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Supplement to RCRA Facility Investigation: Vermont Street Investigation Data Report

RCRA Corrective Action

Allison Transmission, Inc.

Speedway, Indiana

USEPA ID #IND006413348 & IND000806828

February 2010

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Introduction

The purpose of this data report is to present data collected at and in the vicinity of the Allison Transmission Facility during the additional investigation that was completed in January 2010. These data were collected to determine if volatile organic compounds (VOCs) have migrated in the groundwater from the Allison Transmission Facility and to confirm that VOCs in groundwater from the Allison Transmission Facility do not commingle with the VOCs detected in the vicinity of Vermont Street. This investigation was conducted in accordance with the proposal submitted to the United States Environmental Protection Agency (USEPA) on January 6, 2010 (Appendix A).

All soil boring logs for the locations installed during this investigation are presented in Appendix B. Laboratory Analytical Reports for the investigation are presented in Appendix C. Tables summarizing data collected from monitoring wells (groundwater) and soil borings (borehole water and soil) during this investigation are presented as Tables 1, 2 and 3, respectively. Drawing 1 presents analytical data-boxes for samples collected during this investigation and historical samples collected in the vicinity of the investigation area.

Based on GM's previous investigation in the area, three distinct saturated sand units have been identified. Sand unit S1 is an intermittently saturated sand unit, typically encountered west of Grande Avenue. Sand unit S2 can be either saturated or unsaturated and unconfined or confined and is often separated into S2A and S2B units, depending on the presence or absence of an intermittent till layer. Sand unit S3, is a confined saturated sand unit encountered beneath an extensive and continuous till layer below sand unit S2.

Groundwater samples were collected from four existing monitoring wells, MW-7-S2, MW-10-S2, MW-0812-S2A and MW-0813-S2A, located on the eastern side of Plants 12 and 14. Additionally, six soil borings (SB-64-1001 through SB-64-1006) were advanced south-southeast of Plants 12 and 14, both on-site and off-site. The collection of three borehole water samples was planned from each soil boring: within the top four feet of the saturated zone (S2 or S2A), the mid-point of the saturated zone (or above an underlying till separating sand unit S2A from S2B) and from the bottom of the saturated unit (above the underlying till separating S2 or S2B from S3). Due to the lithology encountered, only two borehole water samples were collected from soil borings SB-64-1003 and SB-64-1006. Finally, a soil sample was collected from soil boring SB-64-1001 in an interval of silty fine sand (39 ft to 40 ft below ground surface). The locations of these monitoring wells and soil borings are shown on Drawing 1.

Results

All soil and water samples were analyzed for the target compound list (TCL) VOCs via USEPA Method SW-846 8260. No site-related VOCs were detected in the groundwater, borehole water, or soil samples. This indicates that VOCs have not migrated to the investigation locations from the Allison Transmission Facility in the S2 sand unit and the detected VOCs in the vicinity of Vermont Street are separate and distinct from the VOC impacted groundwater in the S2 sand unit at the Allison Transmission Facility. Chloroform was the only constituent detected in an equipment blank collected during the groundwater sampling portion of the investigation. Based on discussions with the laboratory, GM understands that chloroform is commonly present in commercially purchased deionized water. The analytical results had not been independently validated at the time of this report.

Databox Presentation

To allow effective presentation of the data for determining whether VOCs have migrated in groundwater from the Allison Transmission Facility in the S2 sand unit and to confirm that VOCs in the S2 sand unit at the Allison Transmission Facility do not commingle with the VOCs detected in the vicinity of Vermont Street, Drawing 1 presents databoxes with select constituents. The constituent list is comprised of five chlorinated VOCs (1,1-dichloroethene (DCE), cis-1,2-DCE, tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride) which were identified during the RCRA Facility Investigation (RFI) for the Allison Transmission Facility.

Results exceeding maximum contaminant level (MCLs) are highlighted on the figures.

Additionally, databoxes summarizing analytical results for water samples collected by Marion County Health Department, Genuine Parts Company, and Michigan Plaza are also shown on Drawing 1. These data were obtained through review of historical reports or receipt of the analytical results from the parties collecting the data.

Proposed Additional Investigation

GM proposes to install two monitoring wells in the S3 sand unit to monitor groundwater from this unit for the purpose of confirming that VOCs have not migrated from the Allison Transmission Facility in the S3 sand unit and to confirm that VOCs from the Allison Transmission Facility do not commingle with the VOCs detected in the vicinity of Vermont Street. It was not possible to collect borehole water samples to fulfill this purpose during the January 2010 investigation without

possibly compromising the integrity of the till unit separating the S2 and S3 sand units (i.e., preventing a potential preferential migration pathway from the S2 sand unit to the S3 sand unit). The proposed locations for these monitoring wells are presented as Appendix D.

References

ARCADIS, October 1, 2009. *Special Report on the Evaluation of Potential Off-Site Migration of Chlorinated Volatile Organic Compounds South of Allison Transmission Plant 12*, General Motors Company RCRA Corrective Action at Allison Transmission, Inc. , Speedway, Indiana.

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Table 1. Groundwater Analytical Results, Vermont Street Investigation, General Motors LLC at Allison Transmission, Inc., Speedway, Indiana.

Parameter	MW-0812-S2A	FD-1-MAH MW-0812-S2A	MW-0813-S2A	MW-10-S2	MW-7-S2
Date	1/19/2010	1/19/2010 *field duplicate*	1/19/2010	1/19/2010	1/19/2010
1,1,1-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichlorotrifluoroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,4-Trichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromo-3-chloropropane	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromoethane (EDB)	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane	<5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
2-Butanone (MEK)	<25.0	<25.0	<25.0	<25.0	<25.0
2-Hexanone	<25.0	<25.0	<25.0	<25.0	<25.0
4-Methyl-2-pentanone (MIBK)	<25.0	<25.0	<25.0	<25.0	<25.0
Acetone	<100	<100	<100	<100	<100
Benzene	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon disulfide	<10.0	<10.0	<10.0	<10.0	<10.0
Carbon tetrachloride	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform	<5.0	<5.0	<5.0	<5.0	<5.0
Chloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0
Cyclohexane	<100	<100	<100	<100	<100
Dibromochloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Dichlorodifluoromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene	<5.0	<5.0	<5.0	<5.0	<5.0
Isopropylbenzene (Cumene)	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl acetate	<50.0	<50.0	<50.0	<50.0	<50.0
Methylcyclohexane	<50.0	<50.0	<50.0	<50.0	<50.0
Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-tert-butyl ether	<4.0	<4.0	<4.0	<4.0	<4.0
Styrene	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl chloride	<2.0	<2.0	<2.0	<2.0	<2.0
Xylene (Total)	<10.0	<10.0	<10.0	<10.0	<10.0

Results in ug/L
Samples analyzed via USEPA
SW-846 Method 8260

Table 2. Borehole Water Analytical Results, Vermont Street Investigation, General Motors LLC at Allison Transmission, Inc., Speedway, Indiana.

Parameter / Sample ID (Depth Interval Screened, ft)	SB-64-1001 (11-15)	SB-64-1001 (30-34)	SB-64-1001 (41-45)	SB-64-1002 (17-21)	SB-64-1002 (24-28)
Date	1/14/2010	1/15/2010	1/15/2010	1/19/2010	1/19/2010
1,1,1-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichlorotrifluoroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,4-Trichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromo-3-chloropropane	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromoethane (EDB)	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane	<5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
2-Butanone (MEK)	<25.0	<25.0	<25.0	<25.0	<25.0
2-Hexanone	<25.0	<25.0	<25.0	<25.0	<25.0
4-Methyl-2-pentanone (MIBK)	<25.0	<25.0	<25.0	<25.0	<25.0
Acetone	<100	<100	<100	<100	<100
Benzene	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon disulfide	<10.0	<10.0	<10.0	<10.0	<10.0
Carbon tetrachloride	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform	<5.0	<5.0	<5.0	<5.0	<5.0
Chloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0
Cyclohexane	<100	<100	<100	<100	<100
Dibromochloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Dichlorodifluoromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene	<5.0	<5.0	<5.0	<5.0	<5.0
Isopropylbenzene (Cumene)	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl acetate	<50.0	<50.0	<50.0	<50.0	<50.0
Methylcyclohexane	<50.0	<50.0	<50.0	<50.0	<50.0
Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-tert-butyl ether	<4.0	<4.0	<4.0	<4.0	<4.0
Styrene	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl chloride	<2.0	<2.0	<2.0	<2.0	<2.0
Xylene (Total)	<10.0	<10.0	<10.0	<10.0	<10.0

Results in ug/L
Samples analyzed via USEPA
SW-846 Method 8260

Table 2. Borehole Water Analytical Results, Vermont Street Investigation, General Motors LLC at Allison Transmission, Inc., Speedway, Indiana.

Parameter / Sample ID (Depth Interval Screened, ft)	SB-64-1002 (31-35)	SB-64-1003 (18-22)	SB-64-1003 (31-35)	FD-01 SB-64-1003 (31-35)	SB-64-1004 (22-26)
Date	1/19/2010	1/13/2010	1/14/2010	1/14/2010	1/13/2010
1,1,1-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichlorotrifluoroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,4-Trichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromo-3-chloropropane	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromoethane (EDB)	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane	<5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
2-Butanone (MEK)	<25.0	<25.0	<25.0	<25.0	<25.0
2-Hexanone	<25.0	<25.0	<25.0	<25.0	<25.0
4-Methyl-2-pentanone (MIBK)	<25.0	<25.0	<25.0	<25.0	<25.0
Acetone	<100	<100	<100	<100	<100
Benzene	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon disulfide	<10.0	<10.0	<10.0	<10.0	<10.0
Carbon tetrachloride	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform	<5.0	<5.0	<5.0	<5.0	<5.0
Chloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0
Cyclohexane	<100	<100	<100	<100	<100
Dibromochloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Dichlorodifluoromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene	<5.0	<5.0	<5.0	<5.0	<5.0
Isopropylbenzene (Cumene)	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl acetate	<50.0	<50.0	<50.0	<50.0	<50.0
Methylcyclohexane	<50.0	<50.0	<50.0	<50.0	<50.0
Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-tert-butyl ether	<4.0	<4.0	<4.0	<4.0	<4.0
Styrene	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl chloride	<2.0	<2.0	<2.0	<2.0	<2.0
Xylene (Total)	<10.0	<10.0	<10.0	<10.0	<10.0

Results in ug/L
Samples analyzed via USEPA
SW-846 Method 8260

Table 2. Borehole Water Analytical Results, Vermont Street Investigation, General Motors LLC at Allison Transmission, Inc., Speedway, Indiana.

Parameter / Sample ID (Depth Interval Screened, ft)	SB-64-1004 (27-31)	SB-64-1004 (35-39)	SB-64-1005 (22-26)	SB-64-1005 (26-30)	SB-64-1005 (33-37)
Date	1/13/2010	1/14/2010	1/20/2010	1/20/2010	1/20/2010
1,1,1-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichlorotrifluoroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,4-Trichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromo-3-chloropropane	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromoethane (EDB)	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane	<5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
2-Butanone (MEK)	<25.0	<25.0	<25.0	<25.0	<25.0
2-Hexanone	<25.0	<25.0	<25.0	<25.0	<25.0
4-Methyl-2-pentanone (MIBK)	<25.0	<25.0	<25.0	<25.0	<25.0
Acetone	<100	<100	<100	<100	<100
Benzene	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon disulfide	<10.0	<10.0	<10.0	<10.0	<10.0
Carbon tetrachloride	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform	<5.0	<5.0	<5.0	<5.0	<5.0
Chloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0
Cyclohexane	<100	<100	<100	<100	<100
Dibromochloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Dichlorodifluoromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene	<5.0	<5.0	<5.0	<5.0	<5.0
Isopropylbenzene (Cumene)	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl acetate	<50.0	<50.0	<50.0	<50.0	<50.0
Methylcyclohexane	<50.0	<50.0	<50.0	<50.0	<50.0
Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-tert-butyl ether	<4.0	<4.0	<4.0	<4.0	<4.0
Styrene	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl chloride	<2.0	<2.0	<2.0	<2.0	<2.0
Xylene (Total)	<10.0	<10.0	<10.0	<10.0	<10.0

Results in ug/L
Samples analyzed via USEPA
SW-846 Method 8260

Table 2. Borehole Water Analytical Results, Vermont Street Investigation, General Motors LLC at Allison Transmission, Inc., Speedway, Indiana.

Parameter / Sample ID (Depth Interval Screened, ft)	SB-64-1006 (20-24)	SB-64-1006 (33-37)
Date	1/18/2010	1/18/2010
1,1,1-Trichloroethane	<5.0	<5.0
1,1,2,2-Tetrachloroethane	<5.0	<5.0
1,1,2-Trichloroethane	<5.0	<5.0
1,1,2-Trichlorotrifluoroethane	<5.0	<5.0
1,1-Dichloroethane	<5.0	<5.0
1,1-Dichloroethene	<5.0	<5.0
1,2,4-Trichlorobenzene	<5.0	<5.0
1,2-Dibromo-3-chloropropane	<5.0	<5.0
1,2-Dibromoethane (EDB)	<5.0	<5.0
1,2-Dichlorobenzene	<5.0	<5.0
1,2-Dichloroethane	<5.0	<5.0
1,2-Dichloropropane	<5.0	<5.0
1,3-Dichlorobenzene	<5.0	<5.0
1,4-Dichlorobenzene	<5.0	<5.0
2-Butanone (MEK)	<25.0	<25.0
2-Hexanone	<25.0	<25.0
4-Methyl-2-pentanone (MIBK)	<25.0	<25.0
Acetone	<100	<100
Benzene	<5.0	<5.0
Bromodichloromethane	<5.0	<5.0
Bromoform	<5.0	<5.0
Bromomethane	<5.0	<5.0
Carbon disulfide	<10.0	<10.0
Carbon tetrachloride	<5.0	<5.0
Chlorobenzene	<5.0	<5.0
Chloroethane	<5.0	<5.0
Chloroform	<5.0	<5.0
Chloromethane	<5.0	<5.0
cis-1,2-Dichloroethene	<5.0	<5.0
cis-1,3-Dichloropropene	<5.0	<5.0
Cyclohexane	<100	<100
Dibromochloromethane	<5.0	<5.0
Dichlorodifluoromethane	<5.0	<5.0
Ethylbenzene	<5.0	<5.0
Isopropylbenzene (Cumene)	<5.0	<5.0
Methyl acetate	<50.0	<50.0
Methylcyclohexane	<50.0	<50.0
Methylene chloride	<5.0	<5.0
Methyl-tert-butyl ether	<4.0	<4.0
Styrene	<5.0	<5.0
Tetrachloroethene	<5.0	<5.0
Toluene	<5.0	<5.0
trans-1,2-Dichloroethene	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0
Trichloroethene	<5.0	<5.0
Trichlorofluoromethane	<5.0	<5.0
Vinyl chloride	<2.0	<2.0
Xylene (Total)	<10.0	<10.0

Results in ug/L
Samples analyzed via USEPA
SW-846 Method 8260

ARCADIS

Table 3. Soil Analytical Results, Vermont Street Investigation, General Motors LLC at Allison Transmission, Inc., Speedway, Indiana.

Parameter / Sample ID (depth interval, ft)	SB-64-1001(39-40)
Date	1/15/2010
1,1,1-Trichloroethane	<5.7
1,1,2,2-Tetrachloroethane	<5.7
1,1,2-Trichloroethane	<5.7
1,1,2-Trichlorotrifluoroethane	<5.7
1,1-Dichloroethane	<5.7
1,1-Dichloroethene	<5.7
1,2,4-Trichlorobenzene	<5.7
1,2-Dibromo-3-chloropropane	<5.7
1,2-Dibromoethane (EDB)	<5.7
1,2-Dichlorobenzene	<5.7
1,2-Dichloroethane	<5.7
1,2-Dichloropropane	<5.7
1,3-Dichlorobenzene	<5.7
1,4-Dichlorobenzene	<5.7
2-Butanone (MEK)	<28.3
2-Hexanone	<113
4-Methyl-2-pentanone (MIBK)	<28.3
Acetone	<113
Benzene	<5.7
Bromodichloromethane	<5.7
Bromoform	<5.7
Bromomethane	<5.7
Carbon disulfide	<11.3
Carbon tetrachloride	<5.7
Chlorobenzene	<5.7
Chloroethane	<5.7
Chloroform	<5.7
Chloromethane	<5.7
cis-1,2-Dichloroethene	<5.7
cis-1,3-Dichloropropene	<5.7
Cyclohexane	<113
Dibromochloromethane	<5.7
Dichlorodifluoromethane	<5.7
Ethylbenzene	<5.7
Isopropylbenzene (Cumene)	<5.7
Methyl acetate	<5.7
Methylcyclohexane	<5.7
Methylene chloride	<22.7
Methyl-tert-butyl ether	<5.7
Styrene	<5.7
Tetrachloroethene	<5.7
Toluene	<5.7
trans-1,2-Dichloroethene	<5.7
trans-1,3-Dichloropropene	<5.7
Trichloroethene	<5.7
Trichlorofluoromethane	<5.7
Vinyl chloride	<5.7
Xylene (Total)	<11.3

Results in ug/Kg
Samples analyzed via USEPA SW-846 Method 8260

SYMBOLS

MW-0517-S1	S1 MONITORING WELL
MW-0517-S2	S2 MONITORING WELL
MW-0517-S3	S3 MONITORING WELL
MW-0517-S4	S4 MONITORING WELL
RW-0201-S2	RECOVERY WELL
RW-0201-S3	RECOVERY WELL
MW-5	ABANDONED MONITORING WELL
SB-64-1002	SOIL BORING FOR VERMONT STREET INVESTIGATION
SB-64-1001	PIEZOMETER (TEMPORARY) FOR VERMONT STREET INVESTIGATION
MW-167D	MICHIGAN PLAZA/ GENUINE PARTS MONITORING WELL
GP89	GENUINE PARTS BOREHOLE LOCATION
4140 W. Vermont Street	RESIDENTIAL WATER WELL
BW9	DIESEL FUEL PLUME RECOVERY WELL
OSBW-3	ABANDONED DIESEL FUEL RECOVERY WELL
	PROPERTY BOUNDARY
	BUILDING OUTLINE
AOI 40	AREA OF INTEREST

SAMPLE LOCATION	MW-132R	11/3/2009	SAMPLE DATE
		mg/l	UNITS
		Depth	SAMPLE INTERVAL (FEET BELOW GROUND SURFACE)
		Groundwater	MATRIX
	VOC		
	1,1-Dichloroethene	0.001 U	RESULTS
	cis-1,2-Dichloroethene	0.0098	
	Tetrachloroethene	0.001 U	DATA QUALIFIER
	Trichloroethene	0.033	RESULTS EXCEEDING SCREENING CRITERIA ARE HIGHLIGHTED IN GREEN
ANALYTICAL PARAMETER	Vinyl Chloride	0.001 U	

Screening Criteria	
Constituent	**MCL**
1,1-Dichloroethene	0.007
cis-1,2-Dichloroethene	0.07
Tetrachloroethene	0.005
Trichloroethene	0.005
Vinyl Chloride	0.002
Values in mg/L	
MCL - Maximum Contaminant Level	

DATA QUALIFIERS

R - Rejected
U - Analyte/Compound was analyzed for but not detected.
UJ - Quantitation limit qualified as estimate.

DEFINITIONS

S1 Saturated or Unsaturated Sand Unit encountered from 1 to 16.5 feet below ground surface (BGS) with a clay underneath and where saturated, it is considered perched.

S1 ranges in thickness from 14 to 16 feet.

S2 Saturated Sand Unit ranges from ranges in thickness of 6 to 43.5 (ft).

S2 may be subdivided into units S2A or S2B if a clay is present that divides the S2 unit.

S2A is encountered from 16.5 to 34 feet BGS and ranges in thickness from 4.5 to 15.5 feet.

S2B is encountered from 15 to 48.5 feet BGS and ranges in thickness from 3 to 20 feet.

If S2B is present, then the saturated unit above the till is named S2A.

If S2B is not present, then the saturated unit above the till is named S2.

S3 Saturated Sand Unit typically encountered from 37 to 76 feet BGS and ranges in thickness from 2.6 to 24.5 feet.

S4 Saturated Sand Unit typically encountered from 89 to 110 feet BGS and ranges in thickness from 4 to 10.5 feet.

T Saturated Till Unit encountered at 32 feet BGS at monitoring well MW-0204-T.

DATABOX INFORMATION

NS - Not analyzed for the specific constituent.

Water analytical results presented in milligrams per liter (mg/L)

Databoxes include constituents that were detected above screening criteria (Region 9 Industrial PRGs with a target cancer risk of 1 E-6 and a hazard quotient of 1) in one or more samples collected at the Site, except for the following:

- constituents with concentrations that exceed criteria in only borehole water samples; and
- constituents that are believed to be unrelated to the Facility and/or were detected only infrequently at low levels.

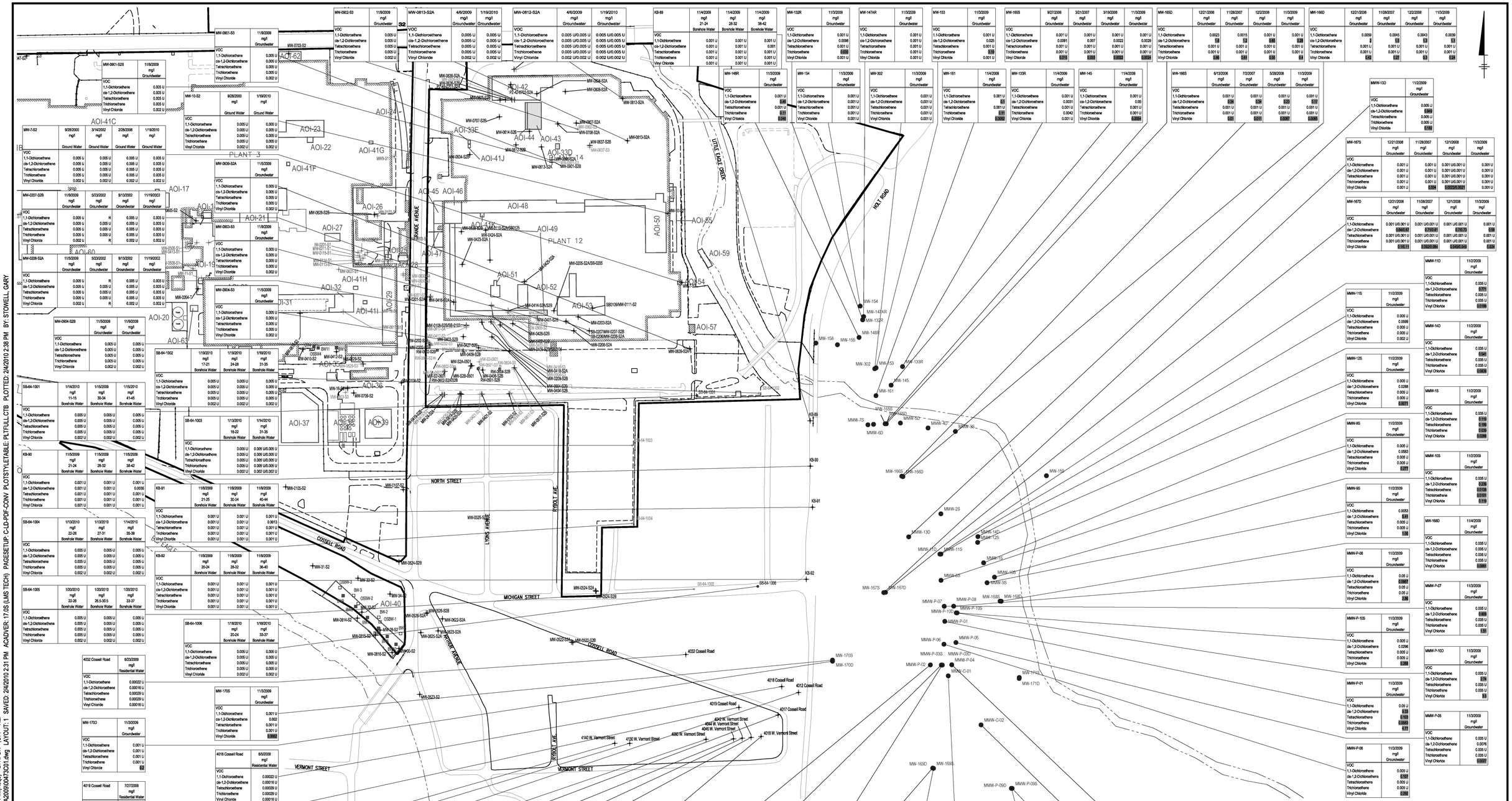
SUPPLEMENT TO RCRA FACILITY INVESTIGATION:
VERMONT STREET INVESTIGATION DATA REPORT
INDIANAPOLIS, INDIANA

LEGEND

ARCADIS

DRAWING
LEGEND

CITY:(Read) DIV:(RGROUP:(Read) DB:(Read) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\APROJECT\ALLSTATE\IN\IN047\5020-Corrective Measures\Field Investigation\Vermont Street Investigation\Data Report\Drawing_legend_100202_af.dwg LAYOUT:LEGEND SAVED: 2/11/2010 11:54 AM ACADVER: 17.0S (LMS TECH) PAGESETUP:---- PLOTSTYLETABLE:---- PLOTTED: 2/11/2010 2:15 PM BY: FISHER, SARAH
XREFS: IMAGES: PROJECTNAME: —
IN0004/3-BASE_IMPD Databorder_logo.JPG



MW-0902-S3	11/9/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.002 U

MW-0813-S2A	4/6/2009 mg/l Groundwater	1/19/2010 mg/l Groundwater
VOC		
1,1-Dichloroethene	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U

MW-0812-S2A	4/6/2009 mg/l Groundwater	1/19/2010 mg/l Groundwater
VOC		
1,1-Dichloroethene	0.005 U/0.005 U	0.005 U/0.005 U
cis-1,2-Dichloroethene	0.005 U/0.005 U	0.005 U/0.005 U
Tetrachloroethene	0.005 U/0.005 U	0.005 U/0.005 U
Trichloroethene	0.005 U/0.005 U	0.005 U/0.005 U
Vinyl Chloride	0.002 U/0.002 U	0.002 U/0.002 U

KB-88	11/4/2009 mg/l 21-24 Borehole Water	11/4/2009 mg/l 28-32 Borehole Water	11/4/2009 mg/l 38-42 Borehole Water
VOC			
1,1-Dichloroethene	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.001 U	0.001 U	0.001
Tetrachloroethene	0.001 U	0.001 U	0.001 U
Trichloroethene	0.001 U	0.001 U	0.001 U
Vinyl Chloride	0.001 U	0.001 U	0.001 U

MW-132R	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.001 U
cis-1,2-Dichloroethene	0.0098
Tetrachloroethene	0.001 U
Trichloroethene	0.002
Vinyl Chloride	0.001 U

MW-147AR	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.001 U
cis-1,2-Dichloroethene	0.001 U
Tetrachloroethene	0.001 U
Trichloroethene	0.001 U
Vinyl Chloride	0.001 U

MW-153	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.001 U
cis-1,2-Dichloroethene	0.025
Tetrachloroethene	0.001 U
Trichloroethene	0.29
Vinyl Chloride	0.001 U

MW-165S	9/27/2006 mg/l Groundwater	3/21/2007 mg/l Groundwater	3/19/2008 mg/l Groundwater	11/3/2009 mg/l Groundwater
VOC				
1,1-Dichloroethene	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.0091	0.007	0.0022	0.0029
Tetrachloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl Chloride	0.0115	0.088	0.0022	0.0024

MW-165D	12/21/2006 mg/l Groundwater	11/28/2007 mg/l Groundwater	12/2/2008 mg/l Groundwater	11/3/2009 mg/l Groundwater
VOC				
1,1-Dichloroethene	0.0023	0.0015	0.001 U	0.001 U
cis-1,2-Dichloroethene	5.9	5.2	4.85	5.28
Tetrachloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl Chloride	0.36	0.61	0.55	0.4

MW-166D	12/21/2006 mg/l Groundwater	11/28/2007 mg/l Groundwater	12/2/2008 mg/l Groundwater	11/3/2009 mg/l Groundwater
VOC				
1,1-Dichloroethene	0.0059	0.0045	0.0043	0.0039
cis-1,2-Dichloroethene	8	6.6	5.9	5.1
Tetrachloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl Chloride	0.42	0.27	0.3	0.24

MW-148R	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.001 U
cis-1,2-Dichloroethene	0.49
Tetrachloroethene	0.001 U
Trichloroethene	0.51
Vinyl Chloride	0.045

MW-154	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.001 U
cis-1,2-Dichloroethene	0.001 U
Tetrachloroethene	0.001 U
Trichloroethene	0.001 U
Vinyl Chloride	0.001 U

MW-302	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.001 U
cis-1,2-Dichloroethene	0.001 U
Tetrachloroethene	0.001 U
Trichloroethene	0.001 U
Vinyl Chloride	0.001 U

MW-161	11/4/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.001 U
cis-1,2-Dichloroethene	0.1
Tetrachloroethene	0.001 U
Trichloroethene	0.16
Vinyl Chloride	0.0022

MW-133R	11/4/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.001 U
cis-1,2-Dichloroethene	0.0031
Tetrachloroethene	0.001 U
Trichloroethene	0.0042
Vinyl Chloride	0.001 U

MW-145	11/4/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.001 U
cis-1,2-Dichloroethene	0.05
Tetrachloroethene	0.001 U
Trichloroethene	0.001 U
Vinyl Chloride	0.0054

MW-168S	6/13/2006 mg/l Groundwater	7/2/2007 mg/l Groundwater	5/28/2008 mg/l Groundwater	11/3/2009 mg/l Groundwater
VOC				
1,1-Dichloroethene	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.34	0.34	0.29	0.17
Tetrachloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl Chloride	0.01	0.011	0.0047	0.0065

MW-13D	11/2/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.069
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.192

MW-167S	12/21/2006 mg/l Groundwater	11/28/2007 mg/l Groundwater	12/1/2008 mg/l Groundwater	11/3/2009 mg/l Groundwater
VOC				
1,1-Dichloroethene	0.001 U	0.001 U	0.001 U/0.001 U	0.001 U
cis-1,2-Dichloroethene	0.001 U	0.001 U	0.001 U/0.001 U	0.001 U
Tetrachloroethene	0.001 U	0.001 U	0.001 U/0.001 U	0.001 U
Trichloroethene	0.001 U	0.001 U	0.001 U/0.001 U	0.001 U
Vinyl Chloride	0.001 U	0.004	0.0023/0.0021	0.001 U

MW-167D	12/21/2006 mg/l Groundwater	11/28/2007 mg/l Groundwater	12/1/2008 mg/l Groundwater	11/3/2009 mg/l Groundwater
VOC				
1,1-Dichloroethene	0.001 U/0.001 U	0.001 U/0.001 U	0.001 U/0.001 U	0.001 U
cis-1,2-Dichloroethene	1.8/0.97	2.1/1.61	2.7/2.73	0.98
Tetrachloroethene	0.001 U/0.001 U	0.001 U/0.001 U	0.001 U/0.001 U	0.001 U
Trichloroethene	0.001 U/0.001 U	0.001 U/0.001 U	0.001 U/0.001 U	0.001 U
Vinyl Chloride	0.15/0.13	0.0625/0.064	0.0452/0.049	0.024

MW-11D	11/2/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.28
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.0198

MW-11S	11/2/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.099
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.002 U

MW-14D	11/2/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.545
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.0676

MW-12S	11/2/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.0288
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.0071

MW-1S	11/2/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.16
Tetrachloroethene	0.198
Trichloroethene	0.029
Vinyl Chloride	0.0099

MW-8S	11/2/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.0583
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.072

MW-10S	11/2/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.236
Tetrachloroethene	0.0126
Trichloroethene	0.0104
Vinyl Chloride	0.119

MW-9S	11/2/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.0053
cis-1,2-Dichloroethene	0.81
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	1.06

MW-16D	11/4/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.0088

MW-P-08	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.05 U
cis-1,2-Dichloroethene	0.0667
Tetrachloroethene	0.05 U
Trichloroethene	0.05 U
Vinyl Chloride	0.96

MW-P-07	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.169
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	1.81

MW-P-10D	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.06
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.0099

MW-P-05	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.0076
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.0027

MW-0901-S3	11/9/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.002 U

MW-0901-S2S	11/9/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.002 U

MW-10-S2	9/28/2000 mg/l Ground Water	1/19/2010 mg/l Ground Water
VOC		
1,1-Dichloroethene	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U

MW-7-S2	9/28/2000 mg/l Ground Water	3/14/2002 mg/l Ground Water	2/28/2006 mg/l Ground Water	1/19/2010 mg/l Ground Water
VOC				
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U	0.002 U

MW-0207-S2S	11/9/2009 mg/l Groundwater	5/23/2002 mg/l Groundwater	9/13/2002 mg/l Groundwater	11/19/2003 mg/l Groundwater
VOC				
1,1-Dichloroethene	0.005 U	R	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	R	0.002 U	0.002 U

MW-0208-S2A	11/5/2009 mg/l Groundwater	5/23/2002 mg/l Groundwater	9/13/2002 mg/l Groundwater	11/19/2002 mg/l Groundwater
VOC				
1,1-Dichloroethene	0.005 U	R	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	R	0.002 U	0.002 U

MW-0904-S2B	11/5/2009 mg/l Groundwater	11/9/2009 mg/l Groundwater
VOC		
1,1-Dichloroethene	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U

MW-0639-S2A	11/5/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.002 U

MW-0903-S3	11/9/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.002 U

MW-0904-S3	11/5/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.002 U

SB-64-1002	1/19/2010 mg/l 17-21 Borehole Water	1/19/2010 mg/l 24-28 Borehole Water	1/19/2010 mg/l 31-35 Borehole Water
VOC			
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U

SB-64-1001	1/14/2010 mg/l 11-15 Borehole Water	1/15/2009 mg/l 30-34 Borehole Water	1/15/2010 mg/l 41-45 Borehole Water
VOC			
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U

SB-64-1003	1/13/2010 mg/l 18-22 Borehole Water	1/14/2010 mg/l 31-35 Borehole Water
VOC		
1,1-Dichloroethene	0.005 U	0.005 U/0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U/0.005 U
Tetrachloroethene	0.005 U	0.005 U/0.005 U
Trichloroethene	0.005 U	0.005 U/0.005 U
Vinyl Chloride	0.002 U	0.002 U/0.002 U

KB-90	11/5/2009 mg/l 21-24 Borehole Water	11/5/2009 mg/l 28-32 Borehole Water	11/5/2009 mg/l 38-42 Borehole Water
VOC			
1,1-Dichloroethene	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.001 U	0.001 U	0.0035
Tetrachloroethene	0.001 U	0.001 U	0.001 U
Trichloroethene	0.001 U	0.001 U	0.001 U
Vinyl Chloride	0.001 U	0.001 U	0.001 U

KB-91	11/5/2009 mg/l 21-25 Borehole Water	11/9/2009 mg/l 30-34 Borehole Water	11/9/2009 mg/l 40-44 Borehole Water
VOC			
1,1-Dichloroethene	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.001 U	0.001 U	0.0013
Tetrachloroethene	0.001 U	0.001 U	0.001 U
Trichloroethene	0.001 U	0.001 U	0.001 U
Vinyl Chloride	0.001 U	0.001 U	0.001 U

SB-64-1004	1/13/2010 mg/l 22-26 Borehole Water	1/13/2010 mg/l 27-31 Borehole Water	1/14/2010 mg/l 35-39 Borehole Water
VOC			
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U

KB-92	11/9/2009 mg/l 20-24 Borehole Water	11/9/2009 mg/l 28-32 Borehole Water	11/9/2009 mg/l 36-40 Borehole Water
VOC			
1,1-Dichloroethene	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.001 U	0.001 U	0.001 U
Trichloroethene	0.001 U	0.001 U	0.001 U
Vinyl Chloride	0.001 U	0.001 U	0.001 U

SB-64-1005	1/20/2010 mg/l 22-26 Borehole Water	1/20/2010 mg/l 26.5-30.5 Borehole Water	1/20/2010 mg/l 33-37 Borehole Water
VOC			
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U

SB-64-1006	1/18/2010 mg/l 20-24 Borehole Water	1/18/2010 mg/l 33-37 Borehole Water
VOC		
1,1-Dichloroethene	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U

4032 Cossell Road	6/23/2009 mg/l Residential Water
VOC	
1,1-Dichloroethene	0.00022 U
cis-1,2-Dichloroethene	0.00016 U
Tetrachloroethene	0.00029 U
Trichloroethene	0.00029 U
Vinyl Chloride	0.00016 U

MW-170S	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.001 U
cis-1,2-Dichloroethene	0.002
Tetrachloroethene	0.001 U
Trichloroethene	0.001 U
Vinyl Chloride	0.0062

MW-170D	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.001 U
cis-1,2-Dichloroethene	0.001 U
Tetrachloroethene	0.001 U
Trichloroethene	0.001 U
Vinyl Chloride	0.0

4018 Cossell Road	8/5/2009 mg/l Residential Water
VOC	
1,1-Dichloroethene	0.00022 U
cis-1,2-Dichloroethene	0.00016 U
Tetrachloroethene	0.00029 U
Trichloroethene	0.00029 U
Vinyl Chloride	0.00016 U

4019 Cossell Road	7/27/2009 mg/l Residential Water
VOC	
1,1-Dichloroethene	0.00022 U
cis-1,2-Dichloroethene	0.00016 U
Tetrachloroethene	0.00029 U
Trichloroethene	0.00029 U
Vinyl Chloride	0.00016 U

4140 W. Vermont Street	7/22/2009 mg/l Residential Water
VOC	
1,1-Dichloroethene	0.00022 U
cis-1,2-Dichloroethene	0.00016 U
Tetrachloroethene	0.00029 U
Trichloroethene	0.00029 U
Vinyl Chloride	0.00016 U

4012 Cossell Road	11/20/2009 mg/l Groundwater	12/2/2009 mg/l Groundwater
VOC		
1,1-Dichloroethene	0.00022 U	0.00022 U
cis-1,2-Dichloroethene	0.00016 U	0.00016 U
Tetrachloroethene	0.00029 U	0.00029 U
Trichloroethene	0.00029 U	0.00029 U
Vinyl Chloride	0.0055	0.0027

4017 Cossell Road	7/27/2009 mg/l Residential Water
VOC	
1,1-Dichloroethene	0.00022 U
cis-1,2-Dichloroethene	0.00016 U
Tetrachloroethene	0.00029 U
Trichloroethene	0.00029 U
Vinyl Chloride	0.00016 U

4044 W. Vermont Street	7/22/2009 mg/l Residential Water
VOC	
1,1-Dichloroethene	0.00022 U
cis-1,2-Dichloroethene	0.00016 U
Tetrachloroethene	0.00029 U
Trichloroethene	0.00029 U
Vinyl Chloride	0.00016 U

4018 W. Vermont Street	9/3/2009 mg/l Residential Water	9/10/2009 mg/l Residential Water	9/17/2009 mg/l Residential Water	11/30/2009 mg/l Residential Water
VOC				
1,1-Dichloroethene	0.00022 U	0.00022 U	0.00022 U	0.00022 U
cis-1,2-Dichloroethene	0.00016 U	0.00016 U	0.00016 U	0.00016 U
Tetrachloroethene	0.00029 U	0.00029 U	0.00029 U	0.00029 U
Trichloroethene	0.00029 U	0.00029 U	0.00029 U	0.00029 U
Vinyl Chloride	0.0045	0.0038	0.0039	0.0023

MMW-P-03S	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.163
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.379

MMW-P-03D	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.0085
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.168

MMW-C-01	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.211
Tetrachloroethene	0.0126
Trichloroethene	0.005 U
Vinyl Chloride	1.72

MMW-P-09D	11/5/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.0071

MMW-C-02	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.002 U

4130 W. Vermont Street	6/25/2009 mg/l Residential Water
VOC	
1,1-Dichloroethene	0.00022 U
cis-1,2-Dichloroethene	0.00016 U
Tetrachloroethene	0.00029 U
Trichloroethene	0.00029 U
Vinyl Chloride	0.00016 U

4060 W. Vermont Street	6/11/2009 mg/l Residential Water
VOC	
1,1-Dichloroethene	0.00022 U
cis-1,2-Dichloroethene	0.00016 U
Tetrachloroethene	0.00029 U
Trichloroethene	0.00029 U
Vinyl Chloride	0.00016 U

4046 W. Vermont Street	7/8/2009 mg/l Residential Water
VOC	
1,1-Dichloroethene	0.00022 U
cis-1,2-Dichloroethene	0.00016 U
Tetrachloroethene	0.00029 U
Trichloroethene	0.00029 U
Vinyl Chloride	0.00016 U

4042 W. Vermont Street	9/3/2009 mg/l Residential Water	9/10/2009 mg/l Residential Water	9/17/2009 mg/l Residential Water	11/30/2009 mg/l Residential Water
VOC				
1,1-Dichloroethene	0.00022 U	0.00022 U	0.00022 U	0.00022 U
cis-1,2-Dichloroethene	0.00016 U	0.00016 U	0.00016 U	0.00016 U
Tetrachloroethene	0.00029 U	0.00029 U	0.00029 U	0.00029 U
Trichloroethene	0.00029 U	0.00029 U	0.00029 U	0.00029 U
Vinyl Chloride	0.00073	0.00085	0.00059	0.00016 U

MMW-P02	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.0901
Tetrachloroethene	0.0111
Trichloroethene	0.005 U
Vinyl Chloride	0.0758

MMW-169D	3/13/2006 mg/l Groundwater	11/28/2007 mg/l Groundwater	9/23/2008 mg/l Groundwater	11/3/2009 mg/l Groundwater
VOC				
1,1-Dichloroethene	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.001 U	0.001 U	0.014	0.001 U
Vinyl Chloride	0.002	0.009	0.014	0.004

MW-169S	3/13/2006 mg/l Groundwater	3/21/2007 mg/l Groundwater	3/19/2008 mg/l Groundwater	11/3/2009 mg/l Groundwater
VOC				
1,1-Dichloroethene	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl Chloride	0.001	0.0021	0.0022	0.001 U

MMW-P-09S	11/3/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.022 U

MMW-P-04	11/5/2009 mg/l Groundwater
VOC	
1,1-Dichloroethene	0.005 U
cis-1,2-Dichloroethene	0.16
Tetrachloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.0099

NOTE:

1. SEE LEGEND FOR DRAWING INFORMATION.

200 0 200
Approximate Scale In Feet

SUPPLEMENT TO RCRA FACILITY INVESTIGATION:
VERMONT STREET INVESTIGATION DATA REPORT

VOC ANALYTICAL RESULTS

ARCADIS

DRAWING
1

CITY: SYRACUSE DIV/GROUP: 141 DB: GMS LD: GMS PM:(Reqd) LYR:ON=*;OFF=REF
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XREFS: 00473X03 00473X02
IMAGES:

AMMH002488

ARCADIS

Appendix A

Supplement to RCRA Facility Investiation: Vermont Street Investigation Sampling Matrix

ARCADIS

251 East Ohio Street
Suite 800
Indianapolis
Indiana 46204
Tel 317.231.6500
Fax 317.231.6514

MEMO

To:
Don Heller, USEPA

Copies:
Dave Favero, on behalf of GM LLC
Marilyn Dedyne, GM LLC
Sue Barto, Allison Transmission, Inc.

From:
Sarah Fisher

Date:
January 6, 2010

ARCADIS Project No.:
IN000473.0020

Subject:
Supplement to RCRA Facility Investigation - Vermont Street Investigation

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Introduction

ARCADIS plans to perform an investigation on behalf of General Motors LLC (GM) south of the Allison Transmission, Inc. Plant 12 as a supplement to the RCRA Facility Investigation pursuant to the Corrective Action Agreement between GM and USEPA (see Drawing 1). The intent of this supplemental investigation is to collect volatile organic compound (specifically, vinyl chloride) data in groundwater between Plant 12 and the residential neighborhood south of Plant 12.

Background

- At the Allison Transmission, Inc. Facility, groundwater has been identified in three saturated sand units, S1, S2 (commonly subdivided into S2A and S2B) and S3. Each of these units is separated by a clay till unit.

- In October 2009, Keramida advanced four soil borings along Holt Road at the request of the Indiana Department of Environmental Management (IDEM) to collect borehole water samples. Keramida is working on behalf of Genuine Parts Company, conducting a voluntary cleanup of a former BHT Corporation facility. Borehole water samples were collected from three zones (top of saturated unit, middle of saturated unit and within or directly above a clay till) of the upper saturated sand unit (S2). These zones range in depth of approximately 20 to 24 ft, 28 to 34 ft and 36 to 44 ft below ground surface (bgs), respectively. Keramida encountered a clay till unit ranging from 36 to 42 ft bgs at the bottom of each soil boring.

- One monitoring well, MW-170D, is located on the east side of Holt Road. Samples from this well have contained concentrations of vinyl chloride approximately 100 times the Maximum Contamination Level (MCL) for vinyl chloride. Genuine Parts and Michigan Plaza have stated that the vinyl chloride concentrations were from an unknown source. Monitoring well MW-170D is screened from 34 to 39 ft bgs (just above a clay till).

- GM has monitoring wells nests west (MW-0524-S2A and MW-0524-S2B) and southwest (MW-0522-S2A and MW-0522-S2B) of the proposed soil borings along Michigan Street. During installation of these monitoring wells, a clay till dividing the S2 saturated unit into S2A and S2B was encountered from 19 to 25 ft (MW-0522-S2A/B) and 26 to 35.5 ft (MW-0524-S2A/B) bgs before reaching the bottom of the S2B unit at 40 to 42 ft bgs. No vinyl chloride has been detected in these well nests.

Scope of Investigation

ARCADIS will oversee the advancement of six soil borings (SB-64-1001 through SB-64-1006) presented on the attached drawing (Drawing 1). The soil borings will be advanced with a direct push drill rig which will allow for continuously collecting samples for identification of soil lithology, field screening with a photoionization meter, and collection of borehole water samples.

Due to the lithology in the area, it is likely that the direct push rig will encounter refusal and it will not be possible to collect a borehole water sample from within the S3 saturated unit in which two of the three nearby residential water wells are screened. However, to be consistent with the work completed by Keramida, ARCADIS will collect borehole water samples from the top, middle and bottom of the first encountered saturated sand unit (S2).

Two of the planned soil borings will be completed as temporary wells (one-inch piezometers) in order to obtain groundwater elevation data between the residential neighborhood and Plant 12. Additionally, if another combined round of groundwater elevations are collected between Genuine Parts, Michigan Plaza, and GM, the data from the piezometers can be used to increase the accuracy of groundwater elevation contour drawings.

The investigation is tentatively scheduled to start the week of January 11. 2010, and all sampling activity is expected to be completed no later than January 31, 2010.

Reporting

The findings of the investigation (boring logs and preliminary analytical results), will be submitted to USEPA within thirty days of completion of the field work.

Data Usage	Sample Matrix	Sample Locations	Number of Proposed Soil Borings	Laboratory Parameters	Analytical Methods (SW-846)
Assess if CVOC impacts identified in residential wells are associated with the Allison Transmission Facility	Borehole Water	SB-64-1001 and SB-64-1002 - southeast portion of Plant 12 property SB-64-1003 and SB-64-1004 - east side of Plant 12 southern parking lot SB-64-1005 and SB-64-1006 - along Michigan Street between Rybolt Avenue and Holt Road	6	VOCs	8260
	Groundwater	Monitoring Wells: MW-7-S2, MW-10-S2, MW-0812-S2A, and MW-0813-S2A	-	VOCs	8260

NOTES:
Borehole water samples will be collected during the direct push drill rig advancement. Intervals sampled will include the first encountered groundwater, ten feet into unit, bottom of unit (if greater than ten feet).
If a till unit is identified beneath the saturated sand unit and is less than 30 ft bgs, the soil boring will be advanced through the till unit to sample the underlying satruated unit.

LEGEND

MW-7-S2 — EXISTING MONITORING WELL - PROPOSED VOC GROUNDWATER SAMPLE FOR VOC ANALYSIS

SB-64-1001 — PROPOSED SOIL BORING - BOREHOLE WATER SAMPLE FOR VOC ANALYSIS

SB-64-1002 — PROPOSED SOIL BORING - BOREHOLE WATER SAMPLE FOR VOC ANALYSIS COMPLETED AS PIEZOMETER TO OBTAIN WATER LEVELS

300 0 300
Approximate Scale In Feet

VERMONT STREET INVESTIGATION

PROPOSED SAMPLING LOCATIONS

ARCADIS

DRAWING 1

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\APPROJECT\ALLISTRN\N0473\020-Corrective Measures\Field Investigations\Vermont Street Investigation\Vermont Street Sample.dwg LAYOUT: 1 SAVED: 12/23/2009 9:11 AM ACADVER: 17.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/4/2010 2:58 PM BY: FISHER, SARAH
XREFS: IMAGES: PROJECTNAME: —
Vermont Street.jpg

ARCADIS

Appendix B

Soil Boring Logs

WELL CONSTRUCTION LOG

ARCADIS

WELL NO.: **SB-64-1001**

TOTAL DEPTH: **45.00**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**GM/ENCORE (Allison Transmission)**	DRILLING CO.:	**WDC**
SITE LOCATION:	**Speedway, IN**	DRILLER:	**William, Daniel**
LOGGED BY:	**Tim Porter**	DRILLING METHOD:	**HA/Geoprobe**
DATE STARTED:	**1/14/2010**	**COORDINATES:**	
DATE COMPLETED:	**1/20/2010**	**Northing:**	**1649628.2**
		Easting:	**169734.8**
		TOC Elevation:	**713.8**

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE ID	SUDAN IV	PID (ppm)	WELL CONSTRUCTION DETAILS
0		ASPHALT: ASPHALT	SB-64-1001-01		0	Flush Mount PVC sch 40
		SILTY CLAY: Dark yellowish Brown (10YR 4/4), ML-CL, sandy SILTY CLAY, few-common gravels, fine-med. sands, sl. moist (increase grain size @2.5'; med.-coarse sands, common-many gravels, few cobbles)(@6.0', color change to dark brown, 10YR 3/3, texture change to ML-SM)	SB-64-1001-02		0	bentonite-chips
			SB-64-1001-03		0	
5			SB-64-1001-04	Neg	0	
		SAND: Yellowish brown (10YR 5/4), SM, med-coarse SANDS, few gravels, slightly moist	SB-64-1001-05		0	
		SILT: Yellowish brown (10YR 5/4), ML, sandy clayey SILT, common fine sands, trace gravels, moist, soft. Color change to grayish brown (10YR5/2) at 8.5 ft. Moisture content slightly increases from 12.0 ft to 13.3 ft.	SB-64-1001-06		0	
10			SB-64-1001-07	Neg	0	
		SILT: (cont.) (From 8.0-8.3 ft - layer of yellowish brown (10YR5/4) SM, med-coarse sands, few gravels, sl. moist - negative Sudan IV) (From 11.3 ft - 11.7 ft - layer of yellowish brown (10YR5/4) SM, med-coarse sands, few gravels, sl. moist - negative Sudan IV)	SB-64-1001-08		0	
15			SB-64-1001-09		0	
		SILT: (cont.) (From 12.25 ft to 12.4 ft - layer of fine sand soft, loose, very moist- negative Sudan IV)	SB-64-1001-10		0	
20		SAND: Yellowish brown (10YR 5/4), SM, fine-coarse SANDS, few-common gravels, loose, very moist. (color change @17.1' to gray (10YR 5/1) (layer of fine sand from 18.85-19.15', wet).	SB-64-1001-11		0	
			SB-64-1001-12		0	
		SAND: (cont.) Grain size increases at 20.6-24.1' (med-coarse sands, common-many gravels, few cobbles)	SB-64-1001-13		0	
25			SB-64-1001-14	Neg	0	
		CLAYEY SILT: Gray (10YR 5/1), ML, CLAYEY SILT, few fine-med sands, few cobbles, slightly moist, firm, compact (~50% recovery from 25.0-27.0'). From 25.0-26.7', texture change to ML, clayey silt with very few med-coarse sands, no gravels.	SB-64-1001-15		0	sand pack
30			SB-64-1001-16		0	PVC sch 40
		SAND: Yellowish brown (10YR 5/4), SM, med-coarse SANDS, few gravels, moist	SB-64-1001-17		0	
		CLAYEY SILT: Gray (10YR 5/1), ML, CLAYEY SILT, few fine-med sands, few cobbles, slightly moist, firm, compact (~50% recovery from 25.0-27.0'). From 25.0-26.7', texture change to ML, clayey silt with very few med-coarse sands, no gravels.	SB-64-1001-18	Neg	0	
35			SB-64-1001-19		0	
		SAND: Gray (10YR5/1) SM, fine-coarse SANDS,				

WELL CONSTRUCTION LOG

WELL NO.: **SB-64-1001**

TOTAL DEPTH: **45.00**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**GM/ENCORE (Allison Transmission)**	DRILLING CO.:	**WDC**
SITE LOCATION:	**Speedway, IN**	DRILLER:	**William, Daniel**
LOGGED BY:	**Tim Porter**	DRILLING METHOD:	**HA/Geoprobe**
DATE STARTED:	**1/14/2010**	**COORDINATES:**	
DATE COMPLETED:	**1/20/2010**	**Northing:**	**1649628.2**
		Easting:	**169734.8**
		TOC Elevation:	**713.8**

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE ID	SUDAN IV	PID (ppm)	WELL CONSTRUCTION DETAILS
		few-common gravels, loose, very moist to wet. From 33.9-34.3', slight decreasing grain size (fine-coarse sands, few gravels)	SB-64-1001-20		0	
40		CLAYEY SILT: Gray (10YR 5/1), ML, CLAYEY SILT, few fine-med sands, few cobbles, slightly moist, firm, compact	SB-64-1001-21		0	
		SAND: Gray (10YR 6/1), SM, silty fine SANDS, few med-coarse sands, very moist to wet.	SB-64-1001-22		0	
45		SAND: (cont.) From 40.0-45.0', fine sands with few med-coarse sands (decrease in silt content), decrease in moisture (moist), loose. EOB @45.0', reached the limitation of geoprobe to advance any further.	SB-64-1001-23		0	

BORING LOG

BORING LOG: **SB-64-1002**

TOTAL DEPTH: **40.00**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	GM/ENCORE (Allison Transmission)	DRILLING CO.:	WDC
SITE LOCATION:	Speedway, IN	DRILLER:	William Watkins, Russ Gordon
LOGGED BY:	Tim Porter	DRILLING METHOD:	HA/Geoprobe
DATE STARTED:	1/19/2010	COORDINATES	
DATE COMPLETED:	1/19/2010	NORTHING:	1649638.3
		EASTING:	169998.8
		ELEVATION:	715.78

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	MOISTURE	SAMPLE NUMBER	SUDAN IV	PID (ppm)
0		ASPHALT: ASPHALT		SB-64-1002-01		0.5
		SANDY CLAY: Dark yellowish brown (10YR 4/6), ML-CL, silty SANDY CLAY, many fine-coarse sands, few gravels, plastic, slightly moist.		SB-64-1002-02		0.9
-5		SAND: Dark yellowish brown (10YR 4/4), SM, clayey silty SAND, med-coarse sands, trace gravels, slightly moist. Grain size increasing with depth, common-many gravels (~15% recovery from 5.0-10.0') (zero recovery from 10-11.4').		SB-64-1002-03		0.2
				SB-64-1002-04		0.2
		SANDY SILT: Yellowish brown (10YR 5/4), ML, SANDY SILT, few clays, common gravel, trace cobbles, friable-loose (seams of moist sands and gravels from 11.8-12.0', 12.4-12.6', and 13.0-13.25').		SB-64-1002-05		0.2
-10				SB-64-1002-06		0.3
		SANDY SILT: (cont.) Seams of yellowish brown (10YR 5/4), ML, clayey silt with few sands, trace gravels, moist, soft from 12.3-12.4', 12.8-12.9', and 13.25-13.7'.		SB-64-1002-07	Neg	0.3
-15				SB-64-1002-08		0.7
		SAND: Yellowish brown (10YR 5/8), SM, silty fine-med SAND, few coarse sands. Layer of brownish yellow (10YR 6/6) fine sands, moist, from 14.4-15.0'.		SB-64-1002-09		0.9
		SILT: Light yellowish brown (10YR 6/4), clayey sandy SILT, ML-SM, common med-coarse sands, few gravels, few cobbles, slightly moist.		SB-64-1002-10		1
-20				SB-64-1002-11		1.3
		SAND: Grayish brown (10YR 5/2), SM, fine-med SANDS, common coarse sands, few gravels (color of yellowish brown, 10 YR 5/4, from 16.8-17.3'). Seams of increased grain size (coarse sands, common gravels) from 17.2-17.4', 18.3-18.4', and 19.25-19.5'.		SB-64-1002-12		0.7
-25				SB-64-1002-13		0
		SAND: (cont.) Starting at 22.4', grain size increases to med-coarse sands, few gravels. Seam of coarse sands, common-many gravels, and common cobbles from 24.0-25.0'. Entire unit is wet.		SB-64-1002-14		0
				SB-64-1002-15		0
-30		SAND: Gray (10YR 6/1), gravel with coarse SANDS, very wet, loose (mixed with fine-med sands, few silts from 27.9-28.6'). Seam of gray, 10 YR 5/1, fine sand from 29.1-29.25'. Color change to light olive brown, 2.5Y 5/4, @29.8'. Entire unit is wet.		SB-64-1002-16		0.1
				SB-64-1002-17		0
-35		SAND: Light yellowish brown (2.5Y 6/3), SM, fine-med SANDS, trace coarse sands, trace gravels, very moist (common gravels from 32.7-33.55'). (Seam of fine sand with few med. sands from 33.8-34.3')		SB-64-1002-18	Neg	0
				SB-64-1002-19		0
-40		CLAYEY SILT: Gray (10YR 5/1), ML-CL, CLAYEY SILT, few coarse sands, trace gravels, compact, slightly moist (color change to grayish brown, 10YR 5/2, @37.7' and becoming less moist and friable). EOB @40.0'.		SB-64-1002-20		0

BORING LOG

BORING LOG: **SB-64-1003**

TOTAL DEPTH: **40.00**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	GM/ENCORE (Allison Transmission)	DRILLING CO.:	WDC
SITE LOCATION:	Speedway, IN	DRILLER:	William, Daniel
LOGGED BY:	Tim Porter	DRILLING METHOD:	HA/Geoprobe
DATE STARTED:	1/13/2010	COORDINATES	
DATE COMPLETED:	1/14/2010	NORTHING:	1649416.3
		EASTING:	169460.4
		ELEVATION:	717.32

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	MOISTURE	SAMPLE NUMBER	SUDAN IV	PID (ppm)
0		ASPHALT: ASPHALT		SB-64-1003-01		3.2
		SAND: Yellowish brown (10YR 5/4), SM, silty fine-med SAND, few coarse sands, trace gravels, slightly moist (trace cobbles starting @4.4'). Increasing grain size (dominantly med-coarse sands) starting @5.0'.		SB-64-1003-02		0
-5				SB-64-1003-03		0
				SB-64-1003-04		0
				SB-64-1003-05		0
-10				SB-64-1003-06		0
				SB-64-1003-07	Neg	0
-15		CLAYEY SILT: Dark yellowish brown (10YR 4/4), ML, CLAYEY SILT, few sands, trace gravels, slightly moist, cohesive, slightly compact. Color change to gray (10YR 5/1) @ 14.8'.		SB-64-1003-08		0
				SB-64-1003-09		0
		SAND: Yellowish brown (10YR 5/4), SM, silty fine-med SAND, few coarse sands, trace gravels, slightly moist. Fine-med sand from 17.7-18.3'. Very moist from 18.9-22.1'.		SB-64-1003-10		0
-20				SB-64-1003-11		0
		CLAYEY SILT: Grayish brown (10YR 5/2), ML, CLAYEY SILT, few sands, trace gravels, firm, compact (moist-very moist from 22.1-22.8').		SB-64-1003-12	Neg	0
-25				SB-64-1003-13		0
				SB-64-1003-14		0
				SB-64-1003-15		0
-30				SB-64-1003-16		0
		SAND: Gray (10YR 6/1), SM, med-coarse sand, few gravels, wet.		SB-64-1003-17		0
-35				SB-64-1003-18	Neg	0
		CLAYEY SILT: Grayish brown (10YR 5/2), ML, CLAYEY SILT, few sands, trace gravels, firm, compact. EOB @40'.		SB-64-1003-19		0
-40				SB-64-1003-20		0

BORING LOG

BORING LOG: **SB-64-1004**

TOTAL DEPTH: **45.00**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	GM/ENCORE (Allison Transmission)	DRILLING CO.:	WDC
SITE LOCATION:	Speedway, IN	DRILLER:	William, Daniel
LOGGED BY:	Tim Porter	DRILLING METHOD:	HA/Geoprobe
DATE STARTED:	1/13/2010	COORDINATES	
DATE COMPLETED:	1/14/2010	NORTHING:	1649084.9
		EASTING:	169460.5
		ELEVATION:	719.20

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	MOISTURE	SAMPLE NUMBER	SUDAN IV	PID (ppm)
0		CLAYEY SILT: Dark yellowish brown (10YR 4/4), ML, CLAYEY SILT, trace sands, few gravels, slightly moist, friable, few cobbles, organic matter, roots.		SB-64-1004-01		0
				SB-64-1004-02		0
-5		CLAY: Dark yellowish brown (10YR 4/4), ML-CL, sandy silty CLAY, slightly moist, few-common gravels, few cobbles.		SB-64-1004-03		0
		SAND: Light yellowish brown (10YR 6/4), SM, silty gravelly fine-coarse SAND, common subangular gravels, few cobbles (7.0-8.6', fine sands). (16.0-16.1', yellowish brown 10YR 5/4 sandy silt, slightly cohesive) (16.1-16.5', fine sands).		SB-64-1004-04		0
				SB-64-1004-05		0
-10				SB-64-1004-06		0
				SB-64-1004-07		0
				SB-64-1004-08		0
-15		CLAYEY SILT: Gray (10YR 5/1), ML-CL, CLAYEY SILT, few med-coarse sands, few gravels, compact, firm (color change to yellowish brown (10YR 5/4) from 17.7-18.0').		SB-64-1004-09	Neg	0
		SAND: Light yellowish brown (10YR 6/4), SM, silty gravelly fine-coarse SAND, common subangular gravels, few cobbles. Crushed cobbles @20.5' and 21.3'. Wet from 22.0-24.4', increasing grain size/coarse sands - many gravels @22.0-33.0'.		SB-64-1004-10		0
-20				SB-64-1004-11		0
				SB-64-1004-12		0
				SB-64-1004-13		0
-25		SAND: (cont.) From 24.5-25.5', yellowish brown 10YR 5/4 fine sands, moist (~20% recovery from 30.0-33.0'). (Very moist-wet from 26-33')		SB-64-1004-14		0.1
				SB-64-1004-15		0.3
-30				SB-64-1004-16		0
		CLAYEY SILT: Gray (10YR 5/1), ML-CL, CLAYEY SILT, few med-coarse sands, few gravels, very compact, very dense (from 33.0-33.3', color: strong brown, 7.5YR 5/6).		SB-64-1004-17	Neg	0
-35				SB-64-1004-18		
		SAND: Yellowish brown (10YR 5/4), med-coarse SANDS, SM, common gravels, very moist, loose.		SB-64-1004-19		
				SB-64-1004-20	Neg	
-40		CLAYEY SILT: Gray (10YR 5/1), ML-CL, CLAYEY SILT, few-common med-coarse sands, trace gravels, very compact, very dense (slightly moist, slightly soft from 41.8-42.2'). EOB @45'.		SB-64-1004-21		
				SB-64-1004-22		
-45				SB-64-1004-23		

BORING LOG

BORING LOG: **SB-64-1005**

TOTAL DEPTH: **40.00**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	GM/ENCORE (Allison Transmission)	DRILLING CO.:	WDC
SITE LOCATION:	Speedway, IN	DRILLER:	William Watkins, Russ Gordon
LOGGED BY:	Meryl Hicks	DRILLING METHOD:	HA/Direct Push
DATE STARTED:	1/20/2010	COORDINATES	
DATE COMPLETED:	1/20/2010	NORTHING:	1648806
		EASTING:	169722.5
		ELEVATION:	718.92

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	MOISTURE	SAMPLE NUMBER	SUDAN IV	PID (ppm)
0		SAND AND GRAVEL: Fill, dark gray to black, SAND AND GRAVEL, loose.		SB-64-1005-01		1.4
		CLAYEY SILT: Sandy CLAYEY SILT, orangish brown, slightly sticky to loose, med. to coarse sands, trace gravel, increasing moisture with depth, increasing clay with depth.		SB-64-1005-02		2.1
-5		SAND: SAND, orangish brown, loose, poorly sorted, med. to coarse grain, med. gravels. 13.8' - large gravels (angular). 18.3' - color change to grayish brown. 22.4' - wet, well sorted. 28.5' - color change to orangish brown, increasing gravels, cobbles present.		SB-64-1005-03		0
				SB-64-1005-04		0.1
				SB-64-1005-05		0
-10				SB-64-1005-06		0
				SB-64-1005-07		0
-15				SB-64-1005-08		0.4
				SB-64-1005-09		0.1
				SB-64-1005-10		0
-20				SB-64-1005-11		0
				SB-64-1005-12		0
-25				SB-64-1005-13		0
				SB-64-1005-14		0
				SB-64-1005-15		0
-30		TILL: TILL, gray, non-pliable, firm, slightly moist, trace gravels (subrounded to round, med.-coarse). 32.0' - color change to brown.		SB-64-1005-16		0
		SAND: SAND, brown, loose, poorly sorted, med. to coarse grain, wet, med. gravels.		SB-64-1005-17		0
-35		TILL: Could not retrieve core from tooling. Per driller: hit TILL ~37.0 bgs (boring to E hit till at 37.7 bgs). 40.0 EOB.		SB-64-1005-18		0
				SB-64-1005-19		
-40				SB-64-1005-20		

WELL CONSTRUCTION LOG

ARCADIS

WELL NO.: **SB-64-1006**

TOTAL DEPTH: **40.00**

PROJECT INFORMATION

PROJECT: **GM/ENCORE (Allison Transmission)**

SITE LOCATION: **Speedway, IN**

LOGGED BY: **Tim Porter**

DATE STARTED: **1/18/2010**

DATE COMPLETED: **1/19/2010**

DRILLING INFORMATION

DRILLING CO.: **WDC**

DRILLER: **William Watkins, Russ Gordon**

DRILLING METHOD: **HA/Geoprobe**

COORDINATES:

Northing: **1648817.6**

Easting: **169993.1**

TOC Elevation: **717.37**

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE ID	SUDAN IV	PID (ppm)	WELL CONSTRUCTION DETAILS
0		FILL: Dark gray (10YR 4/1), FILL material, gravels, cobbles, organic matter.	SB-64-1006-01		0.6	Flush Mount PVC sch 40
		CLAYEY SILT: Dark yellowish brown (10YR 4/4), ML-CL, sandy CLAYEY SILT, common med-coarse sands, few gravels, moist, slightly plastic. Sand content increasing with depth. Clay content slightly increases from ~3.5-4.5'.	SB-64-1006-02		0	bentonite-chips
5			SB-64-1006-03		0	
			SB-64-1006-04		0	
		SAND AND GRAVEL: Yellowish brown (10YR 5/4), SM, med-coarse SANDS AND GRAVELS, slightly moist, non-cohesive, loose. Few common cobbles starting @6.8' and continuing to 14.4' and gravels increasing with depth (starting at 6.8') to common-many.	SB-64-1006-05		0	
10			SB-64-1006-06		0.6	
		SAND AND GRAVEL: (cont.)Silt content increases from ~9.5-11' (layer of fine-med sands with few gravels from 11.9-12.2' and 12.6-13.2'). Layer of sand from 14.0-14.2'.	SB-64-1006-07		0	
15			SB-64-1006-08	Neg	0	
		CLAYEY SILT: Light yellowish brown (10YR 6/4), ML, CLAYEY SILT, few coarse sands, trace gravels, slightly moist, compact.	SB-64-1006-09		0	
			SB-64-1006-10		0	
20		SAND AND GRAVEL: Yellowish brown (10YR 5/4), SM, med-coarse SANDS AND GRAVELS, slightly moist, non-cohesive, loose. From 17.0-17.3', color bands of brownish-yellow (10YR 6/6) mixed with matrix.	SB-64-1006-11		0.2	
			SB-64-1006-12		0.1	
		SAND: Light gray (10YR 7/2), SM, fine-med. SANDS, few coarse sands, trace gravels, trace cobbles, loose, slightly moist (wet, loose beginning @21.4'). Grain size increasing with depth.	SB-64-1006-13		0	
25			SB-64-1006-14	Neg	0	
		SAND: (cont.) Starting @22.2' - med-coarse sands, common gravels. Layer of fine-med. sands from 25.9-26.4'.	SB-64-1006-15		0	
30			SB-64-1006-16		0	sand pack
		CLAY AND SILT: Gray (10YR 6/1), ML-CL, CLAYEY SILT, few coarse sands, few gravels, slightly moist, compact, very firm (color change from 30.6-31.1' = olive gray, 5Y 5/2).	SB-64-1006-17		0	PVC sch 40
			SB-64-1006-18		0	
35		SAND: Pale brown (10YR 6/3), SM, fine-med. sands, trace coarse sands, very moist-wet, loose (grain size increases @32.7', fine-coarse sands, few gravels).	SB-64-1006-19	Neg	0	
		CLAYEY SILT: Gray (10YR 6/1), ML-CL, CLAYEY SILT, few coarse sands, few gravels, slightly moist, compact, very firm, moist.	SB-64-1006-20		0	
40						

ARCADIS

Appendix C

Laboratory Analytical Reports

NOT INCLUDED IN THIS VERSION

ARCADIS

Appendix D

Proposed Monitoring Well Locations

VERMONT STREET INVESTIGATION

PROPOSED MONITORING WELL LOCATIONS

ARCADIS

DRAWING 1

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\APROJECT\ALISTRN\NAT9020-Corrective Measures\Field Investigations\Vermont Street Investigation\Vermont St S3 Matrix\Vermont Street S3 Matrix.dwg LAYOUT: 1 SAVED: 2/1/2010 4:48 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 2/2/2010 1:13 PM BY:
FISHER, SARAH
XREFS: Vermont Street S3 Matrix.jpg IMAGES: PROJECTNAME: —

AMMH002503