# HAZARD RANKING SYSTEM (HRS) DOCUMENTATION RECORD- REVIEW COVER SHEET

Name of Site: West Vermont Drinking Water Contamination

U.S. EPA ID No. INN000510429

Date Prepared: September 2015

**Contact Persons**

Documentation Record: Mark Jaworski
Site Investigation Program, Federal Programs Section
Indiana Department of Environmental Management
(317) 233-2407

Pathways, Components, or Threats Not Scored

Surface Water Migration Pathway, Soil Exposure Pathway, and Air Migration Pathway:

The Surface Water Migration Pathway, Soil Exposure Pathway, and Air Migration Pathway were not scored as part of this Hazard Ranking System (HRS) evaluation. These pathways were not included because a release to these media does not significantly affect the overall score and because the ground water pathway produces an overall score above the minimum requirement for the West Vermont Drinking Water Contamination to qualify for inclusion on the National Priorities List (NPL).

# HRS DOCUMENTATION RECORD

| | |
|---|---|
| Name of Site: | West Vermont Drinking Water Contamination |
| EPA Region: | 5 |
| Street Address*: | The intersection of West Vermont Street and Cossell Road, (Figure 1-3 of this HRS Documentation Record) |
| Date Prepared: | September, 2015 |
| City, County, State, Zip Code: | Indianapolis, Marion County, Indiana, 46222 |
| General Location in the State: | Central Indiana (Figure 1-1 of this HRS Documentation Record) |
| Topographic Map: | Indianapolis West, Indiana Quad (7.5') (Ref. 3) |
| Latitude: | 39.772453 North |
| Longitude: | 86.228934 West |
| Reference Point: | The intersection of West Vermont Street and Cossell Road. (Figure 1-3 of this HRS Documentation Record) |
| Congressional District: | 7 |

Scores for **West Vermont Drinking Water Contamination**

| | |
|---|---|
| Air Pathway | Not Scored |
| Ground Water Pathway | 100.00 |
| Soil Exposure Pathway | Not Scored |
| Surface Water Pathway | Not Scored |
| **HRS SITE SCORE** | **50.00** |

*The street address, coordinates, and contaminant locations presented in this HRS documentation record identify the general area the site is located. They represent one or more locations EPA considers to be part of the site based on the screening information EPA used to evaluate the site for NPL listing. EPA lists national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, disposed, or placed, or has otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.

**WORKSHEET FOR COMPUTING HRS SITE SCORE**

| | | S | $S^2$ |
|---|---|---|---|
| 1. | Ground Water Migration Pathway Score ($S_{gw}$) | 100.00 | 10,000.00 |
| 2a. | Surface Water Overland/Flood Migration Component (from Table 4-1, line 30) | NS* | |
| 2b. | Ground Water to Surface Water Migration Component (from Table 4-25, line 28) | NS | |
| 2c. | Surface Water Migration Pathway Score ($S_{sw}$) Enter the larger of lines 2a and 2b as the pathway score. | NS | |
| 3. | Soil Exposure Pathway Score ($S_s$) (from Table 5-1, line 22) | NS | |
| 4. | Air Migration Pathway Score ($S_a$) (from Table 6-1, line 12) | NS | |
| 5. | Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$ | | 10,000.00 |
| 6. | **HRS Site Score** Divide the value on line 5 by 4 and take the square root | | 50.00 |

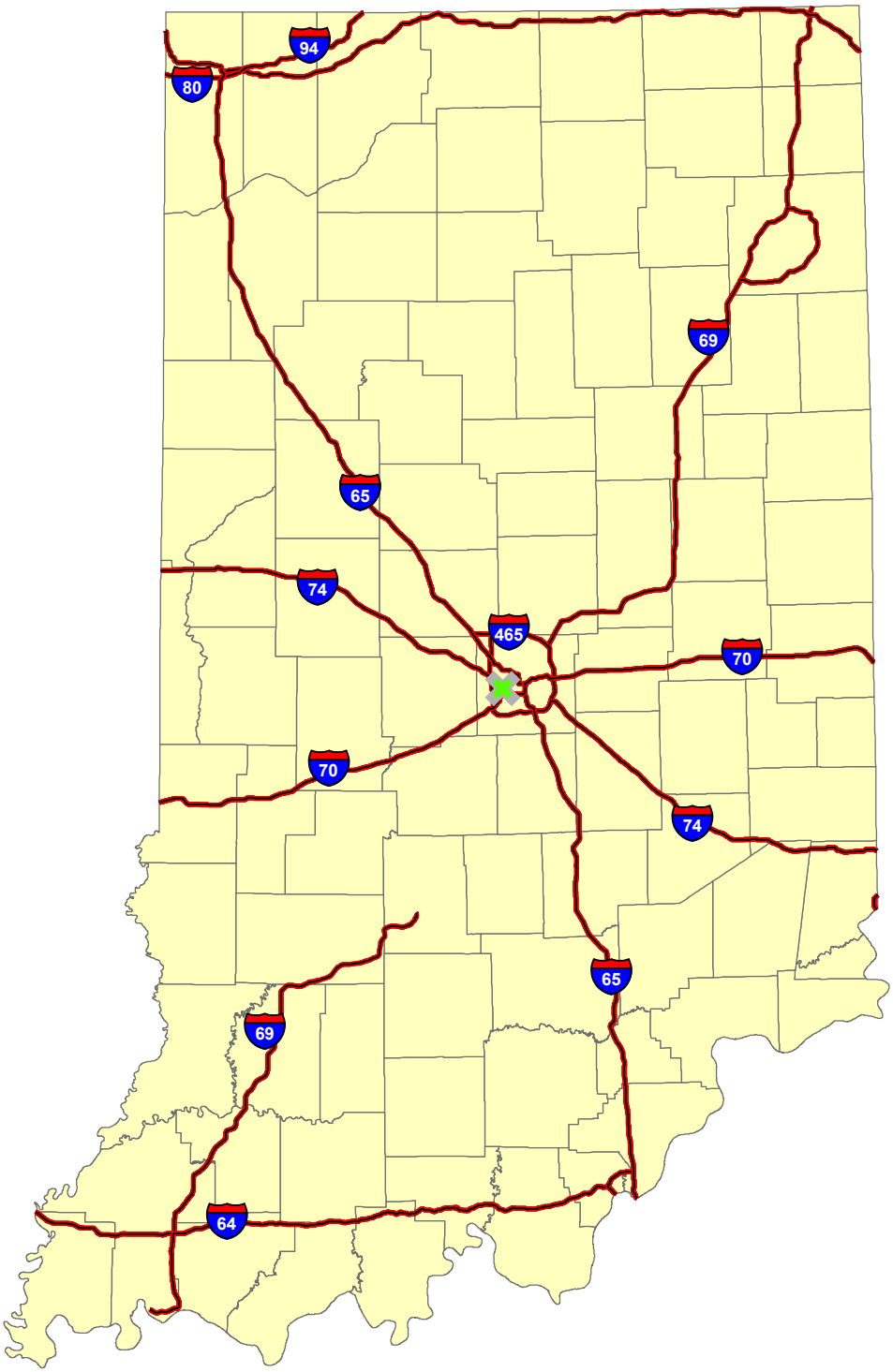
Notes: *NS = Not Scored

## HRS Table 3-1 –Ground Water Migration Pathway Scoresheet

| Factor Categories and Factors | Maximum Value | Value Assigned |
|---|---|---|
| **Likelihood of Release to an Aquifer:** | | |
| 1. Observed Release | 550 | 550 |
| 2. Potential to Release: | | |
| 2a. Containment | 10 | NS |
| 2b. Net Precipitation | 10 | NS |
| 2c. Depth to Aquifer | 5 | NS |
| 2d. Travel Time | 35 | NS |
| 2e. Potential to Release [lines 2a x (2b + 2c + 2d)] | 500 | NS |
| 3. Likelihood of Release (higher of lines 1 and 2e) | 550 | 550 |
| **Waste Characteristics:** | | |
| 4. Toxicity/Mobility | (a) | 10,000 |
| 5. Hazardous Waste Quantity | (a) | 100 |
| 6. Waste Characteristics | 100 | 32 |
| **Targets**: | | |
| 7. Nearest Well | 50 | 50 |
| 8. Population: | | |
| 8a. Level I Concentrations | (b) | 30 |
| 8b. Level II Concentrations | (b) | NS |
| 8c. Potential Contamination | (b) | 909 |
| 8d. Population (lines 8a + 8b + 8c) | (b) | 939 |
| 9. Resources | 5 | 0 |
| 10. Wellhead Protection Area | 20 | 0 |
| 11. Targets (lines 7 + 8d + 9 + 10) | (b) | 989 |
| **Ground Water Migration Score For An Aquifer:** | | |
| 12. Aquifer Score [(lines 3 x 6 x 11)/82,500][c]<br>550 x 32 x 989 =17,406,400/82,500 =210.9 | 100 | 100.00 |
| **Ground Water Migration Pathway Score:** | | |
| 13. Pathway Score ($S_{gw}$),<br>(highest value from line 12 for all aquifers evaluated)[c] | 100 | 100.00 |

(a) Maximum value applies to waste characteristics category
(b) Maximum value not applicable
[c] Do not round to nearest integer
NS - Not Scored

# West Vermont Drinking Water Contamination - EPA ID INN000510429
## Speedway, Marion County, Indiana




This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

**Mapped By:**
Shane Moore, Office of Land Quality
**Date:**04/28/2015

0 15 30 60 Kilometers
0 10 20 40 Miles

N W E S

Center of Site

Latitude: 39.7720520
Longitude: -86. 2294990

**Sources:**
**Non Orthophotography Data** - Obtained from the State of Indiana Geographical Information Office Library
**Orthophotography** - Obtained from Indiana Map Framework Data (www.indianamap.org)

**Map Projection:** UTM Zone 16 N
**Map Datum:** NAD83

# West Vermont Drinking Water Contamination INN000510429
## Ground Water Plume Map Showing Sample Concentrations of VOCs
## Speedway, Marion County, Indiana

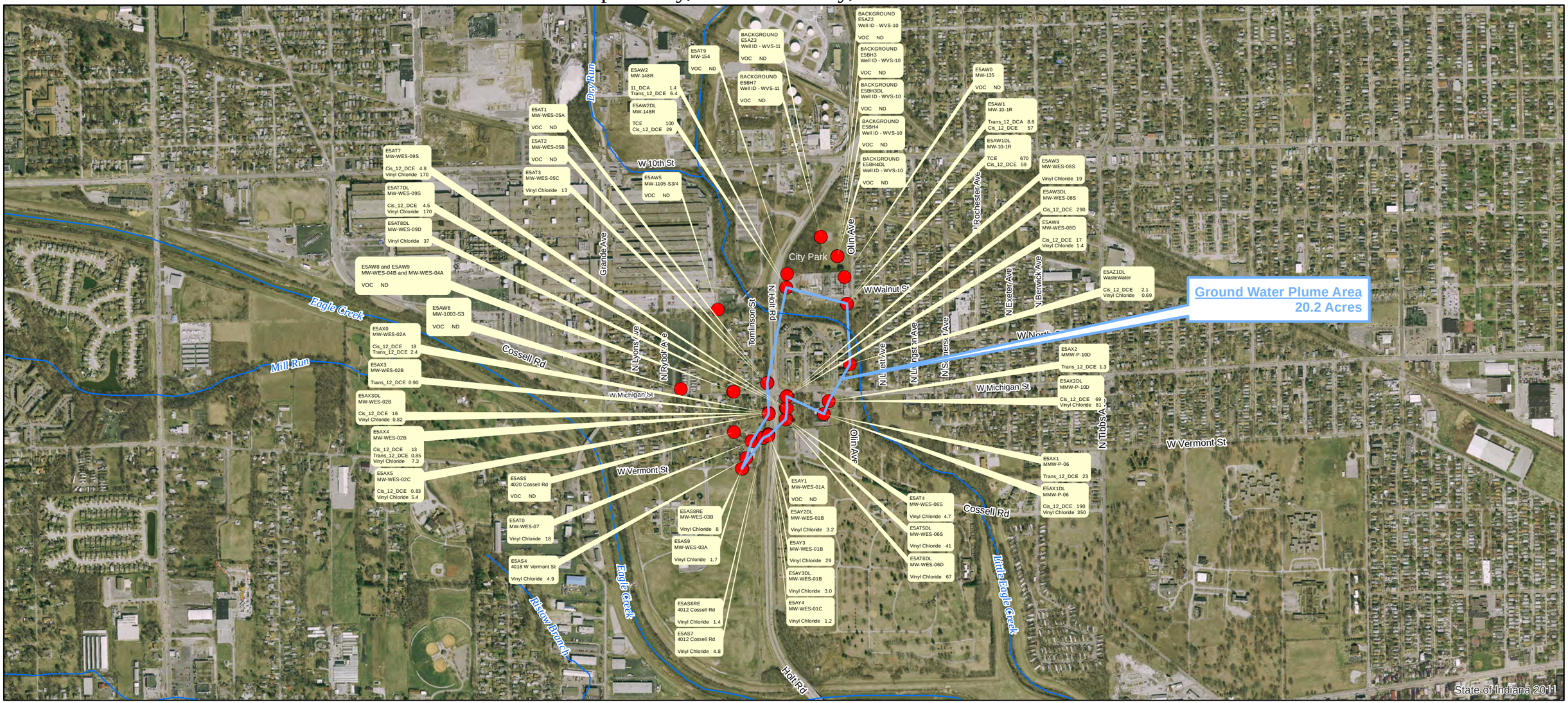



Figure 1-2
Marion County

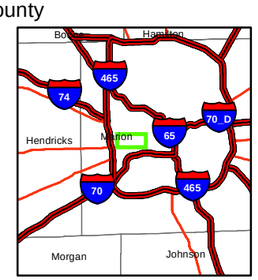
This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

**Mapped By:**
Shane Moore, Office of Land Quality
**Date:**08/17/2015

**Sources:**
**Non Orthophotography**
**Data** - Obtained from the State of Indiana Geographical Information Office Library
Samplling Data is from IDEM SampDB
**Orthophotography** - Obtained from Indiana Map Framework Data (www.indianamap.org)
**Map Projection:** UTM Zone 16 N **Map Datum:** NAD83

N
W E
S

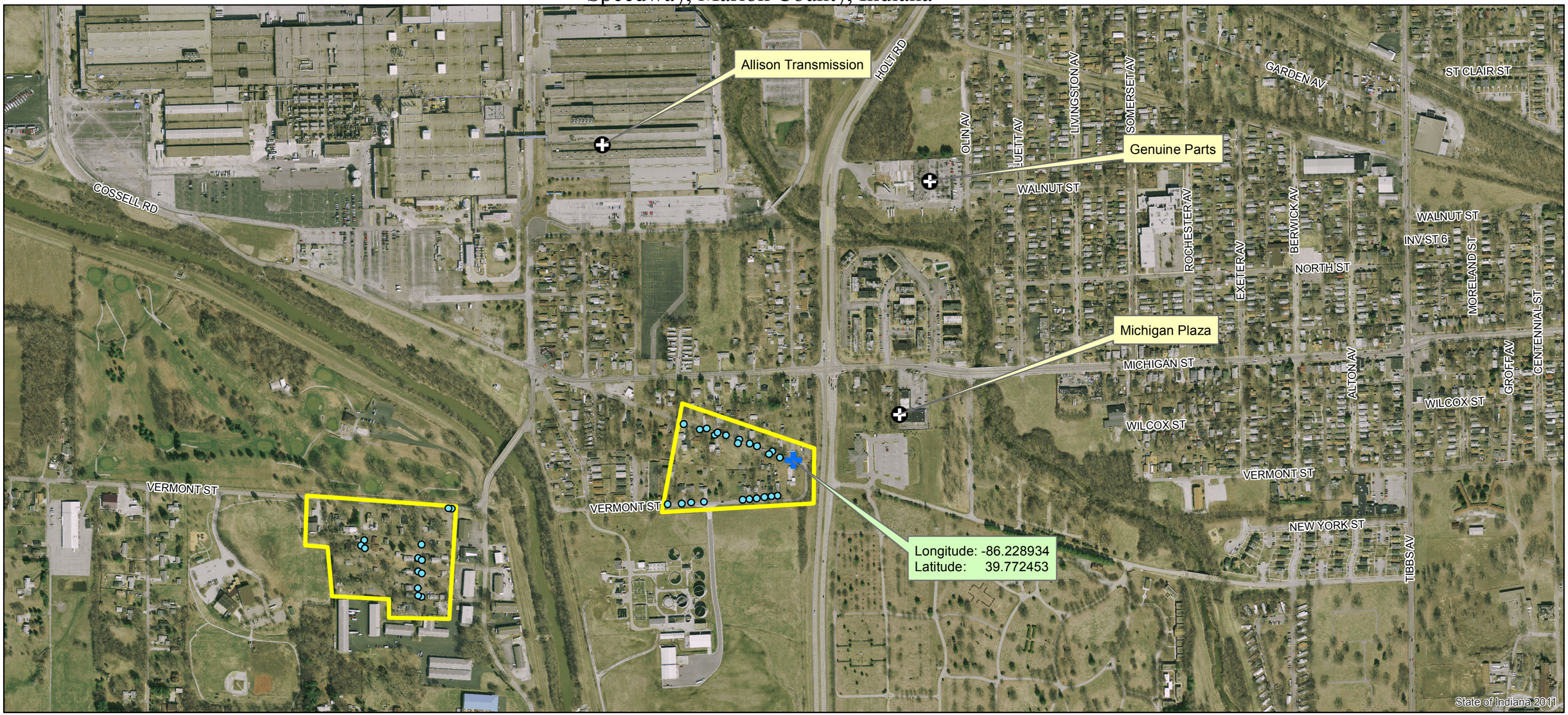
0 150 300 600 Meters
0 500 1,000 2,000 Feet




Sample Points (ug/L)
Approximate Ground Water Plume Boundary

*The Approximate Ground Water Plume was digitized by connecting sample locations with concentration levels of concern for contaminates*

# West Vermont Drinking Water Contamination With Near By Potential Sources
## Speedway, Marion County, Indiana




This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

**Mapped By:**
Shane Moore, Office of Land Quality
**Date:**01/13/2015

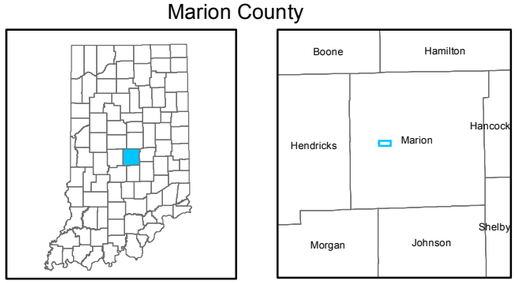
**Sources:**
**Non Orthophotography Data** - Obtained from the State of Indiana Geographical Information Office Library
**Orthophotography** - Obtained from Indiana Map Framework Data (www.indianamap.org)
**Map Projection:** UTM Zone 16 N **Map Datum:** NAD83

N
W E
S

0 87.5 175 350 Meters

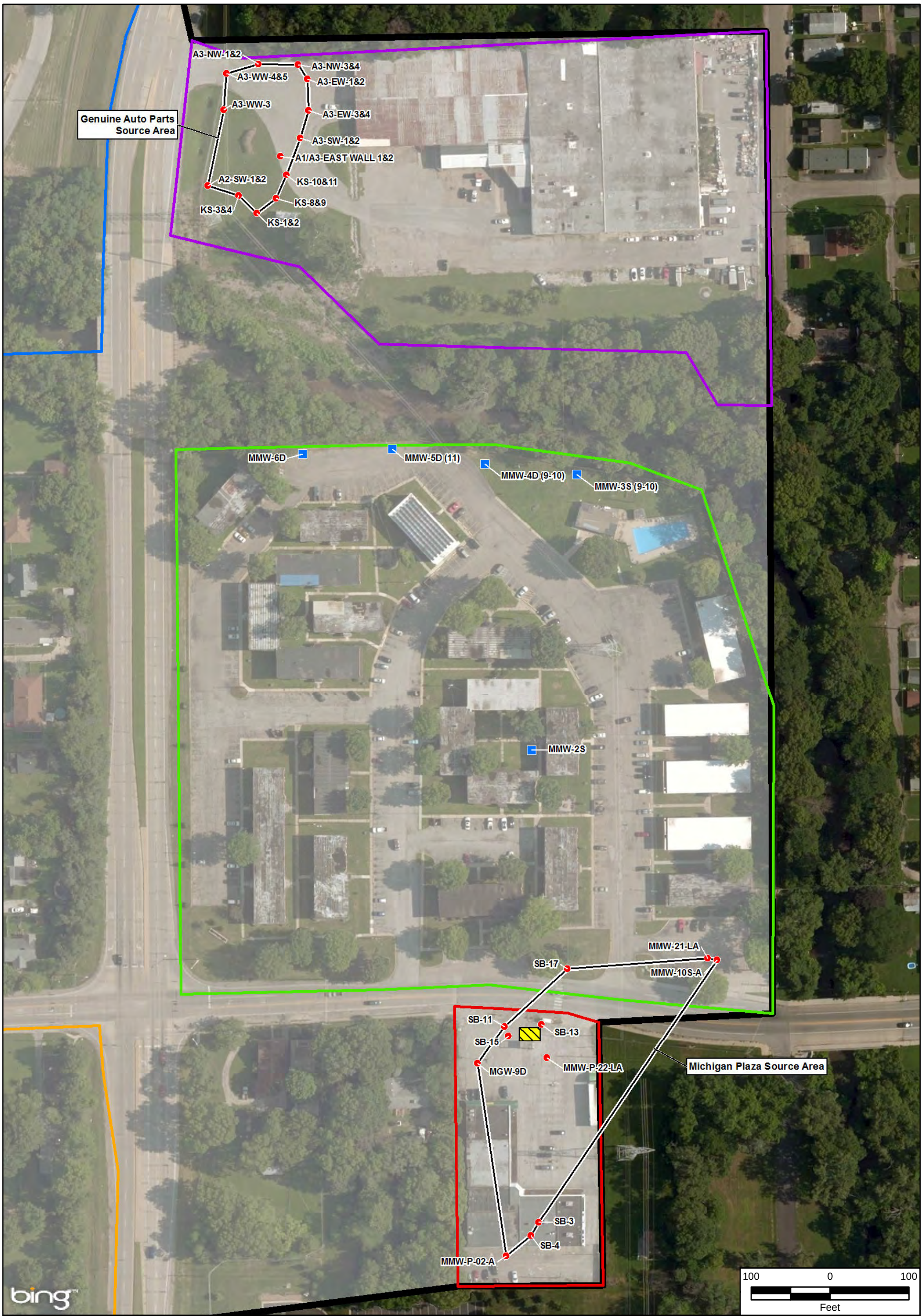
0 280 560 1,120 Feet

Marion County




- Residence of Concern
- West Vermont Drinking Water Contamination
- Potential Source
- Area of Residences Supplied by Private Ground Water Wells

IDEM
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
EST. 1986




**Legend**

- Soil Boring Location
- Background Sample Location
- Excavation Area
- Study Area
- Allison Transmission Site
- Genuine Auto Parts Site
- Michigan Plaza Site
- Michigan Meadow Apartments
- Residential Area

Source: Bing Maps Hybrid, 2011-2012

West Vermont Groundwater Contamination OS
West Vermont Street and Cossell Road
Speedway, Marion County, Indiana

***Figure 1-4***
***Source and Background Sampling Locations Map***

TETRA TECH

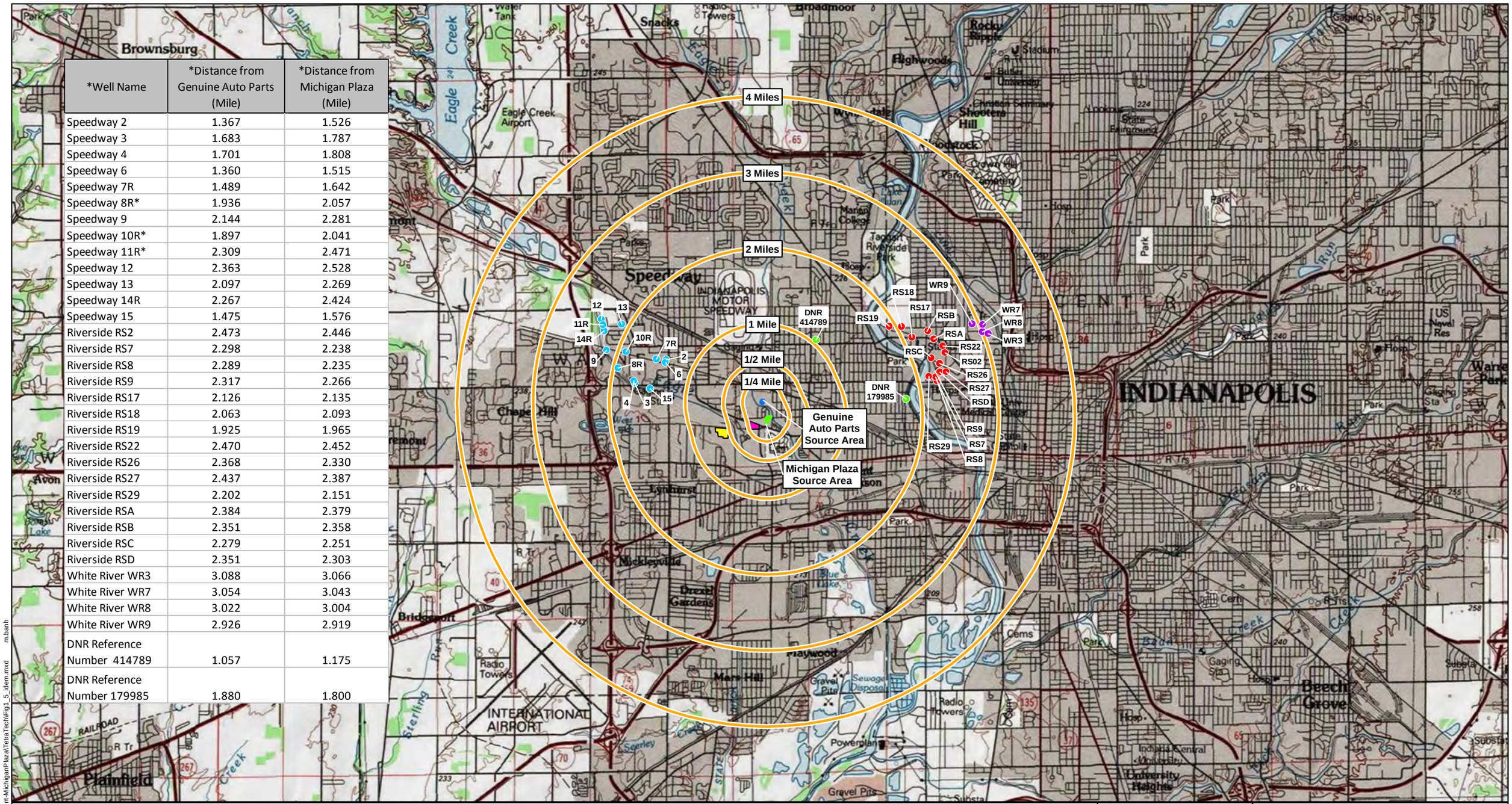
Prepared For: EPA | Prepared By: Tetra Tech Inc.

File Path: G:\G\G9026-START IV\Indiana\West Vermont\mxd\2015-03\Fig1-4_Source&BackgroundSamples.mxd

Date Saved: 4/16/2015 EPA Contract No.: EP-S5-13-01 TDD No.: S05/0001-1404-009

Coordinate System: NAD 1983 UTM Zone 16N Projection: Transverse Mercator Datum:North American 1983 Units: Foot US

| *Well Name | *Distance from Genuine Auto Parts (Mile) | *Distance from Michigan Plaza (Mile) |
|---|---|---|
| Speedway 2 | 1.367 | 1.526 |
| Speedway 3 | 1.683 | 1.787 |
| Speedway 4 | 1.701 | 1.808 |
| Speedway 6 | 1.360 | 1.515 |
| Speedway 7R | 1.489 | 1.642 |
| Speedway 8R* | 1.936 | 2.057 |
| Speedway 9 | 2.144 | 2.281 |
| Speedway 10R* | 1.897 | 2.041 |
| Speedway 11R* | 2.309 | 2.471 |
| Speedway 12 | 2.363 | 2.528 |
| Speedway 13 | 2.097 | 2.269 |
| Speedway 14R | 2.267 | 2.424 |
| Speedway 15 | 1.475 | 1.576 |
| Riverside RS2 | 2.473 | 2.446 |
| Riverside RS7 | 2.298 | 2.238 |
| Riverside RS8 | 2.289 | 2.235 |
| Riverside RS9 | 2.317 | 2.266 |
| Riverside RS17 | 2.126 | 2.135 |
| Riverside RS18 | 2.063 | 2.093 |
| Riverside RS19 | 1.925 | 1.965 |
| Riverside RS22 | 2.470 | 2.452 |
| Riverside RS26 | 2.368 | 2.330 |
| Riverside RS27 | 2.437 | 2.387 |
| Riverside RS29 | 2.202 | 2.151 |
| Riverside RSA | 2.384 | 2.379 |
| Riverside RSB | 2.351 | 2.358 |
| Riverside RSC | 2.279 | 2.251 |
| Riverside RSD | 2.351 | 2.303 |
| White River WR3 | 3.088 | 3.066 |
| White River WR7 | 3.054 | 3.043 |
| White River WR8 | 3.022 | 3.004 |
| White River WR9 | 2.926 | 2.919 |
| DNR Reference Number 414789 | 1.057 | 1.175 |
| DNR Reference Number 179985 | 1.880 | 1.800 |




- Riverside Well (RS)
- Speedway Well
- White River Well (WR)
- * DNR Well

- Area of Residences Supplied by Private Ground Water Wells - West Vermont Street/Cossell Road
- Area of Residences Supplied by Private Ground Water Wells - Fleming Street/Vine Street

Source area = outline of the outer most source sample locations.
Coordinate System = NAD 1983 State Plane Indiana East-Feet

IDEM

* = Indiana Department of Environmental Managment (IDEM) Addedl/Modified Information to Tetra Tech Figure 1-5 Map

Source: USGS 7.5-Minute Topographic Quadrangle Map, Indianapolis West, IN 1998

*This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

***Mapped By:** Shane Moore
Office of Land Quality
***Date Modified:** Aug. 3, 2015

N
0.5 0 0.5
Miles

West Vermont Groundwater Contamination OS
West Vermont Street and Cossell Road
Speedway, Marion County, Indiana

*** Figure 1-5**
***4-Mile Radius Map***
***Genuine Auto Parts and Michigan Plaza***

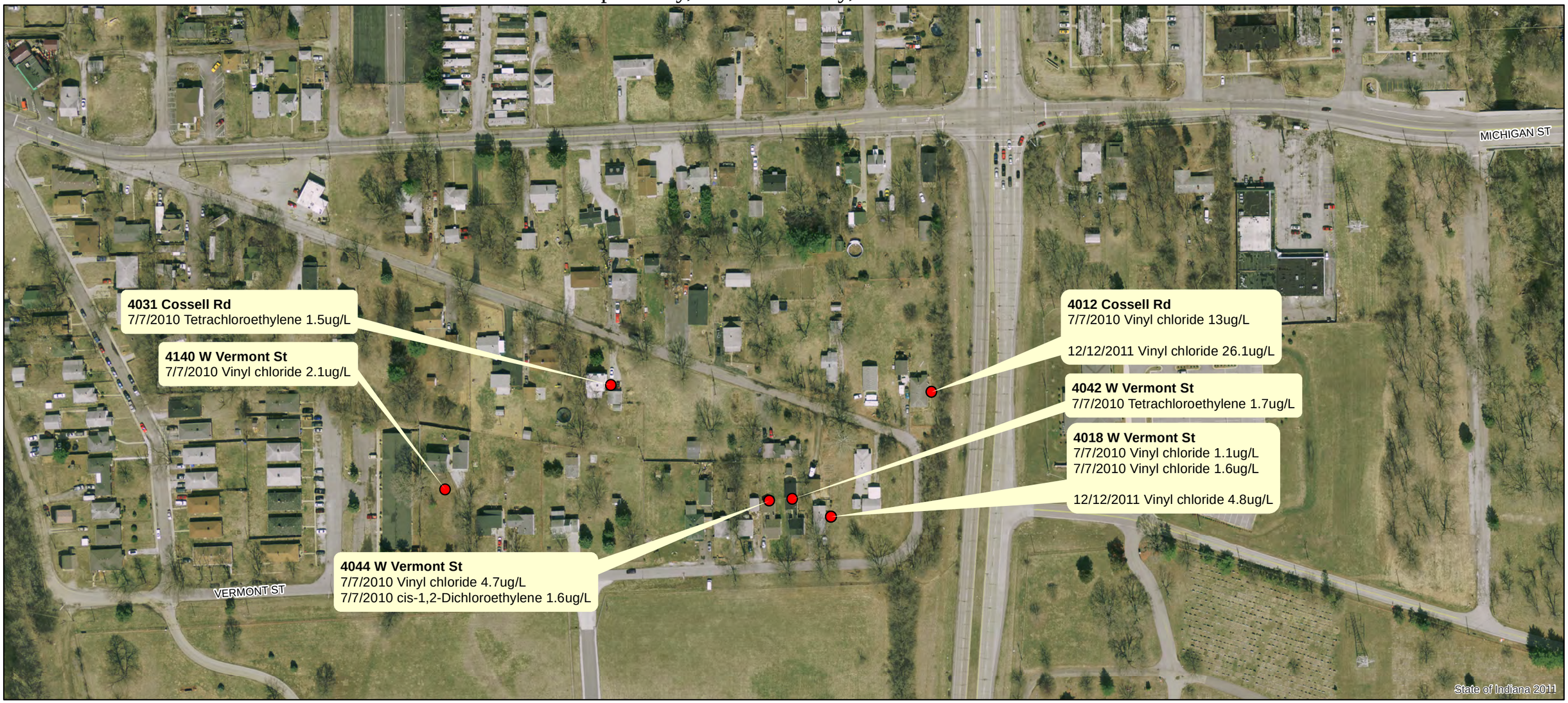
TETRA TECH

Prepared For: EPA | Prepared By: Tetra Tech Inc.

8/3/2015 X:\OL\OLQGIS\Projects\WestVermont-MichiganPlaza\TetraTech\Fig1_5_idem.mxd m.banh

Date Saved: 8/3/2015 EPA Contract No.: EP-S5-13-01 TDD No.: S05/0001-1404-009

# West Vermont Drinking Water Contamination
# EPA Residential Sampling
# Speedway, Marion County, Indiana

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**Mapped By:**
Shane Moore, Office of Land Quality
**Date:**04/13/2015

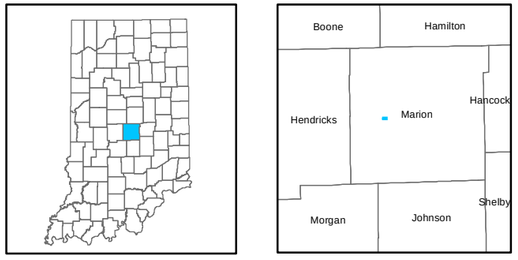
**Sources:**
**Non Orthophotography Data** - Obtained from the State of Indiana Geographical Information Office Library
Samplling Data is from IDEM SampDB
**Orthophotography** - Obtained from Indiana Map Framework Data (www.indianamap.org)
**Map Projection:** UTM Zone 16 N **Map Datum:** NAD83

N
W E
S

0 25 50 100 Meters

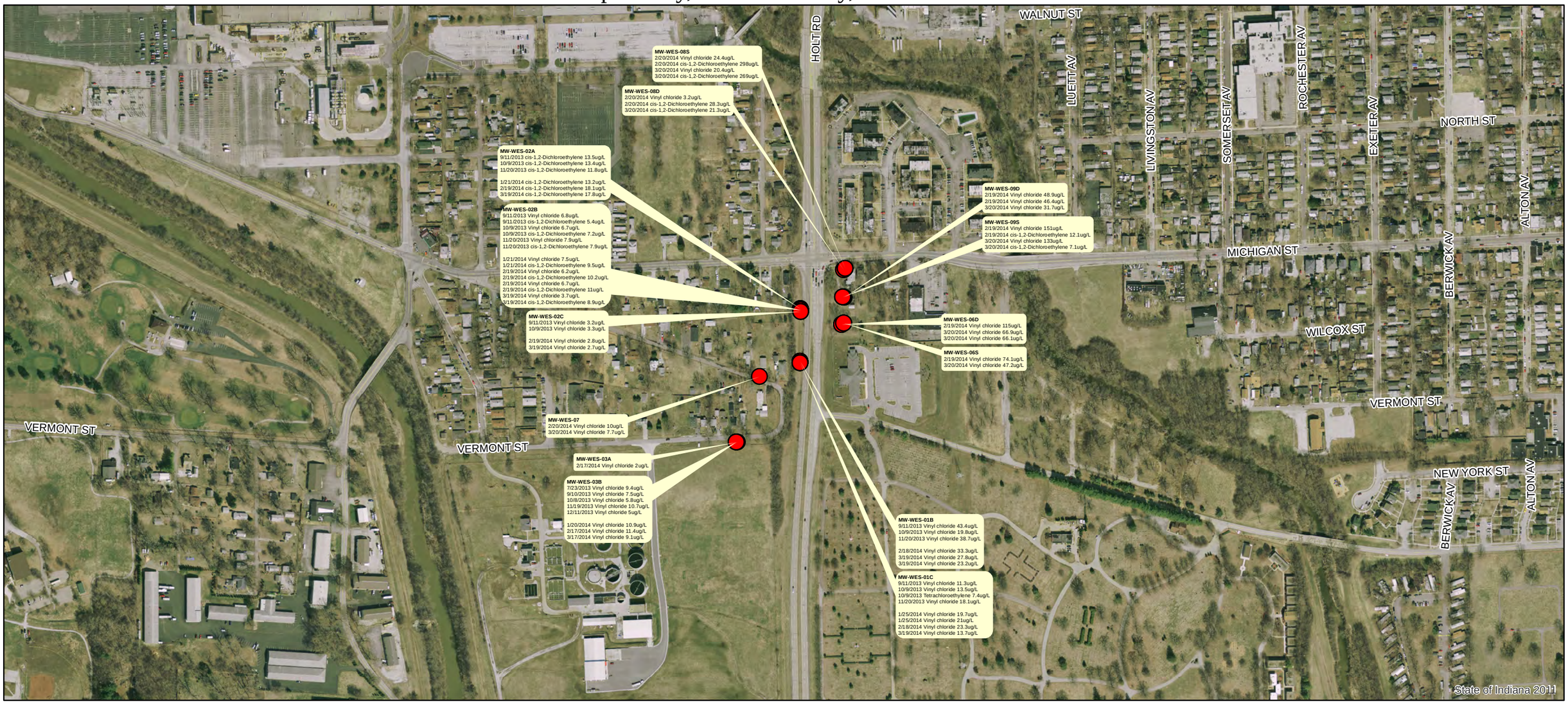
0 85 170 340 Feet

Marion County




Sampling Location

# West Vermont Drinking Water Contamination
# Monitoring Well Sampling - EPA 2013, 2014
# Speedway, Marion County, Indiana

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**Mapped By:**
Shane Moore, Office of Land Quality
**Date:**04/13/2015

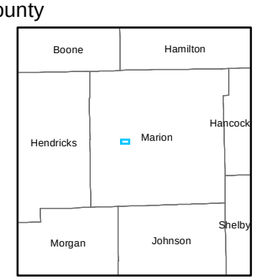
**Sources:**
**Non Orthophotography**
**Data** - Obtained from the State of Indiana Geographical Information Office Library
Samplling Data is from IDEM SampDB
**Orthophotography** - Obtained from Indiana Map Framework Data (www.indianamap.org)
**Map Projection:** UTM Zone 16 N **Map Datum:** NAD83

N
W E
S

0 62.5 125 250 Meters

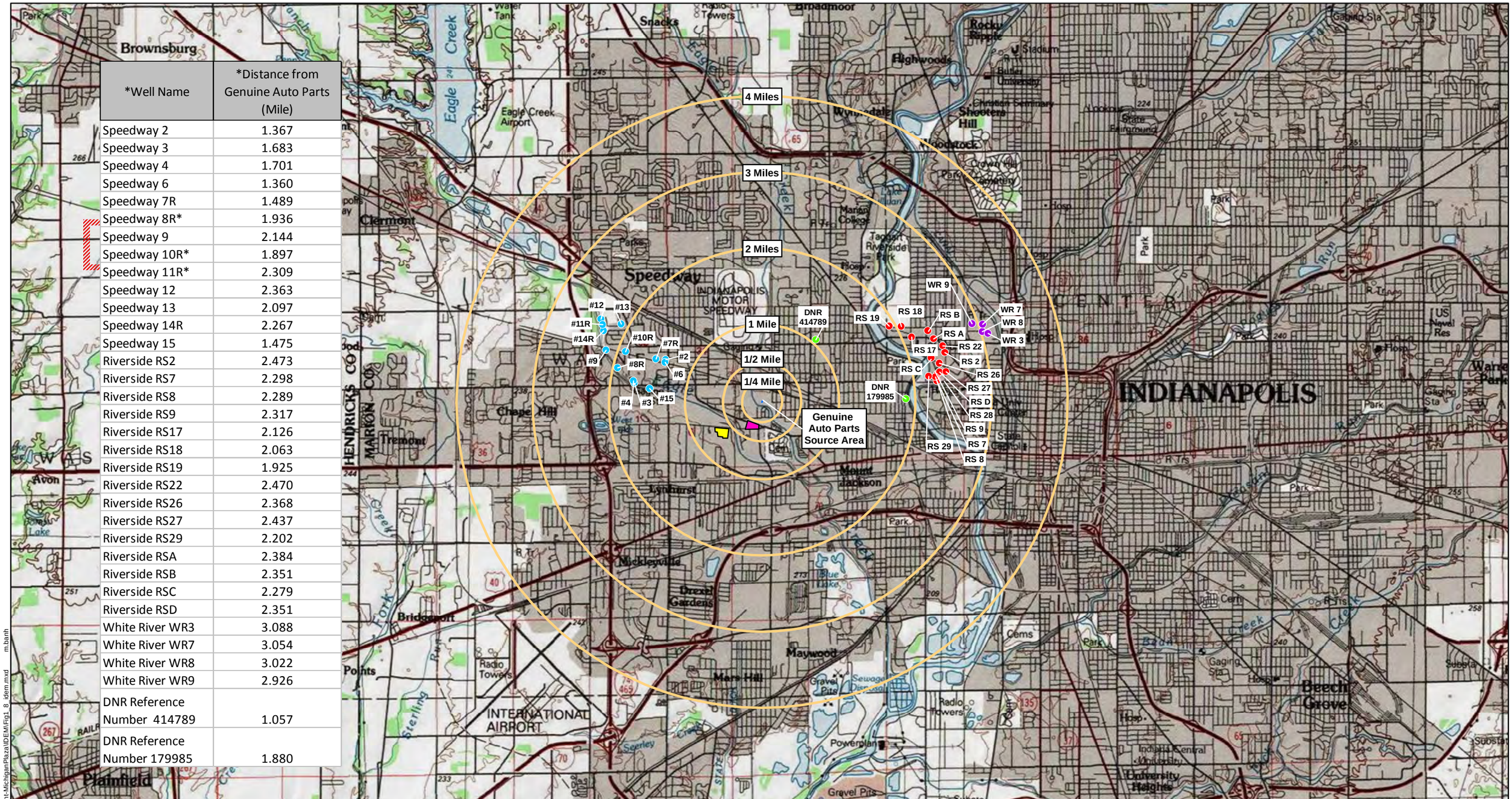
0 212.5 425 850 Feet

Marion County




Sample Locations

| *Well Name | *Distance from Genuine Auto Parts (Mile) |
|---|---|
| Speedway 2 | 1.367 |
| Speedway 3 | 1.683 |
| Speedway 4 | 1.701 |
| Speedway 6 | 1.360 |
| Speedway 7R | 1.489 |
| Speedway 8R* | 1.936 |
| Speedway 9 | 2.144 |
| Speedway 10R* | 1.897 |
| Speedway 11R* | 2.309 |
| Speedway 12 | 2.363 |
| Speedway 13 | 2.097 |
| Speedway 14R | 2.267 |
| Speedway 15 | 1.475 |
| Riverside RS2 | 2.473 |
| Riverside RS7 | 2.298 |
| Riverside RS8 | 2.289 |
| Riverside RS9 | 2.317 |
| Riverside RS17 | 2.126 |
| Riverside RS18 | 2.063 |
| Riverside RS19 | 1.925 |
| Riverside RS22 | 2.470 |
| Riverside RS26 | 2.368 |
| Riverside RS27 | 2.437 |
| Riverside RS29 | 2.202 |
| Riverside RSA | 2.384 |
| Riverside RSB | 2.351 |
| Riverside RSC | 2.279 |
| Riverside RSD | 2.351 |
| White River WR3 | 3.088 |
| White River WR7 | 3.054 |
| White River WR8 | 3.022 |
| White River WR9 | 2.926 |
| DNR Reference Number 414789 | 1.057 |
| DNR Reference Number 179985 | 1.880 |




Riverside Well (RS)

Speedway Well

White River Well (WR)

* DNR Well

Supplied by Private Ground Water Wells
Area of Residences - West Vermont Street/Cossell Road

Supplied by Private Ground Water Wells
Area of Residences - Fleming Street/Vine Street

Source area = outline of the outer most source sample locations.
Coordinate System = NAD 1983 State Plane Indiana East-Feet

IDEM

* = Indiana Department of Environmental Managment (IDEM)
Addedl/Modified Information to Tetra Tech Figure 1-8 Map

Source: USGS 7.5-Minute Topographic Quadrangle Map, Indianapolis West, IN 1998

*This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

*Mapped By: Shane Moore
Office of Land Quality
*Date Modified: August 10, 2015

N

0.5 0 0.5
Miles

West Vermont Groundwater Contamination OS
West Vermont Street and Cossell Road
Speedway, Marion County, Indiana

*** Figure 1-8**
***4-Mile Radius Map***
***Genuine Auto Parts***

TETRA TECH

Prepared For: EPA | Prepared By: Tetra Tech Inc.

8/10/2015 X:\OLQ\OLQGIS\Projects\WestVermont-MichiganPlaza\IDEM\Fig1_8_idem.mxd m.banh

Date Saved: 8/10/2015 EPA Contract No.: EP-S5-13-01 TDD No.: S05/0001-1404-009

| *Well Name | *Distance from Michigan Plaza (Mile) |
|---|---|
| Speedway 2 | 1.526 |
| Speedway 3 | 1.787 |
| Speedway 4 | 1.808 |
| Speedway 6 | 1.515 |
| Speedway 7R | 1.642 |
| Speedway 8R* | 2.057 |
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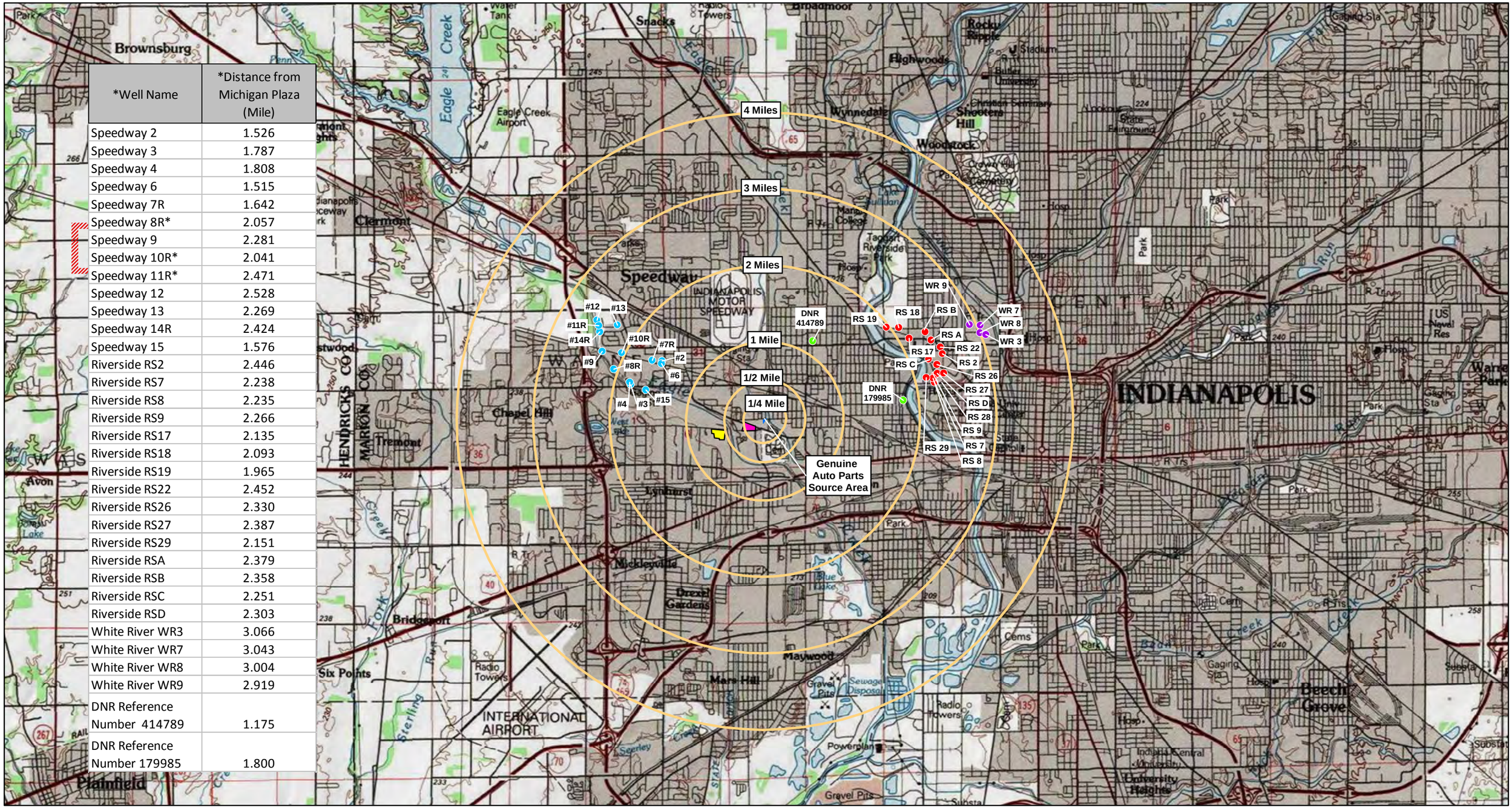
| Riverside RS8 | 2.235 |
| Riverside RS9 | 2.266 |
| Riverside RS17 | 2.135 |
| Riverside RS18 | 2.093 |
| Riverside RS19 | 1.965 |
| Riverside RS22 | 2.452 |
| Riverside RS26 | 2.330 |
| Riverside RS27 | 2.387 |
| Riverside RS29 | 2.151 |
| Riverside RSA | 2.379 |
| Riverside RSB | 2.358 |
| Riverside RSC | 2.251 |
| Riverside RSD | 2.303 |
| White River WR3 | 3.066 |
| White River WR7 | 3.043 |
| White River WR8 | 3.004 |
| White River WR9 | 2.919 |
| DNR Reference Number 414789 | 1.175 |
| DNR Reference Number 179985 | 1.800 |




- Riverside Well (RS)
- Speedway Well
- White River Well (WR)
- * DNR Well
- Area of Residences - *Supplied by Private Ground Water Wells - West Vermont Street/Cossell Road*
- Area of Residences - *Supplied by Private Ground Water Wells - Fleming Street/Vine Street*

Source area = outline of the outer most source sample locations.
Coordinate System = NAD 1983 State Plane Indiana East-Feet

IDEM

* = Indiana Department of Environmental Managment (IDEM) Addedl/Modified Information to Tetra Tech Figure 1-9 Map

Source: USGS 7.5-Minute Topographic Quadrangle Map, Indianapolis West, IN 1998

*This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

***Mapped By:** Shane Moore
Office of Land Quality
***Date Modified:** August 10, 2015

N

0.5 0 0.5
Miles

West Vermont Groundwater Contamination OS
West Vermont Street and Cossell Road
Speedway, Marion County, Indiana

*** Figure 1-9**
***4-Mile Radius Map***
***Michigan Plaza***

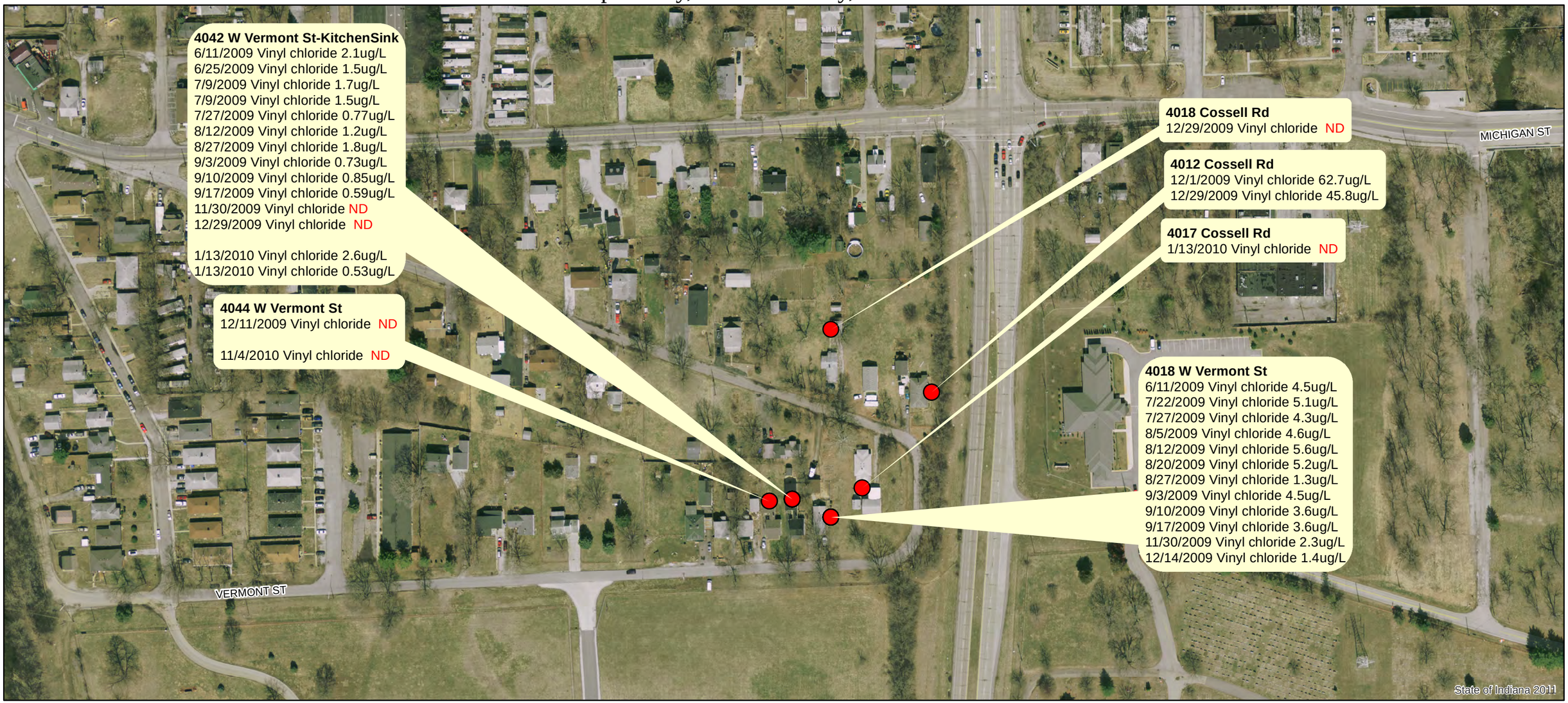
TETRA TECH

Prepared For: EPA | Prepared By: Tetra Tech Inc.

8/10/2015 X:\OLQ\OLQGIS\Projects\WestVermont-MichiganPlaza\IDEM\Fig1-9_idem.mxd m.banh

Date Saved: 8/10/2015 EPA Contract No.: EP-S5-13-01 TDD No.: S05/0001-1404-009

# West Vermont Drinking Water Contamination
# Marion County Health Dept. Sampling Event
# Speedway, Marion County, Indiana




This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

**Mapped By:**
Shane Moore, Office of Land Quality
**Date:**04/13/2015

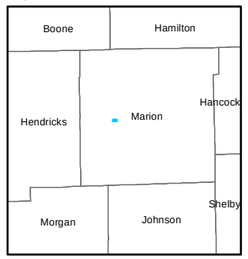
**Sources:**
**Non Orthophotography Data** - Obtained from the State of Indiana Geographical Information Office Library
Samplling Data is from IDEM SampDB
**Orthophotography** - Obtained from Indiana Map Framework Data (www.indianamap.org)
**Map Projection:** UTM Zone 16 N **Map Datum:** NAD83

N
W E
S

0 25 50 100 Meters

0 85 170 340 Feet

Marion County




Sampling Locations

IDEM
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
EST. 1986

## REFERENCES


| No. | Description of the Reference |
|---|---|
| 1. | U.S. Environmental Protection Agency (U.S. EPA), 40 CFR Part 300, Hazard Ranking System; Final Rule. December 14, 1990. Excerpt. 138 pages. A complete version of the HRS is available at: http://www.epa.gov/superfund/sites/npl/hrsres/index.htm |
| 2. | U.S. EPA. Superfund Chemical Data Matrix (SCDM). A complete version of SCDM is available at: http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm, June 20, 2014. Excerpt. 16 pages. |
| 3. | U.S. Geological Survey, Indianapolis, Marion County, Indiana – Area Location Topographic Map. March 25, 2015. 1 page. |
| 4. | Reference Number Reserved |
| 5. | Weston Solutions, Inc., Monitoring Well Sampling Logs, June 26, 2013. 13 pages. |
| 6. | Weston Solutions, Inc., Monitoring Well Sampling Logs, July 23, 2013. 13 pages. |
| 7. | Weston Solutions, Inc., Monitoring Well Sampling Logs, August 20, 2013. 14 pages. |
| 8. | Weston Solutions, Inc., Monitoring Well Sampling Logs, September 10, 2013. 13 pages. |
| 9. | Weston Solutions, Inc., Monitoring Well Sampling Logs, October 8, 2013. 13 pages. |
| 10. | Weston Solutions, Inc., Monitoring Well Sampling Logs, November 19, 2013. 13 pages. |
| 11. | Reference Number Reserved |
| 12. | Weston Solutions, Inc., Log Book, March 1, 2013. 43 pages. |
| 13. | Weston Solutions, Inc., Log Book, October 20, 2009. 43 pages. |
| 14. | Indiana Department of Natural Resources, Record of Water Well, various dates 1930-1992. 13 pages |
| 15. | Indiana Department of Environmental Management, E-Mail from Shelly Lam, Acting Section Chief, Response Section 2, U.S. EPA to Nuria Muniz, David Brauner, Mark Jaworski, Christina Miller, Subject: New Information on the West Vermont Site, September 23, 2014. 1page. |
| 16. | U. S. EPA, Email from Shelly Lam, Action Section Chief, Response Section 2, U.S. EPA to Nuria Muniz, Mark Jaworski, Christina Miller, Subject: West Vermont Cross-Sections, September 23, 2014. 7 pages |
| 17. | IDEM, Email from Frank Beodray, Ohio Operations, Cleveland Office Manager to Carmen Anderson, Senior Environmental Manager, IDEM, Subject: Boring & Construction Logs for West Vermont, March 26, 2014, 15 pages. |
| 18. | Indiana Department of Environmental Management, Email forwarded from Carmen Anderson, Senior Environmental Manager, IDEM to Mark Jaworski, Senior Project Geologist, Mundell & Associates, Inc., Subject: Michigan Plaza – Methane and Mitigation – November 13, 2014 Update, January 26, 2015. 28 pages. |

19. Mundell Consulting Professionals, Remediation Work Plan, September 18, 2013. 1510 pages.

20. Keramida Environmental, Inc. (Keramida), Waste Characterization, Former Allison Plant #10, December 6, 2000. 13 pages.

21. Keramida, Phase II Investigation Report, Former General Motors Corporation, Allison Gas Turbine Division Plant 10, Volume 1, March 29, 2002. 228 pages.

22. Keramida, Phase II Investigation Report, Former General Motors Corporation, Allison Gas Turbine Division Plant 10, Volume 2, March 29, 2002. 790 pages.

23. Favero Geosciences, Letter with Attachments from David M. Favero, Project Manager, Favero Geosciences to Don Heller, U.S. EPA, Region 5, Subject: Second Quarter 2014 Progress Report, RCRA Corrective Action, General Motors at Allison Transmission, Speedway, Indiana, July 14, 2014. 1595 pages.

24. Marion County Health Department, Sample Information, June 11, 2009. 71pages.

25. Keramida, Remedial Assessment And Soil Excavation Report, former General Motors Corporation, Allison Gas Turbine Division, Plant 10, July 23, 2007. 107 pages.

26. Mundell & Associates, Inc., Letter with Attachments from Leena A. Lothe, Project Environmental Engineer, Mundell & Associates, Inc. to Eric Brittain, Project Manager, Voluntary Remediation Program, Subject: Quarterly Monitoring Progress Report - 1st Quarter 2009, October 31, 2009. 599 pages.

27. Mundell & Associates, Inc., Further Site Investigation, December 1, 2006. 661 pages.

28. Mundell Consulting Professionals, Quarterly Monitoring Progress Report, 1st Quarter, 2013, April 30, 2013. 484 pages.

29. Indiana Department of Natural Resources (IDNR), Significant Water Withdrawal Facility Data, http://www.in.gov/dnr/water/4841.htm, Accessed April 7, 2015. 29 pages.

30. Mundell & Associates, Inc., Letter with Attachments from Leona A. Lothe, Staff Environmental Engineer and John A. Mundell, President/Senior Environmental Consultant to Daniel P. McInerny, Bose McKinnery & Evans, Subject: Keramida Split Groundwater Sampling Event – March 2004, Michigan Meadows Apartments, June 30, 2004. 25 pages.

31. U.S. EPA, Email from Charles Gebien, Chief Emergency Response Section 3 to Kenneth C. McDaniel and Harry E. Atkinson, Subject: West Vermont Street Groundwater Contamination, October 9, 2009. 20 pages.

32. U.S. EPA, Memorandum from Shelly Lam, OSC, Emergency Response Branch 1 to Richard C. Karl, Director, Superfund Division, Subject: Enforcement Action Memorandum – Determination of Threat to Public Health and the Environment and Selection of Time-Critical Removal Actions at the West Vermont Drinking Water Contamination Site, Speedway, Marion County, Indiana (Site ID #B5UJ), August 5, 2013. 27 pages.

33. IDEM, Voluntary Remediation Agreement, April 25, 2007. 67 pages.

34. IDEM, Letter from Andrea Robertson, Project manager, Voluntary Remediation Program to Bob Lewis, Genuine Parts Company, Subject: Voluntary Remediation Agreement, Former Allison Engine Plant 10, May 11, 2000. 19 pages.

35. Arcadis Infrastructure, Environment, Buildings (ARCADIS), RCRA Facility Investigation Report, February, 2009. 250 pages.

36. Keramida, Final Remediation Work Plan, Former General Motors Corporation, Allison Gas Turbine Division, Plant 10, Volume 1, August 16, 2004. 295 pages.

37. U.S. Census Bureau, Indianapolis (City (Balance)) QuickFacts, http://www.census.gov/2010census/, Accessed April 7, 2015. 9 pages.

38. Weston Solutions, Inc., Technical Memorandum, Analytical and Hydrogeological Evaluation, January 30, 2013. 448 pages.

39. Indiana Department of Environmental Management, Email with Attachments from Carmen Anderson, Senior Environmental Manager, Remediation Services Branch to Mark Jaworski, Subject: CAP18 Letters, January 27, 2015. 117 pages.

40. Acuity Environmental Solutions, Revised Remediation Work Plan, Michigan Plaza, December 31, 2014. 1596 pages.

41 Reference Number Reserved

42. Reference Number Reserved

43. U.S. EPA, Log Book, October 17, 2014. 17 pages.

44. Favero Geosciences, Letter with Attachments from David M. Favero, Project Manager to Don Heller, U.S. EPA, Region 5, Waste Management Division, Subject: RCRA Facility Investigation Report, RCRA Corrective Action, USEPA ID Nos. IND 006412248 and IND 0008062828, February 20, 2009. 415 pages.

45. U.S. EPA, Email forwarded from Scott Kevin to Mark Jaworski, Subject: West Vermont Residential Field Sheets, February 4, 2015. 3 pages.

46. Keramida, Remedial Assessment And Soil Excavation Report, Former General Motors Corporation, Allison Gas Turbine Division, Plant 10, (continuation of Ref. 25), July 23, 2007 , 862 pages. This reference goes with Ref. 25.

47. Weston Solutions, Inc., ALS Laboratory Group, West Vermont Street site , Speedway, Indiana, Data Validation Report, April 19, 2010. 15 pages.

48. Favero Geosciences, Letter with Attachments from David M. Favero, Project Manager to Don Heller, U.S. EPA, Region 5, Waste Management Division, Subject: Fourth Quarter 2010 Progress Report, RCRA Corrective Action, USEPA ID Nos. IND006412248 and IND0008062828, January 14, 2011. 1033 pages.

49. U. S. EPA, Region 5, Memorandum from Paul Atkociunas, OSC, Emergency Response Branch 2 and Shelly Lam, OSC, Emergency Response Branch 1 to Richard C. Karl, Director, Superfund Division, Subject: Request for Approval and Funding for a Time-Critical Removal Action at the West Vermont

Drinking Water Contamination Site, Speedway, Marion County, Indiana (Site ID #B5UJ), September 26, 2011, 28 pages.

50. Weston Solutions, Inc., Pace Analytical Services, Inc., West Vermont Hydrogeologic Investigation, Speedway, Indiana, Data Validation Report, November 18, 2011. 290 pages.

51. U. S. EPA, OSC: Shelly Lam, W. Vermont Hydrological Investigation, Field Log Notes, November 9, 2011. 53 pages.

52. Indiana Department of Environmental Management, Email forwarded from Shelly Lam, LPG, Federal On-Scene Coordinator, U.S. EPA, Region 5 to Mark Jaworski, January 8, 2015. 3 pages.

53. IDEM, Preliminary Assessment Report, West Vermont Drinking Water Contamination, November 26, 2014. 4,545 pages.

54. U. S. EPA, Field Log Book, October 17, 2014, 17 pages.

55. Weston Solutions, Inc., Pace Analytical Services, Inc., West Vermont Site, Speedway, Indiana, Data Validation Report, September 5, 2013. 71 pages.

56. Weston Solutions, Inc., Monitoring Well Sampling Logs, July 23, 2013. 13 pages.

57. Tetra Tech EM Inc. (Tetra Tech), Email from Kevin Scott, Region 5 START Program Manager to Mark Jaworski, Subject: Copy of West Vermont Revised Source Sample List, April 10, 2015, 47 pages.

58. Weston Solutions, Inc., Pace Analytical Services, Inc., West Vermont Site, Speedway, Indiana, Data Validation Report, September 24, 2013. 51 pages.

59. Weston Solutions, Inc., Monitoring Well Sampling Logs, September 10, 2013. 13 pages.

60. Tetra Tech, Ground Water Sampling Collection Using Low-Flow Sampling Methodology, July 2009. 2 pages.

61. Weston Solutions, Inc., Pace Analytical Services, Inc., West Vermont Site, Speedway, Indiana, Data Validation Report, October 24, 2013. 33 pages.

62. Weston Solutions, Inc., Monitoring Well Sampling Logs, October 8, 2013. 13 pages

63. Weston Solutions, Inc., Pace Analytical Services, Inc., West Vermont Site, Speedway, Indiana, Data Validation Report, December 9, 2013. 56 pages.

64. University of Minnesota, Lynda Ellis and Sean Anderson, Tetrachloroethene Pathway Map (anaerobic), 2011. 5 pages.

65. Weston Solutions, Inc., Pace Analytical Services, Inc., West Vermont Site, Speedway, Indiana, Data Validation Report, January 16, 2014. 28 pages.

66. Weston Solutions, Inc., Pace Analytical Services, Inc., West Vermont Site, Speedway, Indiana, Data Validation Report, January 16, 2014. 41 pages.

67. IDEM, Email with Attachments from Kristy Mcintire, Environmental Chemist to Mark Jaworski, Subject: Key Findings Table for Background for February Results, April 21, 2015. 6 pages.

68. Citizens Energy Group, Email from Ann McIver to Mark Jaworski, Riverside and White River Population, August 28, 2014. 3 pages.

69. Weston Solutions, Inc., Pace Analytical Services, Inc., West Vermont Site, Speedway, Indiana, Data Validation Report, February 4, 2014. 56 pages.

70. Weston Solutions, Inc., Pace Analytical Services, Inc., West Vermont Site, Speedway, Indiana, Data Validation Report, February 4, 2014. 26 pages.

71. Weston Solutions, Inc., Pace Analytical Services, Inc., West Vermont Site, Speedway, Indiana, Data Validation Report, February 27, 2014. 69 pages.

72. Pace Analytical, West Vermont Street Pace Project No. 5095028, Analytical Results, March 28, 2014. 84 pages.

73. Pace Analytical, Analytical Results, April 24, 2014. 30 pages.

74. IDEM, Email with Attachments from Sarah Finley, LPG #2158, Geological Services to Mark Jaworski, Subject: Email Response for W. Vermont St GW Contamination (7300171), April 20, 2015. 11 pages.

75. ENVIRON International Corporation, Remedial Progress Report, Former Allison Plant 10, 700 North Olin Avenue, Indianapolis, Indiana, August 2014, 300 pages.

76. IDEM, Email with Attachments from Kristy McIntire, Environmental Chemist to Mark Jaworski, Subject: West Vermont Street Updated Key Findings Table, March 26, 2015, 15 pages.

77. Tetra Tech, Field Log Book, November 26, 2014. 6 pages.

78. Pace Analytical, Analytical Results, April 29, 2014. 25 pages.

79. Weston Solutions, Inc., Title Search Report for West Vermont Water Contamination Site, Genuine Auto Parts Property, June 16, 2011. 11 pages.

80. Weston Solutions, Inc., Title Search Report for West Vermont Water Contamination Site, Michigan Plaza Property, June 16, 2011. 12 pages**.**

81. U.S. EPA, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996, 18 pages.

82. Reference Number Reserved

83. Veolia Water Indianapolis, LLC., Phase II Indianapolis Water Wellhead Protection Plan, March 2007. 320 pages.

84. US. EPA, Email from Shelly Lam, Federal On-Scene Coordinator to Nuria Muniz, Mark Jaworski, Carmen Anderson, Subject: West Vermont Drinking Water Site - Weston Boring/Monitoring well Logs, December 3, 2014. 21 pages.

85. Tetra Tech, Final Sampling and Analysis Plan, October 6, 2014. 100 pages.

86 IDEM, Email from Carmen Anderson, Senior Environmental Manager, Remediation Services Branch to Mark Jaworski, Senior Environmental Manager, Site Investigation Program, Subject: Michigan Plaza, May 1, 2015. 1 page.

87. U.S. EPA, Well Log Book, November 18, 2014. Excerpt. 2 pages.

88. Marion County Health Department, Email from Adam Rickert to Mark Jaworski, Subject: Drinking Water Wells Along Fleming and Vine Streets, January 8, 2015. 14 pages.

89. U.S. EPA, Region 5, Sample Data Group (SDG) E5AS4, Level 3 Data Validation, December 15, 2014. 251 pages.

90. U.S. EPA, Region 5, Sample Data Group (SDG) E5AS8, Level 3 Data Validation, December 23, 2014. 89 pages.

91. U.S. EPA, Region 5, Sample Data Group (SDG) E5AT4, Level 3 Data Validation, December 30, 2014. 65 pages.

92. U.S. EPA, Region 5, Sample Data Group (SDG) E5AW8, Level 3 Data Validation, January 6, 2014. 221 pages.

93. Tetra Tech, Ground Water Sampling Collection Using Low-Flow Sampling Methodology, October 30, 2014. 25 pages.

94. U.S. EPA, Region 5, Sample Data Group (SDG) E5AZ2, Level 3 Data Validation, December 19, 2014. 206 pages.

95. Pace Analytical, Analytical Results, April 28, 2014, 26 pages.

96. Keramida, Remedial Assessment and Soil Excavation Report, Former General Motors Corporation, Allison Gas Turbine Division, Plant 10, Volume 2 of 2, July 23, 2007. 281 pages.

97. Keramida, Remedial Assessment and Soil Excavation Report, Former General Motors Corporation, Allison Gas Turbine Division, Plant 10, Volume 1 of 2, July 23, 2007. 996 pages.

98. Mundell Consulting Professionals, Quarterly Monitoring Progress Report, 4th Quarter, 2013, January 31, 2014. 593 pages.

99. Mundell & Associates, Inc., Phase II Environmental Site Assessment, Michigan Meadows Apartments, May 5, 2005. 236 pages.

100. Keramida Environmental, Inc., Final remediation Work Plan, Former General Motors Corporation, Allison Gas turbine Division, Plant 10, Volume1, August 16, 2004. 2909 pages.

101. Quality Environmental Professionals, Inc., Monitoring Well Logs, November 18, 2014. 8 pages.

102. U.S. EPA, Residential Well Information, October 17, 2014. 2 pages.

103. U.S. EPA. Email from Shelly Lam, LPG, Federal On-Scene Coordinator to Carmen Anderson, Mark Jaworski , Nuria Muniz, Subject: West Vermont, February 26, 2015. 2 pages.

104. Microseeps, 2010 Laboratory Results, July 21, 2010. 46 pages.

105. Pace Analytical, West Vermont Street, Pace Project No. 5055016, December 24, 2011. 29 pages.

106. Keramida, Remedial Assessment and Soil Excavation Report, Former General Motors Corporation, Allison Gas Turbine Division, Plant 10 (Continuation of Reference 25), July 23, 2007. 563 pages.

107. Indiana Department of Environmental Management, Office Memorandum from Sarah Finley, Geologist, Geological Services Section to Mark Jaworski, Federal Programs, Subject: Preliminary Assessment, June 19, 2015. 4 pages.

108. U.S. EPA, Email from Donald Heller to Mark Jaworski, Subject: Allison Transmission Well Logs, April 29, 2015. 4 pages.

109. Indiana Department of Environmental Management, Email from Shelly Lam, Federal On-Scene Coordinator, U.S. EPA – Region 5 to Nuria Muniz, Mark Jaworski, Subject: Cossell Vermont Neighborhood Wells, March 4, 2015. 3 pages.

110. Indiana Department of Environmental Management, Affidavit of mark Jaworski, April 28, 2015. 1 page.

111. U.S. EPA, Email from Don Heller to Mark Jaworski, Subject: Allison Transmission Well Logs, MW-1003-S3 and MW-1105-S3-4, April 29, 2015. 4 pages.

112. Fluor Daniel GTI, Inc., Draft - Feasibility Study Report, General Motors-Allison Gas Turbine Plant 10, June 3, 1997. 268 pages.

113. U.S. EPA, Sample Data Group (SDG) E5BH3, Level 3 Data Validation, March 6, 2015. 88 pages.

114. Weston Solutions, Monitoring Well Sampling Logs, November 19, 2013. 167 pages

115. Indiana Department of Natural Resources, Significant Water Withdrawal Facility Data- Southeast Quadrant, August 21, 2014. 26 pages.

116. Indiana Department of Natural Resources, Record of Water Well, Various Dates. 62 pages.

117. Indiana Department of Environmental Management, Affidavit of Mark Jaworski, June 2, 2015. 1 page.

118. Indiana Department of Environmental Management, Affidavit of Mark Jaworski, June 2, 2015. 1 page.

119. Environ International Corporation, Remedial Progress Report, August 2014. 70 pages.

120. Indiana Geological Survey, The Hydrogeologic Framework of Marion County, Indiana, 2000. 15 pages.

121. Mundell Consulting Professionals, Remediation Work Plan, September 18, 2013. 54 pages.

122. Mundell Consulting Professionals, Quarterly Monitoring Progress Report, 2nd Quarter, 2014, July 31, 2014. 122 pages.

123. HNTB, Phase 1 Wellhead Protection Plan, March 2001, 41 pages.

124. City of Indianapolis, General Map Viewer, Historic Aerial Photographs, 1941, 1956, 1962, 1972, 2014, www.maps.indy.gov/MapIndy. 6 pages.

125. U. S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey of Marion County, Indiana, September, 1978. 7 pages.

126. Reference Number Reserved.

127. Indiana Department of Natural Resources, Geology for Environmental Planning in Marion County, Indiana, 1980. 4 pages.

128. Black & Veatch, Boring Logs, Various Dates, 2010. 26 pages.

129. Wittman Hydro Planning Associates, Inc. And IWC Resources, Inc. WHPA, Riverside And Fall Creek Well Fields, Capture Zone Delineation, March, 2000. 273 pages.

130. U. S. Geological Survey, Hydrogeologic Atlas of Aquifers In Indiana, 1992, 22 pages.

131. Weston Solutions, Boring Well Logs, November, 2011. 5 pages

132. Weston Solutions, Well Construction Form, February, 2014, 4 pages.

133. Keramida Environmental, Inc. Remediation Work Plan, Former General Motors Corporation, Allison Gas Turbine Division, Plant 10, volume 2, October 30, 2002. 613 pages.

134 Indiana Department of Environmental Management, Drinking Water Branch, Water System Details, June 18, 2015. 4 pages.

135. Indiana Department of Environmental Management, Drinking Water Branch, Water System Details, June 18, 2015. 4 pages.

136. Citizens Energy Group, Email from Ann McIver to Mark Jaworski, June 24, 2015. 4 pages.

137. Citizens Energy Group, Email from Ann McIver to Mark Jaworski, June 22, 2015. 1 page.

138. Indiana Department of Environmental Management, Riverside and White River Municipal Well Calculations, June 23, 2015. 1 page.

139. Indiana Department of Environmental Management, Speedway Municipal Well Calculations, June 23, 2015. 1 page.

140. Citizens Energy Group, Email from Ann McIver to Mark Jaworski, Requested Well Information, June 3, 2015. 13 pages.

141. Speedway Water Works, Email from Steve Hurst to Mark Jaworski, Well and SWP Capacities, June 30, 2015. 2 pages.

142. Speedway Indiana Waterworks, Email from Mary Armacost to Mark Jaworski, Well 8R, June 30, 2015. 2 pages

143. Speedway Indiana Waterworks, Email from Mary Armacost to Mark Jaworski, Well 7R, June 30, 2015. 2 pages.

144. U.S. Census Bureau. Census Data for Marion County, Indiana. Accessed 7/29/2015. http://quickfacts.census.gov/qfd/states/18/18097.html. 2 pages.

145. Citizens Energy Group, Email from Ann McIver to Mark Jaworski, RE: Inactive Wells, June 11, 2015. 1 page.

146. Speedway Indiana Waterworks, Email from Mary Armacost to Mark Jaworski, RE: Active/Inactive Wells. June 11, 2015. 1 page.

147. Speedway Indiana Waterworks, Email from Mary Armacost to Mark Jaworski, RE: Well 8R. August 3, 2015. 1 page.

148. U.S. EPA. SW-846; Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. 8260B Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) December, 1996. 86 pages. Available at: http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/8260b.pdf

149. Indiana Department of Environmental Management, Affidavit of Sarah Finley Johanson, August 10, 2015. 1 page.

150. Pace Analytical Laboratories, Inc. Chris Boyle. Definition of Reporting Limits. August 12, 2015. 1 page.

## West Vermont Drinking Water Contamination

### SUMMARY

The West Vermont Drinking Water Contamination consists of overlapping contaminated ground water releases from sources on two properties in a commercial/residential area of Indianapolis, Indiana. See Figure 1-1 for a Location of the area within the State of Indiana. The sources are located at the Genuine Parts facility and at Michigan Plaza. Michigan Plaza is located approximately 1100 feet south of the Genuine Parts property as shown on Figure 1-3. Initially identified as potential sources (Figure 1-3), volatile organic compound (VOC) contamination has been confirmed in both subsurface soils and ground water monitoring wells at the Genuine Parts and Michigan Plaza facilities (Section 2.2 and Section 3.1.1 of this HRS Documentation Record). Based on 2014 sampling, Level I concentrations of vinyl chloride also are documented in the ground water within two residential wells downgradient of the sources and within the city of Indianapolis (Refs. 24, pp. 3, 6, 8, 10, 13, 15, 17, 21, 23, 25, 27, 29, 31; 25, pp. 8, 10, 17, 20, 23-26; 26, pp., 8, 18, 21, 24, 27, 33; 27, pp. 3, 15, 18). The two impacted residential wells lie within a neighborhood where 21 additional residences obtain drinking water from their own private wells (Figure 1-3). The private wells are the primary source of drinking water for the residents. Although scored in this HRS Documentation Record as a single site listing, both Genuine Parts and Michigan Plaza sources score separately (see the scoresheets in Attachments 1 and 2 to this HRS Documentation Record).

The West Vermont Drinking Water Contamination site lies between three municipal well fields (Figure 1-5). The Riverside Municipal Well Field is located approximately between two (2) and three (3) miles to the east-northeast, the White River Municipal Well Field is located between three (3) and four (4) miles to the northeast, and the Speedway Municipal Well Field is located between one (1) and three (3) miles to the northwest (Figure 1-5).

The commingled ground water plume is depicted aerially by ground water sample locations with detections of trichloroethylene (TCE), cis-1,2-DCE, trans -1, 2 dichloroethylene (trans -1,2-DCE), 1,1 dichloroethane (1,1- DCA), and vinyl chloride (VC) exceeding non-detect background concentrations (Section 3.1.1, Contaminated Ground Water Samples, Tables 5 and 6 of this HRS documentation record). Concentrations of VC have been detected in the residential wells. The depicted plume is bounded to the north by a city park, Little Eagle Creek to the east, to the south by West Vermont Street, and to the west by Tomlinson Street (Figure 1-2).

The depicted plume encompasses approximately 20.2 acres (Figure 1-2 of this HRS documentation record; Sections 3.0.1 and 3.1.1 of this HRS documentation record). The area of the ground water plume is based on available samples that meet the criteria for an observed release (Section 3.1.1 of this HRS documentation record).

**HISTORY**

In 2009 and 2010, the Marion County Public Health Department (MCPHD) documented, via numerous sampling events, the presence of vinyl chloride at three residences along West Vermont Street and Cossell Road. Concentrations of vinyl chloride were found to be as high as 62.7 micrograms per liter (µg/L) in the ground water in one of the three residential wells (Refs. 14, pp. 8, 11, 13; 24, pp. 3, 5-70; 40, pp. 413, 414, 416, 452, 535, 559, 646; Figure 1-10 of this HRS Documentation Record). Including the three homes with vinyl chloride in the private wells, there are 23 homes in the Vermont and Cossell Road neighborhood that rely on private water wells as their only source of water (Ref. 109, p. 1, 3; Figure 1-3).

On October 8, 2009, IDEM formally requested assistance from U.S. EPA to address the contamination in the residential wells (Ref. 31, p. 1, 2). In November 2009 and February 2010, the U.S. EPA installed temporary water treatment systems in the three residences to mitigate vinyl chloride in the drinking water (Ref. 38, p. 12). In March 2010, U.S. EPA conducted indoor air sampling at three of the residences and detected concentrations of PCE and other degradation products (Ref. 47, p. 7-11, 14-15). In July 2010, EPA's contractor conducted additional residential ground water sampling (Table 7) of this HRS Documentation Record; Figure 1-6 of this HRS Documentation Record). Concentrations of PCE, Cis 1, 2-DCE, and vinyl chloride were detected in six (6) residential ground water samples (Table 7 of this HRS Documentation Record; Figure 1-6 of this HRS Documentation Record). On September 26, 2011, EPA approved an Action Memorandum to expend up to $237,000 to conduct time-critical removal activities that included a hydrogeologic investigation to find the source of contamination in the residential wells (Refs. 32, p. 1; 49, p.1; 53, p. 6).

On January 30, 2013, EPA completed a Technical Memorandum Analytical and Hydrogeological Evaluation (Technical Memorandum) for the West Vermont Drinking Water Contamination area (Ref. 38, p. 1). This memorandum documented the findings and activities conducted by the U.S. EPA and Superfund Technical Assessment and Response Team (START) in November and December 2011 during an analytical and hydrogeologic investigation (Ref. 38, p. 9). This Technical Memorandum also documents and incorporates specific historical information and analytical data for the purpose of determining the potential source or sources of contamination in West Vermont Street residential drinking water wells (Ref.38, p. 9).

START installed 13 monitoring wells in the West Vermont area in November 2011. The wells were surveyed using a benchmark established during a previous survey (Ref. 38, p. 25). On December 6 and 7, 2011, 152 monitoring wells, located at and near Michigan Plaza and Genuine Parts, as well as another nearby facility, Allison Transmission, were gauged and 66 monitoring wells were sampled (Ref. 38, p. 25). Cis-1,2-DCE, Trans-1,2 DCE, TCE, PCE, and/or Vinyl chloride were detected in several of the monitoring wells samples (Refs. 38, pp. 48-50, 78, 79, 420-429, 445; 50, pp.4-236; 51, pp. 9-11, 24-26, 41-51).

The Technical Memorandum concluded that the study area for the analytical and hydrogeological evaluation contains several potential sources of vinyl chloride contamination in the residential wells, including Allison Transmission, Genuine Parts, and Michigan Plaza. Each potential source has had releases of tetrachloroethylene (PCE) or trichloroethylene (TCE), with vinyl chloride as a natural breakdown product (Ref. 38, p. 36).

The Technical Memorandum stated that monitoring wells along West Michigan Street were installed to monitor contaminant migration from Allison Transmission. These monitoring wells have showed no-detect results for PCE, TCE, DCE, and VC (Ref. 38, p. 36). However, the U.S. EPA determined that at least two monitoring wells on West Michigan Street directly north of the residential area are screened in zones deeper than contamination at Allison Transmission and deeper than the residential wells (Ref. 38, p. 36). During the investigation, the U.S. EPA installed two additional nested monitoring well sets along West Michigan Street to fill this data gap (Ref. 38, p. 36). The data collected confirm that PCE, TCE, and vinyl chloride are not present between Allison Transmission and the West Vermont Street residential area (Ref. 38, p. 36). The report stated that the contamination at the Allison Transmission plant is restricted to the Allison Transmission property, and Allison Transmission is not a contributor of contamination to the residential area (Ref. 38, p. 36). The Technical Memorandum stated that the U.S. EPA determined that both Genuine Parts and Michigan Plaza are actual or potential contributors to VC contamination in the residential area (Ref. 38, p. 37).

The conceptual site model presented in the 2013 Remediation Work Plan prepared on behalf of Michigan Plaza projected similar findings as those in the Technical Memorandum regarding Michigan Plaza source and ground water VOC contamination and Genuine Parts source and ground water VOC contamination. The Remediation Work Plan further concluded at least limited commingling of the ground water releases (Ref. 19, pp. 15, 52).

The U.S. EPA and General Motors Corporation (GM) have entered into a performance-based Resource Conservation and Recovery Act (RCRA) Corrective Action agreement (Agreement) with the effective date of April 27, 2005. Pursuant to the Agreement, GM has worked in cooperation with the U.S. EPA to investigate, and as necessary, stabilize and remediate releases of hazardous wastes or hazardous constituents at or from Allison Transmission (Ref. 35, p. 38).

From September 2013 through March 2014, U.S. EPA continued sampling of monitoring wells. Concentrations of vinyl chloride and cis 1, 2-Dichloroethylene continued to be detected in the monitoring wells (Table 8 of this HRS Documentation Record; Figure 1-7 of this HRS Documentation Record).

According to an email outline by the Marion County Health Department, there are 20 residences in the immediate area that obtain drinking water from their private wells (Ref. 109, pp. 1, 3; Figure 1-3 of this HRS Documentation Record).

A Preliminary Assessment (PA) was conducted by IDEM for the West Vermont Drinking Water Contamination (Ref. 53, p.1). The PA was finalized by U.S. EPA on March 11, 2015 (Ref. 53, p. 2). The PA documented the contaminated ground water at the three residential wells Ref. 53, p. 6). The PA also discussed the environmental activities that were conducted by the U.S. EPA, Allison Transmission, Genuine Parts, and Michigan Plaza. The environmental activities included the installation of monitoring wells, the collection of ground water samples at the above mentioned facilities and the residential wells, and other environmental activities (Ref. 53, pp. 6-13).

In October and November 2014, U.S. EPA collected 45 ground water samples. The ground water samples were obtained from selected private residential wells located along West Vermont and Cossell Avenue from nearby established monitoring wells (Refs. 76, pp. 8, 9, 12, 13, 14, 15; 89, p.1; 90, p.1; 91, p.1; 92, p. 1, 94, p. 1; Table 5 and Table 6 of this HRS Documentation Record). The ground water samples were analyzed for VOCs (Refs. 89, p. 2; 90, p. 2; 91, p. 2; 92, p. 2, 94, p. 1) In addition, two background monitoring wells (WVS-10 and WVS-11) were installed north of Genuine Parts property (Ref.84, pp. 18-21; 77, pp. 1-6; 87, p. 1, 2; Figure 1-2 of this HRS Documentation Record). Laboratory analysis of the ground water from the residential private wells and from monitoring wells revealed detections of vinyl chloride, trichloroethylene, tetrachloroethylene, cis, 1, 2- dichloroethene and trans 1, 2 dichloroethene (Table 5 and Table 6 of this HRS Documentation Record). No contaminants of concern were detected in any of the background monitoring wells (Figure 1-2; Table 4 of this HRS Documentation Record).

## 2.2 SOURCE CHARACTERIZATION

### 2.2.1 Source Identification

Number of Source: 1

Name and description of the source: Leaky Sewer Line – Michigan Plaza

Source Type: Contaminated Soil

Source 1 is associated with historic solvent discharges from a dry cleaners, Accent Cleaners, to a leaky sewer line (Ref.19, pp. 14, 15, 70, 129, 149, 150). Analytical results from subsurface soil samples obtained from the leaky sewer areas indicate the presence of trichloroethylene (TCE), cis 1,2,-dichloroetheyene (CIS 1,2 DCE), and tetrachloroethylene (PCE) (Figure 1-4; Table 1 of this HRS Documentation Record).

The construction of a new sewer line connection to the existing manhole at the bend of a sewer line which travels from the south to the north side of Michigan Street was conducted in October 2007. During the excavation activities, PCE and TCE were detected in a soil sample obtained at approximately 4 feet in the excavation area. Higher concentrations of PCE and TCE were also detected at approximately 9 feet obtained from the same exact area (Ref. 40, pp. 52, 53).

Location of Source
The source area associated with the leaky sewer line is located on the south sector of Michigan Plaza, northern and southern areas of Michigan Street located north of Michigan Plaza, and along the south and southeastern property of Maple Creek Village Apartments (Ref. 19, pp. 15, 70, 129, 132, 142, 143, 145-151).

### 2.2.2 Hazardous Substances Associated with Source No. 1

Table 1 below depicts the date, sample identification, hazard substance detected, hazardous substance concentration, and other associated information that were obtained from the Michigan Plaza source area. Refer to Figure 1-4 of this HRS Documentation Record for an aerial view of the Michigan Plaza Source area. Subsurface soils in the area consist largely of loam (silty, sandy and/or sandy clay loams) (Refs. 19, pp. 33, 34; 25, pp. 36-77). Soil and ground water samples were analyzed in accordance with U.S. EPA Method 8260 (Refs. 26, p. 153; 57, p. 4; 148).

# Table 1
# Source No. 1 Soil Sample Table
# Michigan Plaza
# (Soils Obtained Greater Than Two Feet Above The Water Table)

| Lab ID | Client Sample ID # | Date Collected | Location | Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) | RL | Units | Reference |
|---|---|---|---|---|---|---|---|---|---|
| 09-0105 | SB-3 (2-3) | 2/3/2009 | SB-3 | 2-3 Feet | PCE | 71 J+[1] (7.1)* | 5.0 | µg/kg | 26, pp. 128, 153; 57, pp. 6, 13, 25; 81, pp. 8, |
| 507931001 | SEWER EXC. (4') | 10/1/2007 | Sewer Excavation | 4 Feet | PCE | 243 | 5.6 | µg/kg | 27, pp. 515, 516, 526; |
| | | | | | cis-1,2-DCE | 11.7 | 5.6 | µg/kg | |
| | | | | | TCE | 57.7 | 5.6 | µg/kg | |
| 5023501014 | SB-15 (4-6') | 2/17/2009 | SB-15 | 4-6 Feet | PCE | 110 J-[1] (110) | 5.4 | µg/kg | 26, pp. 387, 408; 57, pp. 6, 13, 19; 81, p. 8 |
| 5023501020 | SB-17 (4-6') | 2/17/2009 | SB-17 | 4-6 Feet | PCE | 77.2 | 5.8 | µg/kg | 26, pp. 393, 408 |
| 5096084002 | MMW-P-22-LA (4-6) | 4/10/2014 | MMW-P-22-LA | 4-6 Feet | cis-1,2-DCE | 234 J-[2] (234) (DL) | 203 | µg/kg | 57, pp. 9, 13, 37, 38; 81, p. 8; 95, pp. 3, 7, 8, 24 |
| | | | | | PCE | 62.6 J+[2] (6.26) | 4.0 | µg/kg | |
| | | | | | TCE | 46.1 J+[2] (21.84) | 4.0 | µg/kg | |
| 5023333001 | SB-11 (5-6') | 2/13/2009 | SB-11 | 5-6 Feet | PCE | 3,890 (DL) | 261 | µg/kg | 26, pp. 291, 293, 339 |
| | | | | | TCE | 25.3 | 5.2 | µg/kg | |
| 5023333002 | SB-11 (8-9') | 2/13/2009 | SB-11 | 8-9 Feet | PCE | 4,320 (DL) | 260 | µg/kg | 26, pp. 291, 295, 339 |
| | | | | | TCE | 34.0 | 5.2 | µg/kg | |
| 507931002 | SEWER EXC. (9') | 10/1/2007 | Sewer Excavation | 9 Feet | PCE | 2,300 (DL) | 273 | µg/kg | 27, pp. 517, 518, 526 |
| | | | | | cis-1,2-DCE | 15.4 | 5.5 | µg/kg | |
| | | | | | TCE | 55.4 | 5.5 | µg/kg | |
| 5023501015 | SB-15 (8-10') | 2/17/2009 | SB-15 | 8-10 Feet | PCE | 130 J+[2] (13.0) | 5.2 | µg/kg | 26, pp. 388, 408; 57, pp. 6, 13,20;81, p. 8, |
| 5088407003 | MGW-9D (8-10) | 10/14/2013 | MGW-9D | 8-10 Feet | PCE | 11,100 (DL) | 888 | µg/kg | 98, pp. 390, 397, 420 |
| 09-0094 | SB-4 (10-11') | 2/3/2009 | SB-4 | 10-11 Feet | PCE | 118 J+[1] (11.8)* | 5.0 | µg/kg | 26, pp. 106, 152; 57, pp. 6, 14, 26; 81, pp. 8, 11 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 5023333005 | SB-13 (10-11') | 2/13/2009 | SB-13 | 10-11 Feet | PCE | 1,640 (DL) | 136 | µg/kg | 26, pp. 291, 300, 301, 339 |
| | | | | | cis-1,2-DCE | 45.8 | 5.4 | µg/kg | |
| | | | | | TCE | 55.7 | 5.4 | µg/kg | |
| 5077147001 | MMW-10S-A (10-12) | 3/6/2013 | MMW-10S-A | 10-12 Feet | PCE | 1,640 (DL) | 484 | µg/kg | 28, pp. 289, 292 |
| 5096109001 | MMW-P-22-LA (10-12) | 4/11/2014 | MMW-P-22-LA | 10-12 Feet | cis-1,2-DCE | 136 | 5.3 | µg/kg | 78, pp. 3, 5, 23 |
| | | | | | PCE | 724 (DL) | 533 | µg/kg | |
| | | | | | TCE | 42.4 | 5.3 | µg/kg | |
| 09-0092 | SB-3 (11-12) | 2/3/2009 | SB-3 | 11-12 Feet | PCE | 6.09 (DL) | 1 | mg/kg | 26, pp. 102, 152 |
| 5095863001 | MMW-21-LA (11-12) | 4/7/2014 | MMW-21-LA | 11-12 Feet | cis-1,2-DCE | 6.1 | 4.8 | µg/kg | 73, pp. 4, 5, 6, 28 |
| | | | | | PCE | 34,700 (DL) | 2,050 | µg/kg | |
| | | | | | TCE | 18.3 | 4.8 | µg/kg | |
| 5077222004 | MMW-P-02-A (12-14) | 3/7/2013 | MMW-P-02-A | 12-14 Feet | PCE | 118 | 4.9 | µg/kg | 28, pp. 328, 336 |
| 5095863002 | MMW-21-LA (12-14) | 4/7/2014 | MMW-21-LA | 12-14 Feet | cis-1,2-DCE | 1,310 (DL) | 211 | µg/kg | 73, pp. 4, 7, 8, 28 |
| | | | | | PCE | 49,000 (DL) | 2,110 | µg/kg | |
| | | | | | TCE | 1,390 (DL) | 211 | µg/kg | |

Notes:

| | |
|---|---|
| # | Number |
| DCE | Dichloroethene |
| DL | Concentration exceeded the instrument's calibration range. Samples were reanalyzed using a dilution factor and the results are reported from the diluted analysis. Dilution in and of itself does not indicate any associated data quality issue |
| ID | Identification |
| J-[1] | Laboratory control sample yielded a low recovery; the result is estimated with a low bias. Results for release samples require no adjustment according to procedures described in EPA 540-F-94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996 (Ref. 81, pg. 5). |
| J-[2] | Reanalysis was outside the holding time; the result is estimated with a low bias. Results for release samples require no adjustment according to procedures described in EPA 540-F-94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996 (Ref. 81, pg. 5). |
| J+[1] | Surrogate displayed recoveries above the quality control limit; the result is estimated with a high bias. Results for release samples were adjusted according to procedures described in EPA 540-F-94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996 (Ref. 81,pg. 5). |
| J+[2] | Excessive surrogate recovery; the result is estimated with a high bias. Results for release samples were adjusted according to procedures described in EPA 540-F-94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996 (Ref. 81,pg. 5). Adjusted value is shown in parentheses. |
| µg/kg | Micrograms per kilogram |
| mg/kg | Milligrams per kilogram |
| PCE | Tetrachloroethene |
| RL | Reporting limit; The reporting limit presented is equivalent to the sample quantitation limit as defined by HRS Section 1.1, *Definitions* (Refs. 1, pp. 59, 60; 150) |
| TCE | Trichloroethene |
| VC | Vinyl chloride |

While not required for HRS scoring purposes, background samples are presented below to show the relative increase of contaminant levels in source samples over background levels. Table 2 below depicts the background samples that were collected from borings located between Source 1 and Source 2. The table depicts the date, sample identification, the lab analysis results of the background samples, and other associated information. No detections of any volatile organic compounds were detected in the background soil samples. Refer to Figure 1-4 of this HRS Documentation Record for an aerial location of the background soil samples.

**Table 2**
**Background Soil Sample Table**
**(Soils Obtained Greater Than Two Feet Above The Water Table)**

| Lab ID | Consultant Sample # | Date | Location | Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) | RL | Units | Reference |
|---|---|---|---|---|---|---|---|---|---|
| 503733172 | MMW-6D | 8/23/2004 | MMW-6D | 11-12 Feet | 1,1-DCE | 5.0 U | 5.0 | µg/kg | 99, pp. 36, 121, 122, 134 |
| | | | | | cis-1,2-DCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | trans-1,2-DCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | PCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | TCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | VC | 2.0 U | 2.0 | µg/kg | |
| 503744989 | MMW-4D (9-10) | 8/25/2004 | MMW-4D | 9-10 Feet | 1,1-DCE | 5.0 U | 5.0 | µg/kg | 99, pp. 36, 108, 109, 119 |
| | | | | | cis-1,2-DCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | trans-1,2-DCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | PCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | TCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | VC | 2.0 U | 2.0 | µg/kg | |
| 503750598 | MMW-3S (9-10) | 8/26/2004 | MMW-3S | 9-10 Feet | 1,1-DCE | 5.0 U | 5.0 | µg/kg | 99, pp. 36, 95, 96, 106 |
| | | | | | cis-1,2-DCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | trans-1,2-DCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | PCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | TCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | VC | 2.0 U | 2.0 | µg/kg | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 503740128 | MMW-5D (11) | 8/24/2004 | MMW-5D | 11 Feet | 1,1-DCE | 5.0 U | 5.0 | µg/kg | 99, pp. 36, 139, 140, 150 |
| | | | | | cis-1,2-DCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | trans-1,2-DCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | PCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | TCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | VC | 2.0 U | 2.0 | µg/kg | |
| 503730343 | MMW-2S | 8/19/2004 | MMW-2S | 13 Feet | 1,1-DCE | 5.0 U | 5.0 | µg/kg | 99, pp. 36, 82, 83 |
| | | | | | cis-1,2-DCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | trans-1,2-DCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | PCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | TCE | 5.0 U | 5.0 | µg/kg | |
| | | | | | VC | 2.0 U | 2.0 | µg/kg | |

Notes:

| | |
|---|---|
| # | Number |
| DCE | Dichloroethene |
| ID | Identification |
| µg/kg | Micrograms per kilogram |
| PCE | Tetrachloroethene |
| RL | Reporting limit; The reporting limit presented is equivalent to the sample quantitation limit as defined by HRS Section 1.1, *Definitions* (Refs. 1, pp. 59, 60; 150) |
| TCE | Trichloroethene |
| U | Not detected at or above adjusted reporting limit |
| VC | Vinyl chloride |

The following hazardous substances are associated with the source:

- trichloroethylene (TCE )
- tetrachloroethylene (PCE)
- cis-1,2-dichloroethylene (cis-1,2-DCE)

**Location of the source with reference to a map:**
See Figures 1-2, 1-4, and 1-5 which show an aerial view of the location of Source No. 1.

### 2.2.3 Hazardous Substances Available to a Pathway

| Containment Description | Containment Factor Value | References |
|---|---|---|
| Gas release to air:<br><br>The air migration pathway was not evaluated; therefore, gas containment was not evaluated | Not Scored | |
| Particulate release to air:<br><br>The air migration pathway was not evaluated; therefore, gas containment was not evaluated. | Not Scored | |
| Release to ground water:<br><br>The applicable containment factor value was determined based on existing analytical evidence of hazardous substances in ground water from private public wells and established monitoring wells. There is no liner, either engineered or natural, for the source areas at Michigan Plaza and Genuine Parts. Therefore, based on evidence of hazardous substance migration from source area and lack of a liner, the highest Ground Water Migration Pathway Containment Factor Value of 10 was assigned to Source No. 1 as specified in Table 3-2 of the HRS Rule. | 10 | Refs. 1, Table 3-2, Section 3.1.2.1, p. 70; 149, p. 1<br>See Section 3.1.1 of this HRS documentation record |
| Release via overland migration and/or flood:<br><br>The surface water pathway was not scored; therefore, surface water overland/flood migration component containment was not evaluated | Not Scored | |

## 2.4.2 Hazardous Waste Quantity

### 2.4.2.1 Source Hazardous Waste Quantity

#### 2.4.2.1.1 Hazardous Constituent Quantity (Tier A)

The hazardous constituent quantity for Source No. 1 could not be adequately determined according to the HRS requirements; that is, the total mass of all Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances in the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.1). There are insufficient historical and current data (manifests, potentially responsible parties (PRP) records, State records, permits, waste concentration data, etc.) available to adequately calculate the total or partial mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous constituent quantity for Source No. 1 with reasonable confidence. As a result, the evaluation of hazardous waste quantity proceeds to the evaluation of Tier B, hazardous wastestream quantity (Ref. 1, Section 2.4.2.1.1, pp. 64, 65).

**Hazardous Constituent Quantity Assigned Value: NS**

#### 2.4.2.1.2. Hazardous Wastestream Quantity (Tier B)

The hazardous wastestream quantity for Source No. 1 could not be adequately determined according to the HRS requirements; that is, the mass of the hazardous wastestreams plus the mass of any additional CERCLA pollutants and contaminants in the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.2). There are insufficient historical and current data (manifests, PRP records, State records, permits, waste concentration data, etc.) available to adequately calculate the total or partial mass of the wastestream plus the mass of all CERCLA pollutants and contaminants in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous wastestream quantity for Source No. 1 with reasonable confidence. Scoring proceeds to the evaluation of Tier C, Volume (Ref. 1, Section 2.4.2.1.2, p. 65).

**Hazardous Wastestream Quantity Assigned Value: NS**

#### 2.4.2.1.3. Volume (Tier C)

The information available on the depth of Source No. 1 is not sufficiently specific to support a volume reasonable confidence; therefore it is not possible to assign a volume (Tier C) for Source No. 1 (Ref. 1, Section 2.4.2.1.3). Source No. 1 has been assigned a value of 0 for the volume measure. As a result the evaluation of hazardous waste quantity proceeds to the evaluation of Tier D, area (Ref. 1, Section 2.4.2.1.3, p. 65).

**Volume Assigned Value: 0**

#### 2.4.2.1.4. Area (Tier D)

The horizontal extent of Source No. 1 and the continuation of contamination between sample points have not been sufficiently determined; therefore, the source area is unknown, but greater than 0 (Ref. 1, Section 2.4.2.1.4, p. 65).

**Area Assigned Value: Unknown, but > 0**

#### 2.4.2.1.5. Source Hazardous Waste Quantity Value

Area of contaminated soil source: >0
Highest assigned value assigned from Ref. 1, Table 2-5: > 0
Source Hazardous Waste Quantity Value: >0 (Ref. 1, Section 2.4.2.1.5, p. 65).

### 2.2.1 Source Identification

Number of Source: 2

Source Type: Soil Contamination

Name and Description of the Source: Historic degreasing and industrial waste burial activities – Genuine Parts

The source area is associated with former parts degreasing operations and waste burial activities on the west side of the Genuine Parts property (Refs. 36, p. 36; 75, p. 8). During exploratory trenching activities, fill material consisting of soil and occasional automotive debris parts mostly consisting of round flexible discs were encountered near the surface (Ref. 25, p. 12). Analytical results from subsurface soil samples indicate the presence of TCE, CIS 1,2 DCE, PCE, Trans 1,2 DCE, and VC (Ref. 25, pp. 105, 106; Source Soil Sample Map from Tetra Tech, Table 2 of this HRS Documentation Record).

Hazardous waste was excavated between April 9, 2001 and July 6, 2001 (Ref. 21, p. 50). During this time 190 loads of waste were transported and disposed at Environsafe Services of Ohio, Inc. in Oregon, Ohio resulting in a total of 4,981.51 tons (Ref. 21, p. 50). During the removal action, it was observed that buried waste extended beneath the building. Soil borings placed inside the building revealed that the buried waste extended beneath the building approximately 100 feet to the east and approximately 75 feet north from the southwest corner of the building (Ref, 36, p. 36). As shown in Table 3 of this HRS Documentation Record, below, soil contamination remained at the facility following the 2001 removal action.

Location of Source:

The source area is located on the western portion of Genuine Parts property (Refs. 25, p.106; 36, pp. 36, 273, 274; Figure 1-4 of this HRS Documentation Record). The eastern source of Genuine Parts, as mentioned in the Attribution Section of Section 3.1.1 of this HRS Documentation Record, is not shown in Figure 1-4 due to insufficient data. The exact nature of historic operations and potential contaminant release mechanisms in the eastern source area are not known (Ref. 36, p. 34). See Section 3.1.1 for additional details.

### 2.2.2 Hazardous Substances Associated with Source No. 2

Table 3 on the following page depicts the date, sample identification, hazard substance detected, hazardous substance concentration, and other associated information that were obtained from the western source area located on the Genuine Parts property. Refer to Figure 1-4 of this HRS Documentation Record for an aerial view of the source area for Genuine Parts. Subsurface soils in the area consist largely of loam (silty, sandy and/or sandy clay loams) (Refs. 19, pp. 33, 34; 25, pp. 36-77). Soil and ground water samples were analyzed in accordance with U.S. EPA Method 8260 (Refs. 26, p. 153; 57, p. 4; 148).

# Table 3
# Source No. 2 Soil Sample Table
# Genuine Parts
# (Soils Obtained Greater Than Two Feet Above The Water Table)

| Lab ID | Consultant Sample # | Date | Location | Depth Below Ground Surface (feet) | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) | RL | Units | Reference |
|---|---|---|---|---|---|---|---|---|---|
| A749078 | A2-WW-1 (4') | 10/5/2006 | A2-WW-1 | 4 Feet | cis-1,2-DCE | 1,000 J-[1] (1,000) | 27 | µg/kg | 25, p. 28; 57, pp. 10, 13 81, p. 8; 106, pp. 181, 190 |
| | | | | | PCE | 30 J-[1] (30) | 27 | µg/kg | |
| A744579 | KS-1 | 8/23/2006 | KS-1 | 5 Feet | TCE | 6.2 | 5.8 | µg/kg | 25, p. 28; 96, pp. 3, 7 |
| A744586 | KS-8 | 8/28/2006 | KS-8 | 5 Feet | TCE | 20 | 5.4 | µg/kg | 25, p, 28; 96, pp. 3, 30 |
| A744588 | KS-10 | 8/28/2006 | KS-10 | 5 Feet | TCE | 41 | 5.3 | µg/kg | 25, p, 28; 96, pp. 3, 37 |
| A747903 | A3-WW-4 | 9/25/2006 | A3-WW-4 | 5 Feet | cis-1,2-DCE | 7.9 | 5.8 | µg/kg | 25, p. 28; 97, pp. 634, 636 |
| A747910 | A3-EW-1 | 9/27/2006 | A3-EW-1 | 5 Feet | TCE | 42 | 5.7 | µg/kg | 25, p. 28; 97, pp. 634, 661 |
| A747912 | A3-EW-3 | 9/28/2006 | A3-EW-3 | 5 Feet | cis-1,2-DCE | 6.9 | 5.9 | µg/kg | 25, p. 28; 97, pp. 634, 666, 667 |
| | | | | | TCE | 54 | 5.9 | µg/kg | |
| A747914 | A3-SW-1 | 9/28/2006 | A3-SW-1 | 5 Feet | cis-1,2-DCE | 320 | 5.6 | µg/kg | 25, p. 28; 97, pp. 634, 672-673 |
| | | | | | trans-1,2-DCE | 12 | 5.6 | µg/kg | |
| | | | | | TCE | 1,800 (DL) | 28 | µg/kg | |
| A749079 | A2-WW-2 (9') | 10/5/2006 | A2-WW-2 | 9 Feet | cis-1,2-DCE | 130 | 5.3 | µg/kg | 25, p. 25; 106, pp. 181, 194, 195 |
| | | | | | TCE | 40 | 5.3 | µg/kg | |
| A744580 | KS-2 | 8/23/2006 | KS-2 | 10 Feet | cis-1,2-DCE | 120 | 5.5 | µg/kg | 25, p. 28; 96, pp. 3, 9, 10 |
| | | | | | TCE | 7 | 5.5 | µg/kg | |
| A744582 | KS-4 | 8/23/2006 | KS-4 | 10 Feet | cis-1,2-DCE | 120 | 5.4 | µg/kg | 25, p. 28; 96, pp. 3, 15, 16 |
| | | | | | trans-1,2-DCE | 8.3 | 5.4 | µg/kg | |
| | | | | | TCE | 16 | 5.4 | µg/kg | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| A744587 | KS-9 | 8/28/2006 | KS-9 | 10 Feet | cis-1,2-DCE | 910 (DL) | 680 | µg/kg | 25, p, 28; 57, pp. 10, 13, 32; 81, p.8; 96, pp. 3, 32, 33 |
| | | | | | trans-1,2-DCE | 29 | 5.4 | µg/kg | |
| | | | | | TCE | 18,000 J-[2] (18) (RA) | 680 | µg/kg | |
| A744589 | KS-11 | 8/28/2006 | KS-11 | 10 Feet | cis-1,2-DCE | 3,700 (DL) | 680 | µg/kg | 25, p. 28; 96, pp. 4, 39, 40 |
| | | | | | trans-1,2-DCE | 82 | 27 | µg/kg | |
| | | | | | TCE | 340 | 27 | µg/kg | |
| A746417 | A1/A3 East Wall-2 | 9/6/2006 | A1/A3 East Wall | 11 Feet | 1,1- DCE | 40 | 5.4 | µg/kg | 25, p. 28; 97, pp. 193, 198, 199 |
| | | | | | cis-1,2-DCE | 2.0 (DL) | 27 | µg/kg | |
| | | | | | trans-1,2-DCE | 39 | 5.4 | µg/kg | |
| | | | | | TCE | 250 | 5.4 | µg/kg | |
| | | | | | VC | 8.6 | 5.4 | µg/kg | |
| A747151 | A3-WW-3 (10') | 9/15/2006 | A3-WW-3 | 10 Feet | cis-1,2-DCE | 350 | 5.6 | µg/kg | 25, p. 28; 97, pp. 367, 375, 376 |
| | | | | | trans-1,2-DCE | 20 | 5.6 | µg/kg | |
| | | | | | PCE | 150 | 5.6 | µg/kg | |
| | | | | | TCE | 11,000 (DL) | 710 | µg/kg | |
| A747904 | A3-WW-5 | 9/25/2006 | A3-WW-5 | 10 Feet | 1,1- DCE | 37 | 5.5 | µg/kg | 25, p. 28; 97, pp. 634, 639, 640 |
| | | | | | cis-1,2-DCE | 23,000 (DL) | 690 | µg/kg | |
| | | | | | trans-1,2-DCE | 99 | 5.5 | µg/kg | |
| | | | | | TCE | 9.3 | 5.5 | µg/kg | |
| | | | | | VC | 1,300 (DL) | 690 | µg/kg | |
| A747905 | A3-WW-5 DUP | 9/25/2006 | A3-WW-5 | 10 Feet | 1,1- DCE | 43 | 5.6 | mg/kg | 25, p. 28; 97, pp. 634, 643, 644 |
| | | | | | cis-1,2-DCE | 22,000 (DL) | 700 | mg/kg | |
| | | | | | trans-1,2-DCE | 110 | 5.6 | µg/kg | |
| | | | | | TCE | 12 | 5.6 | µg/kg | |
| | | | | | VC | 1,100(DL) | 700 | µg/kg | |
| A747907 | A3-NW-2 | 9/25/2006 | A3-NW-2 | 10 Feet | cis-1,2-DCE | 75 | 5.4 | µg/kg | 25, p. 28; 97, pp. 634, 650, 651 |
| | | | | | trans-1,2-DCE | 5.6 | 5.4 | µg/kg | |
| | | | | | TCE | 220 | 5.4 | µg/kg | |
| A747909 | A3-NW-4 | 9/27/2006 | A3-NW-4 | 11 Feet | TCE | 400 | 5.4 | µg/kg | 25, p. 28; 97, pp. 634, 658 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| A747913 | A3-EW-4 | 9/28/2006 | A3-EW-4 | 11 Feet | 1,1- DCE | 15 | 5.4 | µg/kg | 25, p. 28; 97, pp. 634, 669, 670 |
| | | | | | cis-1,2-DCE | 7,500 (DL) | 680 | µg/kg | |
| | | | | | trans-1,2-DCE | 92 | 5.4 | µg/kg | |
| | | | | | TCE | 14 | 5.4 | µg/kg | |
| | | | | | VC | 8.2 | 5.4 | µg/kg | |
| A747915 | A3-SW-2 | 9/28/2006 | A3-SW-2 | 11 Feet | cis-1,2-DCE | 1,400 (DL) | 690 | µg/kg | 25, p. 28; 97, pp. 634, 677, 678 |
| | | | | | trans-1,2-DCE | 33 | 5.5 | µg/kg | |
| | | | | | VC | 35 | 5.5 | µg/kg | |
| A749077 | A2-SW-2 (11') | 10/5/2006 | A2-SW-2 | 11 Feet | 1,1- DCE | 82 | 5.5 | µg/kg | 25, p. 28; 106, pp. 181, 186, 187 |
| | | | | | cis-1,2-DCE | 18,000 (DL) | 690 | µg/kg | |
| | | | | | trans-1,2-DCE | 110 | 5.5 | µg/kg | |
| | | | | | TCE | 21,000 (DL) | 690 | µg/kg | |
| | | | | | VC | 45 | 5.5 | µg/kg | |

Notes:

| | |
|---|---|
| # | Number |
| DCE | Dichloroethene |
| ID | Identification |
| J-[1] | Matrix interference led to a recovery below the quality control limit; the result is estimated with a low bias. Results for release samples require no adjustment according to procedures described in EPA 540-F-94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996 (Ref. 81, p. 5). |
| J-[2] | The matrix spike/matrix spike duplicate displayed recoveries below the quality control limit; the result is estimated with a low bias. Results for release samples require no adjustment according to procedures described in EPA 540-F-94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996 (Ref. 81, p. 5). |
| µg/kg | Micrograms per kilogram. Concentrations were multiplied by 1,000 to convert them from milligrams per kilogram to micrograms per kilogram for ease of comparison to background levels presented in Table 2. |
| PCE | Tetrachloroethene |
| DL | Analyte was reanalyzed using Volatile Organics, Capillary Column Technique SW-846-8260B. Concentration exceeded the instrument's calibration range. Samples were reanalyzed using a dilution factor and the results are reported from the diluted analysis. Dilution in and of itself does not indicate any associated data quality issue |
| TCE | Trichloroethene |
| VC | Vinyl chloride |
| RL | Reporting Limit; The reporting limit presented is equivalent to the sample quantitation limit as defined by HRS Section 1.1, *Definitions* (Refs. 1, pp. 59, 60; 150) |

While not required for HRS scoring purposes, background samples are presented in Table 2 in the Source No. 1 characterization section of this HRS documentation record. These background samples were collected from borings located between Source 1 and Source 2.and are used for comparison to Source No. 2 samples presented in Table 3 to show the relative increase of source contaminant levels over background levels. No detection of any volatile organic compounds were detected in the background soil samples. Refer to Figure 1-4 of this HRS Documentation Record for an aerial location of the background soil samples.

The following hazardous substances are associated with the source:

- trichloroethylene (TCE )
- 1,1-dichloroethylene (1,1 -DCE)
- cis-1, 2-dichloroethylene (cis-1,2-DCE)
- trans -1, 2-dichloroethylene (trans-1,2-DCE)
- vinyl chloride (VC)
- tetrachloroethylene (PCE)

**Location of the source with reference to a map:**
See Figures 1-2, 1-4, and 1-5 which show and aerial view of the location of Source No. 2.

### 2.2.3 Hazardous Substances Available to a Pathway

| Containment Description | Containment Factor Value | References |
|---|---|---|
| Gas release to air:<br><br>The air migration pathway was not evaluated; therefore, gas containment was not evaluated | Not Scored | |
| Particulate release to air:<br><br>The air migration pathway was not evaluated; therefore, gas containment was not evaluated. | Not Scored | |
| Release to ground water:<br><br>The applicable containment factor value was determined based on existing analytical evidence of hazardous substances in ground water from private public wells and established monitoring wells. There is no liner, either engineered or natural, for the source areas at Michigan Plaza and Genuine Parts. Therefore, based on evidence of hazardous substance migration from source area and lack of a liner, the highest Ground Water Migration Pathway Containment Factor Value of 10 was assigned to Source No. 1 as specified in Table 3-2 of the HRS Rule | 10 | Refs. 1, Table 3-2, Section 3.1.2.1, p.70; 149, p. 1;<br>See Section 3.1.1 of this HRS documentation record |

| Containment Description | Containment Factor Value | References |
|---|---|---|
| Release via overland migration and/or flood:<br><br>The surface water pathway was not scored; therefore, surface water overland/flood migration component containment was not evaluated | Not Scored | |

## 2.4.2 Hazardous Waste Quantity

### 2.4.2.1 Source Hazardous Waste Quantity

#### 2.4.2.1.1 Hazardous Constituent Quantity (Tier A)

The hazardous constituent quantity for Source No. 2 could not be adequately determined according to the HRS requirements; that is, the total mass of all Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances in the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.1). There are insufficient historical and current data (manifests, potentially responsible parties (PRP) records, State records, permits, waste concentration data, etc.) available to adequately calculate the total or partial mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous constituent quantity for Source No. 2 with reasonable confidence. As a result, the evaluation of hazardous waste quantity proceeds to the evaluation of Tier B, hazardous wastestream quantity (Ref. 1, Section 2.4.2.1.1, pp. 64, 65).

**Hazardous Constituent Quantity Assigned Value: NS**

#### 2.4.2.1.2. Hazardous Wastestream Quantity (Tier B)

The hazardous wastestream quantity for Source No. 2 could not be adequately determined according to the HRS requirements; that is, the mass of the hazardous wastestreams plus the mass of any additional CERCLA pollutants and contaminants in the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, Section 2.4.2.1.2, p. 65). There are insufficient historical and current data (manifests, PRP records, State records, permits, waste concentration data, etc.) available to adequately calculate the total or partial mass of the wastestream plus the mass of all CERCLA pollutants and contaminants in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous

wastestream quantity for Source No. 2 with reasonable confidence. Scoring proceeds to the evaluation of Tier C, Volume (Ref. 1, Section 2.4.2.1.2, p. 65).

**Hazardous Wastestream Quantity Assigned Value: NS**

### 2.4.2.1.3. Volume (Tier C)

The information available on the depth of Source No. 2 is not sufficiently specific to support a volume reasonable confidence; therefore it is not possible to assign a volume (Tier C) for Source No. 2 (Ref. 1, Section 2.4.2.1.3, p. 65). Source No. 2 has been assigned a value of 0 for the volume measure. As a result the evaluation of hazardous waste quantity proceeds to the evaluation of Tier D, area (Ref. 1, Section 2.4.2.1.3, p. 65).

**Volume Assigned Value: 0**

### 2.4.2.1.4. Area (Tier D)

The horizontal extent of Source No. 2 and the continuation of contamination between sample points have not been sufficiently determined; therefore, the source area is unknown, but greater than 0 (Ref. 1, Section 2.4.2.1.4, p. 65).

**Area Assigned Value: Unknown, but > 0**

### 2.4.2.1.5. Source Hazardous Waste Quantity Value

Area of contaminated soil source: >0
Highest assigned value assigned from Ref. 1, Table 2-5: > 0
Source Hazardous Waste Quantity Value: >0 (Ref. 1, Section 2.4.2.1.5, p. 65).

## SUMMARY OF SOURCE DESCRIPTIONS

| Source No. | Source Haz. Waste Quantity Value | Source Hazardous Constituent Quantity Complete? (Y/N) | Containment Factor Value by Pathway | | | | |
|---|---|---|---|---|---|---|---|
| | | | Ground Water (GW) (Ref. 1, Table 3-2) | Surface Water (SW) | | Air | |
| | | | | Overland/flood (Ref. 1, Table 4-2) | GW to SW (Ref. 1, Table 3-2) | Gas (Ref. 1, Table 6-3) | Particulate (Ref. 1, Table 6-9) |
| 1 | > 0 | N | 10 | NS* | NS* | NS* | NS* |
| 2 | > 0 | N | 10 | NS* | NS* | NS* | NS* |

*NS (Not Scored)

## Other Possible Sources

No other possible sources have been identified at the site.

## 3.0 GROUND WATER MIGRATION PATHWAY

### 3.0.1 General Considerations

### Ground Water Migration Pathway Description

### Regional Geology/Aquifer Description:

Subsurface materials beneath the site, the Speedway wellfield, and the Riverside wellfield are part of one continuous sand and gravel outwash plain that extends across the White River and lower Eagle Creek stream valleys (Ref. 120, pp. 6, 8, 9). In the area of interest and the Speedway wellfield, sediments consist of variable thicknesses of outwash overlying complexly interbedded sand and gravel and till. Thick unbroken sections of sand and gravel are present locally (Ref. 120, p. 11). Sediments in the Riverside wellfield consist of thick sections of sand and gravel interstratified with a few, small, widely scattered till units (Ref. 120, p. 11). Regionally, the New Albany Shale underlies the sand and gravel outwash and Muskatatuck (limestone) group underlies the shale (Refs. 120; 130). However, the New Albany Shale is not present throughout the entire region and where the shale is absent, unconsolidated sand and gravel materials sit directly on the carbonate Muskatatuck group (Fig 1-5: Ref 120, p. 10; 116, pp. 51-55). The aquifer is unconfined and the recharge rate is high (Ref. 120, pp. 12-13).

The 4-mile Target Distance Limit (TDL) has been established from the sources at this site as shown in Figure 1-5.

### Local Geology/Aquifer Description:

The ground water system in the area of the West Vermont Drinking Water site consists of two hydraulically interconnected aquifer layers/strata. These aquifers are described below.

- Aquifer/Stratum 1 (uppermost): Sand and Gravel Outwash Overburden

Description

Surficial soils near the residential wells and potential sources consist of Urban Land-Genesee complex along the north bank of Little Eagle Creek and in a small area near west Vermont St in the southwest corner of the area of interest. Genesee soil consists of very deep, well drained soils that formed in flood plains along the White River and larger creeks. Urban Land-Fox complex is present through the remainder of the area of interest and in most of the land between the two creeks. Fox complex soil consists of well drained soils overlying sand and gravelly sand. (Ref. 125)

Boring logs in the project area show that unconsolidated sediments consist primarily of sand, with interbedded fine-grained units between 30 and 80 feet bgs (Refs. 40, pp. 885-1113; 131; 132; 133, pp. 446-571). Nearby locations, notably wells MMW-20LA, MMW-21LA, MMW-P-22LA (Ref. 122, pp. 91-96, 98-101, 105-109), MW-WES-01C (Ref. 131, p 1), and MW-WES-6D (Ref. 132, p. 1) show vinyl chloride contamination migrating below the fine-grained sediments down to a depth of 70 feet (Refs. 122, pp. 46-72; 131; 132; Table 7; Table 8). This migration of a non-naturally occurring contaminant (vinyl chloride) through the fine-grained

sediments, and subsequent presence of contamination throughout the aquifer to a depth of at least 70 feet, demonstrates that the interbedded fine-grained units do not act as a local barrier to ground water flow and the sand and gravel aquifer is one hydraulic unit.

- Aquifer/Stratum 2 (deepest): Limestone Bedrock

Description

The Muskatatuck group consists of crystalline limestone and lesser calcareous shales (Ref. 120, p. 10). Prior to glaciation, the top of the bedrock surface was exposed to weathering and underwent karst development (Ref. 130, p. 15). Within the Riverside wellfield, the outwash aquifer is directly on the bedrock, (Ref. 129, p. 23), which is relict karst, therefore, "the limestone aquifer is hydraulically connected to the outwash sand and gravel aquifer" (Ref. 129, p. 27). The "…carbonate rocks lying…immediately beneath the outwash have undergone extensive solution-channel development…" (Ref. 127, p. 3). Possible solution cavities and/or voids were identified in the test piezometers cored near RS-29 (Ref. 128, pp. 6, 12, 18-20).

**Aquifer Interconnections/Distance from Source**

Description

Subsurface materials beneath the project area, the Speedway wellfield, and the Riverside wellfield are part of one continuous sand and gravel outwash plain that extends across the White River and lower Eagle Creek stream valleys (Ref. 120, pp. 6, 8, 9). The thickness and extent of the finer grained material in the project area are insufficient to form a barrier to vertical contaminant migration. The finer grained unit from 35-50 ft bgs is not present in parts of the project area (Ref. 16; 40, pp. 955-963, 986-997; 133, pp. 557 and 559). Additionally, the migration of a non-naturally occurring contaminant (vinyl chloride) through the fine-grained sediments, and subsequent presence of contamination throughout the aquifer to a depth of at least 70 feet bgs demonstrates that the interbedded fine-grained units do not act as a local barrier to ground water flow.

Shale bedrock of the New Albany Formation (Ref. 120, p. 10) is present in the project area between 70-80 feet bgs (Refs. 122, pp. 108, 113, 117; 131). However, the New Albany Shale is not present throughout the study area and is specifically not present within 2 miles east of the study area where unconsolidated materials (the sand and gravel outwash overburden) sit directly on the carbonate Muskatatuck group (Fig 1-5; Refs. 120, p. 10; 116, pp. 51-55). Within the Riverside wellfield, the outwash aquifer is directly on the bedrock, (Ref. 129, p. 23), which is relict karst. The materials in the aquifers have hydraulic conductivities that are within two orders of magnitude of one another; therefore, "the limestone aquifer is hydraulically connected to the outwash sand and gravel aquifer" (Ref 1, pp, 51601; 129, p. 27).

**Additional Site Geology/Aquifer Description:**

The sand and gravel outwash overburden extends throughout the 4-mile TDL, but specifically eastward in to the White River valley to the Riverside wells (Ref. 120, pp. 6, 8, 9). There are no aquifer boundaries such as faults or mountain ranges between the project area and the Speedway or Riverside wellfields (Ref 3).

In 2013, Mundell performed slug tests on seven wells near the residential wells. The hydraulic conductivity averaged 70.9 feet per day with a maximum of 141 feet per day (Ref. 121, p. 3).

In the project area, shale bedrock of the New Albany Formation (Ref 120, p. 10) is present between 70-80 feet bgs (Refs. 122, pp 108, 113, 117; 131). The New Albany Formation is between 85-150 feet thick in the White River basin and has low water yield (Ref 130, pp 6 and 11). In the Speedway wellfield it is not a major ground water producing unit and is considered an aquitard (Ref. 123, p. 10). The New Albany Shale is not present less than 2 miles east of the study area and unconsolidated materials sit directly on the carbonate Muskatatuck group (Fig 1-5: Refs. 120, p. 10; 116, pp 51-55).

Ground water in the project area is encountered between 14 and 18 feet bgs in monitoring wells (Refs. 119, pp 2-39; 122, pp. 44-45). Ground water is unconfined, as evidenced by similar hydraulic heads in shallow and deep wells (Refs. 119, pp. 2-39; 122, pp. 7-45). Little Eagle Creek does not form a hydraulic barrier, as evidenced by contamination sourced north of the creek which underflows the stream (Ref. 119, pp. 57-61).

The ground water flow direction in the project area is generally towards the south with some components of flow to the southeast and southwest (Refs. 119, pp. 63-66; 122 pgs 2-5; 38, pp. 51-52). Regional ground water flow near the Speedway wellfield southeast from the Eagle Creek valley towards the White River valley (Ref 123, p. 12).

The stream channel of Big Eagle Creek within the lower valley has been rerouted over time. Review of historic aerial photographs from 1972, 1962, 1956, and 1941 (Ref. 124, pp. 2, 3, 4, 5, 6) shows that Big Eagle Creek steam channel south of Vermont St, was originally much closer to what is now the intersection of Holt Road and Cossell Ave. The original stream channel implies that natural flow can be to the southwest as well as southeast. (Ref. 15, p. 1)

**Aquifer Discontinuities within Target Distance Limit**

There are no known aquifer boundaries or discontinuities present within 4 miles of the project area and the Riverside, White River, and Speedway wellfields that completely transects an aquifer in the 4-mile TDL (Refs. 3; 120, pp 6, 8-9). The Speedway, and Riverside wellfields are located between 1 to 3 miles from the source areas (Figure 1-5). The White River wellfield is located 2 to 4 miles from the source areas (Figure 1-5). The New Albany Shale is not present less than 2 miles east of the study area, and Little Eagle Creek does not form a hydraulic barrier, as evidenced by contamination sourced north of the creek which underflows the stream (Ref. 119, pp. 57-61).

**SUMMARY OF AQUIFER(S) BEING EVALUATED**

| Aquifer No. | Aquifer Name | Is Aquifer Interconnected with Upper Aquifer within 2 miles? (Y/N/NA) | Is Aquifer Continuous within 4-mile TDL? (Y/N) | Is Aquifer Karst? (Y/N) |
|---|---|---|---|---|
| 1 | Sand and Gravel Outwash Overburden | NA | Y | N |
| 2 | Limestone Bedrock | Y | Y | Y* |

*Karst topography has not been confirmed to be underlying the source and continuing out to the target wells being evaluated at this time; therefore, the aquifer is not scored as karst for HRS purposes.

The unconsolidated (Sand and Gravel Outwash Overburden) and bedrock aquifers are interconnected (Ref. 107, p. 2). The aquifer is continuous in within the 4-mile radius (Ref. 107, pp. 1-3).

## 3.1 LIKELIHOOD OF RELEASE

### 3.1.1 Observed Release

Aquifer Being Evaluated: The interconnected unconsolidated and bedrock aquifers

Establishing an observed release by chemical analysis requires analytical evidence of a hazardous substance in the media significantly above background level (Ref. 1, Section 2.3, p. 63). If the background concentration is not detected (or is less than the detection limit), an observed release is established when the sample measurement equals or exceeds its own Sample Quantitation Limit (SQL) and that of the background sample. If the SQL cannot be established, the U.S. EPA Contract-Required Quantitation Limit (CRQL) is used in place of the SQL (Ref. 1, Table 2-3, p. 63).

Chemical Analysis

On October 17, 21 through 31, November 26, 2014, and February 6, 2015, U.S. EPA Contractor staff collected ground water samples for the West Vermont Contaminated Drinking Water (Refs. 43, pp.1-17; 45, pp. 1, 2; 54, pp. 1-17; 77, pp. 1-6; 87, pp.1, 2; 93, pp. 1-2589, pp. 92-95; 90, pp.35, 36; 91, p. 23; 92, pp. 90, 91; 94, pp. 31, 201; Tables 4, 5, 6 of this HRS Documentation Record). The ground water samples were analyzed for the trace volatile list of compounds. All samples were analyzed according to CLP SOW SOM01.2 (10/2006) and reviewed according to the NFG for SOM01.2 and the SOP for ESAT 5/TechLaw Validation of Contract Laboratory Program Organic Data (Version 2.7) (Refs. 89, p. 2; 90, p. 2; 91, p. 2; 92, p. 2; 94, p. 2).

- Background Concentrations:

EPA contractor staff obtained background ground water samples from monitoring wells and one residential private well. Table 4 below on the following pages depicts the background ground water samples, hazardous substances concentrations, and other associated sample information.

**Table 4**
**Background Ground Water Sample**
**(Obtained from established monitoring wells and one private residential well)**

| EPA CLP# | EPA ID | Date | Location | Type of Ground Water Sample | Depth Below Ground Surface | Hazardous Substance** | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Contract-Required Quantitation Limit (CRQL) µg/L | Reference |
|---|---|---|---|---|---|---|---|---|---|
| E5AZ2 | BUJ-0068 | 11/26/14 | MW-WVs-10 | Monitoring Well | 45 Feet | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE<br>TCE<br>1,1-DCA | ND<br>ND<br>ND<br>0.37 * (ND)<br>ND | 0.5<br>0.5<br>0.5<br>0.5<br>0.5 | Refs. 76, pp. 7, 8; 77, pp. 1, 94, pp. 6, 7, 31, 46-48, 201; 101, p. 2 |
| E5AZ3 | BUJ-0069 | 11/26/14 | MW-WVS-11 | Monitoring Well | 53 Feet | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE<br>TCE<br>1,1-DCA | ND<br>ND<br>ND<br>ND<br>ND | 0.5<br>0.5<br>0.5<br>0.5<br>0.5 | Refs. 76, pp. 7, 8, 9; 94, pp. 8,9, 31, 64-66, 201; 101, pp. 3, 4 |
| E5AS5 | WV-RES-4020cos | 10/17/2014 | 4020 Cossell | Residential Well | | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE<br>TCE<br>1,1-DCA | ND<br>ND<br>ND<br>ND<br>ND | 0.5<br>0.5<br>0.5<br>0.5<br>0.5 | Ref. 54, pp. 2, 3; 89, pp. 17, 92, 147, 148, 149; 103, pp, 1, 2 |
| E5BH3 | MW 10 | 02/06/15 | Olin Park/WVS-10 | Monitoring Well | 50 Feet | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE<br>TCE<br>1,1-DCA | ND<br>ND<br>0.12* (ND)<br>ND<br>ND | 0.5<br>0.5<br>0.5<br>0.5<br>0.5 | Refs. 60, p. 1; 67, pp. 1-6; 113, ; pp. 9-10, 37, 57-59 |

| EPA CLP# | EPA ID | Date | Location | Type of Ground Water Sample | Depth Below Ground Surface | Hazardous Substance** | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Contract-Required Quantitation Limit (CRQL) µg/L | Reference |
|---|---|---|---|---|---|---|---|---|---|
| E5BH4 | MW 10 | 02/06/15 | Olin Park/WVS-10 | Monitoring Well | 50 Feet | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE<br>TCE<br>1,1-DCA | ND<br>ND<br>0.11 * (ND)<br>ND<br>ND | 0.5<br>0.5<br>0.5<br>0.5<br>0.5 | Refs. 60, p. 1; 67, pp. 1-6; 113, pp. 17-18, 37, 67-69 |
| E5BH7 | MW 11 | 02/06/15 | Olin Park/WVS-11 | Monitoring Well | 55 Feet | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE<br>TCE<br>1,1-DCA | ND<br>ND<br>ND<br>ND<br>ND | 0.5<br>0.5<br>0.5<br>0.5<br>0.5 | Refs. 60, p. 2; 67, pp. 1-6; 113, pp. 25-26, 37, 79-81 |
| E5AW8 | WV-MW-4B-GW | 10/29/14 | Existing USEPA monitoring well MWWES-04b, north side of residential area | Monitoring Well | 39-44 feet | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE<br>TCE<br>1,1-DCA | ND<br>ND<br>ND<br>ND<br>ND | 0.5<br>0.5<br>0.5<br>0.5<br>0.5 | Refs. 38, p. 426; 85, p. 27; 92, pp. 15-16, 90, 118-120; 114, p.2 |
| E5AW9 | WV-MW-4A | 10/29/14 | Existing USEPA monitoring well MWWES-04a, north side of residential area | Monitoring Well | 25-30 feet | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE<br>TCE<br>1,1-DCA | ND<br>ND<br>ND<br>ND<br>ND | 0.5<br>0.5<br>0.5<br>0.5<br>0.5 | Ref. 38, p. 426; 85, p. 27; 92: Pg. 17-18, 90, 121-123 |

| EPA CLP# | EPA ID | Date | Location | Type of Ground Water Sample | Depth Below Ground Surface | Hazardous Substance** | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Contract-Required Quantitation Limit (CRQL) µg/L | Reference |
|---|---|---|---|---|---|---|---|---|---|
| E5AW6 | WV-MW-10 | 10/21/14 | Existing Allison Transmission monitoring well MW-1003-S3, north of NW corner of residential area | Monitoring Well | 55 feet | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE<br>TCE<br>1,1-DCA | ND<br>ND<br>ND<br>ND<br>ND | 0.5<br>0.5<br>0.5<br>0.5<br>0.5 | Refs. 23, p. 95; 85, p. 28; 90, pp. 18-19, 36, 67-69; 111, p. 2 |
| E5AW5 | WV-MW-11-GW | 10/24/14 | Existing Allison Transmission monitoring well MW-1105-S3/4, north of residential area | Monitoring Well | | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE<br>TCE<br>1,1-DCA | ND<br>ND<br>ND<br>ND<br>ND | 0.5<br>0.5<br>0.5<br>0.5<br>0.5 | Refs. 85, p. 28; 89, pp. 71-72, 95, 228-230; 108, p. 3; 111, pp. 3, 4 |
| E5AW0 | WV-MW-12-GW | 10/23/14 | Existing Genuine Parts monitoring well MW-135 | Monitoring Well | 10-20 feet | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE<br>TCE<br>1,1-DCA | ND<br>ND<br>ND<br>ND<br>ND | 0.5<br>0.5<br>0.5<br>0.5<br>0.5 | Refs. 36, p. 97; 85, p. 28; 89, pp. 55-56, 94, 204-206 |
| E5AT9 | WV-MW-13-GW | 10/23/14 | Existing Genuine Parts monitoring well MW-154 | Monitoring Well | 5-20 feet | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE<br>TCE<br>1,1-DCA | ND<br>ND<br>ND<br>ND<br>ND | 0.5<br>0.5<br>0.5<br>0.5<br>0.5 | Refs. 36, p. 101; 85, p. 28; 89: pp. 53-54, 94, 201-203 |

ND* = Not Detected

*- Samples have analyte concentrations below the quantitation limit (CRQL) and detected compounds are qualified as J values. Detection below the CRQL is treated as non-quantifiable for HRS purposes. Result was adjusted to “Non-Detect” (ND) using the procedure described in EPA 540-F-94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996

ND = Concentrations of analyte was at or below the CRQL and received a “U” qualifier, or adjusted concentrations of analyte was below the CRQL.

- **Contaminated Ground Water Samples:**

In 2014, U.S.EPA’s START Contractor conducted sampling activities at the West Vermont

Drinking Water Contamination and surrounding areas (Refs. 43, pp.1-17; 45, pp. 1, 2; 54, pp. 1-17; 77, pp. 1-6; 87, pp.1, 2; 93, pp. 1-25; 89, pp. 92-95; 90, pp. 35, 36; 91, p. 23; 92, pp. 90, 91; 94, p. 31, 201; Tables 5 and 6 of this HRS Documentation Record). The ground waters obtained from monitoring wells and residential wells were found to be contaminated with chlorinated VOCs (Ref. Sections 3.1.1 and 3.3.2.2 of this HRS documentation record).

The extent of the ground water plume is depicted by samples from monitoring wells and residential wells meeting observed release criteria (Figure 1-2). The extent of this plume has not been completely delineated at this time but has been characterized by data from monitoring wells and residential wells (Ref. Section 3.1.1 of this HRS documentation record and Figure 1-2 of this HRS documentation record).

The plume currently measures approximately 20.2 acres (Fig. 1-2). The area of the ground water plume is based on available samples that meet the criteria for an observed release (Section 3.1.1 of this Documentation Record). The plume boundary was digitized by connecting wells that met observed release criteria (Figure 1-2 of this HRS documentation record). Background wells were identified outside the boundaries of the plume (Section 3.1.1 of this HRS documentation record; Figure 1-2 of the HRS documentation record).

Table 5 and Table 6 below depict the samples that meet the observed release criteria (Ref. 1, Table 2-3, p. 63). These tables list the organic hazardous substances with their concentrations and CRQLs for each sample. These samples qualify as “observed releases” based on the criteria in the HRS (Ref. 1, Section 2.3, Table 2-3, p. 63). The well locations are depicted on Figure 1-2 of this HRS documentation record.

**Table 5**
**Contaminated Ground Water Collected by EPA from Monitoring Wells Establishing an Observed Release**
**Utilizing CLP Laboratory**

| EPA CLP# | EPA Location | Date | Location | Screened Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Contract-Required Quantitation Limit (CRQL) µg/L | Reference |
|---|---|---|---|---|---|---|---|---|
| E5AS9 | WV-MW-3A | 10/21/14 | MW-3A | 30-35 feet | VC | 1.7 | 0.5 | Refs. 7, p. 3; 38, p. 78; 54, p. 6; 76, pp. 5, 6; 85, p. 27; 89, pp. 25, 26, 93, 159-161; 93, p. 8 |

| EPA CLP# | EPA Location | Date | Location | Screened Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Contract-Required Quantitation Limit (CRQL) µg/L | Reference |
|---|---|---|---|---|---|---|---|---|
| E5AT0 | WV-MW-7A | 10/21/14 | Existing USEPA monitoring well MWWES-07, | 43-48 feet | VC | 18 | 0.5 | Refs. 54, p. 7; 76, p. 5, 6; 84, p. 9; ; 85, p. 27; 89, pp. 29, 30, 93, 165-167; 93, p. 19 |
| E5AT3 | WV-MW-5C | 10/22/14 | MW-5C | 45-50 feet | VC | 13 | 0.5 | Refs. 5, p. 5; 38, p. 78; 76, p. 5; 85, p. 27; 89, pp. 35, 36, 93, 174-176; 93, p. 16 |
| E5AT5 DL | WV-MW-6A | 10/23/14 | MWWES-06S | 25-30 feet | VC | 41 | 2.5 | Refs. 54, p. 10; 76, pp. 5, 6; 84, pp. 5, 6; 85, p. 27; 89, pp. 37, 38, 93, 177-179; 93, p. 17 |
| E5AT6 | WV-MW-6B | 10/23/14 | MWWES-06D | 44-48 feet | VC | 67 | 5.0 | Refs. 54, pp. 10; 76, pp. 5, 6; 84, p. 6; 85, p. 27; 89, pp. 41, 42, 93, 183-185; 93, p. 18 |
| E5AT7 | WV-MW-9A | 10/23/14 | MWWES-09S | 25-30 feet | Cis-1,2-DCE | 4.8 | 0.5 | Refs. 54, p. 10, 11; 76, pp. 5, 6; 84, p. 16; 85, p. 27; 89, pp. 45, 46, 93, 189-191; 93, p. 22 |
| E5AT7 DL | WV-MW-9A | 10/23/14 | MWWES-09S | 25-30 feet | VC | 170 | 10 | Refs. 54, p. 10; 76, pp. 5, 6; 84, p. 16; 89, pp. 47, 48, 93, 192-194; 93, p. 22 |
| E5AT8 DL | WV-MW-9B | 10/23/14 | MWWES-09D | 41-46 feet | VC | 37 | 2.5 | Refs. 76, pp. 5, 6; 84, p. 15; 85, p. 27; 89, pp. 50, 51, 94, 195-197; 93, p. 23 |
| E5AW1 | WV-MW-16 | 10/23/14 | Existing Genuine Parts monitoring well MMW-166D | 44-51 feet | Trans-1,2-DCE<br>Cis-1,2-DCE | 8.8<br>57 | 2.5<br>2.5 | Refs. 54, p. 11; 76, pp. 5, 6 , 7; 85, p. 28; 89, pp. 57, 58, 94, 207-209; 100, p. 1211 |

| EPA CLP# | EPA Location | Date | Location | Screened Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Contract-Required Quantitation Limit (CRQL) µg/L | Reference |
|---|---|---|---|---|---|---|---|---|
| E5AW1 DL | WV-MW-16 | 10/23/14 | Existing Genuine Parts monitoring well MMW-166D | 44-51 feet | TCE | 670 | 25 | Refs. 54, p. 11; 76, p. 5; 85, p. 28; 89, pp. 59, 60, 94, 210-212; 100, p. 1211 |
| E5AW2 | WV-MW-17 | 10/23/14 | Existing Genuine Parts monitoring well MMW-148R | 10.5-25.5 feet | 1,1-DCA<br>Trans-1,2-DCE | 1.4<br>6.4 | 0.5<br>0.5 | Refs. 54, p. 11; 76, p. 5; 85, p. 28; 89, pp. 61, 62, 94, 213-215; 100, p. 1177 |
| E5AW2 DL | WV-MW-17 | 10/23/14 | Existing Genuine Parts monitoring well MMW-148R | 10.5-25.5 feet | Cis-1,2-DCE<br>TCE | 29<br>100 | 5.0<br>5.0 | Refs. 54, p. 12; 76, p. 5; 85, p. 28; 89, pp. 63, 64, 94, 216 - 218; 100, p. 1177 |
| E5AW3 | WV-MW-8A | 10/24/14 | Existing USEPA monitoring well MWWES-08S | 27-32 feet | VC | 19 J- (19) | 2.5 | Ref 54, p. 12; 76, p. 5, 6, 7; 85, p. 27; 89, pp. 65, 66, 95, 219 - 221 |
| E5AW3 DL | WV-MW-8A | 10/24/14 | Existing USEPA monitoring well MWWES-08S | 27-32 feet | Cis-1,2-DCE | 290 J- (290) | 25 | Refs. 54, p. 12; 76, p. 5, 6, 7; 84, p. 12; 85, p. 27; 89, pp. 67, 68, 95, 222 - 224; 93, p. 20 |
| E5AW4 | WV-MW-8B | 10/24/14 | Existing USEPA monitoring well MWWES-08D, | 45-50 feet | VC<br>Cis-1,2-DCE | 1.4 J- (1.4)<br>17 J- (17) | 0.5<br>0.5 | Refs. 54, p. 12; 76, p. 5, 6, 7; 84, p. 11; 85, p. 27; 89, pp. 69, 70, 95, 225-227; 93, p. 21 |
| E5AT4 | WV-MW-6A | 10/23/14 | Existing USEPA monitoring well MWWES-06S | 44-48 | VC | 47 J+ (4.7) | 0.5 | Refs. 54, p. 10; 76, p. 4, 5; 84, p. 5, 6; 85, p. 27; 91, pp. 8, 9, 23, 47-49 |

| EPA CLP# | EPA Location | Date | Location | Screened Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Contract-Required Quantitation Limit (CRQL) µg/L | Reference |
|---|---|---|---|---|---|---|---|---|
| E5AS8 RE | WV-MW-3B | 10/21/14 | MW-3B | 40-45 feet | VC | 8.0 | 0.5 | Refs. 38, p. 420; 54, p. 6; 76, p. 4, 5; 85, p. 27; 90, pp. 16, 17, 35, 64-66; 93, p. 9, 10 |
| E5AX0 | WV-MW-2A | 10/29/14 | MW-2A | 23-30 feet | Trans-1,2-DCE<br>Cis-1,2-DCE | 2.4<br>18 | 0.5<br>0.5 | Refs. 38, p. 422; 54, p. 15; 76, p. 2; 85, p. 27; 92, pp. 19, 20, 90, 124-126; 93, p. 4 |
| E5AX1 | WV-MW-15 | 10/29/14 | Existing Michigan Plaza monitoring well MMW-P-06 | 18-28 feet | Trans-1,2-DCE | 23J- (23) | 5 | Refs. 19, pp. 208, 988, 989; 54, p. 15; 76, p. 2; 85, p. 28; 92, pp. 21, 22, 90, 127-129 |
| E5AX1 DL | WV-MW-15 | 10/29/14 | Existing Michigan Plaza monitoring well MMW-P-06 | 18-28 feet | VC<br>Cis-1,2-DCE | 3,500 J+ (350)<br>1,900 J+ (190) | 50<br>50 | Refs. 19, pp. 208, 988, 989; 54, p. 15; 76, p. 2; 85, p. 28; 92, pp. 23, 24, 90, 130-132 |
| E5AX2 | WV-MW-14 | 10/29/14 | Existing Michigan Plaza monitoring well MMW-P-10D, | 28-38 feet | Trans-1,2-DCE | 1.3 | 0.5 | Refs. 19, p. 211; 54, p. 15; 76, p. 2; 92, pp. 25-26, 90, 133-135 |
| E5AX2 DL | WV-MW-14 | 10/29/14 | Existing Michigan Plaza monitoring well MMW-P-10D, | 28-38 feet | VC<br>Cis-1,2-DCE | 810 J+ (81)<br>69 | 25<br>25 | Refs. 19, p. 211; 54, p. 15; 76, p. 2; 85, p. 28; 92, pp. 27, 28, 90, 136-138 |
| E5AX3 | WV-MW-2B | 10/30/14 | Existing USEPA monitoring well MWWES-02b, | 35-40 feet | Trans-1,2-DCE | 0.90 | 0.5 | Refs. 38. p. 78; 54, p. 16; 85, p. 27; 92, pp. 29, 30, 90, 139-141; 93, p. 5 |

| EPA CLP# | EPA Location | Date | Location | Screened Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Contract-Required Quantitation Limit (CRQL) µg/L | Reference |
|---|---|---|---|---|---|---|---|---|
| E5AX3 DL | WV-MW-2B | 10/30/14 | Existing USEPA monitoring well MWWES-02b, | 35-40 feet | VC<br>Cis-1,2-DCE | 8.2 J+ (0.82)<br>16 | 0.5<br>0.5 | Refs. 38, p. 422; 54, p. 16; 76, p. 2; 85, p. 27; 92: Pg. 31-32, 90, 142-144 |
| E5AX4 | WV-MW-2B-Dup | 10/30/14 | Existing USEPA monitoring well MWWES-02b, | 35-40 feet | VC<br>Trans-1,2-DCE<br>Cis-1,2-DCE | 7.3<br>0.85<br>13 | 0.5<br>0.5<br>0.5 | Refs. 38, p. 423; 76, p. 2; 85, p. 27; 92, pp. 33, 34, 90, 145-147 |
| E5AX5 | WV-MW-2C | 10/30/14 | MW-2C | 45-50 feet | VC<br>Cis-1,2-DCE | 5.4<br>0.83 | 0.5<br>0.83 | Refs. 38, p. 423; 54, p. 16; 76, p. 2; 85, p. 27; 92, pp. 35, 36, 90, 148-150; 93, pp. 6, 7 |
| E5AY2 DL | WV-MW-1B | 10/30/14 | MW-1B | 41-46 feet | VC | 32J+(3.2) | 2.5 | Refs. 38, p. 421;54, p. 17; 76, p. 2, 3; 85, p. 27; 92, pp. 43, 44, 91, 160-162; 93, p. 2 |
| E5AY3 DL | WV-MW-1B Dup | 10/30/14 | MW-1B | 41-46 feet | VC | 30J+ (3.0) | 2.5 | Refs. 38, p. 421; 54, p. 17; 76, p. 2, 3; 85, p. 27; 92, pp. 51, 52, 91, 170-172; 93, p. 2 |
| E5AY4 | WV-MW-1C | 10/30/14 | MW-1C | 50-55 feet | VC | 12J+ (1.2) | 0.5 | Refs. 38, p. 421; 76, p. 2; 85, p. 27; 92, pp. 53, 54, 91, 173-175; 93, p. 3, |

<u>For SDG E5AS4 (Reference 76, pp 5-6)</u>
J- - Samples E5AS4, E5AS6RE, E5AS7, E5AW3DL, and E5AW4 were analyzed outside the holding time and result is estimated with a low bias. Results for release samples require no adjustment according to procedures described in EPA 540-F-94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996.

J+- Surrogate recoveries out of control, low in sample E5AS6RE and associated compounds are qualified bias low. Results required no adjustment according to procedures described in EPA 540-F-

94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996.

RE- Results from rerun of sample E5AS6

DL – Concentrations exceeded the instrument's calibration range. Samples were reanalyzed using dilution factor and the results and CRQL are reported from diluted analysis.

For SDG E5AT4 (Reference 76, p4)
J+ – Vinyl Chloride exceeded calibration range and sample was not reanalyzed. Result is estimated with an unknown bias and adjusted according to described in EPA 540-F-94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996.

For SDG E5AS8 (Reference 76, p4)
RE – Results from rerun of sample E5AS8

For SDG E5AW8 (Reference 76, pp 2-3)

J+- Sample E5AY4 vinyl chloride was analyzed after a sample with a compound exceeding the calibration range and no intervening instrument blank. Detections of these compounds are estimated with unknown bias (as they may be results of or supplemented by carryover) and adjusted according to procedures described in EPA 540-F-94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996.

J- - Sample E5AX1 was analyzed outside the holding time and results are estimated with a low bias. Results for release samples require no adjustment according to procedures described in EPA 540-F-94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996.

J+- Surrogate recoveries were out of control, high in samples E5AX1, E5AX2DL, E5AX3RE, E5AY2DL, E5AY3DL, and E5AZ1DL and associated compounds are qualified bias high. Results were adjusted according to procedures described in EPA 540-F-94-028, Using Qualified Data to Document an Observed Release and Observed Contamination, November 1996.

RE- Results from rerun of sample E5AX3

DL - Concentrations exceeded the instrument's calibration range. Samples were reanalyzed using dilution factor and the results and CRQL are reported from diluted analysis.

**Table 6**
**Contaminated Ground Water from Residential Wells Sample Table**
**Results Obtained Using CLP Laboratory**
**SDG E5AS4**

| EPA CLP# | EPA Location | Date | Location | Depth Below Ground Surface (feet) | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg /L | Contract Required Quantitation Limit (CRQL) µg/L | Reference |
|---|---|---|---|---|---|---|---|---|
| E5AS4 | WV-RES-4018WVS | 10/17/14 | 4018 West Vermont | 75 | Vinyl Chloride | 4.9 J- (4.9) | 0.5 | Refs. 14, p. 11; 54, p. 3; 89, pp. 11,12, 92, 140-142; 102, p. 2 |
| E5AS6RE | WV-RES-4012COS | 10/17/14 | 4012 Cossell | 62 | Vinyl Chloride | 1.4 J- (1.4) | 0.5 | Refs, 14, p. 8; 54, p. 2; 89, pp. 21, 22, 92, 153-156; 102, p. 1; 103, pp. 1, 2 |
| E5AS7 | WV-RES-4012COS-DUP | 10/17/14 | 4012 Cossell | 62 | Vinyl Chloride | 4.8 J- (4.8) | 0.5 | Refs 14, p. 8; 54, p. 2; 89, pp. 23, 24, 92, 156-158; 102, p. 1; 103, pp. 1, 2 |

For SDG E5AS4 (Reference 76, p5)
J- - Sample was analyzed outside the holding time and result is estimated with a low bias. Results for release samples require no adjustment according to Reference 76, page 13-14

RE- Results from rerun of sample E5AS6

Abbreviations:

| | |
|---|---|
| VC | Vinyl Chloride |
| PCE | Tetrachloroethene |
| Cis-1,2 DCE | Cis - 1,2 Dichloroethene |
| Trans 1,2 DCE | Trans 1,2 Dichloroethene |
| TCE | Trichloroethene |

**Other Supporting Data**

The following tables provide additional samples to support an observed release at the site and continuous contamination throughout the aquifer.

## Table 7
## Contaminated Residential Ground Water Collected By U.S. EPA

| Lab ID | EPA Sample ID. | Date | Location | Screened Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration | Reference |
|---|---|---|---|---|---|---|---|
| P10071 04-08 | 4012cos ell-RW1-070710 | 7/7/10 | 4012 Cossell | 35 feet | VC | 13 | Refs. 13, p. 37; 14, p. 8; 40, p. 416; 104, p. 18 |
| P10071 04-09 | 4044WV eermont-RW2-07071 | 7/7/10 | 4044 West Vermont | 75 feet | CIS 1,2-DCE<br>PCE<br>VC | 1.6 J<br>3 J<br>4.7 J | Refs.13, p. 38; 40, p. 414; 104, pp. 19, 20 |
| P10071 04-10 | 4140wve rmont-RW3-07071 | 7/7/10 | 4140 West Vermont | 36 feet | PCE<br>VC | 2.2 J<br>2.1 J | Refs. 13, p. 38; 40, p. 551; 104, p. 22 |
| P10071 04-11 | 4018wve rmont-RW4-07071 | 7/7/10 | 4018 West Vermont | 75 feet | PCE<br>VC | 2.0 J<br>1.6 J | Refs. 13, p. 39; 40, p. 559; 104, p. 24 |
| P10071 04-12 | 4018ver mont-RWD-070710 | 7/7/10 | 4018 West Vermont | 75 feet | PCE<br>VC | 1.9 J<br>1.1 J | Refs.14, p. 11; 40, p. 559;104, p. 26 |
| P10071 04-13 | 4042wve rmont-RW5-070710 | 7/7/10 | 4042 West Vermont | 75 feet | PCE | 1.7 J | Refs. 13, p. 39; 40, p. 646; 104, p. 28 |
| P10071 04-14 | 4031cos sell-RW6-070710 | 7/7/10 | 4031 Cossell | | PCE | 1.5 J | Ref. 13, p. 39; 104, p. 30 |
| 505591 6001 | WVS-4012CO SSEL-121211-GW | 12/12/11 | 4012COSSEL | 35 feet | VC | 26.1 | Refs.14, p. 8; 40, p. 535; 105, pp. 5, 27; 51, p. 28 |
| 505591 6002 | WVS-4018WV ERMON T-121211-GW | 12/12/11 | 4018 West VERMONT | 75 feet | VC | 4.8 | Refs.14, p. 11; 105, pp. 7, 27; 51, p. 28 |

## Table 8
## Contaminated Ground Water Collected by EPA from Monitoring Wells Establishing an Observed Release from the Known Sources
## Results Obtained Using Non-CLP Laboratory

| Lab ID | EPA Sample ID | Date | Location | Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Reference |
|---|---|---|---|---|---|---|---|
| 5091443003 | WVS-MWWES-05B-121613-GW | 12/16/2013 | WVS-MWWES-05B-121613-GW | 32.5-37.5 | None Detected | None Detected | Refs. 38, p. 428; 66, pp. 1, 2, 14-15 |
| 5091443004 | WVS-MWWES-05C-121613-GW | 12/16/2013 | WVS-MWWES-05C | 50 | None Detected | None Detected | Refs. 38, p. 429; 66, pp. 1, 2, 16, 17 |
| 5091443005 | WVS-MWWES-02A-121713-GW | 12/17/2013 | WVS-MWWES-02A | 29 feet | cis-1,2-Dichloroethene | 12.7 | Refs. 38, p. 422; 66, pp. 2, 18 |
| 5091443006 | WVS-MWWES-02B-121713-GW | 12/17/2013 | WVS-MWWES02B | 40 feet | cis-1,2-DCE<br>Vinyl Chloride | 9.5<br>9.5 | Refs. 38, p. 422; 66, pp. 1, 2, 20, 21 |
| 5091443007 | WVS-MWWES-02C-121713-GW | 12/17/2013 | WVS-MWWES-02C | 50 feet | None Detected | None Detected | Ref. 38, p. 423; 66, pp. 1, 2, 22,23 |
| 5091443008 | WVS-MWWES-01A-121713-GW | 12/17/2013 | WVS-MWWES-01A | 37.5 | None Detected | None Detected | Refs. 38, p. 420; 66, pp. 1, 2, 24,25 |
| 5091443009 | WVS-MWWES-01B-121713-GW | 12/17/2013 | WVS-MWWES-01B | 46 feet | Vinyl Chloride | 52.3 | Refs. 38, p. 421; 66, pp. 1, 2, 26, 27 |
| 5091443010 | WVS-MWWES-01C-121713-GW | 12/17/2013 | WVS-MWWES-01C | 55 feet | Vinyl Chloride | 24.7 | Refs. 38, p. 421; 66, pp. 1, 2, 28, 29 |

| Lab ID | EPA Sample ID | Date | Location | Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Reference |
|---|---|---|---|---|---|---|---|
| 5084009004 | WVS-MWWES-03B-072313-GW | 07/23/13 | Monitoring Well 3B | 45 feet | VC | 9.4 | Refs. 6, p. 4; 12, p. 6; 38, pp. 24, 424; 55, p. 16; 56, p. 4 |
| 5086585005 | WVS-MWWES-03B-091013 | 09/10/13 | Monitoring Well 3B | 40.05 feet | VC | 7.5 | Refs. 12, p. 10; 38, pp. 24, 424; 58, p. 17; 59, p. 4 |
| 5086585010 | WVS-MWWES-02A-091113 | 09/11/13 | Monitoring Well 2A | 29.5 feet | Cis-1,2-DCE | 13.5 | Refs. 8, p. 8; 12, p. 11; 38, pp. 24, 422; 58, p. 26 |
| 5086585011 | WVS-MWWES-02B-091113 | 09/11/13 | Monitoring Well 2B | 40 feet | Cis-1,2-DCE<br>VC | 5.4<br>6.8 | Refs. 8,p. 9; 12, p. 11; 38, pp. 24, 422; 58, pp. 28, 29 |
| 5086585012 | WVS-MWWES-02C-091113 | 09/11/13 | Monitoring Well 2C | 45.33 feet | VC | 3.2 | Refs. 8, p. 10; 12, p. 11; 38, pp. 24, 422, 423; 58, p. 31; 68, p. 10 |
| 5086585014 | WVS-MWWES-01B-091113 | 09/11/13 | Monitoring Well 1B | 36 feet | VC | 43.4 | Refs. 8, p. 12; 12, p. 11; 38, pp. 24, 420, 421; 58, p. 35 |
| 5086585015 | WVS-MWWES-01C-091113 | 09/11/13 | Monitoring Well 1C | 54.35 feet | VC | 11.3 | Refs. 8, p. 13; 12, p. 12; 38, pp. 24, 420, 421; 58, p. 37 |
| 5090262006 | WVS-MWWES-03B-111913-GW | 11/19/13 | Monitoring Well 3B | 45 feet | VC | 10.7 | Refs. 10, p. 4; 12, p. 20; 38, pp. 24, 424; 63, p. 21; 68, p.4 |
| 5090262010 | WVS-MWWES-02A-112013-GW | 11/20/13 | Monitoring Well 2A | 29 feet | Cis-1,2-DCE | 11.8 | Refs. 10, p. 8; 12, p. 21; 38, pp. 24, 422; 63, p. 28; 68, p. 8 |
| 5090262013 | WVS-MWWES-01C-112013-GW | 11/20/13 | Monitoring Well 1C | 55 feet | VC | 18.1 | Refs. 10, p. 13; 12, p. 21; 38, pp. 24, 420, 421; 63, p. 35; 68, p. 13 |

| Lab ID | EPA Sample ID | Date | Location | Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Reference |
|---|---|---|---|---|---|---|---|
| 5090262014 | WVS-MWWES-02B-112013-GW | 11/20/13 | Monitoring Well 2B | 40 feet | Cis-1,2-DCE<br>VC | 7.9<br>7.9 | Ref. 10, p. 9; 12, p. 21; 38, p. 422 63, pp. 36, 37; 68, p. 9 |
| 5090262016 | WVS-MWWES-01B-112013-GW | 11/20/13 | Monitoring Well 1B | 46 feet | VC | 38.7 | Refs. 10, p. 12; 12, p. 21; 38, pp. 24, 420, 421; 63, 40 |
| 5088129002 | WVS-MWWES-DUP1-100913-GW | 10/09/13 | Monitoring Well 3B | 45 feet | VC | 20.2 | Refs. 7, p. 4; 12, p. 13; 38, p. 424; 61, p. 7; 62, p. 4 |
| 5088129006 | WVS-MWWES-03B-100813-GW | 10/08/13 | Monitoring Well 3B | 45 feet | VC | 5.8 | Refs. 9, p. 4; 38, pp. 24, 424; 61, p. 15; 62, p. 4 |
| 5088129010 | WVS-MWWES-02A-100913-GW | 10/09/13 | Monitoring Well 2A | 29 feet | Cis-1,2-DCE | 13.4 | Refs 9, p.8; 12, p. 13;. 38, pp. 24, 422; 61, p. 22; 62, p. 8 |
| 5088129011 | WVS-MWWES-02B-100913-GW | 10/09/13 | Monitoring Well 2B | 40 feet | Cis-1,2-DCE<br>VC | 7.2<br>6.7 | Refs. 9, p. 9; 12, p. 13; 38, pp. 24, 422; 61, pp. 24, 25; 62, p. 9 |
| 5088129012 | WVS-MWWES-02C-100913-GW | 10/09/13 | Monitoring Well 2C | 50 feet | VC | 3.3 | Refs. 9, -p. 10; 12, p. 13; 38, pp. 24, 422, 423; 61, p. 27; 62, p. 10 |
| 5088129014 | WVS-MWWES-01B-100913-GW | 10/09/13 | Monitoring Well 1B | 46 feet | VC | 19.8 | Refs. 9, p. 12; 12, p. 13; 38, pp. 24, 420, 421; 61, p. 31; 62 p. 12 |

| Lab ID | EPA Sample ID | Date | Location | Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Reference |
|---|---|---|---|---|---|---|---|
| 5088129015 | WVS-MWWES-01C-100913-GW | 10/09/13 | Monitoring Well 1C | 55 feet | TCE<br>VC | 7.4<br>13.5 | Refs. 9, p. 13; 12, p. 13; 38, pp. 24, 420, 421; 61, p. 32, 33; 62, p. 13 |
| 5091133005 | WVS-MWWES-03B-121113-GW | 12/11/13 | Monitoring Well 3B | 45 feet | VC | 5 | Refs. 12, p. 22; 38, pp. 24, 424; 65, p. 18 |
| 5092728005 | WVS-MWWES-03B-012014-GW | 01/20/14 | Monitoring Well 3B | 45 feet | VC | 10.9 | Refs. 12, p. 30; 38, pp. 24, 424; 69, p. 19 |
| 5092728009 | WVS-MWWES-02A-012114-GW | 01/21/14 | Monitoring Well 2A | 29 feet | Cis-1,2-DCE | 13.2 | Refs. 12, p. 30; 38, pp. 24, 422; 69, p. 26 |
| 5092728010 | WVS-MWWES-02B-012114-GW | 01/21/14 | Monitoring Well 2B | 40 feet | Cis-1,2-DCE<br>VC | 9.5<br>7.5 | Refs. 12, p. 31; 38, pp. 24, 422; 69,pp. 28, 29 |
| 5092776003 | WVS-MWWES-01B-012514-GW | 01/25/14 | Monitoring Well 1B | 46 feet | VC | 23.4 | Refs. 12, p. 34; 38, pp. 24, 420, 421; 70, p. 14 |
| 5092776004 | WVS-MWWES-01C-012514-GW | 01/25/14 | Monitoring Well 1C | 55 feet | VC | 21 | Refs. 12, p. 34; 38, pp. 24, 420, 421; 70, p. 16 |
| 5093632002 | WVS-MWWES-03A-021714-GW | 02/17/14 | Monitoring Well 3A | 35 feet | VC | 2 | Refs. 12, p. 35; 38, pp. 24, 424; 71, p. 14 |

| Lab ID | EPA Sample ID | Date | Location | Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Reference |
|---|---|---|---|---|---|---|---|
| 5093632003 | WVS-MWWES-03B-021714-GW | 02/17/14 | Monitoring Well 3B | 45 feet | VC | 11.4 | Refs. 12, p. 35; 38, pp. 24, 424; 71, p.16 |
| 5093632007 | WVS-MWWES-01C-021814-GW | 02/18/14 | Monitoring Well 1C | 55 feet | VC | 23.3 | Refs. 12, p. 35; 38, pp. 24, 420, 421; 71, p. 24 |
| 5093632008 | WVS-MWWES-01B-021814-GW | 02/18/14 | Monitoring Well 1B | 46 feet | VC | 33.3 | Refs. 12, p. 35; 38, pp. 24, 420, 421; 71, p. 26 |
| 5093632010 | WVS-MWWES-02A-021914-GW | 02/19/14 | Monitoring Well 2A | 29 feet | Cis-1,2-DCE | 18.1 | Refs. 12, p. 36; 38, pp. 24, 422; 71, 29 |
| 5093632011 | WVS-MWWES-02B-021914-GW | 02/19/14 | Monitoring Well 2B | 40 feet | Cis-1,2-DCE<br>VC | 10.2<br>6.2 | Refs. 12, p. 36; 38, pp. 24, 422; 71, pp. 31, 32 |
| 5093632012 | WVS-MWWES-02C-021914-GW | 02/19/14 | Monitoring Well 2C | 50 feet | VC | 2.8 | Refs. 12, p. 36; 38, pp. 24, 422, 423; 71 p. 34 |
| 5093632013 | WVS-MWWES-06D-021914-GW | 02/19/14 | Monitoring Well 6D | 49 feet | VC | 115 | Refs. 12, p. 37; 71, p. 36; 84, pp. 4, 5 |
| 5093632014 | WVS-MWWES-06S-021914-GW | 02/19/14 | Monitoring Well 6S | 30 feet | VC | 74.1 | Ref. 12, p. 37; 71, p. 38; 84, pp. 6, 7 |

| Lab ID | EPA Sample ID | Date | Location | Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Reference |
|---|---|---|---|---|---|---|---|
| 5093632015 | WVS-MWWES-09D-021914-GW | 02/19/14 | Monitoring Well 9D | 47 feet | VC | 46.4 | Refs. 12, p. 37; 71, p. 40; 84, pp.14, 15 |
| 5093632016 | WVS-MWWES-09S-021914-GW | 02/19/14 | Monitoring Well 9S | 31 feet | Cis-1,2-DCE<br>VC | 12.1<br>151 | Refs. 12, p. 37; 71, pp. 41, 42; 84, pp.16, 17 |
| 5093632017 | WVS-MWWES-08D-022014-GW | 02/20/14 | Monitoring Well 8D | 51 feet | Cis-1,2-DCE<br>VC | 28.3<br>3.2 | Refs. 12, p. 38; 71,p p. 43, 44; 84, pp. 10, 11 |
| 5093632018 | WVS-MWWES-08S-022014-GW | 02/20/14 | Monitoring Well 8S | 34 feet | Cis-1,2-DCE<br>VC | 298<br>24.4 | Refs. 12, p. 38; 71, p. 45; 84, pp. 12, 13 |
| 5093632019 | WVS-MWWES-07D-022014-GW | 02/20/14 | Monitoring Well 7D | 70 | VC | 10 | Refs. 12, p. 38; 17, p. 6; 71, p. 48; 84 |
| 5095028005 | WVS-MWWES-03B-031714-GW | 03/17/14 | Monitoring Well 3B | 45 feet | VC | 9.1 | Ref. 12, pp. 38, 39; 38, p. 424; 72, p. 15 |
| 5095028016 | WVS-MWWES-02A-031914-G | 03/19/14 | Monitoring Well 2A | 29 feet | Cis-1,2-DCE | 17.8 | Ref. 12, p. 40; 38, pp. 24, 422; 72, p. 29 |
| 5095028017 | WVS-MWWES-02B-031914-GW | 03/19/14 | Monitoring Well 2B | 40 feet | Cis-1,2-DCE<br>VC | 8.9<br>3.7 | Ref. 12, p. 40; 38, pp. 24, 422; 72, pp. 31, 32 |

| Lab ID | EPA Sample ID | Date | Location | Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Reference |
|---|---|---|---|---|---|---|---|
| 5095028018 | WVS-MWWES-02C-031914-GW | 03/19/14 | Monitoring Well 2C | 50 feet | VC | 2.7 | Ref. 12, p. 40; 38, pp. 24, 422, 423; 72, p.34 |
| 5095028020 | WVS-MWWES-01B-031914-GW | 03/19/14 | Monitoring Well 1B | 46 feet | VC | 23.2 | Ref. 12, p. 40; 38, pp. 24, 420, 421; 72, p. 38 |
| 5095028021 | WVS-MWWES-01C-031914-GW | 03/19/14 | Monitoring Well 1C | 55 feet | VC | 13.7 | Ref. 12, p. 40; 38, pp. 24, 420, 421; 72, p. 40 |
| 5095028023 | WVS-MWWES-07-032014-GW | 03/20/14 | Monitoring Well 7S | 50 feet | VC | 7.7 | Refs. 12, p. 42; 72, p. 44; 84, pp. 8, 9 |
| 5095028024 | WVS-MWWES-06D-032014-GW | 03/20/14 | Monitoring Well 6D | 49 feet | VC | 66.9 | Refs. 12, p. 42; 72, p. 46; 84, pp.4, 5 |
| 5095028025 | WVS-MWWES-06S-032014-GW | 03/20/14 | Monitoring Well 6S | 30 feet | VC | 47.2 | Refs. 12, p. 42; 72, p. 48; 84, pp. 6, 7 |
| 5095028026 | WVS-MWWES-09D-032014-GW | 03/20/14 | Monitoring Well 9D | 46 feet | VC | 31.7 | Refs. 12, p. 42; 72, p. 50; 84, pp.14, 15 |
| 5095028027 | WVS-MWWES-09S-032014-GW | 03/20/14 | Monitoring Well 9S | 31 feet | Cis-1,2-DCE<br>VC | 7.1<br>133 | Refs. 12, p. 42; 72, pp. 51, 52; 84, pp.16, 17 |

| Lab ID | EPA Sample ID | Date | Location | Depth Below Ground Surface | Hazardous Substance | Hazardous Substance Concentration (Adjusted Concentration) µg/L | Reference |
|---|---|---|---|---|---|---|---|
| 5095028028 | WVS-MWWES-08D-032014-GW | 03/20/14 | Monitoring Well 8D | 51 feet | Cis-1,2-DCE | 21.3 | Refs. 12, p. 42; 72, p. 53; 84, pp. 10, 11 |
| 5095028029 | WVS-MWWES-08S-032014-GW | 03/20/14 | Monitoring Well 8S | 34 feet | Cis-1,2-DCE<br>VC | 269<br>20.4 | Refs. 12, p. 42; 72, pp. 55, 56; 84, pp. 12, 13 |

Attribution:

The West Vermont Drinking Water Contamination is a contaminated ground water plume originating from at least two sources where hazardous substances have been released and seeped through the ground to the aquifer.

As stated in the site history section of this HRS Documentation Record, the U.S. EPA Technical Memorandum identified three properties as potential sources of contamination in the residential area: Allison Transmission, Genuine Parts (also known as the Former Allison Transmission Plant 10), and Michigan Plaza. Each PRP property had releases of PCE or TCE, with DCE and VC as natural breakdown products (Ref. 38, p. 36). Although chlorinated solvents are present at Allison Transmission, the data indicate that the contamination is restricted to the Allison Transmission property, and Allison Transmission is not a contributor to Residential Area well contamination (Ref. 38, p. 36; 48; 75).

Genuine Parts (GP) and Michigan Plaza (MP) are the principle sources of contamination in the deeper parts of the sand and gravel aquifer where the target receptor wells are screened. Recent EPA sampling upgradient of GP showed only trace levels of contaminant in one location. Sampling along Holt Road and Michigan Street west of the intersection showed no detectable contamination. There are no other sources of contamination upgradient of the target receptors (Ref. 107; 124; Figure 1-2).

GP is directly north of Little Eagle Creek and shallow ground water contamination is contained on-site, but deeper ground water underflows the creek and enters the main valley associated with the confluence of Little and Big Eagle Creeks. This is supported both by ground water gauging and contaminant concentrations in wells MW-165S&D, MW-166S&D, MMW-3S, MMW-4D, MMW-5D, MMW-6D, MMW-7S, and MMW-18D&LA. The GP contamination flowing into the lower valley is only present in wells screened greater than 10 feet below the water table. Ground water contamination related to the MP sewer release source areas is present from the top of the water table to the sands below the first encountered

fine grained unit. As explained in section 3.0.1, there is no aquifer discontinuity between the water table and the top of the first fine grained unit (Ref. 107, pp. 1-3).

The two contaminant plumes are co-mingled in the area south of the east-west sewer line north of Michigan Street (MP main source area). South of Little Eagle Creek and north of well nests MW-174 and MMW-11, there is no detectable contamination at the water table. Co-mingling begins where shallow contamination is present in wells MMW-8S, MMW-9S, MMW-10S, and MMW-12S. As explained in section 3.0.1, shallow and deep horizons are interconnected and part of one aquifer (Ref. 74, p. 4).

Below is a brief narrative discussing the facilities' business activities and any environmental investigations that were conducted.

**Genuine Parts**
**700 North Olin**
**Indianapolis, Indiana**

Genuine Parts is the former General Motors Corporation, Allison Gas Turbine (AGT) Division Plant 10 (Ref. 36, p. 13). The facility is located on 5.4 acres (Ref. 36 p. 14). Between 1956 and 1973, BHT Corporation operated the facility for carburetor and brake re-manufacturing (Ref. 36, p. 13). General Motors purchased the property from BHT in 1973 and used the facility for warehousing obsolete machines, tooling, and fixtures until the mid1980s, at which time the property became part of the AGT Division. BHT became part of Genuine Parts through acquisition and merger, subsequent to the sale of the property to General Motors. AGT continued to use the facility for warehousing until December 1993 when the property was sold to the Allison Engine Company (AEC). AEC sold the property to Associated Properties, Inc. in 1998 (Ref. 36, p.13; 79, p. 8). Associated Properties, Inc. sold the facility to American Art Clay Company, Inc. in 2002 (Ref. 75, p. 8; 36, p. 13). American Art Clay Company, Inc. sold the facility to the current property owner, Faris Mailing Inc., in 2012 (Ref. 75, p. 8). Two businesses, Faris Mailing and Asset Recycling conduct their operations at this property (Ref. 110, p. 1).

Engineering Science, Inc. conducted two environmental investigations at the property in 1992 and 1993. The initial investigation, entitled Phase I Information Review Report for General Motors Corporation Allison Gas Turbine Division, was completed in July of 1992.The Phase I assessment identified two reported releases of quench oil in the southwest corner of the property and an unknown amount of hydraulic fluid in the southwest courtyard; possible waste burial area at western end of the property; and possible area of dumping near the northwest corner of the plant. The Phase I identified the Plant 10 site as a potential area of concern. The report included a recommendation to install three monitoring wells and one soil boring (Ref. 21, p. 13).

An intrusive follow-up assessment of the areas of environmental concern identified during the Phase I assessment was completed in November of 1993. Methods and results of this additional investigation were reported in a document entitled Phase II Site Assessment Final Report for General Motors Corporation Allison Gas Turbine Division Dated November 19, 1993. Results of this investigation Identified TCE, VC, 1,2-DCE, PCE, Toluene, and methylene chloride in the soil on-Site (Ref. 21, p. 13).

According to a Feasibility Study Report, dated June 3, 1997, TCE and 1, 2-dichloroethylene (1,2-DCE) were the most frequently detected compounds found in soil samples collected from the vadose zone (Ref. 22, p. 531; 112, p. 9). Analytical data indicate detectable TCE concentration ranged from 29 ug/kg to 120,000 ug/kg and, 1,2-DCE concentrations ranged from 4 ug/kg to 12,000 ug/kg (Refs. 22, p. 530; 112, p. 9). Analytical data indicate detectable TCE concentrations ranged from 5.4 ug/l to 13,000 ug/l, cis-1,2-DCE concentrations ranged from 5.3 ug/l to 65,000 ug/l, trans-1,2-DCE concentrations ranged from 5.9 ug/l to 1,400 ug/l, and detectable VC concentrations ranged from 12 ug/L to 3,400 ug/l in the ground water (Refs. 22, p. 531; 112, p. 10). A Voluntary Remediation Agreement (VRA) for the Genuine Parts site was signed January 11, 2000 by IDEM's Deputy Assistant Commissioner (Ref. 34, pp. 1-17). As a result, the facility is currently being addressed by the IDEM's Voluntary Remediation Program (VRP). The VRP ID# for the site is 6991004.(Ref. 34, pp. 1, 2).

The presence of historic buried waste was discovered in May 2000 while installing ground water remediation system piping (Ref. 21, p. 44; 36, p. 57). During this time stained soils, decayed drums, and miscellaneous small metallic debris (automotive parts) were encountered during trenching activities in the southwest corner of the site in the vicinity of a soil vapor extraction remediation system vent well, SVE-8 (Ref. 21, p. 44). Contaminated soil with varying amounts of debris was also encountered in the vicinity of another system vent well (SVE-3) and in several soil/vent boreholes. The discovery of the buried waste prompted an investigation of the entire property (excluding areas under roof) to locate other potential burial area (Ref. 21, p. 44).

Hazardous waste was excavated between April 9, 2001 and July 6, 2001 (Ref. 21, p. 50). During this time 190 loads of waste were transported and disposed at Environsafe Services of Ohio, Inc. in Oregon, Ohio resulting in a total of 4,981.51 tons (Ref. 21, p. 50).

Non-hazardous waste was excavated between April 6, 2001 and May 22, 2001. During this time 264 loads of waste were transported and disposed at Twin Bridges Landfill in Danville, Indiana for a total of 4,805.20 tons (Ref. 21, p. 50).

Two source areas were identified at the site: 1) an eastern source associated with former solvent operations, and (2) a western source area associated with historic degreasing and industrial waste burial activities (Refs. 36, p. 34; 53, p. 299). The exact nature of historic operations and potential contaminant release mechanisms in the eastern source area are not known (Ref. 36, p. 34). A former solvent storage tank existed in a partially sub-grade concrete structure that was located outside along the facility wall in this area. General Motors removed the solvent tank and concrete structure in the 1990's (Ref. 36, p. 34). Documentation of this removal is not available, although based on soil data collected since that time, the removal of the tank and structure mitigated any source material in this area (Ref. 36, pp. 34, 35).

The western source area is associated with former parts degreasing operations and waste burial activities (Ref. 36, p. 36). A small anomalous area of TCE occurrence in ground water was also noted to the east of the site at the intersection of Olin Avenue and Walnut Street. This area is referred to as the East Bioremediation Source Area (Ref. 53, p. 299). Refer

to the Final Remediation Work Plan, for a further summary of on and off-site investigation activities (Ref. 36).

According to a Remedial Progress Report, dated August 2014, TCE was detected as high as 620 µg/L in 2004 in monitoring well 153 (located in the western source area) (Ref. 36, p. 179, 276) and as high as 1800 µg/L in 1995 in monitoring well 10 (located in the eastern sector of the property) (Ref. 36, p. 176, 276). The Groundwater Potentiometric Surface Maps completed for the investigation indicates that ground water flow is in a southern direction for the shallow monitoring wells and a southern to southwestern direction for the deep monitoring wells (Ref. 36, pp. 255 - 265).

**Michigan Plaza**
**2801-3823 West Michigan Street**
**Indianapolis, Indiana**

The site is located to the east of the intersection of West Michigan Street and Holt Road in a mixed residential commercial setting on the near west side of Indianapolis (Ref. 19, p. 14; Figure 1-3). The site currently consists of a strip mall along the south side of West Michigan Street and a multi-building apartment complex to the north of the street. The apartment complex consists of several apartment buildings and support buildings on approximately 13.7 acres and the Michigan Plaza facility consists of a single multi-tenant retail facility covering approximately 1.5 acres (Ref. 19, p. 14). AIMCO Michigan Meadows Holdings, LLC (AMMH) previously owned the two properties at the time the pre-existing environmental impacts associated with historic tenant site activities were first Identified (Ref. 19, p.21).

Aimco Michigan Meadows Holdings, L.L.C. owned the subject property from December 29, 1999, until May 8, 2008. On May 8, 2008, Aimco Michigan Meadows Holdings, L.L.C. conveyed the property to Aimco Michigan Apartments, LLC through a Quitclaim Deed. Aimco Michigan Apartments, LLC owned the subject property from May 8, 2008, until October 15, 2008. On October 15, 2008, Aimco Michigan Apartments, LLC conveyed the property to GenNx Properties VII, LLC through a Limited Warranty Deed (Ref. 80, p. 8).

Historic dry-cleaning operations at Michigan Plaza by a company called Accent Cleaners are believed to have impacted on-site soils, indoor air and ground water. The exact timing of subsurface impacts is not known (need Ref. 19, p. 14).

The results of historic site investigations completed since 2001 indicate that chlorinated volatile organic chemicals are present in the subsurface soils, soil gas, indoor air, and ground water at the site (Ref. 19, p. 14). A March, 2004 ground water sample taken from a deep ground water system (MW-165D) indicated dissolved chlorinated solvent ground water impacts (most notably cis-1,2-DCE and vinyl Chloride) beneath the Michigan Meadows Apartments. A vinyl chloride concentration of 720 ug/l and a cis-1, 2-DCE concentration of 2,300 ug/l were exhibited (Ref. 30, pp. 2, 14). Three source areas have been identified on site. The source areas are associated with the historic solvent discharges from the dry cleaners to a leaky sewer line (Ref. 19, p. 14). The source areas have been identified as a combination of leaky lines and contaminated soil and have been designated as Source Area A, B, and C (Ref. 19, pp. 14, 15). Refer to the remediation Work Plan for a location of the source area (Ref. 19, pp. 149, 1288, 1496). The primary chemicals of concern (COCs) for the site are PCE and its

breakdown products, including TCE, cis -1, 2 dichloroethylene (cis-1, 2-DCE) and vinyl chloride (Ref. 19, pp. 14, 15).

A Voluntary Remediation Agreement (VRA) for the Michigan Plaza site was signed April 20, 2007 by IDEM's Deputy Assistant Commissioner (Ref. 33, p.1). As a result, the facility is currently being addressed by the IDEM's Voluntary Remediation Program (VRP). The VRP ID# for the site is 6061202 (Ref. 19, p. 1464).

Vapor mitigation systems have been installed and operated at Michigan Plaza since 2006 and at the apartment complex since 2008, to address vapor intrusion concerns. According to the VRP Remediation Work Plan (RWP), these systems will continue to operate until the cleanup objectives have been met (Ref. 21, p. 15).

The ground water is currently being remediated by the injection of a bioremediation product consisting essentially of food-grade soybean Oil (Ref. 19, p. 1466; 39). The injections occurred in 2007 and 2009 (Ref. 19, pp. 55, 155–172) , During the second round of bioremediation injections, 16,500 pounds of bioremediation product were injected: 3,000; 4,500; and 9,000 pounds in Source Areas A, B, and C, respectively during the second round of injections (Ref. 19, p. 55). The shallow plumes for cis-1,2-DCE and VC compounds are larger than the PCE and TCE plumes because the previous 2007 and 2009 bioremediation injection events have facilitated the generation of the chlorinated solvent daughter products (cis-1,2-DCE and VC) through sequential dechlorination (Ref. 19, p. 71). It should be noted that vinyl chloride concentrations in several monitoring wells have increased after injections of the bioremediation product. Table 3, Cumulative Monitoring Well Ground Water Analytical Results, found in the Remediation Work Plan dated September 13, 2013, depicts a cumulative of vinyl Chloride Concentrations before and after the bioremediation injections (Ref. 19, p. 231)

As requested by IDEM, the consultant monitored methane production related to fermentation process associated with the bioremediation injections completed during July 2013 (Ref. 40, p. 64). According to an email attachment from the consultant, methane has been monitored since September 22, 2013 (Ref. 18, pp. 1-28). A subset of the wells that have experienced elevated levels above 10% LEL were screened. Methane levels were initially measured at 23,000 ppm in soil vapor extraction system SVE-1 and at 29,000 ppm at Monitoring well MGW-8D (Ref. 18, p. 1).

Monitoring wells MMW-P03S, MMW-P-08, and MW 9S have been installed near the source area (Ref. 19, pp. , 173). A release of PCE to the ground water was detected in these monitoring wells at 397 µg/L in MMW-P03S, 6,280 ug/l in MMW-P-08, and 782 ug/l in MW 9 (Ref. 19, pp. 232, 239, 1,313).

The consultant for Michigan Plaza samples forty-six (46) monitoring wells on a quarterly basis (Ref. 19, p. 110). Potentiometric Maps submitted to IDEM depict a south-southeasterly ground water flow direction (Ref. 19, pp. 142, 143).

The Michigan Plaza facility has been active in IDEM's VRP. The facility has been conducting soil and ground water investigations and has been attempting to remediate the source area and ground water contamination since 2007. All quarterly monitoring reports, investigative and remedial reports, and other requested documents have been submitted to

IDEM (Ref. 86, p. 1).

Hazardous Substances Released

- TCE
- trans-1,2-DCE
- cis-1,2-DCE
- VC
- 1,1-DCA

Trans-1,2-DCE, cis-1,2-DCE, VC are degradation products of TCE and PCE (Ref. 64, pp. 1-5).

As specified in the HRS Rule (Ref. 1, Section 3.1.1. p. 69), an observed release factor value of 550 was assigned to the West Vermont Drinking Water Contamination since an observed release by chemical analysis was established to the aquifer.

**Ground Water Observed Release Factor Value: 550**

The ground water samples used to delineate the outline of the plume, covers approximately 20.2 acres (Figure 1-2 of this HRS documentation record); Sections 3.0.1 and 3.1.1 of this HRS documentation record). The area of the ground water plume is based on available samples that meet the criteria for an observed release and the target distance limit is measured from the source of the contamination (Ref. 1; Section 3.1.1 of this HRS documentation record).

## 3.2 WASTE CHARACTERISTICS

### 3.2.1 Toxicity/Mobility

The following toxicity, mobility and combined toxicity/mobility factor values have been assigned to those substances present in the observed release and/or a source with a containment value greater than 0.

| Hazardous Substance | Source No. (and/or Observed Release) | Toxicity Factor Value | Mobility Factor Value* | Does Hazardous Substance meet Observed Release by chemical analysis? (Y/N) | Toxicity/ Mobility (Ref. 1, Table 3-9) | References |
|---|---|---|---|---|---|---|
| 1,1-DCA | Observed Release | 10 | 1 | Y | 10 | Ref. 2, p. 4 |
| 1,1-DCE | 2 | 10 | 1 | N | 10 | Ref. 2, p. 3 |
| cis-1,2-DCE | 1; 2 Observed Release | 1,000 | 1 | Y | 1,000 | Ref. 2, p. 8 |
| trans-1,2-DCE | 2; Observed Release | 100 | 1 | Y | 100 | Ref. 2, p. 10 |
| TCE | 1; 2 Observed Release | 1,000 | 1 | Y | 1,000 | Ref. 2, p. 12 |
| PCE | 1; 2 | 100 | $1x10^{-2}$ | N | 1 | Ref. 2, p. 16 |
| VC | 2; Observed Release | 10,000 | 1 | Y | 10,000 | Ref. 2, p. 14 |

*All hazardous substances that meet the criteria for an observed release by chemical analysis to one or more aquifers underlying the source(s), regardless of the aquifer being evaluated, are assigned a mobility factor value of 1 (Ref. 1, Section 3.2.1.2, p. 72).

The hazardous substance with the highest toxicity/mobility factor value available to the ground water migration pathway is vinyl chloride (10,000).

**Toxicity/Mobility Factor Value: 10,000**
(Ref. 1, Table 3-9, p. 76)

### 3.2.2 Hazardous Waste Quantity

| Source No. | Source Type | Source Hazardous Waste Quantity |
|---|---|---|
| 1 | Other | Unknown, but >0 |

The West Vermont Drinking Water plume has been scored as consisting of a ground water plume with an identified source. According to Section 2.4.2.2 in the HRS (Ref. 1, pp. 65, 66), if any target for that migration pathway is subject to Level I or Level II concentrations and the hazardous constituent quantity is not adequately determined, assign a value from Table 2-6 or a value of 100 whichever is greater, as the hazardous waste quantity factor value for that pathway. Because Level I concentrations were present in a drinking water well (Section 3.3.2.2 of this HRS documentation record), a hazardous waste quantity factor value of 100 is assigned for the ground water pathway.

**Hazardous Waste Quantity Factor Value: 100**
(Ref. 1, Table 2-6, pp. 65, 66)

### 3.2.3 Waste Characteristics Factor Category Value

As specified in the HRS (Ref. 1, Section 3.2.3, p. 76), the Hazardous Waste Quantity Factor Value of 100 was multiplied by the highest Toxicity/Mobility Value of 10,000, resulting in a product of 1,000,000. Based on this product, a Waste Characteristics Factor Category Value of 32 was assigned from Table 2-7 of the HRS (Ref. 1, Section 2.4.3.1, p. 66).

Utilizing vinyl chloride has the highest Toxicity/Mobility Factor Value of the substances listed in Section 3.2.1 of this HRS documentation record (Ref. 2, p. 14).

Toxicity/Mobility Factor Value: 10,000 (Ref. 2, p. 14)
Hazardous Waste Quantity Factor Value: 100

Hazardous Waste Quantity Factor Value: 1,000,000

**Waste Characteristics Factor Category Value: 32**
(Ref. 1, Table 2-7, p. 66)

## 3.3 GROUND WATER PATHWAY TARGETS

The West Vermont Drinking Water Contamination site includes two residences where ground water from private residential wells is utilized for drinking water.

### 3.3.1 Nearest Well

Well ID: E5AS4/E5AS7 (Duplicate of E5AS4), E5AS6
Level of Contamination (I, II, or potential): I
If potential contamination, distance from source in miles: N/A

As specified in the HRS (Ref. 1, Section 3.3.1, Table 3-11, pp. 76, 77), if one or more drinking water wells are subject to Level I concentrations, a Nearest Well Factor Value of 50 is assigned. Level I vinyl chloride concentrations have been documented in the ground water of residential wells located at 4018 West Vermont (Samples E5AS4 and E5AS7) and 4012 Cossell (Sample E5AS6) (Section 3.3.2.2 of this HRS documentation record).

**Nearest Well Factor Value: 50**
(Ref. 1, Table 3-11)

### 3.3.2 Population

#### 3.3.2.1 Level of Contamination

#### 3.3.2.2 Level I Concentrations

There are three (3) residents that utilize private wells for drinking water and the drinking water was found to exceed the MCL for vinyl chloride (Ref. 45, pp. 2, 3).

**Table 9**
**Level I Concentrations**

| Resident | Drinking Water Sample Number | Vinyl Chloride Concentration µg/L (Adjusted Concentration µg/L) | Vinyl Chloride Benchmark µg/L | Reference |
|---|---|---|---|---|
| WV-RES-4018WVS | E5AS4 | 4.9 J- (4.9) | .017 | Ref. 2, p. 13; Table 6 of this HRS Documentation Record |
| WV-RES-4012COS | E5AS6RE | 1.4 J- (1.4) | .017 | Ref. 2, p. 14; Table 6 of this HRS Documentation Record |
| WV-RES-4012COS | E5AS7 (Duplicate of E5AS6 | 4.8 J- (4.8) | .017 | Ref. 2, p. 14; Table 6 of this HRS Documentation Record 2 |

J- - Sample was analyzed outside the holding time and result is estimated with a low bias. Results for

release samples require no adjustment according to procedures described in EPA fact sheet 540-F-94-028, *Using Qualified Data to Document an Observed Release and Observed Contamination*, November 1996.

RE- Results from rerun of sample E5AS6

WV-RES-4010COS-DUP was mislabeled in the field on October 17, 2014 from a residential property and was submitted to the lab with incorrect locations. The duplicate sample from 4020 Cossell in fact was collected from 4012 Cossell. Therefore, the Sample Location in Ref. 89, pp. 23 should read "WV-RES-4012COS-DUP" instead of "WV-RES-4020COS-DUP."

According to a Residential Well Information form, there are two people living at 2018 West Vermont and one person living at 4012 Cossell (Ref. 45, pp. 2, 3). Three total residents are scored.

**Level I Concentrations Factor Value: 30**

### 3.3.2.3 Level II Concentrations

Private residential water wells in which observed releases are established are subject to Level I contamination. No Level II contamination was observed

**Level II Concentrations Factor Value: NS**

### 3.3.2.4 Potential Contamination

(Ref. 1, Table 3-11)

Ground water from the White River and Riverside wells is pumped to the White River treatment plant where it blends with raw surface water, then passes through the entire surface water treatment process prior to distribution to customers (Ref. 68, p. 1).

The Riverside and White River Municipal Well Calculations table (Ref. 138, p. 1) depicts the Well ID#, Well/Intake capacity, and population served per each well. The table explains how the population was apportioned for each well/intake based on capacity. The well capacity numbers for the Riverside and White River wells were supplied by Citizens Energy Group (Ref. 136, pp. 1, 2). The White River treatment plant supplies 60% of the population of Indianapolis (Ref. 137, p. 1). The population served by Citizens Water is 876,728 (Refs. 68, p. 1; 134, p. 2).

The Speedway Well Calculations table (Ref. 139, p. 1) depicts the Well ID#, Well/Intake capacity, and population served per each well. The table explains how the population was apportioned for each well/intake based on capacity. The well capacity numbers for the Speedway wells were supplied by Speedway Water Works (Ref. 141, p. 2). The population served by Speedway Municipal wells is 11,812 (Ref. 135, p. 4).

The Municipal Well Table below depicts the depth, distance from the source area, the population apportioned to each well, the aquifer producing the water, the screen length (where applicable), the water producing interval, and references.

| Municipal Well Table | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Riverside Wells** | **Depth** | **Distance** | **Population Apportioned** | **Aquifer** | **Screen Length** | **Water Production Interval/ Screen Interval** | **References** |
| RS 2 | 297 feet | 2-3 Miles | 4203.531 | Limestone | NA | 225 feet | Refs. 29, p. 5; 115, p. 3; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, p. 2; Figure 1-5 |
| RS 7 | 196 feet | 2-3 Miles | 4045.898 | Limestone | NA | NA* | Refs. 29, p. 5; 115, p. 3; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, p. 12; Figure 1-5 |
| RS 8 | 277 feet | 2-3 Miles | 4203.531 | Limestone | NA | 277 feet | Refs. 29, p. 5; 115, p. 3; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, p. 3; Figure 1-5 |
| RS 9 | 251 feet | 2-3 Miles | 4413.707 | Limestone | NA | 244 feet | Refs. 29, p. 5; 115, p. 3; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, p. 4; Figure 1-5 |
| RS 17 | 391 feet | 2-3 Miles | 3152.648 | Limestone | NA | 370 feet | Refs. 29, p. 5; 115, p. 3; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, p. 5; Figure 1-5 |
| RS 18 | 400 feet | 2-3 Miles | 3467.913 | Limestone | NA | 88-? Feet | Refs. 29, p. 5; 115, p. 3; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, p. 6; Figure 1-5 |
| RS 19 | 392 feet | 1-2 Miles | 3467.913 | Limestone | NA | NA* | Refs. 29, p. 5; 115, p. 3; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, p. 12; Figure 1-5 |
| RS 22 | 271 feet | 2-3 Miles | 2627.207 | Limestone | NA | 267 feet | Refs. 29, p. 5; 115, p. 3; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, p. 7; Figure 1-5 |
| RS 26 | 286 feet | 2-3 Miles | 3152.648 | Limestone | NA | NA* | Refs. 29, p. 5; 115, p. 3; 136, pp. 1, 2; 138, p. 1; 140, p. 8 |
| RS 27 | 416 feet | 2-3 Miles | 4466.251 | Limestone | NA | 98- ? feet | Refs. 29, p. 5; 115, p. 3; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, p. 9; Figure 1-5 |
| RS 29 | 290 feet | 2-3 Miles | 3152.648 | Limestone | NA | 285 feet | Refs. 29, p. 5; 115, p. 3; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, p. 11; Figure 1-5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| RS A | 97 feet | 2-3 Miles | 2364.486 | Sand and Gravel | 20 feet | 77-97 feet | Refs. 29, p. 5; p. 3; 115, p. 3; 116, pp. 15, 16; 117, p. 1, 2; 136, pp. 1, 2; 138, p. 1; Figure 1-5 |
| RS B | 80 feet | 2-3 Miles | 5254.413 | Sand and Gravel | NA | NA* | Ref. 29, p. 5; 115, p. 3; 136, pp. 1, 2; Figure 1-5 |
| RS C | 80 feet | 2-3 Miles | 7618.899 | Sand and Gravel | NA | NA* | Refs. 29, p. 5; 115, p. 3; 136, pp. 1, 2; 138, p. 5 |
| RS D | 74 feet | 2-3 Miles | 3888.266 | Sand and Gravel | NA | NA* | Refs. 29, p. 5; 115, p. 3; 136, pp. 1, 2; 138, p. 5 |

* According to page 1 of Reference 117, the well screens are placed at the bottom of the well.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **White River Wells** | | | | | | | |
| WR 3 | 70 feet | 3-4 Miles | 7146.002 | Sand & Gravel | 38 feet | 35-70 | Refs. 29, p. 5; 115, p. 3; 116, p. 21; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, pp. 12, 13; Figure 1-5 |
| WR 7 | 77 feet | 3-4 Miles | 3678.089 | Sand & Gravel | 20 feet | 57-77 feet | Refs. 29, p. 5; 115, p. 3; 116, p. 25; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, p. 13; Figure 1-5 |
| WR 8 | 78 feet | 3-4 Miles | 10508.83 | Sand & Gravel | 20 feet | 77 feet | Refs. 29, p. 5; 115, p. 3; 116, p. 27; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, pp. 12, 13; Figure 1-5 |
| WR 9 | 79.5 feet | 2-3 Miles | 7356.178 | Sand & Gravel | 20 feet | 80 feet | Refs. 29, p. 5; 115, p. 3; 116, pp. 29, 30; 117, p. 1; 136, pp. 1, 2; 138, p. 1; 140, pp. 12, 13; Figure 1-5 |
| **Speedway Wells** | | | | | | | |
| 2 | 78 feet | 1-2 Miles | 1,135.25 | Sand & Gravel | 30 feet | 48-78 feet | Refs. 29, p. 4; 115, p. 2; 116, pp. 11, 12; 118, p. 1; 139, p.1; 141, p. 2; Figure 1-5 |
| 3 | 63 feet | 1-2 Miles | 648.7143 | Sand & Gravel | 10 feet | 53-63 feet | Refs. 29, p. 4; 115, p. 2; 118, p. 1; 116, pp. 31, 32; 118, p. 1; 139, p. 1; 141, p. 2; Figure 1-5 |
| 4 | 69 feet | 1-2 Miles | 567.625 | Sand & Gravel | 10 feet | 59-69 feet | Refs. 29, p. 4; 115, p. 2; 116. pp. 33, 34; 118, p.1; 139, p. 1; 141, p. 2; Figure 1-5 |
| 6 | 71 feet | 1-2 Miles | 810.8928 | Sand & Gravel | 20 feet | 51-71 feet | Refs. 29, p. 4; 115, p. 2; 116, pp. 13, 14; 118, p.1; 139, p. 1; 141, p. 2; Figure 1-5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 7R | 69 feet | 1-2 Miles | 486.5357 | Sand & Gravel | 11 feet | 54-65 feet | Refs. 29, p. 4; 115, p. 2; 118, p. 1; 139, p. 1; 141, p. 2; 143 pp. 1,2; Figure 1-5 |
| 8R | 57 feet | 1-2 Miles | 364.9018 | Sand & Gravel | 10 feet | 47-57 feet | Refs. 29, p. 4; 115, p. 2; 118, p. 1; 139, p. 1; 141, p. 2; 142, p. 2; 146; 147; Figure 1-5 |
| 9 | 64 feet | 2-3 Miles | 486.5357 | Sand & Gravel | 12 feet | 52-64 feet | Refs. 29, p. 4; 115, p. 2; 118, p. 1; 139, p. 1; 141, p. 2; Figure 1-5 |
| 10R | 64 feet | 1-2 Miles | 486.5357 | Sand & Gravel | 10 feet | 66 feet | Refs. 29, p. 4; 115, p. 2; 116, p. 1; 118, p. 1; 139, p. 1; 141, p. 2; Figure 1-5 |
| 11R | 55 feet | 2-3 Miles | 608.1696 | Sand & Gravel | 10 feet | 56 feet | Refs. 29, p. 4; 118, p. 1; 139, p. 1; 141, p. 2; Figure 1-5 |
| 12 | 72 feet | 2-3 Miles | 810.8928 | Sand & Gravel | 8 Feet | 64-72 feet | Refs. 29, p. 4; 115, p. 2; 116, p. 5; 118, p. 1; 139, p. 1; 141, p. 2, ; Figure 1-5 |
| 13 | 59 feet | 2-3 Miles | 810.8928 | Sand & Gravel | 8 feet | 60 feet | Refs. 29, p. 4; 115, p. 2; 116, p. 7; 118, p. 1; 139, p. 1; 141, p. 2; Figure 1-5 |
| 14R | 62 feet | 2-3 Miles | 810.8928 | Sand & Gravel | 9 feet | 60 feet | Refs. 29, p. 4; 115, p. 2; 116, p. 9; 118, p. 1; 139, p. 1; 141, p. 2; Figure 1-5 |
| 15 | 54 feet | 1-2 Miles | 405.4464 | Sand and Gravel | NA | 54 feet | Ref. 29, p. 4; 118, p. 1; 139, p. 1; 141, p. 2; Figure 1-5 |

There are two properties, Genuine Parts and Michigan Plaza, that contain sources for the contaminated ground water. The sources lay between the Riverside/White River and Speedway municipal well fields. The Potential Population Table below depict the distance ranges from Genuine Parts and Michigan Plaza to the municipal wells, the population served at each well, and the value assigned from Table 3-12 of Reference 1 of this HRS Documentation Record.

## Potential Population Table

| Distance | Municipal/Residential Well | Population Served | Value assigned from Table 3-12 of Ref. 1 | References |
|---|---|---|---|---|
| 0-1/4 Miles | 21 Residential Wells* | 52 | 53 | Refs. 37, p. 8; 109, p.1; 144, p. 1; Figure 1-3 of this HRS Documentation Record; Figure 1-5 of this HRS Documentation Record |
| ¼- ½ Miles | none | | | Figure 1-5 of this HRS Documentation Record |
| ½ - 1 Miles | 13 Residential Wells** | 32 | 17 | Refs. 88, p.1; 144, p.1; Figure 1-5 of this HRS Documentation Record |
| 1-2 Miles | Speedway wells 2, 3, 4, 6, 7R, 8R, 10R, 15; Riverside Well RS 19 *** | 8,373.8147 | 939 | Refs. 29, pp. 4, 5; 138, p. 1; 139, p. 1; Figure 1-5 of this HRS Documentation Record |
| 2-3 Miles | Speedway Wells 9, 11R, 12, 13, 14R; Riverside Wells RS A, RS B, RS C, RS D, RS 2, RS 7, RS 8, RS 9, RS 17, RS 18, RS 22, RS 26, RS 27, RS 29; White River Wells WR 9, **** | 66,895.6077 | 6778 | Refs. 29, pp. 4, 5; 138, p. 1; 139, p. 1; 145; Figure 1-5 of this HRS Documentation Record |
| 3-4 Miles | White River Wells WR3, WR7, and WR8 ***** | 21,332.921 | 1306 | Refs. 29, p. 4; 138, p. 1; Figure 1-8 of this HRS Documentation Record |
| Total | | | 9,093 | |

2.49 People per household (Ref. 144, p. 1)
* 2.49 times 21 homes = 52 people
** 2.49 times 13 homes = 32 people

*** **1-2 Mile Radius Calculation (Refs. 138, p. 1; 139, p. 1; Figure 1-5)**

**Speedway Wells**

| | |
|---|---|
| Well 2 Serves | 1,135.25 People |
| Well 3 Serves | 648.7143 People |
| Well 4 Serves | 567.625 People |
| Well 6 Serves | 810.8928 People |
| Well 7R Serves | 486.5357 People |
| Well 8R Serves | 364.9018 People |
| Well 10R Serves | 486.5357 People |
| Well 15 Serves | 405.4464 People |

**Riverside Wells**

| | |
|---|---|
| RS 19 Serves | 3467.913 People |

The total number of people served in the1-2 mile radius is 8,373.8147 people

******2-3 Mile Calculation (Refs. 138, p. 1; 139, p. 1; Figure 1-5)**

**Speedway Wells**

| | |
|---|---|
| Well 9 Serves | 486.5357 People |
| Well 11R Serves | 608.1696 People |
| Well 12 Serves | 810.8928 People |
| Well 13 Serves | 810.8928 People |
| Well 14R Serves | 810.8928 People |

**Riverside Wells**

| | |
|---|---|
| Well RS A Serves | 2364.486 People |
| Well RS B Serves | 5254.413 People |
| Well RS C Serves | 7618.899 People |
| Well RS D Serves | 3888.266 People |
| Well RS 2 Serves | 4203.531 People |
| Well RS 7 Serves | 4045.898 People |
| Well RS 8 Serves | 4203.531 People |
| Well RS 9 Serves | 4413.707 People |
| Well RS 17 Serves | 3152.648 People |
| Well RS 18 Serves | 3467.913 People |
| Well RS 22 Serves | 2627.207 People |
| Well RS 26 Serves | 3152.648 People |
| Well RS 27 Serves | 4466.251 People |
| Well RS 29 Serves | 3152.648 People |

**White River Wells**

| | |
|---|---|
| Well WR 9 Serves | 7356.178 People |

The total number of people served in the 2-3 mile radius is 66,895.6077 people

*******3-4 Mile Calculation (Ref. 138, p. 1; Figure 1-5)**

**White River Wells**

| | |
|---|---|
| Well WR 3 Serves | 7146.002 People |
| Well WR 7 Serves | 3678.089 People |
| Well WR 8 Serves | 10508.83 People |

The total number of people served in the 3-4 mile radius 21,332.921 people

Table 3-12 value of 9,093 is multiplied by .1 = 909.3

**Potential Contamination Factor Value: 909**

### 3.3.3 Resource

Resource use of the combined aquifer within the target distance limit does not include any of the Resource Factors. Therefore, a Resource Factor value of 0 is assigned (Ref. 1, Section 3.3.3, p. 78).

**Resources Factor Value: 0**

### 3.3.4 Wellhead Protection Area

Neither the source nor the ground water plume lies within a Wellhead Protection Area. Therefore, the Wellhead Protection Area Factor Value of 0 is assigned (Ref. 1, Section 3.3.4, p. 78; 83, pp. 65, 119, 151, 152).

**Wellhead Protection Area Factor Value: 0**

Attachment 1
HRS Scoring and Target Information Showing That Michigan Plaza Will Score on its Own

**WORKSHEET FOR COMPUTING HRS SITE SCORE**
**For Michigan Plaza**

| | S | $S^2$ |
|---|---|---|
| **1. Ground Water Migration Pathway Score ($S_{gw}$) (from Table 3-1, line 13)** | **100.00** | **10,000.00** |
| **2a. Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)** | **NS*** | |
| **2b. Ground Water to Surface Water Migration Component (from Table 4-25, line 28)** | **NS** | |
| **2c. Surface Water Migration Pathway Score ($S_{sw}$) Enter the larger of lines 2a and 2b as the pathway score.** | **NS** | |
| **3. Soil Exposure Pathway Score ($S_s$) (from Table 5-1, line 22)** | **NS** | |
| **4. Air Migration Pathway Score ($S_a$) (from Table 6-1, line 12)** | **NS** | |
| **5. Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$** | | **10,000.00** |
| **6. HRS Site Score Divide the value on line 5 by 4 and take the square root** | **50.00** | |

**Notes: *NS = Not Scored**

**HRS Table 3-1 –Ground Water Migration Pathway Scoresheet (For Michigan Plaza)**

| Factor Categories and Factors | Maximum Value | Value Assigned |
|---|---|---|
| **Likelihood of Release to an Aquifer:** | | |
| 1. Observed Release | 550 | 550 |
| 2. Potential to Release: | | |
| 2a. Containment | 10 | NS |
| 2b. Net Precipitation | 10 | NS |
| 2c. Depth to Aquifer | 5 | NS |
| 2d. Travel Time | 35 | NS |
| 2e. Potential to Release [lines 2a x (2b + 2c + 2d)] | 500 | NS |
| 4. Likelihood of Release (higher of lines 1 and 2e) | 550 | 550 |
| **Waste Characteristics:** | | |
| 4. Toxicity/Mobility | (a) | 10,000 |
| 5. Hazardous Waste Quantity | (a) | 100 |
| 6. Waste Characteristics | 100 | 32 |
| **Targets**: | | |
| 7. Nearest Well | 50 | 50 |
| 8. Population: | | |
| 8a. Level I Concentrations | (b) | 30 |
| 8b. Level II Concentrations | (b) | NS |
| 8c. Potential Contamination | (b) | 909 |
| 8d. Population (lines 8a + 8b + 8c) | (b) | 939 |
| 9. Resources | 5 | NS |
| 10. Wellhead Protection Area | 20 | NS |
| 11. Targets (lines 7 + 8d + 9 + 10) | (b) | 989 |
| **Ground Water Migration Score For An Aquifer:** | | |
| 12. Aquifer Score [(lines 3 x 6 x 11)/82,500][c]<br>550 x 32 x 989 =17,406,400/82,500 =210.9 | 100 | 100.00 |
| **Ground Water Migration Pathway Score:** | | |
| 14. Pathway Score ($S_{gw}$),<br>(highest value from line 12 for all aquifers evaluated)[c] | 100 | 100.00 |

(a) Maximum value applies to waste characteristics category
(b) Maximum value not applicable
[c] Do not round to nearest integer
NS - Not Scored

**Potential Population**
**Michigan Plaza Property**

| Distance | Municipal/Residential Well | Population Served | Value assigned from Table 3-12 | References |
|---|---|---|---|---|
| 0-1/4 Miles | 21 Residential Wells* | 52 | 53 | Ref. 52, pp. 1, 3; 37, p. 8; Figure 1-3 of this HRS Documentation Record |
| ¼- ½ Miles | None | 0 | 0 | Ref. 88, p.2 |
| ½ - 1 Miles | 13 Residential Wells** | 32 | 17 | Ref. 88, p.2; Figure 1-9 |
| 1-2 Miles | Speedway Wells 2, 3, 4, 6, 7R, 15; Riverside well RS 19*** | 7,522.3772 | 939 | (Ref. 29, p. 5; Figure 1-9 of this Documentation Record) |
| 2-3 Miles | Speedway Wells 8R, 9, 10R, 11R, 12, 13, 14R; Riverside Wells RS A, RS B, RS C, RS D, RS 2, RS 7, RS 8, RS 9, RS 17, RS 18, RS 22, RS 26, RS 27, RS 29; White River Wells WR 9, **** | 67,747.0452 | 6778 | (Ref. 29, p. 4, 5; Figure 1-9 of this Documentation Record) |
| 3-4 Miles | White River Wells 3, 7, 8***** | 21,332.921 | 1306 | (Ref. 29, pp. 4; Figure 1-9 of this Documentation Record) |
| Total | | | 9093 | |

**<u>*0-1/4 Mile Radius Calculation</u>**

- 2.49 People per household (Ref. 144)
  2.49 times 21 homes =52 people

**<u>**½ - 1 Mile Radius Calculation</u>**

- 2.49 People per household (Ref. 144)
  2.49 times 13 homes = 32.37 people

*** **1-2 Mile Radius Calculation**

**Speedway Wells**

| | |
|---|---|
| Well 2 Serves | 1,135.25 People |
| Well 3 Serves | 648.7143 People |
| Well 4 Serves | 567.625 People |
| Well 6 Serves | 810.8928 People |
| Well 7R Serves | 486.5357 People |
| Well 15 Serves | 405.4464 People |

**Riverside Wells**

| | |
|---|---|
| RS 19 Serves | 3467.913 People |

The total number of people served in the 1-2 mile radius is 7,522.3772 People

******2-3 Mile Radius Calculation**

**Speedway Wells**

| | |
|---|---|
| Well 8R Serves | 364.9018 People |
| Well 9 Serves | 486.5357 People |
| Well 10R Serves | 486.5357 People |
| Well 11R Serves | 608.1696 People |
| Well 12 Serves | 810.8928 People |
| Well 13 Serves | 810.8928 People |
| Well 14R Serves | 810.8928 People |

**Riverside Wells**

| | |
|---|---|
| Well RS A Serves | 2364.486 People |
| Well RS B Serves | 5254.413 People |
| Well RS C Serves | 7618.899 People |
| Well RS D Serves | 3888.266 People |
| Well RS 2 Serves | 4203.531 People |
| Well RS 7 Serves | 4045.898 People |
| Well RS 8 Serves | 4203.531 People |
| Well RS 9 Serves | 4413.707 People |
| Well RS 17 Serves | 3152.648 People |
| Well RS 18 Serves | 3467.913 People |
| Well RS 22 Serves | 2627.207 People |
| Well RS 26 Serves | 3152.648 People |
| Well RS 27 Serves | 4466.251 People |
| Well RS 29 Serves | 3152.648 People |

**White River Wells**

| | |
|---|---|
| Well WR 9 Serves | 7356.178 People |

The total number of people served in the 2-3 mile radius is 67,747.0452 people

*******3-4Miles Radius Calculation**
**White River Wells**

| | |
|---|---|
| Well WR 3 Serves | 7146.002 People |
| Well WR 7 Serves | 3678.089 People |
| Well WR 8 Serves | 10508.83 People |

The total number of people served in the 3-4 mile radius 21,332.921 people

Table 3-12 value of 9093 is multiplied by .1 = 909.3

**Potential Contamination Factor Value: 909**

Scores for **Michigan Plaza**

| | |
|---|---|
| Air Pathway | Not Scored |
| Ground Water Pathway | 100.00 |
| Soil Exposure Pathway | Not Scored |
| Surface Water Pathway | Not Scored |
| **HRS SITE SCORE** | **50.00** |

Attachment 2

HRS Scoring and Target Information Showing That Genuine Parts Will Score on its Own

**WORKSHEET FOR COMPUTING HRS SITE SCORE**
**For Genuine Parts**

| | | S | $S^2$ |
|---|---|---|---|
| 1. | Ground Water Migration Pathway Score ($S_{gw}$) | 100.00 | 10,000.00 |
| 2a. | Surface Water Overland/Flood Migration Component (from Table 4-1, line 30) | NS* | |
| 2b. | Ground Water to Surface Water Migration Component (from Table 4-25, line 28) | NS | |
| 2c. | Surface Water Migration Pathway Score ($S_{sw}$) Enter the larger of lines 2a and 2b as the pathway score. | NS | |
| 3. | Soil Exposure Pathway Score ($S_s$) (from Table 5-1, line 22) | NS | |
| 4. | Air Migration Pathway Score ($S_a$) (from Table 6-1, line 12) | NS | |
| 5. | Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$ | | 10,000.00 |
| 6. | **HRS Site Score** Divide the value on line 5 by 4 and take the square root | | 50.00 |

Notes: *NS = Not Scored

## HRS Table 3-1 –Ground Water Migration Pathway Scoresheet (For Genuine Parts)

| Factor Categories and Factors | Maximum Value | Value Assigned |
|---|---|---|
| **Likelihood of Release to an Aquifer:** | | |
| 1. Observed Release | 550 | 550 |
| 2. Potential to Release: | | |
| 2a. Containment | 10 | NS |
| 2b. Net Precipitation | 10 | NS |
| 2c. Depth to Aquifer | 5 | NS |
| 2d. Travel Time | 35 | NS |
| 2e. Potential to Release [lines 2a x (2b + 2c + 2d)] | 500 | NS |
| 5. Likelihood of Release (higher of lines 1 and 2e) | 550 | 550 |
| **Waste Characteristics:** | | |
| 4. Toxicity/Mobility | (a) | 10,000 |
| 5. Hazardous Waste Quantity | (a) | 100 |
| 6. Waste Characteristics | 100 | 32 |
| **Targets**: | | |
| 7. Nearest Well | 50 | 50 |
| 8. Population: | | |
| 8a. Level I Concentrations | (b) | 30 |
| 8b. Level II Concentrations | (b) | NS |
| 8c. Potential Contamination | (b) | 909 |
| 8d. Population (lines 8a + 8b + 8c) | (b) | 939 |
| 9. Resources | 5 | NS |
| 10. Wellhead Protection Area | 20 | NS |
| 11. Targets (lines 7 + 8d + 9 + 10) | (b) | 989 |
| **Ground Water Migration Score For An Aquifer:** | | |
| 12. Aquifer Score [(lines 3 x 6 x 11)/82,500][c]<br>550 x 32 x 989 =17,406,400/82,500 =210.9 | 100 | 100.00 |
| **Ground Water Migration Pathway Score:** | | |
| 15. Pathway Score ($S_{gw}$),<br>(highest value from line 12 for all aquifers evaluated)[c] | 100 | 100.00 |

(a) Maximum value applies to waste characteristics category
(b) Maximum value not applicable
[c] Do not round to nearest integer
NS - Not Scored

## Potential Population

| Distance | Municipal/Residential Well | Population Served | Value assigned from Table 3-12 | References |
|---|---|---|---|---|
| 0-1/4 Miles | 23 Residential Wells* | 57 | 53 | Ref. 52, pp. 1, 3; 37, p. 8; Figure 1-3 of this HRS Documentation Record |
| ¼- ½ Miles | none | | | Figure 1-8 |
| ½ - 1 Miles | 13 Residential Wells** | 32 | 17 | Ref. 88, p. 2; Figure 1-8 |
| 1-2 Miles | Speedway wells 2, 3, 4, 6, 7R, 8R, 10R, 15; Riverside Well RS 19 *** | 8,373.8147 | 939 | (Ref. 29, pp. 4, 5; Figure 1-8 of this HRS Documentation Record) |
| 2-3 Miles | Speedway Wells 9, 11R, 12, 13, 14R; Riverside Wells RS A, RS B, RS C, RS D, RS 2, RS 7, RS 8, RS 9, RS 17, RS 18, RS 22, RS 26, RS 27, RS 29; White River Wells WR 9, **** | 66,895.6077 | 6778 | (Ref. 29, pp. 4, 5; Figure 1-8 of this HRS Documentation Record) |
| 3-4 Miles | White River Wells 3, 7, 8***** | 21,332.921 | 1306 | |
| Total | | | 9093 | |

**<u>*0-1/4 Mile Radius Calculation</u>**

- 2.49 People per household (Ref. 144)
  2.49 times 23 homes =57 people

**<u>**½ - 1 Mile Radius Calculation</u>**

- 2.49 People per household (Ref. 144)
  2.49 times 13 homes = 32.37 people

*** **1-2 Mile Radius Calculation (Refs. 138, p. 1; 139, p. 1; Figure 1-5)**

**Speedway Wells**

| | |
|---|---|
| Well 2 Serves | 1,135.25 People |
| Well 3 Serves | 648.7143 People |
| Well 4 Serves | 567.625 People |
| Well 6 Serves | 810.8928 People |
| Well 7R Serves | 486.5357 People |
| Well 8R Serves | 364.9018 People |
| Well 10R Serves | 486.5357 People |
| Well 15 Serves | 405.4464 People |

**Riverside Wells**

| | |
|---|---|
| RS 19 Serves | 3467.913 People |

The total number of people served in the1-2 mile radius is 8,373.8147 people

******2-3 Mile Calculation (Refs. 138, p. 1; 139, p. 1; Figure 1-5)**

**Speedway Wells**

| | |
|---|---|
| Well 9 Serves | 486.5357 People |
| Well 11R Serves | 608.1696 People |
| Well 12 Serves | 810.8928 People |
| Well 13 Serves | 810.8928 People |
| Well 14R Serves | 810.8928 People |

**Riverside Wells**

| | |
|---|---|
| Well RS A Serves | 2364.486 People |
| Well RS B Serves | 5254.413 People |
| Well RS C Serves | 7618.899 People |
| Well RS D Serves | 3888.266 People |
| Well RS 2 Serves | 4203.531 People |
| Well RS 7 Serves | 4045.898 People |
| Well RS 8 Serves | 4203.531 People |
| Well RS 9 Serves | 4413.707 People |
| Well RS 17 Serves | 3152.648 People |
| Well RS 18 Serves | 3467.913 People |
| Well RS 22 Serves | 2627.207 People |
| Well RS 26 Serves | 3152.648 People |
| Well RS 27 Serves | 4466.251 People |
| Well RS 29 Serves | 3152.648 People |

**White River Wells**

| | |
|---|---|
| Well WR 9 Serves | 7356.178 People |

The total number of people served in the 2-3 mile radius is 66,895.6077 people

*******3-4 Mile Calculation (Ref. 138, p. 1; Figure 1-5)**

**White River Wells**

| | |
|---|---|
| Well WR 3 Serves | 7146.002 People |
| Well WR 7 Serves | 3678.089 People |
| Well WR 8 Serves | 10508.83 People |

The total number of people served in the 3-4 mile radius 21,332.921 people

Table 3-12 value of 9,093 is multiplied by .1 = 909.3

**Potential Contamination Factor Value: 909**

Scores for **Genuine Parts**

| | |
|---|---|
| Air Pathway | Not Scored |
| Ground Water Pathway | 100.00 |
| Soil Exposure Pathway | Not Scored |
| Surface Water Pathway | Not Scored |
| **HRS SITE SCORE** | **50.00** |