagon Lane/ Tanawingo	EM2-GS04-S	South side	Soil gas	433
2002ZG05-S23	Area D	Wagon Lane/ Tanawingo	EM2-GS04-N	North side	Soil gas	4059
2002ZG05-S24	Area D	Wagon Lane/ Tanawingo	EM2-GS04-W	West side	Soil gas	31442
2002ZG05-S25	Area D	Wagon Lane/ Tanawingo	EM2-GS04-E	East side	Soil gas	4034
2002ZG05-R01	NA		EM2-AAEB-01		Equipment Blank	458
2002ZG05-R02	NA		EM2-AAEB-02		Equipment Blank	23926
2002ZG05-R03	NA		EM2-AAEB-03		Equipment Blank	25239

NA= Not applicable

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 4-3 (Continued)

Summary of Air Sampling Information
Evergreen Manor Site
Roscoe, Illinois

Sample ID	Sample Area	Start date	Start time	End date	End time	Initial Pressure ("Hg)	Final Pressure ("Hg)	PID reading (ppm)	Comments
2002ZG05-S01	Area A	5/22/2002	7:20	5/23/2002	7:20	-28	-2	NA	
2002ZG05-S02	Area A	5/22/2002	7:20	5/23/2002	7:25	-30	-13	NA	
2002ZG05-S03	Area B	5/22/2002	7:45	5/23/2002	7:45	-28	-8	NA	
2002ZG05-S04	Area B	5/22/2002	7:45	5/23/2002	7:45	-28	-8	NA	
2002ZG05-S05	Area C	5/22/2002	8:30	5/23/2002	8:05	-28	-10	NA	
2002ZG05-D05	Area C	5/22/2002	8:30	5/23/2002	8:05	-29	-7.5	NA	Duplicate
2002ZG05-S06	Area C	5/22/2002	8:30	5/23/2002	8:05	-29.5	-11.5	NA	
2002ZG05-S07	Area D	5/22/2002	9:20	5/23/2002	8:50	-29	-7	NA	
2002ZG05-S08	Area D	5/22/2002	9:20	5/23/2002	8:50	-28.5	-3	NA	
2002ZG05-S09	Area A	5/22/2002	9:15	5/23/2002	9:55	-28	-6	0	
2002ZG05-S10	Area A	5/22/2002	9:25	5/23/2002	9:55	-28	-6	0	
2002ZG05-S11	Area A	5/22/2002	9:35	5/23/2002	9:55	-28	-3	50	
2002ZG05-S12	Area A	5/22/2002	9:45	5/23/2002	9:55	-28	-6	0	
2002ZG05-S13	Area B	5/22/2002	10:25	5/23/2002	10:20	-30	-6	0	
2002ZG05-S14	Area B	5/22/2002	10:35	5/23/2002	10:25	-30	-10	0	
2002ZG05-S15	Area B	5/22/2002	10:45	5/23/2002	10:30	-30	-7	0	
2002ZG05-S16	Area B	5/22/2002	10:55	5/23/2002	10:35	-29	-9	0	
2002ZG05-S17	Area C	5/22/2002	12:15	5/23/2002	11:30	-30	-8	0	
2002ZG05-S18	Area C	5/22/2002	12:10	5/23/2002	11:30	-28	-6.5	0	
2002ZG05-S19	Area C	5/22/2002	12:15	5/23/2002	11:30	-30	-10	0	
2002ZG05-S20	Area C	5/22/2002	12:30	5/23/2002	11:30	-28	-8.5	0	
2002ZG05-D20	Area C	5/22/2002	12:30	5/23/2002	11:30	-28	-6	0	Duplicate
2002ZG05-S21	Area C	5/22/2002	12:27	5/23/2002	11:30	-29	-7.5	NA	
2002ZG05-D21	Area C	5/22/2002	12:27	5/23/2002	11:30	-29	-10	NA	Duplicate
2002ZG05-S22	Area D	5/22/2002	13:02	5/23/2002	12:35	-29.5	-10	0	
2002ZG05-S23	Area D	5/22/2002	12:50	5/23/2002	12:35	-28	-3.5	0	
2002ZG05-S24	Area D	5/22/2002	13:05	5/23/2002	12:35	-29	-3	0	
2002ZG05-S25	Area D	5/22/2002	13:00	5/23/2002	12:35	-29	-4.5	0	
2002ZG05-R01	NA	5/23/2002	8:10	5/24/2002	8:10	-29	-16		Equipment blk
2002ZG05-R02	NA	5/23/2002	8:10	5/24/2002	8:10	-29	-15		Equipment blk
2002ZG05-R03	NA	5/23/2002	8:10	5/24/2002	8:10	-30	-9		Equipment blk

NA= Not applicable

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-1

U.S. EPA Region IX Preliminary Remediation Goals and Vapor Intrusion Guidance Target Levels
Evergreen Manor Site
Roscoe, Illinois

	Air screening levels				Soil gas screening levels			
Analyte	Region IX PRG Ambient Air - NC	Region IX PRG Ambient Air - C	EPA VI Guide, Indoor Air	Most Conservative RBC	Region IX PRG Ambient Air - NC	Region IX PRG Ambient Air - C	EPA VI Guide, Soil Gas	Most Conservative RBC
1,1,1-Trichloroethane	2.30E+03	--	2.20E+03	2.20E+03	2.30E+04	--	2.20E+04	2.20E+04
2-Butanone	1.00E+03	--	1.00E+03	1.00E+03	1.00E+04	--	1.00E+04	1.00E+04
Acetone	3.70E+02	--	3.50E+02	3.50E+02	3.70E+03	--	3.50E+03	3.50E+03
Benzene	6.20E+00	2.30E-01	3.10E-01	2.30E-01	6.20E+01	2.30E+00	3.10E+00	2.30E+00
Chloroform	3.10E+00	3.50E-01	1.10E-01	1.10E-01	3.10E+01	3.50E+00	1.10E+00	1.10E+00
cis-1,2-dichloroethene	3.70E+01	--	3.50E+01	3.50E+01	3.70E+02	--	3.50E+02	3.50E+02
Ethylbenzene	1.10E+03	1.70E+00	2.20E+00	1.70E+00	1.10E+04	1.70E+01	2.20E+01	1.70E+01
Freon 113	3.10E+04	--	3.00E+04	3.00E+04	3.10E+05	--	3.00E+05	3.00E+05
m,p-xylene	1.10E+02	--	7.00E+03	1.10E+02	1.10E+03	--	7.00E+04	1.10E+03
Methylene Chloride	3.10E+03	4.10E+00	5.20E+00	4.10E+00	3.10E+04	4.10E+01	5.20E+01	4.10E+01
o-xylene	1.10E+02	--	7.00E+03	1.10E+02	1.10E+03	--	7.00E+04	1.10E+03
Tetrachloroethene	6.20E+02	6.70E-01	8.10E-01	6.70E-01	6.20E+03	6.70E+00	8.10E+00	6.70E+00
Toluene	4.00E+02	--	4.00E+02	4.00E+02	4.00E+03	--	4.00E+03	4.00E+03
Trichloroethene	3.70E+01	1.70E-02	2.20E-02	1.70E-02	3.70E+02	1.70E-01	2.20E-01	1.70E-01

Unit = mg/m^3

Region IX PRGs= U.S. EPA Region IX Preliminary Remediation Goals (ambient air values); October 2002

EPA VI guide = "U.S. EPA Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway From Groundwater and Soil" (November 2002)

RBCs =Risk-Based Concentrations

The following assumptions were used:

Target Risk = 1E-06

Target Hazard Quotient = 1

Attenuation Factor was 0.1 using shallow soil screening levels

C = Cancer Risk

NC = Noncancer Risk

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-2

Risk-Based Screening of Soil Gas and Indoor Air Levels
Area A (Northern Residential Area): Mathew Avenue
Evergreen Manor, Roscoe IL

Chemical	Soil Gas				Target [a] Level Soil Gas Conc.		Soil Gas Ratio				Indoor Air		Target [a] Level Indoor Air Conc.		Indoor Air Ratio	
	Sample Identification 2002ZG05-						Soil Gas Conc. To Target Soil Gas Conc. 2002ZG05-				Sample Identification 2002ZG05-				Indoor Air Sample Identification	
	-S09	-S10	-S11	-S12			-S09	-S10	-S11	-S12	-S01	-S02			-S01	-S02
	South (ug/m^3)	East (ug/m^3)	West (ug/m^3)	North (ug/m^3)	$C_{soil-gas}$ (ug/m^3)		South	East	West	North	1st Floor (ug/m^3)	Basement (ug/m^3)	C_{target} (ug/m^3)		1st Floor	Basement
1,1,1-Trichloroethane	0.27	**0.81**	0.20	0.33	2.20E+04	NC	0.00001	0.00004	0.00001	0.00002	0.49	**5.30**	2.20E+03	NC	0.0002	0.002
2-Butanone (MEK)	3.30	1.60	**5.10**	2.20	1.00E+04	NC	0.0003	0.0002	0.0005	0.0002	6.80	**23.0**	1.00E+03	NC	0.007	0.023
Acetone	16.0 J	11.00 J	**31.0** J	10.00 J	3.50E+03	NC	0.005	0.003	0.009	0.003	25.0 J	**40.0** J	3.50E+02	NC	0.071	0.114
Benzene	[illegible]	6.10	[illegible]	[illegible]	2.30E+00	C	[illegible]	[illegible]	2.87	[illegible]	[illegible]	[illegible]	2.30E-01	C	[illegible]	[illegible]
Chloroform	ND	ND	ND	ND	1.10E+00	C	NA	NA	NA	NA	[illegible]	[illegible]	1.10E-01	C	[illegible]	[illegible]
cis-1,2-Dichloroethene	ND	ND	ND	ND	3.50E+02	NC	NA	NA	NA	NA	ND	ND	3.50E+01	NC	NA	NA
Ethylbenzene	[illegible]	13.0	14.0	[illegible]	1.70E+01	C	[illegible]	0.76	0.82	[illegible]	0.48	**1.00**	1.70E+00	C	0.2824	0.588
Freon 113	0.46	0.46	0.40	**0.48**	3.00E+05	NC	0.000002	0.000002	0.000001	0.000002	0.43	**0.45**	3.00E+04	NC	0.00001	0.00002
m,p-Xylene	**51.0**	18.0	18.0	25.0	1.10E+03	NC	0.0464	0.0164	0.0164	0.0227	1.30	**3.00**	1.10E+02	NC	0.0118	0.0273
Methylene Chloride	0.67	0.81	**0.90**	**0.90**	4.10E+01	C	0.016	0.020	0.022	0.022	2.40	[illegible]	4.10E+00	C	0.59	6.59
o-Xylene	**25.0**	7.70	9.10	12.0	1.10E+03	NC	0.0227	0.0070	0.0083	0.0109	0.55	**0.99**	1.10E+02	NC	0.0050	0.0090
Tetrachloroethene	0.61	**0.88**	0.28	0.30	6.70E+00	C	0.091	0.13	0.042	0.045	[illegible]	[illegible]	6.70E-01	C	1.04	1.04
Toluene	**95.0**	30.0	24.0	43.0	4.00E+03	NC	0.024	0.008	0.006	0.011	8.60	**20.0**	4.00E+02	NC	0.022	0.050
Trichloroethene	ND	ND	ND	ND	1.70E-01	C	NA	NA	NA	NA	ND	ND	1.70E-02	C	NA	NA

a) Soil gas screening and indoor air screening levels were based on the more conservative values between the U.S. EPA Region 9 Preliminary Remediation Goals and "Draft Guidance for Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" (U.S. EPA, 2002)
Soil gas samples were collected at 8-9 feet bgs. Target risk (TR) was 1E-06, Attenuation Factor (AF) was 0.1 and Target Hazard Quotient (THQ) was 1.
J= estimated concentration
NC= RBC based on noncancer endpoint
C= RBC based on carcinogenic endpoint
ND= Not Detected
Y= Yes
N= NO
shaded = exceeds target RBC
NA= Not applicable
Bold-indicates the highest concentration in each specific medium (e.g. soil gas, indoor air

Note: The analytical results values differ slightly from the original data table. A slight difference between Weston-calculated-values and the laboratory-reported-values was observed during the data review. Therefore, the data was modified to reflect the laboratory-reported values in this table.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-3

Risk-Based Screening of Soil Gas and Indoor Air Levels
Area B (East Central Residential Area) : Straw Lane/ Blue Spruce Drive
Evergreen Manor, Roscoe IL

Chemical	Soil Gas				Target [a] Level Soil Gas Conc.		Soil Gas Ratio				Indoor Air		Target [a] Level Indoor Air Conc.		Indoor Air Ratio	
	Sample Identification 2002ZG05-						Soil Gas Conc. To Target Soil Gas Conc. 2002ZG05-				Sample Identification 2002ZG05-				Indoor Air Sample Identification	
	-S13	-S14	-S15	-S16			-S13	-S14	-S15	-S16	-S03	-S04			-S03	-S04
	South (ug/m^3)	North (ug/m^3)	East (ug/m^3)	West (ug/m^3)	$C_{soil-gas}$ (ug/m^3)		South	North	East	West	1st Floor (ug/m^3)	Basement (ug/m^3)	C_{target} (ug/m^3)		1st Floor	Basement
1,1,1-Trichloroethane	0.32	0.84	0.46	**4.00**	2.20E+04	NC	**0.00001**	0.00004	0.00002	0.0002	**3.00**	0.91	2.20E+03	NC	0.001	0.0004
2-Butanone (MEK)	**12.0**	2.80	12.0	9.80	1.00E+04	NC	**0.001**	0.0003	0.001	0.001	**13.0**	7.10	1.00E+03	NC	0.013	0.007
Acetone	**62.0**	15.0	43.0	39.0	3.50E+03	NC	**0.018**	0.004	0.012	0.011	**35.0** J	28.0 J	3.50E+02	NC	0.100	0.080
Benzene	1.70	**2.80**	2.30	**5.30**	2.30E+00	C	**0.74**	**1.22**	1.00	**2.30**	**7.00**	**2.90**	2.30E-01	C	**30.4**	**12.61**
Chloroform	**6.00**	**5.20**	**1.80**	ND	1.10E+00	C	**5.45**	**4.73**	1.64	NA	**0.73**	**0.72**	1.10E-01	C	**6.66**	**6.55**
cis-1,2-Dichloroethene	ND	ND	ND	ND	3.50E+02	NC	NA	NA	NA	NA	ND	ND	3.50E+01	NC	NA	NA
Ethylbenzene	2.00	3.30	3.40	**8.90**	1.70E+01	C	0.12	0.19	0.20	0.52	**13.0**	**5.90**	1.70E+00	C	**7.65**	**3.47**
Freon 113	0.43	0.54	0.48	**0.78**	3.00E+05	NC	**0.000001**	0.000002	0.000002	0.000003	**0.43**	0.42	3.00E+04	NC	0.00001	0.00001
m,p-Xylene	2.50	3.70	4.40	**11.0**	1.10E+03	NC	**0.00227**	0.00336	0.00400	0.01000	**57.0**	26.0	1.10E+02	NC	0.518	0.236
Methylene Chloride	ND	ND	ND	**0.80**	4.10E+01	C	NA	NA	NA	0.020	**28.0**	**99.0**	4.10E+00	C	**6.83**	**24.1**
o-Xylene	1.20	2.00	2.10	**4.20**	1.10E+03	NC	**0.00109**	0.00182	0.00191	0.00382	**13.0**	5.40	1.10E+02	NC	0.118	0.049
Tetrachloroethene	1.90	2.00	2.40	**4.40**	6.70E+00	C	**0.28**	0.30	0.36	0.66	**3.40**	**11.0**	6.70E-01	C	**5.07**	**16.42**
Toluene	5.70	8.70	7.80	**20.0**	4.00E+03	NC	**0.001**	0.002	0.002	0.005	**57.0**	42.0	4.00E+02	NC	0.14	0.105
Trichloroethene	ND	ND	ND	**0.52**	1.70E-01	C	NA	NA	NA	**3.06**	ND	ND	1.70E-02	C	NA	NA

a) Soil gas screening and indoor air screening levels were based on the more conservative values between the U.S. EPA Region 9 Preliminary Remediation Goals and "Draft Guidance for Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" (U.S. EPA, 2002)
Soil gas samples were collected at 8-9 feet bgs. Target risk (TR) was 1E-06, Attenuation Factor (AF) was 0.1 and Target Hazard Quotient (THQ) was 1.
NC= RBC based on noncancer endpoint
C= RBC based on carcinogenic endpoint
ND= Not Detected
Y= Yes
N= NO
[redacted] RBC
NA= Not applicable
Bold-indicates the highest concentration in each specific medium (e.g. soil gas, indoor air)

Note: The analytical results values differ slightly from the original data table. A slight difference between Weston-calculated-values and the laboratory-reported-values was observed during the data review. Therefore, the data was modified to reflect the laboratory-reported values in this table.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-4

Risk-Based Screening of Soil Gas and Indoor Air Levels
Area C (West Central Residential Area): Wagon Lane Court
Evergreen Manor, Roscoe IL

Chemical	Soil Gas				Target [a] Level Soil Gas Conc.		Soil Gas Ratio				Indoor Air		Target [a] Level Indoor Air Conc.		Indoor Air Ratio	
	Sample Identification 2002ZG05-						Soil Gas Conc. To Target Soil Gas Conc. 2002ZG05-				Sample Identification 2002ZG05-				Indoor Air Sample Identification	
	-S17	-S18	-S19	-S20			-S17	-S18	-S19	-S20	-S05	-S06			-S05	-S06
	North (ug/m^3)	East (ug/m^3)	West (ug/m^3)	South (ug/m^3)	$C_{soil-gas}$ (ug/m^3)		North	East	West	South	1st Floor (ug/m^3)	Basement (ug/m^3)	C_{target} (ug/m^3)		1st Floor	Basement
1,1,1-Trichloroethane	0.42	**1.20**	0.31	0.47	2.20E+04	NC	**0.00002**	0.00005	0.00001	0.00002	0.29	**0.74**	2.20E+03	NC	0.0001	0.0003
2-Butanone (MEK)	2.90	**16.0**	3.00	2.60	1.00E+04	NC	**0.0003**	0.002	0.0003	0.0003	**2.90**	2.40	1.00E+03	NC	0.003	0.002
Acetone	16.0	**26.0** J	12.00 J	12.00	3.50E+03	NC	**0.005**	0.007	0.003	0.003	**36.0** J	27.0 J	3.50E+02	NC	0.103	0.077
Benzene	**6.90**	**25.0**	7.20	**2.60**	2.30E+00	C	**3.00**	10.87	3.13	1.13	**0.84**	**0.76**	2.30E-01	C	**3.65**	**3.30**
Chloroform	ND	ND	ND	**0.86**	1.10E+00	C	NA	NA	NA	0.78	**0.49**	**0.67**	1.10E-01	C	**4.45**	**6.09**
cis-1,2-Dichloroethene	ND	ND	ND	ND	3.50E+02	NC	NA	NA	NA	NA	ND	ND	3.50E+01	NC	NA	NA
Ethybenzene	**12.0**	5.40	6.30	2.80	1.70E+01	C	**0.706**	0.32	0.37	0.16	**0.80**	0.60	1.70E+00	C	0.4706	0.3529
Freon 113	0.49	**0.52**	0.43	0.50	3.00E+05	NC	**0.000002**	0.000002	0.000001	0.000002	0.45	**0.46**	3.00E+04	NC	0.00002	0.00002
m,p-Xylene	**60.0**	7.60	7.50	3.20	1.10E+03	NC	**0.0545**	0.0069	0.0068	0.00291	**1.70**	1.60	1.10E+02	NC	0.0155	0.0145
Methylene Chloride	0.79	ND	0.87	**0.98**	4.10E+01	C	**0.019**	NA	0.021	0.024	**0.88**	ND	4.10E+00	C	0.21	NA
o-Xylene	**21.0**	2.20	3.40	1.40	1.10E+03	NC	**0.0191**	0.00200	0.00309	0.00127	**0.64**	**0.64**	1.10E+02	NC	0.00582	0.00582
Tetrachloroethene	2.80	**190**	5.30	2.80	6.70E+00	C	**0.42**	**28.34**	0.79	0.42	**0.76**	**3.28**	6.70E-01	C	**1.13**	**4.78**
Toluene	57.0	**150**	14.0	8.00	4.00E+03	NC	**0.014**	0.038	0.004	0.002	**11.0**	8.10	4.00E+02	NC	0.028	0.020
Trichloroethene	ND	**9.50**	ND	ND	1.70E-01	C	**NA**	**55.88**	NA	NA	ND	ND	1.70E-02	C	NA	NA

a) Soil gas screening and indoor air screening levels were based on the more conservative values between the U.S. EPA Region 9 Preliminary Remediation Goals and "Draft Guidance for Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" (U.S. EPA, 2002)
Soil gas samples were collected at 8-9 feet bgs. Target risk (TR) was 1E-06, Attenuation Factor (AF) was 0.1 and Target Hazard Quotient (THQ) was 1.
NC= RBC based on noncancer endpoint
C= RBC based on carcinogenic endpoint
ND= Not Detected
Y= Yes
N= NO
Shaded = exceeds target RBC
NA= Not applicable
Bold-indicates the highest concentration in each specific medium (e.g. soil gas, indoor air

Note: The analytical results values differ slightly from the original data table. A slight difference between Weston-calculated-values and the laboratory-reported-values was observed during the data review. Therefore, the data was modified to reflect the laboratory-reported values in this table.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-5

Risk-Based Screening of Soil Gas and Indoor Air Levels
Area D (Southern Residential Area): Wagon Lane/ Tanawingo
Evergreen Manor, Roscoe IL

Chemical	Soil Gas				Target [a] Level Soil Gas Conc.		Soil Gas Ratio				Indoor Air		Target [a] Level Indoor Air Conc.		Indoor Air Ratio	
	Sample Identification 2002ZG05-						Soil Gas Conc. To Target Soil Gas Conc. 2002ZG05-				Sample Identification 2002ZG05-				Indoor Air Sample Identification	
	-S22	-S23	-S24	-S25			-S22	-S23	-S24	-S25	-S07	-S08			-S07	-S08
	South (ug/m^3)	North (ug/m^3)	West (ug/m^3)	East (ug/m^3)	$C_{soil-gas}$ (ug/m^3)		South	North	West	East	1st Floor (ug/m^3)	Basement (ug/m^3)	C_{target} (ug/m^3)		1st Floor	Basement
1,1,1-Trichloroethane	**3.60**	0.41	1.30	0.69	2.20E+04	NC	**0.0002**	0.00002	0.0001	0.00003	**0.28**	0.21	2.20E+03	NC	0.0001	0.0001
2-Butanone (MEK)	1.80	3.60	4.00	**5.70**	1.00E+04	NC	**0.0002**	0.0004	0.0004	0.0006	**27.0**	26.0	1.00E+03	NC	0.027	0.026
Acetone	13.00 J	16.0 J	21.0 J	**28.0** J	3.50E+03	NC	0.004	0.005	0.006	0.008	87.0 E	**120.0** E	3.50E+02	NC	0.25	0.34
Benzene	1.20	1.20	1.40	**1.60**	2.30E+00	C	**0.52**	0.52	0.61	0.70	**22.0**	**9.30**	2.30E-01	C	**95.7**	**40.4**
Chloroform	**1.70**	ND	ND	1.10	1.10E+00	C	[illegible]	NA	NA	1.00	**2.80**	**3.00**	1.10E-01	C	**21.8**	27.3
cis-1,2-Dichloroethene	ND	ND	ND	ND	3.50E+02	NC	NA	NA	NA	NA	ND	ND	3.50E+01	NC	NA	NA
Ethylbenzene	1.30	0.98	1.60	**1.90**	1.70E+01	C	**0.08**	0.06	0.09	0.11	**2.10**	**4.80**	1.70E+00	C	**4.76**	**2.82**
Freon 113	**0.78**	0.67	0.75	0.63	3.00E+05	NC	**0.000003**	0.000002	0.000003	0.000002	**0.42**	**0.42**	3.00E+04	NC	0.00001	0.00001
m,p-Xylene	1.80	1.40	2.10	**2.60**	1.10E+03	NC	**0.00164**	0.00127	0.00191	0.00236	**35.0**	17.0	1.10E+02	NC	0.318	0.155
Methylene Chloride	**0.74** J	0.55	0.57	0.62	4.10E+01	C	**0.018**	0.013	0.014	0.015	**1.30**	1.00	4.10E+00	C	0.32	0.24
o-Xylene	0.87	0.73	1.20	**1.30**	1.10E+03	NC	**0.00079**	0.00066	0.00109	0.00118	**10.0**	4.80	1.10E+02	NC	0.091	0.0436
Tetrachloroethene	**0.94**	ND	**0.94**	0.33	6.70E+00	C	**0.140**	NA	0.140	0.049	**1.30**	**0.82**	6.70E-01	C	**1.94**	**1.22**
Toluene	3.00	2.50	3.30	**3.60**	4.00E+03	NC	**0.0008**	0.0006	0.0008	0.0009	**68.0**	45.0	4.00E+02	NC	0.17	0.11
Trichloroethene	**1.40**	ND	ND	ND	1.70E-01	C	[illegible]	NA	NA	NA	ND	ND	1.70E-02	C	NA	NA

a) Soil gas screening and indoor air screening levels were based on the more conservative values between the U.S. EPA Region 9 Preliminary Remediation Goals and "Draft Guidance for Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" (U.S. EPA, 2002)
Soil gas samples were collected at 8-9 feet bgs. Target risk (TR) was 1E-06, Attenuation Factor (AF) was 0.1 and Target Hazard Quotient (THQ) was 1.
NC= RBC based on noncancer endpoint
C= RBC based on carcinogenic endpoint
ND= Not Detected
Y= Yes
N= NO
E= Exceeded calibration range
[illegible] target RBC
NA= Not applicable
Bold-indicates the highest concentration in each specific medium (e.g. soil gas, indoor air)

Note: The analytical results values differ slightly from the original data table. A slight difference between Weston-calculated-values and the laboratory-reported-values was observed during the data review. Therefore, the data was modified to reflect the laboratory-reported values in this table.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-6

Comparison of Ambient Air Data with U.S. EPA Region IX Preliminary Remediation Goals for Ambient Air Evergreen Manor Site Roscoe, Illinois

Ambient Air		Sample Identification 2002ZG05-	
		-S21	-D21 duplicate
Analyte	Region IX PRG	(ug/m^3)	(ug/m^3)
1,1,1-Trichloroethane	2.3E+03	ND	ND
2-Butanone	1.0E+03	11.0	1.50
Acetone	3.7E+02	51.0	8.00
Benzene	2.3E-01	[redacted]	[redacted]
Chloroform	3.1E+00	ND	ND
cis-1,2-dichloroethene	3.7E+01	ND	ND
Ethyl benzene	1.7E+00	ND	0.22
Freon 113	3.1E+04	0.40	0.61
m,p-xyelene	1.1E+02	0.46	0.63
Methylene Chloride	4.1E+00	ND	ND
o-xylene	1.1E+02	0.26	0.26
Tetrachloroethene	6.7E-01	0.27	0.52
Toluene	4.0E+02	1.00 U	1.20 U
Trichloroethene	1.7E-02	ND	ND

ND=Not detected at or above laboratory reporting limits

U= Validated as non detect because the concentration was less than 5 times of what was found in blank

Shaded-indicates concentrations exceeding PRGs

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-7

Comparison of Indoor Air, Soil Gas, and Ambient Air Data
Area A (Northern Residential Area): Mathew Avenue
Evergreen Manor, Roscoe IL

Chemical	Soil Gas				Target[a] Level Soil Gas Conc.		Indoor Air		Target[a] Level Indoor Air Conc.		Ambient Air[b]	
	Sample Identification 2003ZG05-						Sample Identification 2003ZG05-				Sample Identification 2003ZG05-	
	-S09	-S10	-S11	-S12			-S01	-S02			-S21	-D21
	South (ug/m³)	East (ug/m³)	West (ug/m³)	North (ug/m³)	$C_{soil-gas}$ (ug/m³)		1st Floor (ug/m³)	Basement (ug/m³)	C_{target} (ug/m³)		(ug/m³)	duplicate (ug/m³)
1,1,1-Trichloroethane	0.27	**0.81**	0.20	**0.33**	2.20E+04	NC	0.49	**5.30**	2.20E+03	NC	ND	ND
2-Butanone (MEK)	3.30	1.60	**5.10**	**2.20**	1.00E+04	NC	6.80	**23.0**	1.00E+03	NC	11.0	1.50
Acetone	16.0 J	11.00 J	31.0 J	**10.00** J	3.50E+03	NC	25.0 J	**40.0** J	3.50E+02	NC	51.0	8.00
Benzene	**31.0**	8.10	6.60	**12.0**	2.30E+00	C	0.72	**1.10**	2.30E-01	C	0.33	0.48
Chloroform	ND	ND	ND	ND	1.10E+00	C	0.42	**0.59**	1.10E-01	C	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	3.50E+02	NC	ND	ND	3.50E+01	NC	ND	ND
Ethylbenzene	**41.0**	13.0	14.0	**20.0**	1.70E+01	C	0.48	**1.00**	1.70E+00	C	ND	0.22
Freon 113	0.46	0.46	0.40	**0.48**	3.00E+05	NC	0.43	**0.45**	3.00E+04	NC	0.40	0.61
m,p-Xylene	**51.0**	18.0	18.0	**25.0**	1.10E+03	NC	1.30	**3.00**	1.10E+02	NC	0.46	0.63
Methylene Chloride	0.67	0.81	**0.90**	**0.90**	4.10E+01	C	2.40	**27.0**	4.10E+00	C	ND	ND
o-Xylene	**25.0**	7.70	9.10	**12.0**	1.10E+03	NC	0.55	**0.99**	1.10E+02	NC	0.26	0.26
Tetrachloroethene	0.61	**0.88**	0.28	**0.30**	6.70E+00	C	0.70	**0.70**	6.70E-01	C	0.27	0.52
Toluene	**95.0**	30.0	24.0	**43.0**	4.00E+03	NC	8.60	**20.0**	4.00E+02	NC	1.00 U	1.20 U
Trichloroethene	ND	ND	ND	ND	1.70E-01	C	ND	ND	1.70E-02	C	ND	ND

a) Soil gas screening and indoor air screening levels were based on the more conservative values between the U.S. EPA Region IX Preliminary Remediation Goals and "Draft Guidance for Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" (U.S. EPA, 2002)
Soil gas samples were collected at 8-9 feet bgs. Target risk (TR) was 1E-06, Attenuation Factor (AF) was 0.1 and Target Hazard Quotient (THQ) was 1.
b) One ambient air sample (and duplicate) was collected in Area C.
J= indicates an estimated value below the method detection limit
U = Qualified as ND by validation because the concentration was less than 5 times of what was detected in blank.
NC= RBC based on noncancer endpoint
C= RBC based on carcinogenic endpoint
ND= Not detected at or above laboratory reporting limit.
Y= Yes
N= NO
Bold- indicates the highest concentration in each specific medium (e.g. soil gas, indoor air)

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-8

Comparison of Indoor Air, Soil Gas, and Ambient Air Data
Area B (East Central Residential Area): Straw Lane/ Blue Spruce Drive
Evergreen Manor, Roscoe IL

Chemical	Soil Gas				Target[a] Level Soil Gas		Indoor Air				Target[a] Level Indoor Air		Ambient Air[b]			
	Sample Identification 2002ZG05-						Sample Identification 2002ZG05-						Sample Identification 2002ZG05-			
	-S13	-S14	-S15	-S16	Conc.		-S03		-S04		Conc.		-S21		-D21	
	South (ug/m³)	North (ug/m³)	East (ug/m³)	West (ug/m³)	$C_{soil-gas}$ (ug/m³)		1st Floor (ug/m³)		Basement (ug/m³)		C_{target} (ug/m³)		(ug/m³)		duplicate (ug/m³)	
1,1,1-Trichloroethane	0.32	0.84	0.46	**4.00**	**2.20E+04**	NC	**3.00**		0.91		2.20E+03	NC	ND		ND	
2-Butanone (MEK)	12.0	2.80	12.0	9.80	**1.00E+04**	NC	13.0		7.10		1.00E+03	NC	11.0		1.50	
Acetone	62.0	15.0	43.0	39.0	**3.50E+03**	NC	35.0	J	28.0	J	3.50E+02	NC	51.0		8.00	
Benzene	1.70	2.80	2.30	**5.30**	**2.30E+00**	C	7.00		2.90		2.30E-01	C	0.33		0.48	
Chloroform	**6.00**	5.20	1.80	ND	**1.10E+00**	C	**0.73**		0.72		1.10E-01	C	ND		ND	
cis-1,2-Dichloroethene	ND	ND	ND	ND	**3.50E+02**	NC	ND		ND		3.50E+01	NC	ND		ND	
Ethylbenzene	2.00	3.30	3.40	**8.90**	**1.70E+01**	C	**13.0**		5.90		1.70E+00	C	ND		0.22	
Freon 113	0.43	0.54	0.48	**0.78**	**3.00E+05**	NC	**0.43**		0.42		3.00E+04	NC	0.40		0.61	
m,p-Xylene	2.50	3.70	4.40	**11.0**	**1.10E+03**	NC	**57.0**		26.0		1.10E+02	NC	0.46		0.63	
Methylene Chloride	ND	ND	ND	**0.80**	**4.10E+01**	C	**28.0**		99.0		4.10E+00	C	ND		ND	
o-Xylene	1.20	2.00	2.10	**4.20**	**1.10E+03**	NC	**13.0**		5.40		1.10E+02	NC	0.26		0.26	
Tetrachloroethene	1.90	2.00	2.40	**4.40**	**6.70E+00**	C	3.40		11.0		6.70E-01	C	0.27		0.52	
Toluene	5.70	8.70	7.80	**20.0**	**4.00E+03**	NC	**57.0**		42.0		4.00E+02	NC	1.00	U	1.20	U
Trichloroethene	ND	ND	ND	**0.52**	**1.70E-01**	C	ND		ND		1.70E-02	C	ND		ND	

a) Soil gas screening and indoor air screening levels were based on the more conservative values between the U.S. EPA Region IX Preliminary Remediation Goals and "Draft Guidance for Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" (U.S. EPA, 2002)
Soil gas samples were collected at 8-9 feet bgs. Target risk (TR) was 1E-06, Attenuation Factor (AF) was 0.1 and Target Hazard Quotient (THQ) was 1.
b) One ambient air sample (and duplicate) was collected in Area C.
J= indicates an estimated value below the method detection limit
U = Qualified as ND by validation because the concentration was less than 5 times of what was detected in blank.
NC= RBC based on noncancer endpoint
C= RBC based on carcinogenic endpoint
ND= Not detected at or above laboratory reporting limit
Y= Yes
N= NO
Bold- indicates the highest concentration in each specific medium (e.g. soil gas, indoor air)

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-9

Comparison of Indoor Air, Soil Gas, and Ambient Air Data
Area C (West Central Residential Area): Wagon Lane Court
Evergreen Manor, Roscoe IL

Chemical	Soil Gas				Target[a] Level Soil Gas Conc.		Indoor Air		Target[a] Level Indoor Air Conc.		Ambient Air[b]	
	Sample Identification 2002ZG05-						Sample Identification 2002ZG05-				Sample Identification 2002ZG05-	
	-S17	-S18	-S19	-S20			-S05	-S06			-S21	-D21
	North (ug/m³)	East (ug/m³)	West (ug/m³)	South (ug/m³)	$C_{soil-gas}$ (ug/m³)		1st Floor (ug/m³)	Basement (ug/m³)	C_{target} (ug/m³)		(ug/m³)	duplicate (ug/m³)
1,1,1-Trichloroethane	0.42	**1.20**	0.31	**0.47**	**2.20E+04**	NC	0.29	**0.74**	2.20E+03	NC	ND	ND
2-Butanone (MEK)	2.90	**16.0**	3.00	**2.60**	**1.00E+04**	NC	**2.90**	2.40	1.00E+03	NC	11.0	1.50
Acetone	16.0	**26.0** J	12.00 J	**12.00**	**3.50E+03**	NC	**36.0** J	27.0 J	3.50E+02	NC	51.0	8.00
Benzene	6.90	**25.0**	7.20	**2.60**	**2.30E+00**	C	**0.84**	0.76	2.30E-01	C	0.33	0.48
Chloroform	ND	ND	ND	**0.86**	**1.10E+00**	C	0.49	**0.67**	1.10E-01	C	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	**3.50E+02**	NC	ND	ND	3.50E+01	NC	ND	ND
Ethylbenzene	**18.0**	5.40	6.30	**2.80**	**1.70E+01**	C	**0.80**	0.60	1.70E+00	C	ND	0.22
Freon 113	0.49	**0.52**	0.43	**0.50**	**3.00E+05**	NC	0.45	**0.46**	3.00E+04	NC	0.40	0.61
m,p-Xylene	**60.0**	7.60	7.50	**3.20**	**1.10E+03**	NC	**1.70**	1.60	1.10E+02	NC	0.46	0.63
Methylene Chloride	0.79	ND	0.87	**0.98**	**4.10E+01**	C	**0.88**	ND	4.10E+00	C	ND	ND
o-Xylene	**21.0**	2.20	3.40	**1.40**	**1.10E+03**	NC	**0.64**	**0.64**	1.10E+02	NC	0.26	0.26
Tetrachloroethene	2.80	**190**	5.30	**2.80**	**6.70E+00**	C	0.76	**3.20**	6.70E-01	C	0.27	0.52
Toluene	57.0	**150**	14.0	**8.00**	**4.00E+03**	NC	**11.0**	8.10	4.00E+02	NC	1.00 U	1.20 U
Trichloroethene	ND	**9.50**	ND	ND	**1.70E-01**	C	ND	ND	1.70E-02	C	ND	ND

a) Soil gas screening and indoor air screening levels were based on the more conservative values between the U.S. EPA Region IX Preliminary Remediation Goals and "Draft Guidance for Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" (U.S. EPA, 2002)
Soil gas samples were collected at 8-9 feet bgs. Target risk (TR) was 1E-06, Attenuation Factor (AF) was 0.1 and Target Hazard Quotient (THQ) was 1.
b) One ambient air sample (and duplicate) was collected in Area C.
J= indicates an estimated value below the method detection limit
U = Qualified as ND by validation because the concentration was less than 5 times of what was detected in blank.
NC= RBC based on noncancer endpoint
C= RBC based on carcinogenic endpoint
ND= Not detected at or above laboratory reporting limit.
Y= Yes
N= NO
Bold- indicates the highest concentration in each specific medium (e.g. soil gas, indoor air)

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-10

Comparison of Indoor Air, Soil Gas, and Ambient Air Data
Area D (Southern Residential Area): Wagon Lane/ Tanawingo
Evergreen Manor, Roscoe IL

Chemical	Soil Gas				Target[a] Level Soil Gas Conc.		Indoor Air		Target[a] Level Indoor Air Conc.		Ambient Air[b]	
	Sample Identification 2002ZG05-						Sample Identification 2002ZG05-				Sample Identification 2002ZG05-	
	-S22	-S23	-S24	-S25			-S07	-S08			-S21	-D21
	South (ug/m³)	North (ug/m³)	West (ug/m³)	East (ug/m³)	$C_{soil-gas}$ (ug/m³)		1st Floor (ug/m³)	Basement (ug/m³)	C_{target} (ug/m³)		(ug/m³)	duplicate (ug/m³)
1,1,1-Trichloroethane	**3.60**	0.41	1.30	**0.69**	2.20E+04	NC	**0.28**	0.21	2.20E+03	NC	ND	ND
2-Butanone (MEK)	1.80	3.60	4.00	**5.70**	1.00E+04	NC	**27.0**	26.0	1.00E+03	NC	11.0	1.50
Acetone	13.00 J	16.0 J	21.0 J	**28.0 J**	3.50E+03	NC	87.0 E	**120.0 E**	3.50E+02	NC	51.0	8.00
Benzene	1.20	1.20	1.40	**1.60**	2.30E+00	C	**22.0**	9.30	2.30E-01	C	0.33	0.48
Chloroform	**1.70**	ND	ND	1.10	1.10E+00	C	2.40	**3.00**	1.10E-01	C	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	3.50E+02	NC	ND	ND	3.50E+01	NC	ND	ND
Ethylbenzene	1.30	0.98	1.60	**1.90**	1.70E+01	C	**8.10**	4.80	1.70E+00	C	ND	0.22
Freon 113	**0.78**	0.67	0.75	**0.63**	3.00E+05	NC	**0.42**	**0.42**	3.00E+04	NC	0.40	0.61
m,p-Xylene	1.80	1.40	2.10	**2.60**	1.10E+03	NC	**35.0**	17.0	1.10E+02	NC	0.46	0.63
Methylene Chloride	**0.74 J**	0.55	0.57	**0.62**	4.10E+01	C	**1.30**	1.00	4.10E+00	C	ND	ND
o-Xylene	0.87	0.73	1.20	**1.30**	1.10E+03	NC	**10.0**	4.80	1.10E+02	NC	0.26	0.26
Tetrachloroethene	**0.94**	ND	**0.94**	**0.33**	6.70E+00	C	**1.30**	0.82	6.70E-01	C	0.27	0.52
Toluene	3.00	2.50	3.30	**3.60**	4.00E+03	NC	**68.0**	45.0	4.00E+02	NC	1.00 U	1.20 U
Trichloroethene	**1.40**	ND	ND	ND	1.70E-01	C	ND	ND	1.70E-02	C	ND	ND

a) Soil gas screening and indoor air screening levels were based on the more conservative values between the U.S. EPA Region IX Preliminary Remediation Goals and "Draft Guidance for Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" (U.S. EPA, 2002)
Soil gas samples were collected at 8-9 feet bgs. Target risk (TR) was 1E-06, Attenuation Factor (AF) was 0.1 and Target Hazard Quotient (THQ) was 1.
b) One ambient air sample (and duplicate) was collected in Area C.
J= indicates an estimated value below the method detection limit
E= Detected at concentrations exceeding the calibration range
U = Qualified as ND by validation because the concentration was less than 5 times of what was detected in blank.
NC= RBC based on noncancer endpoint
C= RBC based on carcinogenic endpoint
ND= Not detected at or above laboratory reporting limit.
Y= Yes
N= NO
Bold- indicates the highest concentration in each specific medium (e.g. soil gas, indoor air)

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-11

Summary of Detected Compounds in Groundwater by Air Sampling Areas
2000 RI Data[3]
Evergreen Manor Site
Roscoe, Illinois

Detected Contaminant	Area A (northern residential area)					
	Area A Reference Residential Air Sample Location - Mathew Avenue					
	MW-104S	MW-104D	MW-105S	MW-105D	MW-105D-011	CPT-04[2]
Well Depth (ft bgs)	50-60	90-100	55-65	90-100	90-100	See Below
Distance (ft) from Reference Air Sample	200 ft	200 ft	190 ft	190 ft	190 ft	800 ft
Acetone	ND	ND	ND	ND	ND	10 B
Benzene	ND	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND
Xylenes (non-isomer specific)	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	2 J	1 J	2 J	2 J	3	ND
Freon 113	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	1 J	1 J	2	ND
Tetrachloroethene (PCE)	ND	ND	3 J	3 J	4	ND
Toluene	ND	ND	ND	ND	ND	1 J
Trichloroethene (TCE)	ND	ND	2 J	2 J	3	ND

Unit = µg/L

Notes:

ND - Not Detected

[1]Sample analyzed at an off-site laboratory. All other samples analyzed by an on-site mobile laboratory.

[2]Includes only maximum detected concentrations including QC duplicate and/or multiple depth samples same location.

DUP - Field quality control duplicate sample

[3]Data compiled from Tables 5-1 through 5-4, and raw data (Appendix D), RI Report March 2001 (WESTON, 2001)

J - Indicates an estimated value below the method detection limit

B - Indicates compound was found in the associated method blank sample indicating presence may be due to laboratory procedures.

CPT-04 samples were collected at the following depths :32, 46, 56, 71, 78, 84, and 93 feet bgs
CPT-05 samples were collected at the following depths: 35, 43, 51, 57, 69.5, 78, and 87 feet bgs
CPT-09 samples were collected at the following depths: 35, 45, 55, 68, 75, 85, and 88 feet bgs
CPT-10 samples were collected at the following depths: 25, 36, 42, 55, 65, 73, and 90 feet bgs

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-11 (Continued)

Summary of Detected Compounds in Groundwater by Air Sampling Areas
2000 RI Data[3]
Evergreen Manor Site
Roscoe, Illinois

Detected Contaminant	Area A (northern residential area)				
	Area A Reference Residential Air Sample Location - Mathew Avenue				
	CPT-05[2]	CPT-09[2]	CPT-10[2]	RW-17	RW-18
Well Depth (ft bgs)	See Below	See Below	See Below	Unknown	Unknown
Distance (ft) from Reference Air Sample	920 ft	600 ft	1280 ft	970 ft	1100 ft
Acetone	100 J	11 J	40 B	ND	ND
Benzene	ND	0.6 J	ND	ND	ND
2-Butanone	16 J	ND	ND	ND	ND
Ethylbenzene	ND	0.6 J	ND	ND	ND
Xylenes (non-isomer specific)	ND	0.7 J	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	1 J	ND	ND
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND
Tetrachloroethene (PCE)	ND	ND	0.9 J	ND	ND
Toluene	1 J	2 J	1 J	2 B	2 B
Trichloroethene (TCE)	ND	ND	ND	ND	ND

Unit = µg/L

Notes:

ND - Not Detected

[1]Sample analyzed at an off-site laboratory. All other samples analyzed by an on-site mobile laboratory.

[2]Includes only maximum detected concentrations including QC duplicate and/or multiple depth samples same location.

DUP - Field quality control duplicate sample

[3]Data compiled from Tables 5-1 through 5-4, and raw data (Appendix D), RI Report March 2001 (WESTON, 2001)

J - Indicates an estimated value below the method detection limit

B - Indicates compound was found in the associated method blank sample indicating presence may be due to laboratory procedures.

CPT-04 samples were collected at the following depths :32, 46, 56, 71, 78, 84, and 93 feet bgs

CPT-05 samples were collected at the following depths: 35, 43, 51, 57, 69.5, 78, and 87 feet bgs

CPT-09 samples were collected at the following depths: 35, 45, 55, 68, 75, 85, and 88 feet bgs

CPT-10 samples were collected at the following depths: 25, 36, 42, 55, 65, 73, and 90 feet bgs

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-11 (Continued)

Summary of Detected Compounds in Groundwater by Air Sampling Areas
2000 RI Data[3]
Evergreen Manor Site
Roscoe, Illinois

Detected Contaminant	Areas B and C (central residential area)										
	Area B&C Ref. Residential Air Sample Locations - Straw Lane/ Blue Spruce & Wagon Lane Court										
	RW-01	RW-02	RW-03	RW-04	RW-04-01[1]	RW-05[2]	RW-06	RW-07	RW-08	RW-09	RW-10
Distance (ft) from Reference Air Sample[4]	1250/600 ft	1325/725 ft	900/300 ft	500/550 ft	500/550 ft	1750/1650 ft	1350/1700 ft	550/125 ft	750/300 ft	1875/1250 ft	1800/1150 ft
Acetone	ND	ND	0.8	ND	ND	0.6	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (non-isomer specific)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	2 J	2 J	2	ND	ND	5 J	0.9 J	ND	ND
Freon 113	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	0.9 J	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	1 J	2	ND	ND	ND	ND	ND	ND
Tetrachloroethene (PCE)	ND	ND	ND	2 J	2	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene (TCE)	ND	ND	ND	5 J	6	ND	ND	0.7 J	ND	ND	ND

Unit = µg/L
Notes:
ND - Not Detected
[1]Sample analyzed at an off-site laboratory. All other samples analyzed by an on-site mobile laboratory.
[2]Includes only maximum detected concentrations including QC duplicate and/or multiple depth samples same location.
DUP - Field quality control duplicate sample
[3]Data compiled from Tables 5-1 through 5-4, and raw data (Appendix D), RI Report March 2001 (WESTON, 2001)
J - Indicates an estimated value below the method detection limit
B - Indicates compound was found in the associated method blank sample indicating presence may be due to laboratory procedures.
[4] Where two distances are given in combined Area B&C, values represent distances to Straw Lane/Blue Spruce and Wagon Lane Court, respectively.
Residential well depths are unknown- the screen depth is assumed to be 55 to 65 feet bgs

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-11 (Continued)

Summary of Detected Compounds in Groundwater by Air Sampling Areas
2000 RI Data[3]
Evergreen Manor Site
Roscoe, Illinois

Detected Contaminant	Areas B and C (central residential area)										
	Area B&C Ref. Residential Air Sample Locations - Straw Lane/ Blue Spruce & Wagon Lane Court										
	RW-11	RW-11-01[1]	RW-12	RW-13	RW-14	RW-15	RW-16	RW-19	RW-20	RW-21	RW-22
Distance (ft) from Reference Air Sample[4]	1375/825 ft	1375/825/ft	1625/1050 ft	1550/2100 ft	1500/2040 ft	1450/1950 ft	1350/1800 ft	300/550 ft	1100/400 ft	1700/1100 ft	1150/500 ft
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (non-isomer specific)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	1 J	1	ND	ND	ND	ND	ND	1 J	ND	ND	ND
Freon 113	ND	ND	ND	ND	ND	ND	ND.	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene (PCE)	ND	ND	ND	ND	ND	ND	ND	0.9 J	ND	ND	ND
Toluene	ND	ND	ND	2 B	2 B	2 B	ND	2 B	1 B	1 B	2 B
Trichloroethene (TCE)	ND	ND	ND	ND	ND	ND	ND	4 J	ND	ND	ND

Unit = µg/L
Notes:
ND - Not Detected
[1]Sample analyzed at an off-site laboratory. All other samples analyzed by an on-site mobile laboratory.
[2]Includes only maximum detected concentrations including QC duplicate and/or multiple depth samples same location.
DUP - Field quality control duplicate sample
[3]Data compiled from Tables 5-1 through 5-4, and raw data (Appendix D), RI Report March 2001 (WESTON, 2001)
J - Indicates an estimated value below the method detection limit
B - Indicates compound was found in the associated method blank sample indicating presence may be due to laboratory procedures.
[4] Where two distances are given in combined Area B&C, values represent distances to Straw/Blue Spruce and Wagon Lane Court, respectively.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-11 (Continued)

Summary of Detected Compounds in Groundwater by Air Sampling Areas
2000 RI Data[3]
Evergreen Manor Site
Roscoe, Illinois

Detected Contaminant	Area D (southern residential area)					
	Ref. Air Sample Location - Wagon Lane/ Tanawingo					
	CPT-01[2]		CPT-02[2]		CPT-03[2]	
Well Depth (ft)	See Below		See Below		See Below	
Distance (ft) from Reference Air Sample[4]	100 ft		880 ft		900 ft	
Acetone	15	B	470		32	B
Benzene	ND		ND		ND	
2-Butanone	ND		ND		ND	
Ethylbenzene	ND		ND		ND	
Xylenes (non-isomer specific)	ND		0.6	J	ND	
1,1,1-Trichloroethane	1	J	ND		2	J
Freon 113	ND		ND		ND	
Chloroform	ND		ND		ND	
cis-1,2-Dichloroethene	2	J	ND		ND	
Methylene Chloride	ND		ND		0.5	J
Tetrachloroethene (PCE)	ND		ND		ND	
Toluene	0.7	J	1	J	2	
Trichloroethene (TCE)	4	J	ND		ND	

Unit = µg/L
Notes:
ND - Not Detected
[1]Sample analyzed at an off-site laboratory. All other samples analyzed by an on-site mobile laboratory.
[2]Includes only maximum detected concentrations including QC duplicate and/or multiple depth samples same location.
[3]Data compiled from Tables 5-1 through 5-4, and raw data (Appendix D), RI Report March 2001 (WESTON, 2001)
DUP - Field quality control duplicate sample
J - Indicates an estimated value below the method detection limit
B - Indicates compound was found in the associated method blank sample indicating presence may be due to laboratory procedures.
CPT-01 samples were collected at the following depths: 29, 39, 49, 59, 69, 79, 89, and 99 feet bgs.
CPT-02 samples were collected at the following depths: 28, 34, 42, 51, 68, 78, and 84 feet bgs
CPT-03 samples were collected at the following depths: 29, 42, 54, 68, 84, 92, and 102 feet bgs

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-12

Summary of Detected Compounds in Groundwater by Air Sampling Areas
2002 Investigation Data
Evergreen Manor Site
Roscoe, Illinois

Detected Constituent	Area A (northern residential area)				Area B and C (central residential area)		Area D (southern area)
	Reference Res. Sample Loc. - Mathew Ave.				Straw/ Blue Spruce & Wagon Lane Court		Wagon/ Tanawingo
	MW-104S	MW-104D	MW-105S	MW-105D	MW-01A[1]	MW-02[2]	MW-03
Well Depth (ft below ground surface)	50-60	90-100	55-65	90-100	55-60	65-70	70-75
Distance (ft) from Reference Air Sample[3]	300 ft	300 ft	130 ft	130 ft	280/600 ft	800/450 ft	250 ft
1,1,1-Trichloroethane	0.9	0.87	1.9	2.2	2.4	1.7	2.1
Freon 113	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	0.2 J	0.39 J	0.34 J	ND	0.26 J
1,1-Dichloroethene	ND	ND	ND	ND	0.19 J	ND	0.2 J
cis-1,2-Dichloroethene	ND	ND	0.47 J	1.3	1.5	ND	1.1
Chloroform	ND	ND	ND	ND	ND	0.23* J	ND
Tetrachloroethene (PCE)	0.48 J	0.18 J	3.5	3.2	1.7	ND	0.1 J
Trichloroethene (TCE)	0.19 J	ND	1.7	2.8	4.7	ND	7.2 J

Unit = µg/L
Notes:
ND- Not Detected at or above the laboratory detection limits
[1]This well was installed to replace former residential well RW-04 located on Blue Spruce Drive.
[2]This well was installed to replace former residential well RW-08 located on Wagon Lane.
[3] Where two distances are given in combined Area B&C, values represent distances to Straw/Blue Spruce and Wagon Lane Court, respectively.
*Chloroform detected in this sample was less than 10 times of what was detected in the field blank

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-13

Summary of Detected Compounds in Upgradient[1] Groundwater
2000 RI Data[3]
Evergreen Manor Site
Roscoe, Illinois

	Upgradient Groundwater Samples											
Detected Contaminant[2]	**CPT-06**	**CPT-11**	**CPT-12**	**MW-101S**	**MW-101D**	**MW-102S**	**MW-102D**	**MW-103S**	**MW-103D**	**MW-108S**	**MW-108D**	**MW-112**
Well Depth (ft)	**See Below**	**See Below**	**See Below**	**30-40**	**70-80**	**35-45**	**55-65**	**32-42**	**45-55**	**35-45**	**55-65**	**38.28-48.77**
Distance (ft) from Northern Limit Area A	**300**	**3,600**	**3,300**	**600**	**600**	**4,500**	**4,500**	**5,100**	**5,100**	**3,300**	**3,300**	**6,950**
Acetone	53 J	13 J	7 B	ND	ND	ND	ND	ND	35 B	ND	ND	ND
Benzene	ND	ND	0.5 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	0.7 J	0.6 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	3	ND	ND	ND	ND	ND	ND	3 J	ND	ND	2 J
Freon 113	ND	ND	ND	ND	ND	ND	ND	2 J	300 J	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2- Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene (PCE)	ND	ND	ND	ND	ND	ND	ND	9 J	0.5 J	ND	0.7 J	ND
Toluene	2	3 J	2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene (TCE)	ND	ND	ND	ND	2 J	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Unit = µg/L
ND-Not Detected
[1] Groundwater sample data upgradient of Areas A-D, including area of Rt 251 and Rockton Road.
[2] Inlcudes only Maximum Detected concentrations includeing QC duplicate and/or multiple depth samples from same location
[3] Data complied from Tables 5-1 through 5-4, and raw data (Appendix D), RI Report, March 2001 (Weston, 2001)
J - Indicates an estimated value below the method detection limit
B- compound was also detected in laboratory blank samples
CPT-06 samples were collected from following depths: 35, 42, 53, 62, 74, 85, 92
CPT-11 samples were collected from following depths: 45, 58, 70, 81, 93, 102, 114, 125
CPT-12 samples were collected from following depths: 45, 62, 70, 81, 93, 102, 118

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-13 (Continued)

Summary of Detected Compounds in Upgradient[1] Groundwater
2002 Data Evaluation Report Data[5]
Evergreen Manor Site
Roscoe, Illinois

	Upgradient Groundwater Samples							
Detected Contaminant[2]	MW-101S	MW-101D	MW-103S	MW-103D	MW-107S	MW-107D	MW-109S	MW-109D
Well Depth (ft. below ground surface)	30-40	70-80	32-42	45-55	35-45	55-65	40-50	60-70
Distance (ft) from Northern Limit Area A	600	600	5,100	5,100	3,600	3,600	3,000	3,000
Acetone	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	0.63	0.56	ND	1.3	0.29 J	0.44 J
Freon 113	ND	ND	ND	ND	ND	6.7	ND	ND
Chloroform	ND	ND	ND	30	ND	ND	ND	ND
cis-1,2- Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene (PCE)	ND	ND	5.9	ND	0.17 J	3.3	1.6	2.6
Toluene	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene (TCE)	0.21 J	1.8	ND	ND	ND	ND	ND	0.24 J
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND

Unit = µg/L
ND-Not Detected
[1] Groundwater sample data upgradient of Areas A-D, including area of Rt 251 and Rockton Road.
[2] Inlcudes only Maximum Detected concentrations includeing QC duplicate and/or multiple depth samples from same location
[5] Data complied from Table 5-1 and raw data (Appendix D), Groundwater Data Evaluation Report (Weston, 2003)
J - Indicates an estimated value below the method detection limit
B- compound was also detected in laboratory blank samples

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-14

Summary of Groundwater Analytical Data - All Sources 2000 and 2002
Residential Wells, Temporary CPT Wells, and Monitoring Wells
Evergreen Manor Site
Roscoe, Illinois

Chemical	2000 Remedial Investigation					2002 Investigation*				
	Frequency of Detection	Range of Detections		Location of Maximum Detection		Frequency of Detection	Range of Detections		Location of Maximum Detection	
		Minimum	Maximum	Sample Point	Air Sampling Area		Minimum	Maximum	Sample Point	Air Sampling Area
Residential wells										
cis-1,2-Dichloroethene	1/22	ND	2.00	RW-04	Area BC	NA	NA	NA	NA	NA
Trichloroethene (TCE)	3/22	0.7	6.00	RW-04	Area BC	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	2/22	0.9	2.00	RW-04	Area BC	NA	NA	NA	NA	NA
Acetone	2/22	0.6	0.80	RW-03	---	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	6/22	0.6	5.00	RW-07	Area BC	NA	NA	NA	NA	NA
Chloroform	1/22	ND	0.90	RW-08	Area BC	NA	NA	NA	NA	NA
Toluene	9/22	1	2.00	RW-13;14;15	---	NA	NA	NA	NA	NA
				RW-17;18	Area A	NA	NA	NA	NA	NA
				RW-22	Area BC	NA	NA	NA	NA	NA
CPT wells										
Acetone	31/73	1	470	CPT-02-03	Area D	NA	NA	NA	NA	NA
1,1-Dichloroethane	1/73	ND	2.0	CPT11-05	---	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	5/73	1	2.0	CPT-01-02	Area D	NA	NA	NA	NA	NA
Trichloroethene (TCE)	8/73	2	4.0	CPT-01-01 thru 08	Area D	NA	NA	NA	NA	NA
Toluene	60/73	0.5	3.0	CPT-11-08	---	NA	NA	NA	NA	NA
Methylene chloride	1/73	ND	0.5	CPT-03-05	Area D	NA	NA	NA	NA	NA
Benzene	3/73	ND	0.6	CPT-09-07	Area A	NA	NA	NA	NA	NA
2-Butanone	1/73	ND	16.0	CPT-05-06	Area A	NA	NA	NA	NA	NA
m-&/or p-Xylene	4/73	0.5	0.7	CPT-06-01	---	NA	NA	NA	NA	NA
				CPT-09-07	Area A					
Xylenes (total)	2/12	0.6	0.6	CPT-11-01	---	NA	NA	NA	NA	NA
Ethylbenzene	1/73	ND	0.6	CPT-09-07	Area A	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	2/73	0.6	0.9	CPT-10-02	Area A	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	15/73	0.8	3.0	CPT-11-06	---	NA	NA	NA	NA	NA
				CPT-11-05	---					
Monitoring wells										
Acetone	1/15	ND	35	MW-103D	---	ND	ND	ND	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	2/15	1	300	MW-103D	---	2/15	6.7	30	MW-103D	---
cis-1,2-Dichloroethene	2/15	1	2	MW-105D	Area A	4/15	0.47	1.5	MW-01A	Area BC
1,1,1-Trichloroethane	6/15	1	3	MW103D	---	12/15	0.29	2.4	MW-01A	Area BC
				MW-105D	Area A					
1,1-Dichloroethane	ND	ND	ND	NA	NA	3/15	0.21	0.39	MW-105D	Area BC
1,1-Dichloroethene	ND	ND	ND	NA	NA	2/15	0.19	0.2	MW-03	Area D
Chloroform	ND	ND	ND	NA	NA	1/15	--	0.23	MW-02	Area BC
Tetrachloroethene (PCE)	5/15	0.5	9	MW-103S	---	11/15	0.1	5.9	MW-103S	---
Trichloroethene (TCE)	3/15	2	3	MW-105D	Area A	8/15	0.19	7.2	MW-3	Area D

Unit = µg/L
Notes:
NA = Not Applicable
ND = Not Detected at or above laboratory reporting limits
--- Out of air sampling areas
*2002 Monitoring well sampling result does not include the samples collected from municipal wells #6 and #6A

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-15

Summary of Groundwater Analytical Data-All Sources 2000 and 2002
All Wells Combined
Evergreen Manor Site
Roscoe, Illinois

Detected Chemicals	2000 RI					2002 Investigation				
	Frequency of Detection	Range of Detections		Location of Maximum Detection		Frequency of Detection	Range of Detections		Location of Maximum Detection	
		Minimum	Maximum	Sample Point	Air Sampling Area		Minimum	Maximum	Sample Point	Air Sampling Area
Acetone	34/110	ND	470.0	CPT-02-03	Area D	ND	ND	ND	NA	NA
Chlororform	1/110	ND	0.9	RW-08	Area BC	1/15	ND	0.23	MW-02	Area BC
1,1-Dichloroethane	1/110	ND	2.0	CPT11-05	---	3/15	0.21	0.39	MW-01A	Area BC
1,1-Dichloroethene	0/110	ND	ND	NA	NA	2/15	0.19	0.2	MW-03	Area D
Freon 113	2/110	1	300.0	MW103D	---	2/15	6.7	30	MW-103D	---
cis-1,2-Dichloroethene	8/110	1	2.0	CPT-01-02	Area D	4/15	0.47	1.5	MW-01A	Area BC
				RW-04	Area BC					
				MW105D	Area A					
Trichloroethene	14/110	0.7	6.0	CPT-01-03;01-04;01-06	Area D	8/15	0.19	7.2	MW-03	Area D
				RW-04	Area BC					
Toluene	69/110	0.5	3.0	CPT-11-08	---	ND	ND	ND	NA	NA
Methylene chloride	1/110	ND	0.5	CPT-03-05	Area D	ND	ND	ND	NA	NA
Benzene	3/110	ND	0.6	CPT-09-01	Area A	ND	ND	ND	NA	NA
				CPT-12-04DUP	---					
2-Butanone	1/110	ND	16.0	CPT-05-06	Area A	ND	ND	ND	NA	NA
m-&/or p-Xylene	4/110	0.5	0.7	CPT-06-01	---	ND	ND	ND	NA	NA
				CPT-09-07	Area A					
Xylenes (total)	2/12	0.6	0.6	CPT11-01;02-01	---	ND	ND	ND	NA	NA
Ethylbenzene	1/110	ND	0.6	CPT-09-07	Area A	ND	ND	ND	NA	NA
Tetrachloroethene	7/110	0.6	9.0	CPT-10-02	Area A	11/15	0.1	5.9	MW-103S	---
				MW-103S	---					
1,1,1-Trichloroethane	27/110	0.6	5.0	CPT-11-06	---	12/15	0.29	2.4	MW-01A	Area BC

Unit = µg/L
--- Out of air sampling areas
ND= Not Detected at or above laboratory reporting limits
NA= Not Applicable

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-1a

Overall Potential Cancer Risk Summary
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

	Indoor Air						Soil Gas					
Area A-Northern Residential Area	Maximum Detected Concentration	EPA VI Guide, Indoor Air	Cancer Risk - VI	Region IX PRG, Ambient Air	Cancer Risk - R9	Most Conservative Cancer Risk	Maximum Detected Concentration	EPA VI Guide, Soil Gas	Cancer Risk - VI	Region IX PRG, Ambient Air	Cancer Risk - R9	Most Conservative Cancer Risk
Benzene	1.1	0.31	3.5E-06	0.23	4.8E-06	4.8E-06	31	3.1	1.0E-05	2.3	1.3E-05	1.3E-05
Chloroform	0.59	0.11	5.4E-06	0.35	1.7E-06	5.4E-06	ND	1.1	--	3.5	--	--
Ethylbenzene	1	2.2	4.5E-07	1.70	5.9E-07	5.9E-07	41	22	1.9E-06	17	2.4E-06	2.4E-06
Methylene Chloride	27	5.2	5.2E-06	4.1	6.6E-06	6.6E-06	0.9	52	1.7E-08	41	2.2E-08	2.2E-08
PCE	0.7	0.81	8.6E-07	0.67	1.0E-06	1.0E-06	0.88	8.1	1.1E-07	6.7	1.3E-07	1.3E-07
TCE	ND	0.022	--	0.017	--	--	ND	0.22	--	0.17	--	--
TOTAL - All VOCs			1.5E-05		1.5E-05	1.5E-05			1.2E-05		1.6E-05	1.6E-05
Benzene	1.1	0.31	3.5E-06	0.23	4.8E-06	4.8E-06	31	3.1	1.0E-05	2.3	1.3E-05	1.3E-05
Ethylbenzene	1	2.2	4.5E-07	1.7	5.9E-07	5.9E-07	41	22	1.9E-06	17	2.4E-06	2.4E-06
PCE	0.7	0.81	8.6E-07	0.67	1.0E-06	1.0E-06	0.88	8.1	1.1E-07	6.7	1.3E-07	1.3E-07
TCE	ND	0.022	--	0.017	--	--	ND	0.22	--	0.17	--	--
TOTAL-Excluding Methylene chloride and chloroform			4.9E-06		6.4E-06	6.4E-06			1.2E-05		1.6E-05	1.6E-05
PCE	0.7	0.81	8.6E-07	0.67	1.0E-06	1.0E-06	0.88	8.1	1.1E-07	6.7	1.3E-07	1.3E-07
TCE	ND	0.022	--	0.017	--	--	ND	0.22	--	0.17	--	--
TOTAL-Only PCE and TCE			8.6E-07		1.0E-06	1.0E-06			1.1E-07		1.3E-07	1.3E-07

VI = Cancer risk based on Vapor Intrusion Guidance Screening Level (EPA, 2002b).
R9 = Cancer risk based on Region IX Preliminary Remediation Goal (EPA, 2002a).
The risk estimates presented are based on the higher of the 1st floor and basement concentrations.
ND - not detected.
All concentrations in ug/m^3.
The following assumptions were used:
Target risk = 1E-06
Target Hazard Quotient = 1
Attenuation Factor was 0.1 using shallow soil screening levels

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-1a (Continued)

Overall Potential Cancer Risk Summary
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

	Indoor Air						Soil Gas					
Area B - East Central Residential Area	**Maximum Detected Concentration**	**EPA VI Guide, Indoor Air**	**Cancer Risk - VI**	**Region IX PRG, Ambient Air**	**Cancer Risk - R9**	**Most Conservative Cancer Risk**	**Maximum Detected Concentration**	**EPA VI Guide, Soil Gas**	**Cancer Risk - VI**	**Region IX PRG, Ambient Air**	**Cancer Risk - R9**	**Most Conservative Cancer Risk**
Benzene	7	0.31	2.3E-05	0.23	**3.0E-05**	3.0E-05	5.3	3.1	1.7E-06	2.3	2.3E-06	2.3E-06
Chloroform	0.73	0.11	6.6E-06	0.35	**2.1E-06**	6.6E-06	6	1.1	5.5E-06	3.5	1.7E-06	5.5E-06
Ethylbenzene	13	2.2	5.9E-06	1.7	**7.6E-06**	7.6E-06	8.9	22	4.0E-07	17	5.2E-07	5.2E-07
Methylene Chloride	99	5.2	1.9E-05	4.1	**2.4E-05**	2.4E-05	0.8	52	1.5E-08	41	2.0E-08	2.0E-08
PCE	11	0.81	1.4E-05	0.67	**1.6E-05**	1.6E-05	4.4	8.1	5.4E-07	6.7	6.6E-07	6.6E-07
TCE	ND	0.022	--	0.017	--	--	0.52	0.22	2.4E-06	0.17	3.1E-06	3.1E-06
TOTAL - All VOCs			6.8E-05		**8.1E-05**	8.1E-05			1.0E-05		8.3E-06	1.0E-05
Benzene	7	0.31	2.3E-05	0.23	**3.0E-05**	3.0E-05	5.3	3.1	1.7E-06	2.3	2.3E-06	2.3E-06
Chloroform	0.73	0.11	6.6E-06	0.35	**2.1E-06**	6.6E-06	6	1.1	5.5E-06	3.5	1.7E-06	5.5E-06
Ethylbenzene	13	2.2	5.9E-06	1.7	**7.6E-06**	7.6E-06	8.9	22	4.0E-07	17	5.2E-07	5.2E-07
PCE	11	0.81	1.4E-05	0.67	**1.6E-05**	1.6E-05	4.4	8.1	5.4E-07	6.7	6.6E-07	6.6E-07
TCE	ND	0.022	--	0.017	--	--	0.52	0.22	2.4E-06	0.17	3.06E-06	3.06E-06
TOTAL- Excluding Methylene chloride			4.9E-05		**5.7E-05**	5.7E-05			1.0E-05		8.3E-06	1.0E-05
Benzene	7	0.31	2.3E-05	0.23	**3.0E-05**	3.0E-05	5.3	3.1	1.7E-06	2.3	2.3E-06	2.3E-06
Ethylbenzene	13	2.2	5.9E-06	1.7	**7.6E-06**	7.6E-06	8.9	22	4.0E-07	17	5.2E-07	5.2E-07
PCE	11	0.81	1.4E-05	0.67	**1.6E-05**	1.6E-05	4.4	8.1	5.4E-07	6.7	6.6E-07	6.6E-07
TCE	ND	0.022	--	0.017	--	--	0.52	0.22	2.4E-06	0.17	3.06E-06	3.06E-06
TOTAL- Excluding methylene chloride and chloroform			4.2E-05		**5.4E-05**	5.4E-05			5.0E-06		6.5E-06	6.5E-06
Benzene	7	0.31	2.3E-05	0.23	**3.0E-05**	3.0E-05	5.3	3.1	1.7E-06	2.3	2.3E-06	2.3E-06
Ethylbenzene	13	2.2	5.9E-06	1.7	**7.6E-06**	7.6E-06	8.9	22	4.0E-07	17	5.2E-07	5.2E-07
Methylene chloride	99	5.2	1.9E-05	4.1	**2.4E-05**	2.4E-05	0.80	52	1.5E-08	41	2.0E-08	2.0E-08
PCE	11	0.81	1.4E-05	0.67	**1.6E-05**	1.6E-05	4.4	8.1	5.4E-07	6.7	6.6E-07	6.6E-07
TCE	ND	0.022	--	0.017	--	--	0.52	0.22	2.4E-06	0.17	3.06E-06	3.06E-06
TOTAL - Excluding chloroform			6.1E-05		**7.9E-05**	7.9E-05			5.0E-06		6.6E-06	6.6E-06
PCE	11	0.81	1.4E-05	0.67	**1.6E-05**	1.6E-05	4.40	8.1	5.4E-07	6.7	6.6E-07	6.6E-07
TCE	ND	0.022	--	0.017	--	--	0.52	0.22	2.4E-06	0.17	3.06E-06	3.06E-06
TOTAL - Only PCE and TCE			1.4E-05		**1.6E-05**	1.6E-05			2.9E-06		3.7E-06	3.7E-06

VI = Cancer risk based on Vapor Intrusion Guidance Screening Level (EPA, 2002b).
R9 = Cancer risk based on Region IX Preliminary Remediation Goal (EPA, 2002a).
The risk estimates presented are based on the higher of the 1st floor and basement concentrations.
ND - not detected.
All concentrations in ug/m^3.
The following assumptions were used:
Target risk = 1E-06
Target Hazard Quotient = 1
Attenuation Factor was 0.1 using shallow soil screening levels

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-1a (Continued)

Overall Potential Cancer Risk Summary
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

	Indoor Air						Soil Gas					
Area C - West Central Residential Area	Maximum Detected Concentration	EPA VI Guide, Indoor Air	Cancer Risk - VI	Region IX PRG, Ambient Air	Cancer Risk - R9	Most Conservative Cancer Risk	Maximum Detected Concentration	EPA VI Guide, Soil Gas	Cancer Risk - VI	Region IX PRG, Ambient Air	Cancer Risk - R9	Most Conservative Cancer Risk
Benzene	0.84	0.31	2.7E-06	0.23	3.7E-06	3.7E-06	25	3.1	8.1E-06	2.3	1.1E-05	1.1E-05
Chloroform	0.67	0.11	6.1E-06	0.35	1.9E-06	6.1E-06	0.86	1.1	7.8E-07	3.5	2.5E-07	7.8E-07
Ethylbenzene	0.8	2.2	3.6E-07	1.7	4.7E-07	4.7E-07	18	22	8.2E-07	17	1.1E-06	1.1E-06
Methylene Chloride	0.88	5.2	1.7E-07	4.1	2.1E-07	2.1E-07	0.98	52	1.9E-08	41	2.4E-08	2.4E-08
PCE	3.2	0.81	4.0E-06	0.67	4.8E-06	4.8E-06	190	8.1	2.3E-05	6.7	2.8E-05	2.8E-05
TCE	ND	0.022	--	0.017	--	--	9.5	0.22	4.3E-05	0.17	5.6E-05	5.6E-05
TOTAL - All VOCs			1.3E-05		1.1E-05	1.3E-05			7.6E-05		9.6E-05	9.6E-05
Benzene	0.84	0.31	2.7E-06	0.23	3.7E-06	3.7E-06	25	3.1	8.1E-06	2.3	1.1E-05	1.1E-05
Ethylbenzene	0.8	2.2	3.6E-07	1.7	4.7E-07	4.7E-07	18	22	8.2E-07	17	1.1E-06	1.1E-06
Methylene Chloride	0.88	5.2	1.7E-07	4.1	2.1E-07	2.1E-07	0.98	52	1.9E-08	41	2.4E-08	2.4E-08
PCE	3.2	0.81	4.0E-06	0.67	4.8E-06	4.8E-06	190	8.1	2.3E-05	6.7	2.8E-05	2.8E-05
TCE	ND	0.022	--	0.017	--	--	9.5	0.22	4.3E-05	0.17	5.6E-05	5.6E-05
TOTAL - Excluding chloroform			7.2E-06		9.1E-06	9.1E-06			7.6E-05		9.6E-05	9.6E-05
Benzene	0.84	0.31	2.7E-06	0.23	3.7E-06	3.7E-06	25	3.1	8.1E-06	2.3	1.1E-05	1.1E-05
Ethylbenzene	0.8	2.2	3.6E-07	1.7	4.7E-07	4.7E-07	18	22	8.2E-07	17	1.1E-06	1.1E-06
Chloroform	0.67	0.11	6.1E-06	0.35	1.9E-06	6.1E-06	0.86	1.1	7.8E-07	3.5	2.5E-07	7.8E-07
PCE	3.2	0.81	4.0E-06	0.67	4.8E-06	4.8E-06	190	8.1	2.3E-05	6.7	2.8E-05	2.8E-05
TCE	ND	0.022	--	0.017	--	--	9.5	0.22	4.3E-05	0.17	5.6E-05	5.6E-05
TOTAL - Excluding methylene chloride			1.3E-05		1.1E-05	1.3E-05			7.6E-05		9.6E-05	9.6E-05
PCE	3.2	0.81	4.0E-06	0.67	4.8E-06	4.8E-06	190	8.1	2.3E-05	6.7	2.8E-05	2.8E-05
TCE	ND	0.022	--	0.017	--	--	9.5	0.22	4.3E-05	0.17	5.6E-05	5.6E-05
TOTAL - Only PCE and TCE			4.0E-06		4.8E-06	4.8E-06			6.7E-05		8.4E-05	8.4E-05

VI = Cancer risk based on Vapor Intrusion Guidance Screening Level (EPA, 2002b).
R9 = Cancer risk based on Region IX Preliminary Remediation Goal (EPA, 2002a).
The risk estimates presented are based on the higher of the 1st floor and basement concentrations.
ND - not detected.
All concentrations in ug/m^3.
The following assumptions were used:
Target risk = 1E-06
Target Hazard Quotient = 1
Attenuation Factor was 0.1 using shallow soil screening levels

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-1a (Continued)

Overall Potential Cancer Risk Summary
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

	Indoor Air						Soil Gas					
Area D -Southern Residential Area	Maximum Detected Concentration	EPA VI Guide, Indoor Air	Cancer Risk - VI	Region IX PRG, Ambient Air	Cancer Risk - R9	Most Conservative Cancer Risk	Maximum Detected Concentration	EPA VI Guide, Soil Gas	Cancer Risk - VI	Region IX PRG, Ambient Air	Cancer Risk - R9	Most Conservative Cancer Risk
Benzene	22	0.31	7.1E-05	0.23	**9.6E-05**	9.6E-05	1.6	3.1	5.2E-07	2.3	7.0E-07	7.0E-07
Chloroform	3	0.11	2.7E-05	0.35	**8.6E-06**	2.7E-05	1.7	1.1	1.5E-06	3.5	4.9E-07	1.5E-06
Ethylbenzene	8.1	2.2	3.7E-06	1.7	**4.8E-06**	4.8E-06	1.9	22	8.6E-08	17	1.1E-07	1.1E-07
Methylene Chloride	1.3	5.2	2.5E-07	4.1	**3.2E-07**	3.2E-07	0.74	52	1.4E-08	41	1.8E-08	1.8E-08
PCE	1.3	0.81	1.6E-06	0.67	**1.9E-06**	1.9E-06	0.94	8.1	1.2E-07	6.7	1.4E-07	1.4E-07
TCE	ND	0.022	--	0.017	--	--	1.4	0.22	6.4E-06	0.17	8.2E-06	8.2E-06
TOTAL- All VOCs			1.0E-04		**1.1E-04**	1.1E-04			8.6E-06		9.7E-06	9.7E-06
Chloroform	3	0.11	2.7E-05	0.35	**8.6E-06**	2.7E-05	1.70	1.1	1.5E-06	3.5	4.86E-07	1.5E-06
Ethylbenzene	8.1	2.2	3.7E-06	1.7	**4.8E-06**	4.8E-06	1.90	22	8.6E-08	17	1.1E-07	1.1E-07
Methylene Chloride	1.3	5.2	2.5E-07	4.1	**3.2E-07**	3.2E-07	0.74	52	1.4E-08	41	1.8E-08	1.8E-08
PCE	1.3	0.81	1.6E-06	0.67	**1.9E-06**	1.9E-06	0.94	8.1	1.2E-07	6.7	1.4E-07	1.4E-07
TCE	ND	0.022	--	0.017	--	--	1.40	0.22	6.4E-06	0.17	8.2E-06	8.2E-06
TOTAL- Excluding benzene			3.3E-05		**1.6E-05**	3.3E-05			8.1E-06		9.0E-06	9.0E-06
Methylene Chloride	1.3	5.2	2.5E-07	4.10	**3.2E-07**	3.2E-07	0.74	52	1.4E-08	41	1.8E-08	1.8E-08
PCE	1.3	0.81	1.6E-06	0.67	**1.9E-06**	1.9E-06	0.94	8.1	1.2E-07	6.7	1.4E-07	1.4E-07
TCE	ND	0.022	--	0.017	--	--	1.4	0.22	6.4E-06	0.17	8.2E-06	8.2E-06
TOTAL - Excluding benzene, ethylbenzene, and chloroform			1.9E-06		**2.3E-06**	2.3E-06			6.5E-06		8.4E-06	8.4E-06
Benzene	22	0.31	7.1E-05	0.23	**9.6E-05**	9.6E-05	1.6	3.1	5.2E-07	2.3	7.0E-07	7.0E-07
Ethylbenzene	8.1	2.2	3.7E-06	1.7	**4.8E-06**	4.8E-06	1.9	22	8.6E-08	17	1.1E-07	1.1E-07
Methylene chloride	1.3	5.2	2.5E-07	4.1	**3.2E-07**	3.2E-07	0.74	52	1.4E-08	41	1.8E-08	1.8E-08
PCE	1.3	0.81	1.6E-06	0.67	**1.9E-06**	1.9E-06	0.94	8.1	1.2E-07	6.7	1.4E-07	1.4E-07
TCE	ND	0.022	--	0.017	--	--	1.4	0.22	6.4E-06	0.17	8.2E-06	8.2E-06
TOTAL - Excluding chloroform			7.7E-05		**1.0E-04**	1.0E-04			7.1E-06		9.2E-06	9.2E-06
PCE	1.3	0.81	1.6E-06	0.67	**1.9E-06**	1.9E-06	0.94	8.1	1.2E-07	6.7	1.4E-07	1.4E-07
TCE	ND	0.022	--	0.017	--	--	1.4	0.22	6.4E-06	0.17	8.2E-06	8.2E-06
TOTAL - Only PCE and TCE			1.6E-06		**1.9E-06**	1.9E-06			6.5E-06		8.4E-06	8.4E-06

VI = Cancer risk based on Vapor Intrusion Guidance Screening Level (EPA, 2002b).
R9 = Cancer risk based on Region IX Preliminary Remediation Goal (EPA, 2002a).
The risk estimates presented are based on the higher of the 1st floor and basement concentrations.
ND - not detected.
All concentrations in ug/m^3.
The following assumptions were used:
Target risk = 1E-06
Target Hazard Quotient = 1
Attenuation Factor was 0.1 using shallow soil screening levels

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-1b

Overall Potential Noncancer Risk Summary
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

	Indoor Air			Soil Gas		
Area A-Northern Residential Area	**Maxiumum Concentration**	**Region IX PRG-ambient air**	**Hazard Quotient (HQ)**	**Maxiumum Concentration**	**Region IX PRG- ambient air**	**Hazard Quotient (HQ)**
Carcinogens						
Benzene	1.1	6.2	0.177	31	62	0.50
Chloroform	0.59	3.1	0.190	ND	31	--
Ethylbenzene	1	1100	0.0009	41	11000	0.0037
Methylene Chloride	27	3100	0.0087	0.9	31000	0.000029
PCE	0.7	620	0.001	0.88	6200	0.00014
TCE	ND	37	--	ND	370	--
Subtotal			*0.38*			*0.50*
Noncarcinogens						
1,1,1-Trichloroethane	5.3	2300	0.0023	0.81	23000	3.5E-05
2-Butanone	23	1000	0.023	5.1	10000	0.00051
Acetone	40	370	0.11	31	3700	0.0084
cis-1,2-Dichloroethene	ND	37	--	ND	370	--
Freon 113	0.45	31000	0.000015	0.48	310000	1.55E-06
m,p-Xylene	3	110	0.027	51	1100	0.046
o-Xylene	0.99	110	0.0090	25	1100	0.023
Toluene	20	400	0.050	95	4000	0.024
Subtotal			*0.22*			*0.10*
TOTAL HI- All VOCs			*0.60*			*0.61*

R9 = Noncancer risk based on Region IX Preliminary Remediation Goal for
the risk estimates presented are based on the higher of the 1st floor and basement concentrations.
ND - not detected.
All concentrations in ug/m^3.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-1b (Continued)

Overall Potential Noncancer Risk Summary
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area B - East Central Residential Area	Indoor Air			Soil Gas		
	Maxiumum Concentration	Region IX PRG- ambient air	Hazard Quotient (HQ)	Maxiumum Concentration	Region IX PRG- ambient air	Hazard Quotient (HQ)
Carcinogens						
Benzene	7	6.2	1.13	5.3	62	0.085
Chloroform	0.73	3.1	0.24	6	31	0.194
Ethylbenzene	13	1100	0.012	8.9	11000	0.00081
Methylene Chloride	99	3100	0.032	0.8	31000	0.000026
PCE	11	620	0.018	4.4	6200	0.00071
TCE	ND	37	--	0.52	370	0.0014
Subtotal			*1.43*			*0.28*
Noncarcinogens						
1,1,1-Trichloroethane	3	2300	0.0013	4	23000	0.00017
2-Butanone	13	1000	0.013	12	10000	0.0012
Acetone	35	370	0.095	62	3700	0.017
cis-1,2-Dichloroethene	ND	37	--	ND	370	--
Freon 113	0.43	31000	1.4E-05	0.78	310000	2.52E-06
m,p-Xylene	57	110	0.52	11	1100	0.010
o-Xylene	13	110	0.12	4.2	1100	0.0038
Toluene	57	400	0.14	20	4000	0.0050
Subtotal			*0.89*			*0.04*
TOTAL HI- All VOCs			2.3			0.32

R9 = Noncancer risk based on Region IX Preliminary Remediation Goal for
the risk estimates presented are based on the higher of the 1st floor and basement concentrations.
ND - not detected.
All concentrations in ug/m^3.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-1b (Continued)

Overall Potential Noncancer Risk Summary
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area C - West Central Residential Area	Indoor Air			Soil Gas		
	Maxiumum Concentration	Region IX PRG- ambient air	Hazard Quotient (HQ)	Maxiumum Concentration	Region IX PRG- ambient air	Hazard Quotient (HQ)
Carcinogens						
Benzene	0.84	6.2	0.14	25	62	0.40
Chloroform	0.67	3.1	0.22	0.86	31	0.028
Ethylbenzene	0.8	1100	0.00073	18	11000	0.0016
Methylene Chloride	0.88	3100	0.00028	0.98	31000	3.2E-05
PCE	3.2	620	0.0052	190	6200	0.031
TCE	ND	37	--	9.5	370	0.026
Subtotal			*0.36*			*0.49*
Noncarcinogens						
1,1,1-Trichloroethane	0.74	2300	0.00032	1.2	23000	5.2E-05
2-Butanone	2.9	1000	0.0029	16	10000	0.0016
Acetone	36	370	0.097	26	3700	0.0070
cis-1,2-Dichloroethene	ND	37	--	ND	370	--
Freon 113	0.46	31000	1.48E-05	0.52	310000	1.68E-06
m,p-Xylene	1.7	110	0.015	60	1100	0.055
o-Xylene	0.64	110	0.0058	21	1100	0.019
Toluene	11	400	0.028	150	4000	0.038
Subtotal			*0.15*			*0.12*
TOTAL HI - All VOCs			0.51			0.61

R9 = Noncancer risk based on Region IX Preliminary Remediation Goal for
the risk estimates presented are based on the higher of the 1st floor and basement concentrations.
ND - not detected.
All concentrations in ug/m^3.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-1b (Continued)

Overall Potential Noncancer Risk Summary
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

	Indoor Air			Soil Gas		
Area D -Southern Residential Area	**Maxiumum Concentration**	**Region IX PRG- ambient air**	**Hazard Quotient (HQ)**	**Maxiumum Concentration**	**Region IX PRG- ambient air**	**Hazard Quotient (HQ)**
Carcinogens						
Benzene	22	6.2	3.55	1.6	62	0.026
Chloroform	3	3.1	0.97	1.7	31	0.055
Ethylbenzene	8.1	1100	0.0074	1.9	11000	0.00017
Methylene Chloride	1.3	3100	0.00042	0.74	31000	0.000024
PCE	1.3	620	0.0021	0.94	6200	0.00015
TCE	ND	37	--	1.4	370	0.0038
Subtotal			*4.53*			*0.085*
Noncarcinogens						
1,1,1-Trichloroethane	0.28	2300	0.00012	3.6	23000	0.00016
2-Butanone	27	1000	0.027	5.7	10000	0.00057
Acetone	120	370	0.32	28	3700	0.0076
cis-1,2-Dichloroethene	ND	37	--	ND	370	--
Freon 113	0.42	31000	1.35E-05	0.78	310000	2.52E-06
m,p-Xylene	35	110	0.32	2.6	1100	0.0024
o-Xylene	10	110	0.091	1.3	1100	0.0012
Toluene	68	400	0.17	3.6	4000	0.00090
Subtotal			*0.93*			*0.013*
TOTAL HI- All VOCs			5.46			0.10

R9 = Noncancer risk based on Region IX Preliminary Remediation Goal for
the risk estimates presented are based on the higher of the 1st floor and basement concentrations.
ND - not detected.
All concentrations in ug/m^3.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-2

Individual Residence Results: Area A- Northern Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area A - Northern Residential Area (Mathew Avenue)

Chemical	Screening Concentration in µg/m³ per Risk Level and Source Document (Cancer Risk = 1E-06, NonCancer HQ = 1.0)			Basement and 1st Floor Concentrations and Maximum Soil Gas Conc. (µg/m³)	Risk Based on Maximum Concentration (Basement/ 1st Floor)	Could Chemical Concentrations Be Site-Related?	Notes
Benzene	Indoor Air	VI Cancer	0.31	**1.1 B** 0.72 1st	3.5 x 10-6	YES	Maximum soil gas concentration more than one order of magnitude (27 times) higher than indoor air concentrations. Unattached garage. One smoker but smoking not permitted in house. Benzene in Area C ambient air at 0.32 to 0.48 µg/m³.
		R9 Cancer	0.23		4.8 x 10-6		
		R9 HQ=1	6.2		HQ = 0.18		
	Soil Gas AF = 0.1	VI Cancer	3.1	31.0	1.0 x 10-5		
		R9 Cancer	2.3		1.3 x 10-5		
		R9 HQ=1	62		HQ = 0.5		
Chloroform	Indoor Air	VI Cancer	0.11	**0.59 B** 0.42 1st	5.4 x 10-6	NO	The chloroform is most likely a byproduct of municipal water chlorination. Chloroform has been detected in the municipal water distribution system as high as 12 µg/L over the past few years. Region IX PRGs indicate chloroform in household water can cause a 10^{-6} inhalation risk at a concentration of 0.71 µg/L. Municipal water and chlorine products such as chlorine bleach for laundry and cleaning toilets is discharged into septic systems. Also, residents who had or still have private wells may disinfect them with chlorine bleach or tablets.
		R9 Cancer	0.35		1.7 x 10-6		
		R9 HQ=1	3.1		HQ = 0.19		
	Soil Gas AF = 0.1	VI Cancer	1.1	ND	-		
		R9 Cancer	3.5		-		
		R9 HQ=1	31		-		

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-2 (Continued)

Individual Residence Results: Area A- Northern Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area A - Northern Residential Area (Mathew Avenue)

Chemical	Screening Concentration in µg/m³ per Risk Level and Source Document (Cancer Risk = 1E-06, NonCancer HQ = 1.0)			Basement and 1st Floor Concentrations and Maximum Soil Gas Conc. (µg/m³)	Risk Based on Maximum Concentration (Basement/ 1st Floor)	Could Chemical Concentrations Be Site-Related?	Notes
Ethyl benzene	Indoor Air	VI Cancer	2.2	**1.0 B**	4.5 x 10-7	YES	Maximum soil gas concentration more than one order of magnitude (40x) higher than indoor air concentrations. Unattached garage. one smoker but smoking not permitted in house. Ethyl benzene in Area C ambient air non-detect to 0.22 µg/m³.
		R9 Cancer	1.7	0.48 1st	5.9 x 10-7		
		R9 HQ=1	1100		HQ =0.00091		
	Soil Gas AF = 0.1	VI Cancer	22	41.0	1.9 x 10-6		
		R9 Cancer	17		2.4 x 10-6		
		R9 HQ=1	11000		HQ = 0.0037		
Methylene Chloride	Indoor Air	VI Cancer	5.2	**27.0 B**	5.2 x 10-6	VERY LITTLE	Indoor air concentrations more than one order of magnitude (30 times) higher than soil gas concentrations. Paints, polishes, cleaners, lubricants, etc., stored in basement. Basement concentration more than one order of magnitude (11times) higher than 1st floor concentration (26.7 vs. 2.3 µg/m³)
		R9 Cancer	4.1	2.40 1st	6.6 x 10-6		
		R9 HQ=1	3100		HQ = 0.0087		
	Soil Gas AF = 0.1	VI Cancer	52	0.9	1.7 x 10-8		
		R9 Cancer	41		2.2 x 10-8		
		R9 HQ=1	31000		HQ=0.000029		

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-2 (Continued)

Individual Residence Results: Area A- Northern Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area A - Northern Residential Area (Mathew Avenue)

Chemical	Screening Concentration in µg/m³ per Risk Level and Source Document (Cancer Risk = 1E-06, NonCancer HQ = 1.0)			Basement and 1st Floor Concentrations and Maximum Soil Gas Conc. (µg/m³)	Risk Based on Maximum Concentration (Basement/ 1st Floor)	Could Chemical Concentrations Be Site-Related?	Notes
PCE	Indoor Air	VI Cancer	0.81	**0.70 B**	8.6 x 10-7	POSSIBLY	PCE was detected in soil gas and was detected in soil gas at higher levels (4.41 and 190 µg/m³) in two other homes. However, soil gas and indoor air concentrations are similar and PCE was also detected in ambient air sample (collected from Area C) at risk of 7.8 x 10^{-7}. Paints, polishes, cleaners, lubricants, etc., also stored in basement.
		R9 Cancer	0.67	**0.70 1st**	1.0 x 10-6		
		R9 HQ=1	620		HQ = 0.0011		
	Soil Gas AF = 0.1	VI Cancer	8.1	0.88	1.1 x 10-7		
		R9 Cancer	6.7		1.3 x 10-7		
		R9 HQ=1	6200		HQ = 0.00014		
TCE	Indoor Air	VI Cancer	0.02	ND	-	N/A	Not detected.
		R9 Cancer	0.017		-		
		R9 HQ=1	37		-		
	Soil Gas AF = 0.1	VI Cancer	0.2	ND	-		
		R9 Cancer	0.17		-		
		R9 HQ=1	370		-		

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-2 (Continued)

Individual Residence Results: Area A- Northern Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

TOTAL INDOOR RISK ALL CHEMICALS	VI Cancer	1.5 x 10-5	About 1 to 2 **additional** cases of cancer for every 100,000 people similarly exposed
	R9 Cancer	1.5 x 10-5	About 1 to 2 **additional** cases of cancer for every 100,000 people similarly exposed
	Most Conservative VI/R9 Cancer	1.5 x 10-5	About 1 to 2 **additional** cases of cancer for every 100,000 people similarly exposed
	R9 HI	0.38	No non-cancer risks

Area A – North End (Mathew Avenue)

TOTAL INDOOR RISK EXCLUDING Chloroform and Methylene Chloride	VI Cancer	4.9 x 10-6	About 4 to 5 **additional** cases of cancer for every 1 million people similarly exposed
	R9 Cancer	6.4 x 10-6	About 6 to 7 **additional** cases of cancer for every 1 million people similarly exposed
	Most Conservative VI/R9 Cancer	6.4 x 10-6	About 6 to 7 **additional** cases of cancer for every 1 million people similarly exposed
	R9 HI	0.18	No non-cancer risks
POTENTIAL INDOOR RISK FROM SOIL GAS ALL CHEMICALS AF = 0.1	VI Cancer	1.2 x 10-5	About 1 **additional case** of cancer for every 100,000 people similarly exposed
	R9 Cancer	1.6 x 10-5	About 1 to 2 **additional** cases of cancer for every 100,000 people similarly exposed
	Most Conservative VI/R9 Cancer	1.6 x 10-5	About 1 to 2 **additional** cases of cancer for every 100,000 people similarly exposed
	R9 HI	0.5	No non-cancer risk

B= Basement sample.
1st = 1st floor sample.
VI = Vapor Intrusion Guidance Screening Level (EPA, 2002b).
R9 = Region IX PRG (EPA, 2002a).
HI = Hazard Index
AF = Attenuation Factor
PRG = Region IX Preliminary Remediation Goal (EPA 2002a).
Bold indicates maximum indoor air concentration.
Shading indicates most conservative cancer risk estimate exceeds 10^{-6} or HI exceeds one.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-3

Individual Residence Results: Area B – East Central Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area B – East Central Residential Area (Straw Lane/ Blue Spruce Drive)

Chemical	Screening Concentration in µg/m³ per Risk Level and Source Document (Cancer Risk = 1E-06, NonCancer HQ = 1.0)			Basement and 1st Floor Concentrations and Maximum Soil Gas Conc. (µg/m³)	Risk Based on Maximum Concentration (Basement/ 1st Floor)	Could Chemical Concentrations Be Site-Related?	Notes
Benzene	Indoor Air	VI Cancer	0.31	**7.00 1st**	2.3 x 10-5	PARTIALLY	Benzene was detected in soil gas and was at high levels in soil gas (24.9 and 30.7 µg/m³) at two other homes. However, soil gas and indoor air concentrations are similar (within 1 order of magnitude), and residents park in attached garage and have three 5-gallon containers containing petroleum products. Not certain if containers removed prior to sampling. One or more smokers in home but smoking not permitted in house. Benzene concentrations 2.5 times higher on 1st floor where door to garage is than in basement (7.03 vs. 2.81 µg/m³)
		R9 Cancer	0.23	2.90 B	3.0 x 10-5		
		R9 HQ=1	6.2		HQ = 1.13		
	Soil Gas AF = 0.1	VI Cancer	3.1	5.30	1.7 x 10-6		
		R9 Cancer	2.3		2.3 x 10-6		
		R9 HQ=1	62		HQ = 0.085		
Chloroform	Indoor Air	VI Cancer	0.11	**0.73 1st**	6.6 x 10-6	PROBABLY NOT	Chloroform is most likely a byproduct of municipal water chlorination. Chloroform has been detected in the municipal water distribution system as high as 12 µg/L over the past few years. Region IX PRGs indicate chloroform in household water can cause a 10^{-6} inhalation risk at a concentration of 0.71 µg/L. Municipal water and chlorine products such as chlorine bleach for laundry and cleaning toilets is discharged into septic systems. Also, residents who had or still have private wells may disinfect them with chlorine bleach or tablets.
		R9 Cancer	0.35	0.72 B	2.1 x 10-6		
		R9 HQ=1	3.1		HQ = 0.24		
	Soil Gas AF = 0.1	VI Cancer	1.1	6.00	5.5 x 10-6		
		R9 Cancer	3.5		1.7 x 10-6		
		R9 HQ=1	31		HQ = 0.19		

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-3 (Continued)

Individual Residence Results: Area B – East Central Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area B – East Central Residential Area (Straw Lane/ Blue Spruce Drive)

Chemical	Screening Concentration in µg/m³ per Risk Level and Source Document (Cancer Risk = 1E-06, NonCancer HQ = 1.0)			Basement and 1st Floor Concentrations and Maximum Soil Gas Conc. (µg/m³)	Risk Based on Maximum Concentration (Basement/ 1st Floor)	Could Chemical Concentrations Be Site-Related?	Notes
Ethyl benzene	Indoor Air	VI Cancer	2.2	**13.0 1st**	5.9 x 10-6	PARTIALLY	Ethyl benzene was detected in soil gas and was detected at high levels (40.4 and 17.8 µg/m³) in soil gas at two other homes. However, residents park in attached garage and have three 5-gallon containers containing petroleum products. Not certain if containers removed prior to sampling. One or more smokers in home but smoking not permitted in house. Ethyl benzene concentrations 2 times higher on 1st floor where door to garage is than in basement (12.6 vs. 5.65 µg/m³)
		R9 Cancer	1.7	5.90 B	7.6 x 10-6		
		R9 HQ=1	1100		HQ = 0.012		
	Soil Gas AF = 0.1	VI Cancer	22	8.90	4.0 x 10-7		
		R9 Cancer	17		5.2 x 10-7		
		R9 HQ=1	11000		HQ = 0.00081		
Methylene Chloride	Indoor Air	VI Cancer	5.2	**99.0 B**	1.9 x 10-5	VERY LITTLE	Indoor air concentrations more than 2 orders of magnitude (120 times) higher than soil gas concentrations. Paints, polishes, cleaners, lubricants, paint removers, spot removers, etc., stored in basement. Methylene chloride concentrations 3.5 times higher in basement than 1st floor (97.3 vs. 27.4 µg/m³)
		R9 Cancer	4.1	28.0 1st	2.4 x 10-5		
		R9 HQ=1	3100		HQ = 0.032		
	Soil Gas AF = 0.1	VI Cancer	52	0.80	1.5 x 10-8		
		R9 Cancer	41		2.0 x 10-8		
		R9 HI=1	31000		HQ=0.000026		

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-3 (Continued)

Individual Residence Results: Area B – East Central Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area B – East Central Residential Area (Straw Lane/ Blue Spruce Drive)

Chemical	Screening Concentration in µg/m³ per Risk Level and Source Document (Cancer Risk = 1E-06, NonCancer HQ = 1.0)			Basement and 1st Floor Concentrations and Maximum Soil Gas Conc. (µg/m³)	Risk Based on Maximum Concentration (Basement/ 1st Floor)	Could Chemical Concentrations Be Site-Related?	Notes
PCE	Indoor Air	VI Cancer	0.81	**11.0 B**	1.4 x 10-5	PARTIALLY	PCE was detected in soil gas and was detected at high levels (190 µg/m³) in soil gas at one other home. However, indoor air concentrations are 2 times higher than soil gas concentrations. Paints, polishes, cleaners, lubricants, paint removers, spot removers, etc., stored in basement.
		R9 Cancer	0.67	3.40 1st	1.6 x 10-5		
		R9 HQ=1	620		HQ = 0.018		
	Soil Gas AF = 0.1	VI Cancer	8.1	4.40	5.4 x 10-7		
		R9 Cancer	6.7		6.6 x 10-7		
		R9 HQ=1	6200		HQ = 0.00071		
TCE	Indoor Air	VI Cancer	0.02	ND	-	YES	Detected at low levels in soil gas but not in indoor air. TCE not detected in ambient air sample (collected from Area C).
		R9 Cancer	0.017		-		
		R9 HQ=1	37		-		
	Soil Gas AF = 0.1	VI Cancer	0.2	0.52	2.4 x 10-6		
		R9 Cancer	0.17		3.1 x 10-6		
		R9 HQ=1	370		HQ = 0.0014		

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-3 (Continued)

Individual Residence Results: Area B – East Central Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

TOTAL INDOOR RISK ALL CHEMICALS	VI Cancer	6.8 x 10-5	About 6 to 7 **additional cases** of cancer for every 100,000 people similarly exposed
	R9 Cancer	8.1 x 10-5	About 8 **additional cases** of cancer for every 100,000 people similarly exposed
	Most Conservative VI/R9 Cancer	8.1 x 10-5	About 8 to 9 **additional** cases of cancer for every 100,000 people similarly exposed
	R9 HI	1.43	Slight **non-cancer risk**
TOTAL INDOOR RISK EXCLUDING Chloroform and Methylene Chloride	VI Cancer	4.9 x 10-5	About 4 **additional cases** of cancer for every 100,000 people similarly exposed
	R9 Cancer	5.7 x 10-5	About 5 **additional cases** of cancer for every 100,000 people similarly exposed
	Most Conservative VI/R9 Cancer	5.7 x 10-5	About 5 **additional cases** of cancer for every 100,000 people similarly exposed
	R9 HI	1.16	Slight **non-cancer risk**

Area B – Central East (Straw Lane/ Blue Spruce Drive)

POTENTIAL INDOOR RISK FROM SOIL GAS AF = 0.1	VI Cancer	1.0 x 10-5	About 1 **additional case of** cancer for every 100,000 people similarly exposed
	R9 Cancer	8.3 x 10-6	About 8 **additional cases** of cancer for every 1 million people similarly exposed
	Most Conservative VI/R9 Cancer	1.1 x 10-5	About 1 **additional case of** cancer for every 100,000 people similarly exposed
	R9 HI	0.28	No **non-cancer risks**

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-3 (Continued)

Individual Residence Results: Area B – East Central Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

POTENTIAL INDOOR RISK FROM SOIL GAS EXCLUDING Chloroform AF = 0.1	VI Cancer	5.0 x 10-6	About 5 **additional cases** of cancer for every 1 million people similarly exposed
	R9 Cancer	6.6 x 10-6	About 6 **additional cases** of cancer for every 1 million people similarly exposed
	Most Conservative VI/R9 Cancer	6.6 x 10-6	About 6 **additional cases** of cancer for every 1 million people similarly exposed
	R9 HI	0.086	No non-cancer risks

B= Basement sample.
1st = 1st floor sample.
VI = Vapor Intrusion Guidance Screening Level (EPA, 2002b).
R9 = Region IX PRG (EPA, 2002a).
HI = Hazard Index
AF = Attenuation Factor
PRG = Region IX Preliminary Remediation Goal (EPA 2002a).
Bold indicates maximum indoor air concentration.
Shading indicates most conservative cancer risk estimate exceeds 10^{-6} or HI exceeds one.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-3b

Site-Related Potential Noncancer Risk Summary: Area B
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area B - East Central Residential Area	Indoor Air			
	Maximum Indoor Air Concentration	Region IX PRG- Ambient Air Concentration (at which HI=1)	Hazard Quotient (HQ)	Note
Carcinogens				
Benzene	2.9	6.2	0.47	BTEX component; basement concentration
Chloroform	NSR	NA	NA	Chloroform is most likely a byproduct of municipal water chlorination. Chloroform has been detected in the municipal water distribution system as high as 12 ug/L over the past few years. Region IX PRGs indicate chloroform in household water can cause a 10^{-6} inhalation risk at a concentration of 0.71 ug/L. Municipal water and chlorine products such as chlorine bleach for laundry and cleaning toilets is discharged into septic systems. Also, residents who had or still have private wells may disinfect them with chlorine bleach or tablets.
Ethylbenzene	5.9	1100	0.005	BTEX component; basement concentration
Methylene Chloride	NSR	NA	NA	Indoor air concentrations more than 2 orders of magnitude (120 times) higher than soil gas concentrations. Paints, polishes, cleaners, lubricants, paint removers, spot removers, etc., stored in basement. Methylene chloride concentrations 3.5 times higher in basement than 1st floor (99 vs. 28 ug/m3)
PCE	11	620	0.018	Maximum concentration
TCE	ND	37	--	NA
Subtotal			*0.49*	
Noncarcinogens				
1,1,1-Trichloroethane	3	2300	0.0013	Maximum concentration
2-Butanone	13	1000	0.013	Maximum concentration
Acetone	35	370	0.095	Maximum concentration
cis-1,2-Dichloroethene	ND	37	NA	NA
Freon 113	0.43	31000	1.4E-05	Maximum concentration
m,p-Xylene	26	110	0.24	BTEX component; basement concentration
o-Xylene	5.4	110	0.05	BTEX component; basement concentration
Toluene	42	400	0.11	BTEX component; basement concentration
Subtotal			*0.50*	
TOTAL HI- All VOCs			0.99	

ND = Not detected.
All concentrations are in ug/m^3.
NSR = Not site-related.
NA= Not applicable

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-4

Individual Residence Results: Area C - West Central Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area C – West Central Residential (Wagon Lane Ct.)

Chemical	Screening Concentration in µg/m³ per Risk Level and Source Document (Cancer Risk = 1E-06, NonCancer HQ = 1.0)			Basement and 1st Floor Concentrations and Maximum Soil Gas Conc. (µg/m³)	Risk Based on Maximum Concentration (Basement/ 1st Floor)	Could Chemical Concentrations Be Site-Related?	Notes
Benzene	Indoor Air	VI Cancer	0.31	**0.84 1ST**	2.7 x 10-6	YES	Maximum soil gas concentration more than one order of magnitude (30 times) higher than indoor air concentrations. Unattached garage. No smokers. Paints and other products stored in unattached garage.
		R9 Cancer	0.23	0.76 B	3.7 x 10-6		
		R9 HQ=1	6.2		HQ = 0.14		
	Soil Gas AF = 0.1	VI Cancer	3.1	25.0	8.1 x 10-6		
		R9 Cancer	2.3		1.1 x 10-5		
		R9 HQ=1	62		HQ = 0.4		
Chloroform	Indoor Air	VI Cancer	0.11	**0.67 B**	6.1 x 10-6	PROBABLY NOT	The chloroform is mostly likely a byproduct of municipal water chlorination. Chloroform has been detected in the municipal water distribution system as high as 12 µg/L over the past few years. Region IX PRGs indicate chloroform in household water can cause a 10^{-6} inhalation risk at a concentration of 0.71 µg/L. Municipal water and chlorine products such as chlorine bleach for laundry and cleaning toilets is discharged into septic systems. Also, residents who had or still have private wells may disinfect them with chlorine bleach or tablets.
		R9 Cancer	0.35	0.49 1st	1.9 x 10-6		
		R9 HQ=1	3.1		HQ = 0.22		
	Soil Gas AF = 0.1	VI Cancer	1.1	0.86	7.8 x 10-7		
		R9 Cancer	3.5		2.5 x 10-7		
		R9 HQ=1	31		HQ = 0.028		

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-4 (Continued)

Individual Residence Results: Area C -West Central Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area C – West Central Residential (Wagon Lane Ct.)

Chemical	Screening Concentration in µg/m³ per Risk Level and Source Document (Cancer Risk = 1E-06, NonCancer HQ = 1.0)			Basement and 1st Floor Concentrations and Maximum Soil Gas Conc. (µg/m³)	Risk Based on Maximum Concentration (Basement/ 1st Floor)	Could Chemical Concentrations Be Site-Related?	Notes
Ethyl benzene	Indoor Air	VI Cancer	2.2	**0.80 1st**	3.6 x 10-7	YES	Maximum soil gas concentration more than one order of magnitude (23 times) higher than indoor air concentrations. Unattached garage. No smokers. Paints and other products stored in unattached garage.
		R9 Cancer	1.7	0.60 B	4.7 x 10-7		
		R9 HQ=1	1100		HQ = 0.00073		
	Soil Gas AF = 0.1	VI Cancer	22	18.0	8.2 x 10-7		
		R9 Cancer	17		1.1 x 10-6		
		R9 HQ=1	11000		HQ = 0.0016		
Methylene Chloride	Indoor Air	VI Cancer	5.2	**0.88 1st**	1.7 x 10-7	POSSIBLY	Methylene chloride was detected in soil gas. However, methylene chloride was not detected in the basement, and soil gas and indoor air concentrations are similar (within one order of magnitude). Paints etc., stored in basement. Methylene Chloride not detected in ambient air sample (collected from Area C).
		R9 Cancer	4.1	ND B	2.1 x 10-7		
		R9 HQ=1	3100		HQ = 0.00028		
	Soil Gas AF = 0.1	VI Cancer	52	0.98	1.9 x 10-8		
		R9 Cancer	41		2.4 x 10-8		
		R9 HQ=1	31000		HQ =0.000032		

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-4 (Continued)

Individual Residence Results: Area C -West Central Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area C – West Central Residential (Wagon Lane Ct.)

Chemical	Screening Concentration in µg/m³ per Risk Level and Source Document (Cancer Risk = 1E-06, NonCancer HQ = 1.0)			Basement and 1st Floor Concentrations and Maximum Soil Gas Conc. (µg/m³)	Risk Based on Maximum Concentration (Basement/ 1st Floor)	Could Chemical Concentrations Be Site-Related?	Notes
PCE	Indoor Air	VI Cancer	0.81	**3.20 B**	4.0 x 10-6	YES	Maximum soil gas concentration more than one order of magnitude (60 times) higher than indoor air concentrations. Paints and other products stored in unattached garage.
		R9 Cancer	0.67	0.76 1st	4.8 x 10-6		
		R9 HQ=1	620		HQ = 0.0052		
	Soil Gas AF = 0.1	VI Cancer	8.1	190	2.3 x 10-5		
		R9 Cancer	6.7		2.8 x 10-5		
		R9 HQ=1	6200		HQ = 0.031		
TCE	Indoor Air	VI Cancer	0.02	ND	-	YES	Detected in soil gas but not in indoor air. TCE not detected in ambient air sample.
		R9 Cancer	0.017		-		
		R9 HQ=1	37		-		
	Soil Gas AF = 0.1	VI Cancer	0.2	9.5	4.3 x 10-5		
		R9 Cancer	0.17		5.6 x 10-5		
		R9 HQ=1	370		HQ = 0.026		

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-4 (Continued)

Individual Residence Results: Area C -West Central Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

TOTAL INDOOR RISK ALL CHEMICALS	VI Cancer	1.3 x 10-5	About 1 **additional case** of cancer for every 100,000 people similarly exposed
	R9 Cancer	1.1 x 10-5	About 1 **additional case** of cancer for every 100,000 people similarly exposed
	Most Conservative VI/R9 Cancer	1.3 x 10-5	About 1 to 2 **additional** cases of cancer for every 100,000 people similarly exposed
	R9 HI	0.36	No non-cancer risks
TOTAL INDOOR RISK EXCLUDING Chloroform	VI Cancer	7.2 x 10-6	About 7 **additional cases** of cancer for every 1 million people similarly exposed
	R9 Cancer	9.1 x 10-6	About 9 **additional cases** of cancer for every 1 million people similarly exposed
	Most Conservative VI/R9 Cancer	9.1 x 10-6	About 9 **additional cases** of cancer for every 1 million people similarly exposed
	R9 HI	0.14	No non-cancer risks

Area C – Central West (Wagon Lane Ct.)

POTENTIAL INDOOR RISK FROM SOIL GAS AF = 0.1	VI Cancer	7.6 x 10-5	About 7 to 8 **additional** cases of cancer for every 100,000 people similarly exposed
	R9 Cancer	9.6 x 10-5	About 9 **additional cases** of cancer for every 100,000 people similarly exposed
	Most Conservative VI/R9 Cancer	9.6 x 10-5	About 9 to 10 **additional** cases of cancer for every 100,000 people similarly exposed
	R9 HI	0.49	No non-cancer risks

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-4 (Continued)

Individual Residence Results: Area C -West Central Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

POTENTIAL INDOOR RISK FROM SOIL GAS EXCLUDING Chloroform AF = 0.1	VI Cancer	7.6 x 10-5	About 7 to 8 **additional cases** of cancer for every 100,000 people similarly exposed
	R9 Cancer	9.6 x 10-5	About 6 **additional cases** of cancer for every 100,000 people similarly exposed
	Most Conservative VI/R9 Cancer	9.6 x 10-5	About 9 **additional cases** of cancer for every 100,000 people similarly exposed
	R9 HI	0.46	No non-cancer risks

B= Basement sample.
1st = 1st floor sample.
VI = Vapor Intrusion Guidance Screening Level (EPA, 2002b).
R9 = Region IX PRG (EPA, 2002a).
HI = Hazard Index
AF = Attenuation Factor
PRG = Region IX Preliminary Remediation Goal (EPA 2002a).
Bold indicates maximum indoor air concentration.
Shading indicates most conservative cancer risk estimate exceeds 10^{-6} or HI exceeds one.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-5

Individual Residence Results: Area D – Southern Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area D – Southern Residential Area (Wagon Lane/ Tanawingo)

Chemical	Screening Concentration in µg/m³. per Risk Level and Source Document (Cancer Risk = 1E-06, NonCancer HQ = 1.0)			Maximum Concentration (µg/m³)	Risk	Could Chemical Concentrations Be Site-Related?	Notes
Benzene	Indoor Air	VI Cancer	0.31	**22 1st**	7.1 x 10-5	VERY LITTLE	Indoor air concentration over one order of magnitude (13 times) higher than soil gas concentrations. Residents park in attached garage and have two to three containers containing petroleum products. Not certain if containers removed prior to sampling. Leaf blower stored in garage. Benzene concentrations 2 times higher on 1st floor where door to garage is than in basement (21.1 vs. 9.26 µg/m³).
		R9 Cancer	0.23	9.30 B	9.6 x 10-5		
		R9 HQ=1	6.2		HQ = 3.55		
	Soil Gas AF = 0.1	VI Cancer	3.1	1.60	5.2 x 10-7		
		R9 Cancer	2.3		7.0 x 10-7		
		R9 HQ=1	62		HQ = 0.026		
Chloroform	Indoor Air	VI Cancer	0.11	**3.0 B**	2.7 x 10-5	PROBABLY NOT	The chloroform is most likely a byproduct of municipal water chlorination. Chloroform has been detected in the municipal water distribution system as high as 12 µg/L over the past few years. Region IX PRGs indicate chloroform in household water can cause a 10^{-6} inhalation risk at a concentration of 0.71 µg/L. Municipal water and chlorine products such as chlorine bleach for laundry and cleaning toilets is discharged into septic systems. Also, residents who had or still have private wells may disinfect them with chlorine bleach or tablets.
		R9 Cancer	0.35	2.4 1st	8.6 x 10-6		
		R9 HQ=1	3.1		HQ = 0.97		
	Soil Gas AF = 0.1	VI Cancer	1.1	1.70	1.5 x 10-6		
		R9 Cancer	3.5		4.9 x 10-7		
		R9 HQ=1	31		HQ = 0.055		

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-5 (Continued)

Individual Residence Results: Area D – Southern Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area D – Southern Residential Area (Wagon Lane/ Tanawingo)

Chemical	Screening Concentration in µg/m³. per Risk Level and Source Document (Cancer Risk = 1E-06, NonCancer HQ = 1.0)			Maximum Concentration (µg/m³)	Risk	Could Chemical Concentrations Be Site-Related?	Notes
Ethyl benzene	Indoor Air	VI Cancer	2.2	**8.10 1st** 4.80 B	3.7 x 10-6	SOME	Ethyl benzene was detected in soil gas. However, indoor air concentrations are 4 times higher than soil gas concentrations. Residents park in attached garage and have three 5-gallon containers containing petroleum products. Not certain if containers removed prior to sampling. Ethyl benzene concentrations about 1.5 times higher on 1st floor where door to garage is than in basement (7.82 vs.4.78 µg/m³).
		R9 Cancer	1.7		4.8 x 10-6		
		R9 HQ=1	1100		HQ = 0.0074		
	Soil Gas AF = 0.1	VI Cancer	22	1.90	8.6 x 10-8		
		R9 Cancer	17		1.1 x 10-7		
		R9 HQ=1	11000		HQ = 0.00017		
Methylene Chloride	Indoor Air	VI Cancer	5.2	**1.3 1st** 1.00 B	2.5 x 10-7	POSSIBLY	Methylene chloride was detected in soil gas. However, soil gas and indoor air concentrations are similar (within one order of magnitude). Paints etc., stored in basement. Methylene Chloride not detected in ambient air sample (collected from Area C).
		R9 Cancer	4.1		3.2 x 10-7		
		R9 HQ=1	3100		HQ = 0.00042		
	Soil Gas AF = 0.1	VI Cancer	52	0.74	1.4 x 10-8		
		R9 Cancer	41		1.8 x 10-8		
		R9 HQ=1	31000		HQ=0.000024		

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-5 (Continued)

Individual Residence Results: Area D – Southern Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

Area D – Southern Residential Area (Wagon Lane/ Tanawingo)

Chemical	Screening Concentration in µg/m³. per Risk Level and Source Document (Cancer Risk = 1E-06, NonCancer HQ = 1.0)			Maximum Concentration (µg/m³)	Risk	Could Chemical Concentrations Be Site-Related?	Notes
PCE	Indoor Air	VI Cancer	0.81	**1.30 1ST**	1.6 x 10-6	POSSIBLY	PCE was detected in soil gas and was detected in soil gas at higher levels (4.41 and 190 µg/m³) at two other homes. However, soil gas and indoor air concentrations are similar and PCE was also detected in ambient air sample (collected from Area C) at risk of 7.8 x 10^{-7}. Paints, etc., are also stored in basement.
		R9 Cancer	0.67	**0.82 B**	1.9 x 10-6		
		R9 HQ=1	620		HQ = 0.0021		
	Soil Gas AF = 0.1	VI Cancer	8.1	0.94	1.2 x 10-7		
		R9 Cancer	6.7		1.4 x 10-7		
		R9 HQ=1	6200		HQ = 0.00015		
TCE	Indoor Air	VI Cancer	0.02	ND	-	YES	Detected at low levels in soil gas but not in indoor air. Not detected in ambient air sample (collected from Area C).
		R9 Cancer	0.017		-		
		R9 HQ=1	37		-		
	Soil Gas AF = 0.1	VI Cancer	0.2	1.40	6.4 x 10-6		
		R9 Cancer	0.17		8.2E-06		
		HQ=1	370		HQ =0.0038		

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-5 (Continued)

Individual Residence Results: Area D – Southern Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

TOTAL INDOOR RISK ALL CHEMICALS	VI Cancer	1.0 x 10-4	About 1 additional case of cancer for every 10,000 people similarly exposed
	R9 Cancer	1.1 x 10-4	About 1 additional case of cancer for every 10,000 people similarly exposed
	Most Conservative VI/R9 Cancer	1.1 x 10-4	About 1 additional case of cancer for every 10,000 people similarly exposed
	R9 HI	4.53	Unacceptable non-cancer risk, mostly from benzene
TOTAL INDOOR RISK EXCLUDING Benzene, chloroform and ethyl benzene	VI Cancer	1.9 x 10-6	About 1 to 2 additional cases of cancer for every 1 million people similarly exposed
	R9 Cancer	2.3 x 10-6	About 2 additional cases of cancer for every 1 million people similarly exposed
	Most Conservative VI/R9 Cancer	2.3 x 10-6	About 2 additional cases of cancer for every 1 million people similarly exposed
	R9 HI	0.0026	No non-cancer risks

Area D – South End (Wagon Lane/ Tanawingo)

POTENTIAL INDOOR RISK FROM SOIL GAS AF = 0.1	VI Cancer	8.6 x 10-6	About 9 additional cases of cancer for every 1 million people similarly exposed
	R9 Cancer	9.7 x 10-6	About 9 to 10 additional cases of cancer for every 1 million people similarly exposed
	Most Conservative VI/R9 Cancer	9.7 x 10-6	About 1 additional case of cancer for every 100,000 people similarly exposed
	R9 HI	0.085	No non-cancer risks

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 7-5 (Continued)

Individual Residence Results: Area D – Southern Residential Area
Air Sampling Report
Evergreen Manor Site
Roscoe, Illinois

POTENTIAL INDOOR RISK FROM SOIL GAS EXCLUDING Chloroform AF = 0.1	VI Cancer	7.1 x 10-6	About 8 **additional cases** of cancer for every 1 million people similarly exposed
	R9 Cancer	9.2 x 10-6	About 9 **additional cases** of cancer for every 1 million people similarly exposed
		9.2 x 10-6	About 9 **additional case** of cancer for every 1 million people similarly exposed
	R9 HI	0.03	No non-cancer risks

B= Basement sample.
1st = 1st floor sample.
VI = Vapor Intrusion Guidance Screening Level (EPA, 2002b).
R9 = Region IX PRG (EPA, 2002a).
HI = Hazard Index
AF = Attenuation Factor
PRG = Region IX Preliminary Remediation Goal (EPA 2002a).
Bold indicates maximum indoor air concentration.
Shading indicates most conservative cancer risk estimate exceeds 10^{-4} or HI exceeds one.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 8-1

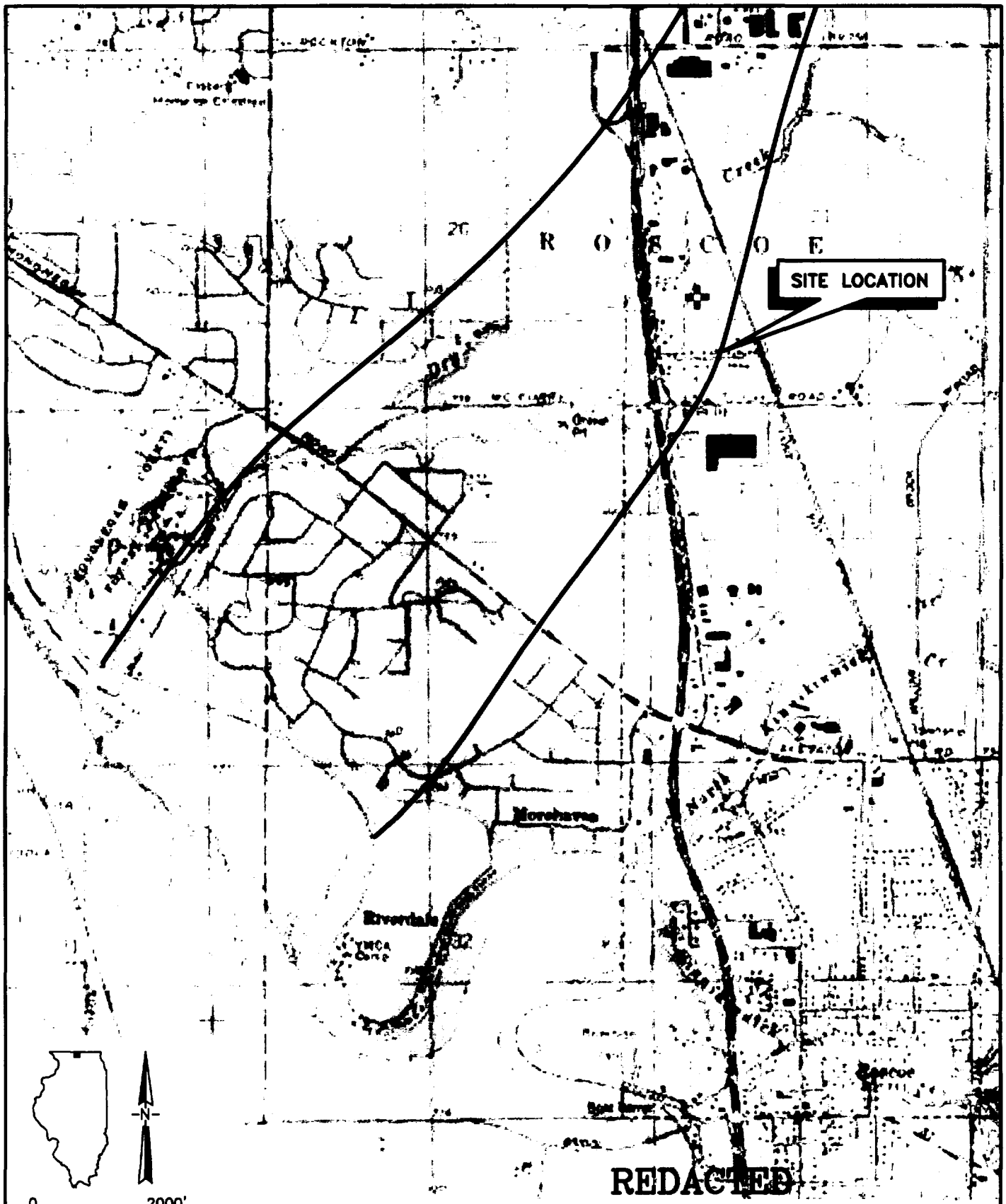
Summary of Uncertainty Analysis
U.S. EPA-Evergreen Manor Site
Roscoe, Illinois

Uncertainty Element	Effect on Risk Estimates		
Environmental Data	**Potential for Overestimation**	**Potential for Underestimation**	**Potential for Over- or Under-estimation***
Air and Soil Gas			
Insufficient data to characterize media being evaluated			Moderate
Systematic or random errors in the chemical analyses yielding erroneous data			Low
Elimination of chemicals from quantitative analysis based on risk-based screening		Low	
Inclusion of chemicals (i.e., benzene, ethylbenzene, methylene chloride, chloroform) in quantitative analysis that may be attributable to background sources	Low to High		
Use of indoor space and flow patterns within the structure			Low to Moderate
Housing construction			Low to Moderate
Difference in landscaping (windforces)			Low
Climatic conditions during the sampling (rain, wind, tempeature)			Moderate
Changes in water table			Low
Seasonal factors (stack effects, frozen ground)			Moderate
Compound recovery from sampling canister		Low	
Off-site contribution (e.g. residence, ambient air)	Low to High		
Sampling duration (24-hour)			Moderate
Presence of structures (utility conduits, paved structures etc.)			Low to Moderate
Precision of laboratory data			Low
Variation in housing construction			Low to Moderate
Groundwater (Historical data)			
Insufficient data to characterize media being evaluated (vadose zone-water table)			Low
Systematic or random errors in the chemical analyses yielding erroneous data			Low
Stratigraphic characterization (homogeneity and extrapolation of field observations)			Low
Risk Assessment			
Use of current exposure concentrations to represent future conditions (i.e., assumption of no attenuation of site chemicals)	Moderate		
Use of U.S. EPA Region 9 PRGs and associated default exposure parameters	Low to Moderate		
Use of U.S. EPA VI values and associated default exposure parameters	Low to Moderate		

* This column was used when the direction of influence (overestimation or underestimation) on risk cannot be determined at this time

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be disclosed in whole or in part without the express, written permission of U.S. EPA.

Figures

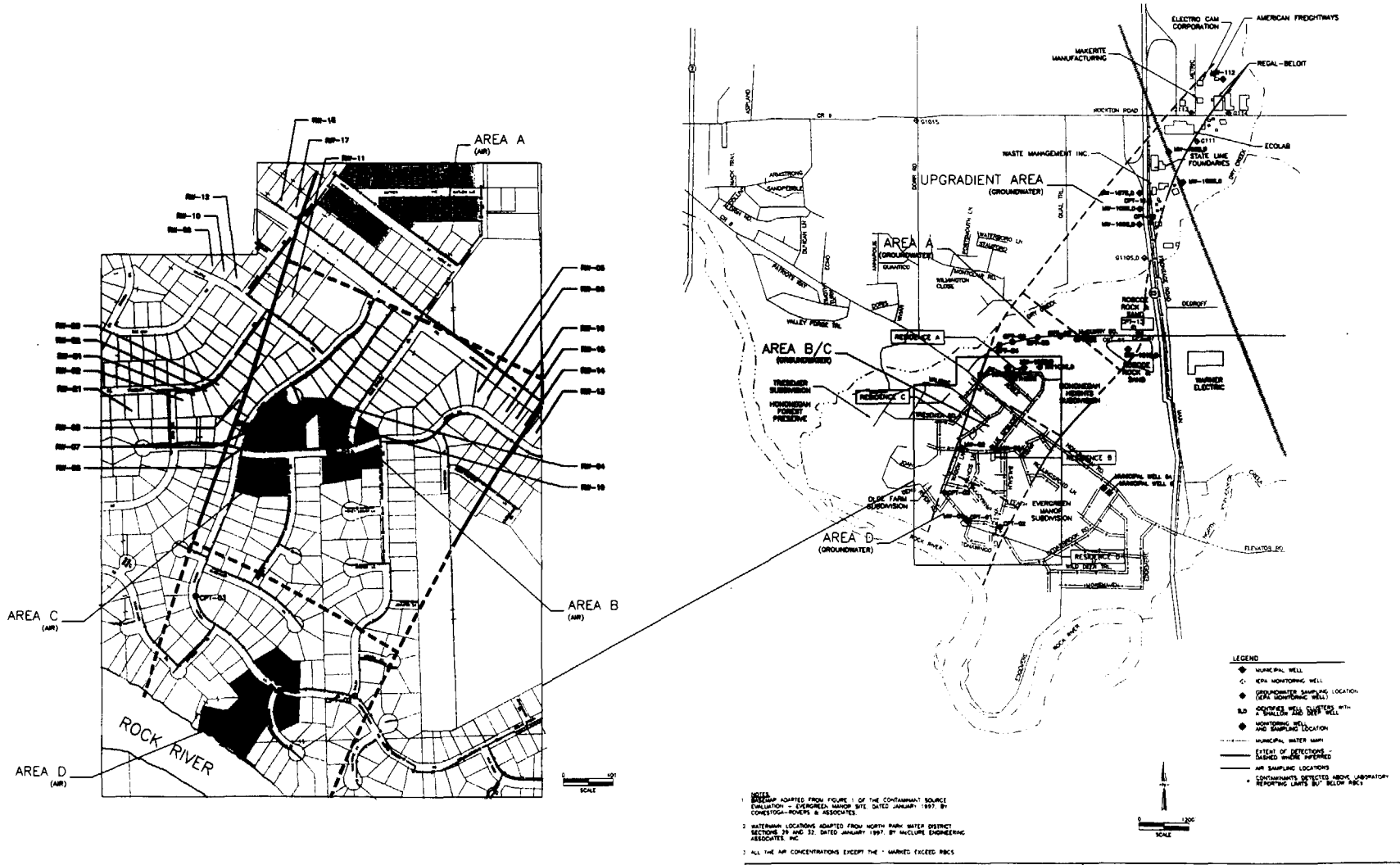


SOURCE: U.S.G.S. 7.5 MINUTE TOPOGRAPHIC MAPS.
SOUTH BELOIT, ILLINOIS QUADRANGLE.

FIGURE 2-1

RESPONSE ACTION CONTRACT	PROJECT LOCATION MAP
U.S. EPA CONTRACT No. 68-W7-0026 WORK ASSIGNMENT No. 139-RICO-05MZ DOCUMENT CONTROL No. RFW139-2A-ANOI	AIR SAMPLING REPORT EVERGREEN MANOR SITE Roscoe, Illinois

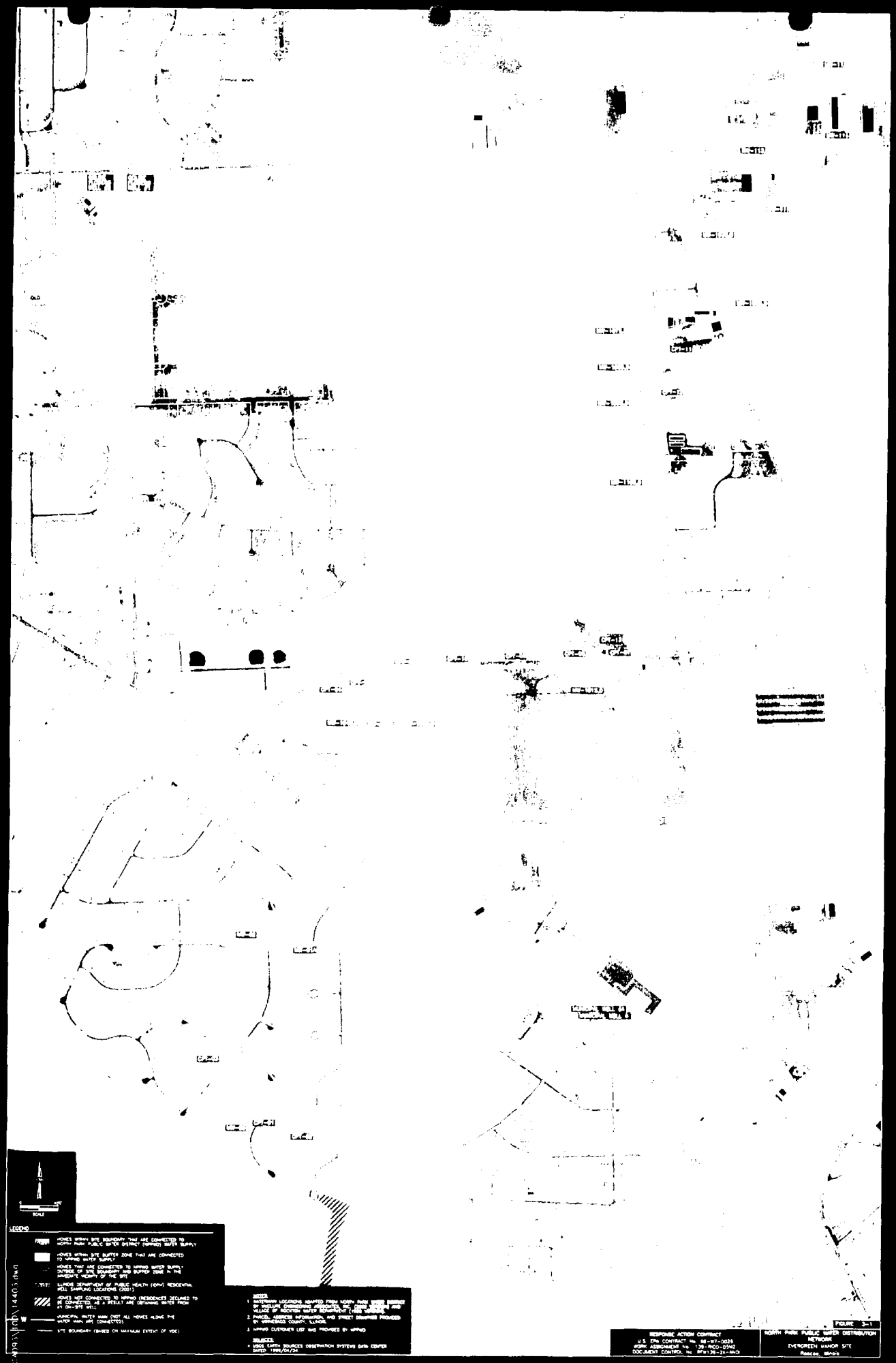
\CAD93\000\0470...dwg



NOTES
1 BASEMAP ADAPTED FROM FIGURE 1 OF THE CONTAMINANT SOURCE EVALUATION - EVERGREEN MANOR SITE DATED JANUARY 1997, BY CONESTOGA-ROVERS & ASSOCIATES.
2 WATERMAIN LOCATIONS ADAPTED FROM NORTH PARK WATER DISTRICT SECTIONS 29 AND 32, DATED JANUARY 1997, BY McCLURE ENGINEERING ASSOCIATES, INC.
3 ALL THE AIR CONCENTRATIONS EXCEPT THE * MARKED EXCEED RBCS

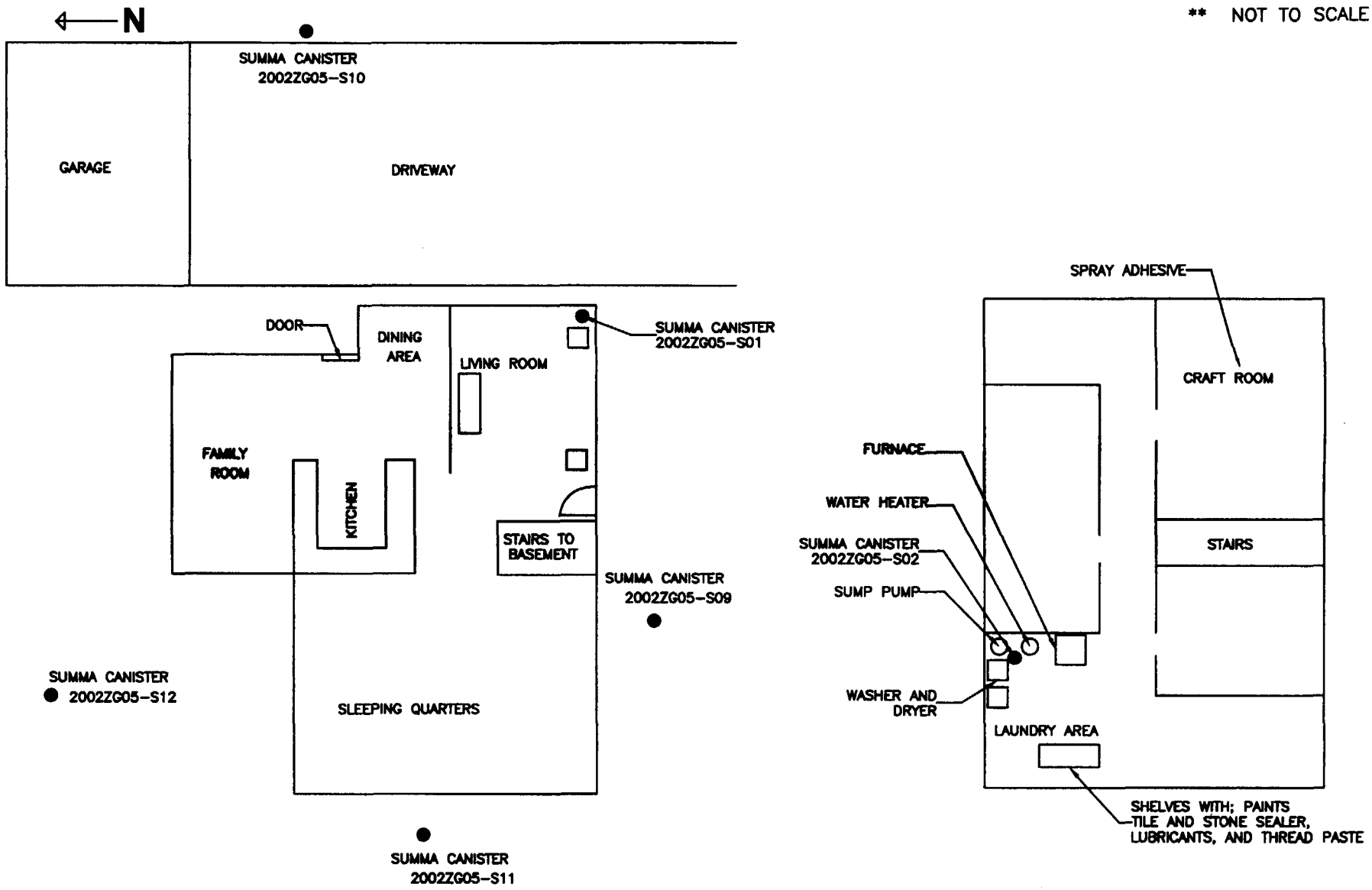
REDACTED

RESPONSE ACTION CONTRACT U.S. EPA CONTRACT No. 68-W7-0026 WORK ASSIGNMENT No. 139-RICO-05MZ DOCUMENT CONTROL No. RFW139-2A-AN01	AIR AND GROUNDWATER SAMPLING LOCATIONS EVERGREEN MANOR SITE Roscoe, Illinois				
	SCALE: AS NOTED	DRAWN: D.C.H.	DATE: 7/03	DWG. NO. 14703	FIGURE 2-2



SCALE
LEGEND
HOMES WITHIN SITE BOUNDARY THAT ARE CONNECTED TO NORTH PARK PUBLIC WATER DISTRICT (NPPWD) WATER SUPPLY
HOMES WITHIN SITE BUFFER ZONE THAT ARE CONNECTED TO NPPWD WATER SUPPLY
HOMES THAT ARE CONNECTED TO NPPWD WATER SUPPLY OUTSIDE OF SITE BOUNDARY AND BUFFER ZONE IN THE IMMEDIATE VICINITY OF THE SITE
ILLINOIS DEPARTMENT OF PUBLIC HEALTH (IDPH) RESIDENTIAL WELL SAMPLING LOCATIONS (2001)
HOMES NOT CONNECTED TO NPPWD (RESIDENCES DECLARED TO BE CONNECTED, AS A RESULT ARE OBTAINING WATER FROM AN ON-SITE WELL)
W
MUNICIPAL WATER MAIN (NOT ALL HOMES ALONG THE WATER MAIN ARE CONNECTED)
SITE BOUNDARY (BASED ON MAXIMUM EXTENT OF VOC)
NOTES:
1. WATERMAIN LOCATIONS ADAPTED FROM NORTH PARK WATER DISTRICT BY INCLUDE PROMINENT RESIDENTIAL AND SITE BUFFER ZONE AND VILLAGE OF ROCKTON WATER DEPARTMENT (VOC) SUBMITTAL
2. PARCEL, ADDRESS INFORMATION, AND STREET DRAWINGS PROVIDED BY WINNEBAGO COUNTY, ILLINOIS
3. NPPWD CUSTOMER LIST WAS PROVIDED BY NPPWD
SOURCES:
• USGS EARTH SOURCES OBSERVATION SYSTEMS DATA CENTER DATED 1998/01/24
RESPONSE ACTION CONTRACT
U.S. EPA CONTRACT No. 68-W7-0025
WORK ASSIGNMENT No. 139-RCO-0242
DOCUMENT CONTROL No. RF9139-25-AMD
NORTH PARK PUBLIC WATER DISTRIBUTION NETWORK
EVERGREEN MANOR SITE
Roscoe, Illinois

FIGURE 3-1



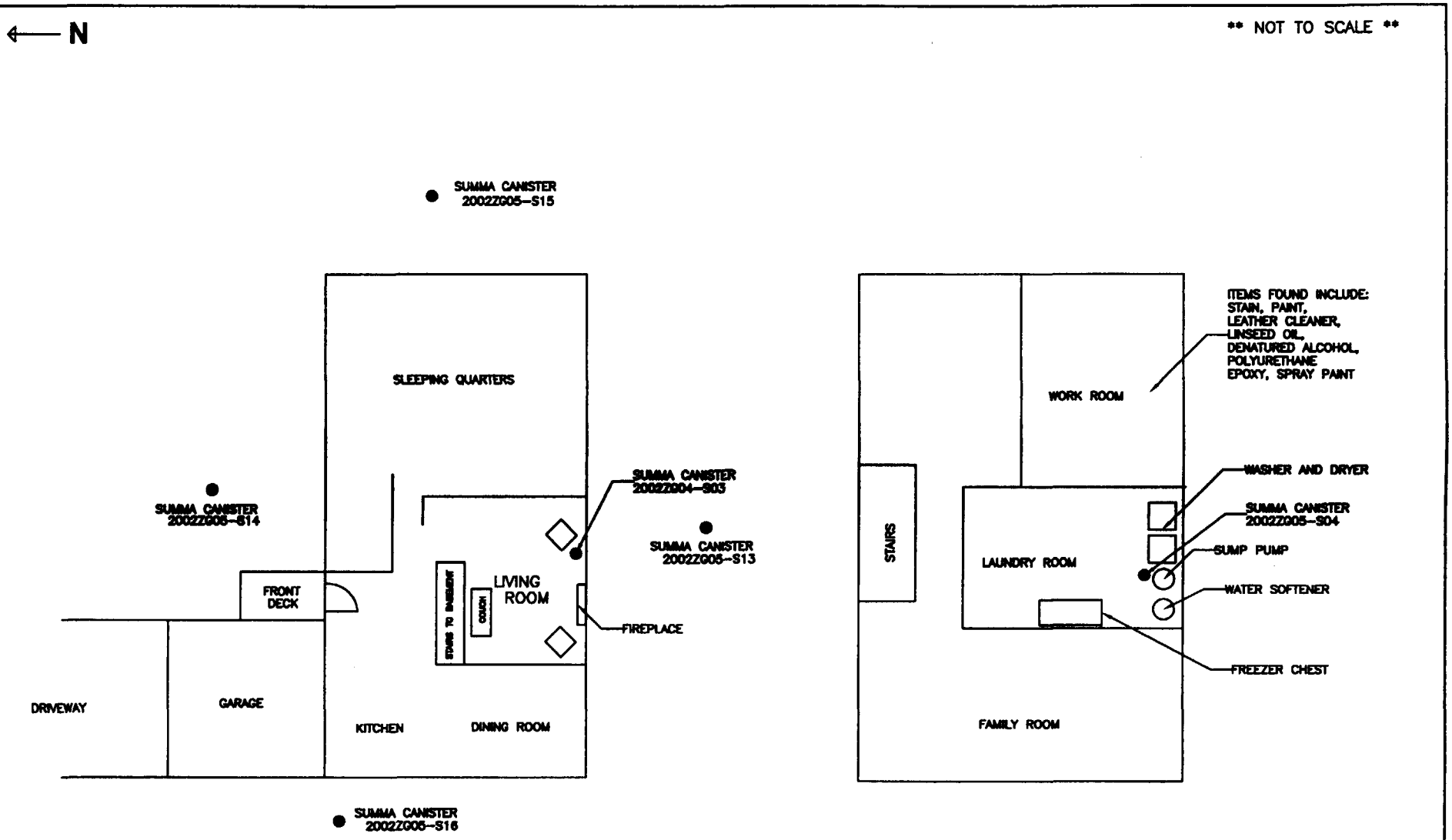
REDACTED

FIGURE 4-1

RESPONSE ACTION CONTRACT
U.S. EPA CONTRACT No. 68-W7-0026
WORK ASSIGNMENT No. 139-RICO-05MZ
DOCUMENT CONTROL No. RFW139-2A-ANOI

AREA A - MATTHEW AVENUE
SAMPLING LOCATIONS
USEPA - EVERGREEN MANOR SITE
Roscoe, Illinois

K:\1154\Evergreen\Air sampling report\Figures\MATTFW.dwg



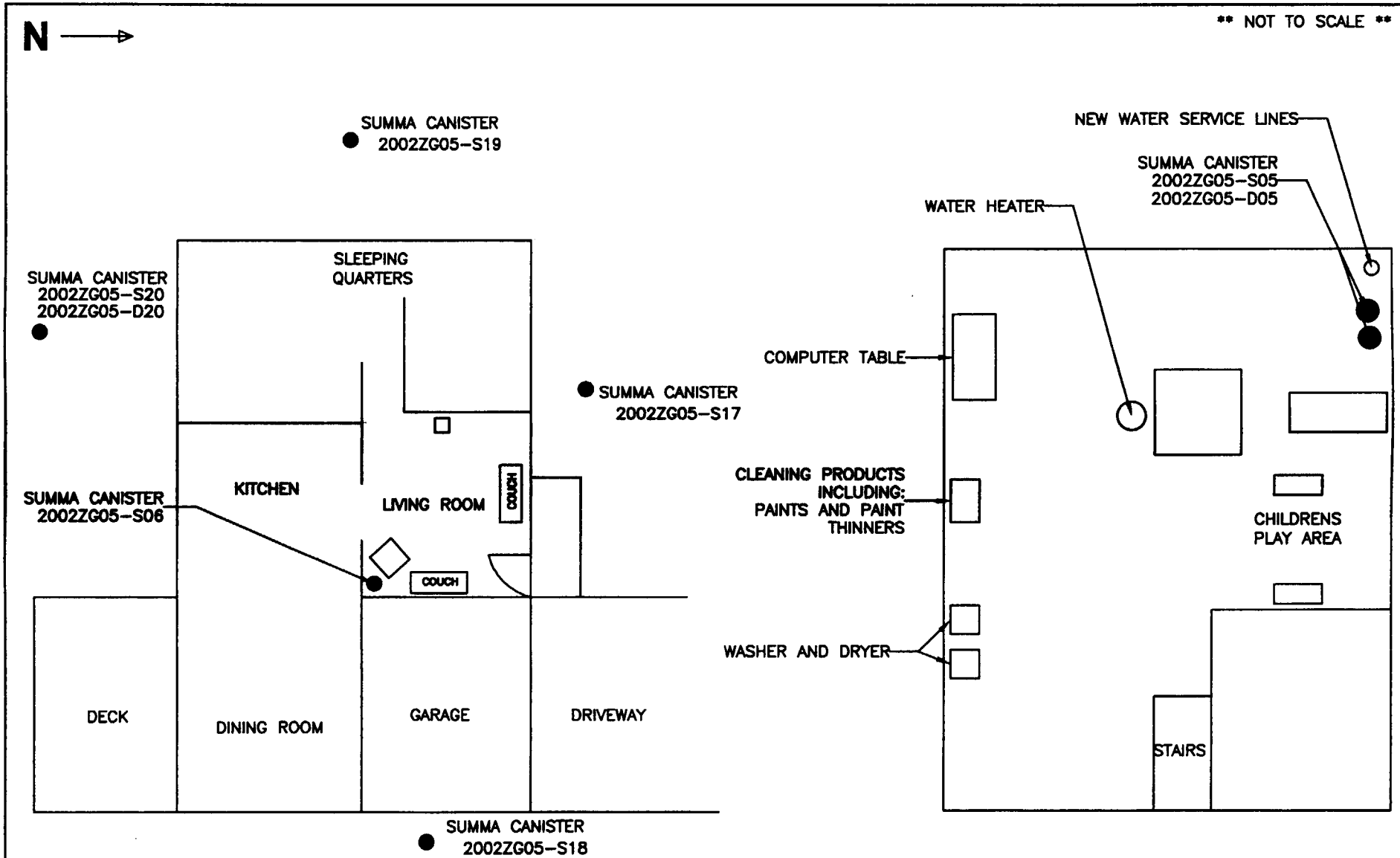
REDACTED

FIGURE 4-2

RESPONSE ACTION CONTRACT
U.S. EPA CONTRACT No. 68-W7-0026
WORK ASSIGNMENT No. 139-RICO-05MZ
DOCUMENT CONTROL No. RFW139-2A-AN01

AREA B - STRAW AND BLUE SPRUCE
SAMPLING LOCATIONS
USEPA - EVERGREEN MANOR SITE
Roscoe, Illinois

K:\1154\Fvergreen\Air sampling report\Figures\STRAW LANF.dwg



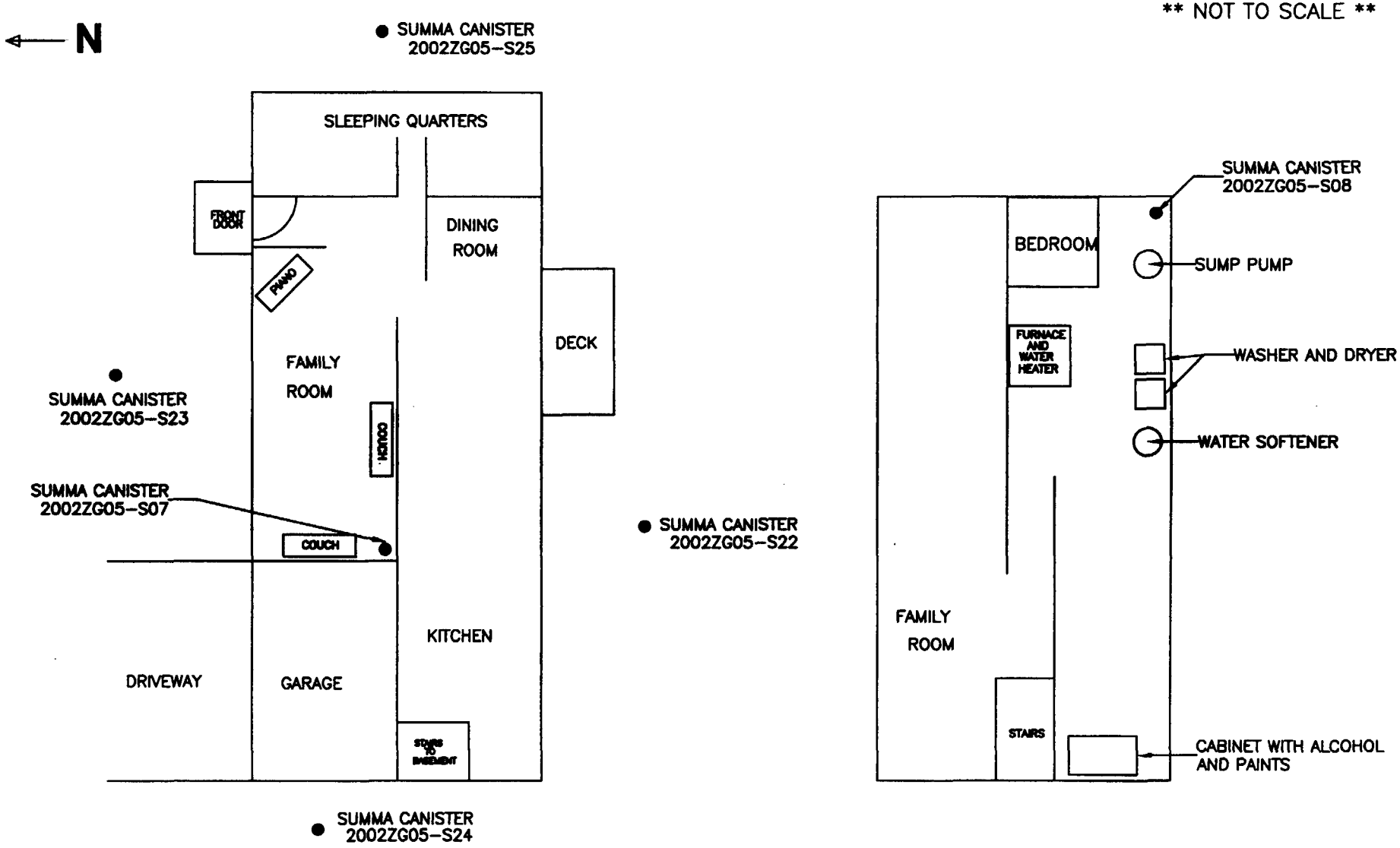
REDACTED

FIGURE 4-3

RESPONSE ACTION CONTRACT
U.S. EPA CONTRACT No. 68-W7-0026
WORK ASSIGNMENT No. 139-RICO-05MZ
DOCUMENT CONTROL No. RFW139-2A-ANOI

AREA C – WAGON AND WAGON LANE CT
SAMPLING LOCATIONS
USEPA – EVERGREEN MANOR SITE
Roscoe, Illinois

K:\1154\Evergreen\Air sampling report\Figures\2-WAGON LANE.dwg



REDACTED

FIGURE 4-4

RESPONSE ACTION CONTRACT U.S. EPA CONTRACT No. 68-W7-0026 WORK ASSIGNMENT No. 139-RICO-05MZ DOCUMENT CONTROL No. RFW139-2A-ANOI	AREA D - WAGON LANE AND TANAWINGO SAMPLING LOCATIONS USEPA - EVERGREEN MANOR SITE Roscoe, Illinois

K:\1154\Evergreen\Air sampling report\Figures\1-WAGON LANE.dwg

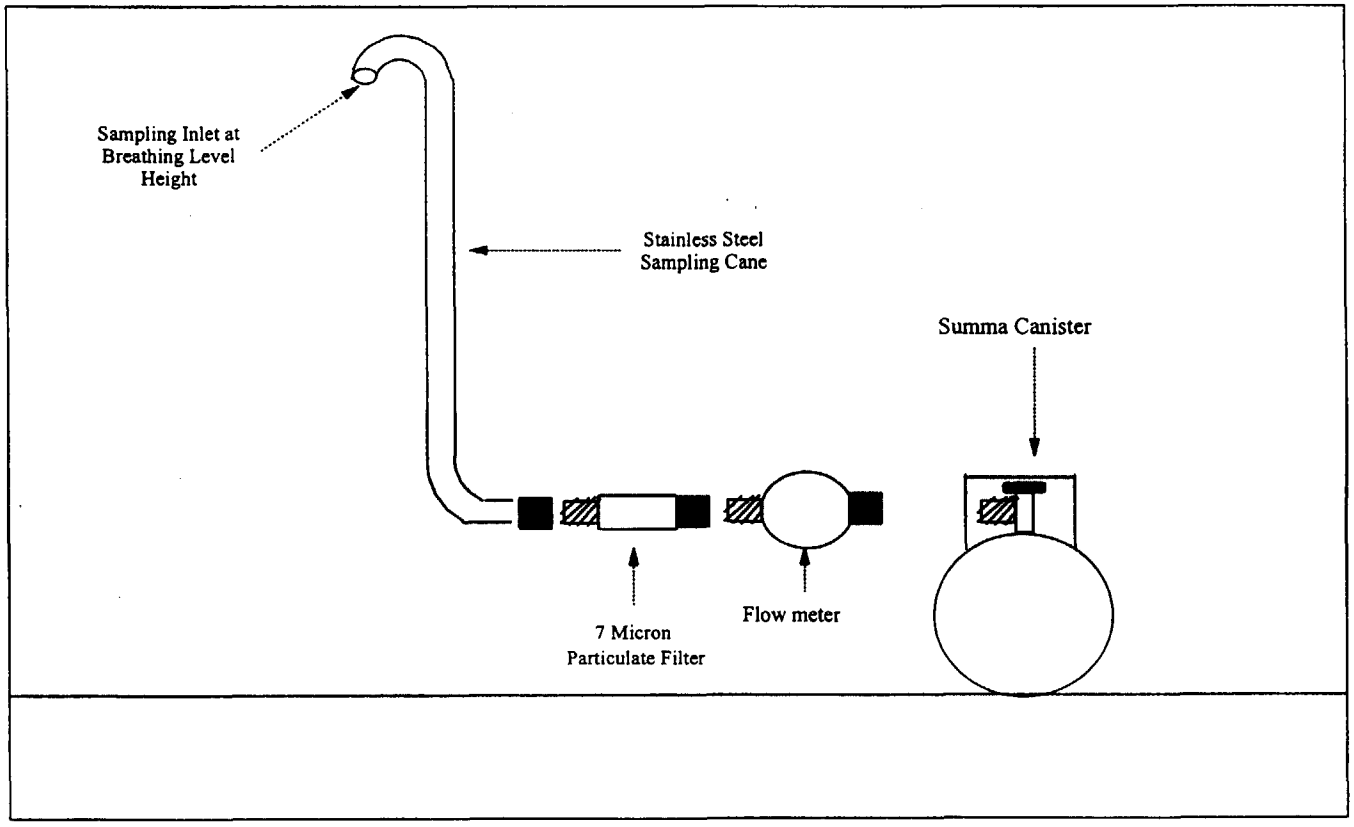


FIGURE 4–5

REDACTED

RESPONSE ACTION CONTRACT
U.S. EPA CONTRACT No. 68–W7–0026
WORK ASSIGNMENT No. 139–RICO–05MZ
DOCUMENT CONTROL No. RFW139–2A–ANOI

SCHEMATIC DIAGRAM OF INDOOR AIR AND AMBIENT AIR SAMPLING SET–UP
EVERGREEN MANOR SITE
Roscoe, Illinois

J:\CAD95\SYMBOL\Arcs-oh.dwg

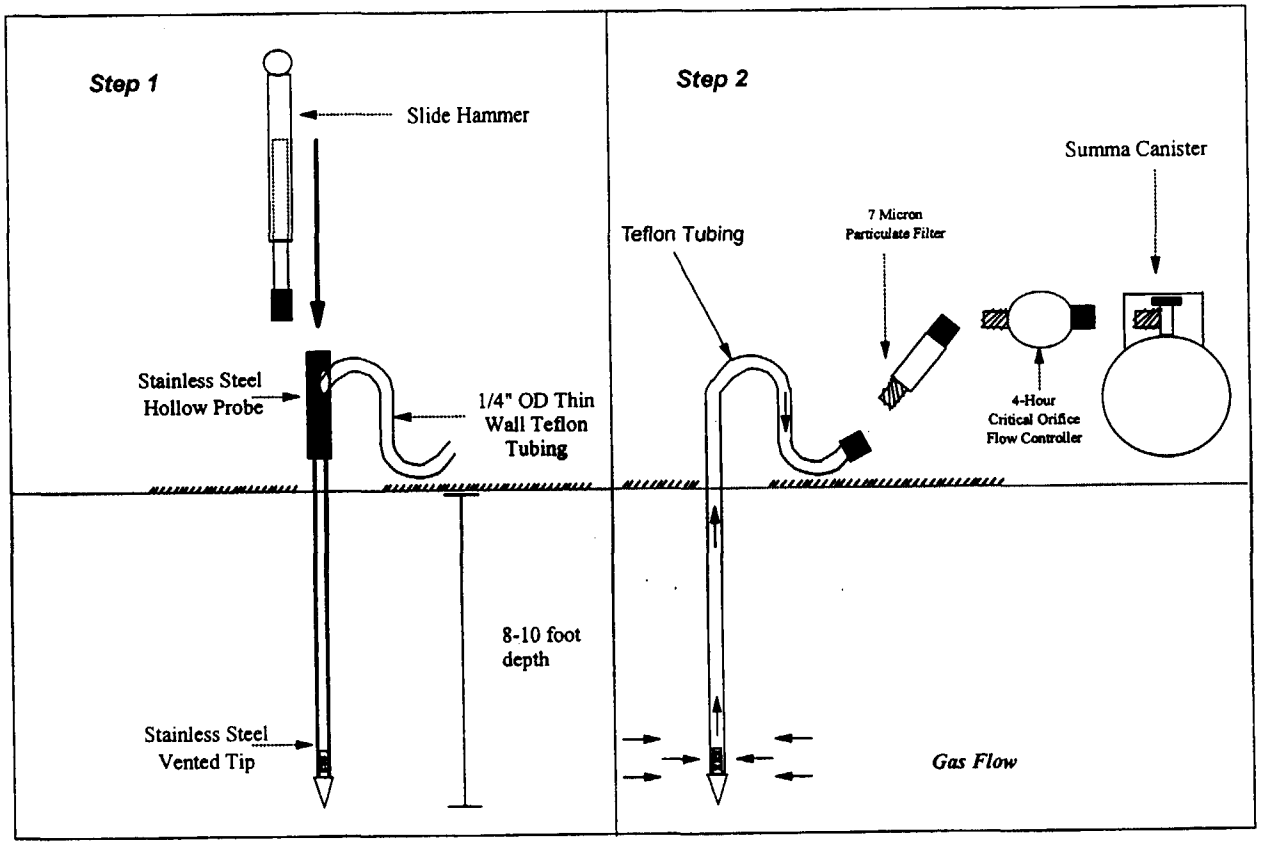


FIGURE 4–6

REDACTED

RESPONSE ACTION CONTRACT
U.S. EPA CONTRACT No. 68–W7–0026
WORK ASSIGNMENT No. 139–RICO–05MZ
DOCUMENT CONTROL No. RFW139–2A–ANOI

SCHEMATIC DIAGRAM OF SOIL GAS SAMPLING SET–UP
EVERGREEN MANOR SITE
Roscoe, Illinois

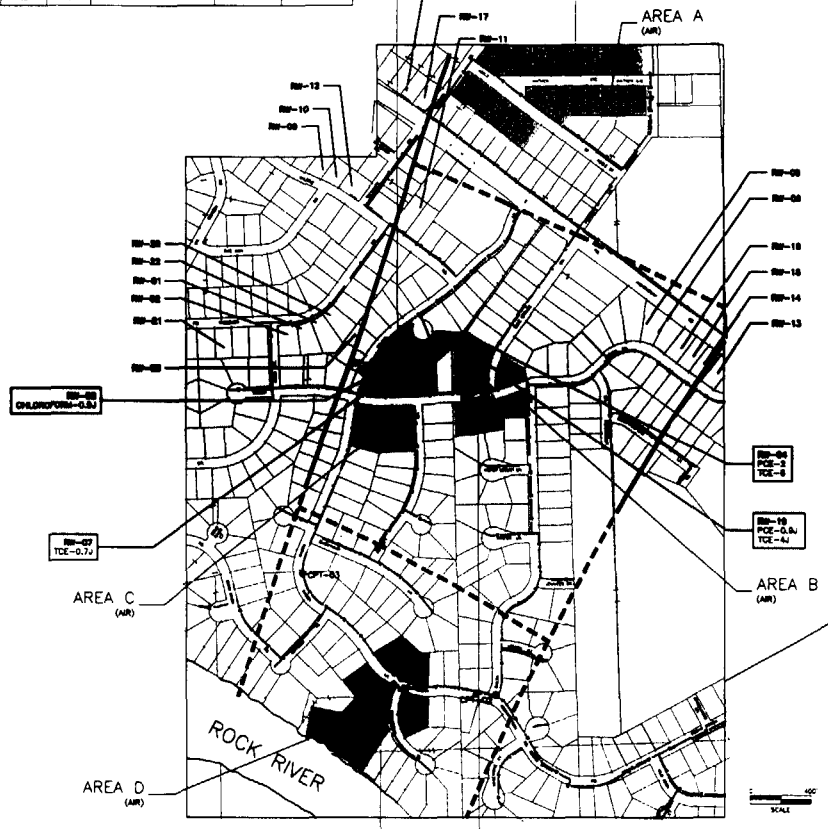
J:\CAD95\SYMBOL\Arcs-gh.dwg

AREA A	RESIDENCE A SAMPLE IDENTIFICATION: 20027G05-					
	SOIL GAS				INDOOR AIR	
DETECTED CONTAMINANT	SG8	SG10	SG11	SG13	DETECTED CONTAMINANT	IA01	IA02
BENZENE	31.0	8.10	6.60	12.0	BENZENE	0.72	1.10
ETHYLBENZENE	41.0	13.0*	14.0*	20.0	CHLOROFORM	0.42	0.58
					METHYLENE CHLORIDE	46.0*	47.0
					TETRACHLOROETHENE (PCE)	0.70	0.70

ug/m3)

AREA C	RESIDENCE C SAMPLE IDENTIFICATION: 20027G05-					
	SOIL GAS				INDOOR AIR	
DETECTED CONTAMINANT	SG17	SG18	SG19	SG20	DETECTED CONTAMINANT	IA08	IA09
BENZENE	8.90	23.0	7.20	2.80	BENZENE	0.84	0.75
ETHYLBENZENE	18.0	5.40*	8.30*	2.80*	CHLOROFORM	0.49	0.67
TETRACHLOROETHENE (PCE)	2.30*	1.90	3.30*	2.80*	TETRACHLOROETHENE (PCE)	0.78	1.20
TRICHLOROETHENE (TCE)	ND	9.50	ND	ND			

(UNIT= ug/m3)



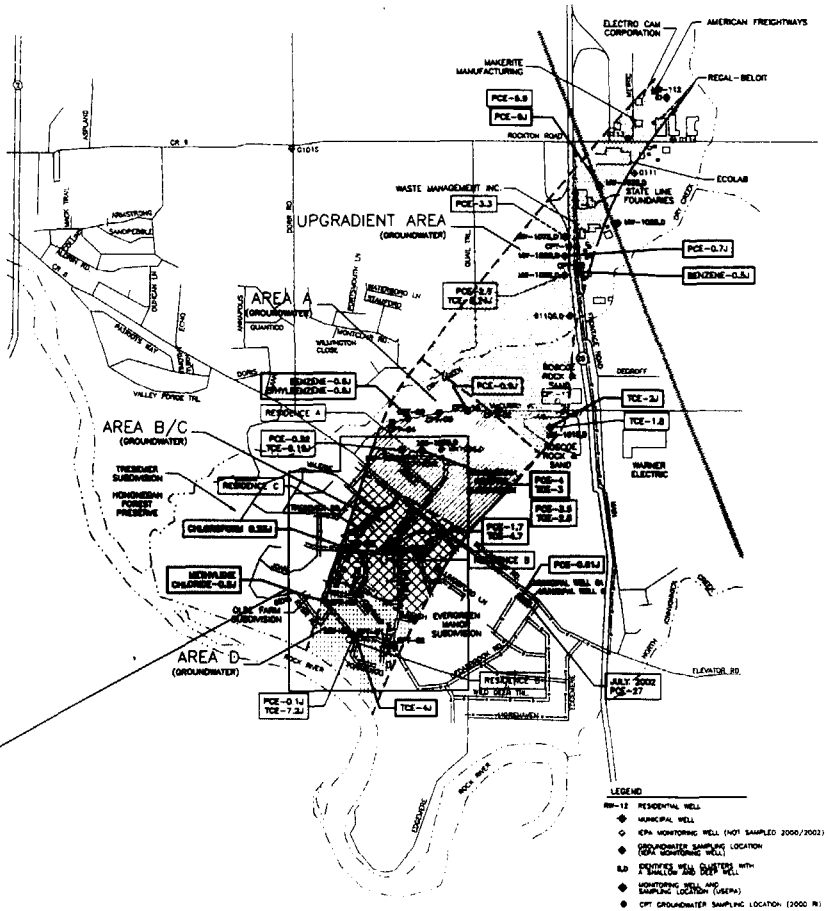
AREA D	RESIDENCE D SAMPLE IDENTIFICATION: 20027G05-					
	SOIL GAS				INDOOR AIR	
DETECTED CONTAMINANT	SG22	SG23	SG24	SG25	DETECTED CONTAMINANT	IA07	IA06
CHLOROFORM	1.70	ND	ND	1.10	BENZENE	1.10	1.10
TRICHLOROETHENE (TCE)	1.40	ND	ND	ND	CHLOROFORM	0.49	0.00
					ETHYLBENZENE	3.10	4.80
					TETRACHLOROETHENE (PCE)	1.30	0.82

(UNIT= ug/m3)

A_B	RESIDENCE B SAMPLE IDENTIFICATION: 20027G05-					
	SOIL GAS				INDOOR AIR	
DETECTED CONTAMINANT	SG14	SG15	SG16	SG17	DETECTED CONTAMINANT	IA03	IA04
BENZENE	1.70	2.80	2.30*	3.30	BENZENE	1.00	2.80
CHLOROFORM	6.00	4.20	1.80	ND	CHLOROFORM	0.73	0.49
TRICHLOROETHENE (TCE)	ND	ND	ND	0.52	ETHYLBENZENE	1.70	1.40
					METHYLENE CHLORIDE	38.0	92.0
					TETRACHLOROETHENE (PCE)	3.40	11.0

(UNIT= ug/m3)

REDACTED



NOTES:
1 BASEMAP ADAPTED FROM FIGURE 1 OF THE CONTAMINANT SOURCE EVALUATION - EVERGREEN MANOR SITE DATED JANUARY 1997 BY CONESTOGA-ROVERS & ASSOCIATES.
2 WATERMAIN LOCATIONS ADAPTED FROM NORTH PARK WATER DISTRICT SECTIONS 26 AND 33, DATED JANUARY 1997 BY McCLURE ENGINEERING ASSOCIATES, INC.
3 ALL THE AIR CONCENTRATIONS EXCEPT THE * MARKED EXCEEDED RBCs

RESPONSE ACTION CONTRACT
U.S. EPA CONTRACT No. 68-W7-0026
WORK ASSIGNMENT No. 139-RICO-05MZ
DOCUMENT CONTROL No. RFW139-2A-ANOI

DISTRIBUTION AND CONCENTRATIONS OF AIR CONTAMINANTS IN GROUNDWATER, SOIL GAS, & INDOOR EXCEEDING RBCs
EVERGREEN MANOR SITE
Roscoe, Illinois

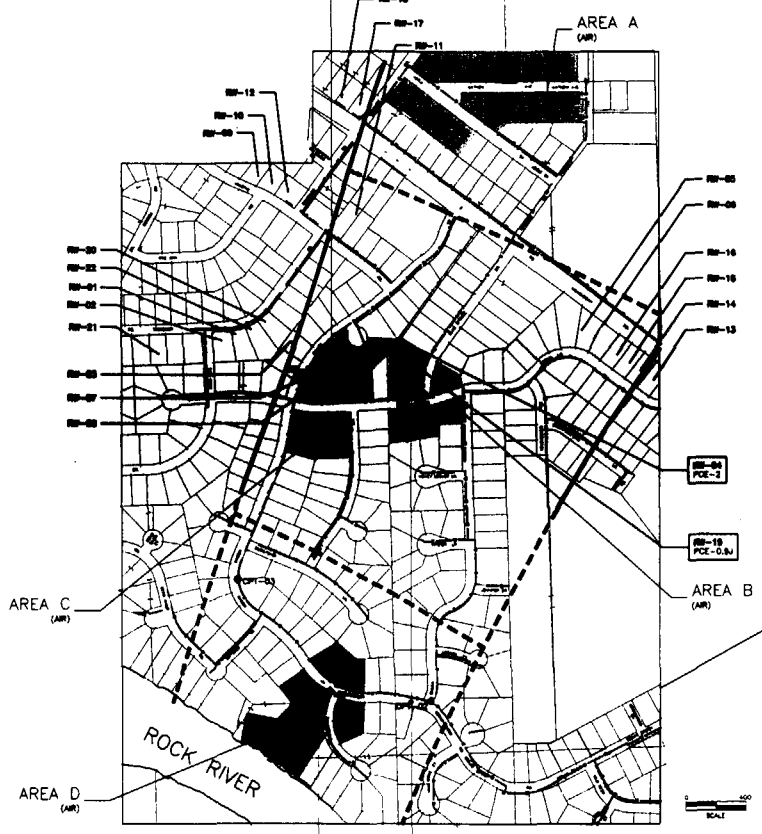
SCALE	DRAWN	DATE	DWG. NO	
AS NOTED	D.C.H.	7/03	14703	FIGURE 5-1

AREA A	RESIDENCE A SAMPLE IDENTIFICATION 20027G05-	
	INDOOR AIR	
DETECTED CONTAMINANT	501	502
TETRACHLOROETHENE (PCE)	0.70	0.70

(UNIT= ug/m3)

AREA C	RESIDENCE C SAMPLE IDENTIFICATION 20027G05-						
	SOIL GAS				INDOOR AIR		
DETECTED CONTAMINANT	2.80*	190	5.30*	2.80*	TETRACHLOROETHENE (PCE)	0.70	3.20

(UNIT= ug/m3)



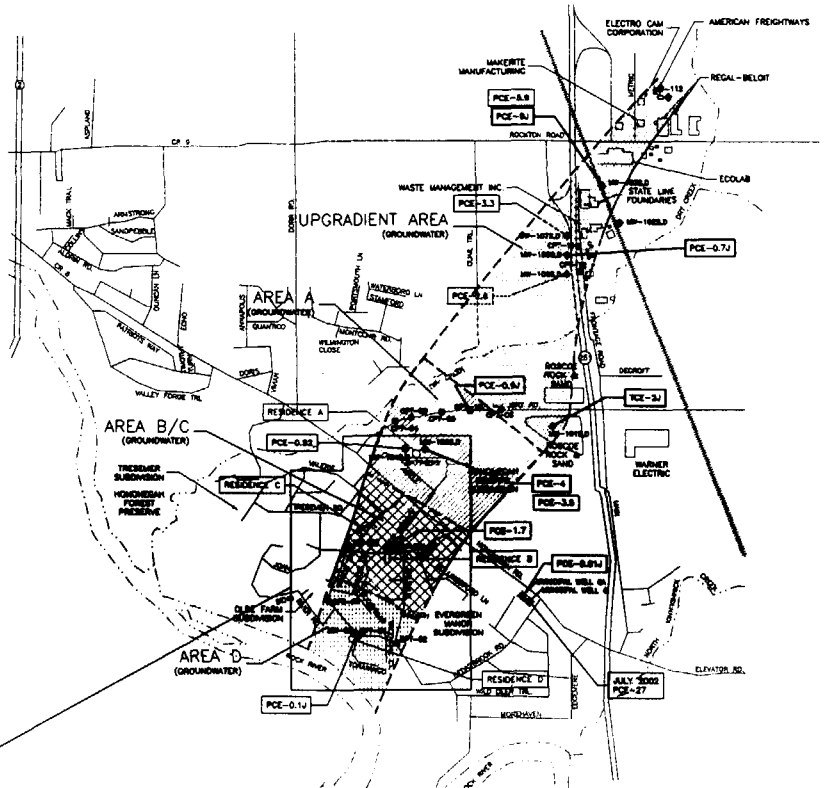
AREA D	RESIDENCE D SAMPLE IDENTIFICATION 20027G05-						
	SOIL GAS				INDOOR AIR		
DETECTED CONTAMINANT	523	523	524	525	DETECTED CONTAMINANT	507	508
TETRACHLOROETHENE (PCE)	1.40	ND	ND	ND	TETRACHLOROETHENE (PCE)	1.30	0.83

(UNIT= ug/m3)

AREA B	RESIDENCE B SAMPLE IDENTIFICATION 20027G05-	
	INDOOR AIR	
DETECTED CONTAMINANT	503	504
TETRACHLOROETHENE (PCE)	3.40	11.0

(UNIT= ug/m3)

REDACTED



LEGEND

- MUNICIPAL WELL
- IEPA MONITORING WELL (NOT SAMPLED 2000/2002)
- GROUNDWATER SAMPLING LOCATION (IEPA MONITORING WELL)
- S,D IDENTIFIES WELL CLUSTERS WITH A SHALLOW AND DEEP WELL
- MONITORING WELL AND SAMPLING LOCATION (USEPA)
- CPT GROUNDWATER SAMPLING LOCATION (2000 RI)
- CPT STRATIGRAPHY LOCATION (NO GROUNDWATER SAMPLES)
- MUNICIPAL WATER MAIN
- EXTENT OF GROUNDWATER DETECTIONS AND AIR/GROUNDWATER EVALUATION AREAS
- PCE-86 — CONTAMINANT CONCENTRATIONS THAT EXCEEDED RBCs IN AIR SAMPLES THAT WERE DETECTED IN GROUNDWATER IN 2000 (UNIT= ug/l)
- PCE-33 — CONTAMINANT CONCENTRATIONS THAT EXCEEDED RBCs IN AIR SAMPLES THAT WERE DETECTED IN GROUNDWATER IN APRIL 2002 (UNIT= ug/l)
- PCE-33 — CONTAMINANT DETECTED IN DEEP WELLS
- * CONTAMINANTS DETECTED ABOVE LABORATORY REPORTING LIMITS BUT BELOW RBCs
- RESIDENTIAL WELL SAMPLING LOCATION (2000) ALL WELLS SEALED 2001
- AREA A (GROUNDWATER)
- AREA B/C (GROUNDWATER)
- AREA D (GROUNDWATER)

NOTES

1. BASEMAP ADAPTED FROM FIGURE 1 OF THE CONTAMINANT SOURCE EVALUATION - EVERGREEN MANOR SITE DATED JANUARY 1997 BY CONESTOGA-ROVERS & ASSOCIATES
2. WATERMAIN LOCATIONS ADAPTED FROM NORTH PARK WATER DISTRICT SECTIONS 29 AND 32 DATED JANUARY 1997 BY McCLURE ENGINEERING ASSOCIATES, INC
3. ALL THE AIR CONCENTRATIONS EXCEPT THE * MARKED EXCEEDED RBCS

RESPONSE ACTION CONTRACT
U.S. EPA CONTRACT No 68-W7-0026
WORK ASSIGNMENT No 139-RICO-05MZ
DOCUMENT CONTROL No RFW139-2A-AN01

DISTRIBUTION OF PCE DETECTION IN GROUNDWATER AND RBC EXCEEDANCES IN AIR SAMPLES
EVERGREEN MANOR SITE
Roscoe, Illinois

SCALE	DRAWN	DATE	DWG NO	FIGURE 6-
AS NOTED	D.C.H.	7/03	14703	

(EPA MONITORING WELL)

S,D IDENTIFIES WELL CLUSTERS WITH A SHALLOW AND DEEP WELL

MONITORING WELL AND SAMPLING LOCATION

—w— MUNICIPAL WATER MAIN

EXTENT OF DETECTIONS – DASHED WHERE INFERRED

AIR SAMPLING LOCATIONS

* CONTAMINANTS DETECTED ABOVE LABORATORY REPORTING LIMITS BUT BELOW RBCs

N

0 1200'

SCALE

AIR AND GROUNDWATER SAMPLING LOCATIONS

EVERGREEN MANOR SITE

Roscoe, Illinois

SCALE:	DRAWN:	DATE:	DWG. NO.	
AS NOTED	D.C.H.	7/03	14703	FIGURE 2–2

FIGURE 3-1

E ACTION CONTRACT TRACT No. 68-W7-0026 ENT No. 139-RICO-05MZ TROL No. RFW139-2A-ANOI	NORTH PARK PUBLIC WATER DISTRIBUTION NETWORK EVERGREEN MANOR SITE Roscoe, Illinois

PCE-95 — CONTAMINANT CONCENTRATIONS THAT EXCEEDED RBCs IN AIR SAMPLES THAT WERE DETECTED IN GROUNDWATER IN 2000 (UNIT= ug/l).

PCE-33 — CONTAMINANT CONCENTRATIONS THAT EXCEEDED RBCs IN AIR SAMPLES THAT WERE DETECTED IN GROUNDWATER IN APRIL 2002 (UNIT= ug/l).

PCE-33 — CONTAMINANT DETECTED IN DEEP WELLS

* CONTAMINANTS DETECTED ABOVE LABORATORY REPORTING LIMITS BUT BELOW RBCs

RESIDENTIAL WELL SAMPLING LOCATION (2000) ALL WELLS SEALED 2001

AREA A (GROUNDWATER)

AREA B/C (GROUNDWATER)

AREA D (GROUNDWATER)

N

0 1200'

SCALE

DISTRIBUTION AND CONCENTRATIONS OF AIR CONTAMINANTS IN GROUNDWATER, SOIL GAS, & INDOOR EXCEEDING RBCs

EVERGREEN MANOR SITE
Roscoe, Illinois

SCALE:	DRAWN:	DATE:	DWG. NO.	
AS NOTED	D.C.H.	7/03	14703	FIGURE 5-1

26
MZ
ANOI

AIR/GROUNDWATER EVALUATION AREAS

PCE-95 — CONTAMINANT CONCENTRATIONS THAT EXCEEDED RBCs IN AIR SAMPLES THAT WERE DETECTED IN GROUNDWATER IN 2000 (UNIT= ug/l).

PCE-33 — CONTAMINANT CONCENTRATIONS THAT EXCEEDED RBCs IN AIR SAMPLES THAT WERE DETECTED IN GROUNDWATER IN APRIL 2002 (UNIT= ug/l).

PCE-33 — CONTAMINANT DETECTED IN DEEP WELLS

* CONTAMINANTS DETECTED ABOVE LABORATORY REPORTING LIMITS BUT BELOW RBCs

RESIDENTIAL WELL SAMPLING LOCATION (2000) ALL WELLS SEALED 2001

AREA A (GROUNDWATER)

AREA B/C (GROUNDWATER)

AREA D (GROUNDWATER)

N

0 1200'

SCALE

DISTRIBUTION OF PCE DETECTION IN GROUNDWATER AND RBC EXCEEDANCES IN AIR SAMPLES

EVERGREEN MANOR SITE

Roscoe, Illinois

SCALE:	DRAWN:	DATE:	DWG. NO.	
AS NOTED	D.C.H.	7/03	14703	FIGURE 6-1

6
MZ
ANOI

Appendix A
Redacted

Appendix A
Redacted

Air Quality Sampling Questionnaire
Evergreen Manor Site
Roscoe, Illinois

Residence A

WESTON Personnel: Yoshie Hagiwara Date: 5-1-02 Time: 5:30 PM

1. **RESIDENT INFORMATION:**

a. Name: _____

b. Owner of Property (if different from above): _____

c. Address: Matthew Ave, Roscoe, Il. 61073

d. Phone Number: _____

e. Rent or Own House: _____

f. Resident Age and Sex: _____

g. Occupation of Resident mach.

h. Are you willing to participate in the air sampling program? (Yes) / No

2. **HOUSE DETAILS:**

a. Approximate age of house: 30 Years

b. How long have you lived in house: 23 years +

c. Type of Building: Single family dwelling ☒ Apartment ☐ Other: _____

? d. Approximate floor area of your home? Total surface: 1800 sq. ft. Unknown ☐

e. Does the house have a basement? (Yes) / No Finished / ~~Unfinished~~ 1/2

f. Known foundation problems: Large cracks ____ Settling ____ Water ____

g. Is there a garage? (Yes) / No One Car / (Two Car) Attached / (Unattached)

? h. How is the house entered from the garage? Closed door ____ Open door ____ Other Not connected to garage

i. Do you routinely park your auto in the garage? No

j. Do you have central air: (Yes) / No

k. Is there a sump pump: Yes / No Is there a gas clothes dryer: Yes / No

l. Is there a gas stove or oven: Yes Continuously burning pilot light: No

m. Is there a gas hot water heater: Yes Continuously burning pilot light: No

n. Location of water heater: Basement

o. Location of clothes dryer: Basement & Main Floor

p. Heating: Natural Gas / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes / No

r. Is there a fireplace: No / Yes Type: Wood / Natural Gas Other: _____

3. **RESIDENT/HOUSEHOLD ACTIVITIES:**

a. Any hobbies using paints, solvents, fuels, etc?: No

b. Have planned any home repair work during the next six weeks? Yes / No

c. What type of repair work? _____

d. Any planned painting activities in your home during the next six weeks? Yes / No

e. Which areas of your home are you planning to paint?: _____

f. Any smokers in the home? Yes / No How many smokers 1 Packs per day: _____

g. Is smoking permitted in the house No big.

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / No

? i. During the next six weeks, do you plan to use any of the following in your home?:

Pesticide/Fungicide ✓	Incense _____
Mothballs or moth crystals _____	Candles ✓
Indoor air fresheners _____	Nail Polish Remover ✓
Paint or paint thinners _____	Fondue _____
Solvents _____	Indoor barbecue _____

j. Do you use a kerosene heater: No / Yes How often: _____

k. Where do you place the kerosene heater?:

l. How often is the burning stove or fireplace used?:
when ever it is cold

m. Where is it located?:
Main Floor Back room on house

? n. What do you do with work clothes (other than office clothes):
~~back to work to be~~ washed

4. **ADDITIONAL INFORMATION:**

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.?
yes

b. Where do you store such materials?:
Base ment

? c. Other gasoline or diesel powered equipment (type and location):
garage

? d. Approximate number of containers, especially those containing petroleum products:
4

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling?: (Yes) / No

Residence B

Air Quality Sampling Questionnaire
Evergreen Manor Site
Roscoe, Illinois

WESTON Personnel: Y. Hagiwara Date: 1 May 2002 Time: _____

1. **RESIDENT INFORMATION:**

   a. Name _____

   b. Owner of Property (if different from above): _____

   c. Address: Straw Lane

   d. Phone Number: _____

   e. Rent or Own House: _____

   f. Resident Age and Sex: _____

   g. Occupation of Resident Tool & Die

   h. Are you willing to participate in the air sampling program? (Yes) / No

2. **HOUSE DETAILS:**

   a. Approximate age of house: 16 Years

   b. How long have you lived in house: 16 years

   c. Type of Building: Single family dwelling ☑ Apartment ☐ Other: _____

   d. Approximate floor area of your home? Total surface: 1400 sq. ft. Unknown ☐

   e. Does the house have a basement? (Yes) / No (Finished) / Unfinished

   f. Known foundation problems: Large cracks No Settling No Water _____

   g. Is there a garage? (Yes) / No One Car / (Two Car) (Attached) / Unattached

   h. How is the house entered from the garage? Closed door ✓ Open door ____ Other _____

   i. Do you routinely park your auto in the garage? yes

   j. Do you have central air: (Yes) / No

k. Is there a sump pump: Yes / No Is there a gas clothes dryer: Yes / No

l. Is there a gas stove or oven: yes Continuously burning pilot light: No

m. Is there a gas hot water heater: yes Continuously burning pilot light:_____

n. Location of water heater: Center Basement

o. Location of clothes dryer: Center Basement

p. Heating: Natural Gas / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes / No

r. Is there a fireplace: No Yes Type: Wood / Natural Gas Other: _____

3. **RESIDENT/HOUSEHOLD ACTIVITIES:**

a. Any hobbies using paints, solvents, fuels, etc?: yes

b. Have planned any home repair work during the next six weeks? Yes / No

c. What type of repair work? Siding

d. Any planned painting activities in your home during the next six weeks? Yes / No

e. Which areas of your home are you planning to paint?: None

f. Any smokers in the home? Yes / No How many smokers _____ Packs per day:_____

g. Is smoking permitted in the house No

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / No

i. During the next six weeks, do you plan to use any of the following in your home?:

Pesticide/Fungicide No
Mothballs or moth crystals No
Indoor air fresheners yes
Paint or paint thinners No
Solvents No

Incense No
Candles yes
Nail Polish Remover yes
Fondue No
Indoor barbecue No

j. Do you use a kerosene heater: No Yes How often: _____

k. Where do you place the kerosene heater?:

_____

l. How often is the burning stove or fireplace used?:
when it cold

m. Where is it located?:
upstairs living room

n. What do you do with work clothes (other than office clothes):
Sent out

4. **ADDITIONAL INFORMATION:**

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.?
yes

b. Where do you store such materials?:
Downstairs workshop

c. Other gasoline or diesel powered equipment (type and location):
garage

d. Approximate number of containers, especially those containing petroleum products:
3 (5 gallon)

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling?: Yes / No

Residence C

Air Quality Sampling Questionnaire
Evergreen Manor Site
Roscoe, Illinois

WESTON Personnel: Y. Magiwam Date: 1 May 2002 Time: _____

1. **RESIDENT INFORMATION:**

   a. Name: _____

   b. Owner of Property (if different from above): _____

   c. Address: Wagon Lane et Roscoe 61073

   d. Phone Number: _____

   e. _____

   f. Resident Age and Sex: _____

   g. Occupation of Resident Truckdriver

   h. Are you willing to participate in the air sampling program? (Yes) / No

2. **HOUSE DETAILS:**

   a. Approximate age of house: 23 Years

   b. How long have you lived in house: 4 yes

   c. Type of Building: Single family dwelling ☒ Apartment ☐ Other: _____

   d. Approximate floor area of your home? Total surface: 1600 sq. ft. Unknown ☐

   e. Does the house have a basement? (Yes) / No Finished / (Unfinished)

   f. Known foundation problems: Large cracks ____ Settling ____ Water _____

   g. Is there a garage? (Yes) / No One Car / (Two Car) (Attached) / (Unattached)

   h. How is the house entered from the garage? Closed door ✓ Open door ____ Other_____

   i. Do you routinely park your auto in the garage? Yes

   j. Do you have central air: (Yes) / No

k. Is there a sump pump(Yes / No / No Is there a gas clothes dryer: (Yes)

l. Is there a gas stove or oven: yes Continuously burning pilot light: _____

m. Is there a gas hot water heater: yes Continuously burning pilot light: _____

n. Location of water heater: down stairs

o. Location of clothes dryer: down stairs

p. Heating: (Natural Gas) / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes / (No)

r. Is there a fireplace: (No) / Yes Type: Wood / Natural Gas Other: _____

3. **RESIDENT/HOUSEHOLD ACTIVITIES:**

a. Any hobbies using paints, solvents, fuels, etc?: no

b. Have planned any home repair work during the next six weeks? Yes / (No)

c. What type of repair work? _____

d. Any planned painting activities in your home during the next six weeks? Yes / (No)

e. Which areas of your home are you planning to paint?: _____

f. Any smokers in the home?: Yes / (No) How many smokers _____ Packs per day: _____

g. Is smoking permitted in the house no

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / (No)

i. During the next six weeks, do you plan to use any of the following in your home?:

Pesticide/Fungicide no
Mothballs or moth crystals no
Indoor air fresheners yes
Paint or paint thinners no
Solvents no

Incense yes
Candles yes
Nail Polish Remover yes
Fondue no
Indoor barbecue no

j. Do you use a kerosene heater: (No) Yes How often: _____

k. Where do you place the kerosene heater?:

_____

l. How often is the burning stove or fireplace used?:

_____

m. Where is it located?:

_____

n. What do you do with work clothes (other than office clothes):

_____

4. ADDITIONAL INFORMATION:

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.?

yes

b. Where do you store such materials?:

outside garages

c. Other gasoline or diesel powered equipment (type and location):

yes

d. Approximate number of containers, especially those containing petroleum products:

4

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling?: Yes / No

Residence D

Air Quality Sampling Questionnaire
Evergreen Manor Site
Roscoe, Illinois

WESTON Personnel: Yoshi Hagiwara Date: May 1, 2002 Time: _____

1. **RESIDENT INFORMATION:**

   a. Name:

   b. Owner of Property (if different from above):

   c. Address: Wagon Ln, Roscoe IL 61073

   d. Phone Number

   e. Rent or Own House:

   f. Resident Age and Sex:

   g. Occupation of Resident: Coach Driver

   h. Are you willing to participate in the air sampling program? (Yes) / No

2. **HOUSE DETAILS:**

   a. Approximate age of house: 20 Years

   b. How long have you lived in house: 11 yrs

   c. Type of Building: Single family dwelling ☒ Apartment ☐ Other: _____

   d. Approximate floor area of your home? Total surface: 1200 sq. ft. Unknown ☐

   e. Does the house have a basement? (Yes) / No (Finished) / Unfinished

   f. Known foundation problems: Large cracks Basement floor repared. Settling ____ (Water) ____

   g. Is there a garage? (Yes) / No One Car / (Two Car) (Attached) / Unattached

   h. How is the house entered from the garage? (Closed door) ____ Open door ____ Other _____

   i. Do you routinely park your auto in the garage? yes

   j. Do you have central air: (Yes) / No

k. Is there a sump pump: Yes / No (No) Is there a gas clothes dryer: Yes

l. Is there a gas stove or oven: no Continuously burning pilot light: ____

m. Is there a gas hot water heater: yes Continuously burning pilot light: yes

n. Location of water heater: Basement By stairs

o. Location of clothes dryer: across from Water Heat, Basem

p. Heating: Natural Gas / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes / No

r. Is there a fireplace: No / Yes Type: Wood / Natural Gas Other: ____

3. **RESIDENT/HOUSEHOLD ACTIVITIES:**

a. Any hobbies using paints, solvents, fuels, etc?: no

b. Have planned any home repair work during the next six weeks? Yes / No

c. What type of repair work? ____

d. Any planned painting activities in your home during the next six weeks? Yes / No

e. Which areas of your home are you planning to paint?: ____

f. Any smokers in the home?: Yes / No How many smokers ____ Packs per day: ____

g. Is smoking permitted in the house no

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / No

i. During the next six weeks, do you plan to use any of the following in your home?:

no

Pesticide/Fungicide ____	Incense no
Mothballs or moth crystals ____	Candles no
Indoor air fresheners ____	Nail Polish Remover yes.
Paint or paint thinners ____	Fondue no
Solvents ____	Indoor barbecue no

j. Do you use a kerosene heater: No Yes How often: ____

k. Where do you place the kerosene heater?:

l. How often is the burning stove or fireplace used?:

m. Where is it located?:

n. What do you do with work clothes (other than office clothes):

4. ADDITIONAL INFORMATION:

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.?

yes

b. Where do you store such materials?:

in garage in metal cabnit & Base ment Wood c. ' nt

c. Other gasoline or diesel powered equipment (type and location):

leaf Blower - garage lawnmower - shed
snowblower - shed

d. Approximate number of containers, especially those containing petroleum products:

2 or 3

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling?: Yes / No

Air Quality Sampling Questionnaire
Evergreen Manor Site
Roscoe, Illinois

WESTON Personnel: Y. Hagiwara Date: _____ Time: _____

1. **RESIDENT INFORMATION:**

   a. Name: / _____

   b. Owner of Property (if different from above):
   _____

   c. Address:
   _____

   d. Phone Number: _____

   _____

   _____

   h. Are you willing to participate in the air sampling program? Yes / No

2. **HOUSE DETAILS:**

   a. Approximate age of house: 25 Years

   b. How long have you lived in house: 13

   c. Type of Building: Single family dwelling ☒ Apartment ☐ Other: _____

   d. Approximate floor area of your home? Total surface: 1,200 sq. ft. Unknown ☐

   e. Does the house have a basement? Yes / No Finished / Unfinished

   f. Known foundation problems: Large cracks _____ Settling ____ Water NONE _____

   g. Is there a garage? Yes / No One Car / Two Car Attached / Unattached

   h. How is the house entered from the garage? Closed door X Open door ____ Other_____

   i. Do you routinely park your auto in the garage? YES

   j. Do you have central air: Yes / No

k. Is there a sump pump: Yes / No Is there a gas clothes dryer: Yes / No

l. Is there a gas stove or oven: YES Continuously burning pilot light: NO

m. Is there a gas hot water heater: YES Continuously burning pilot light: YES

n. Location of water heater: BSMT

o. Location of clothes dryer: BSMT

p. Heating: Natural Gas / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes / No

r. Is there a fireplace: No / Yes Type: Wood / Natural Gas Other: _____

3. **RESIDENT/HOUSEHOLD ACTIVITIES:**

a. Any hobbies using paints, solvents, fuels, etc?: NO

b. Have planned any home repair work during the next six weeks? Yes / No

c. What type of repair work? _____

d. Any planned painting activities in your home during the next six weeks? Yes / No

e. Which areas of your home are you planning to paint?: NO

f. Any smokers in the home?: Yes / No How many smokers _____ Packs per day: _____

g. Is smoking permitted in the house YES

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / No

i. During the next six weeks, do you plan to use any of the following in your home?:

Pesticide/Fungicide _____	Incense X
Mothballs or moth crystals _____	Candles X
Indoor air fresheners X	Nail Polish Remover X
Paint or paint thinners _____	Fondue _____
Solvents _____	Indoor barbecue _____

j. Do you use a kerosene heater: No Yes How often: _____

k. Where do you place the kerosene heater?: _____

l. How often is the burning stove or fireplace used?: 2-3 YR

m. Where is it located?: REC ROM UPSTAIRS

n. What do you do with work clothes (other than office clothes): N/A

4. **ADDITIONAL INFORMATION:**

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.? YES. BSMT.

b. Where do you store such materials?: BSMT.

c. Other gasoline or diesel powered equipment (type and location): GARAGE

d. Approximate number of containers, especially those containing petroleum products: 15 GAL

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling?: Yes / No

Air Quality Sampling Questionnaire
Evergreen Manor Site
Roscoe, Illinois

WESTON Personnel: N. Hagiwara Date: _____ Time: _____

1. **RESIDENT INFORMATION:**

   a. Name:

   b. Owner of Property (if different from above):

   _____

   c. Address:

   _____ _____ _____

   d. Phone Number

   _____ _____ _____

   _____ _____

   h. Are you willing to participate in the air sampling program? (Yes) / No

2. **HOUSE DETAILS:**

   a. Approximate age of house: 27 Years

   b. How long have you lived in house: 13

   c. Type of Building: Single family dwelling ☒ Apartment ☐ Other: _____

   d. Approximate floor area of your home? Total surface: ____ sq. ft. Unknown ☒

   e. Does the house have a basement? (Yes) / No Finished / (Unfinished)

   f. Known foundation problems: Large cracks ____ Settling ____ Water _____

   g. Is there a garage? (Yes) / No One Car / (Two Car) (Attached) / Unattached

   h. How is the house entered from the garage? Closed door X Open door ____ Other_____

   i. Do you routinely park your auto in the garage? Yes

   j. Do you have central air: (Yes) / No

k. Is there a sump pump: Yes / No (No) Is there a gas clothes dryer: Yes

l. Is there a gas stove or oven: yes Continuously burning pilot light: no

m. Is there a gas hot water heater: yes Continuously burning pilot light: yes

n. Location of water heater: basement

o. Location of clothes dryer: basement

p. Heating: (Natural Gas) / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes (No)

r. Is there a fireplace: No (Yes) Type: (Wood) / Natural Gas Other: _____

3. RESIDENT/HOUSEHOLD ACTIVITIES:

a. Any hobbies using paints, solvents, fuels, etc?: _____

b. Have planned any home repair work during the next six weeks? (Yes) / No

c. What type of repair work? painting, paneling basement — wallpaper Kitchen

d. Any planned painting activities in your home during the next six weeks? (Yes) / No

e. Which areas of your home are you planning to paint?: basement

f. Any smokers in the home?: Yes (No) How many smokers _____ Packs per day: _____

g. Is smoking permitted in the house no

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / (No)

i. During the next six weeks, do you plan to use any of the following in your home?:

Pesticide/Fungicide _____	Incense _____
Mothballs or moth crystals _____	Candles _____
Indoor air fresheners ✓	Nail Polish Remover _____
Paint or paint thinners ✓	Fondue _____
Solvents _____	Indoor barbecue _____

j. Do you use a kerosene heater: (No) Yes How often: _____

k. Where do you place the kerosene heater?:

_____

l. How often is the burning stove or fireplace used?:
not used in years

m. Where is it located?:
family room

n. What do you do with work clothes (other than office clothes):

_____

4. **ADDITIONAL INFORMATION:**

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.?
yes

b. Where do you store such materials?:
basement, garage

c. Other gasoline or diesel powered equipment (type and location):
lawn mower in shed

d. Approximate number of containers, especially those containing petroleum products:
5

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling?: Yes / No

Air Quality Sampling Questionnaire
Evergreen Manor Site
Roscoe, Illinois

WESTON Personnel: Y. Hagiwara Date: 5/1 Time: 7:00

1. **RESIDENT INFORMATION:**

   a. Name: _____

   b. Owner of Property (if different from above): _____

   c. Address: _____

   d. Phone Number: _____

   h. Are you willing to participate in the air sampling program? (Yes) / No

2. **HOUSE DETAILS:**

   a. Approximate age of house: 30 Years

   b. How long have you lived in house: 16

   c. Type of Building: Single family dwelling ☒ Apartment ☐ Other: _____

   d. Approximate floor area of your home? Total surface: 1500 sq. ft. Unknown ☐

   e. Does the house have a basement? (Yes) / No ~~Finished~~ / (Unfinished)

   f. Known foundation problems: Large cracks ____ Settling ____ Water _____

   g. Is there a garage? Yes / No One Car / (Two Car) Unattached (Attached) /

   h. How is the house entered from the garage? Closed door X Open door ____ Other _____

   i. Do you routinely park your auto in the garage? Yes

   j. Do you have central air: (Yes) / No

k. Is there a sump pump: (Yes) No / No Is there a gas clothes dryer: (Yes)

l. Is there a gas stove or oven: no Continuously burning pilot light: _____

m. Is there a gas hot water heater: yes Continuously burning pilot light: yes

n. Location of water heater: Basement

o. Location of clothes dryer: Basement

p. Heating: (Natural Gas) / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes / (No)

r. Is there a fireplace: No / (Yes) Type: (Wood) / Natural Gas Other: _____

3. **RESIDENT/HOUSEHOLD ACTIVITIES:**

a. Any hobbies using paints, solvents, fuels, etc?: No

b. Have planned any home repair work during the next six weeks? (Yes) / No

c. What type of repair work? New Windows new Roof

d. Any planned painting activities in your home during the next six weeks? Yes / (No)

e. Which areas of your home are you planning to paint?: _____

f. Any smokers in the home?: Yes / (No) How many smokers _____ Packs per day: _____

g. Is smoking permitted in the house yes

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / (No)

i. During the next six weeks, do you plan to use any of the following in your home?:

Pesticide/Fungicide _____	Incense _____
Mothballs or moth crystals _____	Candles yes
Indoor air fresheners _____	Nail Polish Remover yes
Paint or paint thinners _____	Fondue _____
Solvents _____	Indoor barbecue _____

j. Do you use a kerosene heater: No (Yes) How often: During Winter

k. Where do you place the kerosene heater?:
Family Room

l. How often is the burning stove or fireplace used?:
Infrequently during winter

m. Where is it located?:
Family Room

n. What do you do with work clothes (other than office clothes):

4. **ADDITIONAL INFORMATION:**

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.?
yes

b. Where do you store such materials?:
Basement garage

c. Other gasoline or diesel powered equipment (type and location):
Garage

d. Approximate number of containers, especially those containing petroleum products:
2-3

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling?: (Yes) / No

Air Quality Sampling Questionnaire
Evergreen Manor Site
Roscoe, Illinois

WESTON Personnel: Y. Higiwara Date: 5-1-02 Time: _____

1. **RESIDENT INFORMATION:**

   a. Name: _____

   b. Owner of Property (if different from above): Same

   c. Address: _____

   d. Phone Number: _____

   h. Are you willing to participate in the air sampling program? Yes / No

2. **HOUSE DETAILS:**

   a. Approximate age of house: 22 Years

   b. How long have you lived in house: 8

   c. Type of Building: Single family dwelling ☒ Apartment ☐ Other: _____

   d. Approximate floor area of your home? Total surface: ~~[illegible]~~ 2000 sq. ft. Unknown ☐

   e. Does the house have a basement? (Yes) / No (Finished) / Unfinished

   f. Known foundation problems: Large cracks None Settling None Water None

   g. Is there a garage? (Yes) / No One Car (Two Car) (Attached) / Unattached

   h. How is the house entered from the garage? Closed door X Open door ____ Other _____

   i. Do you routinely park your auto in the garage? Yes

   j. Do you have central air: (Yes) / No

5/6/02

k. Is there a sump pump: Yes / No Is there a gas clothes dryer: Yes / No

l. Is there a gas stove or oven: Yes Continuously burning pilot light: NO

m. Is there a gas hot water heater: Yes Continuously burning pilot light: Yes

n. Location of water heater: laundry Room lower level

o. Location of clothes dryer: laundry Room lower level

p. Heating: Natural Gas / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes / No

r. Is there a fireplace: No / Yes Type: Wood / Natural Gas Other: _____

3. RESIDENT/HOUSEHOLD ACTIVITIES:

a. Any hobbies using paints, solvents, fuels, etc?: NO

b. Have planned any home repair work during the next six weeks? Yes / No

c. What type of repair work? windows / wood trim / siding

d. Any planned painting activities in your home during the next six weeks? Yes / No

e. Which areas of your home are you planning to paint?: _____

f. Any smokers in the home? Yes / No How many smokers 2 Packs per day: 1

g. Is smoking permitted in the house Not suppose to be

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / No

i. During the next six weeks, do you plan to use any of the following in your home?:

Pesticide/Fungicide _____	Incense _____
Mothballs or moth crystals _____	Candles X
Indoor air fresheners ✓	Nail Polish Remover _____
Paint or paint thinners _____	Fondue _____
Solvents _____	Indoor barbecue _____

j. Do you use a kerosene heater: No Yes How often: _____

k. Where do you place the kerosene heater?: —

l. How often is the burning stove or fireplace used?: seldom

m. Where is it located?: lower level family Room

n. What do you do with work clothes (other than office clothes): —

4. **ADDITIONAL INFORMATION:**

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.? yes

b. Where do you store such materials?: lower level in winter only

c. Other gasoline or diesel powered equipment (type and location): Not in house

d. Approximate number of containers, especially those containing petroleum products: —

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling?: (Yes) No

Air Quality Sampling Questionnaire
Evergreen Manor Site
Roscoe, Illinois

WESTON Personnel: Y. Hagiwara Date: _____ Time: _____

1. **RESIDENT INFORMATION:**

   a. Name:

   b. Owner of Property (if different from above):

   c. Address:

   d. Phone Number:

   h. Are you willing to participate in the air sampling program? Yes / No

2. **HOUSE DETAILS:**

   a. Approximate age of house: 25 Years

   b. How long have you lived in house: 16 yrs

   c. Type of Building: Single family dwelling ☑ Apartment ☐ Other: _____

   d. Approximate floor area of your home? Total surface: 1500 sq. ft. ? Unknown ☐

   e. Does the house have a basement? Yes / No Finished / Unfinished

   f. Known foundation problems: Large cracks No Settling No Water No

   g. Is there a garage? Yes / No One Car / Two Car / Attached / Unattached + unattached 2 car

   h. How is the house entered from the garage? Closed door ____ Open door ____ Other_____ single solid door between (not well sealed)

   i. Do you routinely park your auto in the garage? Yes

   j. Do you have central air? Yes / No

k. Is there a sump pump: Yes / No Is there a gas clothes dryer Yes / No

l. Is there a gas stove or oven: No Continuously burning pilot light: No

m. Is there a gas hot water heater: Yes Continuously burning pilot light: Yes

n. Location of water heater: Basement

o. Location of clothes dryer: Basement

p. Heating: Natural Gas / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes / No

r. Is there a fireplace: No / Yes Type: Wood / Natural Gas Other: _____

3. **RESIDENT/HOUSEHOLD ACTIVITIES:**

a. Any hobbies using paints, solvents, fuels, etc?: Yes (models)

b. Have planned any home repair work during the next six weeks? Yes / No

c. What type of repair work? Replace a window (large) in Kitchen

d. Any planned painting activities in your home during the next six weeks? Yes / No

e. Which areas of your home are you planning to paint?: _____

f. Any smokers in the home?: Yes / No How many smokers _____ Packs per day: _____

g. Is smoking permitted in the house No

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / No

i. During the next six weeks, do you plan to use any of the following in your home?:

Pesticide/Fungicide _____	Incense _____
Mothballs or moth crystals _____	Candles ✓
Indoor air fresheners ✓	Nail Polish Remover _____
Paint or paint thinners _____	Fondue _____
Solvents _____	Indoor barbecue _____

j. Do you use a kerosene heater No / Yes How often: _____

Are you place the kerosene heater?:

l. How often is the burning stove or fireplace used?:
3 X a year?

m. Where is it located?:
family room

n. What do you do with work clothes (other than office clothes):
lie in basement until washed

4. **ADDITIONAL INFORMATION:**

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.?
Yes

b. Where do you store such materials?:
Basement & garage

c. Other gasoline or diesel powered equipment (type and location):
lawn mower, weed eater – back unattached garage

? d. Approximate number of containers, especially those containing petroleum products:
12-24 – numerous small

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling?: Yes / No

oil paints? hobby paints? motor oil - lots old paint

Air Quality Sampling Questionnaire possible Exclusion
Evergreen Manor Site
Roscoe, Illinois

WESTON Personnel: Y. Haguma Date: _____ Time: _____

1. **RESIDENT INFORMATION:**

   a. Name: _____

   b. Owner of Property (if different from above): _____

   c. Address: _____

   d. Phone Number: _____

   h. Are you willing to participate in the air sampling program? (Yes) / No

2. **HOUSE DETAILS:**

   a. Approximate age of house: 24 Years

   b. How long have you lived in house: 4 1/2 yrs

   c. Type of Building: Single family dwelling ☒ Apartment ☐ Other: _____

   d. Approximate floor area of your home? Total surface: 2000 sq. ft. Unknown ☐

   e. Does the house have a basement? (Yes) / No Finished / (Unfinished)

   f. Known foundation problems: Large cracks ____ Settling ____ Water _____

   g. Is there a garage? (Yes) / No One Car / (Two Car) Attached / (Unattached)

   h. How is the house entered from the garage? Closed door ____ Open door ____ Other _____

   i. Do you routinely park your auto in the garage? NO

   j. Do you have central air: (Yes) / No

well!

k. Is there a sump pump: Yes / No Is there a gas clothes dryer: Yes / No

l. Is there a gas stove or oven: YES Continuously burning pilot light: NO

m. Is there a gas hot water heater: YES Continuously burning pilot light: YES

n. Location of water heater: BASEMENT

o. Location of clothes dryer: MAIN FLOOR

p. Heating: Natural Gas / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes / No

r. Is there a fireplace: No / Yes Type: Wood / Natural Gas Other: _____

3. **RESIDENT/HOUSEHOLD ACTIVITIES:**

a. Any hobbies using paints, solvents, fuels, etc?: NO

b. Have planned any home repair work during the next six weeks? Yes / No

c. What type of repair work? _____

d. Any planned painting activities in your home during the next six weeks? Yes / No

e. Which areas of your home are you planning to paint?: _____

f. Any smokers in the home? Yes / No How many smokers 1 Packs per day: 1

g. Is smoking permitted in the house YES

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / No

i. During the next six weeks, do you plan to use any of the following in your home?:

Pesticide/Fungicide _____	Incense _____
Mothballs or moth crystals _____	Candles X
Indoor air fresheners X	Nail Polish Remover X
Paint or paint thinners _____	Fondue _____
Solvents _____	Indoor barbecue _____

j. Do you use a kerosene heater: No / Yes How often: _____

k. Where do you place the kerosene heater?:

l. How often is the burning stove or fireplace used?:
NEVER

m. Where is it located?:
MAIN FLOOR - DIN RM

n. What do you do with work clothes (other than office clothes):
?

4. **ADDITIONAL INFORMATION:**

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.?
YES

b. Where do you store such materials?:
BASEMENT

c. Other gasoline or diesel powered equipment (type and location):
TRACTOR - SNOW BLOWER IN SHED OR GARAGE

d. Approximate number of containers, especially those containing petroleum products:
10-15 ?

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling? Yes / No

Quality Sampling Questionnaire
Evergreen Manor Site
Roscoe, Illinois

WESTON Personnel: Y. Hagiwara Date: _____ Time: _____

1. **RESIDENT INFORMATION:**

   a. Name: _____

   b. Owner of Property (if different from above): _____

   c. Address: _____

   d. Phone Number: _____

   _____

   _____

   h. Are you willing to participate in the air sampling program? Yes / No

2. **HOUSE DETAILS:**

   a. Approximate age of house: ____ Years

   b. How long have you lived in house: 3 mo

   c. Type of Building: Single family dwelling ☒ Apartment ☐ Other: _____

   d. Approximate floor area of your home? Total surface: ____ sq. ft. Unknown ☒

   e. Does the house have a basement? Yes / No Finished / Unfinished

   f. Known foundation problems: Large cracks ____ Settling ____ Water _____

   g. Is there a garage? Yes / No One Car / Two Car Attached / Unattached

   h. How is the house entered from the garage? Closed door ✓ Open door ____ Other_____

   i. Do you routinely park your auto in the garage? yes

   j. Do you have central air: Yes / No

k. Is there a sump pump: Yes / No Is there a gas-clothes dryer: Yes / No

l. Is there a gas stove or oven: yes Continuously burning pilot light: no

m. Is there a gas hot water heater: yes Continuously burning pilot light: yes

n. Location of water heater: basement

o. Location of clothes dryer: basement

p. Heating: Natural Gas / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes / No

r. Is there a fireplace: No / Yes Type: Wood / Natural Gas Other: _____

3. **RESIDENT/HOUSEHOLD ACTIVITIES:**

a. Any hobbies using paints, solvents, fuels, etc?: none

b. Have planned any home repair work during the next six weeks? Yes / No

c. What type of repair work? _____

d. Any planned painting activities in your home during the next six weeks? Yes / No

e. Which areas of your home are you planning to paint?: _____

f. Any smokers in the home?: Yes / No How many smokers _____ Packs per day: _____

g. Is smoking permitted in the house no

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / No

i. During the next six weeks, do you plan to use any of the following in your home?:

Pesticide/Fungicide _____	Incense _____
Mothballs or moth crystals _____	Candles ✓
Indoor air fresheners ✓	Nail Polish Remover ✓
Paint or paint thinners _____	Fondue _____
Solvents _____	Indoor barbecue _____

j. Do you use a kerosene heater: No Yes How often: _____

k. Where do you place the kerosene heater?: _____

l. How often is the burning stove or fireplace used?: _____

m. Where is it located?: _____

n. What do you do with work clothes (other than office clothes): _____

4. **ADDITIONAL INFORMATION:**

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.?
no

b. Where do you store such materials?: _____

c. Other gasoline or diesel powered equipment (type and location):
lawnmower garage

d. Approximate number of containers, especially those containing petroleum products: _____

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling?: Yes / No depends

possible Ex

Air Quality Sampling Questionnaire
Evergreen Manor Site
Roscoe, Illinois

RECEIVED

WESTON Personnel: Y. Hagiwara Date: _____ Time: _____

1. **RESIDENT INFORMATION:**

a. Name _____

b. Owner of Property (if different from above): _____

c. Address: _____

d. Phone Number: _____

h. Are you willing to participate in the air sampling program? (Yes) / No

2. **HOUSE DETAILS:**

a. Approximate age of house: 25 Years

b. How long have you lived in house: 25 years

c. Type of Building: Single family dwelling ☒ Apartment ☐ Other: _____

d. Approximate floor area of your home? Total surface: 1500 sq. ft. Unknown ☐

e. Does the house have a basement? (Yes) / No (Finished) / Unfinished

f. Known foundation problems: Large cracks ____ Settling ____ Water _____
Not that we know of.

g. Is there a garage? (Yes) / No One Car / (Two Car) (Attached) / Unattached

h. How is the house entered from the garage? Closed door X Open door ____ Other _____

i. Do you routinely park your auto in the garage? YES

j. Do you have central air: (Yes) / No

k. Is there a sump pump: Yes / No Is there a gas clothes dryer: Yes / No

l. Is there a gas stove or oven: YES Continuously burning pilot light: NO

m. Is there a gas hot water heater: YES Continuously burning pilot light: YES

n. Location of water heater: BASEMENT

o. Location of clothes dryer: BASEMENT

p. Heating: Natural Gas / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes / No

r. Is there a fireplace: No / Yes Type: Wood / Natural Gas Other: _____

3. RESIDENT/HOUSEHOLD ACTIVITIES:

a. Any hobbies using paints, solvents, fuels, etc?: NO

b. Have planned any home repair work during the next six weeks? Yes / No

c. What type of repair work? _____

d. Any planned painting activities in your home during the next six weeks? Yes / No

e. Which areas of your home are you planning to paint?: _____

f. Any smokers in the home? Yes / No How many smokers 2 Packs per day: 2

g. Is smoking permitted in the house YES

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / No

i. During the next six weeks, do you plan to use any of the following in your home?:

Pesticide/Fungicide —	Incense —
Mothballs or moth crystals —	Candles Sometimes
Indoor air fresheners —	Nail Polish Remover —
Paint or paint thinners —	Fondue —
Solvents _____	Indoor barbecue —

j. Do you use a kerosene heater: No / Yes How often: _____

k. Where do you place the kerosene heater?:

l. How often is the burning stove or fireplace used?:
once in a while in winter

m. Where is it located?:
in The family Room

n. What do you do with work clothes (other than office clothes):
RENTAL SERVICE

4. **ADDITIONAL INFORMATION:**

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.?
Paint in Basement EVERYTHING ELSE IN GARAGE

b. Where do you store such materials?:
Basement & GARAGE

c. Other gasoline or diesel powered equipment (type and location):
TRACTOR in SHED GAS KEPT IN GARAGE

d. Approximate number of containers, especially those containing petroleum products:
6

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling?: Yes / No

Air Quality Sampling Questionnaire
Evergreen Manor Site
Roscoe, Illinois

WESTON Personnel: Y. Hagswara Date: _____ Time: _____

1. **RESIDENT INFORMATION:**

   a. Name: _____

   b. Owner of Property (if different from above): _____

   c. Address: _____

   d. Phone Number: _____

   h. Are you willing to participate in the air sampling program? (Yes) / No

2. **HOUSE DETAILS:**

   a. Approximate age of house: 25 Years

   b. How long have you lived in house: 25

   c. Type of Building: Single family dwelling ☒ Apartment ☐ Other: _____

   d. Approximate floor area of your home? Total surface: 1350 sq. ft. Unknown ☐

   e. Does the house have a basement? (Yes) / No (Finished) / Unfinished partially

   f. Known foundation problems: Large cracks ____ Settling ____ Water _____

   g. Is there a garage? (Yes) / No One Car / (Two Car) (Attached) / Unattached

   h. How is the house entered from the garage? Closed door ✓ Open door ____ Other _____

   i. Do you routinely park your auto in the garage? yes

   j. Do you have central air: (Yes) / No

k. Is there a sump pump: (Yes) / No Is there a gas clothes dryer: (Yes) / No

l. Is there a gas stove or oven: yes Continuously burning pilot light: yes

m. Is there a gas hot water heater: yes Continuously burning pilot light: yes

n. Location of water heater: Basement

o. Location of clothes dryer: Basement

p. Heating: (Natural Gas) / Propane / Coal / Oil / Radiator / Forced Air / Heat Pump / Geothermal

q. Is there a fossil fuel (wood, coal etc.) burning stove: Yes / (No)

r. Is there a fireplace: No / (Yes) Type: (Wood) / Natural Gas Other: _____

3. **RESIDENT/HOUSEHOLD ACTIVITIES:**

a. Any hobbies using paints, solvents, fuels, etc?: No

b. Have planned any home repair work during the next six weeks? Yes / (No)

c. What type of repair work? _____

d. Any planned painting activities in your home during the next six weeks? Yes / No maybe

e. Which areas of your home are you planning to paint?: _____

f. Any smokers in the home?: (Yes) / No How many smokers 1 Packs per day: _____

g. Is smoking permitted in the house yes / but dont like it

h. During the next six weeks, have you planned cleaning your drapes, carpeting, or furniture commercially? Yes / (No)

i. During the next six weeks, do you plan to use any of the following in your home?:

Pesticide/Fungicide _____	Incense _____
Mothballs or moth crystals _____	Candles _____
Indoor air fresheners ✓	Nail Polish Remover _____
Paint or paint thinners _____	Fondue _____
Solvents _____	Indoor barbecue _____

j. Do you use a kerosene heater: (No) Yes How often: _____

k. Where do you place the kerosene heater?: _____

l. How often is the burning stove or fireplace used?: its not used

m. Where is it located?: Family Room

n. What do you do with work clothes (other than office clothes): _____

4. **ADDITIONAL INFORMATION:**

a. Do you store paints, polishes, cleaners, lubricants, paint removers, spot removers, etc.? ~~No~~ Yes

b. Where do you store such materials?: Under Kitchen Sink

c. Other gasoline or diesel powered equipment (type and location): Lawn mowers Shed + Garage

d. Approximate number of containers, especially those containing petroleum products: 3

e. Are you willing to remove, box-up and/or bag materials / containers prior to sampling?: Yes / No

Appendix B

Evergreen Manor
Air Toxics LTD.
0205526A

Volatiles – TO15 SIM

Lab ID 0205526A	Sample ID 2002ZG05	Date Collected	Date Analyzed	Vacuum Pressure – Field "Hg	Vacuum Pressure – Lab "Hg
01A	S01	5/22/02	5/31/02	2	3.5
02A	S02	5/22/02	5/31/02	13	12.5
03A	S03	5/22/02	5/31/02	8	7.5
04A	S04	5/22/02	5/31/02	8	7.5
05A	S05	5/22/02	5/31/02	11.5	12
06A	S06	5/22/02	5/31/02	10	10.5
06AA	S06DUP	5/22/02	5/31/02	10.5	10.5
07A	D06	5/22/02	5/31/02	7.5	7.5
08A	S09	5/22/02	5/31/02	6	7.5
09A	S10	5/22/02	5/31/02	6	7
010A	S11	5/22/02	6/1/02	3	4.5
011A	S12	5/22/02	6/1/02	6	8
012A	S07	5/22/02	6/1/02	3	7
013A	S08	5/22/02	6/1/02	7	5
014A	S18	5/22/02	6/1/02	6.5	8
015A	S19	5/22/02	6/1/02	10	11

1. Holding Times
Samples were analyzed within 9 to 11 days. All holding times were acceptable. The laboratory, upon sample receipt, noted no problems.

2. Blank
Three lab blanks were associated with the samples. All blank compounds were non-detect.

3. Surrogate Recovery
Three surrogates were associated with each sample. All surrogate recoveries were within the laboratory required control limits.

4. Internal Standards
All IS recoveries were within the method/laboratory required control limits.

5. Laboratory Control Sample
The LCS recovery for acetone (58) was low outside control limits. All acetone results are flagged UJ for non-detects and J for positive results. All other LCS recoveries were within the required control limits.

Evergreen Manor
Air Toxics LTD.
0205526A
Cont.

6. Calibration
All calibrations were within required control limits.

7. Field Blanks
R01 and R02 were field blanks. The following compounds were detected in each sample: RO1: toluene (0.080 ppbv, 0.31 uG/m^3); R02: toluene (0.13 ppbv, 0.49 uG/m^3), and acetone (1.4 ppbv, 3.3 uG/m^3). Toluene results less than 5 times the blank result (0.65 ppbv , 2.45 uG/m^3) and acetone results less than 5 times the blank results (2.45 ppbv, 16.5 uG/m^3) are flagged U in all investigative and duplicate samples. Results greater than 5 times the blank values do not require qualification.

8. Field Duplicates
Samples S06 and D06 are field duplicates. Overall the results show very good correlation. The lab also reported a sample S06DUP which appears to also be a duplicate of S06. This sample also shows very good correlation to S06 and D06.

9. Other
Samples S07 and S08 exceeded the instrument calibration range for acetone. Neither sample was rerun. Therefore, acetone is flagged E in both samples. The target compound was detected but the quantitated amount exceeded the maximum amount. The laboratory should have rerun the samples.

Data reviewed by: T. Balla Date: 6/19/02

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S01

ID#: 0205526A-01A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.030	0.24	0.055	0.43
Methylene Chloride	0.15	0.54	0.67	2.4
cis-1,2-Dichloroethene	0.030	0.12	Not Detected	Not Detected
1,1,1-Trichloroethane	0.030	0.17	0.089	0.49
Benzene	0.076	0.25	0.22	0.72
Trichloroethene	0.030	0.17	Not Detected	Not Detected
Toluene	0.030	0.12	2.2	8.6
Tetrachloroethene	0.030	0.21	0.10	0.70
Ethyl Benzene	0.030	0.13	0.11	0.48
m,p-Xylene	0.061	0.27	0.30	1.3
o-Xylene	0.030	0.13	0.12	0.55
Acetone	0.76	1.8	10 J	25 J
2-Butanone (Methyl Ethyl Ketone)	0.15	0.46	2.2	6.8
Chloroform	0.030	0.15	0.084	0.42

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	116	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S02

ID#: 0205526A-02A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.046	0.36	0.058	0.45
Methylene Chloride	0.23	0.81	7.7	27
cis-1,2-Dichloroethene	0.046	0.18	Not Detected	Not Detected
1,1,1-Trichloroethane	0.046	0.26	0.96	5.3
Benzene	0.12	0.37	0.35	1.1
Trichloroethene	0.046	0.25	Not Detected	Not Detected
Toluene	0.046	0.18	5.1	20
Tetrachloroethene	0.046	0.32	0.10	0.70
Ethyl Benzene	0.046	0.20	0.23	1.0
m,p-Xylene	0.092	0.41	0.68	3.0
o-Xylene	0.046	0.20	0.22	0.99
Acetone	1.2	2.8	17 J	40 J
2-Butanone (Methyl Ethyl Ketone)	0.23	0.69	7.6	23
Chloroform	0.046	0.23	0.12	0.59

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	117	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S03

ID#: 0205526A-03A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.036	0.28	0.056	0.43
Methylene Chloride	0.18	0.63	7.9	28
cis-1,2-Dichloroethene	0.036	0.14	Not Detected	Not Detected
1,1,1-Trichloroethane	0.036	0.20	0.54	3.0
Benzene	0.090	0.29	2.2	7.0
Trichloroethene	0.036	0.20	Not Detected	Not Detected
Toluene	0.036	0.14	15	57
Tetrachloroethene	0.036	0.25	0.49	3.4
Ethyl Benzene	0.036	0.16	2.9	13
m,p-Xylene	0.072	0.32	13	57
o-Xylene	0.036	0.16	3.0	13
Acetone	0.90	2.2	15 J	35 J
2-Butanone (Methyl Ethyl Ketone)	0.18	0.54	4.3	13
Chloroform	0.036	0.18	0.15	0.73

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	122	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S04

ID#: 0205526A-04A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.036	0.28	0.054	0.42
Methylene Chloride	0.18	0.63	28	99
cis-1,2-Dichloroethene	0.036	0.14	Not Detected	Not Detected
1,1,1-Trichloroethane	0.036	0.20	0.16	0.91
Benzene	0.090	0.29	0.88	2.9
Trichloroethene	0.036	0.20	Not Detected	Not Detected
Toluene	0.036	0.14	11	42
Tetrachloroethene	0.036	0.25	1.6	11
Ethyl Benzene	0.036	0.16	1.3	5.9
m,p-Xylene	0.072	0.32	5.9	26
o-Xylene	0.036	0.16	1.2	5.4
Acetone	0.90	2.2	12 J	28 J
2-Butanone (Methyl Ethyl Ketone)	0.18	0.54	2.4	7.1
Chloroform	0.036	0.18	0.14	0.72

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	122	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S05

ID#: 0205526A-05A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.045	0.35	0.057	0.45
Methylene Chloride	0.22	0.79	0.25	0.88
cis-1,2-Dichloroethene	0.045	0.18	Not Detected	Not Detected
1,1,1-Trichloroethane	0.045	0.25	0.052	0.29
Benzene	0.11	0.36	0.26	0.84
Trichloroethene	0.045	0.24	Not Detected	Not Detected
Toluene	0.045	0.17	3.0	11
Tetrachloroethene	0.045	0.31	0.11	0.76
Ethyl Benzene	0.045	0.20	0.18	0.80
m,p-Xylene	0.089	0.39	0.39	1.7
o-Xylene	0.045	0.20	0.15	0.64
Acetone	1.1	2.7	15 J	36 J
2-Butanone (Methyl Ethyl Ketone)	0.22	0.67	0.98	2.9
Chloroform	0.045	0.22	0.098	0.49

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	124	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S06

ID#: 0205526A-06A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.041	0.32	0.059	0.46
Methylene Chloride	0.21	0.73	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.041	0.17	Not Detected	Not Detected
1,1,1-Trichloroethane	0.041	0.23	0.13	0.74
Benzene	0.10	0.33	0.24	0.76
Trichloroethene	0.041	0.22	Not Detected	Not Detected
Toluene	0.041	0.16	2.1	8.1
Tetrachloroethene	0.041	0.28	0.46	3.2
Ethyl Benzene	0.041	0.18	0.14	0.60
m,p-Xylene	0.082	0.36	0.37	1.6
o-Xylene	0.041	0.18	0.14	0.64
Acetone	1.0	2.5	11 J	27 J
2-Butanone (Methyl Ethyl Ketone)	0.21	0.62	0.80	2.4
Chloroform	0.041	0.20	0.14	0.67

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	126	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S06 Duplicate

ID#: 0205526A-06AA

EPA METHOD TO-15 GC/MS SIM

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.041	0.32	0.057	0.44
Methylene Chloride	0.21	0.73	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.041	0.17	Not Detected	Not Detected
1,1,1-Trichloroethane	0.041	0.23	0.14	0.75
Benzene	0.10	0.33	0.23	0.73
Trichloroethene	0.041	0.22	Not Detected	Not Detected
Toluene	0.041	0.16	2.1	8.0
Tetrachloroethene	0.041	0.28	0.46	3.2
Ethyl Benzene	0.041	0.18	0.15	0.65
m,p-Xylene	0.082	0.36	0.37	1.6
o-Xylene	0.041	0.18	0.14	0.61
Acetone	1.0	2.5	11 J	26 J
2-Butanone (Methyl Ethyl Ketone)	0.21	0.62	0.78	2.3
Chloroform	0.041	0.20	0.13	0.67

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	127	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-D06

ID#: 0205526A-07A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.036	0.28	0.060	0.46
Methylene Chloride	0.18	0.63	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.036	0.14	Not Detected	Not Detected
1,1,1-Trichloroethane	0.036	0.20	0.13	0.73
Benzene	0.090	0.29	0.21	0.69
Trichloroethene	0.036	0.20	Not Detected	Not Detected
Toluene	0.036	0.14	1.7	6.6
Tetrachloroethene	0.036	0.25	0.45	3.1
Ethyl Benzene	0.036	0.16	0.12	0.52
m,p-Xylene	0.072	0.32	0.26	1.2
o-Xylene	0.036	0.16	0.11	0.48
Acetone	0.90	2.2	11 J	26 J
2-Butanone (Methyl Ethyl Ketone)	0.18	0.54	0.78	2.3
Chloroform	0.036	0.18	0.14	0.69

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	127	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S09

ID#: 0205526A-08A

EPA METHOD TO-15 GC/MS SIM

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.036	0.28	0.059	0.46
Methylene Chloride	0.18	0.63	0.19	0.67
cis-1,2-Dichloroethene	0.036	0.14	Not Detected	Not Detected
1,1,1-Trichloroethane	0.036	0.20	0.048	0.27
Benzene	0.090	0.29	9.6	31
Trichloroethene	0.036	0.20	Not Detected	Not Detected
Toluene	0.036	0.14	25	95
Tetrachloroethene	0.036	0.25	0.089	0.61
Ethyl Benzene	0.036	0.16	9.3	41
m,p-Xylene	0.072	0.32	12	51
o-Xylene	0.036	0.16	5.7	25
Acetone	0.90	2.2	6.8 J	16 J
2-Butanone (Methyl Ethyl Ketone)	0.18	0.54	1.1	3.3
Chloroform	0.036	0.18	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	111	70-130
4-Bromofluorobenzene	108	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S10

ID#: 0205526A-09A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.035	0.27	0.059	0.46
Methylene Chloride	0.18	0.62	0.23	0.81
cis-1,2-Dichloroethene	0.035	0.14	Not Detected	Not Detected
1,1,1-Trichloroethane	0.035	0.19	0.15	0.81
Benzene	0.088	0.28	2.5	8.1
Trichloroethene	0.035	0.19	Not Detected	Not Detected
Toluene	0.035	0.13	7.8	30
Tetrachloroethene	0.035	0.24	0.13	0.88
Ethyl Benzene	0.035	0.15	3.0	13
m,p-Xylene	0.070	0.31	4.1	18
o-Xylene	0.035	0.15	1.7	7.7
Acetone	0.88	2.1	4.5 J	11 J
2-Butanone (Methyl Ethyl Ketone)	0.18	0.52	0.54	1.6
Chloroform	0.035	0.17	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	107	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S11

ID#: 0205526A-10A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.032	0.25	0.052	0.40
Methylene Chloride	0.16	0.56	0.25	0.90
cis-1,2-Dichloroethene	0.032	0.13	Not Detected	Not Detected
1,1,1-Trichloroethane	0.032	0.18	0.036	0.20
Benzene	0.079	0.26	2.0	6.6
Trichloroethene	0.032	0.17	Not Detected	Not Detected
Toluene	0.032	0.12	6.3	24
Tetrachloroethene	0.032	0.22	0.040	0.28
Ethyl Benzene	0.032	0.14	3.1	14
m,p-Xylene	0.063	0.28	4.1	18
o-Xylene	0.032	0.14	2.1	9.1
Acetone	0.79	1.9	13 J	31 J
2-Butanone (Methyl Ethyl Ketone)	0.16	0.47	1.7	5.1
Chloroform	0.032	0.16	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	126	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S12

ID#: 0205526A-11A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.037	0.28	0.062	0.48
Methylene Chloride	0.18	0.65	0.26	0.90
cis-1,2-Dichloroethene	0.037	0.15	Not Detected	Not Detected
1,1,1-Trichloroethane	0.037	0.20	0.060	0.33
Benzene	0.092	0.30	3.6	12
Trichloroethene	0.037	0.20	Not Detected	Not Detected
Toluene	0.037	0.14	11	43
Tetrachloroethene	0.037	0.25	0.044	0.30
Ethyl Benzene	0.037	0.16	4.4	20
m,p-Xylene	0.073	0.32	5.6	25
o-Xylene	0.037	0.16	2.8	12
Acetone	0.92	2.2	4.2 J	10 J
2-Butanone (Methyl Ethyl Ketone)	0.18	0.55	0.75	2.2
Chloroform	0.037	0.18	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	104	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S07

ID#: 0205526A-12A

EPA METHOD TO-15 GC/MS SIM

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.035	0.27	0.054	0.42
Methylene Chloride	0.18	0.62	0.37	1.3
cis-1,2-Dichloroethene	0.035	0.14	Not Detected	Not Detected
1,1,1-Trichloroethane	0.035	0.19	0.051	0.28
Benzene	0.088	0.28	6.6	22
Trichloroethene	0.035	0.19	Not Detected	Not Detected
Toluene	0.035	0.13	18	68
Tetrachloroethene	0.035	0.24	0.19	1.3
Ethyl Benzene	0.035	0.15	1.8	8.1
m,p-Xylene	0.070	0.31	7.8	35
o-Xylene	0.035	0.15	2.4	10
Acetone	0.88	2.1	36 E	87 E
2-Butanone (Methyl Ethyl Ketone)	0.18	0.52	9.0	27
Chloroform	0.035	0.17	0.49	2.4

E = Exceeds instrument calibration range.

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	116	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S08

ID#: 0205526A-13A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.032	0.25	0.054	0.42
Methylene Chloride	0.16	0.57	0.30	1.0
cis-1,2-Dichloroethene	0.032	0.13	Not Detected	Not Detected
1,1,1-Trichloroethane	0.032	0.18	0.038	0.21
Benzene	0.080	0.26	2.9	9.3
Trichloroethene	0.032	0.18	Not Detected	Not Detected
Toluene	0.032	0.12	12	45
Tetrachloroethene	0.032	0.22	0.12	0.82
Ethyl Benzene	0.032	0.14	1.1	4.8
m,p-Xylene	0.064	0.28	3.9	17
o-Xylene	0.032	0.14	1.1	4.8
Acetone	0.80	1.9	49 E	120 E
2-Butanone (Methyl Ethyl Ketone)	0.16	0.48	8.8	26
Chloroform	0.032	0.16	0.60	3.0

E = Exceeds instrument calibration range.

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	118	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S19

ID#: 0205526A-15A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.042	0.33	0.056	0.43
Methylene Chloride	0.21	0.75	0.25	0.87
cis-1,2-Dichloroethene	0.042	0.17	Not Detected	Not Detected
1,1,1-Trichloroethane	0.042	0.24	0.056	0.31
Benzene	0.11	0.34	2.2	7.2
Trichloroethene	0.042	0.23	Not Detected	Not Detected
Toluene	0.042	0.16	3.6	14
Tetrachloroethene	0.042	0.29	0.76	5.3
Ethyl Benzene	0.042	0.19	1.4	6.3
m,p-Xylene	0.085	0.37	1.7	7.5
o-Xylene	0.042	0.19	0.76	3.4
Acetone	1.1	2.6	4.8 J	12 J
2-Butanone (Methyl Ethyl Ketone)	0.21	0.64	1.0	3.0
Chloroform	0.042	0.21	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	107	70-130

TB

Evergreen Manor
Air Toxics LTD.
0205526B

Volatiles – TO15 SIM

Lab ID 0205526A	Sample ID 2002ZG05	Date Collected	Date Analyzed	Vacuum Pressure – Field "Hg	Vacuum Pressure – Lab "Hg
16A	S13	5/22/02	6/2/02	6	7.5
17A	S14	5/22/02	6/2/02	10	11.5
18A	S15	5/22/02	6/2/02	7	8.5
19A	S16	5/22/02	6/2/02	9	10.5
20A	S17	5/22/02	6/2/02	8	9
21A	S20	5/22/02	6/2/02	8.5	10.5
22A	D20	5/22/02	6/2/02	6	8
23A	S21	5/22/02	6/2/02	7.5	8.5
24A	D21	5/22/02	6/4/02	10	11.5
25A	S22	5/22/02	6/4/02	10	11.5
26A	S23	5/22/02	6/4/02	3.5	4
26AA	S23DUP	5/22/02	6/4/02	3.5	4
27A	S24	5/22/02	6/4/02	3	4
28A	S25	5/22/02	6/4/02	4.5	4.5

1. Holding Times
Samples were analyzed within 11 to 13 days. All holding times were acceptable. The laboratory, upon sample receipt, noted a discrepancy between the sample tag and the chain of custody information for sample D20. The information on the chain of custody form was used to process the samples.

2. Blank
Two lab blanks were associated with the samples. All blank compounds were non-detect.

3. Surrogate Recovery
Three surrogates were associated with each sample. All surrogate recoveries were within the laboratory required control limits.

4. Internal Standards
All IS recoveries were within the method/laboratory required control limits.

5. Laboratory Control Sample
Two LCS were associated with the samples. The LCS for 6/2 had all recoveries within the required control limits. The LCS for 6/4 had the recovery for acetone (58) low outside control limits. The following acetone results are flagged UJ for non-detects and J for positive results: S22, S23, S24, and S25. All other LCS recoveries were within the required control limits.

Evergreen Manor
Air Toxics LTD.
0205526B
Cont.

6. Calibration
All calibrations were within required control limits.

7. Field Blanks
R01 and R02 were field blanks. The following compounds were detected in each sample: RO1: toluene (0.080 ppbv, 0.31 uG/m^3); R02: toluene (0.13 ppbv, 0.49 uG/m^3), and acetone (1.4 ppbv, 3.3 uG/m^3). Toluene results less than 5 times the blank result (0.65 ppbv , 2.45 uG/m^3) and acetone results less than 5 times the blank results (2.45 ppbv, 16.5 uG/m^3) are flagged U in all investigative and duplicate samples. Results greater than 5 times the blank values do not require qualification.

8. Field Duplicates
Samples S20 and D20 and S21 and D21 are field duplicates. Methylene chloride and chloroform were detected in sample S20 but not in sample D20. The remaining compounds showed good overall correlation. Toluene was detected in sample S21 but not sample D21. The correlation between acetone and 2-butanone was very poor (greater than 75% difference). The remaining compounds showed good correlation. Qualification is not applied on this basis.

9. Other
The laboratory performed duplicate analysis on sample S23. Overall the results show very good correlation.

Data reviewed by: T. Balla Date 6/19/02

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S13

ID#: 0205526B-16A

EPA METHOD TO-15 GC/MS SIM

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.036	0.28	0.056	0.43
Methylene Chloride	0.18	0.63	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.036	0.14	Not Detected	Not Detected
1,1,1-Trichloroethane	0.036	0.20	0.057	0.32
Benzene	0.090	0.29	0.52	1.7
Trichloroethene	0.036	0.20	Not Detected	Not Detected
Toluene	0.036	0.14	1.5	5.7
Tetrachloroethene	0.036	0.25	0.28	1.9
Ethyl Benzene	0.036	0.16	0.45	2.0
m,p-Xylene	0.072	0.32	0.56	2.5
o-Xylene	0.036	0.16	0.28	1.2
Acetone	0.90	2.2	25	62
2-Butanone (Methyl Ethyl Ketone)	0.18	0.54	4.0	12
Chloroform	0.036	0.18	1.2	6.0

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	115	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S14

ID#: 0205526B-17A

EPA METHOD TO-15 GC/MS SIM

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.043	0.34	0.069	0.54
Methylene Chloride	0.22	0.77	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.043	0.17	Not Detected	Not Detected
1,1,1-Trichloroethane	0.043	0.24	0.15	0.84
Benzene	0.11	0.35	0.88	2.8
Trichloroethene	0.043	0.24	Not Detected	Not Detected
Toluene	0.043	0.17	2.3	8.7
Tetrachloroethene	0.043	0.30	0.29	2.0
Ethyl Benzene	0.043	0.19	0.75	3.3
m,p-Xylene	0.087	0.38	0.85	3.7
o-Xylene	0.043	0.19	0.45	2.0
Acetone	1.1	2.6	6.3	15
2-Butanone (Methyl Ethyl Ketone)	0.22	0.65	0.93	2.8
Chloroform	0.043	0.22	1.0	5.2

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	108	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S15

ID#: 0205526B-18A

EPA METHOD TO-15 GC/MS SIM

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.037	0.29	0.062	0.48
Methylene Chloride	0.19	0.66	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.037	0.15	Not Detected	Not Detected
1,1,1-Trichloroethane	0.037	0.21	0.083	0.46
Benzene	0.094	0.30	0.70	2.3
Trichloroethene	0.037	0.20	Not Detected	Not Detected
Toluene	0.037	0.14	2.0	7.8
Tetrachloroethene	0.037	0.26	0.35	2.4
Ethyl Benzene	0.037	0.16	0.76	3.4
m,p-Xylene	0.075	0.33	0.99	4.4
o-Xylene	0.037	0.16	0.47	2.1
Acetone	0.94	2.2	18	43
2-Butanone (Methyl Ethyl Ketone)	0.19	0.56	4.0	12
Chloroform	0.037	0.18	0.36	1.8

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	113	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S16

ID#: 0205526B-19A

EPA METHOD TO-15 GC/MS SIM

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.041	0.32	0.10	0.78
Methylene Chloride	0.21	0.73	0.23	0.80
cis-1,2-Dichloroethene	0.041	0.17	Not Detected	Not Detected
1,1,1-Trichloroethane	0.041	0.23	0.73	4.0
Benzene	0.10	0.33	1.6	5.3
Trichloroethene	0.041	0.22	0.095	0.52
Toluene	0.041	0.16	5.2	20
Tetrachloroethene	0.041	0.28	0.65	4.4
Ethyl Benzene	0.041	0.18	2.0	8.9
m,p-Xylene	0.082	0.36	2.4	11
o-Xylene	0.041	0.18	0.96	4.2
Acetone	1.0	2.5	16	39
2-Butanone (Methyl Ethyl Ketone)	0.21	0.62	3.3	9.8
Chloroform	0.041	0.20	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	117	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S17

ID#: 0205526B-20A

EPA METHOD TO-15 GC/MS SIM

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.038	0.30	0.064	0.49
Methylene Chloride	0.19	0.67	0.22	0.79
cis-1,2-Dichloroethene	0.038	0.15	Not Detected	Not Detected
1,1,1-Trichloroethane	0.038	0.21	0.076	0.42
Benzene	0.096	0.31	2.1	6.9
Trichloroethene	0.038	0.21	Not Detected	Not Detected
Toluene	0.038	0.15	15	57
Tetrachloroethene	0.038	0.26	0.41	2.8
Ethyl Benzene	0.038	0.17	4.1	18
m,p-Xylene	0.076	0.34	14	60
o-Xylene	0.038	0.17	4.7	21
Acetone	0.96	2.3	6.5	16
2-Butanone (Methyl Ethyl Ketone)	0.19	0.57	0.97	2.9
Chloroform	0.038	0.19	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	109	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S20

ID#: 0205526B-21A

EPA METHOD TO-15 GC/MS SIM

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.041	0.32	0.064	0.50
Methylene Chloride	0.21	0.73	0.28	0.98
cis-1,2-Dichloroethene	0.041	0.17	Not Detected	Not Detected
1,1,1-Trichloroethane	0.041	0.23	0.085	0.47
Benzene	0.10	0.33	0.79	2.6
Trichloroethene	0.041	0.22	Not Detected	Not Detected
Toluene	0.041	0.16	2.1	8.0
Tetrachloroethene	0.041	0.28	0.41	2.8
Ethyl Benzene	0.041	0.18	0.64	2.8
m,p-Xylene	0.082	0.36	0.73	3.2
o-Xylene	0.041	0.18	0.32	1.4
Acetone	1.0	2.5	5.0	12
2-Butanone (Methyl Ethyl Ketone)	0.21	0.62	0.85	2.6
Chloroform	0.041	0.20	0.17	0.86

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	111	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-D20

ID#: 0205526B-22A

EPA METHOD TO-15 GC/MS SIM

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.037	0.28	0.060	0.47
Methylene Chloride	0.18	0.65	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.037	0.15	Not Detected	Not Detected
1,1,1-Trichloroethane	0.037	0.20	0.071	0.39
Benzene	0.092	0.30	0.50	1.6
Trichloroethene	0.037	0.20	Not Detected	Not Detected
Toluene	0.037	0.14	1.5	5.6
Tetrachloroethene	0.037	0.25	0.27	1.9
Ethyl Benzene	0.037	0.16	0.45	2.0
m,p-Xylene	0.073	0.32	0.51	2.3
o-Xylene	0.037	0.16	0.21	0.93
Acetone	0.92	2.2	3.2	7.6
2-Butanone (Methyl Ethyl Ketone)	0.18	0.55	0.39	1.2
Chloroform	0.037	0.18	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	110	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S21

ID#: 0205526B-23A

EPA METHOD TO-15 GC/MS SIM

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.037	0.29	0.051	0.40
Methylene Chloride	0.19	0.66	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.037	0.15	Not Detected	Not Detected
1,1,1-Trichloroethane	0.037	0.21	Not Detected	Not Detected
Benzene	0.094	0.30	0.10	0.33
Trichloroethene	0.037	0.20	Not Detected	Not Detected
Toluene	0.037	0.14	0.27 U	1.0 U
Tetrachloroethene	0.037	0.26	0.040	0.27
Ethyl Benzene	0.037	0.16	Not Detected	Not Detected
m,p-Xylene	0.075	0.33	0.10	0.46
o-Xylene	0.037	0.16	0.059	0.26
Acetone	0.94	2.2	21	51
2-Butanone (Methyl Ethyl Ketone)	0.19	0.56	3.6	11
Chloroform	0.037	0.18	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	92	70-130
4-Bromofluorobenzene	119	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-D21

ID#: 0205526B-24A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.043	0.34	0.078	0.61
Methylene Chloride	0.22	0.77	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.043	0.17	Not Detected	Not Detected
1,1,1-Trichloroethane	0.043	0.24	Not Detected	Not Detected
Benzene	0.11	0.35	0.15	0.48
Trichloroethene	0.043	0.24	Not Detected	Not Detected
Toluene	0.043	0.17	0.31 u	1.2 u
Tetrachloroethene	0.043	0.30	0.076	0.52
Ethyl Benzene	0.043	0.19	0.050	0.22
m,p-Xylene	0.087	0.38	0.14	0.63
o-Xylene	0.043	0.19	0.060	0.26
Acetone	1.1	2.6	3.3	8.0
2-Butanone (Methyl Ethyl Ketone)	0.22	0.65	0.51	1.5
Chloroform	0.043	0.22	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	102	70-130

TB

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S22

ID#: 0205526B-25A

EPA METHOD TO-15 GC/MS SIM

File Name	[illegible]	Date of Collection	[illegible]
Dil Factor	[illegible]	Date of Analysis	[illegible]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.043	0.34	0.10	0.78
Methylene Chloride	0.22	0.77	0.21 J	0.74 J
cis-1,2-Dichloroethene	0.043	0.17	Not Detected	Not Detected
1,1,1-Trichloroethane	0.043	0.24	0.65	3.6
Benzene	0.11	0.35	0.38	1.2
Trichloroethene	0.043	0.24	0.27	1.4
Toluene	0.043	0.17	0.79	3.0
Tetrachloroethene	0.043	0.30	0.14	0.94
Ethyl Benzene	0.043	0.19	0.29	1.3
m,p-Xylene	0.087	0.38	0.42	1.8
o-Xylene	0.043	0.19	0.20	0.87
Acetone	1.1	2.6	5.3	13
2-Butanone (Methyl Ethyl Ketone)	0.22	0.65	0.60	1.8
Chloroform	0.043	0.22	0.34	1.7

J = Estimated value.

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	102	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S23

ID#: 0205526B-26A

EPA METHOD TO-15 GC/MS SIM

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Date of Analysis [illegible]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.031	0.24	0.086	0.67
Methylene Chloride	0.16	0.55	0.16	0.55
cis-1,2-Dichloroethene	0.031	0.12	Not Detected	Not Detected
1,1,1-Trichloroethane	0.031	0.17	0.074	0.41
Benzene	0.078	0.25	0.36	1.2
Trichloroethene	0.031	0.17	Not Detected	Not Detected
Toluene	0.031	0.12	0.66	2.5
Tetrachloroethene	0.031	0.21	Not Detected	Not Detected
Ethyl Benzene	0.031	0.14	0.22	0.98
m,p-Xylene	0.062	0.27	0.32	1.4
o-Xylene	0.031	0.14	0.16	0.73
Acetone	0.78	1.9	6.9	16
2-Butanone (Methyl Ethyl Ketone)	0.16	0.46	1.2	3.6
Chloroform	0.031	0.15	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	102	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S23 Duplicate

ID#: 0205526B-26AA

EPA METHOD TO-15 GC/MS SIM

File Name:	[illegible]	Date of Collection: [illegible]
Dilution:	[illegible]	Date of Analysis: [illegible]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.031	0.24	0.086	0.67
Methylene Chloride	0.16	0.55	0.17	0.60
cis-1,2-Dichloroethene	0.031	0.12	Not Detected	Not Detected
1,1,1-Trichloroethane	0.031	0.17	0.077	0.43
Benzene	0.078	0.25	0.37	1.2
Trichloroethene	0.031	0.17	Not Detected	Not Detected
Toluene	0.031	0.12	0.68	2.6
Tetrachloroethene	0.031	0.21	Not Detected	Not Detected
Ethyl Benzene	0.031	0.14	0.23	1.0
m,p-Xylene	0.062	0.27	0.33	1.4
o-Xylene	0.031	0.14	0.19	0.83
Acetone	0.78	1.9	7.1	17
2-Butanone (Methyl Ethyl Ketone)	0.16	0.46	1.2	3.7
Chloroform	0.031	0.15	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S24

ID#: 0205526B-27A

EPA METHOD TO-15 GC/MS SIM

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.031	0.24	0.096	0.75
Methylene Chloride	0.16	0.55	0.16	0.57
cis-1,2-Dichloroethene	0.031	0.12	Not Detected	Not Detected
1,1,1-Trichloroethane	0.031	0.17	0.23	1.3
Benzene	0.078	0.25	0.42	1.4
Trichloroethene	0.031	0.17	Not Detected	Not Detected
Toluene	0.031	0.12	0.87	3.3
Tetrachloroethene	0.031	0.21	0.14	0.94
Ethyl Benzene	0.031	0.14	0.36	1.6
m,p-Xylene	0.062	0.27	0.47	2.1
o-Xylene	0.031	0.14	0.26	1.2
Acetone	0.78	1.9	8.8	21
2-Butanone (Methyl Ethyl Ketone)	0.16	0.46	1.3	4.0
Chloroform	0.031	0.15	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	90	70-130
4-Bromofluorobenzene	102	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S25

ID#: 0205526B-28A

EPA METHOD TO-15 GC/MS SIM

[illegible]	[illegible]	Date of Collection [illegible]
Dil. Factor	[illegible]	Date of Analysis [illegible]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.032	0.25	0.081	0.63
Methylene Chloride	0.16	0.56	0.18	0.62
cis-1,2-Dichloroethene	0.032	0.13	Not Detected	Not Detected
1,1,1-Trichloroethane	0.032	0.18	0.12	0.69
Benzene	0.079	0.26	0.48	1.6
Trichloroethene	0.032	0.17	Not Detected	Not Detected
Toluene	0.032	0.12	0.93	3.6
Tetrachloroethene	0.032	0.22	0.048	0.33
Ethyl Benzene	0.032	0.14	0.42	1.9
m,p-Xylene	0.063	0.28	0.60	2.6
o-Xylene	0.032	0.14	0.30	1.3
Acetone	0.79	1.9	12	28
2-Butanone (Methyl Ethyl Ketone)	0.16	0.47	1.9	5.7
Chloroform	0.032	0.16	0.22	1.1

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	90	70-130
4-Bromofluorobenzene	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-S18

ID#: 0205526A-14A

EPA METHOD TO-15 GC/MS SIM

[redacted]

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.061	0.48	0.067	0.52
Methylene Chloride	0.30	1.1	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.061	0.24	Not Detected	Not Detected
1,1,1-Trichloroethane	0.061	0.34	0.21	1.2
Benzene	0.15	0.50	7.8	25
Trichloroethene	0.061	0.33	1.7	9.5
Toluene	0.061	0.23	39	150
Tetrachloroethene	0.061	0.42	28	190
Ethyl Benzene	0.061	0.27	1.2	5.4
m,p-Xylene	0.12	0.54	1.7	7.6
o-Xylene	0.061	0.27	0.50	2.2
Acetone	1.5	3.7	11	26
2-Butanone (Methyl Ethyl Ketone)	0.30	0.91	5.3	16
Chloroform	0.061	0.30	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	103	70-130

Evergreen Manor
Air Toxics LTD.
0205540

Volatiles – TO15 SIM

Lab ID 0205540	Sample ID 2002ZG05	Date Collected	Date Analyzed	Vacuum Pressure – Field "Hg	Vacuum Pressure – Lab "Hg
01A	R01	5/23/02	6/4/02	16	15
02A	R02	5/23/02	6/4/02	15	14
03A	R03	5/23/02	6/4/02	9	8

1. Holding Times
Samples were analyzed within 12 days. All holding times were acceptable. The laboratory, upon sample receipt, noted no problems.

2. Blank
One lab blank was associated with the samples. All blank compounds were non-detect.

3. Surrogate Recovery
Three surrogates were associated with each sample. All surrogate recoveries were within the laboratory required control limits.

4. Internal Standards
All IS recoveries were within the method/laboratory required control limits.

5. Laboratory Control Sample
The LCS recovery for acetone (58) was low outside control limits. All acetone results are flagged UJ for non-detects and J for positive results. All other LCS recoveries were within the required control limits.

6. Calibration
All calibrations were within required control limits.

7. Field Blanks
All of the above samples were field blanks. The following compounds were detected in each sample: RO1: toluene (0.080 ppbv, 0.31 uG/m^3); R02: toluene (0.13 ppbv, 0.49 uG/m^3), acetone (1.4 pptv, 3.3 uG/m^3); R03: freon (o.48 ppbv, 0.37 uG/m^3), methylene chloride (0.24 ppbv, 0.86 uG/m^3), 1,1,1-trichloroethane (0.077 ppbv, 0.43 uG/m^3), benzene (0.21 ppbv, 0.68 uG/m^3), trichloroethene (0.042 ppbv, 0.23 uG/m^3), toluene (1.2 ppbv, 4.5 uG/m^3), tetrachloroethene (0.081 ppbv, 0.56 uG/m^3), ethyl benzene (0.17 ppbv, 0.74 uG/m^3), m,p-xylene (0.36 ppbv, 1.6 uG/m^3), o-Xylene (0.14 ppbv, 0.60 uG/m^3), acetone (5.1 ppbv, 12 uG/m^3), and 2-butanone (0.92 ppbv, 2.8 uG/m^3). Blank contamination will be assessed in alternate data packages. The anomalies shown in R03 will be explained in the air sampling report. Based on professional judgement, qualification is not being applied to any samples based on R03 results.

Data reviewed by: T. Balla Date: 6/19/02

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-R01

ID#: 0205540-01A

EPA METHOD TO-15 GC/MS SIM

File Name: [redacted] Date of Collection: 5/23/02
Dil Factor: [redacted] 2.68 Date of Analysis: 6/4/02

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.054	0.42	Not Detected	Not Detected
Methylene Chloride	0.27	0.95	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.054	0.22	Not Detected	Not Detected
1,1,1-Trichloroethane	0.054	0.30	Not Detected	Not Detected
Benzene	0.13	0.44	Not Detected	Not Detected
Trichloroethene	0.054	0.29	Not Detected	Not Detected
Toluene	0.054	0.20	0.080	0.31
Tetrachloroethene	0.054	0.37	Not Detected	Not Detected
Ethyl Benzene	0.054	0.24	Not Detected	Not Detected
m,p-Xylene	0.11	0.47	Not Detected	Not Detected
o-Xylene	0.054	0.24	Not Detected	Not Detected
Acetone	1.3	3.2	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.27	0.80	Not Detected	Not Detected
Chloroform	0.054	0.27	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	99	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-R02

ID#: 0205540-02A

EPA METHOD TO-15 GC/MS SIM

File Name: w060412 Date of Collection: 5/23/02
Dil. Factor: 2.51 Date of Analysis: 6/4/02

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.050	0.39	Not Detected	Not Detected
Methylene Chloride	0.25	0.89	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	0.20	Not Detected	Not Detected
1,1,1-Trichloroethane	0.050	0.28	Not Detected	Not Detected
Benzene	0.12	0.41	Not Detected	Not Detected
Trichloroethene	0.050	0.27	Not Detected	Not Detected
Toluene	0.050	0.19	0.13	0.49
Tetrachloroethene	0.050	0.35	Not Detected	Not Detected
Ethyl Benzene	0.050	0.22	Not Detected	Not Detected
m,p-Xylene	0.10	0.44	Not Detected	Not Detected
o-Xylene	0.050	0.22	Not Detected	Not Detected
Acetone	1.2	3.0	1.4	3.3
2-Butanone (Methyl Ethyl Ketone)	0.25	0.75	Not Detected	Not Detected
Chloroform	0.050	0.25	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: 2002ZG05-R03

ID#: 0205540-03A

EPA METHOD TO-15 GC/MS SIM

File Name: [illegible] Date of Collection: 5/23/02
Collection [illegible] Date of Analysis: 6/4/02

Compound	Rpt. Limit (ppbv)	Rpt. Limit (uG/m3)	Amount (ppbv)	Amount (uG/m3)
Freon 113	0.037	0.28	0.048	0.37
Methylene Chloride	0.18	0.65	0.24	0.86
cis-1,2-Dichloroethene	0.037	0.15	Not Detected	Not Detected
1,1,1-Trichloroethane	0.037	0.20	0.077	0.43
Benzene	0.092	0.30	0.21	0.68
Trichloroethene	0.037	0.20	0.042	0.23
Toluene	0.037	0.14	1.2	4.5
Tetrachloroethene	0.037	0.25	0.081	0.56
Ethyl Benzene	0.037	0.16	0.17	0.74
m,p-Xylene	0.073	0.32	0.36	1.6
o-Xylene	0.037	0.16	0.14	0.60
Acetone	0.92	2.2	5.1	12
2-Butanone (Methyl Ethyl Ketone)	0.18	0.55	0.92	2.8
Chloroform	0.037	0.18	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	111	70-130

Appendix C
Redacted

Appendix C
Redacted

Area A Matthew

SUMMA Canister Sample Data Sheet

SAMPLE LOCATION	SAMPLE TYPE[1]	SAMPLE NUMBER	CANISTER NUMBER	SAMPLING PERIOD Start Date	Start Time	Stop Date	Stop Time	VACUUM INITIAL ("Hg)	FINAL ("Hg)	COMMENTS/ OBSERVATIONS
Matthew 1st	Air/G	~~200220~~ S01	~~2858~~ 2787	5/22	~~0700~~ 0720	5/23	0720	~~-30~~ -28	-2	
Matthew Base	Air/G	S02	~~2787~~ 2858	5/22	~~0700~~ 0725		0725	~~-30~~ -28	-13	
	South ~~East~~ SG	200ZG-05-S09	9408	5/22	0915		0955	-28	-6	42° 26.368N 89° 01.815W
	East ~~North~~ SG	2002ZG-05-S10	904	5/22	0925		0955	-28	-6	42° 26.369N 89° 01.812W
	West SG	S11	9565		0938		0955	-28	-3	~50 ppm on OVM
	North SG	S12	2703		0945		0955	-28	-6	42° 26.375N 89° 01.819W

1= Residential, Soil gas, ambient, duplicate

ag
-099704
= 701
700
709

42° 26.372N
89° 01.823W

ADDITIONAL COMMENTS:

SAMPLES COLLECTED BY Feick, Klemp, Hanzely and Hagiwara

DATE 5/23/02

DATA CHECKED BY _____

DATE _____

Area B Straw

SUMMA Canister Sample Data Sheet

#	SAMPLE LOCATION	SAMPLE TYPE[1]	SAMPLE NUMBER	CANISTER NUMBER	SAMPLING PERIOD Start Date	Start Time	Stop Date	Stop Time	VACUUM INITIAL ("Hg)	FINAL ("Hg)	COMMENTS/ OBSERVATIONS
	Straw 1st Floor			2911	5/22	0745	5/23	0745	-28	-8	
	Straw Basement			~~[illegible]~~ 62	5/22	0745	5/23	0745	-28	-8	
9708	GS02-S		SG-South S13	3157	5/22	1025	5/23	1020	-30	-6	42° 26.000N 89° 01.958W
707	GS02-N		SG-~~East~~ North S14	13671	↓	1035	5/23	1025 ~~[illegible]~~	-30	-10	42° 26.008N 89° 01.963W
728	GS02-E		SG-~~North~~ East S15	1616 ~~[illegible]~~	↓	1045	↓	1030 ~~1040~~	-30	-7	42° 26.005N 89° 01.959W
702	GS02-W		SG-West S16	05403	↓	1055	↓	1035 ~~1055~~	-29	-9	42° 26.002N 89° 01.974W

1= Residential, Soil gas, ambient, duplicate

ADDITIONAL COMMENTS:

SAMPLES COLLECTED BY Feick, Klemp, Hanzley and Hagiwara

DATE 5/23/02

DATA CHECKED BY _____

DATE _____

Area C Wag n LN

SUMMA Canister Sample Data Sheet

	SAMPLE LOCATION	SAMPLE TYPE[1]	SAMPLE NUMBER	CANISTER NUMBER	SAMPLING PERIOD Start Date	Start Time	Stop Date	Stop Time	VACUUM INITIAL ("Hg)	FINAL ("Hg)	COMMENTS/ OBSERVATIONS
basement	Wagon Lane Ct	Air	EM-AA-03-B	2978	5/22	0830	5/23	0805	-28	-10	
	Wagon Lane Ct	↓	EM-AA-03-BDP	3026	5/22	0830	5/23	0805	-29	-7.5	DUP
1st floor	Wagon Lane Ct	↓	EM-AA-03-F	2463	5/22	0830	5/23	0805	-29.5	-11.5	~~Dup~~ yu
SG# 099712 →	S-17	SG	SG-~~East~~ North	12080	↓	1215	5/23	1130	-30	-8	42° 26.080N 89° 02.067W
713 →	S-18	↓	SG-~~North~~ East	05362	↓	1210	↓	↓	-28	-6.5	42° 26.080N 89° 02.063W
714 →	S-19	↓	SG-~~South~~ West	20938	↓	1215	↓	↓	-30	-10	42° 26.073N 89° 02.062W
711 →	S-20	↓	SG-~~West~~ South	11889	↓	1230	↓	↓	-28	-8.5	42° 26.074N 89° 02.067W
726 →	D-20	↓	SG-~~West~~ South Dup	30836	↓	1230	↓	↓	-28	-6	Dup
~~726~~ →											

1= Residential, Soil gas, ambient, duplicate

ADDITIONAL COMMENTS:

SAMPLES COLLECTED BY N. Feick, J. Klemp, T. Hanzlay and Y. Hagiwara

DATE 5/23/02

DATA CHECKED BY _____

DATE _____

Wagon LN

Area C — Ambient

SUMMA Canister Sample Data Sheet

	SAMPLE LOCATION	SAMPLE TYPE[1]	SAMPLE NUMBER	CANISTER NUMBER	SAMPLING PERIOD Start Date	Start Time	Stop Date	Stop Time	VACUUM INITIAL ("Hg)	FINAL ("Hg)	COMMENTS/ OBSERVATIONS	
099725	Wagon LN Ct.	Ambient	S21	3117	5/22/02	1227	5/23	1130	-29	-7.5	backyard	AAFB-01
-099722	" " "	" dup	D21	2705	5/22/02	1227	5/23	1130	-29	-10		AAFB-02
				~~957~~					~~-30~~		[illegible]	

1= Residential, Soil gas, ambient, duplicate

ADDITIONAL COMMENTS:

SAMPLES COLLECTED BY Feick, Klemp, Hanzely and Haginam

DATE 5/23/02

DATA CHECKED BY _____

DATE _____

Area D

wagon

SUMMA Canister Sample Data Sheet

SAMPLE LOCATION	SAMPLE TYPE[1]	SAMPLE NUMBER	CANISTER NUMBER	SAMPLING PERIOD Start Date	Start Time	Stop Date	Stop Time	VACUUM INITIAL ("Hg)	FINAL ("Hg)	COMMENTS/ OBSERVATIONS
Wagon Base SG8	Air	EM2-AA04-B	152	5/22/02	0920	5/23	0850	-29	-7	
" " 15SG7	↓	EM2-AA04-F	2748	5/22/02	0920	5/23	0850	-28.5	-3	
5-099742	S22 SG	SG-South	433	5/22/02	1302	5/23	1235	-29.5	-10	42° 25.704N 89° 02.118W
723	23	SG-North	4059	5/22/02	1250	↓	↓	-28	-3.5	42° 25.713N 89° 02.110W
724	24	SG-West	31442	5/22/02	1305	↓	↓	-29	-3	42° 25.711N 89° 02.120W
721	25	SG-East	4034	5/22/02	1300	↓	↓	-29	-4.5	42° 25.704N 89° 02.108W

1= Residential, Soil gas, ambient, duplicate

ADDITIONAL COMMENTS:

SAMPLES COLLECTED BY Ferck, Klemp, Hanzely, and Hagiwara

DATE 5/23/02

DATA CHECKED BY _____

DATE _____

equipment blanks.

SUMMA Canister Sample Data Sheet

SAMPLE LOCATION	SAMPLE TYPE[1]	SAMPLE NUMBER	CANISTER NUMBER	SAMPLING PERIOD				VACUUM		COMMENTS/ OBSERVATIONS	TAG #
				Start Date	Start Time	Stop Date	Stop Time	INITIAL ("Hg)	FINAL ("Hg)		
~~AA-03~~ AAEB03-01	Air	R-01	458	5/20/02	0810	~~5/24~~ 5/24	~~1150~~ 0810	-29	-16		5-119909
~~AA-02~~ AAEB03-02	↓	R-02	23926	↓	↓	5/24	~~1150~~ 0810	-29	-15		5-119908
~~AA-03~~ AAEB03-03	↓	R-03	25239	↓	↓	5/24	~~1150~~ 0810	-30	-9		5-119910

1= Residential, Soil gas, ambient, duplicate

ADDITIONAL COMMENTS:

SAMPLES COLLECTED BY N. Feick, J. Klemp, T. Hanzely and Y. Hagiwara

DATE 5/24/02

DATA CHECKED BY _____

DATE _____

Appendix D

Table 5-1
Groundwater Analytical Results - CPT - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	CPT-01-01	CPT-01-02	CPT-01-03	CPT-01-04	CPT-01-05	CPT-01-06	CPT-01-07	CPT-01-08
Sample Number:	—	—	—	—	—	—	—	—
Sample Date:	5/25/2000	5/25/2000	5/25/2000	5/25/2000	5/25/2000	5/25/2000	5/25/2000	5/25/2000
Laboratory:	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT
Sample Screen Depth (ft below ground):	99	89	79	69	59	49	39	29
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter:								
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	15 B	2 UJ
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Acetate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Cis-1,2-Dichloroethene	4 U	2 J	1 J	1 J	1 J	1 J	4 U	4 U
Methyl tert-Butyl Ether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	2 U	1 J	1 J	1 J	1 J	2 U	1 J	2 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	2 J	3 J	4 J	4 J	3 J	4 J	3 J	2 J
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	0.7 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	—	—	—	—	—	—	—	—
Styrene	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
1,1,2,2-Tetrachloroethane	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	—	—	—	—	—
1,2-Dibromo-3-chloropropane	—	—	—	—	—	—	—	—
Bromochloromethane	—	—	—	—	—	—	—	—

This document was prepared by Roy F. Weston, Inc., expressly for U.S. BPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. BPA.

Table 5-1
Groundwater Analytical Results - CPT - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	CPT-02-01	CPT02-01	CPT-02-02	CPT-02-03	CPT02-03	CPT-02-04	CPT-02-05	CPT-02-06
Sample Number:	—	EABX3	—	—	EABX4	—	—	—
Sample Date:	6/2/2000	6/2/2000	6/2/2000	6/2/2000	6/2/2000	6/2/2000	6/2/2000	6/2/2000
Laboratory:	ESAT	MilKem	ESAT	ESAT	MilKem	ESAT	ESAT	ESAT
Sample Screen Depth (ft below ground):	28	28	34	42	42	51	68	78
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter:								
Dichlorodifluoromethane	1 U	—	1 U	1 U	—	1 U	1 U	1 U
chloromethane	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	—	1 U	1 U	—	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 UJ	—	2 UJ	2 UJ	—	2 UJ	2 UJ	2 UJ
1,1-Dichloroethene	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Acetone	2 UJ	5 U	2 UJ	55 J	470	2 UJ	2 UJ	2 UJ
Carbon Disulfide	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Methylene Chloride	1 U	2 U	1 U	1 U	10 U	1 U	1 U	1 U
Methyl Acetate	1 UJ	—	1 UJ	1 UJ	—	1 UJ	1 UJ	1 UJ
Trans-1,2-Dichloroethene	2 U	1 U	2 U	2 U	5 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
2-Butanone	11 UJ	5 U	11 UJ	11 UJ	25 U	11 UJ	11 UJ	11 UJ
Cis-1,2-Dichloroethene	4 U	1 U	4 U	4 U	5 U	4 U	4 U	4 U
Methyl tert-Butyl Ether	1 UJ	—	1 UJ	1 UJ	—	1 UJ	1 UJ	1 UJ
1,2-Dichloroethane	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Chloroform	3 U	1 U	3 U	3 U	5 U	3 U	3 U	3 U
Carbon Tetrachloride	2 U	1 U	2 U	2 U	5 U	2 U	2 U	2 U
1,1,1-Trichloroethane	2 U	1 U	2 U	2 U	5 U	2 U	2 U	2 U
Benzene	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U
Toluene	0.5 J	0.5 J	0.6 J	0.7 J	5 U	0.5 J	1 J	1 J
Tetrachloroethene	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	—	0.5 J	1 U	—	1 U	1 U	1 U
o-xylene	1 U	—	1 U	1 U	—	1 U	1 U	1 U
Xylenes (total)	—	0.6 J	—	—	5 U	—	—	—
Styrene	3 UJ	1 U	3 UJ	3 UJ	5 U	3 UJ	3 UJ	3 UJ
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	1 U	—	—	5 U	—	—	—
1,2-Dibromo-3-chloropropane	—	1 R	—	—	5 R	—	—	—
Bromochloromethane	—	1 U	—	—	5 U	—	—	—

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-1
Groundwater Analytical Results - CPT - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	CPT-02-07	CPT-03-01	CPT-03-02	CPT-03-02DP	CPT-03-03	CPT-03-04	CPT-03-05	CPT-03-06
Sample Number:	—	—	—	—	—	—	—	—
Sample Date:	6/2/2000	5/26/2000	5/26/2000	5/26/2000	5/26/2000	5/26/2000	5/26/2000	6/2/2000
Laboratory:	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT
Sample Screen Depth (ft below ground):	84	29	42	42	54		84	92
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter:								
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 UJ	2 U	2 U	2 U	2 U	2 U	2 UJ	2 UJ
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	2 UJ	20 B	32 B	19 B	20 B	25 B	9 J	2 UJ
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	1 U	1 U	1 U	1 U	1 U	1 U	0.5 J	1 U
Methyl Acetate	1 UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ
Trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	11 UJ	11 U	11 U	11 U	11 U	11 U	11 U	11 UJ
Cis-1,2-Dichloroethene	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Methyl tert-Butyl Ether	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	2 U	2 U	2 U	2 U	1 J	2 J	2 U	0.9 J
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	1 U	0.8 J	1 J	0.8 J	0.6 J	0.8 J	1 J	2 J
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	0.6 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	—	—	—	—	—	—	—	—
Styrene	3 UJ	3 U	3 U	3 U	3 U	3 U	3 U	3 UJ
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	—	—	—	—	—
1,2-Dibromo-3-chloropropane	—	—	—	—	—	—	—	—
Bromochloromethane	—	—	—	—	—	—	—	—

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-1
Groundwater Analytical Results - CPT - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	CPT03-06	CPT-03-07	CPT-04-01	CPT-04-02	CPT-04-02DUP	CPT-04-02	CPT04-02DP	CPT-04-03
Sample Number:	EABX5	—	—	—	—	EABW5	EABW6	—
Sample Date:	6/2/2000	6/2/2000	5/29/2000	5/29/2000	5/29/2000	5/29/2000	5/29/2000	5/29/2000
Laboratory:	MitKem	ESAT	ESAT	ESAT	ESAT	MitKem	MitKem	ESAT
Sample Screen Depth (ft below ground):	92	102	32	46	46	46	46	56
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter:								
Dichlorodifluoromethane	—	1 U	1 U	1 U	1 U	—	—	1 U
chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	—	1 U	1 U	1 U	1 U	—	—	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	—	2 UJ	2 UJ	2 UJ	2 UJ	—	—	2 UJ
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	5 U	2 UJ	2 U	10 B	2 U	5 U	5 U	2 U
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	2 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
Methyl Acetate	—	1 UJ	1 UJ	1 UJ	1 UJ	—	—	1 UJ
Trans-1,2-Dichloroethene	1 U	2 U	2 U	2 U	2 U	1 U	1 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	5 U	11 UJ	11 U	11 U	11 U	5 U	5 U	11 U
Cis-1,2-Dichloroethene	1 U	4 U	4 U	4 U	4 U	1 U	1 U	4 U
Methyl tert-Butyl Ether	—	1 UJ	1 U	1 U	1 U	—	—	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	1 U	3 U	3 U	3 U	3 U	1 U	1 U	3 U
Carbon Tetrachloride	1 U	2 U	2 U	2 U	2 U	1 U	1 U	2 U
1,1,1-Trichloroethane	0.9 J	0.8 J	2 U	2 U	2 U	1 U	1 U	2 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	2	2 J	1 J	0.8 J	0.9 J	0.6 J	0.8 J	0.8 J
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	—	1 U	1 U	1 U	1 U	—	—	1 U
o-xylene	—	1 U	1 U	1 U	1 U	—	—	1 U
Xylenes (total)	1 U	—	—	—	—	1 U	1 U	—
Styrene	1 U	3 UJ	3 U	3 U	3 U	1 U	1 U	3 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	1 U	—	—	—	—	1 U	1 U	—
1,2-Dibromo-3-chloropropane	1 R	—	—	—	—	1 R	1 R	—
Bromochloromethane	1 U	—	—	—	—	1 U	1 U	—

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-1
Groundwater Analytical Results - CPT - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	CPT-04-04	CPT-04-05	CPT-04-06	CPT-04-07	CPT-05-01	CPT-05-02	CPT-05-03	CPT-05-04
Sample Number:	—	—	—	—	—	—	—	—
Sample Date:	5/29/2000	5/29/2000	5/29/2000	5/29/2000	5/29/2000	5/29/2000	5/29/2000	5/29/2000
Laboratory:	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT
Sample Screen Depth (ft below ground):	71	78	84	93	35	43	51	57
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter:								
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	2 U	2 U	8 B	9 B	2 U	2 U	2 U	2 U
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Acetate	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Cis-1,2-Dichloroethene	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Methyl tert-Butyl Ether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	0.7 J	1 J	0.8 J	1 J	1 J	1 J	1 J	1 J
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	—	—	—	—	—	—	—	—
Styrene	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	—	—	—	—	—
1,2-Dibromo-3-chloropropane	—	—	—	—	—	—	—	—
Bromochloromethane	—	—	—	—	—	—	—	—

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-1
Groundwater Analytical Results - CPT - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	CPT-05-05	CPT-05-05DUP	CPT-05-06	CPT-05-07	CPT-06-01	CPT-06-02	CPT-06-03	CPT-06-04
Sample Number:	—	—	—	—	—	—	—	—
Sample Date:	5/30/2000	5/30/2000	5/30/2000	5/30/2000	6/1/2000	6/1/2000	6/1/2000	6/1/2000
Laboratory:	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT
Sample Screen Depth (ft below ground):	69.5	69.5	78	87	35	42	53	62
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter:								
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	2 U	2 U	100 J	2 U	2 U	53 J	11 J	7 J
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Acetate	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	11 U	11 U	16 J	11 U	11 U	11 U	11 U	11 U
Cis-1,2-Dichloroethene	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Methyl tert-Butyl Ether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	1 J	0.6 J	0.8 J	1 J	0.6 J	0.8 J	0.8 J	1 J
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	1 U	1 U	0.7 J	1 U	1 U	1 U
o-xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	—	—	—	—	—	—	—	—
Styrene	3 U	3 U	3 U	3 U	3 UJ	3 UJ	3 UJ	3 UJ
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	—	—	—	—	—
1,2-Dibromo-3-chloropropane	—	—	—	—	—	—	—	—
Bromochloromethane	—	—	—	—	—	—	—	—

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-1
Groundwater Analytical Results - CPT - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	CPT-06-05	CPT-06-06	CPT06-06	CPT-06-07	CPT-09-01	CPT-09-02	CPT-09-03	CPT-09-04
Sample Number:	—	—	EABW9	—	—	—	—	—
Sample Date:	6/1/2000	6/1/2000	6/1/2000	6/1/2000	5/30/2000	5/30/2000	5/30/2000	5/30/2000
Laboratory:	ESAT	ESAT	MilKem	ESAT	ESAT	ESAT	ESAT	ESAT
Sample Screen Depth (ft below ground):	74	85	85	92	35	45	55	68
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter:								
Dichlorodifluoromethane	1 U	1 U	—	1 U	1 U	1 U	1 U	1 U
chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	—	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,24rifluoromethane	2 UJ	2 UJ	—	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	11 J	2 U	7 U	5 J	2 U	2 U	2 U	2 U
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
Methyl Acetate	1 UJ	1 UJ	—	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Trans-1,2-Dichloroethene	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	11 U	11 U	5 U	11 U	11 U	11 U	11 U	11 U
Cis-1,2-Dichloroethene	4 U	4 U	1 U	4 U	4 U	4 U	4 U	4 U
Methyl tert-Butyl Ether	1 U	1 U	—	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	1 U	3 U	3 U	3 U	3 U	3 U
Carbon Tetrachloride	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U
Benzene	1 U	1 U	1 U	1 U	0.5 J	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	1 J	2 J	2	1 J	1 J	0.8 J	0.8 J	0.8 J
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	—	1 U	1 U	1 U	1 U	1 U
o-xylene	1 U	1 U	—	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	—	—	1 U	—	—	—	—	—
Styrene	3 UJ	3 UJ	1 U	3 UJ	3 U	3 U	3 U	3 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	1 U	—	—	—	—	—
1,2-Dibromo-3-chloropropane	—	—	1 R	—	—	—	—	—
Bromochloromethane	—	—	1 U	—	—	—	—	—

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-1
Groundwater Analytical Results - CPT - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	CPT-09-05	CPT-09-06	CPT-09-07	CPT-10-01	CPT-10-02	CPT-10-03	CPT-10-04	CPT-10-05
Sample Number:	—	—	—	—	—	—	—	—
Sample Date:	5/30/2000	5/30/2000	5/30/2000	5/31/2000	5/31/2000	5/31/2000	6/1/2000	6/1/2000
Laboratory:	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT
Sample Screen Depth (ft below ground):	75	85	88	25	36	42	55	65
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter:								
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	2 U	11 J	8 J	2 U	2 U	40 B	2 U	2 U
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Acetate	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	1 UJ	1 U
Trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Cis-1,2-Dichloroethene	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Methyl tert-Butyl Ether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	2 U	2 U	2 U	2 U	1 J	2 U	1 J	0.8 J
Benzene	1 U	1 U	0.6 J	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	0.5 J	0.8 J	2 J	0.9 J	1 U	1 J	0.5 J	0.9 J
Tetrachloroethene	1 U	1 U	1 U	1 U	0.9 J	1 U	0.6 J	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	0.6 J	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	0.7 J	1 U	1 U	1 U	1 U	1 U
o-xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	—	—	—	—	—	—	—	—
Styrene	3 U	3 U	3 U	3 U	3 U	3 U	3 UJ	3 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	—	—	—	—	—
1,2-Dibromo-3-chloropropane	—	—	—	—	—	—	—	—
Bromochloromethane	—	—	—	—	—	—	—	—

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-1
Groundwater Analytical Results - CPT - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	CPT-10-06	CPT-10-07	CPT-10-4DUP	CPT-11-01	CPT11-01	CPT-11-02	CPT-11-03	CPT-11-04
Sample Number:	—	—	—	—	EABX7	—	—	—
Sample Date:	6/1/2000	6/1/2000	6/1/2000	6/3/2000	6/3/2000	6/3/2000	6/3/2000	6/3/2000
Laboratory:	ESAT	ESAT	ESAT	ESAT	MitKem	ESAT	ESAT	ESAT
Sample Screen Depth (ft below ground):	73	90	55	45	45	58	70	81
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter:								
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	—	1 U	1 U	1 U
chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 UJ	1 U	1 UJ	1 UJ	1 UJ
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	—	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 UJ	2 UJ	2 UJ	2 UJ	—	2 UJ	2 UJ	2 UJ
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	24 J	2 U	2 U	2 UJ	5 U	2 UJ	9 J	2 UJ
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	1 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U
Methyl Acetate	1 UJ	1 UJ	1 UJ	1 UJ	—	1 UJ	1 UJ	1 UJ
Trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U	1 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	11 U	11 U	11 U	11 UJ	5 U	11 UJ	11 UJ	11 UJ
Cis-1,2-Dichloroethene	4 U	4 U	4 U	4 U	1 U	4 U	4 U	4 U
Methyl tert-Butyl Ether	1 U	1 U	1 U	1 UJ	—	1 UJ	1 UJ	1 UJ
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	3 U	3 U	1 U	3 U	3 U	3 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U	1 U	2 U	2 U	2 U
1,1,1-Trichloroethane	2 U	2 U	1 J	2 U	1 U	2 U	0.8 J	0.8 J
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 UJ	1 U	1 UJ	1 UJ	1 UJ
4-Methyl-2-pentanone	5 U	5 U	5 U	5 UJ	5 U	5 UJ	5 UJ	5 UJ
Toluene	1 J	1 J	1 U	1 U	1 U	1 J	1 J	0.9 J
Tetrachloroethene	1 U	1 U	0.6 J	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 UJ	5 U	5 UJ	5 UJ	5 UJ
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	1 U	1 U	—	1 U	1 U	1 U
o-xylene	1 U	1 U	1 U	1 U	—	1 U	1 U	1 U
Xylenes (total)	—	—	—	—	0.6 J	—	—	—
Styrene	3 UJ	3 UJ	3 UJ	3 U	1 U	3 U	3 U	3 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	—	1 U	—	—	—
1,2-Dibromo-3-chloropropane	—	—	—	—	1 R	—	—	—
Bromochloromethane	—	—	—	—	1 U	—	—	—

This document was prepared by Roy F. Weston, Inc., expressly for U.S. BPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. BPA.

Table 5-1
Groundwater Analytical Results - CPT - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	CPT-11-05	CPT11-05	CPT11-05DP	CPT-11-06	CPT-11-07	CPT11-08	CPT-11-08	CPT-12-01
Sample Number:	—	EABX9	EABQ1	—	—	EABQ2	—	—
Sample Date:	6/3/2000	6/3/2000	6/3/2000	6/3/2000	6/3/2000	6/3/2000	6/3/2000	6/5/2000
Laboratory:	ESAT	MKKem	MKKem	ESAT	ESAT	MKKem	ESAT	ESAT
Sample Screen Depth (ft below ground):	93	93	93	102	114	125	125	45
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter:								
Dichlorodifluoromethane	1 U	—	—	1 U	1 U	—	1 U	1 U
chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U
Vinyl Chloride	1 UJ	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	—	—	1 U	1 U	—	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 UJ	—	—	2 UJ	2 UJ	—	2 U	2 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	2 UJ	5 U	5 U	9 J	13 J	5 U	2 UJ	1 B
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	1 U	2 U	2 U	1 U	1 U	2 U	1 U	1 U
Methyl Acetate	1 UJ	—	—	1 UJ	1 UJ	—	1 UJ	1 UJ
Trans-1,2-Dichloroethene	2 U	1 U	1 U	2 U	2 U	1 U	2 U	2 U
1,1-Dichloroethane	1 U	2	2	1 U	1 U	1 U	1 UJ	1 U
2-Butanone	11 UJ	5 U	5 U	11 UJ	11 UJ	5 U	11 UJ	11 U
Cis-1,2-Dichloroethene	4 U	1 U	1 U	4 U	4 U	1 U	4 U	4 U
Methyl tert-Butyl Ether	1 UJ	—	—	1 UJ	1 UJ	—	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	1 U	1 U	3 U	3 U	1 U	3 U	3 U
Carbon Tetrachloride	2 U	1 U	1 U	2 U	2 U	1 U	2 U	2 U
1,1,1-Trichloroethane	2 J	2	3	3 J	2 U	0.7 J	2 U	2 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 UJ	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U
4-Methyl-2-pentanone	5 UJ	5 U	5 U	5 UJ	5 UJ	5 U	5 U	5 U
Toluene	1 J	2	0.8 J	1 J	2 J	2	3 J	0.5 J
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 UJ	5 U	5 U	5 UJ	5 UJ	5 U	5 UJ	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	—	—	1 U	1 U	—	1 U	1 U
o-xylene	1 U	—	—	1 U	1 U	—	1 U	1 U
Xylenes (total)	—	1 U	1 U	—	—	1 U	—	—
Styrene	3 U	1 U	1 U	3 U	3 U	1 U	3 U	3 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	1 U	1 U	—	—	1 U	—	—
1,2-Dibromo-3-chloropropane	—	1 R	1 R	—	—	1 R	—	—
Bromochloromethane	—	1 U	1 U	—	—	1 U	—	—

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-1
Groundwater Analytical Results - CPT - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	CPT-12-01DUP	CPT-12-02	CPT-12-03	CPT-12-03	CPT-12-04	CPT-12-04DUP	CPT-12-05	CPT12-06
Sample Number:	—	—	—	EABQ3	—	—	—	EABQ7
Sample Date:	6/5/2000	6/5/2000	6/5/2000	6/5/2000	6/5/2000	6/5/2000	6/5/2000	6/5/2000
Laboratory:	ESAT	ESAT	ESAT	MitKem	ESAT	ESAT	ESAT	MitKem
Sample Screen Depth (ft below ground):		62	70	70	81	81	93	102
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter:								
Dichlorodifluoromethane	1 U	1 U	1 U	—	1 U	1 U	1 U	—
chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	—	1 U	1 U	1 U	—
1,1,2-Trichloro-1,2,2-trifluoromethane	2 U	2 U	2 U	—	2 U	2 U	2 U	—
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	1 B	1 B	2 B	5 U	2 B	7 B	2	5 U
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	1 U	1 U	1 U	2 U	1 U	1 U	1 U	2 U
Methyl Acetate	1 UJ	1 UJ	1 UJ	—	1 UJ	1 UJ	1 UJ	—
Trans-1,2-Dichloroethene	2 U	2 U	2 U	1 U	2 U	2 U	2 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	11 U	11 U	11 U	5 U	11 U	11 U	11 U	5 U
Cis-1,2-Dichloroethene	4 U	4 U	4 U	1 U	4 U	4 U	4 U	1 U
Methyl tert-Butyl Ether	1 U	1 U	1 U	—	1 U	1 U	1 U	—
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	3 U	1 U	3 U	3 U	3 U	1 U
Carbon Tetrachloride	2 U	2 U	2 U	1 U	2 U	2 U	2 U	1 U
1,1,1-Trichloroethane	2 U	2 U	2 U	1 U	2 U	2 U	2 U	1 U
Benzene	1 U	1 U	1 U	1 U	1 U	0.5 J	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	0.5 J	1 U	0.9 J	0.8 J	0.9 J	1 U	2 J	1
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	1 U	—	1 U	1 U	1 U	—
o-xylene	1 U	1 U	1 U	—	1 U	1 U	1 U	—
Xylenes (total)	—	—	—	1 U	—	—	—	1 U
Styrene	3 U	3 U	3 U	1 U	3 U	3 U	3 U	1 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	1 U	—	—	—	1 U
1,2-Dibromo-3-chloropropane	—	—	—	1 R	—	—	—	1 R
Bromochloromethane	—	—	—	1 U	—	—	—	1 U

This document was prepared by Roy F. Weston, Inc., expressly for U.S. BPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. BPA.

Table 5-1
Groundwater Analytical Results - CPT - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	CPT-12-06	CPT-12-07
Sample Number:	—	—
Sample Date:	6/5/2000	6/5/2000
Laboratory:	ESAT	ESAT
Sample Screen Depth (ft below ground):	102	118
Units:	ug/L	ug/L
Parameter:		
Dichlorodifluoromethane	1 U	1 U
chloromethane	1 U	1 U
Vinyl Chloride	1 U	1 U
Bromomethane	1 U	1 U
Chloroethane	1 U	1 U
Trichlorofluoromethane	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 U	2 U
1,1-Dichloroethene	1 U	1 U
Acetone	2	2
Carbon Disulfide	1 U	1 U
Methylene Chloride	1 U	1 U
Methyl Acetate	1 UJ	1 UJ
Trans-1,2-Dichloroethene	2 U	2 U
1,1-Dichloroethane	1 U	1 U
2-Butanone	11 U	11 U
Cis-1,2-Dichloroethene	4 U	4 U
Methyl tert-Butyl Ether	1 U	1 U
1,2-Dichloroethane	1 U	1 U
Chloroform	3 U	3 U
Carbon Tetrachloride	2 U	2 U
1,1,1-Trichloroethane	2 U	2 U
Benzene	1 U	1 U
Trichloroethene	1 U	1 U
1,2-Dichloropropane	1 U	1 U
Bromodichloromethane	1 U	1 U
Cis-1,3-Dichloropropene	1 U	1 U
Trans-1,3-Dichloropropene	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U
Dibromochloromethane	1 U	1 U
Bromoform	1 U	1 U
4-Methyl-2-pentanone	5 U	5 U
Toluene	2 J	2 J
Tetrachloroethene	1 U	1 U
2-Hexanone	5 U	5 U
1,2-Dibromoethane	1 U	1 U
Chlorobenzene	1 U	1 U
Ethylbenzene	1 U	1 U
m-&/or p-Xylene	1 U	1 U
o-xylene	1 U	1 U
Xylenes (total)	—	—
Styrene	3 U	3 U
1,1,2,2-Tetrachloroethane	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U
1,2,4-Trichlorobenzene	—	—
1,2-Dibromo-3-chloropropane	—	—
Bromochloromethane	—	—

Note:
U - Constituent not detected; method detection limit (MDL) of the analysis reported.
J - Concentration reported is an estimated value.
UJ - The analyte was not detected above the reported sample quantition limit.
B - Designates the constituent was detected in the method blank.
R - The sample results are rejected due to deficiencies in the ability to analyze the sample and
— Indicates compound not analyzed.

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part w

Table 5-2
Groundwater Analytical Results - Monitoring Wells - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	MW101D	MW101S	MW102D	MW102S	MW103D	MW103D-DL	MW103S	MW104D
Sample Number:	—	—	—	—	—	—	—	—
Sample Date:	5/30/2000	5/30/2000	6/1/2000	6/1/2000	5/31/2000	5/31/2000	5/31/2000	6/2/2000
Laboratory:	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PARAMETER								
1,1,1-Trichloroethane	2 U	2 U	2 U	2 U	3 J	50 U	2 U	1 J
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 UJ	2 UJ	2 U	2 UJ	300 J	180 J	2 J	2 UJ
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	—	—	—	—	—
1,2-Dibromo-3-chloropropane	—	—	—	—	—	—	—	—
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
2-Butanone	11 U	11 U	11 U	11 U	11 U	250 U	11 U	11 UJ
2-Hexanone	5 U	5 U	5 U	5 U	5 U	125 U	5 U	5 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	125 U	5 U	5 U
Acetone	2 U	2 U	2 U	2 U	35 B	50 U	2 U	2 UJ
Benzene	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Bromochloromethane	—	—	—	—	—	—	—	—
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U	2 U	50 U	2 U	2 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Chloroform	3 U	3 U	3 U	3 U	3 U	75 U	3 U	3 U
Chloromethane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Cis-1,2-Dichloroethene	4 U	4 U	4 U	4 U	4 U	100 U	4 U	4 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Methyl Acetate	1 UJ	1 UJ	1 U	1 UJ	1 UJ	25 U	1 UJ	1 UJ
Methyl tert-Butyl Ether	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 UJ
Methylene Chloride	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
o-xylene	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Styrene	3 U	3 U	3 U	3 UJ	3 UJ	75 UJ	3 UJ	3 UJ
Tetrachloroethene	1 U	1 U	1 U	1 U	0.5 J	25 U	9 J	1 U
Toluene	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Xylenes (total)	—	—	—	—	—	—	—	—
Trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U	2 U	50 U	2 U	2 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Trichloroethene	2 J	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	25 U	1 U	1 U

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-2
Groundwater Analytical Results - Monitoring Wells - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	MW104D-DUP	MW104S	MW105D	MW105D-01	MW105S	MW108D	MW108D-01	MW108D-DUP
Sample Number:	—	—	—	EABX1	—	—	EABW8	—
Sample Date:	6/2/2000	6/2/2000	6/2/2000	6/2/2000	6/2/2000	6/1/2000	6/1/2000	6/1/2000
Laboratory:	ESAT	ESAT	ESAT	MitKem	ESAT	ESAT	MitKem	ESAT
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PARAMETER								
1,1,1-Trichloroethane	1 J	2 J	2 J	3	2 J	2 U	1 U	2 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 UJ	2 UJ	2 UJ	—	2 UJ	2 UJ	—	2 UJ
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	1 U	—	—	1 U	—
1,2-Dibromo-3-chloropropane	—	—	—	1 R	—	—	1 R	—
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	11 UJ	11 UJ	11 UJ	5 U	11 UJ	11 U	5 U	11 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	2 UJ	2 UJ	2 UJ	5 U	2 UJ	2 U	5 U	2 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	—	—	—	1 U	—	—	1 U	—
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	2 U	2 U	2 U	1 U	2 U	2 U	1 U	2 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	3 U	1 U	3 U	3 U	1 U	3 U
Chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,2-Dichloroethene	4 U	4 U	1 J	2	1 J	4 U	1 U	4 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	—	1 U	1 U	—	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	1 U	—	1 U	1 U	—	1 U
Methyl Acetate	1 UJ	1 UJ	1 UJ	—	1 UJ	1 UJ	—	1 UJ
Methyl tert-Butyl Ether	1 UJ	1 UJ	1 UJ	—	1 UJ	1 U	—	1 U
Methylene Chloride	1 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U
o-xylene	1 U	1 U	1 U	—	1 U	1 U	—	1 U
Styrene	3 UJ	3 UJ	3 UJ	1 U	3 UJ	3 UJ	1 U	3 UJ
Tetrachloroethene	1 U	1 U	3 J	4	3 J	0.6 J	0.7 J	0.6 J
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	—	—	—	1 U	—	—	1 U	—
Trans-1,2-Dichloroethene	2 U	2 U	2 U	1 U	2 U	2 U	1 U	2 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	2 J	3	2 J	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	—	1 U	1 U	—	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-2
Groundwater Analytical Results - Monitoring Wells - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	MW108S	MW110D	MW110S	MW112
Sample Number:	—	—	—	—
Sample Date:	6/1/2000	6/1/2000	6/1/2000	6/2/2000
Laboratory:	ESAT	ESAT	ESAT	ESAT
Units	ug/L	ug/L	ug/L	ug/L
PARAMETER				
1,1,1-Trichloroethane	2 U	2 U	2 U	2 J
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 UJ	2 UJ	2 UJ	2 UJ
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	—
1,2-Dibromo-3-chloropropane	—	—	—	—
1,2-Dibromoethane	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U
2-Butanone	11 U	11 U	11 U	11 UJ
2-Hexanone	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U
Acetone	2 U	2 U	2 U	2 UJ
Benzene	1 U	1 U	1 U	1 U
Bromochloromethane	—	—	—	—
Bromodichloromethane	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U
Carbon Disulfide	1 U	1 U	1 U	1 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U
Chlorobenzene	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	3 U	3 U
Chloromethane	1 U	1 U	1 U	1 U
Cis-1,2-Dichloroethene	4 U	4 U	4 U	4 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	1 U	1 U
Methyl Acetate	1 UJ	1 UJ	1 UJ	1 UJ
Methyl tert-Butyl Ether	1 U	1 U	1 U	1 UJ
Methylene Chloride	1 U	1 U	1 U	1 U
o-xylene	1 U	1 U	1 U	1 U
Styrene	3 UJ	3 UJ	3 UJ	3 UJ
Tetrachloroethene	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U
Xylenes (total)	—	—	—	—
Trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U

U - Constituent not detected; method detection limit (MDL) of the analysis is reported.
J - Concentration reported is an estimated value.
UJ - The analyte was not detected above the reported sample quantitation limit.
DL - Designetes sample was diluted.
B - Designates the constituent was detected in the method blank.
— Indicates compound not analyzed.

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-4
Groundwater Analytical Results - Residential Wells - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	RW01-01	RW02-01	RW-03	RW-04	RW04-01	RW-05	RW-05DUP	RW-06
Sample Number:	—	—	—	—	EABQ4	—	—	—
Sample Date:	5/31/2000	5/31/2000	6/5/2000	6/5/2000	6/5/2000	6/5/2000	6/5/2000	6/5/2000
Address:	Tresemer	Tresemer	Wagon Ln.	Blue Spruce	Blue Spruce	Straw Ln.	Straw Ln.	Straw Ln.
Laboratory:	ESAT	ESAT	ESAT	ESAT	MITKEM	ESAT	ESAT	ESAT
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PARAMETER								
1,1,1-Trichloroethane	2 U	2 U	2 J	2 J	2	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 UJ	2 UJ	2 U	2 U	—	2 U	2 U	2 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	—	1 U	—	—	—
1,2-Dibromo-3-chloropropane	—	—	—	—	1 R	—	—	—
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	11 U	11 U	11 U	11 U	5 U	11 U	11 U	11 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	2 U	2 U	0.8	2 U	5 U	2 U	0.6	2 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	—	—	—	—	1 U	—	—	—
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U	—	2 U	2 U	2 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	3 U	3 U	1 U	3 U	3 U	3 U
Chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,2-Dichloroethene	4 U	4 U	4 U	1 J	2	4 U	4 U	4 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	—	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	1 U	1 U	—	1 U	1 U	1 U
Methyl Acetate	1 UJ	1 UJ	1 UJ	1 UJ	—	1 UJ	1 UJ	1 UJ
Methyl tert-Butyl Ether	1 U	1 U	1 U	1 U	—	1 U	1 U	1 U
Methylene Chloride	1 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U
o-xylene	1 U	1 U	1 U	1 U	—	1 U	1 U	1 U
Styrene	3 UJ	3 UJ	3 U	3 U	1 U	3 U	3 U	3 U
Tetrachloroethene	1 U	1 U	1 U	2 J	2	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	—	—	—	—	1 U	—	—	—
Trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U	1 U	2 U	2 U	2 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	5 J	6	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	—	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-4
Groundwater Analytical Results - Residential Wells - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	RW-07	RW-08	RW-09	RW-10	RW-11	RW11-01	RW11-01DP	RW-11DUP
Sample Number:	—	—	—	—	—	EABQ5	EABQ6	—
Sample Date:	6/5/2000	6/5/2000	6/5/2000	6/5/2000	6/5/2000	6/5/2000	6/5/2000	6/5/2000
Address:	Wagon Ln. Ct.	Wagon Ln.	Valerie Dr.	Valerie Dr.	Valerie Dr.	Valerie Dr.	Valerie Dr.	Valerie Dr.
Laboratory:	ESAT	ESAT	ESAT	ESAT	ESAT	MITKEM	MITKEM	ESAT
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PARAMETER								
1,1,1-Trichloroethane	5 J	0.9 J	2 U	2 U	1 J	1	1	1 J
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 U	2 U	2 U	2 U	2 U	—	—	2 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	—	—	1 U	1 U	—
1,2-Dibromo-3-chloropropane	—	—	—	—	—	1 R	1 R	—
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	11 U	11 U	11 U	11 U	11 U	5 U	5 U	11 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	2 U	2 U	2 U	2 U	2 U	5 U	5 U	2 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	—	—	—	—	—	1 U	1 U	—
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U	2 U	—	—	2 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	0.9 J	3 U	3 U	3 U	1 U	1 U	3 U
Chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,2-Dichloroethene	4 U	4 U	4 U	4 U	4 U	1 U	1 U	4 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	—	—	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	1 U	1 U	1 U	—	—	1 U
Methyl Acetate	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	—	—	1 UJ
Methyl tert-Butyl Ether	1 U	1 U	1 U	1 U	1 U	—	—	1 U
Methylene Chloride	1 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U
o-xylene	1 U	1 U	1 U	1 U	1 U	—	—	1 U
Styrene	3 U	3 U	3 U	3 U	3 U	1 U	1 U	3 U
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	—	—	—	—	—	1 U	1 U	—
Trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U	2 U	1 U	1 U	2 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	0.7 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	—	—	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-4
Groundwater Analytical Results - Residential Wells - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	RW-12	RW-13	RW-14	RW-15	RW-16	RW-17	RW-18	RW-19
Sample Number:	—	—	—	—	—	—	—	—
Sample Date:	6/5/2000	6/6/2000	6/6/2000	6/6/2000	6/6/2000	6/6/2000	6/6/2000	6/6/2000
Address:	Valerie Dr.	Straw Ln.	Straw Ln.	Straw Ln.	Straw Ln.	Hononegah	Hononegah	Blue Spruce Dr.
Laboratory:	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT	ESAT
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PARAMETER								
1,1,1-Trichloroethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	1 J
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
1,1-Dichloroethane	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	—	—	—	—	—
1,2-Dibromo-3-chloropropane	—	—	—	—	—	—	—	—
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	11 U	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ
2-Hexanone	5 U	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	2 U	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	—	—	—	—	—	—	—	—
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Chloromethane	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Cis-1,2-Dichloroethene	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Acetate	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Methyl tert-Butyl Ether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.9 J
Toluene	1 U	2 B	2 B	2 B	1 U	2 B	2 B	1 B
Xylenes (total)	—	—	—	—	—	—	—	—
Trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4 J
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Table 5-4
Groundwater Analytical Results - Residential Wells - VOCs
Evergreen Manor, Roscoe, Illinois

Sample ID:	RW-19DUP	RW-20	RW-21	RW-22
Sample Number:	—	—	—	—
Sample Date:	6/6/2000	6/6/2000	6/6/2000	6/6/2000
Address:	Blue Spruce Dr.	Tresemer	Tresemer	Tresemer
Laboratory:	ESAT	ESAT	ESAT	ESAT
Units	ug/L	ug/L	ug/L	ug/L
PARAMETER				
1,1,1-Trichloroethane	0.6 J	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoromethane	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	1 UJ	1 UJ	1 UJ	1 UJ
1,1-Dichloroethane	1 UJ	1 UJ	1 UJ	1 UJ
1,1-Dichloroethene	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	—	—	—	—
1,2-Dibromo-3-chloropropane	—	—	—	—
1,2-Dibromoethane	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U
2-Butanone	11 UJ	11 UJ	11 UJ	11 UJ
2-Hexanone	5 UJ	5 UJ	5 UJ	5 UJ
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U
Acetone	2 UJ	2 UJ	2 UJ	2 UJ
Benzene	1 U	1 U	1 U	1 U
Bromochloromethane	—	—	—	—
Bromodichloromethane	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U
Bromomethane	1 U	1 U	1 U	1 U
Carbon Disulfide	1 U	1 U	1 U	1 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U
Chlorobenzene	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U
Chloroform	3 U	3 U	3 U	3 U
Chloromethane	1 UJ	1 UJ	1 UJ	1 UJ
Cis-1,2-Dichloroethene	4 U	4 U	4 U	4 U
Cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U
m-&/or p-Xylene	1 U	1 U	1 U	1 U
Methyl Acetate	1 UJ	1 UJ	1 UJ	1 UJ
Methyl tert-Butyl Ether	1 U	1 U	1 U	1 U
Methylene Chloride	1 U	1 U	1 U	1 U
o-xylene	1 U	1 U	1 U	1 U
Styrene	3 U	3 U	3 U	3 U
Tetrachloroethene	0.9 J	1 U	1 U	1 U
Toluene	2 B	1 B	1 B	2 B
Xylenes (total)	—	—	—	—
Trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U
Trichloroethene	4 J	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Vinyl Chloride	1 U	1 U	1 U	1 U

U - Constituent not detected; method detection limit (MDL) of the analysis reported.
J - Concentration reported is an estimated value.
UJ - The analyte was not detected above the reported sample quantition limit.
B - Designates the constituent was detected in the method blank.
— Indicates compound not analyzed.

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part without the express,

Appendix J
Table J-1
April 2002 Groundwater Analytical Results
Evergreen Manor Site
Roscoe, Illinois

Location ID:	MW-101D		MW-101S		MW-103D		MW-103S		MW-104D		MW-104S		MW-104S	
Sample ID:	E0064		E0065		E0092		E0093		E0057		E0058		E0059	
Sample Date:	04/04/02		04/04/02		04/08/02		04/08/02		04/03/02		04/03/02		04/03/02	
Lab Name:	A4		A4		A4		A4		A4		A4		A4	
Unit:	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
PARAMETER														
1,1,1-TRICHLOROETHANE	0.5	U	0.5	U	0.56		0.63		0.87		0.9		1	
1,1,2,2-TETRACHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	0.5	U	0.5	U	30	D	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHYLENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	0.5	U	0.5	U	0.5	UJ	0.5	UJ	0.5	U	0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U
1,2-DICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROPROPANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-DICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-BUTANONE	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-METHYL-2-PENTANONE	5	U	5	U	5	U	5	U	5	U	5	U	5	U
ACETONE	5	UJ	5	UJ	5	U	5	U	5	UJ	5	UJ	5	UJ
BENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMODICHLOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON DISULFIDE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON TETRACHLORIDE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBROMOMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLORODIBROMOMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROFORM	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-DICHLOROETHENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-DICHLOROPROPENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CYCLOHEXANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLORDIFLOUROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ETHYLBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ISOPROPYLBENENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
M-DICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYL ACETATE	0.5	R	0.5	R	0.5	R	0.5	R	0.5	R	0.5	R	0.5	R
METHYL N-BUTYL KETONE	5	U	5	U	5	U	5	U	5	U	5	U	5	U
METHYLCYLOHEXANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYLTERT-BUTYLETHER	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
STYRENE (MONOMER)	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TETRACHLOROETHENE	0.5	U	0.5	U	0.5	U	5.9		0.18	J	0.48	J	0.52	
TOLUENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-DICHLOROETHENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-DICHLOROPROPENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRIBOMOMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOFLUOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROETHYLENE	1.8		0.21	J	0.5	U	0.5	U	0.5	U	0.18	J	0.19	J
VINYLCHLORIDE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
XYLENES(TOTAL)	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Note:
U = The analyte was analyzed for, but was not detected above the reported sample quanitation limit.
J = The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
UJ = The analyte was not detected above the reported sample quanitation limit. However, the reported quanitation limit is approximate.
R = The data are unusable. The compound may or may not be present.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Appendix J
Table J-1 (Continued)
April 2002 Groundwater Analytical Results
Evergreen Manor Site
Roscoe, Illinois

Location ID:	MW-105D		MW-105S		MW-105S		MW-107D		MW-107S		MW-109D		MW-109S	
Sample ID:	E0090		E0088		E0089		E0062		E0063		E0095		E0094	
Sample Date:	04/08/02		04/08/02		04/08/02		04/04/02		04/04/02		04/09/02		04/09/02	
Lab Name:	A4		A4		A4		A4		A4		A4		A4	
Unit:	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
PARAMETER														
1,1,1-TRICHLOROETHANE	2.2		1.9		1.8		1.3		0.5	U	0.44	J	0.29	J
1,1,2,2-TETRACHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	0.5	U	0.5	U	0.5	U	6.7		0.5	U	0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHANE	0.39	J	0.21	J	0.19	J	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHYLENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	UJ
1,2,4-TRICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	UJ
1,2-DICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROPROPANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-DICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-BUTANONE	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-METHYL-2-PENTANONE	5	U	5	U	5	U	5	U	5	U	5	U	5	U
ACETONE	5	U	5	U	5	U	5	UJ	5	UJ	5	U	5	U
BENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMODICHLOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON DISULFIDE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON TETRACHLORIDE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBROMOMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLORODIBROMOMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROFORM	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-DICHLOROETHENE	1.3		0.47	J	0.39	J	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-DICHLOROPROPENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CYCLOHEXANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLORDIFLOUROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ETHYLBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ISOPROPYLBENENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
M-DICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYL ACETATE	0.5	R	0.5	R	0.5	R	0.5	R	0.5	R	0.5	R	0.5	R
METHYL N-BUTYL KETONE	5	U	5	U	5	U	5	U	5	U	5	U	5	U
METHYLCYLOHEXANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYLTERT-BUTYLETHER	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
STYRENE (MONOMER)	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TETRACHLOROETHENE	3.2		3.5		3.1		3.3		0.17	J	2.6		1.6	
TOLUENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-DICHLOROETHENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-DICHLOROPROPENE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRIBOMOMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOFLUOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROETHYLENE	2.8		1.7		1.6		0.5	U	0.5	U	0.24	J	0.5	U
VINYLCHLORIDE	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
XYLENES(TOTAL)	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Note:
U = The analyte was analyzed for, but was not detected above the reported sample quanitation limit.
J = The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
UJ = The analyte was not detected above the reported sample quanitation limit. However, the reported quanitation limit is approximate.
R = The data are unusable. The compound may or may not be present.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Appendix J
Table J-1 (Continued)
April 2002 Groundwater Analytical Results
Evergreen Manor Site
Roscoe, Illinois

Location ID:	GWMU1A	GWMU1A	GWMU1B	GWMU2A	GWMU2B
Sample ID:	E0098	E0099	E00A0RE	E00A1	E00A2RE
Sample Date:	4/9/2002	4/9/2002	4/9/2002	4/9/2002	4/9/2002
Lab Name:	A4	A4	A4	A4	A4
Unit:	µg/L	µg/L	µg/L	µg/L	µg/L
PARAMETER					
1,1,1-TRICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-TETRACHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROETHANE	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 UJ
1,1-DICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHYLENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-TRICHLOROBENZENE	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
1,2,4-TRICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DIBROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
1,2-DICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROPROPANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-BUTANONE	5 U	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	5 U	5 U	5 U	5 U	5 U
ACETONE	5 U	5 U	5 U	5 U	5 U
BENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMODICHLOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CARBON DISULFIDE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CARBON TETRACHLORIDE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROBROMOMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLORODIBROMOMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROFORM	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-DICHLOROETHENE	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 UJ
cis-1,3-DICHLOROPROPENE	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 UJ
CYCLOHEXANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
DICHLORDIFLOUROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
DICHLOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ETHYLBENZENE	0.5 U	0.5 U	0.5 R	0.5 U	0.5 UJ
ISOPROPYLBENENE	0.5 U	0.5 U	0.5 R	0.5 U	0.5 UJ
M-DICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYL ACETATE	0.5 R	0.5 R	0.5 R	0.5 R	0.5 R
METHYL N-BUTYL KETONE	5 U	5 U	5 U	5 U	5 U
METHYLCYLOHEXANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYLTERT-BUTYLETHER	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
STYRENE (MONOMER)	0.5 U	0.5 U	0.5 R	0.5 U	0.5 UJ
TETRACHLOROETHENE	0.34 J	0.25 J	0.23 J	0.61 J	0.61 J
TOLUENE	0.5 U	0.5 U	0.5 R	0.5 U	0.5 UJ
trans-1,2-DICHLOROETHENE	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 UJ
trans-1,3-DICHLOROPROPENE	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 UJ
TRIBOMOMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOFLUOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHYLENE	0.5 U	0.5 U	0.5 R	0.5 U	0.5 UJ
VINYLCHLORIDE	0.5 U	0.5 U	0.5 R	0.5 U	0.5 R
XYLENES(TOTAL)	0.5 U	0.5 U	0.5 R	0.5 U	0.5 UJ

Note:
U = The analyte was analyzed for, but was not detected above the reported sample quanitation limit.
J = The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
UJ = The analyte was not detected above the reported sample quanitation limit. However, the reported quanitation limit is approximate.
R = The data are unusable. The compound may or may not be present.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Appendix J
Table J-1 (Continued)
April 2002 Groundwater Analytical Results
Evergreen Manor Site
Roscoe, Illinois

Location ID:	MW-01A		MW-01A		MW-02		MW-03	
Sample ID:	E00A7		E00A8		E00B2		E00A9	
Sample Date:	04/16/02		04/16/02		04/16/02		04/16/02	
Lab Name:	LIBRTY		LIBRTY		LIBRTY		LIBRTY	
Unit:	µg/L		µg/L		µg/L		µg/L	
PARAMETER								
1,1,1-TRICHLOROETHANE	2.4		2		1.7		2.1	
1,1,2,2-TETRACHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHANE	0.34	J	0.34	J	0.5	U	0.26	J
1,1-DICHLOROETHYLENE	0.19	J	0.16	J	0.5	U	0.2	J
1,2,3-TRICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROPROPANE	0.5	U	0.5	U	0.5	U	0.5	U
1,4-DICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
2-BUTANONE	5	U	5	U	5	U	5	U
4-METHYL-2-PENTANONE	5	U	5	U	5	U	5	U
ACETONE	5	U	5	U	5	U	5	U
BENZENE	0.5	U	0.5	U	0.5	U	0.5	U
BROMODICHLOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
BROMOMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
CARBON DISULFIDE	0.5	U	0.5	U	0.5	U	0.5	U
CARBON TETRACHLORIDE	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBROMOMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
CHLORODIBROMOMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROETHANE	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROFORM[1]	0.5	U	0.5	U	0.23	J	0.5	U
CHLOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-DICHLOROETHENE	1.5		1.4		0.5	U	1.1	
cis-1,3-DICHLOROPROPENE	0.5	U	0.5	U	0.5	U	0.5	U
CYCLOHEXANE	0.5	U	0.5	U	0.5	U	0.5	U
DICHLORDIFLOUROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
DICHLOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
ETHYLBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
ISOPROPYLBENENE	0.5	U	0.5	U	0.5	U	0.5	U
M-DICHLOROBENZENE	0.5	U	0.5	U	0.5	U	0.5	U
METHYL ACETATE	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
METHYL N-BUTYL KETONE	5	U	5	U	5	U	5	U
METHYLCYLOHEXANE	0.5	U	0.5	U	0.5	U	0.5	U
METHYLTERT-BUTYLETHER	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
STYRENE (MONOMER)	0.5	U	0.5	U	0.5	U	0.5	U
TETRACHLOROETHENE	1.7		1.7		0.5	U	0.1	J
TOLUENE	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-DICHLOROETHENE	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-DICHLOROPROPENE	0.5	U	0.5	U	0.5	U	0.5	U
TRIBOMOMETHANE	0.51	U	0.61	U	0.54	U	0.5	U
TRICHLOFLUOROMETHANE	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROETHYLENE	4.7		4.4		0.5	U	7.2	J
VINYLCHLORIDE	0.5	U	0.5	U	0.5	U	0.5	U
XYLENES(TOTAL)	0.5	U	0.5	U	0.5	U	0.5	U

Note:
U = The analyte was analyzed for, but was not detected above the reported sample quanitation limit.
J = The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
UJ = The analyte was not detected above the reported sample quanitation limit. However, the reported quanitation limit is approximate.
R = The data are unusable. The compound may or may not be present.
1. Chloroform concentration in MW-2 was 10 times less than that detected in the field blank sample.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shallnot be released or disclosed in whole or in part without the express, written permission of U.S. I

Appendix J
Table J-2
April 2002 Sediment Analytical Results
Evergreen Manor Site
Roscoe, Illinois

Location ID:	SD01		SD-02		SD-03		SD-03		SD-04		SD-05	
Sample ID:	E0078		E0079		E0080		E0081		E0082		E0083	
Sample Date:	04/05/02		04/05/02		04/05/02		04/05/02		04/05/02		04/05/02	
Lab Name:	ENVSYS		ENVSYS		ENVSYS		ENVSYS		ENVSYS		ENVSYS	
Unit:	µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
PARAMETER												
1,1,1-TRICHLOROETHANE	17	U	17	U	13	U	15	U	14	U	11	U
1,1,2,2-TETRACHLOROETHANE	17	U	17	U	13	U	15	U	14	U	11	U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	8	J	2	J	13	UJ	15	UJ	14	U	11	UJ
1,1,2-TRICHLOROETHANE	17	U	17	U	13	U	15	U	14	U	11	U
1,1-DICHLOROETHANE	17	U	17	U	13	U	15	U	14	U	11	U
1,1-DICHLOROETHYLENE	17	U	17	U	13	U	15	U	14	U	11	U
1,2,4-TRICHLOROBENZENE	17	U	17	U	13	U	15	U	14	U	11	U
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	17	R	17	R	13	R	15	R	14	R	11	R
1,2-DIBROMOETHANE	17	U	17	U	13	U	15	U	14	U	11	U
1,2-DICHLOROBENZENE	17	U	17	U	13	U	15	U	14	U	11	U
1,2-DICHLOROETHANE	17	U	17	U	13	U	15	U	14	U	11	U
1,2-DICHLOROPROPANE	17	U	17	U	13	U	15	U	14	U	11	U
1,4-DICHLOROBENZENE	17	U	17	U	13	U	15	U	14	U	11	U
2-BUTANONE	17	UJ	17	UJ	13	UJ	15	UJ	3	J	11	UJ
4-METHYL-2-PENTANONE	17	U	17	U	13	U	15	U	14	U	11	U
ACETONE	11	UJ	17	UJ	13	UJ	15	UJ	14	UJ	11	UJ
BENZENE	17	U	17	U	13	U	15	U	14	U	11	U
BROMODICHLOROMETHANE	17	U	17	U	13	U	15	U	14	U	11	U
BROMOMETHANE	17	UJ	17	UJ	13	UJ	15	UJ	14	UJ	11	UJ
CARBON DISULFIDE	17	U	17	U	13	U	15	U	14	U	11	U
CARBON TETRACHLORIDE	17	U	17	U	13	U	15	U	14	U	11	U
CHLOROBENZENE	17	U	17	U	13	U	15	U	14	U	11	U
CHLORODIBROMOMETHANE	17	U	17	U	13	U	15	U	14	U	11	U
CHLOROETHANE	17	UJ	17	UJ	13	UJ	15	UJ	14	UJ	11	UJ
CHLOROFORM	17	U	17	U	13	U	15	U	14	U	11	U
CHLOROMETHANE	17	U	17	U	13	U	15	U	14	U	11	U
cis-1,2-DICHLOROETHENE	17	U	17	U	13	U	15	U	14	U	11	U
cis-1,3-DICHLOROPROPENE	17	U	17	U	13	U	15	U	14	U	11	U
CYCLOHEXANE	17	U	17	U	13	U	15	U	14	U	11	U
DICHLORODIFLUOROMETHANE	17	U	17	U	13	U	15	U	14	U	11	U
DICHLOROMETHANE	17	U	17	U	13	U	15	U	14	U	11	U
ETHYLBENZENE	17	U	17	U	13	U	15	U	14	U	11	U
ISOPROPYLBENZENE	17	U	17	U	13	U	15	U	14	U	11	U
M-DICHLOROBENZENE	17	U	17	U	13	U	15	U	14	U	11	U
METHYL ACETATE	17	U	17	U	13	U	15	U	14	U	11	U
METHYL N-BUTYL KETONE	17	U	17	U	13	U	15	U	14	U	11	U
METHYLCYLOHEXANE	17	U	17	U	13	U	15	U	14	U	11	U
METHYLTERT-BUTYLETHER	17	U	17	U	13	U	15	U	14	U	11	U
STYRENE (MONOMER)	17	U	17	U	13	U	15	U	14	U	11	U
TETRACHLOROETHENE	17	U	17	U	13	U	15	U	14	U	11	U
TOLUENE	17	U	17	U	13	U	15	U	14	U	11	U
trans-1,2-DICHLOROETHENE	17	U	17	U	13	U	15	U	14	U	11	U
trans-1,3-DICHLOROPROPENE	17	U	17	U	13	U	15	U	14	U	11	U
TRIBOMOMETHANE	17	U	17	U	13	U	15	U	14	U	11	U
TRICHLOROETHYLENE	17	U	17	U	13	U	15	U	14	U	11	U
TRICHLOROFLUORMETHANE	17	U	17	U	13	U	15	U	14	U	11	U
VINYLCHLORIDE	17	U	17	U	13	U	15	U	14	U	11	U
XYLENES(TOTAL)	17	U	17	U	13	U	15	U	14	U	11	U

Note:
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J = The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate.
R = The data are unusable. The compound may or may not be present.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. E

Appendix J
Table J-2 (Continued)
April 2002 Sediment Analytical Results
Evergreen Manor Site
Roscoe, Illinois

Location ID:	SD-06		SD-07		SD-08	
Sample ID:	E0084		E0085		E0086	
Sample Date:	04/05/02		04/05/02		04/05/02	
Lab Name:	ENVSYS		ENVSYS		ENVSYS	
Unit:	µg/kg		µg/kg		µg/kg	
PARAMETER						
1,1,1-TRICHLOROETHANE	32	U	26	U	17	U
1,1,2,2-TETRACHLOROETHANE	32	U	26	U	17	U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	32	UJ	26	UJ	17	UJ
1,1,2-TRICHLOROETHANE	32	U	26	U	17	U
1,1-DICHLOROETHANE	32	U	26	U	17	U
1,1-DICHLOROETHYLENE	32	U	26	U	17	U
1,2,4-TRICHLOROBENZENE	32	U	26	U	17	U
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	32	R	26	R	17	R
1,2-DIBROMOETHANE	32	U	26	U	17	U
1,2-DICHLOROBENZENE	32	U	26	U	17	U
1,2-DICHLOROETHANE	32	U	26	U	17	U
1,2-DICHLOROPROPANE	32	U	26	U	17	U
1,4-DICHLOROBENZENE	32	U	26	U	17	U
2-BUTANONE	32	UJ	26	UJ	17	UJ
4-METHYL-2-PENTANONE	32	U	26	U	17	U
ACETONE	32	UJ	26	UJ	17	UJ
BENZENE	32	U	26	U	17	U
BROMODICHLOROMETHANE	32	U	26	U	17	U
BROMOMETHANE	32	UJ	26	UJ	17	UJ
CARBON DISULFIDE	32	U	26	U	17	U
CARBON TETRACHLORIDE	32	U	26	U	17	U
CHLOROBENZENE	32	U	26	U	17	U
CHLORODIBROMOMETHANE	32	U	26	U	17	U
CHLOROETHANE	32	UJ	26	UJ	17	UJ
CHLOROFORM	32	U	26	U	17	U
CHLOROMETHANE	32	U	26	U	17	U
cis-1,2-DICHLOROETHENE	32	U	26	U	17	U
cis-1,3-DICHLOROPROPENE	32	U	26	U	17	U
CYCLOHEXANE	32	U	26	U	17	U
DICHLORODIFLUOROMETHANE	32	U	26	U	17	U
DICHLOROMETHANE	32	U	26	U	17	U
ETHYLBENZENE	32	U	26	U	17	U
ISOPROPYLBENZENE	32	U	26	U	17	U
M-DICHLOROBENZENE	32	U	26	U	17	U
METHYL ACETATE	32	U	26	U	17	U
METHYL N-BUTYL KETONE	32	U	26	U	17	U
METHYLCYLOHEXANE	32	U	26	U	17	U
METHYLTERT-BUTYLETHER	32	U	26	U	17	U
STYRENE (MONOMER)	32	U	26	U	17	U
TETRACHLOROETHENE	32	U	26	U	17	U
TOLUENE	4	J	26	U	17	U
trans-1,2-DICHLOROETHENE	32	U	26	U	17	U
trans-1,3-DICHLOROPROPENE	32	U	26	U	17	U
TRIBOMOMETHANE	32	U	26	U	17	U
TRICHLOROETHYLENE	32	U	26	U	17	U
TRICHLOROFLUORMETHANE	32	U	26	U	17	U
VINYLCHLORIDE	32	U	26	U	17	U
XYLENES(TOTAL)	32	U	26	U	17	U

Note:
U = The analyte was analyzed for, but was not detected above the reported sample quantation limit.
J = The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate.
R = The data are unusable. The compound may or may not be present.

EPA. This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Appendix J
Table J-3
April 2002 Surface Water Analytical Results
Evergreen Manor Site
Roscoe, Illinois

Location ID	SW-01	SW-02	SW-03	SW-03	SW-04	SW-05	SW-06
Sample ID	E0067	E0068	E0069	E0070	E0071	E0072	E0073
Sample Date	4/5/2002	4/5/2002	4/5/2002	4/5/2002	4/5/2002	4/5/2002	4/5/2002
Lab Name	A4	A4	A4	A4	A4	A4	A4
Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Chemical Name							
1,1,1-TRICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-TETRACHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETH	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ
1,1,2-TRICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHYLENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-TRICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-TRICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DIBROMO-3-CHLOROPROPANE (DBC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DIBROMOMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ
1,2-DICHLOROPROPANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-BUTANONE	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
BENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMODICHLOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CARBON DISULFIDE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CARBON TETRACHLORIDE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROBROMOMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLORODIBROMOMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROFORM	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,3-DICHLOROPROPENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CYCLOHEXANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
DICHLORODIFLUOROMETHANE	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ
DICHLOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ETHYLBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
M-DICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYL ACETATE	0.5 R	0.5 R	0.5 R	0.5 R	0.5 R	0.5 R	0.5 R
METHYL N-BUTYL KETONE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYLCYLOHEXANE	5 U	5 U	5 U	5 U	5 U	5 U	5 U
METHYLTERT-BUTYLETHER	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
STYRENE (MONOMER)	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRACHLOROETHENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TOLUENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,2-DICHLOROETHENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,3-DICLOROPROPENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRIBOMOMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHYLENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROFLUOROMETHANE	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ
VINLYL CHLORIDE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
XYLENES (TOTAL)	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

Note:

U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J = The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate.

R = The data are unusable. The compound may or may not be present.

This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. I

Appendix J
Table J-3 (Continued)
April 2002 Surface Water Analytical Results
Evergreen Manor Site
Roscoe, Illinois

Location ID	SW-07		SW-08	
Sample ID	E0074		E0075	
Sample Date	4/5/2002		4/5/2002	
Lab Name	A4		A4	
Unit	µg/L		µg/L	
Chemical Name				
1,1,1-TRICHLOROETHANE	0.5	U	0.5	U
1,1,2,2-TETRACHLOROETHANE	0.5	U	0.5	U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	0.5	UJ	0.5	UJ
1,1,2-TRICHLOROETHANE	0.5	U	0.5	U
1,1-DICHLOROETHANE	0.5	U	0.5	U
1,1-DICHLOROETHYLENE	0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	0.5	U	0.5	U
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	0.5	U	0.5	U
1,2-DIBROMOMETHANE	0.5	U	0.5	U
1,2-DICHLOROBENZENE	0.5	U	0.5	U
1,2-DICHLOROETHANE	0.5	UJ	0.5	UJ
1,2-DICHLOROPROPANE	0.5	U	0.5	U
1,4-DICHLOROBENZENE	0.5	U	0.5	U
2-BUTANONE	5	U	5	U
4-METHYL-2-PENTANONE	5	U	5	U
ACETONE	5	UJ	5	UJ
BENZENE	0.5	U	0.5	U
BROMODICHLOROMETHANE	0.5	U	0.5	U
BROMOMETHANE	0.5	U	0.5	U
CARBON DISULFIDE	0.5	U	0.5	U
CARBON TETRACHLORIDE	0.5	U	0.5	U
CHLOROBENZENE	0.5	U	0.5	U
CHLOROBROMOMETHANE	0.5	U	0.5	U
CHLORODIBROMOMETHANE	0.5	U	0.5	U
CHLOROETHANE	0.5	U	0.5	U
CHLOROFORM	0.5	U	0.5	U
CHLOROMETHANE	0.5	U	0.5	U
CIS-1,2-DICHLOROETHENE	0.5	U	0.5	U
CIS-1,3-DICHLOROPROPENE	0.5	U	0.5	U
CYCLOHEXANE	0.5	U	0.5	U
DICHLORODIFLUOROMETHANE	0.5	UJ	0.5	UJ
DICHLOROMETHANE	0.5	U	0.5	U
ETHYLBENZENE	0.5	U	0.5	U
ISOPROPYLBENZENE	0.5	U	0.5	U
M-DICHLOROBENZENE	0.5	U	0.5	U
METHYL ACETATE	0.5	R	0.5	R
METHYL N-BUTYL KETONE	0.5	U	0.5	U
METHYLCYLOHEXANE	5	U	5	U
METHYLTERT-BUTYLETHER	0.5	U	0.5	U
STYRENE (MONOMER)	0.5	U	0.5	U
TETRACHLOROETHENE	0.5	U	0.5	U
TOLUENE	0.5	U	0.5	U
TRANS-1,2-DICHLOROETHENE	0.5	U	0.5	U
TRANS-1,3-DICLOROPROPENE	0.5	U	0.5	U
TRIBOMOMETHANE	0.5	U	0.5	U
TRICHLOROETHYLENE	0.5	U	0.5	U
TRICHLOROFLUOROMETHANE	0.5	UJ	0.5	UJ
VINLYL CHLORIDE	0.5	U	0.5	U
XYLENES (TOTAL)	0.5	U	0.5	U

Note:
U = The analyte was analyzed for, but was not detected above the reported sample quanitation limit.
J = The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
UJ = The analyte was not detected above the reported sample quanitation limit. However, the reported quanitation limit is approximate.
R = The data are unusable. The compound may or may not be present.

EPA. This document was prepared by Weston Solutions, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

Appendix E

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

PLE NUMBER : D111100
PLING POINT DESC. : 0901/NORTH PARK PWD/[redacted] METRIC DR

MITTING SOURCE # : 201550001 SITE # : 010926
E LLECTED : 011003 TIME COLLECTED : 0950 SAMPLING PROGRAM : TH

LECTED BY : GMK DELIVERED BY : UPS
MENTS : HAAS & THMS
DING CODE : PW32 AGENCY ROUTING : UNIT CODE :
TYPE CODE : [redacted] SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B
taken from distribution system
E RECEIVED : 011004 TIME RECEIVED : 0900 RECEIVED BY : J M
OBSERVATIONS : 3-60ML/2-40ML THM TRIP BL SAM# : D111101
ERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

06	CHLOROFORM	UG/L : 4
01	BROMODICHLOROMETHANE	UG/L : 3
05	CHLORODIBROMOMETHANE	UG/L : 2
04	BROMOFORM	UG/L : 1.0K
	TOTAL THMS	UG/L : 9

C PTABLE QUALITY CONTROL COULD NOT BE

CHIEVED FOR METHOD 552.2 ANALYSIS. A
ESAMPLE FOR THIS ANALYSIS WAS REQUESTED ON
0/22/01.

cnc

THMS

Illinois Environmental Protection Agency
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

Andrea Rhodes
Environmental Protection Specialist
Bureau of Water

217 524 8113 – direct line
217/785-0561
217/557-1407 FAX

E-Mail: epa1215@epa.state.il.us

9

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MPLE NUMBER : D011332
MPLING POINT DESC. : 0900/NORTH PARK PWD/[redacted] ELEVATOR ROAD

BMITTING SOURCE # : 201550001 SITE # : 000919
TE COLLECTED : 000925 TIME COLLECTED : 1505 SAMPLING PROGRAM : TH

LLECTED BY : GMK DELIVERED BY : UPS
MMENTS : HAAS & THMS
NDING CODE : PW32 AGENCY ROUTING : UNIT CODE :
M TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

TE RECEIVED : 000926 TIME RECEIVED : 0900 RECEIVED BY : J M
3 OBSERVATIONS : 3-60ML/2-40ML THM TRIP BL SAM# : D011333
PERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

2106	CHLOROFORM	UG/L	: 1
2101	BROMODICHLOROMETHANE	UG/L	: 2
2105	CHLORODIBROMOMETHANE	UG/L	: 2
2104	BROMOFORM	UG/L	: 1.0K
	TOTAL THMS	UG/L	: 5
2213	MONOCHLOROACETIC ACID (MCAA)	UG/L	: 2.0K
1016	MONOBROMOACETIC ACID (MBAA)	UG/L	: 1.0K
2288	DICHLOROACETIC ACID (DCAA)	UG/L	: 1.0K
2723	TRICHLOROACETIC ACID (TCAA)	UG/L	: 1.0K
721	DIBROMOACETIC ACID (DBAA)	UG/L	: 1.0K

cmc

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MPLE NUMBER : D011331
MPLING POINT DESC. : 0900/NORTH PARK PWD/WELLS 6 & 6A

BMITTING SOURCE # : 201550005 SITE # : 000919
TE COLLECTED : 000925 TIME COLLECTED : 1450 SAMPLING PROGRAM : TH

LECTED BY : GMC DELIVERED BY : UPS
MMENTS : HAAS & THMS
NDING CODE : PW32 AGENCY ROUTING : UNIT CODE :
M TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

TE RECEIVED : 000926 TIME RECEIVED : 0900 RECEIVED BY : J M
B OBSERVATIONS : 3-60ML/2-40ML THM TRIP BL SAM# : D011333
PERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

!106	CHLOROFORM	UG/L	: 1
!101	BROMODICHLOROMETHANE	UG/L	: 2
!105	CHLORODIBROMOMETHANE	UG/L	: 3
!1	BROMOFORM	UG/L	: 1
	TOTAL THMS	UG/L	: 7
!213	MONOCHLOROACETIC ACID (MCAA)	UG/L	: 2.0K
)016	MONOBROMOACETIC ACID (MBAA)	UG/L	: 1.0K
'288	DICHLOROACETIC ACID (DCAA)	UG/L	: 1.0K
!723	TRICHLOROACETIC ACID (TCAA)	UG/L	: 1.0K
!721	DIBROMOACETIC ACID (DBAA)	UG/L	: 1.0K

cmc

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

IPLE NUMBER : D006456
IPLING POINT DESC. : 0600/NORTH PARK PWD/WELL 5/[redacted] METRIC

MITTING SOURCE # : 201550001 SITE # : 000601
E COLLECTED : 000619 TIME COLLECTED : 1200 SAMPLING PROGRAM : TH

LECTED BY : GMK DELIVERED BY : UPS
MENTS : HAAS & THMS
DING CODE : PW32 AGENCY ROUTING : UNIT CODE :
TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

E RECEIVED : 000620 TIME RECEIVED : 0900 RECEIVED BY : MAH
OBSERVATIONS : 3-60ML/2-40ML THM TRIP BL SAM# : D006457
ERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

106	CHLOROFORM	UG/L	: 3
101	BROMODICHLOROMETHANE	UG/L	: 3
105	CHLORODIBROMOMETHANE	UG/L	: 4
104	BROMOFORM	UG/L	: 1
	TOTAL THMS	UG/L	: 11
213	MONOCHLOROACETIC ACID (MCAA)	UG/L	: 2.0K
016	MONOBROMOACETIC ACID (MBAA)	UG/L	: 1.0K
288	DICHLOROACETIC ACID (DCAA)	UG/L	: 1.0K
723	TRICHLOROACETIC ACID (TCAA)	UG/L	: 1.0K
721	DIBROMOACETIC ACID (DBAA)	UG/L	: 1.0K

CMC

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MPLE NUMBER : D003249
MPLING POINT DESC. : 0300/NORTH PARK PWD/WELL 5/ROCKTON RD

BMITTING SOURCE # : 201550001 SITE # : 000308
TE COLLECTED : 000327 TIME COLLECTED : 1135 SAMPLING PROGRAM : TH

LLECTED BY : GMK DELIVERED BY : UPS
MMENTS : HAAS & THMS
NDING CODE : PW32 AGENCY ROUTING : UNIT CODE :
M TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

TE RECEIVED : 000329 TIME RECEIVED : 0900 RECEIVED BY : S L
B OBSERVATIONS : 3-60ML/2-40ML THM TRIP BL SAM# : D003250
PERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

2106	CHLOROFORM	UG/L	: 1
2101	BROMODICHLOROMETHANE	UG/L	: 2
2105	CHLORODIBROMOMETHANE	UG/L	: 2
21[illegible]4	BROMOFORM	UG/L	: 1
[illegible]	TOTAL THMS	UG/L	: 6
8213	MONOCHLOROACETIC ACID (MCAA)	UG/L	: 2.0K
0016	MONOBROMOACETIC ACID (MBAA)	UG/L	: 1.0K
7288	DICHLOROACETIC ACID (DCAA)	UG/L	: 1.0K
2723	TRICHLOROACETIC ACID (TCAA)	UG/L	: 1.0K
2721	DIBROMOACETIC ACID (DBAA)	UG/L	: 1.0K

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MPLE NUMBER : D914327
MPLING POINT DESC. : 1299/NORTH PARK PWD/WELL 5

BMITTING SOURCE # : 201550001 SITE # : 991130
TE COLLECTED : 991206 TIME COLLECTED : 1015 SAMPLING PROGRAM : TH

LECTED BY : G. KIRBY DELIVERED BY : UPS
IMENTS : HAAS & THMS
DING CODE : PW32 AGENCY ROUTING : UNIT CODE :
TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

E RECEIVED : 991207 TIME RECEIVED : 0900 RECEIVED BY : S L
OBSERVATIONS : 3-60ML/2-40ML THM TRIP BL SAM# : D914328
ERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

106	CHLOROFORM	UG/L	: 2
101	BROMODICHLOROMETHANE	UG/L	: 3
105	CHLORODIBROMOMETHANE	UG/L	: 3
104	BROMOFORM	UG/L	: 1
	TOTAL THMS	UG/L	: 9
213	MONOCHLOROACETIC ACID (MCAA)	UG/L	: 2.0K
016	MONOBROMOACETIC ACID (MBAA)	UG/L	: 1.0K
288	DICHLOROACETIC ACID (DCAA)	UG/L	: 1.0K
723	TRICHLOROACETIC ACID (TCAA)	UG/L	: 1.0K
721	DIBROMOACETIC ACID (DBAA)	UG/L	: 1.0K

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MPLE NUMBER : D910827
MP NG POINT DESC. : 0999/NORTH PARK PWD/[redacted] GLEASMAN ROAD

BMITTING SOURCE # : 201550001 SITE # : 990909
TE COLLECTED : 990920 TIME COLLECTED : 1010 SAMPLING PROGRAM : TH

LECTED BY : GMK DELIVERED BY : UPS
MMENTS : HAAS & THMS
NDING CODE : PW32 AGENCY ROUTING : UNIT CODE :
M TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

TE RECEIVED : 990921 TIME RECEIVED : 0900 RECEIVED BY : S L
B OBSERVATIONS : 3-60ML/2-40ML THM TRIP BL SAM# : D910828
PERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

2106	CHLOROFORM	UG/L	: 1
2101	BROMODICHLOROMETHANE	UG/L	: 1
21[illegible]	CHLORODIBROMOMETHANE	UG/L	: 2
21[illegible]	BROMOFORM	UG/L	: 1.0K
	TOTAL THMS	UG/L	: 4
2213	MONOCHLOROACETIC ACID (MCAA)	UG/L	: 2.0K
1016	MONOBROMOACETIC ACID (MBAA)	UG/L	: 1.0K
2288	DICHLOROACETIC ACID (DCAA)	UG/L	: 1.0K
2723	TRICHLOROACETIC ACID (TCAA)	UG/L	: 1.0K
27[illegible]	DIBROMOACETIC ACID (DBAA)	UG/L	: 1.0K

GG

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

IPLE NUMBER : D906375
IPLING POINT DESC. : 0699/NORTH PARK PWD/WELL 5

3MITTING SOURCE # : 201550001 SITE # : 990610
TE COLLECTED : 990614 TIME COLLECTED : 1045 SAMPLING PROGRAM : TH

.LECTED BY : GWK DELIVERED BY : UPS
IMENTS : HAAS & THMS
IDING CODE : PW32 AGENCY ROUTING : UNIT CODE :
I TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : 8

'E RECEIVED : 990615 TIME RECEIVED : 0900 RECEIVED BY : MAH
I OBSERVATIONS : 3-60ML/2-40ML THM TRIP BL SAM# : D906376
'ERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

:106	CHLOROFORM	UG/L	: 3
:101	BROMODICHLOROMETHANE	UG/L	: 4
:105	CHLORODIBROMOMETHANE	UG/L	: 4
:104	BROMOFORM	UG/L	: 1
	TOTAL THMS	UG/L	: 12
:213	MONOCHLOROACETIC ACID (MCAA)	UG/L	: 2.0K
016	MONOBROMOACETIC ACID (MBAA)	UG/L	: 1.0K
288	DICHLOROACETIC ACID (DCAA)	UG/L	: 1.0K
:723	TRICHLOROACETIC ACID (TCAA)	UG/L	: 1.0K
:721	DIBROMOACETIC ACID (DBAA)	UG/L	: 1.0K

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MPLE NUMBER : D903178
MPLING POINT DESC. : 0399/NORTH PARK PWD/[redacted] GLEASMAN ROAD

BMITTING SOURCE # : 201550001 SITE # : 990318
TE COLLECTED : 990323 TIME COLLECTED : 1300 SAMPLING PROGRAM : TH

LECTED BY : GMK DELIVERED BY : UPS
MMENTS : THMS/REPLACEMENT SAMPLE FOR #D902921
NDING CODE : PW32 AGENCY ROUTING : UNIT CODE :
M TYPE CODE : DPWS SAMPLE PURPOSE CODE : 3 REPORTING INDICATOR : B

TE RECEIVED : 990324 TIME RECEIVED : 0900 RECEIVED BY : MAH
B OBSERVATIONS : 2-40ML THMS TRIP BL SAM# : D903180
PERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

2106	CHLOROFORM	UG/L	: 1.0K
2101	BROMODICHLOROMETHANE	UG/L	: 1
21	CHLORODIBROMOMETHANE	UG/L	: 1
2104	BROMOFORM	UG/L	: 1.0K
	TOTAL THMS	UG/L	: 2

17

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

IPLE NUMBER : D903179
IPLING POINT DESC. : 0399/NORTH PARK PWD/[redacted] ROCKTON ROAD

IMITTING SOURCE # : 201550005 SITE # : 990318
'E COLLECTED : 990323 TIME COLLECTED : 1230 SAMPLING PROGRAM : TH

.LECTED BY : GMK DELIVERED BY : UPS
IMENTS : THMS/REPLACEMENT SAMPLE FOR #D902920
IDING CODE : PW32 AGENCY ROUTING : UNIT CODE :
I TYPE CODE : DPWS SAMPLE PURPOSE CODE : 3 REPORTING INDICATOR : B

'E RECEIVED : 990324 TIME RECEIVED : 0900 RECEIVED BY : MAH
I OBSERVATIONS : 2-40ML THMS TRIP BL SAM# : D903180
'ERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

:106	CHLOROFORM	UG/L	: 1
:101	BROMODICHLOROMETHANE	UG/L	: 2
:105	CHLORODIBROMOMETHANE	UG/L	: 3
:104	BROMOFORM	UG/L	: 1
	TOTAL THMS	UG/L	: 7

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1PLE NUMBER : D814874
1P NG POINT DESC. : 1298/NORTH PARK PWD/[redacted] TURRET DR

3MITTING SOURCE # : 201550001 SITE # : 981202
TE COLLECTED : 981207 TIME COLLECTED : 0900 SAMPLING PROGRAM : TH

.LECTED BY : GK DELIVERED BY : UPS
1MENTS : HAAS & THMS
1DING CODE : PW32 AGENCY ROUTING : UNIT CODE :
1 TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

'E RECEIVED : 981208 TIME RECEIVED : 0900 RECEIVED BY : G S
1 OBSERVATIONS : 3-60ML/2-40ML THM TRIP BL SAM# : D814876
'ERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

106	CHLOROFORM	UG/L	: 1.0K
101	BROMODICHLOROMETHANE	UG/L	: 1
105	CHLORODIBROMOMETHANE	UG/L	: 1
1	BROMOFORM	UG/L	: 1.0K
	TOTAL THMS	UG/L	: 2
213	MONOCHLOROACETIC ACID (MCAA)	UG/L	: 2.0K
016	MONOBROMOACETIC ACID (MBAA)	UG/L	: 1.0K
288	DICHLOROACETIC ACID (DCAA)	UG/L	: 1.0K
723	TRICHLOROACETIC ACID (TCAA)	UG/L	: 1.0K
721	DIBROMOACETIC ACID (DBAA)	UG/L	: 1.0K

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

IPLE NUMBER : D814875
IPLING POINT DESC. : 1298/NORTH PARK PWD/[redacted] N 2ND ST

MITTING SOURCE # : 201550005 SITE # : 981202
E COLLECTED : 981207 TIME COLLECTED : 1030 SAMPLING PROGRAM : TH

LECTED BY : GK DELIVERED BY : UPS
MENTS : HAAS & THMS
DING CODE : PW32 AGENCY ROUTING : UNIT CODE :
TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

E RECEIVED : 981208 TIME RECEIVED : 0900 RECEIVED BY : G S
OBSERVATIONS : 3-60ML/2-40ML THM TRIP BL SAM# : D814876
ERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

106	CHLOROFORM	UG/L	: 1
101	BROMODICHLOROMETHANE	UG/L	: 1
105	CHLORODIBROMOMETHANE	UG/L	: 1
104	BROMOFORM	UG/L	: 1.0K
	TOTAL THMS	UG/L	: 3
213	MONOCHLOROACETIC ACID (MCAA)	UG/L	: 2.0K
016	MONOBROMOACETIC ACID (MBAA)	UG/L	: 1.0K
288	DICHLOROACETIC ACID (DCAA)	UG/L	: 1.0K
723	TRICHLOROACETIC ACID (TCAA)	UG/L	: 1.0K
721	DIBROMOACETIC ACID (DBAA)	UG/L	: 1.0K

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

AMPLE NUMBER : D811433
AMPLING POINT DESC. : 0998/NORTH PARK PWD/WELL 5

UBMITTING SOURCE # : 201550001 SITE # : 980903
ATE COLLECTED : 980909 TIME COLLECTED : 1120 SAMPLING PROGRAM : TH

OLLECTED BY : M. KRAUSE DELIVERED BY : UPS
OMMENTS : HAAS & THMS
UNDING CODE : PW32 AGENCY ROUTING : UNIT CODE :
AM TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

ATE RECEIVED : 980910 TIME RECEIVED : 0900 RECEIVED BY : S L
AB OBSERVATIONS : 3-60ML/2-40ML THM TRIP BL SAM# : D811434
UPERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

32106	CHLOROFORM	UG/L	: 1.0K
32101	BROMODICHLOROMETHANE	UG/L	: 1
32105	CHLORODIBROMOMETHANE	UG/L	: 1
32104	BROMOFORM	UG/L	: 1.0K
	TOTAL THMS	UG/L	: 2
78[illegible]3	MONOCHLOROACETIC ACID (MCAA)	UG/L	: 2.0K
10016	MONOBROMOACETIC ACID (MBAA)	UG/L	: 1.0K
7288	DICHLOROACETIC ACID (DCAA)	UG/L	: 1.0K
32723	TRICHLOROACETIC ACID (TCAA)	UG/L	: 1.0K
32721	DIBROMOACETIC ACID (DBAA)	UG/L	: 1.0

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

AMPLE NUMBER : D811432
AMPLING POINT DESC. : 0998/NORTH PARK PWD/WELLS 6 & 6A

JBMITTING SOURCE # : 201550005 SITE # : 980903
ATE COLLECTED : 980909 TIME COLLECTED : 1155 SAMPLING PROGRAM : TH

OLLECTED BY : M. KRAUSE DELIVERED BY : UPS
OMMENTS : HAAS & THMS
JNDING CODE : PW32 AGENCY ROUTING : UNIT CODE :
AM TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

ATE RECEIVED : 980910 TIME RECEIVED : 0900 RECEIVED BY : S L
AB OBSERVATIONS : 3-60ML/2-40ML THM TRIP BL SAM# : D811434
JPERVISORS INITIALS : GLG NOTE : K = LESS THAN VALUE

32106	CHLOROFORM	UG/L	: 4
32101	BROMODICHLOROMETHANE	UG/L	: 4
32105	CHLORODIBROMOMETHANE	UG/L	: 3
32104	BROMOFORM	UG/L	: 1
	TOTAL THMS	UG/L	: 12
78213	MONOCHLOROACETIC ACID (MCAA)	UG/L	: 2.0K
10016	MONOBROMOACETIC ACID (MBAA)	UG/L	: 1.0K
77288	DICHLOROACETIC ACID (DCAA)	UG/L	: 1.2
32723	TRICHLOROACETIC ACID (TCAA)	UG/L	: 1.0K
32721	DIBROMOACETIC ACID (DBAA)	UG/L	: 1.0K

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MPLE NUMBER : D714505
MPLING POINT DESC. : 1197/NORTH PARK PWD/DIST 05 CEDARBROOK

TTING SOURCE # : 201550005 SITE # :
TE COLLECTED : 971117 TIME COLLECTED : 1130 SAMPLING PROGRAM : MT

LLECTED BY : DENNIS DELIVERED BY : UPS
MMENTS : THMS/MAXIMUM TRIHALOMETHANE POTENTIAL
NDING CODE : PW32 AGENCY ROUTING : -- UNIT CODE :
M TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

TE RECEIVED : 971118 TIME RECEIVED : 0910 RECEIVED BY : G S
B OBSERVATIONS : 3-40ML MTP TRIP BL SAM# : D714507
PERVISORS INITIALS : RTN NOTE : K = LESS THAN VALUE

2106	CHLOROFORM	UG/L	: 9
2101	BROMODICHLOROMETHANE	UG/L	: 2
2105	CHLORODIBROMOMETHANE	UG/L	: 1
2104	BROMOFORM	UG/L	: 1.0K

012

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

AMPLE NUMBER : D614872
AMPLING POINT DESC. : 1196/NORTH PARK PWD/WELL #5[redacted] TULLET

UBMITTING SOURCE # : 201550001 SITE # : 961028
ATE COLLECTED : 961118 TIME COLLECTED : 1330 SAMPLING PROGRAM : MT

OLLECTED BY : M.KRAUSE DELIVERED BY : UPS
OMMENTS : THMS/MAXIMUM TRIHALOMETHANE POTENTIAL
UNDING CODE : PW32 AGENCY ROUTING : -- UNIT CODE :
AM TYPE CODE : DPWS SAMPLE PURPOSE CODE : 1 REPORTING INDICATOR : B

ATE RECEIVED : 961119 TIME RECEIVED : 0900 RECEIVED BY : GLS
AB OBSERVATIONS : 3-40-ML POTENTIAL TRIP BL SAM# : 0614873
UPERVISORS INITIALS : RTN NOTE : K = LESS THAN VALUE

32106	CHLOROFORM	UG/L	: 12
32101	BROMODICHLOROMETHANE	UG/L	: 8
32105	CHLORODIBROMOMETHANE	UG/L	: 6
32104	BROMOFORM	UG/L	: 1

O2>

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MPLE NUMBER : D600914
NG POINT DESC. : 1195/NORTH PARK PWD/WELL # 5

BMITTING SOURCE # : 201550001 SITE # : 960104
TE COLLECTED : 960122 TIME COLLECTED : 1040 SAMPLING PROGRAM : MT

LLECTED BY : L.ELLIS DELIVERED BY : UPS
MMENTS : THMS/MAXIMUM TRIHALOMETHANE POTENTIAL REPLACEMENT
NDING CODE : PW32 AGENCY ROUTING : -- UNIT CODE :
M TYPE CODE : DPWS SAMPLE PURPOSE CODE : 3 REPORTING INDICATOR : B

TE RECEIVED : 960123 TIME RECEIVED : 0900 RECEIVED BY : GLS
B OBSERVATIONS : 3-40-ML POTENTIAL TRIP BL SAM# : D600915
PERVISORS INITIALS : RTN NOTE : K = LESS THAN VALUE

2106	CHLOROFORM	UG/L : 12
2101	BROMODICHLOROMETHANE	UG/L : 11
2105	CHLORODIBROMOMETHANE	UG/L : 7
2 4	BROMOFORM	UG/L : 2

32