LEGEND

- Update III Soil Sample
- Update II Soil Sample

* *Nature and Extent of contaminants defined using Update III Data for risk purposes only.*

- Storm Sewer
- Storm Sewer Manhole Cover
- Storm Sewer Catch Basin
- Sanitary Sewer
- Sanitary Sewer Manhole Cover
- Sanitary Sewer Sedimentation Structure
- Vernay Facility Boundary

Conceptual VOC Contours

- PCE in Soil > lowest screening criteria
- TCE in Soil > lowest screening criteria
- 1,2-DCP in Soil > lowest screening criteria
- cis-1,2-DCE in Soil > lowest screening criteria
- 1,2-DCE(total) in Soil > lowest screening criteria
- VC in Soil > lowest screening criteria

The following VOCs detected in soil exceed the lowest screening criteria evaluated during the Phase II RFI:

Sampling Media Exceeding Screening Criteria	Chemical Group	Chemical	Industrial Criteria (TR=1E-5 & HQ=1) (mg/kg)	Industrial Soil Volatilization to Indoor Air Criteria (TR=1E-5 & HQ =1) (mg/kg)	Migration to GW (based on Drinking Water) (TR = 1E-5) Criteria (mg/kg)	Residential Criteria (TR=1E-5 & HQ=1) (mg/kg)
On-Facility Soil	VOC (Update III)	Vinyl Chloride (VC)		2.59E-02	8.00E-01	
	VOC (Update III)	Trichloroethene (TCE)		1.50E+00	2.00E+00	
	VOC (Update III)	Tetrachloroethene (PCE)	3.40E+01	4.53E-01	2.00E+00	
	VOC (Update III)	Methylene Chloride (MC)		2.68E+00	2.00E+00	
	VOC (Update III)	cis-1,2-Dichloroethene (cis-1,2-DCE)		1.98E+00		
	VOC (Update III)	Carbon Tetrachloride (CT)		6.44E-02		
	VOC (Update III)	1,2-Dichloropropane (1,2-DCP)	7.40E+00	3.84E-01	2.00E+00	
	VOC (Update III)	1,2-Dichloroethene (total) (1,2-DCE total)		1.14E+00		
	VOC (Update III)	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)		5.35E+02		
Off-Facility Soil	VOC (Update III)	Tetrachloroethene (PCE)	3.40E+01		2.00E+00	1.50E+01
	VOC (Update III)	Trichloroethene (TCE)			2.00E+00	

mg/kg = milligram per kilogram
Blank cells indicate the screening criteria was not exceeded or not applicable

The screening criteria are discussed in the RFI Phase II report, Sections 3.1 to 3.7. A sample by sample comparison of the results to the screening criteria is provided in Appendix VII to the RFI Phase II report. A discussion on the use of the screening criteria for evaluating RFI data quantitatively is provided in the RFI Phase II report, Section 3.7. The potential for human exposure to constituents exceeding a screening criteria is discussed in Section 5.3, and the significance of any potential exposures is discussed in Section 5.5 of the Baseline Human Health Risk Assessment in the RFI Phase II report.

40 20 0 40
Feet

N

Only GP01-169 exceeds screening criteria for Carbon Tetrachloride in soil.

Only GP01-171 exceeds screening criteria for Methylene Chloride in soil.

Only GP01-019 exceeds screening criteria for Freon-113 in soil.

No exceedences detected in soil above a screening criteria along Dayton Street to the northeast

DAYTON STREET

DAYTON STREET

ELINON

PLANT 2

PLANT 3

SEPTIC TANK NW

SEPTIC TANK SE

GP01-169 GP02-077 GP01-112 GP01-158 GP01-137 GP01-172 GP01-113 GP01-114 GP01-043 GP01-088 GP01-087 GP01-089 GP01-042 GP01-120 GP01-155 GP01-041 GP01-171 GP01-149 GP01-154 GP01-153 GP01-164 GP01-085 GP01-086 GP01-027 GP01-051 GP01-004 GP01-026 GP01-119 GP01-044 GP01-045 GP01-046 GP01-118 GP01-047 GP01-025 GP01-053 GP01-115 GP01-039 GP01-024 GP01-129 GP01-130 GP01-054 GP01-093 GP01-152 GP01-030 GP01-030 GP01-150 GP01-131 GP01-055 GP01-117 GP01-165 GP01-092 GP01-091 GP01-090 GP01-032 GP01-079 GP01-128 GP01-050 GP01-099 GP01-142 GP01-017 GP01-141 GP01-143 GP01-098 GP01-064 GP01-066 GP01-065 GP01-102 GP01-101 GP01-122 GP01-103 GP01-097 RW01-06 RW01-04 RW01-04 GP01-018 GP01-116 GP01-052 GP01-069 GP01-123 GP01-144 GP01-019 GP01-040 GP01-070 GP01-145 GP01-096 GP01-071 GP01-080 GP01-021 GP01-022 GP01-073 GP01-094 GP01-023 GP01-166 GP01-074 GP01-121 GP01-059 GP01-132 GP01-034 GP01-058 GP01-057 GP01-056 GP01-033 GP01-037 GP01-151 GP01-063 GP01-062 GP01-061 GP01-060 GP01-035 GP01-067 GP01-077 GP01-078 GP01-076 GP02-096 GP02-097 GP02-098 GP02-071 GP02-072 GP02-099 GP02-073 GP02-102 GP02-053 GP02-101 GP02-100 GP02-088 GP02-105 GP02-104 GP02-103 GP02-054 GP01-111 GP01-163 GP01-108 GP02-074 GP01-124 GP01-162 GP01-161 GP01-125 GP01-107 GP01-126 GP02-075 GP02-076 GP01-173 GP01-158 GP01-160 GP01-048 GP01-159 GP01-157 GP01-127 GP01-106 GP01-049 GP01-105 GP01-100

TITLE	*CONCEPTUAL NATURE AND EXTENT OF VOCs IN SOIL DETECTED (mg/kg) ABOVE THE LOWEST SCREENING CRITERIA*
DATE: *12/21/04*	FIGURE: *8*
DRAWN BY: *ALH*	APPROVED BY: *KDK*
CLIENT: *VERNAY LABORATORIES, INC.*	
PROJECT NO.: *292.11.39*	

The Payne Firm, Inc.
Environmental Consultants
Cincinnati, Ohio

REFERENCE: *Greene County Auditors, Orthophotograph (2003); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83 / NAVD88)*

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LEGEND

- SVOC Soil Sample
- Storm Sewer
- Storm Sewer Manhole Cover
- Storm Sewer Catch Basin
- Sanitary Sewer
- Sanitary Sewer Manhole Cover
- Sanitary Sewer Sedimentation Structure
- Vernay Facility Boundary

The following VOCs detected in soil exceed the lowest screening criteria evaluated during the Phase II RFI:

Sampling Media Exceeding Screening Criteria	Chemical Group	Chemical	Industrial Criteria (TR=1E-5 & HQ=1) (mg/kg)	Residential Criteria (TR=1E-5 & HQ=1) (mg/kg)
On-Facility Soil	SVOC	Benzo(a)pyrene	2.10E+00	
	SVOC	Dibenz(a,h)anthracene	2.10E+00	
Off-Facility Soil	SVOC	Benzo(a)pyrene	2.10E+00	6.20E-01

mg/kg = milligram per kilogram
Blank cells indicate the screening criteria was not exceeded or not applicable

The screening criteria are discussed in the RFI Phase II report, Sections 3.1 to 3.7. A sample by sample comparison of the results to the screening criteria is provided in Appendix VII to the RFI Phase II report. A discussion on the use of the screening criteria for evaluating RFI data quantitatively is provided in the RFI Phase II report, Section 3.7. The potential for human exposure to constituents exceeding a screening criteria is discussed in Section 5.3, and the significance of any potential exposures is discussed in Section 5.5 of the Baseline Human Health Risk Assessment in the RFI Phase II report.

Conceptual SVOC Contours

Benzo(a)pyrene in Soil > lowest screening criteria

60 30 0 60
Feet

N

DAYTON STREET

PLANT 2

PLANT 3

SEPTIC TANK NW
SEPTIC TANK SE

LENON

Only GP01-064 exceeds screening criteria for Benzo(a)pyrene and Dibenz(a,h)anthracene in soil.

TITLE	CONCEPTUAL NATURE AND EXTENT OF SVOCs IN SOIL DETECTED (mg/kg) ABOVE THE LOWEST SCREENING CRITERIA
DATE	12/21/04
FIGURE	9
DRAWN BY	ALH
APPROVED BY	KDK
CLIENT	VERNAY LABORATORIES, INC.
PROJECT NO.	292.11.39
	The Payne Firm, Inc. Environmental Consultants Cincinnati, Ohio
REFERENCE	Greene County Auditors, Orthophotograph (2003); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83 / NAVD88)

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The current understanding of the distribution of PCE in the upper & middle portions of the Cedarville Aquifer shown on this figure was determined utilizing the analytical data obtained from monitoring wells through the Fourth Quarter 2004. PCE was not detected above a reporting limit in the lower portion of the Cedarville Aquifer during the Fourth Quarter 2004.

PCE is a Contaminant of Interest above the maximum contaminant level for PCE in drinking water of 5 ug/L.

No PCE Detected from Direct-Push Samples in the Upper CA

No PCE Detected from Direct-Push Samples in the Upper CA

No PCE Detected from Direct-Push Samples in the Upper CA

No PCE Detected from Direct-Push Samples in the Upper CA

DAYTON STREET

DAYTON STREET

PLANT 3

PLANT 2

OMAR CIRCLE

OMAR CIRCLE

EENON

LAWSON PLACE

SUNCREST DRIVE

GREEN STREET

WRIGHT STREET

WRIGHT STREET

BARBARA STREET

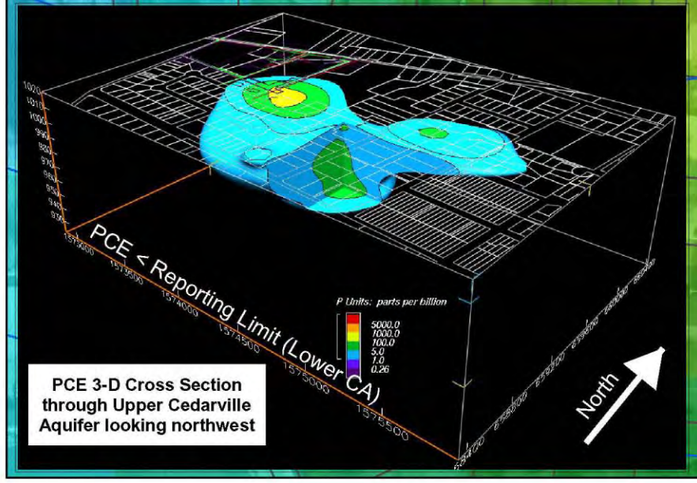
W N COLLEGE STREET

W S COLLEGE STREET

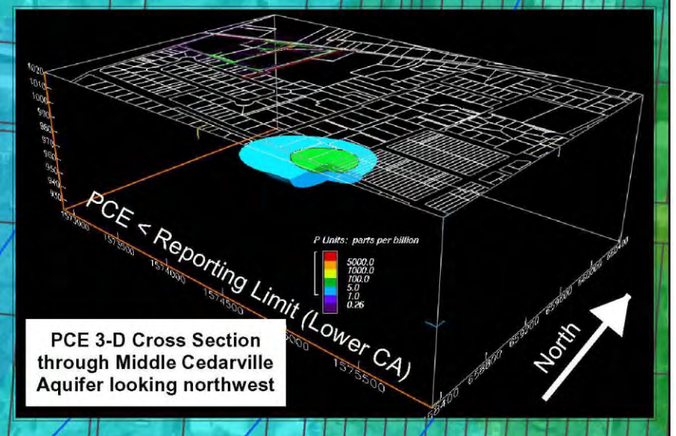
ZONE OF HIGHER HYDRAULIC CONDUCTIVITY

MW01-01 <1
MW01-02 <1
MW01-02CD <1
MW01-02SE <1
MW01-03 0.87J
MW01-03CD <1
MW01-04 120
MW01-04CD 350
MW01-04SE 0.21J
MW01-05 1.6
MW01-05CD 1.1
MW01-06 6.3
MW01-07 <1
MW01-08 <1
MW01-09 1.1
MW01-10 640
MW01-11 <1
MW01-14 440
RW01-05 5800
CW01-01 800
CW01-02 94
MW02-01 <1
MW02-02 <1
MW02-03 0.38J
MW02-03CD <1
MW02-03SE <1
MW02-04 <1
MW02-04CD <1
MW02-05 <1
MW02-05CD <1
MW02-06 18
MW02-06CD <1
MW02-07 <1
MW02-08 50
MW02-08CD 110
MW02-08SE <1
MW02-09 14
MW02-10 3.8
MW02-10CD <1
MW02-11 <1
MW02-11SE <1
MW02-12 2.7
MW02-13 2.7
MW02-14 <1
MW02-14CD 1.6
MW02-15 <1
MW02-15CD <1
MW02-16 1.2
MW02-16CD 0.58J
MW02-17 0.57J
MW02-17CD <1
MW02-18 <1
MW02-18CD <1
MW02-759 Dayton Street <1

1010 1011 1012 1013 1014 1015 1016 1017



PCE 3-D Cross Section through Upper Cedarville Aquifer looking northwest



PCE 3-D Cross Section through Middle Cedarville Aquifer looking northwest

LEGEND

VOCs

- PCE Contour Lines above a Reporting Limit in the Upper and Middle Cedarville Aquifer (Q4-2004)
- PCE Not Detected Above a Reporting Limit in the Lower Cedarville Aquifer (Q4-2004)
- 1.2 PCE Analytical Result posted next to well (Q4-2004)
- <1 Not detected above the laboratory reporting limit

Sampling Locations

- CA Extraction Well
- Upper CA Monitoring Well
- Middle CA Monitoring Well
- Lower CA Monitoring Well
- CA = Cedarville Aquifer
- Vernay Facility Boundary

PCE = Tetrachloroethene
ug/L = micrograms per Liter

Hydrogeology

- 1014 Potentiometric Ground Water Elevation from the Cedarville Aquifer Measured October 13, 2004. (2 Foot Contour Interval)
- Particle Track (October 2004)

125 62.5 0 125 Feet

K in feet per year
6000.0 5750.0 5500.0 5250.0 5000.0 4750.0 4500.0 4250.0 4000.0 3750.0 3500.0 3250.0 3000.0 2750.0 2500.0 2250.0 2000.0 1750.0 1500.0 1250.0 1000.0 750.0 500.0 250.0 0.0
Increasing Hydraulic Conductivity

N

The Payne Firm, Inc.
Environmental Consultants
Cincinnati, Ohio

CLIENT	VERNAY LABORATORIES, INC.
TITLE	CONCEPTUAL NATURE AND EXTENT OF PCE DETECTED (ug/L) IN THE CEDARVILLE AQUIFER (Q4-2004)
FIGURE NO.	10
DRAWN BY	ALH
PROJECT NO.	292.11.39
APPROVED BY	KDK
DATE	11/17/04

REFERENCE Greene County Auditors, Orthophotograph (2003); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83/NAVD88)

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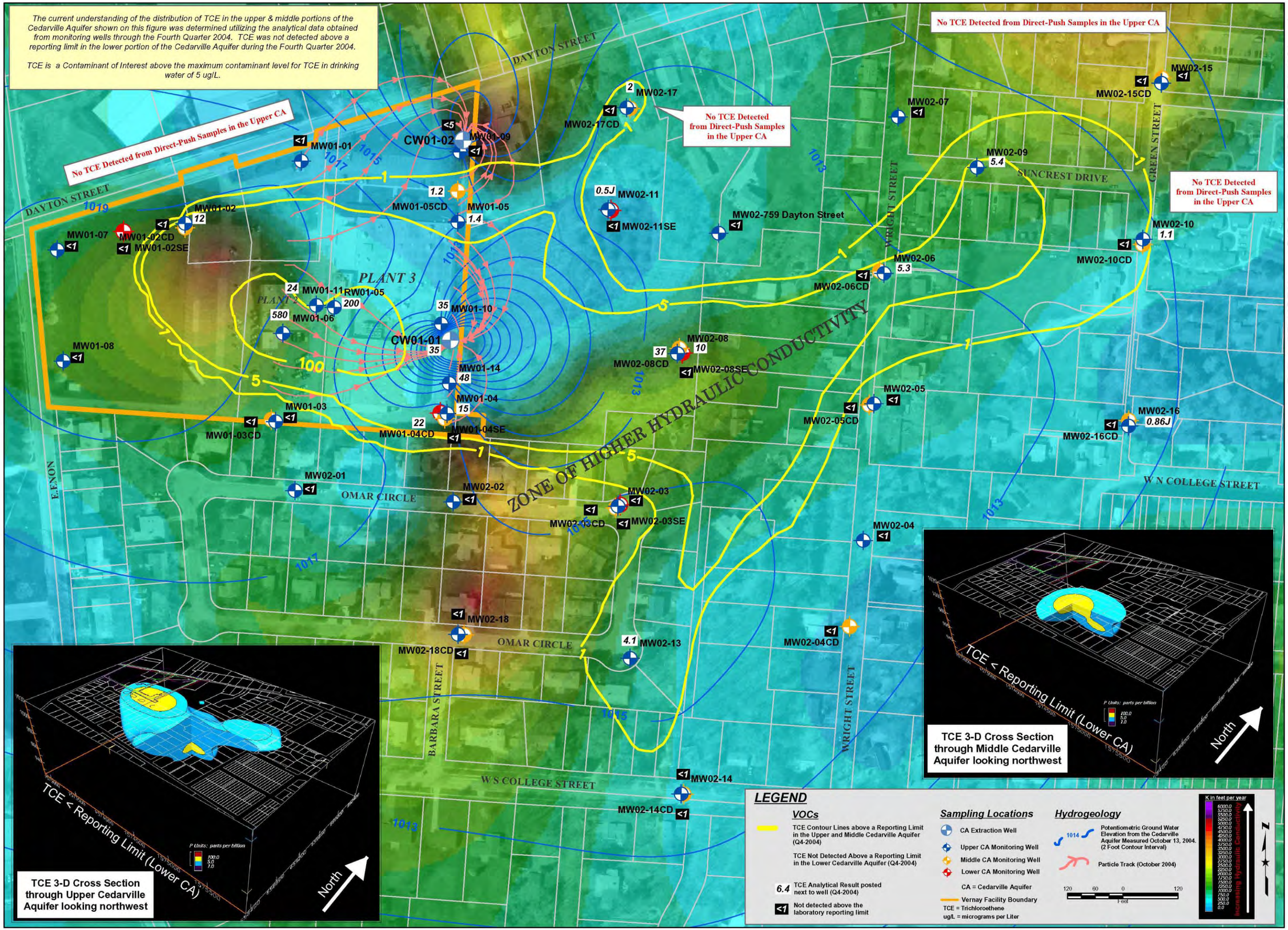
The current understanding of the distribution of TCE in the upper & middle portions of the Cedarville Aquifer shown on this figure was determined utilizing the analytical data obtained from monitoring wells through the Fourth Quarter 2004. TCE was not detected above a reporting limit in the lower portion of the Cedarville Aquifer during the Fourth Quarter 2004.

TCE is a Contaminant of Interest above the maximum contaminant level for TCE in drinking water of 5 ug/L.

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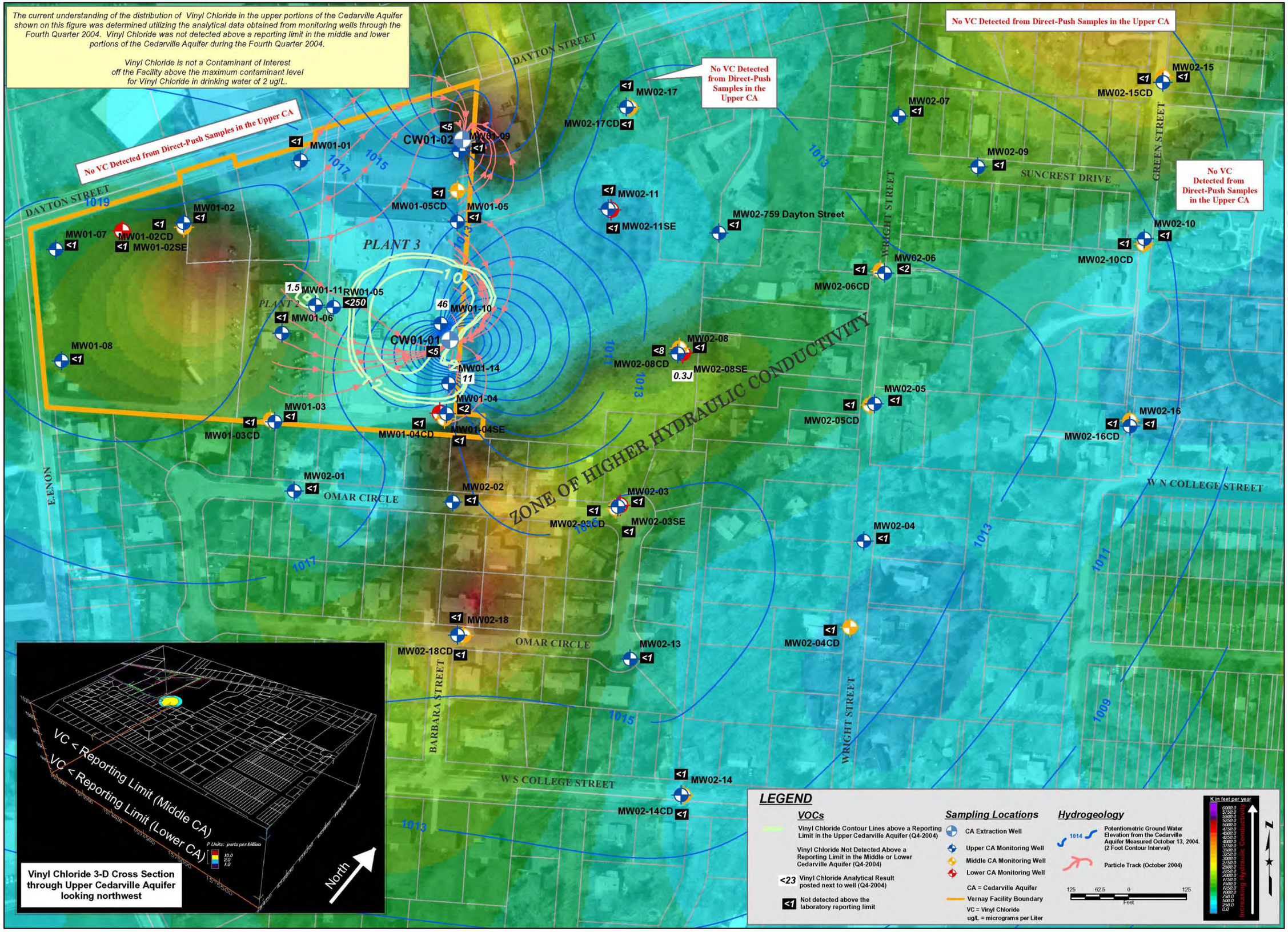
Environmental Consultants
Cincinnati, Ohio

CLIENT	VERNAY LABORATORIES, INC.	FIGURE NO.	11
TITLE	CONCEPTUAL NATURE AND EXTENT OF TCE DETECTED (ug/L) IN THE CEDARVILLE AQUIFER (Q4-2004)	DRAWN BY	ALH
		PROJECT NO.	292.11.39
		DATE	11/19/04
		APPROVED BY	KDK

REFERENCE Greene County Auditors, Orthophotograph (2003); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83/NAVD88)



The Payne Firm, Inc.
Environmental Consultants
Cincinnati, Ohio

CLIENT	VERNAY LABORATORIES, INC.	FIGURE NO.	12
TITLE	CONCEPTUAL NATURE AND EXTENT OF VINYL CHLORIDE DETECTED (ug/L) IN THE CEDARVILLE AQUIFER (Q4-2004)	DRAWN BY	ALH
		PROJECT NO.	292.11.39
		DATE	11/17/04
		APPROVED BY	KDK

REFERENCE Greene County Auditors, Orthophotograph (2003); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83/NAVD88)

The current understanding of the distribution of 1,2-DCP in the upper portion of the Cedarville Aquifer shown on this figure was determined utilizing the analytical data obtained from monitoring wells through the Fourth Quarter 2004. 1,2-DCP was not detected above a reporting limit in the middle and lower portions of the Cedarville Aquifer during the Fourth Quarter 2004.

1,2-DCP is not a Contaminant of Interest On or Off the Facility above a screening criteria. The Maximum Contaminant Level for 1,2-DCP in drinking water is 5 ug/L.

No 1,2-DCP Detected from Direct-Push Samples in the Upper CA

No 1,2-DCP Detected from Direct-Push Samples in the Upper CA

No 1,2-DCP Detected from Direct-Push Samples in the Upper CA

No 1,2-DCP Detected from Direct-Push Samples in the Upper CA

DAYTON STREET

DAYTON STREET

DAYTON STREET

SUNCREST DRIVE

GREEN STREET

WRIGHT STREET

WRIGHT STREET

BARBARA STREET

E.ENON

OMAR CIRCLE

OMAR CIRCLE

W N COLLEGE STREET

W S COLLEGE STREET

PLANT 3

PLANT 2

ZONE OF HIGHER HYDRAULIC CONDUCTIVITY

MW01-01 <1

MW01-02 980

MW01-02CD <1

MW01-02SE <1

MW01-03 <1

MW01-03CD <1

MW01-04 <1

MW01-04CD <1

MW01-04SE <1

MW01-05 0.18J

MW01-05CD 0.29J

MW01-06 <1

MW01-07 <1

MW01-08 <1

MW01-09 <1

MW01-10 <20

MW01-11 0.37J

MW01-14 <1

RW01-05 <250

CW01-01 <5

CW01-02 <5

MW02-01 <1

MW02-02 <1

MW02-03 <1

MW02-03CD <1

MW02-03SE <1

MW02-04 <1

MW02-04CD <1

MW02-05 <1

MW02-05CD <1

MW02-06 <2

MW02-06CD <1

MW02-07 <1

MW02-08 <1

MW02-08CD <8

MW02-08SE <1

MW02-09 <1

MW02-10 <1

MW02-10CD <1

MW02-11 <1

MW02-11SE <1

MW02-13 <1

MW02-14 <1

MW02-14CD <1

MW02-15 <1

MW02-15CD <1

MW02-16 <1

MW02-16CD <1

MW02-17 1.8

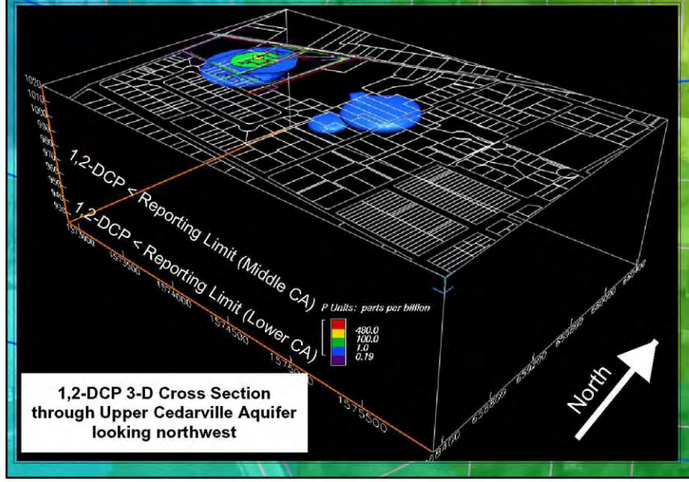
MW02-17CD <1

MW02-18 <1

MW02-18CD <1

MW02-759 Dayton Street <1

1019 1017 1015 1013 1011 1009



1,2-DCP 3-D Cross Section through Upper Cedarville Aquifer looking northwest

LEGEND

VOCs

- 1,2-DCP Contour Lines above a Reporting Limit in the Upper Cedarville Aquifer (Q4-2004)
- 1,2-DCP Not Detected Above a Reporting Limit in the Middle or Lower Cedarville Aquifer (Q4-2004)
- 1.5 1,2-DCP Analytical Result posted next to well (Q4-2004)
- <1 Not detected above the laboratory reporting limit

Sampling Locations

- CA Extraction Well
- Upper CA Monitoring Well
- Middle CA Monitoring Well
- Lower CA Monitoring Well
- CA = Cedarville Aquifer
- Vernay Facility Boundary
- 1,2-DCP = 1,2-Dichloropropane
- ug/L = micrograms per Liter

Hydrogeology

- 1014 Potentiometric Ground Water Elevation from the Cedarville Aquifer Measured October 13, 2004. (2 Foot Contour Interval)
- Particle Track (October 2004)

120 60 0 120 Feet

K in feet per year (Increasing Hydraulic Conductivity)

6000.0 5750.0 5500.0 5250.0 5000.0 4750.0 4500.0 4250.0 4000.0 3750.0 3500.0 3250.0 3000.0 2750.0 2500.0 2250.0 2000.0 1750.0 1500.0 1250.0 1000.0 750.0 500.0 250.0 0.0

N

E:\Data\PEL\MGT\Vernay\GIS\Contours\2004-Q4\DCP_Q4-2004.mxd

CLIENT	VERNAY LABORATORIES, INC.
TITLE	CONCEPTUAL NATURE AND EXTENT OF 1,2-DCP DETECTED (ug/L) IN THE CEDARVILLE AQUIFER (Q4-2004)
FIGURE NO.	13
DRAWN BY	ALH
PROJECT NO.	292.11.39
DATE	11/17/04
APPROVED BY	KDK

The Payne Firm, Inc.
Environmental Consultants
Cincinnati, Ohio

REFERENCE Greene County Auditors, Orthophotograph (2003); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83/NAVD88)

LEGEND

- Cedarville Aquifer Extraction Well
- Upper Cedarville Aquifer Monitoring Well
- Middle Cedarville Aquifer Monitoring Well (CD)
- Lower Cedarville Aquifer Monitoring Well (SE)
- Unconsolidated Unit Monitoring Well
- Sewer Backfill Monitoring Well
- Surface Water Sampling Location
- Vernay Facility Boundary
- Post-RFI Semiannual Sampling Location

240 120 0 240
Feet

N

MW02-860 Dayton
MW01-13
MW01-12
MW01-01
CW01-02
MW01-09
MW01-05CD
MW01-05
MW01-02SE
MW01-02
MW01-07
MW01-02CD
MW01-11
PLANT 2
RW01-05
MW01-10
MW01-06
CW01-01
MW01-08
MW01-14
MW01-04SE
MW01-04
MW01-03CD
MW01-03
MW01-04CD
MW02-01
MW02-02
MW02-03CD
MW02-03SE
MW02-03
PLANT 3
MW02-12
MW02-17
MW02-17CD
MW02-11
MW02-11SE
MW02-759 Dayton
MW02-08CD
MW02-08
MW02-08SE
MW02-06CD
MW02-06
MW02-18
MW02-18CD
MW02-13
MW02-14
MW02-14CD
MW02-07
MW02-09
MW02-15CD
MW02-15
MW02-10
MW02-10CD
MW02-05
MW02-05CD
MW02-16CD
MW02-16
MW02-04
MW02-04CD
ST02-05
DAYTON STREET
LIMESTONE STREET
WRIGHT STREET
SUNCREST DRIVE
OMAR CIRCLE
BARBARA STREET
W S COLLEGE STREET
W N COLLEGE STREET
W C COLLEGE STREET

The Payne Firm, Inc.
Environmental Consultants
Cincinnati, Ohio

DATE	10/22/04
APPROVED BY	KDK
DRAWN BY	ALH
PROJECT NO.	292.11.39
FIGURE NO.	14

CLIENT: VERNAY LABORATORIES, INC.

TITLE: POST-RFI SEMIANNUAL SAMPLING LOCATIONS

REFERENCE: Greene County Auditors, Orthophotograph (2003); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83/NAVD88)