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April 12, 2013

Mr. Don Heller
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RE: RCRA Corrective Action Corrective Measures Proposal
Former Allison Transmission Plant 2, Speedway, IN
EPA ID No. IND000806828

Dear Mr. Heller:

Please find enclosed an updated Corrective Measures Proposal for the above referenced facility. The enclosed CMP is submitted on behalf of General Motors LLC (GM), in accordance with the requirements of the Performance-Based Corrective Action Agreement between the U.S. Environmental Protection Agency Region 5 (USEPA) and General Motors Corporation.

Please contact me if you would like to discuss this matter further. Thank you.

Sincerely,

David M. Favero, P.G.
Project Manager

Enclosure- *RCRA Corrective Action Corrective Measures Proposal*, Allison Transmission, Inc. Former Plant 2-EPA ID IND000806828, ARCADIS & ENVIRON, April 12, 2013.

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RCRA Corrective Action
Corrective Measures Proposal

Allison Transmission, Inc.

Former Plant 2 – EPA ID IND000806828

Prepared for:

General Motors LLC

April 12, 2013



**RCRA Corrective Action
Corrective Measures Proposal**

Allison Transmission, Inc.
Former Plant 2 -
EPA ID IND000806828

Prepared for:
General Motors LLC

Prepared by:
ARCADIS U.S., Inc.
and
ENVIRON International Corporation

Date:
April 12, 2013

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Acronyms

1,1,1-TCA	1,1,1-trichloroethane
AOC	Area of Concern
AOI	Area of Interest
AST	Aboveground Storage Tank
bgs	below ground surface
BN	base-neutral scans of the SVOC analysis
cfs	cubic feet per second
cm/sec	centimeter/second
CMP	Corrective Measures Proposal
cVOCs	Chlorinated volatile organic compounds
DOCC	Description of Current Conditions Report
ENCORE	Environmental Corporate Remediation Company, Inc.
ERD	Enhanced Reductive Dechlorination
F	Fahrenheit
ft	feet
ft/d	feet per day
GMC	General Motors Corporation
GM LLC	General Motors LLC
HI	Hazard Index
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
mg/kg	milligram per kilogram
msl	Mean Sea Level
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PBCAA	Performance-Based Corrective Action Agreement



**Corrective Measures
Proposal
Former Allison
Transmission Plant 2**

PCE	Tetrachloroethene
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RME	Reasonable Maximum Exposure
S	Storativity
SIC	Standard Industrial Classification
SRC	Speedway Redevelopment Commission
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compounds
T	Transmissivity
UAW	United Auto Workers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1 Introduction

1.1 General

ARCADIS U.S., Inc. (ARCADIS) has prepared this Resource Conservation and Recovery Act (RCRA) Corrective Measures Proposal (CMP) on behalf of General Motors LLC (GM LLC), for the former Allison Transmission, Inc. (Allison) Plant 2 located at 4500 West Gilman Street (Facility), Speedway, Indiana (Drawing 1).

The United States Environmental Protection Agency (USEPA) and General Motors Corporation (GMC) entered into a performance-based RCRA Corrective Action Agreement (Agreement) with the effective date of April 27, 2005. Pursuant to the Agreement, GMC worked in cooperation with USEPA to investigate, and as necessary, stabilize and remediate releases of hazardous wastes or hazardous constituents at or from the Facility (IND000806828). This report was prepared to fulfill the requirements of Section V.3.a in the Agreement to remediate releases at or from the Facility.

In August 2007, GMC sold Allison Transmission, which included the Facility, to Clutch Operating Company, Inc. (who now operates the Facility as Allison Transmission, Inc. (Allison)). References to the Facility or current owner of the Facility will be identified as Allison. References to the Facility prior to the sale will be identified as GMC-Allison. However, as part of the sale, GMC retained responsibility for certain environmental obligations, including completing Corrective Action under the April 27, 2005 performance-based RCRA Corrective Action Agreement. GMC filed for Chapter 11 protection under the United States Bankruptcy Code on June 1, 2009. On July 10, 2009, a new company named General Motors Company (subsequently renamed General Motors LLC (GM LLC)), purchased certain GMC assets pursuant to Section 363 of the Bankruptcy Code. Although this Facility was not included in GM LLC's asset purchase, GM LLC assumed the sales agreement between Allison and GMC and thereby assumed the responsibility for the performance-based Corrective Action Agreement (PBCAA) at the Facility. The Facility and surrounding properties are shown on Drawing 1.

GMC/ENCORE conducted a RCRA Facility Investigation (RFI) to investigate the areas of interest (AOIs) identified in the Description of Current Conditions (DOCC) (ARCADIS, 2005a) for the presence of releases of hazardous waste or hazardous constituents that could pose an unacceptable risk to human health or the environment. A table presenting the AOIs at Plant 2 is provided as Table 1. The RFI was conducted in accordance with an RFI Work Plan (ARCADIS, 2005b). Supplemental data

submittals and work plans for additional phases of field investigation were submitted to the USEPA (see Section 7.0 – References). A draft RFI Report was submitted to the USEPA summarizing the results of Phases I through III of the RFI. The RFI Report was revised based on comments from the USEPA and submitted as a final RFI Report (ARCADIS, 2009) on February 20, 2009.

A Corrective Measures Proposal (CMP) that addressed Allison Plants 2, 3, 12 and 14 was prepared and submitted to USEPA on March 31, 2009. Since that submittal, Allison sold the Facility to the Speedway Redevelopment Commission (SRC). To facilitate redevelopment of the former Plant 2 property, GM LLC requested that USEPA prepare a separate Statement of Basis for former Plant 2 while further evaluation related to the remainder of the Allison campus continued. As a result of separating former Plant 2 from the remainder of the Allison campus (and to eliminate confusion during evaluation of Corrective Measures for former Plant 2), USEPA requested that the March 2009 CMP be modified to remove references to the other portions of the Allison campus. On December 12, 2011, GM LLC submitted a CMP to USEPA that was modified from the original submittal and only included references to investigations or evaluations completed at the Facility. This CMP has been updated to include results from investigations conducted in 2012 at and around the former Plant 2 facility and supersedes the December 12, 2011 CMP.

As the 2009 CMP was prepared prior to the GMC bankruptcy, there are references in this document to General Motors Corporation, GMC, or Environmental Corporate Remediation Company, Inc. (ENCORE), a former wholly owned subsidiary of GMC that also filed for bankruptcy protection in 2009. This document is submitted on behalf of GM LLC and is GM LLC's Corrective Measures Proposal (CMP) for the Facility.

This CMP describes the proposed Corrective Measures for site-related constituents at the Facility per Section V.3.a of the Agreement. Both site-related and non-site-related contributions of cVOCs in groundwater are believed to comingle at the Facility, as discussed in Sections 3.10.1, 3.10.2, and 3.10.8. Because cVOCs are believed to comingle on-site, this CMP also discusses non-site-related conditions that were identified in groundwater at and around the Facility during the RFI and the 2012 groundwater investigation.

The proposed Corrective Measures include the existing deed restrictions that prohibit potable use of groundwater at the Facility and limit future use of the Plant 2 property to commercial/industrial. Additionally, an Environmental Restrictive Covenant (ERC) was placed on the property after the sale from Allison to the Speedway Redevelopment

Commission which includes restrictions identified in Section 3.1.1. The CMP also describes the rationale for and the proposed Corrective Measures to be completed at certain areas of the Facility (i.e., AOI 2-2 - Former UST Area B) where the risk assessment did not identify the potential for significant current or future exposures; however, GM LLC performed Interim Measures as an added precaution to help facilitate the sale and redevelopment of the property. In addition, this CMP identifies the potential need for a new deed restriction for property downgradient of Plant 2 where comingled chlorinated volatile organic compounds (cVOCs) in groundwater have migrated off-site.

1.2 Report Organization

The remainder of this Report is organized as follows:

- Section 2 provides a summary of the proposed Corrective Measures.
- Section 3 provides a summary of the Facility background information and an overview of the RFI including a summary of the areas investigated during the RFI.
- Section 4 provides a summary of the risk assessment.
- Section 5 provides a summary of the Corrective Measures alternatives.
- Section 6 provides an evaluation of the Corrective Measure alternatives against USEPA's nine corrective measures criteria and includes a sustainability evaluation.
- Section 7 presents the proposed Corrective Measures.
- Section 8 lists references identified in this report.
- Tables, figures, and appendices follow the text.

2 Proposed Final Corrective Measures

The proposed Final Corrective Measures for this Facility for site-related releases, per Section V.3.a of the Agreement, are discussed in detail in Section 5.1 (Soil), 5.2 (Groundwater) and 5.3 (Facility-wide) and include:

1. Maintenance of existing groundwater and land use restrictions for the entire Facility to ensure that the human health risk assessment assumptions on future on-site groundwater and land use remain valid. Restrictions on groundwater use and land use have been established for the Facility as recorded during the sale of the Facility in August 2007 (recorded with Marion County on August 14, 2007) (Section 3.1.1).
2. Use of the existing groundwater deed restriction to prohibit installation of water wells or any other devices to extract groundwater for any use except as provided in Exhibit C – Restrictions and Covenants Agreement, Paragraph 4 of the deed restriction between GMC and Clutch Operating Company, and listed below in Section 3.1.1.
3. Use of Environmental Restrictive Covenants (ERC) as outlined in the “Declaration of Environmental Restrictive Covenants” signed by Allison, The Town of Speedway Redevelopment Commission and General Motors LLC with an effective date of March 1, 2011 (Appendix A).
4. Use of an Environmental Restrictive Covenant (ERC) to prohibit use of groundwater for any purpose and prohibiting installation of wells for any purpose except contaminant assessment or monitoring without prior IDEM or USEPA approval for the adjacent former Electric Steel Castings site (Brownfield Site #4100805), listed below in Section 3.2, and property now owned by Allison (parcel 49-06-31-130-009.00-914).
5. At the Marion County Health Department’s discretion, adoption of a no-well zone as an additional institutional control to prohibit installation of water wells or any other devices to extract groundwater for any use at former Plant 2 and in near-by off-site locations, to minimize the potential for exposure to or use of contaminated groundwater.

6. Implementation of Facility-wide groundwater monitoring. Certain monitoring wells at and in the vicinity of former Plant 2 will be sampled annually to confirm the conclusions of the RFI, and evaluate trends in groundwater quality for a period of two additional years. The monitoring results will be summarized annually and recommendations regarding the monitoring program and Corrective Measures will be provided, as necessary.
7. Use of an institutional control to maintain the cover at and around the former powerhouse basement associated with AOI 2-2 (Drawing 4) to prevent exposure to the fill material even though the RFI baseline risk assessment determined that such exposures are not expected to pose a significant risk. This has been completed as an Interim Measure and is included in the ERC dated March 1, 2011.
8. Excavation of the historical sample location with elevated mercury concentrations to facilitate redevelopment of the former Plant 2 property for commercial/industrial reuse. This was completed as an Interim Measure in January 2009.

3 Facility Background

3.1 Facility Description

Land use at the Facility is restricted to commercial/industrial land use and groundwater use is restricted to uses as of August 2007, per the deed restrictions that were recorded with Marion County on August 14, 2007. It should be noted that there were no uses of groundwater as of August 2007 at Plant 2. As the information in this section of the report was included in the March 2009 CMP for the entire Allison campus, several of the drawings referenced in this CMP may include other Plants (3, 4, 6, 7, 12, and 14); however, former Plant 2 is the focus of this CMP. Drawing 1 shows the topographic location of the Facility. An aerial view of the Facility is presented in Drawing 2. The boundaries of former Plant 2, Plant 3 and Plant 12/14 are shown on Drawing 2. EPA ID Number IND0000806828 is assigned to the former Plant 2.

The former Plant 2 is bounded by industrial property to the north, including Praxair Surface Technologies (a subsidiary of Praxair, which spun-off from Union Carbide in 1992) and Dallara IndyCar Factory, north of which is the Indianapolis Motor Speedway; to the south, a former railroad right-of-way beyond which is SRC property that is being developed for Community Westview Health Pavilion and 10th Street (beyond which is Allison Plant 3); to the west, Main Street beyond which are commercial/retail facilities and residential properties; and to the east, a railroad right-of-way property, beyond which is a lime slurry pile (owned by Praxair), Polco Street and Dry Run Creek, which flows through a subsurface culvert in the vicinity of former Plant 2 and discharges into a channel before it crosses beneath 10th Street. Residential properties are located within one-quarter mile west of former Plant 2.

3.1.1 Property Ownership History

The former Plant 2 property was the site of a former United States Army base. The exact date when GMC-Allison obtained ownership of former Plant 2 is unknown but the building was initially built in 1936. From 1973 through 1993, GMC owned a parcel north of former Plant 2. The parcel was owned by Union Carbide prior to 1973 and GMC transferred the parcel to Praxair Surface Technologies (a spin-off from Union Carbide) in 1993. As stated in Section 1.1, in August 2007, GMC sold the transmission business including this facility to Allison who subsequently sold the property to SRC in March 2009.

As identified in the deed filed after the sale of the Facility from GMC (Grantor), and Allison (Grantee), the following restrictions were placed on the property:

Exhibit B - Reservation of Rights and Restrictions

1. Grantee hereby grants to Grantor, pursuant to, and subject to, the terms set forth in Section 7.7 of that certain Asset Purchase Agreement dated as of June 28, 2007 by and between Grantor and Grantee (the terms of which Section 7.7 are hereby specifically incorporated herein), and to the United States Environmental Protection Agency (the "U.S. EPA") and the Indiana Department of Environmental Management an irrevocable access easement onto, over and under the Property for the purpose of completing certain environmental investigations and remediation of the Property pursuant to the Performance Based Corrective Action Agreement between the U.S. EPA and Grantor dated April 22, 2005.
2. Grantee acknowledges and agrees that the Property may only be used by Grantee, its successors, assigns, and tenants, for industrial and commercial uses.

Exhibit C – Restrictions and Covenants Agreement

1. Grantee shall prohibit all uses of the Subject Property that are not compatible with the land use restrictions placed on the Subject Property with the consent of Grantee (not to be unreasonably withheld, conditioned or delayed in accordance with that certain Performance Based Correction Action Agreement between the United States Environmental Protection Agency ("U.S. EPA") and Grantor dated April 22, 2005 (the "Corrective Action"), otherwise subject to Section 7.7 of that certain Asset Purchase Agreement dated as of June 28, 2007 by and between Grantor and Grantee (the "APA"), the terms of which Section 7.7 are hereby specifically incorporated herein);
2. Grantee shall manage, at its own cost, all soils, media and/or debris that are excavated or disturbed on the Subject Property by Grantee in accordance with all applicable state and federal Environmental Laws (as hereinafter defined);

3. Grantee shall prohibit any use or construction of wells or other devices to extract groundwater for any domestic potable uses. For purposes of this Paragraph 3, the term “domestic potable uses” shall include water use related to drinking, showering, cooking or cleaning;
4. Grantee is permitted to use dewatering wells or other devices for maintenance or construction purposes, provided the dewatering, including management and disposal of the groundwater, is conducted in accordance with all applicable local, state, and federal Environmental Laws and does not result in material violation of Environmental Laws (it being understood that Grantee will use commercially reasonable efforts to perform construction and maintenance projects without constructing wells or other devices to extract groundwater and, to the extent construction of wells and similar devices is necessary in connection with any such construction or maintenance activity (notwithstanding Grantee’s exercise of such efforts), Grantee will cooperate with Grantor to complete the construction of such wells and similar devices in a manner consistent with the Corrective Action);
5. Notwithstanding any provision to the contrary in this Restrictions and Covenants Agreement, Grantee shall be permitted to use, and have the use of, groundwater at the Subject Property in a manner consistent with current uses of groundwater, and at volumes sufficient to meet Grantee’s water supply requirements for operations and other current uses of such groundwater, and the Corrective Action shall not conflict or interfere with Grantee’s, use of groundwater at the Subject Property as set forth in this Paragraph 5.
6. Grantee shall use commercially reasonable efforts not to unreasonably interfere with the operation of any technology, treatment or other activities engaged in by Grantor or its Affiliates (as hereinafter defined) in accordance with their obligations under the Corrective Action;
7. If Grantee contemplates actions which will materially interfere with the operation of any technology, treatment or other activities engaged in by Grantor or its Affiliates in accordance with their obligations under the Corrective Action, Grantee shall provide prior notice to Grantor if its intent to take such action; and

8. If Grantee intends to transfer any interest in the Subject Property, Grantee shall provide notice thereof to the U.S. EPA Region 5 and the Indiana Department of Environmental Management at least twenty-one (21) days prior to consummating any such transfer. Grantee shall not transfer any interest in the Subject Property unless the transferee agrees in writing to comply with the terms and conditions of Section 7.7 of the APA that are applicable to Grantee and Grantor is provided the right thereunder to enforce such written agreement against such transferee.

Additionally, during the transfer of the property from Allison to the SRC, an ERC (Appendix A) was placed on the former Plant 2 property and includes the following restrictions:

Each Owner covenants and agrees that Owner and its Related Parties:

- a. Shall not occupy any building on the Real Estate without first completing one of the following: Option 1) Evaluate and determine, with IDEM concurrence, the absence of vapor intrusion in existing and/or newly constructed site buildings potentially affected by contamination; or Option 2) Install, operate and maintain a vapor mitigation system (consistent with U.S. EPA Brownfield Technology Primer Vapor Intrusion Considerations for Redevelopment, EPA 542-R-08-001, March 2008) within the existing and any newly-constructed and human-occupied building on the Real Estate, unless the Department concurs that the vapor intrusion system is no longer necessary based upon the achievement of the 25-year Chronic Commercial Indoor Air Action Levels contained within Table 3 of Appendix VIII of the Department's Draft Vapor Intrusion Guidance or site-specific action levels approved by the Department. This prohibition does not apply to short-term occupancy of a building for purposes of construction, renovation, repair, or other short-term activities.
- b. If Option 2 is selected from (a) above, in accordance with the Department's Draft Vapor Intrusion Guidance, install and thereafter operate and maintain a vapor intrusion mitigation system (consistent with U.S. EPA Brownfield Technology Primer Vapor Intrusion Considerations for Redevelopment, EPA 542-R-08-001, March 2008) for the purpose of mitigating the COCs potentially impacting indoor air in the existing building on the Real Estate and any human-occupied building constructed on the Real Estate after the date of this Declaration until the Department makes a determination

regarding acceptable risk under Paragraph No. 10 of this Declaration. The Department's determination shall be based upon the 25-year Chronic Commercial Indoor Air Action Levels contained within Table 3 of Appendix VIII of the Department's Draft Vapor Intrusion Guidance or site-specific action levels approved by the Department.

- c. Shall not use the Real Estate for any agricultural use.
- d. Shall restore soil disturbed as a result of excavation and construction activities in such a manner that the remaining contaminant concentrations do not present a threat to human health or the environment. This determination shall be made using the Department's RISC Technical Guidance Document or applicable guidance at the time of the determination. Upon the Department's or U.S. EPA's request, Owner shall provide the Department or U.S. EPA written evidence (including sampling data) showing the excavated and restored area, and any other area affected by the excavation, does not represent such a threat. Contaminated soils that are excavated must be managed in accordance with all applicable federal and state laws; and disposal of such soils must also be done in accordance with all applicable federal and state laws. Excavation of soil should be conducted in accordance with the attached Soil Management Plan (Exhibit "E").
- e. Shall neither engage in nor allow excavation of soil in the area identified via State Plane coordinates as the "Boundary of Engineering Control" on Exhibit "F", unless soil disturbance obligations listed in the preceding paragraph and Exhibit "E" are followed. In addition, Owner shall provide written notice to the Department and U.S. EPA in accordance with paragraph 14 below before the start of soil disturbance activities. Owner, upon the Department's or U.S. EPA's request, shall provide the Department or U.S. EPA evidence showing the excavated and restored area does not represent a threat to human health or the environment.
- f. Shall maintain the integrity of the existing crushed rock cover or other acceptable cover, which is depicted on Exhibit "F" via State Plane coordinates; this crushed rock cover or other acceptable cover serves as an engineered barrier to prevent direct contact with the underlying soils and must not be excavated, removed, disturbed, demolished, or allowed to fall into disrepair, except if conducted as described above. Owner shall inspect

the engineering control annually and repair any significant deteriorations found.

- g. Shall prohibit any activity at the Real Estate that may interfere with the groundwater monitoring well network.
- h. Shall grant to U.S. EPA, General Motors, and their designated representatives the right to enter the property for the purposes of completing Corrective Action activities (i.e., sampling, remediation, etc.) in accordance with the PBCAA.
- i. Shall comply with the Existing Restrictions.

3.1.2 Current and Historical Operations

Former Plant 2 was utilized for aircraft engine testing, machining, parts cleaning, and warehousing. An expansion on the north side of the former Plant 2 building was added circa 1969, and was used only for warehouse space to support parts distribution activities. An area south of the warehouse, near the center of the Facility, was renovated circa 1993 as a fitness center for GMC-Allison employees. Manufacturing at former Plant 2 stopped in the mid-1990s. Machinery and supplies formerly used in plant operations were removed from the Facility prior to demolition. The former Plant 2 buildings were demolished in 2004 leaving only a partial concrete floor slab with remaining areas of the Facility covered with asphalt or limestone gravel. Since the transfer of the property to the SRC, the property has undergone improvements to allow for redevelopment including the installation of a paved road connecting Gilman Street to 10th Street and removal of portions of the concrete slab and asphalt parking lots. From 1973 to 1993 GMC owned a parcel of land north of former Plant 2 and used the parcel for surface parking. This parcel appears to have included all or part of four former lagoons that were owned and operated by Union Carbide up to 1973. The lagoons are visible on aerial photographs between 1941 and 1962 (Appendix A of DOCC). By 1972, two of the lagoons were no longer visible in the aerial photograph and the remaining two lagoons appeared to be in the process of being filled. Ownership of the parcel was returned to Praxair Surface Technologies (a spin-off from Union Carbide) in 1993.

Operations at the Facility were regulated under several environmental laws and regulations, including RCRA, Clean Air Act, Clean Water Act, and Toxic Substance Control Act. In addition, the workplace was regulated under the Occupational Safety

and Health Administration (OSHA). The property is in the process of being redeveloped by the SRC. An overview of the land cover at the Facility as of 2009 is presented in Drawing 5. Several industrial/commercial redevelopment options are being considered for the former Plant 2 property and are summarized below.

3.2 Speedway Redevelopment Plans

The current Comprehensive Plan developed by the Department of Metropolitan Development, includes 10 critical areas within Wayne Township (City of Indianapolis (COI), 2006). The regions are recognized for historical significance and distinct character. As part of the Comprehensive Plan, recommendations have been made to preserve or redevelop the areas. One of the designated Critical Areas is located within close proximity to the Facility. Critical Area 3, located to the west of the former Plant 2 property, includes Main Street between 10th and 16th Streets. A few recommendations for this area include expanding Indianapolis Motor Speedway related tourist attractions on the east side of Main Street, where the facilities are compatible with existing industrial uses. Development of new residential areas within the area is not recommended due to local industrial history (COI, 2006).

The SRC was created by the Speedway Town Council to redevelop blighted areas in Speedway, Indiana. The Commission is working to redevelop a portion of the former Plant 2 (Drawing 6). According to the Commission, this may include retail, restaurant, etc. along Gilman Street, which is currently the entrance to the property. There is a plan that includes extending Gilman Street to Polco St to the east and realigning 10th Street in the area south of former Plant 2 (currently in progress by SRC).

Additionally, SRC plans to place an Environmental Restrictive Covenant on the property to the south of former Plant 2, the former Electric Steel Castings site, in general accordance with the following restrictions, requested by IDEM:

- No groundwater from beneath the Site shall be used for any purpose. No wells can be installed for any purpose other than contaminant assessment or monitoring without prior IDEM approval
- The Site shall not be used for agricultural purposes.
- Site soils must be capped with two feet of "clean" soil or four to six-inches of concrete and/or asphalt underlain by at least six-inches of gravel sub-base or clean material; or excavate contaminated Site soils exceeding RISC RDCLs

and either: a) consolidate the excavated soils on-Site and cap the consolidated material with two feet of "clean" soil (demonstrated not to contain contaminants of concern above RISC RDCLs); or b) properly dispose of the excavated soils in accordance with applicable regulations. Such excavation shall not be conducted without prior approval by IDEM of a work plan for the soil excavation which shall be submitted to IDEM at least sixty (60) days prior to initiating work.

- Communicate any newly-obtained information about existing contamination or any information about new (or previously unidentified) contamination to IDEM upon becoming aware of such.

3.3 **Climate**

The Marion County climate is influenced by the Great Lakes and has a continental humid climate. Cool air from Canada collides with warm tropical air to bring changes in the climate within days and creates a variability of the seasons (United States Department of Agriculture 1991).

Frequent weather changes come from the passing of weather fronts and associated low and high centers of air pressure across the region. Winds are typically from the southwest, but during the winter months are dominantly from the northwest. The mean daily temperature is 52.5° Fahrenheit (F) (mcc.sws.uiuc.edu). The lowest mean temperature is in January at 26.5° F. The highest mean daily temperature is in July at 75.4° F (mcc.sws.uiuc.edu). These temperature summary data were collected at the Indianapolis International Airport from 1971 through 2000.

The average total annual precipitation for Marion County is 40.95 inches (mcc.sws.uiuc.edu). The average annual snowfall is 26.9 inches (mc.sws.uiuc.edu). Data collected for precipitation and snowfall amounts was collected between 1971 through 2000 from the Indianapolis International Airport. Average annual lake evaporation for the area is about 33 inches. The 1-year, 24-hour maximum rainfall is approximately 2.5 inches (United States Department of Agriculture 1991).

3.4 **Surface Water Hydrology**

The approximate Facility elevation is 720 feet above mean sea level; the Facility land surface is relatively flat and slopes gently to the southwest. The Facility is located in the White River watershed. Dry Run Creek is an intermittent creek that previously ran

north-south along Polco Rd, east of the former Plant 2 property. The creek was relocated to a subsurface culvert. The culvert terminates just north of 10th Street where it empties to a channel that runs beneath 10th Street where it then turns to the east along the northern boundary of Allison Plant 12/14 and discharges into Little Eagle Creek which eventually discharges to Big Eagle Creek. Big Eagle Creek and Little Eagle Creek can be found on the aerial photograph (Drawing 2).

3.4.1 Big Eagle Creek

Big Eagle Creek, a tributary to the White River, is located in the White River Basin and is one of the principal streams flowing through the outwash aquifer in Marion County (Smith, 1983). Since the construction of Eagle Creek Reservoir was completed in 1968, the flow in the creek has been controlled by the Corps of Engineers who operate the dam for Eagle Creek Reservoir, which is located approximately 4.5 miles upstream from the Facility. The arithmetic mean discharge of Big Eagle Creek (USGS Station 03353500, located at Big Eagle Creek and Lynhurst Drive) as calculated by the United States Geological Survey from 1940 to 1980 is 211 cubic feet per second (cfs), the harmonic mean is approximately 12 cfs, and the 7Q10 is 3.3 cfs. (http://waterdata.usgs.gov/in/nwis/uv/?site_no=03353500&PARAMeter_cd=00065,00060,00010).

3.4.2 Little Eagle Creek

Little Eagle Creek, a tributary to Big Eagle Creek, has a drainage area of approximately 17.4 square miles (Town of Speedway, IN, 2005) and is part of the Big Eagle Creek watershed. In the vicinity of the Allison main campus, Little Eagle Creek is a losing stream. Little Eagle Creek joins Big Eagle Creek approximately 1.5 miles south of the Facility and several miles above the mouth of the White River (Roberts et al., 1955). Little Eagle Creek originates in northwestern Marion County, just east of Eagle Creek Reservoir and is part of the Big Eagle Creek Watershed. Little Eagle Creek flows southwest where it is joined by Guion Creek and Falcon Creek to the north of the Town of Speedway, and then flows south. The mean discharge of Little Eagle Creek (USGS Station 03353600, located at Little Eagle Creek and 16th Street) from 1966 to 1980 is 24 cubic feet per second (cfs) (http://waterdata.usgs.gov/in/nwis/uv/?site_no=03353600&PARAMeter_cd=00065,00060,00010).

3.4.3 Dry Run Creek

Dry Run Creek is a tributary to Little Eagle Creek that originates north of Allison Plant 12/14. The creek runs in a subsurface culvert until the culvert emerges and discharges just northeast of the corner of Polco and 10th Streets. From there the creek runs south under 10th Street and then to the east along the north side of Allison Plant 12/14, before it joins Little Eagle Creek. In the vicinity of the Facility, Dry Run Creek is a losing stream and is intermittently dry. Historically, Allison had a State of Indiana Industrial NPDES permit for storm water discharge into Dry Run Creek (permit number INR00A155 and SIC Code Number 3568 – power transmission). The permit included one stormwater outfall to Dry Run Creek (A-2-01 (Outfall 003)) (Drawing 1).

3.5 Geology and Hydrogeology

The information contained in this section relates to former Plant 2 and includes information from the main campus of Allison Transmission. The Facility is located in Marion County, Indiana, which is contained within the Tipton Till Plain physiographic unit. The topography of this unit resulted from Wisconsinan glacial advances. The regional geology of the area around the Facility consists of approximately 140 feet of alluvial and glacial deposits overlying sedimentary bedrock (Harrison 1963). The Pleistocene glacial drift is characterized by clay tills and stream deposits consisting largely of sand and gravel.

3.5.1 Bedrock Geology

Based on a review of the available boring logs, water supply well records for nearby properties and available literature, the bedrock beneath the Facility is the New Albany Shale of the Devonian System. The New Albany Shale is an evenly laminated, deep brown to black, brittle, pyritiferous shale unit (Harrison 1963). The thickness of the shale is approximately 120 feet thick (Harrison 1963, Fenelon 1994). Regionally, the New Albany Shale has a sharp basal contact with underlying limestone and dolomite units (Jeffersonville Limestone of the Devonian System). In the vicinity of the Facility; however, the shale is encountered at 107 feet below ground surface (bgs) and extends to about 190 feet bgs. The shale overlies the Jeffersonville limestone that is found at approximately 190 feet bgs.

3.5.2 Unconsolidated Deposits

The Facility is underlain by a sequence of unconsolidated materials consisting of silt/clay and sand and gravel. According to the United States Department of Agriculture (USDA) *Soil Survey of Marion County*, the soil type at the Facility is classified as Urban land-Fox complex, Urban land-Genesee complex, and cut and fill. The Urban land-Fox complex is described as urban land and well to poorly drained soils. Runoff is generally rapid from the urban land and slow on the Fox soils. The soil type at the Facility is described as having a 0 to 3 percent slope. The Urban land-Genesee complex includes urban land, well-drained soils, and small areas of poorly-drained units with a 0 to 2 percent slope. Runoff is generally rapid on the urban land and slow on the Genesee soils.

Geologic cross-sections and a cross-section reference drawing are presented as Drawings 3.4.1, 3.4.3, 3.4.4, and 3.4.9 of the RFI Report (ARCADIS, 2009a); and the MW-0702-S2 Area Investigation Summary (ARCADIS, 2012). Three sand units separated by till layers have been identified at the former Plant 2 property and have been designated Units S2 through S4, with S2 being the shallowest and S4 being the deepest. Sand unit S2 is comprised of sand from 9 ft to 39 ft bgs, with basal elevations ranging from 716 to 690 ft msl. The surface of the till unit underneath the S2 is undulating and the till surface may be encountered anywhere from 20 to 33 ft bgs with a basal elevation of 705 to 693 ft msl. Sand unit S3 has been identified in one production well and is a deeper water-bearing unit that is present from approximately 48 to 57 ft bgs with a basal elevation ranging from 677.5 to 669 ft msl. Sand Unit S4 has been identified in two production wells; however, the bottom of this unit was not encountered. The top of the S4 is encountered at approximately 104 ft bgs with a basal elevation of 621 ft msl. It should be noted that the information for the S3 and S4 sand units located in this area are based on production well logs that were installed by the driller in 1941.

3.5.3 Facility Hydrogeology

Regional groundwater flow in the uppermost, continuous saturated zone is generally south/southwest towards Big Eagle Creek. A groundwater elevation contour map based on the October 2007 depth to groundwater measurements is presented on Drawing 3.4.15 of the RFI Report and illustrates the uppermost groundwater potentiometric surface, which includes groundwater levels from both confined and unconfined groundwater conditions. The October 2007 groundwater data is consistent with pre- and post-2007 data collected at the Facility.

Generally, the hydrogeologic characteristics beneath the Facility have been assessed using available published literature and data collected during various aquifer tests (pumping tests) conducted at the Facility or the adjacent Allison main campus. During 1983, the United States Geological Survey (USGS) completed a study of the availability of water from the outwash aquifer beneath Marion County (Smith 1983). The USGS estimated the hydraulic conductivity beneath the Facility would be between 50 and 200 feet per day (ft/day), based on lithologic data.

In 1994, Geraghty & Miller, Inc. conducted slug tests on selected monitoring wells to evaluate the saturated hydraulic conductivity of the shallow aquifer materials (Unit S2). The data collected was analyzed using the Bower and Rice method. The estimated hydraulic conductivity ranged from 2.3×10^{-2} centimeters per second (cm/sec) (66 ft/day) to 3.0×10^{-3} cm/sec (9 ft/day) and was generated by calculating the average of all test results. This hydraulic conductivity suggests well sorted sands and glacial outwash (Fetter, 1994).

In December 2001, a groundwater pumping/soil vapor extraction pilot test was conducted in Unit S1 to evaluate the technology's applicability in addressing volatile organic compound (VOC) impacts to soil and groundwater in the vicinity of the Oil Stores and Reclaim Area (AOI 26) at the Allison main campus. Based on aquifer analysis, hydraulic conductivity (1.0×10^{-2} cm/sec) was calculated using the Theis non-equilibrium method. This value, which is within the range of a fine to medium coarse sand, is consistent with the aquifer sediments (Study 2). It should be noted that several historical reports were used during the preparation of the DOCC (referred to as Study 1, Study 2...Study 10). These Studies were prepared at the request of counsel and are subject to Attorney-Client and Environmental Audit privileges. None of the findings, analyses, or conclusions from these reports were included in the DOCC. Use of only the data from those privileged reports does not constitute a waiver of any privilege. To keep consistent with the DOCC, the Study numbers have remained the same for this document.

In December 2002, a step drawdown test was performed in Unit S2 to evaluate the physical characteristics of the aquifer near the southern property boundary (AOI 40) of the Allison main campus. The data collected was analyzed using Theis' non-equilibrium formula, Cooper and Jacobs' approximation of the Theis formula and the distance drawdown method. Based on the evaluations, the storativity (S) and transmissivity (T) were calculated to be 0.0076 and 1,120 gallons per day per foot, respectively. The approximate hydraulic conductivity was 1.5×10^{-2} cm/sec (41 ft/day) (Study 3).

A combined pumping/soil vapor extraction (SVE) test was performed in both Unit S1 and Unit S2A at the Former Degreaser Area (AOI 51) at the Allison main campus on June 7, 2002. The data collected was analyzed using AQTESOLV[®] aquifer test analysis software. Based on analysis, the average hydraulic conductivity in unit S2A was calculated to be approximately 3.03×10^{-4} cm/sec, which corresponds to silt, sandy silts, clayey sands and till (Study 4, Fetter 1994).

Using historic groundwater level data, the hydraulic gradient beneath the former Plant 2 and the Allison main campus has been estimated to be between 0.00005 and 0.023 ft/ft. Hydraulic conductivity values calculated from pumping tests described above are 1.0×10^{-2} cm/sec in Unit S1, 3.03×10^{-4} cm/sec in Unit S2A and range from 2.3×10^{-2} cm/sec to 3.0×10^{-3} cm/sec in Unit S2. Estimated total volume discharge (per unit width of aquifer) and groundwater flow velocity is calculated and provided in the below table for each abovementioned hydraulic conductivity.

AOI	UNIT	K (cm/sec)	K (ft/day)	Gradient (ft/ft)	q (ft/day)	V (ft/day)
AOI 19	S1	1.00×10^{-2}	2.83×10^1	.009	2.60	6.80×10^{-1}
AOI 40*	S2	1.50×10^{-2}	4.25×10^1	.023	9.95	2.61
Facility**	S2	2.30×10^{-2}	6.52×10^1	.005	3.32	8.69×10^{-1}
Facility**	S2	3.00×10^{-3}	8.50	.005	4.33×10^{-1}	1.13×10^{-1}
AOI 51	S2A	3.03×10^{-4}	8.58×10^{-1}	.0000491	4.29×10^{-4}	1.12×10^{-4}

NOTES:

- * - Cossell Road to Big Eagle Creek
- ** - Facility: includes from former Plant 2 to Big Eagle Creek
- q = Ki; q is the total volume discharge per unit width of aquifer
- v = Ki/n
- estimated porosity is 37.5%

3.6 Water Supply and Groundwater Use

The information contained in this section relates to former Plant 2 and includes information from the main campus of Allison Transmission.

3.6.1 Water Supply Survey

A review of the available water well records maintained by the Indiana Department of Natural Resources (IDNR) was conducted to identify any potable or nonpotable water supply wells in the area surrounding the Facility. IDNR classifies wells by their capacity; wells producing less than 70 gallons per minute (gpm) are classified as low

capacity wells and wells producing greater than 70 gpm are classified as high capacity wells. The review included both low and high capacity wells within a 1/4-mile radius of the Facility. All available well construction logs were examined.

Records for 36 low capacity wells were identified within a ¼-mile radius of the former Plant 2 and Allison main campus. The depth of the wells ranged from 40 ft to 270 ft bgs. Seven of the wells were completed in bedrock that was encountered at depths ranging from 80 to 127 ft bgs, and the other 29 wells were completed in unconsolidated sand and gravel. Twenty one of the wells are identified as test wells. Copies of water well records are included in Appendix C of the DOCC. Two wells were located directly downgradient of the Allison main campus at a former metal working facility (now owned by Allison Transmission). The wells were properly abandoned in April 2008 by Allison. No low capacity wells were identified within or downgradient of impacted groundwater from the Facility.

Twenty-three high capacity wells are/were located within one-mile of the former Plant 2 and Allison main campus. Fifteen of these high capacity wells are/were located at the Facility. The high capacity wells that were located at the former Plant 2 property and Allison main campus ranged in depth from 57 ft to 121 ft bgs and therefore extract groundwater from sand units above the bedrock. No low or high capacity wells currently exist at the former Plant 2 property. It is noted that in addition to the water supply wells a #10 Return Well was identified in plant records. This well was installed to a depth of 362 feet bgs and appears to have encountered bedrock at 130 ft bgs. Two of the off-Facility high capacity wells are downgradient of the Allison main campus and located south of Big Eagle Creek (see Drawing 6 in the DOCC). Six of the high capacity wells are associated with the City of Indianapolis and are located north of the former Plant 2.

3.6.2 Facility Non-Potable Water Supply

As of November 2012 there is no non-potable water service to the Facility. As identified in the deed restriction discussed in Section 3.1.1, Allison may not use groundwater as a potable source but may use groundwater at the property in a manner consistent with August 2007 uses of groundwater, and at volumes sufficient to meet Allison's water supply requirements for operations and other August 2007 uses of groundwater. There was no use of groundwater at the Facility as of August 2007.

Historically there were three water supply wells at the former Plant 2 (PW-21, PW-22 and PW-23). Two water supply wells that were located on the former Plant 2 property,

PW-22 and PW-23, were abandoned in 2003. It is not known when PW-21 was abandoned, but a reconnaissance by ARCADIS in 2007 indicated that it was not present. Stormwater from former Plant 2 is discharged to Dry Run Creek through the permitted outfalls.

Since there was no use of groundwater at Plant 2 when the 2007 Restrictions and Covenants Agreement placed deed restrictions as discussed in Section 3.1.1, there is an institutional control in place that prohibits groundwater from being used for non-potable purposes at the Plant 2 Facility.

3.6.3 Facility Potable Water Supply

As of November 2012, there is no potable water service provided to the Facility. Potable water was previously supplied to the Facility by the Town of Speedway municipal system. Water was disconnected at Plant 2 prior to demolition in 2004. Per existing deed restrictions, groundwater at Plant 2 cannot be used as a source for potable water. It is expected that future potable water supply after any redevelopment of the former Plant 2 will originate from the Town of Speedway public water supply system.

3.6.4 Designated Well Areas

Based on communication with the City of Indianapolis Department of Metropolitan Development, the Facility is not located within a well field protection district. The nearest well field protection area (5-year time of travel) is located approximately one half mile to the east-northeast (side gradient) and one quarter mile to the northwest (upgradient) of the Facility. Drawing 3.6.2 of the RFI Report shows the area included in the well field protection areas.

Installation of a well in Marion County requires a licensed water well driller to obtain a well permit, which is signed by the Marion County Health Officer. The County Health Officer does not issue well permits for potable wells proposed for installation in a "No-Well Zone", since the groundwater in these areas is not considered suitable for use by humans for drinking, food preparation, washing or other direct human contact (Sec. 18-102 of the Marion County Health Code). The former Plant 2 property is not currently in a "No-Well Zone".

3.7 Ecology

An Ecological Habitat Characterization was conducted for the former Plant 2 and was presented in Appendix F of the RFI Report. The assessment included a site visit by an Exponent Ecologist and a review of historical analytical data. A habitat assessment decision matrix was developed to identify those areas at the Allison main campus and the Facility that may provide terrestrial and aquatic habitats. Sensitive environments and species were identified as present or potentially present in and immediately adjacent to Big Eagle Creek and Little Eagle Creek. The habitat assessment did not identify any areas in either creek with unique or otherwise protected habitat. There are no areas at the former Plant 2 that constitute ecological habitat.

3.8 Pre-RFI

Extensive environmental investigations and underground storage tank removals were conducted at the Facility prior to the RFI. Historical data in addition to other existing information have been evaluated qualitatively and quantitatively to identify conditions that warrant further investigation. The qualitative review considered sample locations and depths, constituents analyzed, analytical methods, and any related field observations. The quantitative review was based on a comparison of the historical data for soil and groundwater samples with conservative screening criteria to determine the need for additional investigation or evaluation. The results of the comparisons of pre-RFI data to the conservative screening criteria are presented in the DOCC. These comparisons facilitated the development of the RFI scope of work since this historical data had been collected from a majority of the AOIs identified in the DOCC.

3.9 RFI

The following AOI was identified in the DOCC as requiring no further action or investigation:

- AOI 2-9 - Process Waste Sump

The following AOIs were identified in the DOCC (ARCADIS, 2005a) and the RFI Work Plan (ARCADIS 2005b) as requiring further investigation:

Former Plant 2:

- AOI 2-1 - Former Underground Storage Tank (UST) Area A

- AOI 2-2 - Former UST Area B
- AOI 2-3 - Former UST Area C
- AOI 2-4 - Former UST Area D
- AOI 2-5 - Former UST Area E
- AOI 2-6 - Piston Coolant Trenches and Building
- AOI 2-7 - Former Degreaser Area
- AOI 2-8 - Former Tin Plating Area
- AOI 2-10 - Former UST Area 5

A total of three phases of investigation were completed in order to meet the objectives of the RFI. Details of these investigations are presented in the RFI Report (ARCADIS, 2009a).

3.10 Additional Sampling to Support the CMP and to Verify the RFI Results

Additional Sampling was proposed to confirm the results of the RFI, support the evaluation of potential Corrective Measures, and confirm the Environmental Indicators (CA750) Determination. The Work Plan was documented in the RCRA Corrective Action Additional Sampling (ARCADIS 2008a) and included the following AOIs:

Former Plant 2

- AOI 2-1 - Former UST Area A
- AOI 2-2 - Former UST Area B
- AOI 2-3 – Former UST Area C
- AOI 2-4 – Former UST Area D
- AOI 2-6 - Piston Coolant Trenches and Building
- Perimeter

The Stage II Additional Sampling was proposed to further support the evaluation of potential Corrective Measures and support an evaluation of the current interim measures system performance. A work plan was documented in the Stage II Additional Sampling Matrix (identified as Stage II Work Plan) (ARCADIS 2008b) and included the following AOIs:

Former Plant 2

- AOI 2-1 - Former UST Area A
- AOI 2-2 - Former UST Area B
- Perimeter

Summaries of the data from the two stages of additional sampling are presented in the Additional Sampling Data Report (ARCADIS 2008c) and the Stage II Additional Sampling Data Report (ARCADIS 2009b). These data reports identified concentrations of non-site-related cVOCs migrating on-site from the north.

Additionally, based on detected concentrations of constituents in groundwater samples collected from monitoring well MW-0702-S2, an investigation was initiated in 2012 to evaluate vinyl chloride in the vicinity of this well. The work plan documenting the purpose and scope of the investigation was submitted to USEPA on February 15, 2012. Based on the results from the initial investigation, additional investigation activities were completed to further characterize the nature and extent of vinyl chloride in groundwater at the upgradient and downgradient property boundaries as well as off-site beyond the downgradient (southern) property boundary. Concentrations of cVOCs appear to be migrating on-site from the north, in the vicinity of the former lagoons north of the northeast portion of the Site and from off-site north of the central and western portion of the Site.

Summaries of the data from these additional investigation activities are presented in the *MW-0702-S2 Investigation Summary and Proposed Additional Investigation* (ARCADIS 2012a) and *MW-0702-S2 Area Investigation Summary* memos (ARCADIS 2012b).

3.10.1 Groundwater Sampling to Confirm the Environmental Indicators (CA750) Determination

Groundwater samples were collected from the following wells at the former Plant 2 and the Allison main campus Facilities as identified in the 2008 Additional Sampling Work Plan: MW-0620-S1, MW-0408-S2, MW-0702-S2, MW-0616-S2, MW-0644-S2, MW-23-S2, MW-3-9-S2, MW-0629-S3, MW-0116-S2, MW-24-S2A, MW-31-S2, MW-0102-S2A, MW-0419-S2B, MW-0419-S3, MW-0420-S2A, MW-0420-S3, MW-0421-S2, MW-0421-S3, MW-0701-S2, MW-0705-S2 and MW2-4-S2. Groundwater samples from all monitoring wells were analyzed for VOCs and a groundwater sample from MW-0620-S1 was also analyzed for lead.

Based on the data presented in the 2009 CMP and data collected subsequent to the 2009 CMP, cVOCs in groundwater at concentrations above the Maximum Contaminant Levels (MCLs) are observed at and around the Former Plant 2. Detected cVOCs in the upper portion of the S2 saturated unit groundwater were identified migrating on-site

from the north and migrating off-site to the south. Trichloroethene, cis-1,2-dichloroethene, and vinyl chloride were detected at concentrations above their respective MCLs in several on-site monitoring wells and borehole sampling locations at the upgradient perimeter of the Former Plant 2. While the 2009 RFI Report (ARCADIS 2009) did not identify an on-site source of cVOCs in soil (i.e., none of the soil samples from Plant 2 had concentrations greater than the screening criteria, including soil migration to groundwater criteria), recent groundwater results show some localized site-related contribution of certain cVOCs to groundwater, as shown on Drawings 10, 12 and 13 of *MW-0702-S2 Area Investigation Summary* (ARCADIS 2012). Therefore, the cVOC concentrations at the downgradient property boundary likely consist of both site-related sources and non-site-related sources. While it is likely that site-related and non-site-related contributions to the cVOC concentrations in groundwater have comingled, cVOC concentrations in groundwater along the downgradient property boundary of Former Plant 2 are generally similar to those detected in groundwater along the upgradient property boundary of the Former Plant 2.

In order to facilitate redevelopment of the Plant 2 property, GM LLC petitioned to and received authorization from USEPA to abandon 16 monitoring wells at Plant 2 (MW2-1-S2, MW2-2-S2, MW2-3-S2, MW-0615-S2, MW-0617-S2, MW-0618-S2, MW-0619-S2, MW-0640-S2, MW-0642-S2, MW-0643-S2, MW-0645-S2, MW-0704-S2, MW-0705-S2, MW-0706-S2, MW-0809-S2, PZ-0801-S2), which were abandoned in February 2012. Additionally, monitoring wells MW-0802-S2 and MW-0810-S2 were destroyed during the re-pavement of Main Street. Monitoring well MW-0811-S2 was abandoned in preparation of road work by the Town of Speedway. The Town of Speedway re-installed a monitoring well between the former MW-0810-S2 and MW-0811-S2, which is named MW-1201-S2. ARCADIS attempted to sample upgradient perimeter monitoring well MW2-4-S2 in 2011; however, after several attempts, the well was not able to be located and it appears that this well was destroyed during SRC's construction activities.

3.10.2 Perimeter

Two monitoring wells and one piezometer were installed during the 2008 Additional Sampling to evaluate the VOCs in the groundwater in the western portion of the former Plant 2 property. Groundwater samples were collected from MW-0701-S2, MW-0705-S2, MW2-4-S2, MW-0801-S2, MW-0802-S2, and PZ-0801-S2. The groundwater samples were analyzed for VOCs. During the Stage II Additional Sampling, four soil borings (SB-0801 through SB-0804) and three monitoring wells (MW-0809-S2 through MW-0811-S2) were installed to further characterize the VOCs in the groundwater.

Borehole water samples were collected from the four soil borings and groundwater samples were collected from the monitoring wells. Analytical results from the groundwater samples presented in the 2009 CMP and the semi-annual data collected subsequent to the 2009 CMP indicate that 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE and vinyl chloride were detected at concentrations above MCLs near the Facility's upgradient boundary. In addition, sampling conducted in 2012 (discussed in Section 3.10.8) also detected cis-1,2-DCE, TCE and vinyl chloride above MCLs across the upgradient property boundary of Plant 2. During this sampling, cis-1,2-DCE, TCE and vinyl chloride were detected at the downgradient boundary at concentrations above the MCLs, but the detected concentrations were similar to those at the upgradient boundary.

3.10.3 AOI 2-1 – Former UST Area A

Groundwater samples were collected from monitoring wells MW-0615-S2, MW-0640-S2 and MW2-1-S2 during the 2008 Additional Sampling, as presented in the 2009 CMP, to confirm results from the RFI. Groundwater samples were analyzed for VOCs. Analytical results from the groundwater samples collected indicate TCE was detected at a concentration above the MCL in monitoring well MW-0640-S2. The results of the Additional Sampling do not alter the conclusions in the RFI Report, i.e., no potentially significant risk from exposure to hazardous constituents in groundwater.

Three soil borings were proposed in the 2008 Additional Sampling Work Plan to more precisely define an area that exhibited an historical mercury concentration detected in a soil sample collected in 1999 from 8 ft bgs (named Area A SW-7) that exceeded industrial soil contact criteria but did not result in potentially significant estimates of exposure. The work plan specified collecting soil samples from the surface, from 6 ft to 8 ft and 8 ft to 10 ft bgs to determine the vertical and horizontal extent of mercury in the soil. It should be noted that fill material was observed in the upper few feet of borings SB-02-01-0801 and SB-02-01-0804 and due to the nature of the surficial fill material (gravel, bricks, etc.), no samples of this material were collected for analysis. Soil boring SB-02-01-0802 was initially advanced to delineate the southern extent of the mercury. However, a thin layer of stained material was encountered from 2.4 ft to 2.6 ft bgs in SB-02-01-0802 and refusal was encountered at 2.6 ft bgs. A sample of this stained interval was submitted for BN analysis. Based on encountering refusal in SB-02-01-0802, soil boring SB-02-01-0804 was advanced to the north of SB-02-01-0802 in order to be closer to the location of sample Area A SW-7 and to attempt to reach the desired depth (~10 bgs).

Mercury was not detected in any of these new samples. Based on these results, the presence of soil containing mercury was not confirmed. The sample of the stained material did contain concentrations of benzo(a)pyrene and dibenz(a,h)anthracene slightly higher than those used in the human health risk assessment in the RFI Report. However, these new data did not affect the risk assessment conclusions.

A test pit TP-02-01-0801 was advanced in the vicinity of soil boring SB-02-01-0802 to evaluate the stained material identified in and sampled from the soil boring from 2 ft to 2.6 ft bgs. A storm sewer traversing southwest-northeast was identified during the test pitting investigation. Apparently soil boring SB-02-01-0802 was advanced through the upper portion of the storm sewer pipe and encountered refusal at the bottom of the pipe. The stained material that was encountered is contained within the storm sewer pipe. The analytical data for the stained material in the pipe were evaluated in the RFI Report and no potentially significant risk from exposure to this material was identified.

Based on clarification of historical activities related to the UST excavation, it was determined that an additional soil sample would be appropriate to verify that the arsenic concentrations in the vicinity of a previous sidewall soil sample location (Area A SW-12) have been adequately characterized (ARCADIS, U.S. 2008b). Soil samples were collected from 0 to 2 ft, 8 to 10 ft and 12 to 14 ft bgs and were analyzed for arsenic. Analytical results from the soil samples collected did not indicate concentrations of arsenic that affect the risk assessment conclusions.

As discussed in Section 3.11, in January 2009, approximately 46.6 tons of soil containing historical mercury impacts were excavated to facilitate redevelopment of the former Plant 2 property for commercial/industrial reuse. The limits of the excavation extended to the sample locations investigated during the 2008 Additional Sampling investigation, where no detections of mercury were identified. Additional information is provided in the Former UST Area A (AOI 2-1) – Excavation Completion report (ARCADIS, 2009c).

The results of the 2008 Additional Sampling were evaluated to determine whether they alter the conclusions in the RFI Report, i.e., no potentially significant risk from exposure to hazardous constituents in soil (see Section 4). As discussed in Section 4, it was concluded that the risk estimates met the USEPA's acceptable limits at all AOIs investigated at and around Former Plant 2. Therefore, corrective measures specific to this AOI are not warranted; however, it is noted that the excavation was completed as an Interim Measure and that the final proposed Corrective Measure for this AOI will be the adoption of the Interim Measure. As the excavation extended to locations where

no mercury was detected, no changes in criteria/endpoint would affect the amount or area of soil remediated. Further, institutional controls are not necessary and no evaluation of other Corrective Measures is warranted.

3.10.4 AOI 2-2 – Former UST Area B

Groundwater samples were collected from monitoring wells MW2-2-S2 and MW-0702-S2 during the 2008 Additional Sampling to confirm results from the RFI. The groundwater sample from MW2-2-S2 was analyzed for VOCs and the groundwater sample from MW-0702-S2 was analyzed for BNs. Analytical results from the groundwater samples presented in the 2009 CMP and the semi-annual data collected subsequent to the 2009 CMP indicate that vinyl chloride and bis(2-ethylhexyl)phthalate were detected at concentrations above their respective MCL in monitoring wells MW2-2-S2 and the field duplicate for MW-0702-S2, respectively. The results of the Additional Sampling do not alter the conclusions in the RFI Report, i.e., no potentially significant risk from exposure to hazardous constituents in groundwater as long as the water is not used for potable purposes.

Three soil borings were proposed in the 2008 Additional Sampling Work Plan to verify the BNs in historical soil borings. Soil samples were collected from 0 ft to 2 ft, 2 ft to 4 ft, 4 ft to 6 ft, 6 ft to 8 ft and 8 ft to 10 ft bgs and were analyzed for BN analysis. During the installation of these soil borings, fill material (bricks, concrete fragments, asphalt fragments, wood) was identified in SB-02-02-0802 and SB-02-02-0803 from 0 ft to 10 ft and 8 ft bgs, respectively. Due to the nature of this fill material no soil samples were collected from these soil borings for analysis.

Based on the results from the 2008 Additional Sampling, three test pits were proposed to evaluate the fill material in the vicinity of the soil borings (ARCADIS 2008b). A total of seven test pits were completed to attempt to delineate the extent of the fill material. The test pits were advanced to a depth of approximately 10 ft bgs, where a concrete surface was encountered. Based on the observations of the test pits and drawings depicting the former layout of the former Plant 2 buildings, it appears that the basement of the former “Basic Facilities A” was filled with demolition debris. Samples of the fill material were collected from test pits TP-02-02-0804, TP-02-02-0805, TP-02-02-0806 and TP-02-02-0807 and were analyzed for BNs. The results of the Additional Sampling do not alter the conclusions in the RFI Report, i.e., no potentially significant risk from exposure to hazardous constituents in the fill material is expected.

Based on the analytical results, field observations, and Facility drawings, the horizontal extent of fill material containing BNs is adequately characterized. The extent of the fill material containing concentrations of BNs appears to be limited to the former basement of “Basic Facilities A”. As discussed in Section 3.11, crushed rock was placed over the boundary of the former basement as an engineering control to prevent exposure to the fill material. Although the RFI baseline risk assessment determined that exposure to the fill material is not expected to pose a significant risk, this engineering control was completed as an Interim Measure and the final proposed Corrective Measure for this AOI will be the adoption of the Interim Measure.

3.10.5 AOI 2-3 – Former UST Area C

Groundwater samples were collected from monitoring well MW2-3-S2 during the 2008 Additional Sampling, as presented in the 2009 CMP, to confirm results from the RFI. The groundwater sample was analyzed for VOCs and BNs. Analytical results from the groundwater sample did not indicate any constituents detected at concentrations above the drinking water criteria. The results of the Additional Sampling, as presented in the 2009 CMP, were evaluated to determine whether they alter the conclusions in the RFI Report, i.e., no potentially significant risk from exposure to hazardous constituents in groundwater and no significant change in groundwater conditions (see Section 4). As discussed in Section 4, it was concluded that the risk estimates met the USEPA’s acceptable limits at all AOIs investigated at and around Former Plant 2. Therefore, corrective measures specific to this AOI are not warranted.

3.10.6 AOI 2-4 – Former UST Area D

Groundwater samples were collected from monitoring wells MW-0617-S2, MW-0642-S2 and MW-0703-S2 during the 2008 Additional Sampling, as presented in the 2009 CMP, to confirm results from the RFI. The groundwater samples were analyzed for VOCs and the sample from MW-0703-S2 was also analyzed for arsenic. Analytical results from the groundwater samples did not indicate any constituents detected at concentrations above the drinking water criteria. The results of the Additional Sampling were evaluated to determine whether they alter the conclusions in the RFI Report, i.e., no potentially significant risk from exposure to hazardous constituents in groundwater and no significant change in groundwater conditions (see Section 4). As discussed in Section 4, it was concluded that the risk estimates met the USEPA’s acceptable limits at all AOIs investigated at and around Former Plant 2. Therefore, corrective measures specific to this AOI are not warranted.

3.10.7 AOI 2-6 – Piston Coolant Trenches and Building

Groundwater samples were collected from monitoring wells MW-0618-S2, MW-0619-S2, MW-0643-S2, MW-0645-S2, MW-0647-S2 and MW-0706-S2 during the 2008 Additional Sampling, as presented in the 2009 CMP, to confirm results from the RFI. The groundwater samples were analyzed for VOCs. Analytical results from the groundwater samples collected indicate vinyl chloride was detected at a concentration above its MCL in monitoring well MW-0706-S2. Downgradient from AOI 2-6, vinyl chloride concentrations in groundwater is bounded by monitoring wells with concentrations below the MCL. The results of the Additional Sampling were evaluated to determine whether they alter the conclusions in the RFI Report, i.e., no potentially significant risk from exposure to hazardous constituents in groundwater and no significant change in groundwater conditions (see Section 4). As discussed in Section 4, it was concluded that the risk estimates met the USEPA's acceptable limits at all AOIs investigated at and around Former Plant 2. Therefore, corrective measures specific to this AOI are not warranted.

3.10.8 2012 MW-0702-S2 Area Investigation

During the investigation in May and July 2012, 22 soil borings (SB-02-02-1201 through SB-02-02-1211, SB-02-06-1201 and SB-1201 through SB-1210) were installed to obtain borehole water samples for evaluation of cVOCs (specifically vinyl chloride) in the upper and lower portions of the saturated sand unit S2 and the elevation of the top of the till unit underlying S2 in the vicinity and downgradient of MW-0702-S2. The water samples were analyzed for VOCs. Analytical results from the borehole water samples collected indicate 1,1-dichloroethane, trans-1,2-dichloroethene, vinyl chloride, cis-1,2-DCE, and TCE, were detected in borehole water samples collected from the upper portion of the saturated S2 sand unit at concentrations above the MCLs in one or more of the soil borings. Vinyl chloride, cis-1,2-DCE, and TCE were detected in borehole water samples collected from the lower portion of the saturated S2 sand unit at concentrations above the MCLs in one or more of the soil borings. As discussed in Section 3.10.1 and Section 3.10.2, groundwater data from 2012 show some localized site-related contribution of certain cVOCs to groundwater. However, the cVOC concentrations at the downgradient property boundary are likely from both site-related sources and non-site-related sources. Therefore, only a portion of the cVOC groundwater concentrations migrating off-site are considered site-related. Additionally, the locations with detected concentrations in groundwater above MCLs are bounded downgradient by data with detected concentrations below MCLs.

The data generated during this 2012 investigation were evaluated to determine whether they changed the conclusions of the risk assessment. As discussed in Appendix C, the 2012 data collected at and in the vicinity of Plant 2 do not change the conclusions of the 2011 RFI risk assessment.

3.11 Interim Measures

In January 2009, approximately 46.6 tons of soil containing historical mercury impacts were excavated to facilitate redevelopment of the former Plant 2 property for commercial/industrial reuse. Additional information is provided in the *Former UST Area A (AOI 2-1) – Excavation Completion* report (ARCADIS, 2009c). It is noted that the excavation was completed as an Interim Measure and that the final proposed Corrective Measure for this AOI will be the adoption of the Interim Measure.

In March 2011, an engineering control (crushed rock cover over fill material) was instituted in the vicinity of AOI 2-2. Additional information on the cover is provided in *Former Plant 2 – Engineering Control Completion* report (ARCADIS, 2011a). An institutional control (Environmental Restrictive Covenant, ERC) was implemented after the sale of the property to the Speedway Redevelopment Commission to maintain the cover at and around the former powerhouse basement associated with AOI 2-2 (Drawing 4) to prevent exposure to the fill material even though the RFI baseline risk assessment determined that such exposures are not expected to pose a significant risk. The ERC became effective on March 1, 2011. This control was completed as an Interim Measure and that the final proposed Corrective Measure for this AOI will be the adoption of the Interim Measure.

4 Summary of Risk Assessment

The RFI was conducted in a phased approach, with three phases of field investigation being implemented during the period of January 2006 through November 2007. Additional rounds of investigation were conducted in April/May and October/November 2008 to verify results from the RFI and to collect data needed to evaluate potential corrective measures. Field investigations were focused on the AOIs identified in Section 3.10. The findings from each phase of field investigation were communicated to USEPA through data reports and meetings. The data from the RFI are presented in the RFI Report (ARCADIS, 2009a), and the additional rounds of investigation are summarized in the Additional Sampling Data Report (ARCADIS 2008c), Stage II Additional Sampling Data Report (ARCADIS 2009b), MW-0702-S2 Investigation

Summary and Proposed Additional Investigation (ARCADIS 2012a) and MW-0702-S2 Area Investigation Summary (ARCADIS 2012b).

The RFI field investigation was designed to determine if a release of hazardous waste or hazardous constituents had occurred, and where a potentially significant release was identified, to characterize the nature and extent of hazardous constituents in the environmental media. After each phase, the adequacy of the data was evaluated to determine whether additional data collection was warranted. As indicated above, several field events were conducted to collect the data necessary to achieve the RFI objectives.

When data of sufficient quality and quantity had been collected, the data were used to support decisions regarding the need for Interim or Corrective Measures. Human health and ecological risk assessments were conducted to provide a basis for determining whether the presence of hazardous constituents in environmental media at the Facility poses a potentially significant risk to human health and the environment under current and reasonably expected future land and groundwater use that would warrant Corrective Measures. The risk assessment considered existing land and groundwater use restrictions for commercial/industrial land use and existing groundwater uses as of August 2007, respectively, per the deed restriction that was recorded with Marion County on August 14, 2007. Details of the risk assessments and their findings are presented in the RFI Report (ARCADIS, 2009a) and summarized below.

4.1 Summary of Human Health Risk Assessment

During the implementation of the RFI, the Facility characterization data collected for each AOI was compared with conservative risk-based screening criteria to identify whether a potentially significant release of hazardous constituents to the environment may have occurred. As documented in Section 4 of the RFI Report (ARCADIS, 2009a), it was concluded that adequate data had been collected from each AOI to support a risk evaluation.

The significance of potential exposures to Facility-related concentrations of constituents in soil, groundwater, NAPL, and smear zone soil was evaluated based on current and reasonably expected future land use at and around the Facility. Potentially exposed populations considered in this risk assessment included the following:

On-Site: Routine workers
Maintenance workers
Trespassers
Construction workers
Recreational visitors

Off-Site: Residents Routine
workers Maintenance
workers Recreational
visitors

The evaluations for all of the potential exposures were conducted on an area specific basis.

Of the areas evaluated at and around Former Plant 2, none were identified as posing potentially significant risk.

To facilitate completion of RCRA Corrective Action for the former Plant 2, GM LLC agreed to update the parts of 2009 RFI baseline risk assessment that pertain to Former Plant 2. This update incorporated:

- groundwater data collected subsequent to the completion of the RFI Report and the CMP (which were compiled from the July 2011 database);
- USEPA guidance on inhalation risk assessments (*Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual (Part F)*, January 2009);
- USEPA guidance on Age-Dependent Adjustment Factors (ADAFs) (*Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens*, March 2005);
- agreements between USEPA, ENVIRON, and GM LLC on methodologies for streamlining risk assessments (*Health-Based Evaluation of Data to Streamline RCRA Facility Investigations at General Motors Facilities*, August 2010); and
- updated toxicity values, which were compiled on September 28, 2011 and include the new toxicity values for trichloroethene (TCE) in the Integrated Risk Information System (IRIS).

This memorandum, included as Appendix B, concluded that the risk estimates met the USEPA's acceptable limits at all AOIs investigated at and around Former Plant 2.

The data collected to evaluate groundwater conditions at the southern boundary of Plant 2, as discussed in Section 3.10.8, were evaluated to determine whether they change the conclusions of the 2011 RFI risk assessment update (Appendix B). As discussed in Appendix C, the 2012 data collected at Plant 2 do not change the conclusions of the 2011 RFI risk assessment.

4.2 Summary of Ecological Risks

As discussed above in Section 3.7 and in the RFI Report (ARCADIS, 2009a) an ecological risk evaluation was prepared to develop information necessary to determine whether there is the potential for unacceptable risk of adverse ecological effects resulting from Site-related hazardous constituent concentrations in environmental media. This risk evaluation included identification of AOIs with hazardous constituents, suitable habitat, and potentially complete exposure pathways.

No suitable habitat for ecological receptors was identified at former Plant 2. Therefore there is no further evaluation of ecological risks at the former Plant 2.

5 Summary of Corrective Measures Alternatives

Consistent with the Agreement, GM LLC investigated and is proposing to remediate releases at or from the Facility. The DOCC found that no further action was required for AOI-2-9, and the human health risk assessment and ecological risk evaluation documented in the RFI Report (ARCADIS 2009a) and updated in this CMP (included as Appendices B and C) found that corrective measures were not warranted for AOI 2-1, 2-2, 2-3, 2-4, 2-5, 2-6, 2-7, 2-8 and 2-10 or the area downgradient of location MW-0702-S2.

However, an interim measure was implemented in January 2009 at AOI 2-1. Approximately 46.6 tons of soil containing historical mercury impacts were excavated to facilitate redevelopment of the former Plant 2 for commercial/industrial reuse. Interim Measures were implemented at AOI 2-2 in March 2011. An engineering control consisting of crushed rock cover over fill material was implemented in the vicinity of AOI 2-2 to limit potential future exposure to fill material in the former basement. An existing institutional control (environmental restrictive covenant) is in place to manage the cover over this area (Appendix A). Existing institutional controls are in place to minimize the potential for exposure due to any unanticipated migration or use of contaminated groundwater at the former Plant 2 and downgradient properties.

An existing land use deed restriction is in place for the Site to maintain use of the property as commercial/industrial. This institutional control will be maintained as a Final Corrective Measure. IDEM requested additional restrictions on the property after the sale to the Town of Speedway Redevelopment Commission (Appendix A) and are detailed in Section 3.1.1. These additional site-wide restrictions agreed to by Speedway include management of soils excavated from the property and provisions for

evaluating and mitigating the potential for significant vapor intrusion into existing or new buildings.

5.1 Soil

Due to the size of the Facility, the soil information available prior to the RFI fieldwork (as summarized in the DOCC) (ARCADIS, 2005a), and the potential need to evaluate potential source areas, the investigation of soil conditions during the RFI was conducted on an AOI-specific basis. The soil analytical results were initially compared to soil screening criteria to evaluate the need for additional data collection.

The human health risk assessment was conducted as part of the RFI to evaluate potential exposure to soil assuming the existing land use restrictions remain in perpetuity. Based on the results of the human health risk assessment and ecological risk evaluation documented in the RFI Report (ARCADIS 2009a) and the additional human health risk evaluation discussed above in Section 4, soil does not pose a significant risk under current and reasonably expected future land use at and around the Facility, including AOI 2-1 and 2-2. However, to facilitate redevelopment and as an added precaution, GM LLC completed an Interim Measure at AOI 2-1 and AOI 2-2.

Interim Measures were completed at AOI 2-1 to remove a historical sample location containing mercury, as discussed in Section 3.11, and that Interim Measure is proposed to be adopted as a final Corrective Measure and is not further evaluated below. The limits of the excavation extended to the sample locations investigated during the Additional Sampling investigation where no detections of mercury were identified. As the excavation extended to locations where no mercury was detected, no additional Corrective Measures are warranted. Additional information regarding the work completed is provided in the Former UST Area A (AOI 2-1) – Excavation Completion report (ARCADIS, 2009c).

An evaluation of corrective measures was completed for AOI 2-2 as a part of this CMP. As described in the DOCC and RFI Report, Former UST Area B (AOI 2-2) consisted of a total of four USTs and three sumps. AOI 2-2 is located outdoors and is covered with concrete and gravel. The building adjacent to AOI 2-2 was demolished in the summer/fall of 2004. In addition, a portion of the concrete slab was removed.

Based on the discussion in Section 3, the soil conditions related to the former USTs and sumps in AOI 2-2 do not pose a significant risk under current and reasonably expected future land use. However, GM LLC believed that corrective measures were

appropriate for the fill material (bricks, concrete fragments, asphalt fragments, wood) identified in the basement of the former powerhouse of Plant 2. GM LLC worked with the property owner to place a deed restriction on the property to maintain the cover over the fill material (completed as an Interim Measure). This restriction meets the objective of limiting potential future exposure to the fill material. Based on the RFI results, the horizontal extent of fill material is adequately characterized, and encompasses an area of approximately 21,125 square feet (Drawing 4). It is noted that the extent and volume of material requiring cover would not vary even if criteria or endpoints would change. The extent and volume of material requiring cover are set by the limits of the walls of the former basement.

Summary of Alternatives

The following alternatives were evaluated to address the fill material in the basement of the former powerhouse adjacent to AOI 2-2:

Alternative 1: Engineering Controls – Install a cover above the fill material and supplement as necessary to limit direct contact and reduce the potential for erosion of fill material that would otherwise constitute surface material. This was completed as an Interim Measure.

Alternative 2: Institutional Controls – An existing deed restriction is in place to limit land use at the facility to commercial and industrial uses. An additional deed restriction is in place to maintain the cover located above the fill material and require the property owner to evaluate and implement appropriate measures should the overlying cover and/or the fill material be removed (Appendix A).

Alternative 3: Direct Excavation and Disposal – Excavation and off-site disposal of the fill material at a licensed facility was identified as a potentially feasible alternative. The fill material within the footprint of the former basement would be excavated, characterized and transported off-site for proper disposal, if this Alternative were selected.

5.2 On-Site Groundwater

The investigation of groundwater conditions during the RFI was conducted on an AOI-specific basis, as discussed in the DOCC. However, as discussed in Section 4 of the RFI Report (ARCADIS 2009), the RFI did not identify a specific AOI as a potential source of the cVOCs in or to the groundwater.

Analytical results from the groundwater samples presented in the 2009 CMP and the semi-annual data collected subsequent to the 2009 CMP indicate that five cVOCs (1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE and vinyl chloride) were detected at concentrations above MCLs near the Facility's upgradient boundary. Recent sampling in 2012 (discussed in Sections 3.10.1, 3.10.2, and 3.10.8) confirmed detections of three of these cVOCs (cis-1,2-DCE, TCE and vinyl chloride) above MCLs at the upgradient property boundary of Plant 2. These cVOCs were found to be in groundwater across the former Plant 2, with the highest concentrations located at two areas, both in the S2 groundwater unit. Analytical results from the groundwater samples indicate that 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE, carbon tetrachloride and vinyl chloride were detected at concentrations above the MCLs in the upper portion of the S2 saturated unit; and cis-1,2-DCE, TCE and vinyl chloride were detected at concentrations above the MCLs in the lower portion of the S2 saturated unit. These concentrations are bounded by downgradient locations with non-detects both in the upper and lower portions of the saturated units. Drawings 4.1.3, 4.1.4 and 4.1.5 of the RFI present isoconcentration contours for TCE, cis-1,2-DCE and vinyl chloride, respectively.

Based on all the data collected to date, there is no known site-related source of cVOCs in the soil at Plant 2. As discussed in Section 1.1, these data also indicate that the cVOC concentrations in groundwater at the former Plant 2 property are likely from a combination of both site-related and non-site-related sources. The groundwater impacts upgradient of the Facility are not believed to be site-related as there are no known or suspected site-related sources.

A human health risk assessment was conducted as part of the RFI to determine if there were potentially significant exposures to cVOCs in groundwater, assuming the existing groundwater use restrictions remain. As discussed in Section 4.1 above, the human health risk assessment was updated to incorporate updated toxicity information, new data, new guidance and recent agreements between GM and EPA (included as Appendix B of this CMP). The human health risk assessment determined that no potential significant exposures to groundwater exist under current and reasonably expected future land use at the Facility as long as the water is not used for potable purposes.

GM LLC evaluated corrective measures for groundwater in order to remain consistent with the underlying assumptions of the RFI human health risk assessment (i.e., restrict potable groundwater use). Therefore, these restrictions are identified as Corrective

Measure Alternatives. Groundwater corrective measure alternatives were identified and evaluated for groundwater as a whole, rather than on an AOI-specific basis.

Summary of Alternatives

The following alternatives were evaluated to address concentrations of VOCs in the groundwater on-site.

Alternative 1: Existing Institutional Control, Groundwater – An existing groundwater deed restriction is in place for the site to prohibit installation of water wells or any other devices to extract groundwater for any use except as provided in Exhibit C – Restrictions and Covenants Agreement, Paragraph 4 of the deed restriction in place after the sale of the facility from GMC to Clutch Operating Company. Additional restrictions were placed on the property after the sale to the Town of Speedway Redevelopment Commission (Appendix A). These institutional controls would be maintained as a Corrective Measure.

Alternative 2: Institutional Control, No Well Zone - At the Marion County Health Department's discretion, adoption of a no-well zone as an additional institutional control to prohibit installation of water wells or any other devices to extract groundwater for any use at former Plant 2 and in near-by off-site locations, would assist in minimizing the potential for exposure to or use of contaminated groundwater. The proposed boundary of the proposed no-well zone is presented in Drawing 3.

Alternative 3: Groundwater Monitoring – To verify trends in contaminant concentrations over time, groundwater monitoring may be considered appropriate. Groundwater monitoring would demonstrate that contaminant concentrations and distribution are stable or decreasing, verifying that no significant risk to human health is present.

Groundwater samples would be collected from certain monitoring wells annually for a period of two years. Up to three additional monitoring wells (one upgradient and two downgradient) are estimated to be installed in the lower portion of the S2 sand unit. An annual report would be submitted by the 15th of March of the following year and would provide an evaluation of the results from the previous year and provide recommendations for modifications to the monitoring program or the Corrective Measures, if warranted.

Alternative 4: Enhanced Reductive Dechlorination (ERD) – ERD was identified as a potentially feasible alternative. Under this option, a series of 258 injection wells would be installed within the 0.15 mg/L TCE isoconcentration contour around well PZ-0801-S2 and in an area extending from MW-0706-S2 to MW-2-2-S2 (0.2 mg/L vinyl chloride isoconcentration contour) to focus treatment in the areas of greatest mass.

A mobile system would be used to inject a carbon substrate such as molasses or whey into the S2 unit via the injection wells. The injection wells would be set at a depth of approximately 40 ft. The carbon substrate would be used as a food source by the indigenous microbial community, reducing the concentration of dissolved oxygen and creating strongly reducing conditions in the aquifer. These conditions promote the growth of microorganisms that biodegrade chlorinated alkenes. The process removes chlorine atoms sequentially from the alkene, with TCE being biodegraded to cis-1,2-dichloroethene, to vinyl chloride, and then to ethene. This alternative assumes that eight quarterly injection events would be conducted. Groundwater monitoring will be conducted during treatment and after treatment, for a period of 5 years. Because there is an off-site source of cVOCs migrating onto the former Plant 2 property and off the former Plant 2 property, the area remediated by this alternative may become re-contaminated.

Alternative 5: In-Situ Chemical Oxidation (ISCO) – ISCO was identified as a potentially feasible alternative. Under this option, a series of injection wells would be installed within the 0.15 mg/L TCE isoconcentration contour around well PZ-0801-S2 and in an area extending from MW-0706-S2 to MW-2-2-S2 (0.2 mg/L vinyl chloride isoconcentration contour) to focus treatment in the areas of greatest mass.

A mobile system would be used to inject a solution of an oxidant (i.e., sodium permanganate) into the S2 unit via the injection wells. The injection wells would be set at a depth of approximately 40 ft. The sodium permanganate would react chemically with the contaminants, oxidizing the contaminants into innocuous byproducts including carbon dioxide and water. This alternative assumes that four quarterly injection events would be conducted. Groundwater monitoring will be conducted during treatment and after treatment, for a period of 5 years. Because there is an off-site source of cVOCs migrating onto the former Plant 2 property and off the former Plant 2 property, the area remediated by this alternative may become re-contaminated.

5.3 Off-Site Groundwater (Downgradient)

The human health risk assessment and ecological risk evaluation documented in the RFI Report and updated in Appendix B and C concluded that corrective measures were not warranted to address current or potential future exposure of off-site receptors to potentially site-related constituents or cVOCs in the comingled plume. This conclusion was based on assumptions regarding current and potential future groundwater use in the downgradient off-site area south of former Plant 2. As discussed in Sections 3.10.1, 3.10.2, and 3.10.8, only a portion of the cVOC groundwater concentrations migrating off-site are considered site-related. At a minimum, an institutional control may be considered necessary to prohibit groundwater use downgradient of the Site, regardless of the source of the contamination.

Alternative 1: Institutional Control, Groundwater Use – A restriction prohibiting groundwater between the downgradient property boundary of Plant 2 and 10th Street from being used for any purpose. No wells can be installed for any purpose other than contaminant assessment or monitoring without prior IDEM and/or USEPA approval.

Alternative 2: Institutional Control, No Well Zone - At the Marion County Health Department's discretion, adoption of a no-well zone as an additional institutional control to prohibit installation of water wells or any other devices to extract groundwater for any use between the downgradient property boundary of Plant 2 and 10th Street, would minimize the potential for exposure to or use of contaminated groundwater. The proposed boundary of the proposed no-well zone is presented in Drawing 3.

Alternative 3: Permeable Reactive Barrier (PRB) – A PRB was identified as a potentially feasible alternative to control the site-related portion of the comingled plume migrating off-site from Former Plant 2. Under this option, a trench would be installed along the southern boundary of the former Plant 2 property from Main Street to approximately 100 feet past monitoring well MW-0702-S2. A zero valent iron (ZVI) PRB would create a strongly anaerobic condition in the groundwater and would trigger abiotic degradation reactions as the groundwater passes through. ZVI PRBs have a finite lifespan, therefore reinstallation across part, or all, of the PRB may be required at some time in the future depending on Site specific geochemistry and contaminant loading. Groundwater monitoring will be conducted for a period of 20 years. A ZVI PRB is not a source treatment and therefore would need to be in place until concentrations leaving the Site are below the remedial objective. However, because the cVOCs migrating off the Former Plant 2 include both a site-related and non-site-related contributions, the required timeframe for utilizing a ZVI PRB is unknown. An

estimate for one installation of the ZVI PRB is included in the cost estimate. If reinstallation of a part or all of the ZVI PRB is required, the costs would increase significantly.

Alternative 4: Groundwater Extraction – A groundwater extraction system would be installed along the south property line to provide hydraulic control downgradient of the TCE and VC in groundwater. A network of 13 extraction wells would be installed along a 1,100 foot line. It is assumed that groundwater would be extracted at a rate of 2 gallons per minute per well, treated through an air stripper, and discharged to a drainage ditch under a NPDES permit. Similar to the PRB Alternative, the Groundwater Extraction alternative would need to be in place until groundwater concentrations leaving the site are below the remedial objectives. Because the cVOCs migrating off the Former Plant 2 include both a site-related and non-site-related contributions, the required timeframe groundwater extraction is unknown. If groundwater extraction is required beyond 30 years, the costs may increase significantly.

6 Evaluation of Corrective Measures Alternatives

Per Section V.3.a of the Agreement, an evaluation of the Corrective Measures alternatives identified in Section 5 was performed for on-site soil and for groundwater at and downgradient of the Facility, where a portion of the contribution could be site-related. For on-site groundwater, site-related and non-site-related contributions to the cVOC concentrations in groundwater have comeled in the on-site cVOC plume, as discussed in Sections 3.10.1, 3.10.2, and 3.10.8. For off-site groundwater, downgradient of the Site, only a portion of the cVOCs in groundwater migrating off-site are considered site-related, as discussed in Sections 3.10.1, 3.10.2, and 3.10.8. A summary of the Corrective Measures alternatives is presented in Table 2. The evaluation of alternatives considered the degree to which each potential Corrective Measure alternative satisfies the nine criteria outlined in the USEPA document entitled "RCRA Corrective Action Plan" (OSWER 9902.3-2A, May 1994). The RCRA Corrective Action evaluation criteria and the results of the evaluation for each of the potential Corrective Measures alternatives are presented in Table 3a (soil corrective measure alternatives), and Table 3b (on-site groundwater corrective measure alternatives), Table 3c (off-site groundwater (downgradient) corrective measure alternatives) and summarized in Section 6.1.

The RFI risk assessment concluded that there is no significant risk at the Facility associated with contaminated soil or with contaminated groundwater based on current

and anticipated future use, if institutional controls were adopted to restrict the installation of drinking water wells at and in the vicinity of the former Plant 2 property. The evaluation of potential Corrective Measures for Plant 2 took this conclusion into consideration.

6.1 Criteria for Evaluation of Corrective Measures Technologies

The RCRA Corrective Action evaluation criteria and the results of the evaluation for each of the potential Corrective Measures alternatives are summarized below.

1. Overall Protection

The human health risk assessment completed during the RFI concluded that the groundwater and soil conditions do not present significant exposure risks under current and reasonably expected future land use at and around the Facility. However, GM LLC has evaluated Corrective Measures to reduce contact with fill material near AOI 2-2 and to make permanent, the assumptions made during the evaluation of the RFI.

Soil Corrective Measure Alternatives: Each of the Corrective Measures alternatives for soil were evaluated to assess the degree of protection the alternative provides for limiting potential future direct contact exposure to BN-impacted fill material. Each of the alternatives listed in Table 3a, including the 'no action' alternative, would be protective of human health and the environment; however, to help facilitate redevelopment of the property, GM LLC implemented an interim measure by placing cover over fill material in a former basement near AOI 2-2, therefore Corrective Measures were evaluated for the former basement area.

On-Site Groundwater Corrective Measure Alternatives: Each of the Corrective Measures alternatives for groundwater was evaluated to assess the degree of protection the alternatives provide to human health and the environment. Since there is no significant risk associated with contaminated groundwater based on current and anticipated future use, each of the alternatives listed in Table 3b, including the 'no action' alternative, would be protective of human health and the environment, if institutional controls were adopted to restrict the installation of drinking water wells at Former Plant 2 property. However, GM LLC believes it is prudent to evaluate groundwater concentration trends at and downgradient of the Plant 2 property.

Off-Site Groundwater (Downgradient) Corrective Measure Alternatives: Each of the control alternatives listed in Table 3c would be protective of human health and the environment. An institutional control to prohibit use of groundwater for any purpose would prohibit potential exposures via potable use of groundwater with concentrations above MCLs.

2. Attainment of Media Cleanup Standards

Soil Corrective Measure Alternatives: The endpoint for the soil Corrective Measures is limiting direct contact with the fill material in the former basement adjacent to AOI 2-2, as summarized on Table 4. Each of the Corrective Measures alternatives for soil was evaluated to assess whether the endpoints will be attained. Each of the alternatives listed in Table 3a, with the exception of the 'no action' alternative, would be capable of meeting the Corrective Measures endpoint.

On-Site Groundwater Corrective Measures Alternatives: The endpoint for the groundwater Corrective Measures is to confirm the groundwater contaminant concentrations are stable or decreasing over time, as summarized in Table 4. Each of the Corrective Measures alternatives for groundwater was evaluated to assess whether the endpoint will be attained. Each of the alternatives listed in Table 3b, with the exception of the 'no action' and institutional controls alternatives, would be capable of meeting the endpoint except that there is an off-site source of cVOCs resulting in cVOCs migrating on-site.

Off-Site Groundwater (Downgradient) Corrective Measure Alternatives: The endpoint for the off-site controls is to eliminate exposure to impacted groundwater, as summarized on Table 4. Each of the alternatives listed in Table 3c would be capable of meeting the endpoints except that there is an off-site source of cVOCs resulting in cVOCs migrating on-site that may re-contaminate the area.

3. Controlling the Sources of Releases

Soil Corrective Measure Alternatives: Each of the Corrective Measures alternatives for soil was evaluated to assess the degree to which source control will be attained. Each of the alternatives listed in Table 3a, with the exception of the 'no action' alternative, would be capable of providing some control of source releases of BNs.

On-Site Groundwater Corrective Measure Alternatives: Each of the Corrective Measures alternatives for groundwater was evaluated to assess the degree to which source control will be attained. As listed in Table 3b, use of ERD and ISCO would be capable of providing some control near the apparent source of TCE; however, these technologies will not address an upgradient source migrating on-site.

Off-Site Groundwater (Downgradient) Corrective Measure Alternatives: Each of the Corrective Measures alternatives for off-site controls was evaluated to assess the degree to which source control will be attained. Of the alternatives listed in Table 3c, only the prohibition of groundwater use would result in controlling the exposure to releases by eliminating the potential induced migration of impacted groundwater through groundwater pumping.

4. Compliance with Applicable Standards for Waste Management

Soil Corrective Measure Alternatives: Each of the Corrective Measures alternatives for soil was evaluated to assess compliance with waste management standards. Each of the alternatives listed in Table 3a, with the exception of the 'no action' alternative, would result in the generation of some waste. For all of the alternatives where waste would be generated, procedures will be adopted to verify management of waste in accordance with applicable standards.

On-Site Groundwater Corrective Measure Alternatives: Each of the Corrective Measures alternatives for groundwater was evaluated to assess compliance with waste management standards. Each of the alternatives listed in Table 3b, with the exception of the 'no action' and institutional control alternatives, would result in the generation of some waste. For all of the alternatives where waste would be generated, procedures will be adopted to verify management of waste in accordance with applicable standards.

Off-Site Groundwater (Downgradient) Corrective Measure Alternatives: Each of the Corrective Measures alternatives for off-site controls was evaluated to assess compliance with waste management standards. Each of the alternatives listed in Table 3c, with the exception of the 'no action' and institutional control alternatives would result in the generation of some waste. For all of the alternatives where waste would be generated, procedures will be

adopted to verify management of waste in accordance with applicable standards.

5. Long Term Reliability and Effectiveness

Soil Corrective Measure Alternatives: Each of the Corrective Measures alternatives for soil was evaluated to assess long term reliability and effectiveness. Each of the alternatives listed in Table 3a, with the exception of the 'no action' alternative, would provide long term reliability and effectiveness.

On-Site Groundwater Corrective Measure Alternatives: Each of the Corrective Measures alternatives for groundwater was evaluated to assess long term reliability and effectiveness. Each of the alternatives listed in Table 3b, with the exception of the 'no action' alternative, would provide long-term reliability and effectiveness, if there was not an off-site source migrating on-site.

Off-Site Groundwater (Downgradient) Corrective Measure Alternatives: Each of the Corrective Measures alternatives for off-site controls was evaluated to assess long term reliability and effectiveness. Each of the alternatives listed in Table 3c would provide long term reliability and effectiveness, if there was not an off-site source migrating from upgradient of the Site.

6. Reduction of Toxicity, Mobility or Volumes of Wastes

Soil Corrective Measure Alternatives: Each of the Corrective Measures alternatives for soil was evaluated to assess ability to reduce toxicity, mobility or volume of waste. As indicated in Table 3a, the 'no action', 'engineering controls' and 'institutional controls' alternatives would not provide a reduction in the toxicity, mobility or volume of waste. The soil excavation alternative would remove contaminants from the site and transfer them to a licensed landfill.

On-Site Groundwater Corrective Measure Alternatives: Each of the Corrective Measures alternatives for groundwater was evaluated to assess ability to reduce toxicity, mobility or volume of waste. As indicated in Table 3b, the 'no action' and institutional controls alternatives would not provide a reduction in the toxicity, mobility or volume of waste. The remaining alternatives would provide varying reductions in the toxicity, volume, and/or mobility of waste.

Off-Site Groundwater (Downgradient) Corrective Measure Alternatives: Each of the Corrective Measures alternatives for off-site controls was evaluated to assess ability to reduce toxicity, mobility or volume of waste. None of the alternatives listed in Table 3c would provide a reduction in the toxicity, mobility or volume of waste.

7. Short-Term Effectiveness

Soil Corrective Measure Alternatives: Each of the Corrective Measures alternatives for soil was evaluated to assess short term effectiveness. Each of the alternatives listed in Table 3a, with the exception of the 'no action' alternative, would provide short term effectiveness.

On-Site Groundwater Corrective Measure Alternatives: Each of the Corrective Measures alternatives for groundwater was evaluated to assess short term effectiveness. As indicated in Table 3b, the 'no action' alternative would not provide short term effectiveness. The groundwater monitoring alternative would provide limited effectiveness in the short term, but would be enhanced with a concurrent use of institutional controls. The ERD and ISCO alternatives would be effective in a short term timeframe, except there is an off-site upgradient source of cVOCs, which could recontaminate the Site and reduces the likelihood that remediation could be completed in a short timeframe.

Off-Site Groundwater (Downgradient) Corrective Measure Alternatives: Each of the Corrective Measures alternatives for off-site controls were evaluated to assess short-term effectiveness. Each of the alternatives listed in Table 3c would provide short term effectiveness.

8. Implementation

Soil Corrective Measure Alternatives: Each of the Corrective Measures alternatives for soil was evaluated to assess practicality of implementation. Each of the alternatives listed in Table 3a can be practically implemented.

On-Site Groundwater Corrective Measure Alternatives: Each of the Corrective Measures alternatives for groundwater was evaluated to assess practicality of implementation. Each of the alternatives listed in Table 3b can be practically implemented.

Off-Site Groundwater (Downgradient) Corrective Measure Alternatives: Each of the Corrective Measures alternatives for off-site controls was evaluated to assess practicality of implementation. Each of the alternatives listed in Table 3c can be practically implemented. Establishing a no-well zone requires MCHD to act.

9. Cost

Soil Corrective Measure Alternatives: Each of the Corrective Measures alternatives for soil was evaluated for cost. A summary of the costs for each alternative is presented in Table 5a. A detailed breakdown of the costs is presented in Appendix D. As indicated in Table 3a, the costs associated with the 'no action' and institutional controls alternatives have relatively low cost for implementation. Construction of an engineering barrier would have a low to moderate implementation cost, depending on the size of the area requiring a cap. The excavation alternative would have a moderate to high cost of implementation, depending on the volume of soil excavated for disposal.

On-Site Groundwater Corrective Measure Alternatives: Each of the Corrective Measures alternatives for groundwater was evaluated for cost. A summary of the costs for each alternative is presented in Table 5b. A detailed breakdown of the costs is presented in Appendix D. As indicated in Table 3b, the 'no action' alternative would have a low implementation cost, and the monitoring alternative would have a low to moderate cost for implementation. The ERD and ISCO alternatives would have moderate implementation costs; however, it is possible that periodic reapplication of the technology would be required in the future to address cVOCs migrating on-site, thus increasing costs.

Off-Site Groundwater (Downgradient) Corrective Measure Alternatives: Each of the Corrective Measures alternatives for off-site controls was evaluated for cost. A summary of the costs for each alternative is presented in Table 5c. A detailed breakdown of the costs is presented in Appendix D. As indicated in Table 3c, 'no action' and institutional controls have relatively minor costs. The PRB and groundwater extraction alternatives would have moderate to high implementation costs and without control of the upgradient source, costs may increase.

7 Proposed Corrective Measures

Tables 3a, 3b and 3c present the Corrective Measures alternatives evaluated as part of RCRA Corrective Action. The proposed Final Corrective Measures for the Facility are summarized below and listed on Table 4. Per Section V.3.a of the Agreement, corrective measures are only necessary to remediate site-related releases.

7.1 Soil Corrective Measures

Engineering Controls will limit the potential for direct contact with the fill material and associated soil located in the former basement area adjacent to AOI 2-2.

Institutional Controls provide a mechanism to verify the integrity of the engineering control is maintained. The existing Environmental Restrictive Covenant requires the owner to maintain the cover over the fill material located near AOI 2-2, manage soils excavated from the property, evaluate vapor intrusion and mitigate, as necessary, for existing and new buildings and comply with existing deed restrictions.

Completed Excavation of AOI 2-1 eliminates the historical mercury impacts identified at AOI 2-1 and was completed as an Interim Measure.

7.2 On-Site Groundwater

Existing Deed Restriction – On-Site Groundwater Use will prohibit use of groundwater on the property.

On-Site No-Well Zone will restrict the installation of water wells that may bring contaminated groundwater to the surface or increase the migration of the upgradient cVOC plume toward an extraction well. This control requires implementation by the Marion County Health Department.

Groundwater Monitoring will confirm the groundwater contaminant concentrations in the upper and lower portions of the S2 saturated sand and gravel unit are stable or decreasing over time at and downgradient of the Site.

7.3 Off-Site Groundwater (Downgradient)

Environmental Restrictive Covenant will prohibit use of groundwater on the downgradient properties.

Off-Site No-Well Zone will restrict the installation of water wells that may bring contaminated groundwater to the surface or increase the migration of the upgradient cVOC plume toward an extraction well. This control requires implementation by the Marion County Health Department.

Based on information currently available, these proposed Final Corrective Measures provide the best balance of the alternatives evaluated with respect to the evaluation criteria. The proposed Final Corrective Measures, the corrective measures endpoints, and information on how the confirmation of those endpoints will be achieved are presented in Table 4. Because continued migration of impacted groundwater from an upgradient source would limit the effectiveness of the treatment alternatives in the long-term, active groundwater treatment was not selected to address the site-related portion of cVOCs in groundwater. A work plan will be prepared and submitted to USEPA for implementation of the proposed groundwater monitoring program.

The groundwater monitoring program proposal will include annual groundwater monitoring for a period of two years and submittal of an annual status report to USEPA. The report will provide a summary of the monitoring data and any potential recommendations regarding changes to the monitoring program or Corrective Measures, as warranted. In the event that the selected Corrective Measures do not meet the target objectives, the Corrective Measures will be re-evaluated and a targeted, supplemental Corrective Measures Proposal will be submitted to USEPA.

8 Schedule

A Groundwater Monitoring Plan will be submitted within 90 days after USEPA issues its Final Decision and if not filed by the time the USEPA issues its Final Decision, the groundwater use restriction for the adjacent off-site properties will be filed within thirty days of agreement to the restriction by the property owner(s). With respect to the No-Well Zone, within thirty days after USEPA issues its Final Decision GM LLC will submit a request to MCHD requesting that a No-Well Zone be established. All other components of the proposed final Corrective Measures have been implemented. Final Corrective Action Complete with Controls Report will be submitted within 90 days after all Corrective Measures have been implemented.

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Table 1. Areas of Interest, Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

AOI	Name	Description
2-1	Former UST Area A	Former gasoline, lab fuels and solvent USTs
2-2	Former UST Area B	Former Waste oil, alcohol and solvent USTs
2-3	Former UST Area C	Former gasoline and aviation fuel USTs
		Hot Well
		Metal Chips Hopper
2-4	Former UST Area D	Former Gasoline & Aviation Fuels
2-5	Former UST Area E	Former Gasoline UST
2-6	Piston Coolant Trenches and Building	Trenches
		Henry System Building
2-7	Former Degreaser Area	
2-8	Former Tin Plating Area	Tin Plating Area
2-9	Process Waste Sump	
2-10	Former UST Area 5	Former Gasoline UST

Table 2. Overview of Corrective Measures Alternatives for Soil and Groundwater, Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

AOI	Name & Description	Physical Location	Potentially Significant Exposures	Constituent(s) Considered for Corrective Measures	Description of Interim Measures	Potential Corrective Measures	Proposed Corrective Measure
Existing Controls							
1. Groundwater use at the facility is restricted through a deed restriction filed with Marion County (August 14, 2007) to prohibit potable uses and restrict non-potable uses to only those that existed at the time of the property sale (documented in Groundwater Use as of August 2007, ARCADIS, November 2008). 2. The property may only be used for industrial and commercial uses as identified in a deed restriction filed with Marion County (August 14, 2007). 3. Reliance on existing on-Site Environmental Restrictive Covenant which are described in Section 3.1.1 and provided in their entirety in Appendix A of the CMP and summarized below: a. Owner shall not occupy any building without demonstrating the absence of vapor intrusion or shall install, operate and maintain a vapor mitigation system for existing and new buildings that will be human-occupied. b. Owner shall not use the property for agricultural use c. Owner shall restore and/or manage soils excavated from the property such that the remaining contaminant concentrations do not present a threat to human health or the environment d. Owner shall not excavate the material near AOI 2-2 unless following the Soil Management Plan e. Owner shall maintain the cover over the fill material located near AOI 2-2 f. Owner shall prohibit activities that will interfere with the groundwater monitoring/well network g. Owner shall grant access to USEPA, General Motors LLC and designated representatives to complete Corrective Action activities h. Owner shall comply with the Existing Restrictions.							
Soil							
AOI 2-1	Former UST Area A - Contained 16 former USTs and two former sumps	Central portion of Plant 2	Industrial Direct Contact of historical mercury sample	Mercury	Excavation (already completed) to support re-development - not required as part of Final Corrective Measures	Interim Measure adopted as final Corrective Measure	Interim Measure adopted as final Corrective Measure
AOI 2-2	Former UST Area B - Contained four USTs and three sumps	Southern portion of Plant 2	Industrial Direct Contact of BNs in fill material	PAHs	Installation of engineering control (crushed rock cover over former powerhouse basement) and implementation of institutional controls (ERC, see above)	1. Engineering control (already implemented) 2. Institutional control (already implemented) 3. Soil excavation	1. Engineering control (already implemented) 2. Institutional control (already implemented)
On-Site Groundwater¹							
NA	On-Site Groundwater	Entire Plant 2 Property	NA - Mass Reduction	CVOCs	Institutional Controls (deed restriction and ERC, see above)	1. Institutional Controls (deed restriction and ERC, already implemented) 2. Institutional Controls (No Well Zone) 3. Groundwater monitoring 4. Enhanced reductive dechlorination (ERD) 5. In situ chemical oxidation (ISCO)	1. Institutional Controls (deed restriction and ERC, already implemented) 2. Institutional Controls (No Well Zone) 3. Groundwater monitoring
Off-Site Groundwater (Downgradient)¹							
NA	Off-Site Groundwater (Downgradient)	Downgradient of Plant 2 Property	Ingestion of groundwater if water supply wells are installed in affected saturated unit	CVOCs	None	1. Institutional Controls (ERC - groundwater use) 2. Institutional Controls (No Well Zone) 3. Permeable Reactive Barrier (PRB) 4. Groundwater Extraction	1. Institutional Controls (ERC - groundwater use) 2. Institutional Controls (No Well Zone)

1 - Per Section V.3.a of the Agreement, corrective measures are only necessary to remediate site-related releases.

Table 3a. Evaluation of Soil Corrective Measure Alternatives, Corrective Measures Proposal, Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

Evaluation Criteria	Corrective Measures Alternatives - AOI 2-2			
	No Action	Engineering Controls- Soil Cover	Institutional Controls - Cover Management	Soil Excavation
<i>Protect Human Health and the Environment</i>	Not effective protecting human health and the environment.	Effective protecting human health and the environment by establishing a cover over the soil. Limits potential for direct contact and encountering fill material during construction.	Effective protecting human health and the environment by establishing means and methods for maintaining engineering controls.	Effective protecting human health and the environment by eliminating the source.
<i>Attain Media Cleanup Standards (Corrective Measures End Points) Set by the Implementing Agency</i>	Will not meet corrective measures end points.	Will not reduce contaminant concentrations or volume of fill material, but can attain some corrective measures end points associated with limiting exposure.	Will not reduce contaminant concentrations or volume of fill material, but can attain some corrective measures end points associated with limiting exposure.	Can reduce contaminant concentrations to meet corrective measures end points (i.e., cumulative risk limits).
<i>Control the Sources of Releases</i>	Does not control the sources of releases.	Controls the sources of releases by limiting exposure to receptors.	Controls the sources of releases by limiting exposure to receptors and reducing infiltration through the impacted soil and subsequent leaching to groundwater.	Controls the sources of releases by removing contaminants from the soil.
<i>Comply with Any Applicable Standards for Management of Waste</i>	No waste would be generated from this corrective measure.	Waste derived from construction of cover would be managed in accordance with applicable standards.	Waste derived from maintenance of cover would be managed in accordance with applicable standards.	Waste removed during excavation would be managed in accordance with applicable standards.
<i>Long-Term Reliability and Effectiveness</i>	Not reliable or effective in the long term.	Reliable and effective in the long term by limiting contact with contaminants.	Increases the reliability of the cover system by establishing means and methods for maintaining engineering controls.	Reliable and effective in the long term as contaminants are removed from site.
<i>Reduction in the Toxicity, Mobility and Volume of Wastes</i>	Does not reduce toxicity, mobility, or volume of contaminants.	Does not reduce toxicity, mobility, or volume of contaminants.	Does not reduce toxicity, mobility, or volume of contaminants.	Does not reduce toxicity or mobility of contaminants; however, removes contaminants from site and places them into a controlled and monitored landfill.
<i>Short-Term Effectiveness</i>	Not effective in the short term.	A crushed rock cover is already in place.	Cover management is already incorporated into the ERC.	Effectiveness achieved in a short-term time frame.

Table 3a. Evaluation of Soil Corrective Measure Alternatives, Corrective Measures Proposal, Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

	Corrective Measures Alternatives - AOI 2-2			
Evaluation Criteria	No Action	Engineering Controls- Soil Cover	Institutional Controls - Cover Management	Soil Excavation
<i>Implementability</i>	No action is easily implemented.	A crushed rock cover is already in place.	Cover management is already incorporated into the ERC. Property owner is responsible to maintain cover in accordance with ERC.	Soil excavation is easily implemented in the short term.
<i>Cost</i>	Low costs for implementation.	A crushed rock cover is already in place.	An ERC is already in place.	Moderate to high cost for implementation, depending on volume excavated. No operation and maintenance costs.
<i>Sustainability</i>	No energy and water requirements, air emissions, additional impacts to land, material consumption, and waste generation.	As a crushed rock cover is already in place, no energy or water requirements, air emissions, additional impacts to land, material consumption, and waste generation.	Limited energy use, material consumption and waste generation during maintenance activities. No water requirements, air emissions, or additional impacts to land.	Large amount of energy required to power excavation equipment over a two-month period. Significant air emissions are generated from the continuous use of heavy machinery. A large amount of soil waste generated will be disposed of in a landfill. Energy use and air emissions associated with transporting large amount of clean soil and equally large amount of impacted soil a long distance.
Conclusion	This alternative was not included in the final corrective measures because it does not achieve the first threshold criterion.	Completed as an interim measure and included as a final corrective measure.	Completed as an interim measure and included as a final corrective measure.	This technology was not included in the final corrective measures since more appropriate and cost-effective options are available which were implemented during the property transfer.

Notes:

ERC - Environmental Restrictive Covenant recorded with the Marion County Recorders office on March 9, 2011.

Table 3b. Evaluation of On-Site Groundwater Corrective Measure Alternatives¹, Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

Evaluation Criteria	Corrective Measures					
	No Action	Institutional Control (Deed Restriction/ERC)	Institutional Control (No Well Zone)	Groundwater Monitoring	Enhanced Reductive Dechlorination	In Situ Chemical Oxidation
<i>Protect Human Health and the Environment</i>	Not effective protecting human health and the environment.	Effective protecting human health and the environment by prohibiting potable and non-potable uses.	Effective protecting human health and the environment by prohibiting potable and non-potable uses.	Effective protecting human health and the environment, as contaminant concentration changes are monitored.	Effective protecting human health and the environment by decreasing CVOC concentrations.	Effective protecting human health and the environment by decreasing CVOC concentrations.
<i>Attain Media Cleanup Standards Set by the Implementing Agency</i>	Will not meet remediation endpoints.	Will not reduce CVOC concentrations, but will attain corrective measures end points associated with limiting exposure.	Will not reduce CVOC concentrations, but will attain corrective measures end points associated with limiting exposure.	Will not reduce CVOC concentrations, but will be used to confirm reductions are occurring.	Can reduce CVOC concentrations to meet remediation endpoints.	Can reduce CVOC concentrations to meet remediation endpoints.
<i>Control the Sources of Releases</i>	Does not control the sources of releases.	Controls the sources of the releases by eliminating potential induced migration associated with groundwater pumping.	Controls the sources of the releases by eliminating potential induced migration associated with groundwater pumping.	Does not control the sources of releases.	Controls the sources of releases by treating sorbed-phase and dissolved phase CVOCs.	Controls the sources of releases by treating sorbed-phase and dissolved phase CVOCs.
<i>Comply with Any Applicable Standards for Management of Waste</i>	No waste would be generated from this corrective measure.	Does not produce waste requiring management.	Does not produce waste requiring management.	Waste derived from groundwater sample collection would be managed in accordance with applicable standards.	Waste derived from injection well installations would be managed in accordance with applicable standards.	Waste derived from injection well installations would be managed in accordance with applicable standards.
<i>Long-Term Reliability and Effectiveness</i>	Not reliable or effective in the long term.	Reliable and effective in the long term by prohibiting potable and non-potable uses of groundwater.	Reliable and effective in the long term by prohibiting potable and non-potable uses of groundwater.	Reliable and effective in the long term as contaminant concentrations are monitored.	Reliable and effective in the long term as CVOCs are removed from site.	Reliable and effective in the long term as CVOCs are removed from site.
<i>Reduction in the Toxicity, Mobility and Volume of Wastes</i>	Does not reduce toxicity, mobility, or volume of contaminants.	Does not reduce toxicity, mobility, or volume of COCs.	Does not reduce toxicity, mobility, or volume of COCs.	Does not reduce toxicity, mobility, or volume of contaminants, but will be used to confirm reductions are occurring.	Decreases the volume of CVOCs. Decreases the toxicity and mobility of CVOCs in the areas treated.	Decreases the volume of CVOCs. Decreases the toxicity and mobility of CVOCs in the areas treated.
<i>Short-Term Effectiveness</i>	Not effective in the short term.	Effectiveness achieved in a short-term time frame. Already established.	Effectiveness achieved in a short-term time frame.	Limited effectiveness in the short term. However, when implemented with risk management strategies such as institutional controls, this option is effective in the short term.	Effectiveness achieved in a short-term time frame.	Effectiveness achieved in a short-term time frame.

Table 3b. Evaluation of On-Site Groundwater Corrective Measure Alternatives¹, Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

Evaluation Criteria	Corrective Measures					
	No Action	Institutional Control (Deed Restriction/ERC)	Institutional Control (No Well Zone)	Groundwater Monitoring	Enhanced Reductive Dechlorination	In Situ Chemical Oxidation
<i>Implementability</i>	No action is easily implemented.	A groundwater deed restriction and Environmental Restrictive Covenant are already in place.	A no-well zone is easily implemented in the short term with Marion County Health Department's action.	Monitoring is easily implemented	The treatment areas on-site are readily accessible. However, process can produce methane and vinyl chloride, which may be difficult to control	The treatment areas on-site are readily accessible.
<i>Cost</i>	Low costs for implementation.	A groundwater deed restriction and Environmental Restrictive Covenant are already in place.	Low costs for implementation.	Low to moderate costs to complete periodic monitoring, data evaluation, and reporting. Maintenance costs would be low for monitoring well repairs, as required.	Moderate capital cost, and moderate operation costs during treatment phase. Continued post-remediation monitoring would be needed to confirm control of methane and vinyl chloride.	Moderate capital costs and no operation and maintenance costs.
<i>Sustainability</i>	No energy and water requirements, air emissions, additional impacts to land, material consumption, or waste generation.	No energy and water requirements, air emissions, additional impacts to land, material consumption or waste generation.	No energy and water requirements, air emissions, additional impacts to land, material consumption or waste generation.	Limited energy requirements for sample collection, shipping and testing. Limited water usage for equipment decontamination. No air emissions or additional impacts to land. Limited material consumption and waste generation.	High amount of energy for installation of 46 injection wells. Moderate amount of water and materials consumed for injection process. Low impact of land/ecosystem due to short-term system operation. Low impacts on air emissions due to methane production from remediation process	High amount of energy for installation of 46 injection wells. Moderate amount of water and materials consumed for injection process. Low impact of land/ecosystem due to short-term system operation.
Conclusion	This alternative was not included in the final corrective measures because it does not achieve the first threshold criterion.	Already in place, and included in proposed final corrective measures.	Included in proposed final corrective measures as additional layer to prohibit potable and non-potable uses of groundwater. Subject to Marion County Health Department implementation.	This technology was selected for the final corrective measure for groundwater.	This technology was not included in the final corrective measures since more appropriate and cost-effective options are available and in place.	This technology was not included in the final corrective measures since more appropriate and cost-effective options are available and in place.

1 - Per Section V.3.a of the Agreement, corrective measures are only necessary to remediate site-related releases.

Table 3c. Evaluation of Off-Site Groundwater (Downgradient) Corrective Measures Alternatives¹, Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

Evaluation Criteria	Corrective Measures Alternatives				
	No Action	Institutional Control (Deed Restriction/ERC)	Institutional Control (No Well Zone)	Permeable Reactive Barrier	Groundwater Extraction
<i>Protect Human Health and the Environment</i>	Not effective protecting human health and the environment.	Effective protecting human health and the environment by prohibiting potable and non-potable uses.	Effective protecting human health and the environment by prohibiting potable and non-potable uses.	Effective protecting human health and the environment by limiting migration of CVOCs above the MCLs beyond the barrier.	Effective protecting human health and the environment by limiting migration of CVOCs above the MCLs beyond the extraction wall.
<i>Attain Media Cleanup Standards (Corrective Measures End Points) Set by the Implementing Agency</i>	Will not meet corrective measures end points.	Will not reduce CVOC concentrations, but will attain corrective measures end points associated with limiting exposure.	Will not reduce CVOC concentrations, but will attain corrective measures end points associated with limiting exposure.	Can reduce CVOC concentrations to meet remediation endpoints.	Will not reduce CVOC concentrations in the groundwater, but will remove groundwater with CVOC concentrations and treat prior to discharging.
<i>Control the Sources of Releases</i>	Does not control the sources of releases.	Controls the sources of the releases by eliminating potential induced migration associated with groundwater pumping.	Controls the sources of the releases by eliminating potential induced migration associated with groundwater pumping.	Does not control the sources of releases.	Does not control the sources of releases.
<i>Comply with Any Applicable Standards for Management of Waste</i>	No waste would be generated from this corrective measure.	Does not produce waste requiring management.	Does not produce waste requiring management.	Waste removed during wall installation would be managed in accordance with applicable standards.	Waste derived from construction of extraction wells and installation of piping would be managed in accordance with applicable standards.
<i>Long-Term Reliability and Effectiveness</i>	Not reliable or effective in the long term.	Reliable and effective in the long term by prohibiting potable and non-potable uses of groundwater.	Reliable and effective in the long term by prohibiting potable and non-potable uses of groundwater.	May not be reliable or effective in the long term due to off-site source. PRB has finite lifespan and may need to be reinstalled.	May not be reliable or effective in the long term due to unknown off-site source.
<i>Reduction in the Toxicity, Mobility and Volume of Wastes</i>	Does not reduce toxicity, mobility, or volume of contaminants of concern (COCs)	Does not reduce toxicity, mobility, or volume of COCs.	Does not reduce toxicity, mobility, or volume of COCs.	Decreases the volume of CVOCs. Does not reduce toxicity or mobility of CVOCs.	Does not reduce toxicity of CVOCs. Can limit mobility and volume of CVOCs
<i>Short-Term Effectiveness</i>	Not effective in the short term.	Effectiveness achieved in a short-term time frame.	Effectiveness achieved in a short-term time frame.	Establishment of 'clean' barrier achieved in a short-term time frame. However, replacement of the wall may be necessary to maintain barrier due to off-site source.	Establishment of hydraulic control achieved in a short-term time frame. However, continued operation is necessary may be necessary to maintain hydraulic control due to off-site source.
<i>Implementability</i>	No action is easily implemented.	Easily implemented with approval of property owner.	A no-well zone is easily implemented in the short term.	The PRB would be placed along the downgradient boundary of the property, which consists of open land, and so it would be easily implemented.	Groundwater extraction is a well-understood technology that can be easily implemented. However, effluent discharge would require permitting and final timeframe is not known.

Table 3c. Evaluation of Off-Site Groundwater (Downgradient) Corrective Measures Alternatives¹, Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

Evaluation Criteria	Corrective Measures Alternatives				
	No Action	Institutional Control (Deed Restriction/ERC)	Institutional Control (No Well Zone)	Permeable Reactive Barrier	Groundwater Extraction
Cost	Low costs for implementation.	Low costs for implementation.	Low costs for implementation.	High costs for implementation and long term maintenance due to off-site source. PRB has finite lifespan and may need to be reinstalled.	Moderate cost for initial implementation. High long-term costs due to need for continued operation until CVOC concentrations decrease to levels that can be managed through natural attenuation.
Sustainability	No energy and water requirements, air emissions, additional impacts to land, material consumption and waste generation.	No energy and water requirements, air emissions, additional impacts to land, material consumption or waste generation.	No energy and water requirements, air emissions, additional impacts to land, material consumption or waste generation.	High amount of energy and materials consumed for system installation. Moderate amount of waste generated from barrier wall installation. Large amount of water extracted from aquifer during excavation process.	High amount of energy and materials consumed for system operation over 30 yrs. Minimal water required for well installation but large amount of water extracted from aquifer.
Conclusion	This alternative was not included in the final corrective measures because it does not achieve the first threshold criterion.	Included in proposed final corrective measures.	Included in proposed final corrective measures to prohibit potable and non-potable uses of groundwater. Subject to Marion County Health Department implementation.	Not included because unpredictable timeframe and thereby inaccurate costs due to offsite source area.	Not included because unpredictable timeframe and thereby inaccurate costs due to offsite source area.

1 - Per Section V.3.a of the Agreement, corrective measures are only necessary to remediate site-related releases.

Table 4. Proposed Corrective Measures Endpoints Summary, Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

Area	Media Requiring Corrective Measures	Proposed Corrective Measures	Corrective Measures End Point	Confirmation of Corrective Measures End Point
Existing Controls				
<p>1. Groundwater use at the facility is restricted through a deed restriction filed with Marion County (August 14, 2007) to prohibit potable uses and restrict non-potable uses to only those that existed at the time of the property sale (documented in Groundwater Use as of August 2007, ARCADIS, November 2008).</p> <p>2. The property may only be used for industrial and commercial uses as identified in a deed restriction filed with Marion County (August 14, 2007).</p> <p>3. Reliance on existing on-Site Environmental Restrictive Covenant which are described in Section 3.1.1 and provided in their entirety in Appendix A of the CMP and summarized below:</p> <ul style="list-style-type: none"> a. Owner shall not occupy any building without demonstrating the absence of vapor intrusion or shall install, operate and maintain a vapor mitigation system for existing and new buildings that will be human-occupied. b. Owner shall not use the property for agricultural use c. Owner shall restore and/or manage soils excavated from the property such that the remaining contaminant concentrations do not present a threat to human health or the environment d. Owner shall not excavate the material near AOI 2-2 unless following the Soil Management Plan e. Owner shall maintain the cover over the fill material located near AOI 2-2 f. Owner shall prohibit activities that will interfere with the groundwater monitoring/well network g. Owner shall grant access to USEPA, General Motors LLC and designated representatives to complete Corrective Action activities h. Owner shall comply with the Existing Restrictions. 				
Soil				
AOI 2-1	Soil	Interim Measure (soil excavation and off-site disposal) adopted as final Corrective Measure	The excavation was bounded in three directions by sample locations where mercury was not detected and the northern boundary was the southern limit of the previous UST excavation which was backfilled with clean material.	Documented in the Former UST Area A (AOI 2-1) – Excavation Completion report
AOI 2-2	Soil	Maintenance of existing cover over identified demolition debris. Institutional control, consisting of deed restriction requiring management/maintenance of cover located above the demolition debris.	Deed restriction recorded with Marion County	Included in Environmental Restrictive Covenant recorded with the Marion County Recorders office on March 9, 2011.

Table 4. Proposed Corrective Measures Endpoints Summary, Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

Area	Media Requiring Corrective Measures	Proposed Corrective Measures	Corrective Measures End Point	Confirmation of Corrective Measures End Point
On-Site Groundwater¹				
On-Site Groundwater	Groundwater	Institutional Controls (deed restriction and ERC, see above)	Deed restriction and ERC recorded with Marion County	Deed restriction filed with Marion County (August 14, 2007). Environmental Restrictive Covenant recorded with the Marion County Recorders office on March 9, 2011.
		Institutional Control (No Well Zone) (can only be implemented by Marion County Health Department)	Establishment of No Well Zone by Marion County Health Department	Revised figure from Marion County Health Department showing No Well Zone Boundary received by USEPA.
		Groundwater monitoring	Confirm lateral extent of groundwater plume is not expanding and that concentrations are stable or decreasing	Use of a monitoring program to collect data for evaluating trends in groundwater quality. Data from the facility-wide monitoring program would be used to verify stable/decreasing trends.
Off-Site Groundwater (Downgradient)¹				
Off-Site Groundwater (Downgradient)	Groundwater	Institutional Controls (ERC, groundwater use)	ERC recorded with Marion County	Copy of recorded deed restriction received by USEPA
		Institutional Control (No Well Zone) (can only be implemented by Marion County Health Department)	Establishment of No Well Zone by Marion County Health Department	Copy of revised figure from Marion County Health Department showing No Well Zone Boundary received by USEPA.

1 - Per Section V.3.a of the Agreement, corrective measures are only necessary to remediate site-related releases.

Table 5a. Summary of Costs, Soil Corrective Measure Alternatives (AOI 2-2), Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

Remedial Alternative	Remediation Design and Contracting	Construction/ Implementation	Operation and Maintenance - Annual	Duration of Operation and Maintenance (years)	Design and Construction (i.e., no O&M Cost)	Operation and Maintenance	Order of Magnitude Total Cost
No Action	\$0	\$0	\$0	0	\$0	\$0	\$0
Engineering Control - Cover (already implemented)	\$1,400	\$10,000	\$1,000	30	\$11,400	\$30,000	\$41,400
Institutional Control - Cover (already implemented)	\$0	\$0	\$0	30	\$0	\$0	\$0
Soil Excavation	\$38,000	\$2,934,000	\$0	0	\$2,972,000	\$0	\$2,972,000

Notes:

Costs for Engineering Control reflects the amount spent to design and construct crushed rock cover (already installed)

Table 5b. Summary of Costs, On-Site Groundwater Corrective Measure Alternatives¹, Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

Remedial Alternative	Remediation Design and Contracting	Construction/ Implementation	Operation and Maintenance - Annual	Duration of Operation and Maintenance (years)	Design and Construction (i.e., no O&M Cost)	Operation and Maintenance	Order of Magnitude Total Cost
No Action	\$0	\$0	\$0	0	\$0	\$0	\$0
Institutional Control - Deed Restriction and ERC (already implemented)	\$0	\$0	\$0	30	\$0	\$0	\$0
Institutional Control - No-Well Zone*	\$0	\$0	\$0	30	\$0	\$0	\$0
Groundwater Monitoring	\$14,000	\$84,010	\$0	0	\$98,010	\$0	\$98,010
Enhanced Reductive Dechlorination	\$209,900	\$3,029,970	\$24,500	5	\$3,239,870	\$122,500	\$3,362,370
In Situ Chemical Oxidation	\$203,500	\$2,513,348	\$24,500	5	\$2,716,848	\$122,500	\$2,839,348

Notes:

Duration of operation and maintenance period has been assumed for estimating purposes. Additional operation and maintenance beyond the assumed period may be required. Each Groundwater Corrective Measure Alternative requires groundwater monitoring to assess effectiveness. Remedy-specific monitoring is included in the above estimates where applicable.

*Remedial Alternative is applicable to both on-site and downgradient groundwater; therefore, costs are included in Table 5c for Off-Site Groundwater (Downgradient) Corrective Measures Alternatives

¹ - Per Section V.3.a of the Agreement, corrective measures are only necessary to remediate site-related releases.

Table 5c. Summary of Costs, Off-Site Groundwater (Downgradient) Corrective Measure Alternatives¹, Allison Transmission, Inc., Former Plant 2, Speedway, Indiana

Remedial Alternative	Remediation Design and Contracting	Construction/Implementation	Operation and Maintenance - Annual	Duration of Operation and Maintenance (years)	Design and Construction (i.e., no O&M Cost)	Operation and Maintenance	Order of Magnitude Total Cost
No Action	\$0	\$0	\$0	0	\$0	\$0	\$0
Institutional Control - Deed Restriction and ERC (already implemented)	\$0	\$0	\$0	30	\$0	\$0	\$0
Institutional Control - No-Well Zone	\$26,000	\$0	\$0	30	\$26,000	\$0	\$26,000
Permeable Reactive Barrier	\$260,600	\$3,789,850	\$27,600	20	\$4,050,450	\$552,000	\$4,602,450
Groundwater Extraction	\$208,200	\$790,340	\$175,000	30	\$998,540	\$5,250,000	\$6,248,540

Notes:

Duration of operation and maintenance period has been assumed for estimating purposes. Additional operation and maintenance beyond the assumed period may be required. Remedy-specific monitoring is included in the above estimates where applicable.

1 - Per Section V.3.a of the Agreement, corrective measures are only necessary to remediate site-related releases.

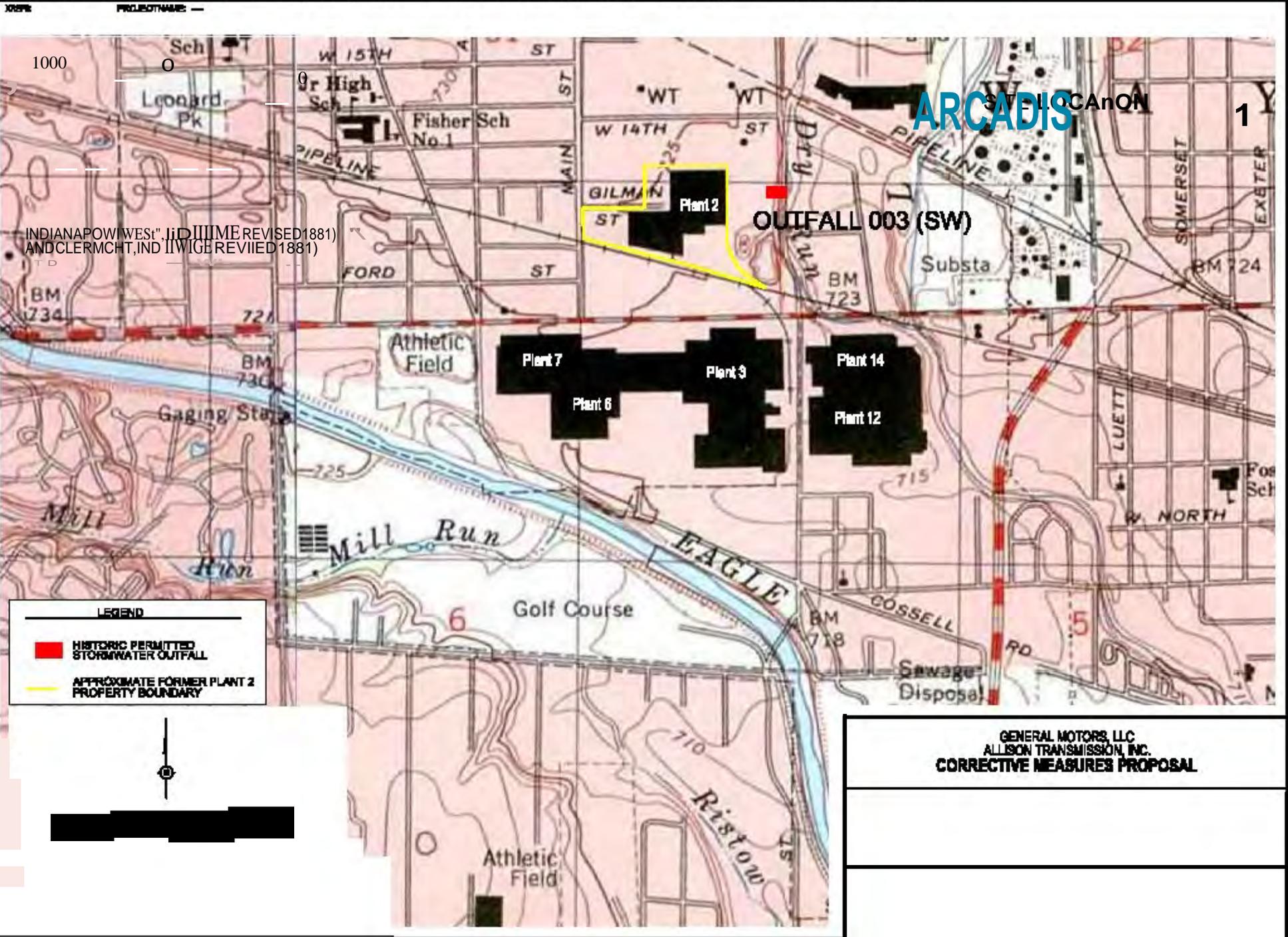
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ARCADIS

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INDIANAPOLIS, INDIANA
AND CLERMONT, INDIANA
REVISED 1881

LEGEND

- HISTORIC PERMITTED STORMWATER OUTFALL
- APPROXIMATE FORMER PLANT 2 PROPERTY BOUNDARY

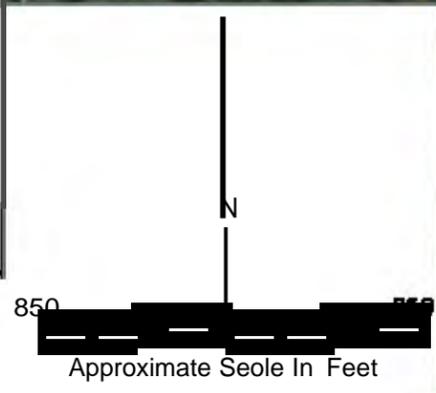


GENERAL MOTORS, LLC
ALLISON TRANSMISSION, INC.
CORRECTIVE MEASURES PROPOSAL

PROJECT: GENERAL M J LLC
 PROJECT: CORRECTIVE MEASURES PROPOSAL
 DRAWING: INSMU110NAL CONTROLS
 DATE: 08/11/2023
 SCALE: 1"=100'
 SHEET: 3 OF 3

LEGEND

- APP MATE BOUNDARY OF EXIBNG NO-WELL ZONE NO.2
- BOUNDARY OF PROPOSED NO-WELL ZONE
- ▨ APPROXIMATE BOUNDARY OF PROPOSED NEW ENVIRONMENTAL RESTRICTIVE COVENANT
- ▨ APPROXIMATE BOUNDARY OF PLANNED SRC ENVIRONMENTAL RESTRICTIVE COVENANT
- ▨ APPROXIMATE BOUNDARY OF PROPOSED NEW ENVIRONMENTAL RESTRICTIVE COVENANT
- APPROXIMATE BOUNDARY OF CONTROL FOR A02.Q2



GENERAL M J LLC
 AWSON TRANSMISSION INC.
 CORRECTIVE MEASURES PROPOSAL

INSMU110NAL CONTROLS

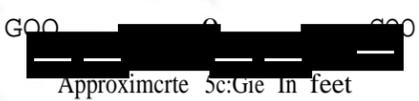
ARCADIS

DRAWING
3

CITY OF GRAND RAPIDS, MI
 1775 17th Street, S.E.
 Grand Rapids, MI 49508
 (616) 973-3000
 www.grandrapidsmi.gov

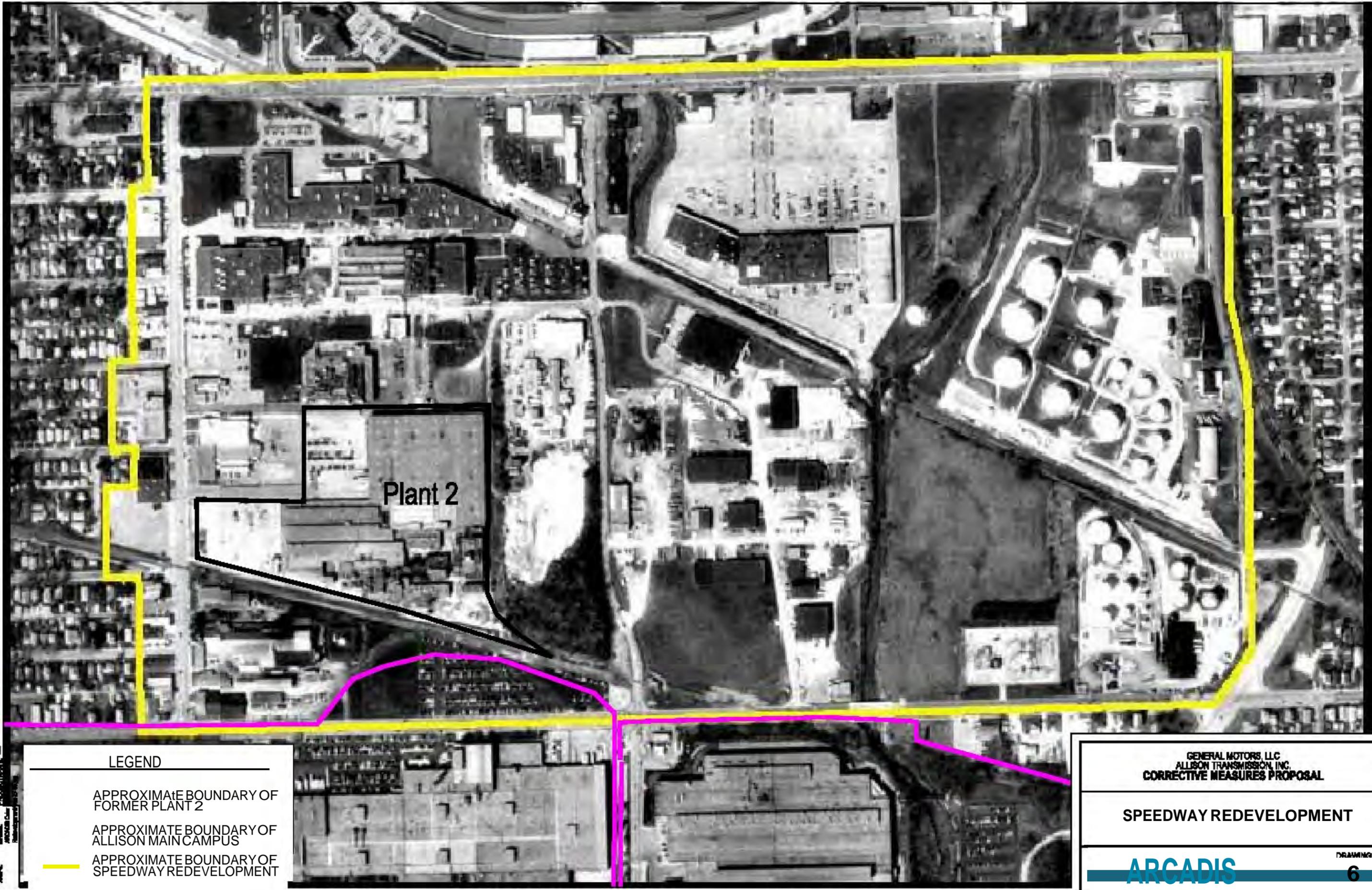


- OPEN WATER
- BUILDING
- PAVED/CRUSHED ROCK
- GRASS (MOWED)
- WOODED



GENERAL MOTORS, LLC. ALLISON TRANSMISSION, INC. CORRECTIVE MEASURES PROPOSAL	
LANDCOVER	
	DRAWING 5

GENERAL MOTORS, LLC
ALLISON TRANSMISSION, INC.
CORRECTIVE MEASURES PROPOSAL
SPEEDWAY REDEVELOPMENT
DRAWING 6



LEGEND

- APPROXIMATE BOUNDARY OF FORMER PLANT 2
- APPROXIMATE BOUNDARY OF ALLISON MAIN CAMPUS
- APPROXIMATE BOUNDARY OF SPEEDWAY REDEVELOPMENT

GENERAL MOTORS, LLC
ALLISON TRANSMISSION, INC.
CORRECTIVE MEASURES PROPOSAL

SPEEDWAY REDEVELOPMENT

ARCADIS

DRAWING
6

Appendix A

Speedway Redevelopment
Commission Environmental
Restrictive Covenant

March 23, 2011

WRITER'S DIRECT NUMBER: (317) 236-2262
DIRECT FAX: (317) 592--4634
INTERNET: Terri.Czajka@icemiller.com

Laura L. Fitzpatrick
General Motors Company
Legal Staff
300 GM Renaissance Center
Mail Code 482-C27-C84
Detroit, MI 48265-3000

RE: Declaration of Environmental Restrictive Covenants

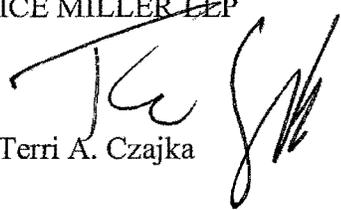
Dear Laura:

Per our e-mail discussion, please find enclosed a fully executed original of the Declaration of Environmental Restrictive Covenants signed by all parties related to the Former Plant 2 property that was sold to the Town of Speedway.

If you should have any questions, please feel free to give me a call.

Very truly yours,

ICE MILLER LLP


Terri A. Czajka

TAC/nh
Enclosure

I/2600297.1

DECLARATION OF ENVIRONMENTAL RESTRICTIVE COVENANTS

THIS DECLARATION OF ENVIRONMENTAL RESTRICTIVE COVENANTS ("Declaration") is made this 1st day of March, 2011, by Allison Transmission, Inc., a Delaware corporation ("Declarant"), and joined in by the Town of Speedway Redevelopment Commission, an Indiana municipal corporation ("Speedway") and General Motors LLC, a Delaware limited liability company ("General Motors").

RECITALS

A. On or about August 7, 2007, General Motors Corporation quitclaimed all of its right title and interest of those parcels of real estate that are located in Marion County, Indiana, as more specifically identified in that certain Quitclaim Deed dated August 7, 2007 ("GM Quitclaim Deed"), from General Motors Corporation, as Grantor, to Clutch Operating Company, Inc., a Delaware corporation ("Clutch Operating"), and recorded on August 14, 2007, as Instrument No. 2007-118762, in the office of the Recorder of Marion County, Indiana (the "County"), which real estate is referenced herein as the "GM Real Estate").

B. On April 22, 2005, General Motors Corporation entered into a Performance-Based Corrective Action Agreement ("PBCAA") with the United States Environmental Protection Agency ("U.S. EPA") Region 5 to address Resource Conservation and Recovery Act ("RCRA") corrective action activities at the GM Real Estate. As a result of work being conducted under the PBCAA, when General Motors Corporation transferred the GM Real Estate to Clutch Operating, it included certain "Reservation of Rights and Restrictions" and "Restrictions and Declarations Agreement" (collectively, "Existing Restrictions") in the GM Quitclaim Deed, which Existing Restrictions contain land use restrictions related to environmental conditions at the GM Real Estate which remain in full force and effect.

C. Declarant and Clutch Operating are one and the same corporation in that effective on August 7, 2007, the name of Clutch Operating Company, Inc. was changed to Allison Transmission, Inc. by the Certificate of Amendment to the Certificate of Incorporation of Clutch Operating Company, Inc. filed with the Delaware Secretary of State on August 7, 2007.

D. On June 1, 2009, General Motors Corporation filed for bankruptcy. On July 10, 2009, in accordance with an order from the bankruptcy court, General Motors Corporation changed its name to Motors Liquidation Company and sold substantially all of its operating assets to a newly formed company, which, after certain subsequent restructuring, is known as General Motors LLC ("General Motors"). Motors Liquidation Company ("MLC") assigned to and General Motors assumed certain agreements from MLC related to the transfer of the GM Real Estate to Clutch Operating Company, Inc. Consequently, General Motors is continuing to conduct activities at the GM Real Estate under the PBCAA.

E. On or about March 1, 2011, Declarant and Speedway entered into that certain Purchase and Sale Agreement ("Purchase Agreement") to sell and purchase a tract of land consisting of approximately 21.280 acres ("Tract 1") and an adjoining tract consisting of approximately .004 acres ("Tract 2"), both of which are part of the former GM Real Estate in Marion County, Indiana, which parcels are located at 4500 West Gilman Street in Speedway,

Indiana and are more particularly described in the attached Exhibit "A" ("Real Estate"), which is hereby incorporated and made a part hereof and are depicted on a map attached hereto as ~~Exhibit~~ "B".

F. Concurrently herewith, Declarant will convey to Speedway by quitclaim deed all of Declarant's right title and interest in Tract 1 pursuant and subject to the terms and provisions of the Purchase Agreement and will convey by quitclaim deed all of Declarant's right, title and interest in Tract 2 (such quitclaim deeds are collectively referred to herein as "ATI's Quitclaim Deed").

G. The Purchase Agreement contemplates that this Declaration will be recorded in the offices of the County Recorder prior to the recordation of ATI's Quitclaim Deed, such that Speedway will take title to the Real Estate subject to the covenants and restrictions set forth in this Declaration and the Existing Restrictions.

H. General Motors is a party to this Declaration because it is continuing to conduct work pursuant to the PBCAA.

I. A Comfort Letter, a copy of which is attached hereto as "was prepared and issued by the Indiana Department of Environmental Management (the "Department" or "IDEM") pursuant to the Indiana Brownfields Program's ("Program") recommendation to address the redevelopment potential of a brownfield site resulting from a release of hazardous substances, petroleum, hazardous waste, or regulated substances relating to Parcels I, II and III of the Real Estate and identified as Program site number BFD #4100704.

J. The Comfort Letter, as approved by the Department, provides that certain contaminants of concern as identified by the Department ("COCs") remain in the soil and groundwater on the Real Estate but will not pose an unacceptable risk to human health at the remaining concentrations provided that the land use restrictions contained herein and in the Existing Restrictions are implemented and maintained to ensure the protection of public health, safety, or welfare, and the environment. The COCs are arsenic, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, carbon tetrachloride, cis-1,2-dichloroethene, dibenzo(a,h)anthracene, lead, trans-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene, and vinyl chloride.

K. Soil and groundwater on the Real Estate have been sampled for total petroleum hydrocarbons ("TPH")-diesel range organics, TPH-gasoline range organics, volatile organic compounds ("VOCs"), semi-volatile organic compounds ("SVOCs"), metals, polychlorinated biphenyls, and pH. The investigations completed under the PBCAA revealed levels of COCs that were above default residential and/or industrial levels established by IDEM in the Risk Integrated System of Closure ("RISC") Technical Resource Guidance Document (February 15, 2001 and applicable revisions). The level of lead detected in one sample from surface soil (defined as between 0 to 10 feet below grade surface ("bgs")), and the levels of arsenic detected in 46 surface soil samples exceeded their respective RISC residential default closure levels for direct contact exposure ("Direct Contact RDCLs") but were below their respective RISC Direct Contact industrial default closure levels ("IDCLs"); levels of benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene detected in surface soil

exceeded their respective RISC Direct Contact RDCLs and/or IDCLs; detected levels of arsenic in fifteen surface soil samples exceeded the Direct Contact RDCL and IDCL; the detected level of arsenic in one sample of sub-surface soil (defined as greater than 10 feet bgs) exceeded the RISC RDCL and IDCL for migration of groundwater.

L. Levels of cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1,1-trichloroethane, and carbon tetrachloride detected in the Real Estate groundwater exceeded their respective RISC RDCLs but were below their IDCLs; levels of trichloroethene and vinyl chloride in groundwater both exceeded their respective RISC RDCLs and IDCLs; and levels of vinyl chloride in groundwater exceeded the commercial groundwater screening level listed in the Department's Draft Vapor Intrusion Pilot Program Guidance Supplement dated February 4, 2010. *See* attached Tables 1, 2, and 3 for levels of COCs detected on the Real Estate above applicable RISC closure levels.

M. General Motors has proposed Final Corrective Measures to protect human health and the environment from current and future unacceptable risks due to releases of hazardous waste or hazardous constituents at or from the Real Estate consistent with the PBCAA. The U.S. EPA has not issued a "Statement of Basis" or "Final Corrective Measures Decision" for the Real Estate under RCRA Corrective Action. The Department has not approved the closure of environmental conditions at the Real Estate under Risk Integrated System of Closure ("RISC"). However, the Department concluded that so long as the land use restrictions required by this Declaration and the Existing Restrictions, unless otherwise modified by the U.S. EPA, are maintained, current conditions at the Real Estate will not pose a threat to human health or the environment. A site map, attached hereto as Exhibit "D," indicates the sample locations at which COCs were detected above applicable RISC closure level on the Real Estate.

N. Environmental reports and other documents related to the Real Estate are hereby incorporated by reference and may be examined at the Public File Room of the Department, which is located in the Indiana Government Center North at 100 N. Senate Avenue, 12th Floor East, Indianapolis, Indiana and at the U.S. EPA Region 5 public File Room located at 77 West Jackson Boulevard, Chicago, IL 60604. The documents may also be viewed electronically by searching the Department's Virtual File Cabinet on the Web at: <http://www.in.gov/idern/4101.htrn>.

NOW THEREFORE, Declarant, with the consent and approval of Speedway and General Motors, subjects the Real Estate to the following restrictions, covenants and provisions, which shall be binding on Speedway and all future owners of the Real Estate or any portion or portions thereof (each, an "Owner"):

I. RESTRICTIONS

1. Restrictions. Each Owner covenants and agrees that Owner and its Related Parties:

(a) Shall not occupy any building on the Real Estate without first completing one of the following: Option 1) Evaluate and determine, with IDEM concurrence, the absence of vapor intrusion in existing and/or newly constructed site buildings potentially affected by

contamination; or Option 2) Install, operate and maintain a vapor mitigation system (consistent with U.S. EPA Brownfield Technology Primer Vapor Intrusion Considerations for Redevelopment, EPA 542-R-08-001, March 2008) within the existing and any newly-constructed and human-occupied building on the Real Estate, unless the Department concurs that the vapor intrusion system is no longer necessary based upon the achievement of the 25-year Chronic Commercial Indoor Air Action Levels contained within Table 3 of Appendix VIII of the Department's Draft Vapor Intrusion Guidance or site-specific action levels approved by the Department. This prohibition does not apply to short-term occupancy of a building for purposes of construction, renovation, repair, or other short-term activities.

(b) If Option 2 is selected from (a) above, in accordance with the Department's Draft Vapor Intrusion Guidance, install and thereafter operate and maintain a vapor intrusion mitigation system (consistent with U.S. EPA Brownfield Technology Primer Vapor Intrusion Considerations for Redevelopment, EPA 542-R-08-001, March 2008) for the purpose of mitigating the COCs potentially impacting indoor air in the existing building on the Real Estate and any human-occupied building constructed on the Real Estate after the date of this Declaration until the Department makes a determination regarding acceptable risk under Paragraph No. 10 of this Declaration. The Department's determination shall be based upon the 25-year Chronic Commercial Indoor Air Action Levels contained within Table 3 of Appendix VIII of the Department's Draft Vapor Intrusion Guidance or site-specific action levels approved by the Department.

(c) Shall not use the Real Estate for any agricultural use.

(d) Shall restore soil disturbed as a result of excavation and construction activities in such a manner that the remaining contaminant concentrations do not present a threat to human health or the environment. This determination shall be made using the Department's RISC Technical Guidance Document or applicable guidance at the time of the determination. Upon the Department's or U.S. EPA's request, Owner shall provide the Department or U.S. EPA written evidence (including sampling data) showing the excavated and restored area, and any other area affected by the excavation, does not represent such a threat. Contaminated soils that are excavated must be managed in accordance with all applicable federal and state laws; and disposal of such soils must also be done in accordance with all applicable federal and state laws. Excavation of soil should be conducted in accordance with the attached Soil Management Plan (Exhibit "E").

(e) Shall neither engage in nor allow excavation of soil in the area identified via State Plane coordinates as the "Boundary of Engineering Control" on Exhibit "F", unless soil disturbance obligations listed in the preceding paragraph and Exhibit "E" are followed. In addition, Owner shall provide written notice to the Department and U.S. EPA in accordance with paragraph 14 below before the start of soil disturbance activities. Owner, upon the Department's or U.S. EPA's request, shall provide the Department or U.S. EPA evidence showing the excavated and restored area does not represent a threat to human health or the environment.

(f) Shall maintain the integrity of the existing crushed rock cover or other acceptable cover, which is depicted on Exhibit "F" via State Plane coordinates; this crushed rock cover or other acceptable cover serves as an engineered barrier to prevent direct contact with the

underlying soils and mustnot be excavated, removed, disturbed, demolished, or allowed to fall into disrepair, except if conducted as described above. Owner shall inspect the engineering control annually and repair any significant deteriorations found.

(g) Shall prohibit any activity at the Real Estate that may interfere with the groundwater monitoring or well network.

(h) ShaH grant to U.S. EPA, General Motors, and their designated representatives the right to enter the property for the purposes of completing Corrective Action activities (i.e., sampling, remediation, etc.) in accordance with the PBCAA.

(i) Shall comply with the Existing Restrictions.

II. GENERAL PROVISIONS

2. Restrictions to Run with the Land. The terms, conditions, covenants, restrictions and other requirements described in this Declaration, including the Existing Restrictions, shall run with the land and be binding upon Owner of the Real Estate and Owner's successors, assignees, heirs and lessees or their authorized agents, employees, contractors, representatives, agents, lessees, licensees, invitees, guests, or persons acting under their direction or control ("Related Parties") and shall inure to the benefit of U.S. EPA, General Motors, Declarant and their respective successors and assigns and shall continue as a servitude running in perpetuity with the Real Estate. No transfer, mortgage, lease, license, easement, or other conveyance of any interest in an or any part of the Real Estate by any person shall limit the restrictions set forth herein. This Declaration, including the Existing Restrictions, is imposed upon the entire Real Estate unless expressly stated as applicable only to a specific portion thereof.

3. Binding upon Future Owners. By taking title to an interest in or occupancy of the Real Estate, any subsequent Owner or Related Party covenants and agrees to comply with all of the restrictions set forth in paragraph 1 above and with all other terms of this Declaration.

4. Access for Department. Owner hereby grants to the Department and its designated representatives the right to enter upon the Real Estate at reasonable times for the purpose of determining whether the land use restrictions set forth in paragraph 1 above are being properly maintained (and operated, if applicable) in a manner that ensures the protection of public health, safety, or welfare and the environment. This right of entry includes the right to take samples, monitor compliance with the remediation work plan (if applicable), and inspect records.

5. Written Notice of the Presence of Contamination. Each party hereto and each Owner hereafter acknowledge and agree that this Declaration, including the Existing Restrictions, may be enforced in perpetuity against each Owner, its Related Parties and their successors in title. Declarant and each Owner agree to include in any instrument conveying any interest in any portion of the Real Estate, including but not limited to deeds, leases and subleases (excluding mortgages, liens, similar financing interests, and other non-possessory encumbrances) the following notice provision (with blanks to be filled in):

NOTICE: THE INTEREST CONVEYED HEREBY IS SUBJECT TO A DECLARATION OF ENVIRONMENTAL RESTRICTIVE COVENANTS, DATED 20__, RECORDED IN THE OFFICE OF THE RECORDER OF MARION COUNTY, INDIANA ON 20__, AS INSTRUMENT NUMBER (or other identifying reference) IN FAVOR OF AND ENFORCEABLE BY THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, GENERAL MOTORS LLC OR ALLISON TRANSMISSION, INC., THEIR SUCCESSORS AND ASSIGNS.

6. Notice to Department of the Conveyance of Property. Owner agrees to provide notice to the Department of any conveyance (voluntary or involuntary) of any ownership interest in the Real Estate (excluding mortgages, liens, similar financing interests, and other non-possessory encumbrances). Owner must provide the Department with the notice within thirty (30) days of the conveyance and include (a) a certified copy of the instrument conveying any interest in any portion of the Real Estate, and (b) if the instrument has been recorded, its recording reference(s), and (c) the name and business address of the transferee.

7. Indiana Law. This Declaration shall be governed by, and shall be construed and enforced according to, the laws of the State of Indiana.

III. ENFORCEMENT

8. Enforcement by Department. Pursuant to IC 13-14-2-6 and other applicable law, the Department or U.S. EPA as a third-party beneficiary may proceed in court by appropriate action to enforce this Declaration, including the Existing Restrictions. Damages alone are insufficient to compensate the Department if any Owner of the Real Estate or its Related Parties breach this Declaration, including the Existing Restrictions, or otherwise default hereunder. As a result, if any Owner of the Real Estate, or any Owner's Related Parties, breach this Declaration, including the Existing Restrictions, or otherwise default hereunder, the Department or U.S. EPA shall have the right to request specific performance and/or immediate injunctive relief to enforce this Declaration, including the Existing Restrictions, in addition to any other remedies it may have at law or at equity. Owner agrees that the provisions of this Declaration, including the Existing Restrictions, are enforceable and agrees not to challenge the provisions or the appropriate court's jurisdiction.

9. Enforcement by General Motors or Declarant. General Motors or Declarant may proceed in court by appropriate action to enforce the Existing Restrictions. Damages alone are insufficient to compensate General Motors or Declarant if any Owner of the Real Estate or its Related Parties breach the Existing Restrictions, or otherwise default hereunder. As a result, if any Owner of the Real Estate, or any Owner's Related Parties, breach the Existing Restrictions, or otherwise default hereunder, General Motors or Declarant shall have the right to request specific performance and/or immediate injunctive relief to enforce the Existing Restrictions, in addition to any other remedies it may have at law or at equity. Owner agrees that the provisions of this Declaration, including the Existing Restrictions, are enforceable and agrees not to challenge the provisions or the appropriate court's jurisdiction.. In the event of a breach or a threatened breach of the Existing Restrictions, General Motors or Declarant may enforce this Declaration, including the Existing Restrictions, and shall be entitled to any other rights or

remedies at law or in equity, and may institute such proceedings for full and adequate relief, including, without limitation, reasonable attorneys' fees and costs incurred in such action, from the consequences of such breach or threatened breach. All remedies available hereunder shall be in addition to any and all other remedies at law or equity.

IV. TERM, MODIFICATION AND TERMINATION

10. Term. This Declaration shall apply until the Department and U.S. EPA determine that contaminants of concern on the Real Estate no longer present an unacceptable risk to the public health, safety, or welfare, or to the environment; provided, however, the Existing Restrictions, may only be released by General Motors and Declarant or their successors or assigns.

11. Modification and Termination. This Declaration, including the Existing Restrictions, shall not be amended, modified, or terminated without the prior written approval of the Department, General Motors and Declarant. Within thirty (30) days' of executing an amendment, modification, or termination of the Declaration, Owner shall record such amendment, modification, or termination with the Office of the Recorder of Marion County, Indiana and within thirty (30) days after recording, provide a true copy of the recorded amendment, modification, or termination to the Department, U.S. EPA, Gerteral Motors and Declarant.

V. MISCELLANEOUS

12. Waiver. No failure on the part of the Department, General Motors or Declarant at any time to require performance by any person of any term of this Declaration shall be taken or held to be a waiver of such term or in any way affect the rights of the Department, General Motors or Declarant to enforce such term, and no waiver on the part of the Department, General Motors or Declarant of any term hereof shall be taken or held to be a waiver of any other term hereof or the breach thereof.

13. Conflict of and Compliance with Laws. If any provision of this Declaration is also the subject of any law or regulation established by any federal, state, or local government, the strictest standard or requirement shall apply. Compliance with this Declaration does not relieve Owner from complying with any other applicable laws.

14. Change in Law, Policy or Regulation. In no event shall this Declaration be rendered unenforceable if Indiana's laws, regulations, RISC guidelines, or remediation policies (including those concerning environmental restrictive covenants, or institutional or engineering controls) change as to form or content. All statutory references include any successor provisions.

15. Notices. Any notice, demand, request, consent, approval or comrhunication that either party desires or is required to give to the other pursuant to this Declaration shall be in writing and shall either be served personally or sent by first class mail, postage prepaid, addressed as follows:

To Speedway:

Mr. Scott Harris, Executive Director
Speedway Redevelopment Commission
1010 Main Street
Speedway, Indiana 46224

To Department:

Indiana Brown:fields Program
100 N. Senate Avenue, Rm. 1275
Indianapolis, Indiana 46204
ATTN: Kyle Hendrix

To U.S. EPA:

U.S. Environmental Protection Agency, Region 5
Attn: Director, Land and Chemicals Division
77 West Jackson Blvd.
Chicago, IL 60604

To Declarant:

Allison Transmission, Inc.
4700 West 10th Street
Mail Code L25
Indianapolis, IN 46222
Attn: Eric C. Scroggins, Vice President, General Counsel and Corporate
Secretary

To General Motors:

General Motors LLC
MC 482-C30-C96
300 Renaissance Center
Detroit, Michigan 48265
Attn : Director Real Estate & Facilities

Any party may change its address or the individual to whose attention a notice is to be sent by giving written notice in compliance with this paragraph.

16. Effect of Headings. Any headings or titles used in this Declaration are inserted in included solely for convenience and shall in no manner be considered or given any effect in construing this Declaration. All pronouns used herein shall include the other genders whether used in the masculine, feminine or neuter gender, and the singular shall include the plural whenever and as often as may be appropriate.

17. Severability. If any portion of this Declaration or other term set forth herein is determined by a court of competent jurisdiction to be invalid for any reason, the surviving portions or terms of this Declaration shall remain in full force and effect as if such portion found invalid had not been included herein.

18. No Dedication. Nothing contained in this Dedication shall be construed as either creating a dedication or grant of any rights to the public or causing any party to be a joint venturer or partner of any other.

19. Authority to Execute and Record. Each of the undersigned persons executing this Declaration on behalf of Declarant, Speedway and General Motors represents and certifies that he or she is an authorized representative of Declarant, Speedway or General Motors, and is duly authorized and fully empowered to execute and deliver this Declaration and that each of Declarant, Speedway and General Motors have the power and authority to enter into this Declaration and the execution and delivery of this Declaration by each of the parties hereto does not require any action on the part of each such party.

20. Counterparts. This Declaration may be executed simultaneously in one or more counterparts, each of which shall be deemed an original, but all of which together shall be one and the same instrument.

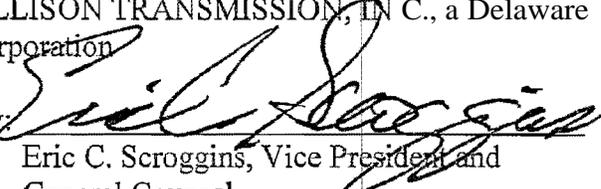
21. Incorporation of Recitals. The parties hereto hereby agree that the above and foregoing Recitals are true and correct and complete and are hereby incorporated and made a part of this Declaration as if completely set forth herein.

**[REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK. c<hUNTERPART
SIGNATURE PAGES TO FOLLOW.]**

IN WITNESS WHEREOF, Declarant, Speedway and General Motors p.ave each caused this Declaration of Environmental Restrictive Covenants to be executed as o(the date and year first above written.

DECL.A..RANT:

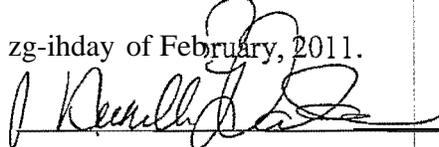
ALLISON TRANSMISSION, IN C., a Delaware corporation

By: 
Eric C. Scroggins, Vice President and General Counsel

STATE OF INDIANA)
) SS:
COUNTY OF MARION)

· Before me, the undersigned, a Notary Public in and for said County anState, personally appeared Eric C. Scroggins the Vice President and General Counsel of Allison Transmission, Inc., a Delaware corporation, who acknowledged the execution of the foregoing instrument for and on behalf of said entity.

Witness my hand and Notarial Sea this zg-ihday of February, 2011.



My Commission Expires:
November 8, 2014

Michelle L. VanGorden, Notary Public
Residing in Marion County, Indiana



GENERAL MOTORS:

GENERAL MOTORS, LLC, a Delaware

Name: DE.B Rt\ IJ. tf0qf5

Title: bf 12e:crot<.. {<E;tc. 65ttiTE-:rvCS.

STATE OF Michl:fn)
COUNTY OF M.tJfotnb) SS:

Before me, the undersigned, a Notary Public in and for said County and State, personally appeared U brO. the 12iredor/ReaJEs1a.:le.Svl:s.of General Motors, LLC, a Delaware limited liability company, who acknowledged the execution of the foregoing instrument for and on behalf of said entity.

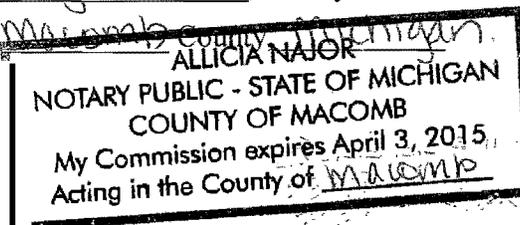
Witness my hand and Notarial Seal this 11 day of Oct '2011.

167

My Commission Expires
Clyt,\) (lu\S.

Alicia Najor, Notary Public

Residing in Macomb county, Michigan



This instrument prepared by: Timothy W. Sullivan, Esq.

I affirm, under the penalties for perjury, that I have taken reasonable care to redact each so'd 1. Security number in this document, unless required by law. Timothy W. Sullivan, Esq.

Upon recording, return to: Ice Miller LLP, One American Square, Suite 2900, Indianapolis, IN 46282-0200, attention: Timothy W. Sullivan, Esq.

EXHIBIT A

LEGAL DESCRIPTION OF THE REAL ESTATE

TRACT

PARCEL:

Part of the Southeast Quarter of Section 31, Township 16 North, Range 3 East, more particularly described as follows: Beginning on the East line of Main Street - now established in the Town of Belpreway at a point seventeen hundred sixty-nine and three tenths (1669.3) feet South of the North line and Nine hundred Thirty (930) feet East of the West line of said Southeast Quarter Section; thence East parallel to the North line thereof a distance of twelve hundred Sixty-eight and one-fifth hundredths (1268.125) feet to a point in the West line of a joint right-of-way of the C.C.C. & St. L. R.R. (also known as the Big Four R.R.) and the C.H. & D. R.R. (now known as the B & O R.R.) thence South in and along said West right-of-way line a distance of Three Hundred Forty-three and seven-tenths (343.7) feet to a point continuing thence along said West right-of-way line on a curve to the left a distance of Three Hundred Forty-nine (349) feet to a point in the North right-of-way line of the former C.H. & D. R.R.; running thence Northwesterly in and along said North right-of-way line a distance of Four hundred Forty and Seventy-five hundredths (1440.75) feet to a point in the aforesaid East line of Main Street running thence North in and along said East line a distance of Two Hundred Ninety-four (294) feet to the point of beginning together with the South 1/2 of the former Gilman Street vacated pursuant to Decree of Vacation under Cause No. X88,592, in the Marion Circuit Court recorded October 22, 1968 as Instrument No. 68-54269.

PARCEL:

Part of the Southeast Quarter of Section 31, Township 16 North, Range 3 East of the Second Principal Meridian in Marion County, Indiana, described as follows, to wit: Beginning at a point 163.3 feet South of the North line of the former Quarter Section, and 13.70 feet from the East line of Main Street as now established in Speedway; said point being on the North line of Gilman Street thence East along the North line of Tibbans Street 794.38 feet to a point (said point on the West line of the right-of-way of the switch connecting the C.I. & W. Railroad and Big Four Railroad Companies main tracks); running thence North along the West line of said switch track 299.50 feet to a point, running thence West 194 feet to a point, running then South 299.50 feet to place of beginning together with the North 1/2 of the former Gilman Street vacated pursuant to Decree of Vacation under Cause No. X88,532, in the Marion Circuit Court recorded October 22, 1968 as Instrument No. 68-54259.

PARCEL:

Part of the Southeast Quarter of Section 31 and part of the Southwest Quarter of Section 32 in Township 16 North, Range 3 East, Marion County, Indiana, more particularly described as follows:

EXHIBIT A (CONTINUED)

Commencing at the Southeast corner of the Southeast Quarter of said Section 31; thence along the East line of said Southeast Quarter Section; North 00 degrees 11 minutes 43 seconds, East (assigned bearing) 157.99 feet to an angle point in the Southern right of way line of the Birminghams and Ohio Railroad (now CSX Corporation), which point is located 40.00 feet perpendicular from the center line of said right of way and which point is the POINT OF BEGINNING; thence continue along the East line of said Southeast Quarter Section and along a jog in said railroad right of way; thence, North 00 degrees 11 minutes 43 seconds East 10.34 feet to a point located 30.00 feet perpendicular from the center line of said right of way, thence along the Southern line of said railroad right of way North 75 degrees 04 minutes 17 seconds West 77.66 feet to the Southern corner of a triangular parcel described in Deed Record 1270, page 231 in the Office of the Recorder of Madison County, Indiana; thence continue along the Southern line of said railroad right of way and along the Northern line of said triangular parcel, North 75 degrees 04 minutes 17 seconds West 38.05 feet (37.99 foot deed) to the Northwest corner of said triangular parcel; thence parallel with the East line of Main Street in the Town of Speedway, North 00 degrees 13 minutes 00 seconds East 31.02 feet to the center line of said railroad right of way; thence along the center line of said railroad right of way, North 75 degrees 04 minutes 17 seconds West 973.38 feet to the intersection of said center line with the extension of the east line of Main Street in the Town of Speedway; thence along said extension of the East line of Main Street North 00 degrees 13 minutes 00 seconds East 31.02 feet to the Northern line of said railroad right of way; thence along the Northern line of said railroad right of way South 75 degrees 04 minutes 17 seconds East 1438.54 feet to the intersection of said Northern right of way line with the Southwestern line of a joint switch right of way; thence perpendicular to the center line of said Baltimore and Ohio Railroad (now CSX Corporation) right of way South 14 degrees 51 minutes 43 seconds West 30.00 feet to the center line of said railroad right of way; thence along the center line of said railroad right of way South 75 degrees 04 minutes 17 seconds East 357.41 feet to the East line of the Southeast Quarter of said Section 31, and the West line of the Southwest Quarter of said Section 32; thence continue along the center line of said railroad right of way South 75 degrees 04 minutes 17 seconds East 80.86 feet to the Western right of way line of Poleo Street, as shown on Indianapolis Department of Transportation plans for Project No. M-B973(1), dated 1986 (the next two courses are along said Western right of way line of Poleo Street); (1) then South 19 degrees 05 minutes 24 seconds East 36.19 feet; (2) thence South 01 degrees 00 minutes 04 seconds East 10.46 feet to the Southern right of way line of said railroad, which point is located 40.00 feet perpendicular from the center line of said right of way; thence along the Southern line of said railroad right of way, North 75 degrees 04 minutes 17 seconds West 93.64 feet to the Point of Beginning.

EXHIBIT A (CONTINUED)

TRACT 2

PARCEL IV:

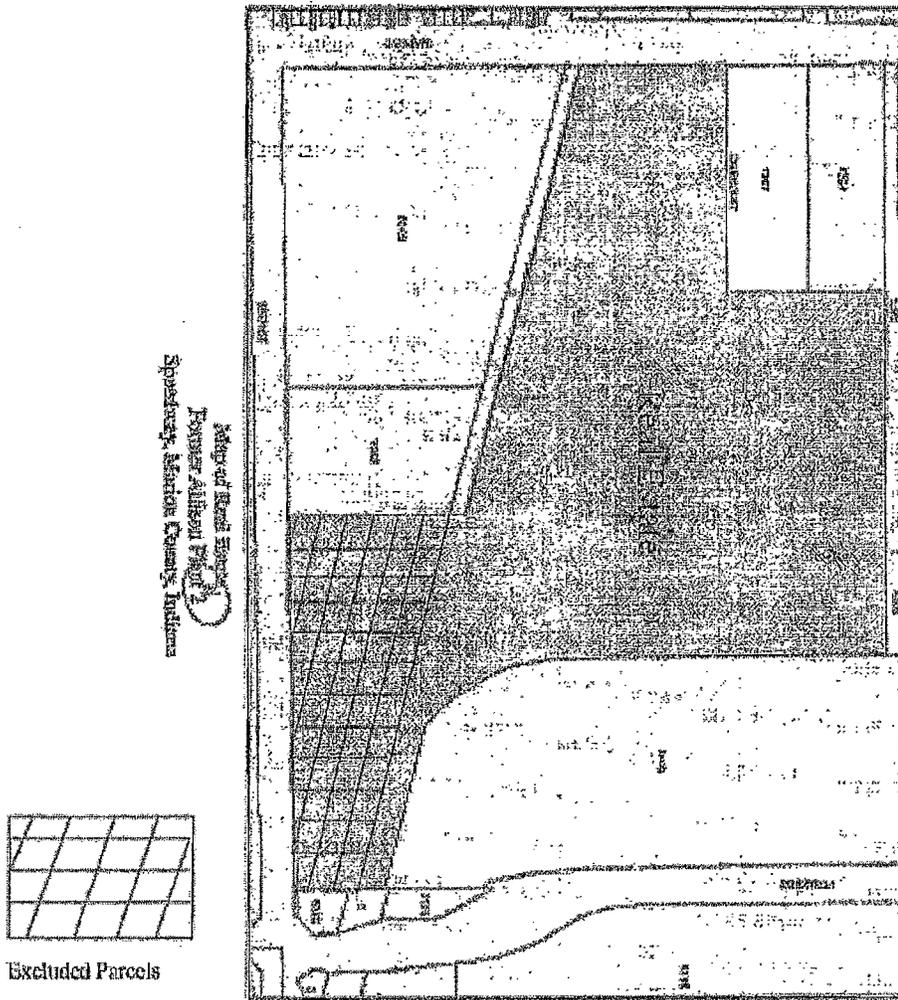
Part of the Southeast Quarter of Section 31 Township 16 North, Range 3 East Marlon County, Indiana, more particularly described as follows:

Commencing at the Southeast corner of the Southeast Quarter of said Section 31; thence along the East line of said Southeast Quarter Section, North 00 degrees 11 minutes 43 seconds East, {assumed bearing} 167.83 feet to the Southerly right-of-way line of the Baltimore and Ohio Railroad (now CSX Corporation) which point is located 30.00 feet perpendicular from the center line of said right of way; thence along the Southerly line of said railroad right of way

North 15 degrees 04 minutes 17 seconds West 776.66 feet to the Easterly corner of a triangular parcel described in Deed Record 1270 Page 231 in the Office of the Recorder of Marlon County, Indiana and the POINT OF BEGINNING; thence continue along the Southerly line of said railroad right-of-way North 75 degrees 04 minutes 17 seconds West 38.05 feet (37.90 feet deed) to the Northwest corner of said triangular parcel; thence parallel with the East line of Main Street in the Town of Speedway, South 00 degrees 13 minutes 10 seconds West 9.85 feet (13 feet deed) to the Southwest corner of said triangular parcel (which point is described by deed as 90.30 feet East of the East line of Main Street in Speedway City and 371 feet North of the South line of said Quarter Section); thence North 89 degrees 55 minutes 42 seconds East 36.80 feet to the Point of Beginning.

EXHIBIT B

MAP OF THE REAL ESTATE



DISCLAIMER: Information on this map is being provided to depict environmental conditions on the Real Estate that are the subject of the land use restrictions contained in the Declaration to which this map is attached and incorporated. The land use restrictions contained in the Declaration were deemed appropriate by the Department based on information provided to the Department by Owner or another party investigating and/or remediating the environmental conditions on the Real Estate. This map cannot be relied upon as a depiction of all current environmental conditions on the Real Estate, nor can it be relied upon in the future as depicting environmental conditions on the Real Estate.

EXHIBIT C
COPY OF COMFORT LETTER



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Huoders-and Our Environment.

Miteh !!E. DanM.r, Jr.
Governor

ThomrtJ W. .Ea; r!y
Commnlrnlrat

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-0003
Toll Free (800)451-6027
www.fdem.IN.gov

February 21, 2011

Mr. Scott Harris, Executive Director
Speedway Redevelopment Commission
1010 Main Street
Speedway, Indiana 46224

Re: Former Allison Plant #2
4500 West Gilman Street
Speedway, Marion Coucl.ty
Brownfield Site#: 4100704
USEPA ID IND000806828

Dear Mr. Harris:

The Comfort Letter for the above-referenced site, issued by the Indiana Department of Environmental Management (IDEM) on October 29, 2010, contained a scrivener's error pertaining to the site acreage the letter was intended to address as a result of a scrivener's error contained in the July 22, 2010 *Phase I Environmental Site Assessment (Phase I ESA)* prepared by Astbury Environmental engineering. The *Phase I BSA*, in fact, covers the entire Former Plant 2 Site consisting of approximately 26 acres (itt six patoels) and not the 20.3 acres referenced in the report. The Comfort Letter was only meant to address three of the six parcels (Parcels I, II, and III, which total 21.28 acres) of the Former Plant 2 Site, for which the Town of Speedway Redevelopment Commission was a prospective purchaser,

Therefore, to correct the error, IDEM is re-issuing the Comfort Letter with correct acreage and parcel information. The corrected Comfort Letter is enclosed herein. The prior-issued letter should be destroyed unreplaced with the enclosed, which will be recorded along with the environmental restrictive covenant on the deed for the site.

IDEM is pleased to assist the Town of Speedway with the redevelopment of the Site. Should you have any questions or comments, please contact Kyle Hendrix at 317/232-4402 or toll free from within Indiana at 800/451-6027, ext. 2-4402. He can also be reached via email at: lhendrix@ifa.in.gov.

Kevin D. Davis
Technical Review Coordinator
Indiana Brownfields Program

Enclosure

cc: Jan Pels, U.S.E:PA Region 5 (*electronic copy*)
Meredith Gramelspacher, Indiana Brownfields Program (*electronic copy*)
Kyle Hendrix, Indiana Brownfields Program (*electronic copy*)
David Gillay, Barnes & Thornburg (*electronic copy*)
Mack Overton, Astbmy Environmental Engineering, Ino. (*electronic copy*)



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We Protect Hoosiers and Our Environment.

Michael E. DanMr, Jr.
Governor

Thomas W. Mastert
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-0300
Toll free (800) 454-0277
www.idem.IN.gov

October 29, 2010

Mr. Scott Harris Executive Director
Speedway Redevelopment Commission
1010 Main Street
Speedway, Indiana 46224

Re: Comfort Letter
Fonner Allison Plant #2
4500 West Gilman Street
Speedway, Marion County
Brownfield Site#: 4100704
USEPA ID IND000806828

Dear Mr. Harris:

In response to the request by Speedway Redevelopment Commission (Prospective Purchaser) to the Indiana Brownfields Program (Program) for assistance concerning the Fonner Allison Plant #2 property located at 4500 West Gilman Street (Site), the Indiana Department of Environmental Management (IDEM) has agreed to provide this Comfort Letter to address applicable limitations on liability for environmental conditions on the Site. Though not a legal release from liability, this letter provides specific information with respect to some of the criteria the Prospective Purchaser must satisfy to qualify for relief from potential liability related to hazardous substances contamination under the bona fide prospective purchaser (BFPP) exemption under Section 101(40) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) 42 U.S.C. §§ 9601 *et seq.* and Indiana Code (IC) § 13-25-4-8(b) (incorporating 42 U.S.C. - 9607(r)) and potential liability for petroleum contamination under the BFPP exemption under IC § 13-23-13 and IC § 13-24-1 (applying 42 U.S.C. § 9607(r) to petroleum contamination). This letter will also help to establish whether environmental conditions at the Site might be a barrier to redevelopment or transfer.

The Site consists of the 3 parcels listed as Parcel I (parcel #490631106002000914), Parcel II (parcel #490631106003000914), and Parcel III (parcel #49063113Q006000914) totaling 21.28 acres, and is part of a larger complex of related former industrial facilities. Historical records are unclear as to when past uses began and ceased. A 1915 Sanborn Fire Insurance Map depicts the Marion County Asylum for the Poor located on the Site. Sometime between 1915 and 1936, the United States Federal Government used the Site as an airplane base. The initial portion of Plant #2 was constructed in 1936. Sometime after this, the General Motors Corporation (GM) as part of its Allison Transmission Division (Allison) used Plant #2 for aircraft engine testing.

machining, parts cleaning, and warehousing until manufacturing operations ceased in the mid-1990s. In 2004, the primary structures occupying approximately 490,605 square feet of floor space were demolished with a portion of the concrete foundations left in place. When GM sold Allison Transmission in 2007, the deed to the Site was transferred to the Clutch Operating Company LLC (current owner). Currently, only the pump house structure with an associated aboveground storage tank (AST) used for fire water storage, a switch house, a substation, and the assorted concrete foundations remain on the unused Site. The Prospective Purchaser intends to develop the Site for mixed use including industrial, commercial, and greenspace.

As part of this request, the Prospective Purchaser provided the Program with the *Phase I Environmental Site Assessment* (Phase I) dated July 22, 2010 prepared by Astbury Environmental Engineering, Inc. (Astbury). The Phase I was conducted utilizing the American Society for Testing and Materials (ASTM) Practice 1527-05 Standard Practice for Environmental Site Assessment, which satisfies the federal "All Appropriate Inquiries" rule set forth in 40 CFR Part 312. The Phase I noted previous Site investigations completed under the supervision of the U.S. Environmental Protection Agency (EPA) Region 5 identified 10 Areas of Interest (AOIs). These AOIs consisted of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs). Six AOIs were identified as recognized environmental concerns (RECs) in the Phase I and designated by AOI-2 (with the 2 referring to Plant #2) followed by the corresponding REC area. The 8 RECs identified in the Phase I are:

- AOI 2-1: Arsenic, benzo(a)pyrene, and mercury levels in the soil exceeded IDEM's Risk Integrated System of Closure (RISC) Technical Resource Guidance Document (February 15, 2001 and applicable revisions) residential and industrial default closure levels (RDCLs and IDCLs). Metals and chlorinated solvents were detected in the groundwater above their respective RISC IDCLs in monitoring well MW-6 just east of AOI 2-2;
- AOI 2-2: Polyaromatic hydrocarbons (PAHs) were detected in groundwater above their respective RISC IDCLs. Arsenic and lead in groundwater were detected above their respective RISC IDCLs, and many chlorinated solvents detected in the groundwater exceeded their respective drinking water criteria.
- AOI 2-4: Arsenic exceeded its RISC IDCL in soil. Groundwater was impacted by benzene, vinyl chloride, and chromium above their respective Site specific groundwater screening criteria and by arsenic and methylene chloride above their respective drinking water criteria.
- AOI 2-6: Groundwater was impacted by benzene, cis-1,2 dichloroethene, ethylbenzene, trichloroethene (TCB), and vinyl chloride above their respective drinking water criteria.
- AOI 2-7: Groundwater was impacted by vinyl chloride above its drinking water criteria.
- AOI 2-8: Groundwater was impacted by arsenic and methylene chloride above their respective drinking water criteria.
- Piping from an underground storage tank (UST), which has been removed, may run under concrete foundations remaining on Site.
- IDEM investigations have determined that groundwater contamination on the Praxair property located adjacent to the north of the Site may have impacted on-Site groundwater.

Former Allison Plant #2
BFPP Comfort Letter
BFD #4100704
October 29, 2010
Page 3 of 11

In addition, the Phase I report identified a January 2000 spill of polychlorinated biphenyls (PCBs) containing sludge (IDEM Spill Incident #2000-01-17) as an historical REC. Allison removed the sludge and excavated the impacted asphalt and sub-base in January 2000. Confirmation samples were non-detect for PCBs. Finally, the presence of electrical wire encased in oil and lead, one AST and three 55-gallon drums of petroleum products; incidental amounts of miscellaneous chemicals, and suspect asbestos containing material (ACM) on Site were identified as a de minimis conditions.

Environmental Conditions at the Site

As part of the request for assistance in determining any existing environmental impacts and potential liability at the Site, Indiana Brownfields Program staff have reviewed the following additional reports for this Site:

1. *Description of Current Conditions (DOCC)*, dated July 19, 200, prepared by Arcadis GM, Inc. (ARCADIS)
2. *Resource Conservation and Recovery Act (RCRA) Facility Investigation Report (RFI Report)*, dated February 2009, prepared by ARCADIS
3. *Additional Sampling Data Report*, dated September 2008, prepared by ARCADIS
4. *Former UST Area A (AOI 2-1) -Excavation Completion*, dated March 2009, prepared by ARCADIS
5. *Stage II Additional Sampling Data Report*, dated March 2009, prepared by ARCADIS
6. *Interim Measures Sem -Annual Status and Groundwater Monitoring Report- First Half 2009*, dated July 14, 2009, prepared by ARCADIS

RCRA- Performance-Based Corrective Action Agreement (PBCAA)

Description of Current Conditions (DOCC)

On April 27, 2005, GM entered into a Performance-Based Corrective Action Agreement (PBCAA) with the U.S. EPA Region 5 to address RCRA corrective action activities at the Allison Transmission Campus, which includes the Site. The DOCC is one of the initial steps taken in the RCRA Corrective Action process and was prepared on behalf of Environmental Corporate Remediation Company, Inc. (ENCORE), a subsidiary of GM, which is responsible for managing this project and administering the RCRA Corrective Action. The DOCC Report discusses the SWMUs and AOCs identified by D.S. EPA Region 5 and other areas of interest not identified by U.S. EPA Region 5 that may require further action. The SWMUs and AOCs identified during the historical investigations were combined by GM into the AOIs based upon geographical location. Also, GM identified other AOIs based on further review of available information. These AOIs include Site locations previously investigated and/or locations of past or present treatment, storage, or disposal of hazardous constituents of which either ENCORE or Allison has knowledge.

Former Allison Plant #2
BFPP Comfort Letter
BFD # 4100704
October 29, 2010
Page 4 of 11

Under RCRA Corrective Action, soil and groundwater data were compared with screening criteria derived from the risk-based preliminary remediation goals published by U.S. EPA Region 9, site-specific volatilization to indoor air criteria, soil migration to groundwater criteria for protection of drinking water sources, maximum contaminant levels (MCLs) established under the Safe Drinking Water Act equivalent drinking water limits for constituents without MCLs, and groundwater contact criteria. Based on the results of the screening evaluation, detected levels of COCs in one or more soil and/or groundwater samples exceeded the screening criteria in twenty-six AOIs at the Site. Thirty-nine constituents were historically detected at concentrations above the screening levels.

Based on the screening criteria, the DOCC indicated that no further remedial action was required at AOI 2-9. The following on-Site areas needed additional investigation: AOI 2-1, AOI 2-2, AOI 2-3, AOI 2-4, AOI 2-5, AOI 2-6; AOI 2-7, AOI 2-8, and AOI 2-10. The following is brief description of activities undertaken by ENCORE to address these areas:

Historically, 42 USTs, sumps, and storage vaults (a/k/a hot wells) used at the Site were located in AOI 2-1, AOI 2-2, AOI 2-3, AOI 2-4, AOI 2-5, and AOI 2-10. UST contents included laboratory fuel, waste oil, water alcohol, engine fuel, fuel, and gasoline. The USTs were removed between 1998 and 2000 along with approximately 3,18 tons of impacted soil and properly disposed. Currently, no regulated USTs remain on the Site. Five sumps and a hot well used mainly for cooling tower water were removed in 1999. One sump was decommissioned and closed in-place due to concerns regarding building integrity.

Soil samples were collected from 0 to 14 feet below grade surface (bgs) and analyzed for total petroleum hydrocarbons (TPH)-diesel range organics (DRO), TPH gasoline range organics (GRO), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, PCBs, and pH. Detected levels of COCs in on-Site surface and subsurface soil samples exceeded soil screening criteria established in the DOCC for benzo(a)pyrene, mercury, arsenic, and lead.

Regional groundwater information indicates that a shallow aquifer exists at approximately 25 to 30 ft bgs. Low and high capacity water wells in the Site vicinity range in depths from 40 ft to 270 ft bgs. On-Site groundwater was typically encountered between 12 to 19.5 foot bgs and was analyzed for one and/or all of the following: TPH-DRO, TPH-GRO, VOCs, SVOCs, total and dissolved metals, PCBs, and pH. Groundwater analytical results indicated the levels of arsenic, lead, chromium, Cis-1,2-DCE, TCB, vinyl chloride and total chromium exceeded the groundwater screening criteria.

On-Site and off-Site Monitoring wells and borings were located along or near the Site's perimeter to determine if on-Site groundwater had been or was being impacted by an off-Site source. Analytical results indicated the levels of VOCs and metals exceeded their respective groundwater screening criteria and are believed to originate from an upgradient, off-Site source.

RCRA Facility Investigation Report <RFD

The February 2009 RFI Report provides an overview of the status of environmental conditions on the Site following a RCRA Facility Investigation (RFI) conducted in accordance with the RFI Work Plan submitted by ARCADIS on November 22, 2005 to U.S. EPA Region 5. The objectives of the RFI were to characterize the nature and extent of known or potential releases, to assess risks to human health and the environment, to collect data for a baseline human health risk assessment; to determine if interim measures were needed, and determine if remedial action is necessary. The RFI report noted the following conditions:

- VOCs exceeded the drinking water criteria in the AOI 2-1.
- SVOCs exceeded the industrial soil criteria within AOI 2-2.
- VOCs exceeded the drinking water criteria in the AOI 2-2.
- Arsenic exceeded the soil migration to groundwater criteria within AOI 2-4.
- Arsenic and methylene chloride exceeded the drinking water criteria in AOI 2-4.
- VOCs exceeded the drinking water criteria in AOI 2-5.
- Vinyl chloride exceeded the drinking water criteria in AOI 2-1.
- VOCs in monitoring wells located on the northern portion of the Site (Plant #2 Perimeter) exceeded the drinking water criteria.
- Arsenic exceeded the industrial soil criteria and migration to groundwater soil criteria along the Plant #2 Perimeter.
- No constituents exceeded the soil screening criteria within AOI 2-5, AOI 2-7, AOI 2-8, AOI 2-9, and AOI 2-10.
- No constituents exceeded the groundwater screening criteria in AOI 2-3.

As part of the RFI Work Plan, a risk assessment was completed based on on-Site and off-Site potentially exposed populations. The RFI report indicated that there are no potentially significant risks from current or future exposure to hazardous constituents in soil, groundwater, non-aqueous phase liquids, or smear zone soil in AOI 2-1, AOI 2-2, AOI 2-3, AOI 2-4, AOI 2-5, AOI 2-6, AOI 2-7, AOI 2-8, AOI 2-9, AOI 2-10, and Plant #2 Perimeter.

Further Remedial Actions

Although the RFI did not indicate any further investigation or corrective measures were warranted at the Site, approximately 46.6 tons of historic mercury impacted soils in AOI 2-1 were excavated in January 2009 to facilitate redevelopment of the Site. No confirmation samples were taken; however, the excavation was bounded by soil sample locations where mercury was not detected.

Current Conditions

For the purposes of this letter and based upon the intended reuse of the Site, sample results were compared to the IDEM Risk Integrated System of Closure (IUSC) Technical Resource Guidance Document (February 15, 2001 and applicable revisions) residential default

closure levelB (RbCLs) and industrial def-aault closure levels (IDCLs) for soil and groundwatet. The above-reforenctJd vestigations revealed the following current conditions:

- Levels of benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene in on-Site surface soil (0 to 10 feet bgs) exceed their respective RISC Direct Contact RDCLs and/or Direct Contact IDCLs.
- Lead was detected in surface soil above the Direct Contact RDCL of 400 ppm in one analytical result, but was below the Direct Contact IDCL of 1,300 ppm. Analytical results for arsenic in 46 surface soil samples ranged from 4.25 ppm to 14.1 ppm exceeding its Direct Contact RDCL of 3.9 parts per million (ppm) but below the Direct Contact IDCL of 20 ppm. Analytical results for arsenic in 15 surface soil samples ranged from 22.3 ppm to 132 ppm exceeding the Direct Contact RDCL of 3.9 ppm and the IDCL of 20 ppm. The detected level of arsenic in one sub" surface soil sample (> 10 feet bgs) exceeded the)USC Migration to Groundwater RDCL and IDCL of 5.8 ppm; Levels of Cis-1,2-dichloroethene in groundwater in 4 monitoring wells and levels of trans-1,2-dichloroethene, 1,1,1-trichloroethane, and carbon tetrachloride in groundwater in one monitoring well exceeded their respective RISC RDCLs but were below their respective IDCLs. Levels of TCE in groundwater in 4 monitoring wells exceeded the RISC RDCL of 0.005 ppm and IDCL of 0.031 ppm.
- Levels of vinyl chloride in groundwater in 4 monitoring wells exceeded the RISC RDCL of 0.005 ppm and IDCL of 0.031 ppm. Also, vinyl chloride levels exceeded the draft commercial groundwater screening levels for 10, 20, and 25 year exposure durations listed in IDEM's Draft Vapor Intrusion Pilot Program Supplement dated February 4, 2010.

See attached Tables 1, 2, and 3 for information regarding current Site soil and groundwater conditions. All documents related to contamination at the former Allison Plant #2 facility can be viewed at IDEM's Virtual File Cabinet at: <http://vfc.ids.m.in.gov/faces!Public/Login.jspx>.

Liability and Enforcement Discretion

IDEM's "Brownfields Program Comfort and Site Status Letters" Nomule Policy Document, W-0051 (April 18, 2003) (Comfort and Site Status Letter Policy), provides that IDEM may issue a letter to a stakeholder involved in redevelopment of a brownfield if the stakeholder satisfies certain eligibility criteria outlined below. IDEM concludes, based in part on information provided by the Prospective Purchaser, that:

- (1) no state or federal enforcement action at the Site is pending;
- (2) no federal grant requires an enforcement action at the Site;
- (3) no condition on the Site constitutes an imminent and substantial threat to human health or the environment;

- (4) neither the Prospective Purchaser nor an agent or employee of the Prospective Purchaser caused, contributed to, or knowingly exacerbated the release or threat of release of any hazardous substance or petroleum at the Site, and;
- (5) the Prospective Purchaser is eligible for an applicable exemption to liability, specifically the BFPP exemption to liability for hazardous substance contamination found in CERCLA § 107(r) and IC 13-25-S(b), and for petroleum contamination under IC §§ 13-23-13 and 13-24-1, provided the applicable statutory criteria are met.

As discussed below, the Prospective Purchaser has demonstrated to IDEM's satisfaction that it is eligible for the BFPP exemption from liability for hazardous substance and/or petroleum contamination provided it takes the "reasonable steps" required by statute, recommendations for which are also discussed below.

Bona Fide Prospective Purchaser

Under IC § 13-25-4-8(a), which bases liability on Section 107(a) of CERCLA, a person that is liable under § 107(a) of CERCLA is liable to the state in the same manner and to the same extent. Under § 107(r) of CERCLA and IC § 13-25-4-S(b), a BFPP is not liable under § 107(a) as long as the BFPP does not impede the performance of a response action or natural resource restoration. 42 U.S.C. § 9607(r). Thus a prospective purchaser that satisfies CERCLA §§ 101(40) (defining bona fide prospective purchaser) and 107(r) would not be liable under CERCLA § 107(a) or IC § 13-25-4-S(a). Similarly, a prospective purchaser that satisfies CERCLA §§ 101(40) and 107(r) would not be liable under IC §§ 13-22-13 and 13-24-1 for petroleum contamination existing on the Site.

The BFPP provisions of CERCLA require a person to meet the criteria of CERCLA §§ 101(40) and 107(r) to be protected from liability. If the Prospective Purchaser satisfies these criteria, IDEM is prohibited from pursuing the Prospective Purchaser even if cleanup requirements change or if IDEM determines that a response action related to existing known hazardous substances or petroleum contamination from prior releases at the Site is necessary. Furthermore, the Prospective Purchaser's satisfaction of CERCLA §§ 101(40) and 107(r) prohibits IDEM from pursuing it for response costs relating to the past release of hazardous substances or petroleum contamination at the Site. Therefore, IDEM will not require the Prospective Purchaser to respond to the past release of hazardous substances or petroleum contamination found at the Site beyond the scope of the statutorily-required reasonable steps outlined below, even if cleanup requirements change or if IDEM determines that a response action is necessary in the future. This decision, however, does not apply to past or present hazardous substance or petroleum contamination that is not described in this letter, future releases, or applicable requirements under the Resource Conservation and Recovery Act, 42 U.S.C. § 6901.

To meet the statutory criteria for liability protection as a BFPP, a landowner must meet certain threshold criteria and satisfy certain continuing obligations. IDEM notes that the Prospective Purchaser will acquire ownership of the Site after January 11, 2002 (and after June

30, 2009), and any disposal of hazardous substances and petroleum at the Site will have occurred prior to it acquiring the Site. See 42 U.S.C. § 9601(40)(A). Based on information reviewed by IDEM concludes that the Prospective Purchaser has conducted all appropriate inquiries into the previous ownership and uses of the Site. See 42 U.S.C. § 9601(40)(B)(i). Furthermore, the Prospective Purchaser has represented that it is not potentially liable or affiliated with any person that is potentially liable for potential contamination at the Site, and IDEM has no information to the contrary. See 42 U.S.C. § 9601(40)(H). Therefore, the Prospective Purchaser meets the threshold requirements of CERCLA §§ 9601(40)(A), (B) and (H) to qualify for the status of BFPP under 42 U.S.C. § 9601(40).

The continuing obligations the Prospective Purchaser must undertake to maintain BFPP status are outlined in 42 U.S.C. §§ 9601(40) (C)-(G) and include exercising "appropriate care with respect to hazardous substances found at the facility by taking reasonable steps to: (i) stop any continuing release; (ii) prevent any threatened future release; and (iii) prevent or limit human, environmental, or natural resource exposure to any previously released hazardous substance." 42 U.S.C. § 9601(40)(D). By extension under IC §§ 13-11-2148(h), 13-11-2-ISO(f), and 13-11-2-151(g), the continuing obligations the Prospective Purchaser must undertake to maintain BFPP status are outlined in 42 U.S.C. §§ 9601(40) (C)-(G) and include exercising appropriate care with respect to petroleum products found at the facility by taking reasonable steps to: (i) stop any continuing release; (ii) prevent any threatened future release; and (iii) prevent or limit human, environmental, or natural resource exposure to any previously released petroleum product. Furthermore, the Prospective Purchaser recognizes that in order to maintain the status of BFPP, it will have to continue to provide the cooperation, assistance and access required by 42 U.S.C. § 9601(40) (E). In addition, the Prospective Purchaser will have to maintain compliance with land use restrictions established for the Site, and not impede the implementation or the effectiveness of any institutional control as required by 42 U.S.C. § 9601(40) (F). To maintain BFPP status, the Prospective Purchaser must also comply with 42 U.S.C. § 9601(40) (C) regarding notices and 42 U.S.C. § 9601(40) (G) regarding requests for information or a **strategic** subpenas.

Reasonable Steps

As of the date of issuance of this Comfort Letter, IDEM believes the following are appropriate reasonable steps for the Prospective Purchaser to undertake with respect to the hazardous substances and petroleum contamination found at the Site in order to qualify as a BFPP, as well as to satisfy the eligibility requirements for issuance of this letter under the Comfort and Site Status Letter Policy:

- Comply with all existing land use restrictions applicable to the Site.
- Implement and maintain new land use restrictions required by this letter.
- The Prospective Purchaser must communicate any newly gathered information about existing contamination or any information about new (or previously unidentified) contamination to IDEM upon becoming aware of such.

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Implementation of the above-enumerated reasonable steps in addition to ongoing satisfaction of the additional statutory conditions will, with respect to IDEM, satisfy the statutory conditions for the BFPP protection. Please be advised that any work performed at the subject property must be done in accordance with all applicable environmental laws in order to ensure no inadvertent exacerbation of existing contamination found on the Site which could give rise to liability.

Institutional Controls

U.S. EPA Region 5 determined that contamination identified in the soil and groundwater on the Site above U.S. EPA-derived screening criteria required the recording of an environmental restrictive covenant (ERC) on the deed for the Site to ensure no exposure to on-Site contamination. See Attachment I. In order to qualify for liability protection as a BFPP in accordance with CERCLA § 101(40)(F) and as a condition of issuance of this letter under the Comfort and Site Status Letter Policy, the Prospective Purchaser must comply with the land use restrictions in the current deed for the Site. The current land use restrictions with which the Prospective Purchaser must comply are stated below in general terms:

- U.S. EPA Region 5 and IDEM are granted irrevocable access to the Site for the purpose of completing certain environmental investigation and remediation activities pursuant to the PBCAA.
- The Site is to be used for commercial and industrial purposes only.
- No groundwater from beneath the Site will be used for any "domestic potable uses" which include drinking, showering, cooking, or cleaning. No wells can be installed for any purpose other than contaminant assessment or monitoring without IDEM approval.
- Any soils and/or debris disturbed and/or excavated from the Site shall be managed in accordance with all applicable federal and state laws and at the then-current owner's expense.
- The then-current owner shall not unreasonably interfere with the operation of any technology, treatment or other activities engaged in by the General Motors Corporation and any of its affiliates in association with obligations under the PBCAA without prior notice to GM.

Furthermore, since impacts to soil and groundwater above RDCLs and IDCLs have been identified on the Site, IDEM is requiring additional land use restrictions through the recording of the enclosed ERC on the deed for the Site to ensure no exposure to on-Site contamination. In order to qualify for liability protection as a BFPP, and as a condition of issuance of this letter under the Comfort and Site Status Letter Policy, following Site acquisition, the Prospective Purchaser must record the enclosed ERC on the deed for the Site. The new BRC includes the following land use restriction, stated below in general terms:

- Either evaluate and determine, with IDEM concurrence, the absence of vapor intrusion in existing and/or newly-constructed Site buildings potentially affected by

contaminants on the Site. Q! mitigate all potential human exposure pathways from the migration of vapors from the VOC contamination identified on the Site into existing WJ.dlor newly constructed Site buildings where groundwater contaminant levels have been detected above IDEM's April 26, 2006 Draft Vapor Intrusion Pilot Program Guidance, Commercial Groundwater Screening Levels for 25 year exposure in sand soils.

Conclusion

IDEM encourages the industrial/commercial redevelopment of the Site. Should additional information gathered in conjunction with future Site investigations and/or remediation demonstrate that a particular restriction is no longer necessary to protect human health and the environment or that Site conditions are appropriate for unrestricted use) IDEM will, upon request, consider modification or termination of the ERCs recorded on the deeds for the parcels comprising the Site. Conversely, it is also possible that new land use restrictions may be necessary in the future due to new information or changed circumstances at the Site.

Pursuant to the Comfort and Site Status Letter Policy, the determinations in this letter are based on the nature and extent of contamination known to IDEM as of the date of this letter, as a result of review of information submitted to or otherwise reviewed by IDEM. If additional information regarding the nature and extent of contamination at the Site later becomes available additional measures may be necessary to satisfy the reasonable steps requirements of BFPP status. In particular, if new areas of contamination or new contaminants are identified, the Prospective Purchaser must communicate this information to IDEM upon becoming aware of it and should ensure that reasonable steps are undertaken with respect to such contamination in order not to jeopardize BFPP status.

This letter shall not be construed as limiting a Prospective Purchaser's ability to rely upon any other defenses and/or exemptions available to it under any common or environmental law, nor shall it limit any ongoing obligations of the Prospective Purchaser that are required to maintain the status of BFPP or the benefit of the issuance of this letter. Furthermore, the terms and conditions of this letter shall be limited in application to this letter recipient and this Site, and shall not be binding on IDEM at any other Site.

If at any time IDEM discovers that the above-mentioned reports, any representations made to IDEM, or any other information submitted to or reviewed by IDEM was inaccurate which inaccuracy can be attributed to the Prospective Purchaser, then IDEM reserves the right to revoke this letter and pursue any responsible parties. Furthermore, if Site conditions are later determined by IDEM to constitute an imminent and substantial threat to human health or the environment, IDEM reserves the right to revoke this decision and pursue any responsible parties. Additionally, this decision is a statement of enforcement priority based on known contaminant levels and does not apply to future releases, or applicable requirements under the Resource Conservation and Recovery Act, 42 U.S.C. § 6901. In addition, if any acts or omission by the Prospective Purchaser exacerbates the contamination at the Site, or if the Prospective Purchaser

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does not implement and maintain the reasonable steps outlined in this letter; then the protection provided by the BFPP exemption may not apply. Furthermore, activities conducted at the Site subsequent to purchase that result in a new release can give rise to full liability.

In order for this letter to be given effect by IDEM, the ERC must be recorded on the deed for the three parcels that comprise the Site in the Marion County Recorder's Office. Please return a certified copy of the recorded document to:

Kyle Hendrix, Project Manager
Indiana Brownfields Program
100 North Senate Avenue, Room 1275
Indianapolis, IN 46204

IDEM is pleased to assist the Town of Speedway with the redevelopment of the Site. Should you have any questions or comments, please contact Kyle Hendrix at 317/232-4402 or toll free from within Indiana at 800/451-6027, ext. 2-4402. He can also be reached via email at: lhendrix@ifa.in.gov.

Sincerely,


Deputy Assistant Commissioner
Office of Land Quality

Enclosure

cc: Jan Pels, U.S. EPA Region 5 (*electronic copy*)
Meredith Gramelspacher, Indiana Brownfields Program (*electronic copy*)
Kyle Hendrix, Indiana Brownfields Program (*electronic copy*)
David Gillfly, Barnes & Thornburg (*electronic copy*)
Mack Overton, Astbury Environmental Engineering, Inc. (*electronic copy*)

Table 1
Surface SoS.ample Results Exceeding RISC RDCLs for Direct Contact

Area	Location Sample ID	Date	Depth (ft bgs)	Benz.o (a) Pyrene	Lead	Bcnzo(a) , Anthracene	Benzo (b) Fluoranthene	Dibenz-o (a,h) Anthracene
AOI2-01	Area ASW13	9/28/1999	5	3.5	-	-	-	-
	Area ASW 3	7/30/1999	8	3.9	-	-	-	-
AOI2-02	Sump 3 BTM2	8/18/1999	3.5	3.9	-	-	-	-
	Sump 3 SWE	8/18/1999	2	3.4	-	-	-	-
	Sump 3 SWW	8/18/1999	2	5.2	-	-	-	-
AOI2-04	SS-1	7/9/1999	0.5	2.5	481	-	-	-
	SS-3	7/9/1999	0.5	2.5	-	-	-	-
	SS-3A	1/28/2000	0.5	2.2	-	-	-	-
AOI2-05	T-16 SWE	11/11/1999	5	2.4	-	-	-	-
AOI2-09	SB-37	2/10/2000	1	2.1	-	-	-	-
	SB-52	2/15/2000	1	0.505	-	-	-	-
AOI2-06	SB-44	2/11/2000	1	2.1	-	-	-	0.57
	SB-48	2/11/2000	1	0.61	-	-	-	-
AOI2-02	SB 02-02-0603	12/20/2006	1	61	-	69	-	6.1
			3	20	-	18	49	2.1
			5	11	-	12	10	-
			7	23	-	21	38	2.3
			1	100	-	143	143	15.4
	SB 02-02-0703	9/14/2007	3	74.2	-	125	114	15
			5	58.2	-	89.6	86.3	12
			7	31.7	-	37.5	39.6	5.75
			7	29	-	41.7	38.1	6.4
	SB 02-02-0703 (dup)	9/14/2007	7	29	-	41.7	38.1	6.4
	SB 02-02-0801	4/23/2008	1	7.43	-	9.54	7.92	4.36
	TP-02-02-0804	11/3/2008	1	100	-	127	101	25.8
			7	106	-	138	111	29.1
	TP 02-02-805	11/3/2008	1	95.6	-	130	98.3	26.3
7			69.3	-	98.3	76.6	18.1	
TP 02-02-806	11/5/2008	1.5	13.6	-	19.9	16.2	4.02	
<i>RDCL for Direct Contact</i>				0.5	400	5	5	0.5
IDCL for Direct Contact				1.5	1,300	15	15	1.5

Notes: Results are in parts per million
Italic => Direct Contact RDCL
Bold => Direct Contact IDCL
 "-" =< Direct Contact RDCL

Table Z
 All Site Solid Samples Exceeding RUSE liDCL and/or IDCu

Alert	Location SampleID	PBIC	Depth (ft, etc tS)	Value
	2	7128/1999	8	6.12
			8	6.1
	Area A SW-3		4	4.46
	Area ASW-4		8	9.01
	Area ASW-5		8	10.1
	Area ASW-6		8	10.5
	Area ASW-7		8	5.43
	Area ASW-8	8/4/1999	8	4.25
		912W1999	5	11.9
	2	1112712006	0.8-2	5.39
		11127/2006	8-10	4.88
		1(1)2112008	0.8-2	11.1 JB
			8-10	4.1B
			10	5.3
	T-1 BTM2		10	5.8
	T-2 BTM1		10	6.4
	T-3 BTM2		10	6.15
				4.41
			10	U.8
AOI2-01	T-SB	8/5/1999	10	5.14
	T-713	8/4/1999	10	4.16
	T-8 B1		10	4.04
	T-9			
	T-9 BTM2			
	T-10 BTM1	7/30/1999	10	11.0
			10	8.37
	T-10 BTM2	7/30/1999	10	11.1
	T-11 BTM1	8/3/1999	10	6.77
	T-12 BTM1	7/30/1999	10	6.07
	T-12 BTM2	7/30/1999	10	5.52
	T-13 BTM1	8/3/19/19	10	7.33
	T-13 BTM2	8/4/1999	10	6.73
	T-14 BTM1	8/3/1999	10	6.15
	T-14 BTM2	8/3/1999	10	5.92
	T-15 BTM1	8/3/1999	10	5.38
	T-15 BTM2	8/3/1999	10	5.05
	SUMP VBTTM1	5/5/1999	2	4.66
	SUMP A		2	9.46
	Area A		5	21.3
	0805		12-14	6.1E
	(W)C	12/15/1999	2	65.7
	Sump3 SW	8/11/1999	1	
	Sump2 SW	8/15/1999	2	
AOI2-02	Sump3 SW		2	
	Sump3 SW (W F)		2	
	Sump SW W-A		2	
	1-19/20 SW W1	11/5/1999	7	132
	SS-3	7/9/1999	0.5	12.3 J
	Area D SW-14		4	8.91
	Area D SW-12		4	S.M
	Area D SW-15	999	4	7.3
	Area D SW-17	999	4	8.48
AOI2-04	Area D SW-18	999	4	6.41
	Area D SW-19	10126/1999	4	11
	Area D SW-J/J		4	13.1
	Area D SW-16		4	28.5
	Area D SW-41		8	30.9
	SS-2		0.5	31.7
	SS-3A	1/28/2000	0.5	29.8
AOI -05	T-16 Sump SW8	1/24/1999	5	30.9

RISC Dir ot < Amtact IIDCL
 RISC Dir oct Contact IDCL
 RISC Mlgr Mloto Groutulwater JWC/r

RISC MlgNilnl1 tr1 <Xrvuntlwatel! JDCL

Notes: Results are it1 paris per million

fatlc >Direcl Cowct RDCL

Bold*Dirttt Coltta<t IDCL

Bold-Higralltm lo Gmmri>Pltler IWCL a11 IDCL

li=laboratocy ..Umate<lthe Vllluo

Table 3
Groundwater Results Exceeding RDCLs/IDCLs/Vapor Intrusion Groundwater Screening Values

Sample ID	Date	Trichloroethene	Cis-1,2-Dichloroethene	Vinyl Chloride	Trans-1,2-Dichloroethene	1,1,1-Trichloroethane	Carbon Tetrachloride
MW-0640-82	5/13/2008	0.101	-	-	-	"	-
MW-0704-S2	4/9/2009	-	<i>0.0966</i>	0.185	-	-	-
MW-0705-82	5/20/2010	0.0344	-	-	"	-	-
MW-0706-82	5/13/2008	-	-	0.267	-	-	-
MW-0802-82	4/9/2009	-	0.184	-	-	"	-
MW2-2-S2	5/13/2008	-	-	0.039	-	-	-
MW2-4-S2	5/20/2010	0.0385	0.681	0.0588	0.49	-	-
PZ-0801-82	4/9/2009	0.168	0.184	0.0042	-	-	-
MW-0617-S2	5/12/2008	-	-	-	-	0.204	-
MW-0701-S2	5/21/2010	-	-	-	-	-	0.009
<i>IUSRDCL</i>		0.005	<i>0.1</i>	0.002	0.1	0.2	0.005
RISIDCL		0.031	1	0.004	2	29	0.022
Applicable Draft VI Screening Level	10 year duration	0.7	*	0.23	*	*	*
	20 year duration	0.35	*	0.110	*	*	*
	25 year duration	0.28	*	0.092	*	*	*

Notes: Results are in parts per million
Italic => RDCL
Bold => IDCL
 "-" =< RDCL or the Draft VI screening levels
 VI = vapor intrusion
 "*" = no current IDEM value

ATTACHMENT 1

Exhibit D.. Reservation.of Rights and restrictions

And

Exhibit C Restrictions and Covenants Agreement

From

The U.S.EPA Region 5 Recorded Environmental Restrictive Coven.mt

EXHIBIT B

Reservation of Rights and Restrictions

This Reservation of Rights and Restrictions ("Reservation") is made by the General Motors Corporation, a Delaware corporation ("GM"), which is the owner of the Property, as defined in the Deed, and is being made pursuant to the terms of the Deed. The Property is conveyed to the Grantee for the purposes set forth in the Deed.

1. Grantor hereby grants to Grantee, pursuant to, and subject to, the terms set forth in Section 1.7 of the Deed, an Asset Purchase Agreement dated as of June 28, 2007, and the terms of the Deed, and the United States Environmental Protection Agency (the "EPA") (40 CFR 146.103) and the terms of the Deed, the right to use the Property for the purposes set forth in the Deed, and the terms of the Deed, and the terms of the Deed, and the terms of the Deed.

2. Grantee acknowledges that the Property may only be used by Grantor for the purposes set forth in the Deed, and the terms of the Deed, and the terms of the Deed, and the terms of the Deed.

The Reservation of Rights and Restrictions contained in this Deed shall not be construed to limit in any way the rights of the Grantee under the Deed, and the terms of the Deed, and the terms of the Deed, and the terms of the Deed.

Grantor and Grantee acknowledge and agree to limit the following rights, interests and claims of the Grantee in the Property to the extent set forth in this Deed, and the terms of the Deed, and the terms of the Deed, and the terms of the Deed.

Grantor is entitled to enforce the Reservation of Rights and Restrictions set forth in this Deed, and the terms of the Deed.

EXHIBIT B

EXHIBIT C

Restrictions and Covenants

This instrument is a part of the Quitclaim Deed dated August 7, 2011 ("Quitclaim Deed") made by the General Motors Corporation ("General Motors"), a Delaware corporation, and its wholly owned subsidiary, General Motors Financial Services, Inc. ("GMFS"), a Delaware corporation, to the Quitclaim Deed. The real estate is described in the legal description attached hereto as "A.M. and Mattac" and is located in the City of Detroit, Michigan. The Quitclaim Deed is recorded in the Public Records of the State of Michigan, County of Wayne, at Book 2489, Page 101.

1. Grantor shall prohibit and restrict the use of the Subject Property to the uses and purposes set forth in the attached "Restrictions and Covenants" (the "Restrictions and Covenants") which are hereby incorporated by reference into this instrument. The Restrictions and Covenants shall be read in conjunction with the Quitclaim Deed and shall constitute a part of the legal description of the Subject Property.

2. Grantor shall not disturb or interfere with the use of the Subject Property by Grantee in accordance with the applicable laws and regulations of the State of Michigan (as hereinafter defined);

3. Grantee shall not prohibit or restrict the use of the Subject Property for the purpose of extracting groundwater for (a) domestic potable use, or (b) for purposes of this instrument, the term "domestic potable uses" shall include water related to cooling, lowering, or other uses.

4. Grantee is permitted to use any existing wells or other devices for maintenance or other purposes, provided that the use of such wells or other devices shall be in accordance with all applicable laws, rules, and regulations of the State of Michigan and shall not result in any material violation of any applicable laws (including but not limited to the Michigan Environmental Protection Act) or any other laws, rules, or regulations of the State of Michigan. Grantee shall not be required to construct or maintain any well or other device for the purpose of extracting groundwater, and to the extent construction of wells and similar devices is necessary in connection with any such construction or maintenance, Grantee shall not be required to construct or maintain any well or other device in a manner consistent with the Cooperative Action:

5. Notwithstanding any provision to the contrary in this Restrictions and Covenants Agreement, Grantee shall be permitted to use, and have the use of, groundwater at the Subject Property in a manner consistent with current uses of groundwater, and at volumes sufficient to meet Grantee's water supply requirements for operations and other current uses of such groundwater, and the Cooperative Action shall not conflict or interfere with Grantee's use of groundwater at the Subject Property as set forth in this Paragraph 5.

Exhibit C

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Exhibit C

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Environmental Restrictive Covenant

THIS ENVIRONMENTAL RESTRICTIVE COVENANT is made this ____ day of _____, 2011, by the Town of Speedway Redevelopment Commission ("Owner").

WHEREAS: Owner is the fee owner of certain real estate in the County of Marion, Indiana, which is located at 4500 West Gilman Street in Speedway and more particularly described in the attached Exhibit "A" ("Real Estate"), which is hereby incorporated and made a part hereof. The Real Estate was acquired by deed on _____; and recorded on _____, as Deed Record _____, in the Office of the Recorder of Marion County, Indiana. The Real Estate consists of approximately 21.28 acres. The Real Estate to which this Covenant applies is depicted on a map attached hereto as Exhibit "A-1."

WHEREAS: This Covenant is made with the knowledge of a previously recorded "Reservation of Rights and Restrictions" and "Restrictions and Covenants Agreement" (collectively, "Existing Restrictions") as part of a Quitclaim Deed filed in the Marion County Recorder's Office on _____, Instrument # _____ which contain land use restrictions related to environmental conditions at the Site.

WHEREAS; Owner does not intend to alter, lessen, or cancel by execution and filing of this Covenant any of the Existing Restrictions.

WHEREAS: Pursuant to a Quit Claim Deed dated August 7, 2007, General Motors Corporation transferred to the Clutch Operating Company certain property known as the "Former Plant 2 Site." The Former Plant 2 Site consists of six parcels comprising approximately 26 acres. The Real Estate is only 21.28 acres (Parcels I, II, and III) of the Former Plant 2 Site.

WHEREAS: A Comfort Letter, a copy of which is attached hereto as Exhibit "C," was prepared and issued by the Indiana Department of Environmental Management ("the Department" or "IDEM") pursuant to the Indiana Brownfields Program's ("Program") recommendation at the request of the Owner to address the redevelopment potential of a brownfield site resulting from a release of hazardous substances, petroleum, hazardous waste, or regulated substances relating to the Former Plant 2 Site, Program site number BFD #4100704.

WHEREAS: The Comfort Letter, as approved by the Department, provides that certain contaminants of concern ("COCs") remain in the soil and groundwater on the Real Estate but will not pose an unacceptable risk to human health at the remaining concentrations provided that the land use restrictions contained herein and in the Existing Restrictions are implemented and maintained to ensure the protection of public health, safety, or welfare, and the environment. The COCs are arsenic, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, carbon tetrachloride, cis-1,2-dichloroethene, dibenzo(a,h)anthracene, lead, trans-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene, and vinyl chloride.

WHEREAS: On April 27, 2005, the General Motors Corporation ("GMH") entered into a Performance-Based Corrective Action Agreement ("PBCAA") with the United States Environmental Protection Agency ("U.S. EPA") Region 5 to address Resource Conservation and Recovery Act ("RCRA") corrective action activities at the Allison Transmission Campus, which includes the Real Estate. As a result of work being conducted under the PBCAA, when GM transferred the Site to Clutch Operating Company, Inc., it included the Existing Restrictions to address environmental conditions at the Site.

WHEREAS: Soil and groundwater on the Real Estate have been sampled for total petroleum hydrocarbons ("TPH")-diesel range organics, TPH-gasoline range organics, volatile organic compounds ("VOCs"), semi-volatile organic compounds ("SVOCs"), metals, polychlorinated biphenyls, and pH. The investigations completed under the PBCAA revealed levels of COCs that were above default residential and/or industrial levels established by IDEM in the Risk Integrated System of Closure ("RISC") Technical Resource Guidance Document (February 15, 2001 and applicable revisions). The level of lead detected in one sample from surface soil (defined as between 0 to 10 feet below grade surface ("bgs")), and the levels of arsenic detected in 46 surface soil samples exceeded their respective RISC residential default closure levels for direct contact exposure ("Direct Contact RDCLs") but were below their respective RISC Direct Contact industrial default closure levels ("IDCLs"); levels of benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene detected in surface soil exceeded their respective RISC Direct Contact RDCLs and/or IDCLs; detected levels of arsenic in fifteen surface soil samples exceeded the Direct Contact RDCL and IDCL; the detected level of arsenic in one sample of sub-surface soil (defined as greater than 10 feet bgs) exceeded the RISC RDCL and IDCL for migration of groundwater.

WHEREAS: Levels of cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1,1-trichloroethane, and carbon tetrachloride detected in Site groundwater exceeded their respective RISC RDCLs but were below their IDCLs; levels of trichloroethene and vinyl chloride in groundwater both exceeded their respective RISC RDCLs and IDCLs; and levels of vinyl chloride in groundwater exceeded the commercial groundwater screening level listed in the Department's Draft Vapor Intrusion Pilot Program Guidance Supplement dated February 4, 2010. See attached Tables 1, 2, and 3 for levels of COCs detected on the Real Estate above applicable RISC closure levels.

WHEREAS: GM has not completed work under the PBCAA and the Department has not approved the closure of environmental conditions at the Site under RISC. However, the Department concluded that so long as the land use restrictions required by this Covenant and the Existing Restrictions in the prior Quitclaim Deed, unless otherwise modified by the U.S. EPA, are maintained, current Site conditions will not pose a threat to human health or the environment. A Site map, attached hereto as Exhibit "D", indicates the sample locations at which COCs were detected above applicable RISC closure level on the Real Estate.

WHEREAS: Environmental reports and other documents related to the Real Estate are hereby incorporated by reference and may be examined at the Public File Room of the Department, which is located in the Indiana Government Center North at 100 N. Senate Avenue, 12th Floor East, Indianapolis, Indiana. The documents may also be viewed electronically by searching the Department's Virtual File Cabinet on the Web at: <http://www.in.gov/idem/4101.htm>.

NOW THEREFORE, the Speedway Redevelopment Commission subjects the Real Estate to the following restrictions and provisions, which shall be binding on the current owner and *all* future owners:

L RESTRICTIONS

1. Restrictions. The Owner:

- (a) Shall not occupy any building on the Real Estate without first completing one of the following: Option 1)) Evaluate and, determine, with Department concurrence, the absence of vapor intrusion in existing and/or newly constructed site buildings potentially affected by contamination; or Option 2) Install, operate and maintain a vapor mitigation system (consistent with U.S. EPA Brownfield Technology Primer Vapor Intrusion Considerations for Redevelopment, EPA 542-R-08-001, March 2008) within the existing and any newly-constructed and human-occupied building on the Real Estate, unless the Department concurs that the vapor intrusion system is no longer necessary based upon the achievement of the 25-year Chronic Commercial Indoor Air Action Levels contained within Table 3 of Appendix VIII of the Department's Draft Vapor Intrusion Guidance or site-specific action levels approved by the Department. This prohibition does not apply to short-term occupancy of a building for purposes of construction, renovation, repair, or other short-term activities.
- (b) If Option 2 is selected from (a) above, in accordance with the Department's Draft Vapor Intrusion Guidance, install and thereafter operate and maintain a vapor intrusion mitigation system (consistent with U.S. EPA Brownfield Technology Primer Vapor Intrusion Considerations for Redevelopment, EPA 542-R-08-001, March 2008) for the purpose of mitigating the Contaminants of Concern potentially impacting indoor air in the existing building on the Real Estate and any human occupied building constructed on the Real Estate after the date of this Covenant until the Department makes a determination regarding acceptable risk under Paragraph No. 9 of this Covenant. The Department's determination shall be based upon the 25-year Chronic Commercial Indoor Air Action Levels contained within Table 3 of Appendix VIII of the Department's Draft Vapor Intrusion Guidance or site specific action levels approved by the Department.

II. GENERAL PROVISIONS

2. Restrictions to Run with the Land. The restrictions and other requirements described in this Covenant shall run with the land and be binding upon and inure to the benefit of the Owner of the Real Estate and the Owner's successors, assignees, heirs and lessees or their authorized agents, employees, contractors, Representatives, agents, lessees, licensees, invitees, guests, or persons acting under their direction or control ("Related Parties") and shall continue as a servitude running in perpetuity with the Real Estate. No transfer, mortgage, lease, license, easement, or other conveyance of any interest in all or any part of the Real Estate by any person shall *limit* the restrictions set forth herein. This Covenant is imposed upon the entire Real Estate unless expressly stated as applicable

only to a specific portion thereof.

3. Binding upon Future Owners. By taking title to an interest in or occupancy of the Real Estate, any subsequent owner or Related Party agrees to comply with all of the restrictions set forth in paragraph 1 above and with all other terms of this Covenant.
4. Access for Depalimnt. The Owner shall grant to the Department and its designated representatives the right to enter upon the Real Estate at reasonable times for the purpose of determining whether the land use restrictions set forth in paragraph 1 above are being properly maintained (and operated, if applicable) in a manner that ensures the protection of public health, safety, or welfare and the environment. This right of entry includes the right to take samples, monitor compliance with the remediation work plan (if applicable), and inspect records.
5. Written Notice of the Presence of Contamination. Owner agrees to include in any instrument conveying any interest in any portion of the Real Estate, including but not limited to deeds, leases and subleases (excluding mortgages, liens, similar financing interests, and other nonpossessory encumbrances) the following notice provision (with blanks to be filled in):

NOTICE: THE INTEREST CONVEYED HEREBY IS SUBJECT TO AN ENVIRONMENTAL RESTRICTIVE COVENANT, DATED _____, 20__, RECORDED IN THE OFFICE OF THE RECORDER OF MARION COUNTY ON _____, 20__, INSTRUMENT NUMBER (or other identifying reference) _____ IN FAVOR OF AND ENFORCEABLE BY THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT.

6. Notice to Department of the Conveyance of Property. Owner agrees to provide notice to the Department of any conveyance (voluntary or involuntary) of any ownership interest in the Real Estate (excluding mortgages, liens, similar financing interests, and other nonpossessory encumbrances). Owner must provide the Department with the notice within thirty (30) days of the conveyance and include (a) a certified copy of the instrument conveying any interest in any portion of the Real Estate, and (b) if the instrument has been recorded, its recording reference(s), and (c) the name and business address of the transferee.
7. Indiana Law. This Covenant shall be governed by, and shall be construed and enforced according to, the laws of the State of Indiana.

"..

m. ENFORCEMENT

8. Enforcement. Pursuant to IC 13-14-2-6 and other applicable law, the Department may proceed in court by appropriate action to enforce this Covenant. Damages alone are insufficient to compensate the Department if any owner of the Real Estate or its Related Parties breach this Covenant or otherwise default hereunder. As a result, if any owner of the Real Estate, or any owner's Related Parties, breach this Covenant or otherwise default

hereunder; the Department shall have the right to request specific performance with/ or immediate injunctive relief to enforce this Covenant in addition to any other remedies it

may have at law or at equity, Owner agrees that the provisions of this Covenant are enforceable and agrees not to challenge the provisions or the appropriate court's jurisdiction.

IV. TERM, MODIFICATION AND TERMINATION

9. Term. The restrictions shall apply until the Department determines that contaminants of concern on the Real Estate no longer present an unacceptable risk to the public health, safety, or welfare, or to the environment.
10. Modification and Termination. This Covenant shall not be amended, modified, or terminated without the Department's prior written approval. Within thirty (30) days of executing an amendment, modification, or termination of the Covenant, Owner shall record such amendment, modification, or termination with the Office of the Recorder of Marion County and within thirty (30) days after recording, provide a true copy of the recorded amendment, modification, or termination to the Department.

V. MISCELLANEOUS

11. Waiver. No failure on the part of the Department at any time to require performance by any person of any term of this Covenant shall be taken or held to be a waiver of such term or in any way affect the Department's right to enforce such term, and no waiver on the part of the Department of any term hereof shall be taken or held to be a waiver of any other term hereof or the breach thereof.
12. Conflict of and, Compliance with Laws. If any provision of this Covenant is also the subject of any law or regulation established by any federal, state, or local government, the strictest standard or requirement shall apply. Compliance with this Covenant does not relieve the Owner from complying with any other applicable laws.
13. Change in Law, Policy, or Regulation. In no event shall this Covenant be rendered unenforceable if Indiana's laws, regulations, RISC guidelines, or remediation policies (including those concerning environmental restrictive covenants, or institutional or engineering controls) change as to form or content. All statutory references include any successor provisions.
14. Notices. Any notice, demand, request, consent, approval or communication that either party desires or is required to give to the other pursuant to this Covenant shall be in writing and shall either be served personally or sent by first class mail, postage prepaid, addressed as follows:

To owner:

Mr. Scott Harris, Executive Director
Speedway Redevelopment Commission
1010 Main Street
Speedway, Indiana 46224

To Department:

Indiana Brownfields Program
100 N. Senate Avenue, Rm.. 1275
Indianapolis, Indiana 46204
ATTN: Kyle Hendrix

Any party may change its address or the individual to whose attention a notice is to be sent by giving written notice in compliance with this paragraph.

15. Severability. If any portion of this Covenant or other term set forth herein is determined by a court of competent jurisdiction to be invalid for any reason, the surviving portions or terms of this Covenant shall remain in full force and effect as if such portion found invalid had not been included herein.
16. Authority to Execute and Record. The undersigned person executing this Covenant represents that he or she is the current fee Owner of the Real Estate or is the authorized representative of the Owner, and further represents and certifies that he or she is duly authorized and fully empowered to execute and record, or have recorded, this Covenant.

Owner hereby attests to the accuracy of the statement in this document and all attachments.

IN WITNESS WHEREOF, Speedway Redevelopment Commission, the said Owner of the Real Estate described above has caused this Environmental Restrictive Covenant to be executed on this _____ day of _____ 20

Speedway Redevelopment Commission

STATE OF _____) SS:
COUNTY **OF ---)**

Before me, the undersigned, a Notary Public in and for said County and State, personally appeared _____, the _____ of the Owner, _____ who acknowledged the execution of the foregoing instrument for and on behalf of said entity.

Witness my hand and Notarial Seal **this**__ day of _____; 20__.

_____, Notary Public
Residing in _____ County, _____

My Commission Expires:

This instrument prepared by:

I affirm, under the penalties for perjury, that I have taken reasonable care to redact each Social Security number in this document, unless required by law

_____(Printed Name of Declarant)

EXHIBIT A

Legal Description of thReal:Estate

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Commencing at the Southeast Corner of the Southeast Quarter of said Section 31; thence along the East line of said Southeast Quarter Section, North 00 degrees 11 minutes 43 seconds East, (assumed bearing) 167.83 feet to the Southern right-of-way line of the Baltimore and Ohio Railroad (now CSX Corporation), which point is located 40.00 feet perpendicular from the center line of said right of way; thence along the Southern line of said railroad right of way, North 75 degrees 04 minutes 17 seconds West 93.64 feet to the Point of Beginning.

~~PARCEL IV:~~

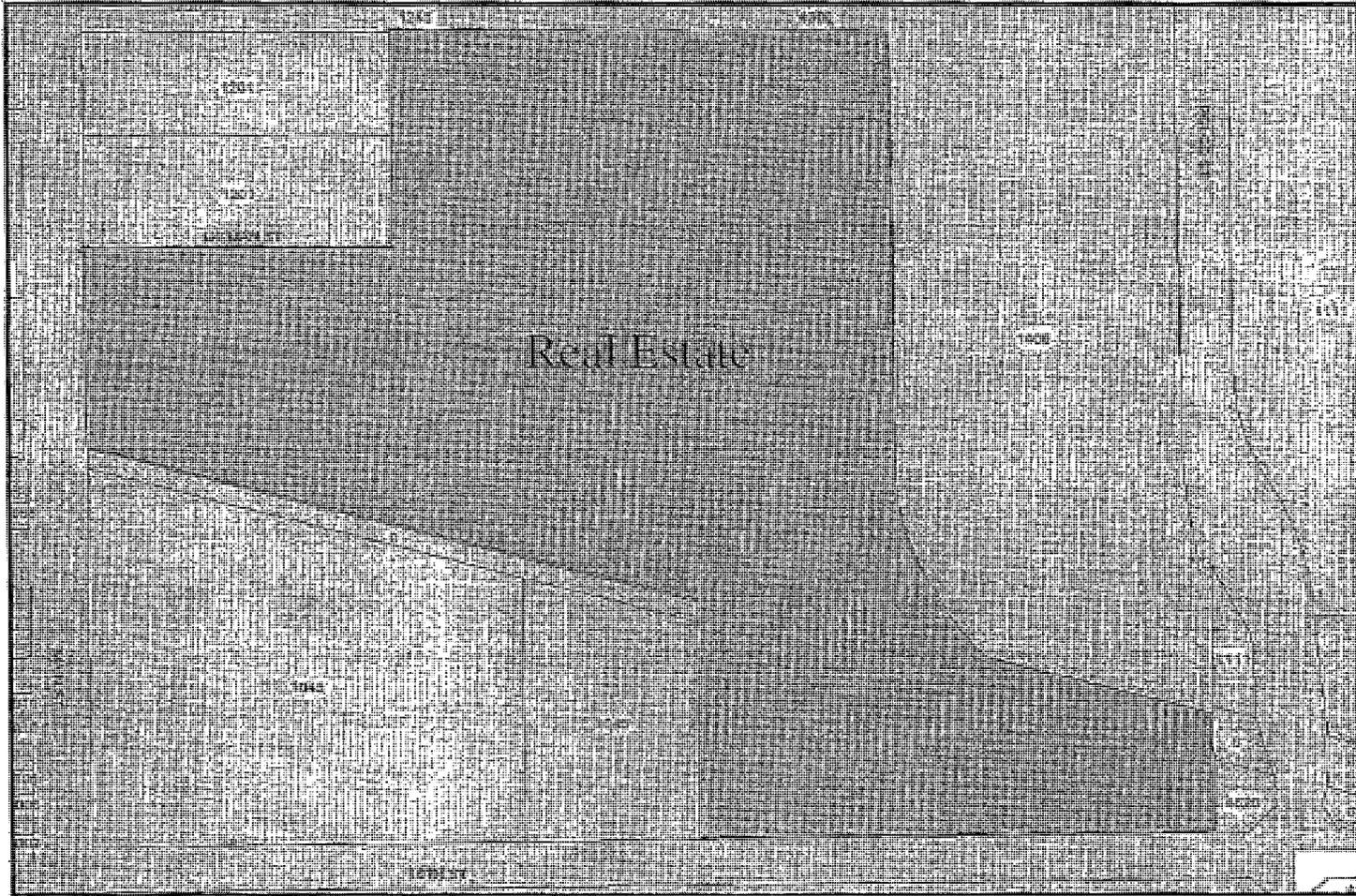
~~Part of the Southeast Quarter of Section 31, Township 16 North, Range 3 East, Marion County, Indiana, more particularly described as follows:~~

~~Commencing at the Southeast Corner of the Southeast Quarter of said Section 31; thence along the East line of said Southeast Quarter Section, North 00 degrees 11 minutes 43 seconds East, (assumed bearing) 167.83 feet to the Southern right-of-way line of the Baltimore and Ohio Railroad (now CSX Corporation), which point is located 40.00 feet perpendicular from the center line of said right of way; thence along the Southern line of said railroad right of way,~~

:EXHIBIT B

Map of the Real Estate

DISCLAIMER: Information on this map is being provided to depict environmental conditions on the Real Estate that are the subject of the land use restrictions contained in the Covenant to which this map is attached and incorporated. The land use restrictions contained in the Covenant were deemed appropriate by the Department based on information provided to the Department by the owner or another party investigating and/or remediating the environmental conditions on the Real Estate. This map cannot be relied upon as a depiction of all current environmental conditions on the Real Estate, nor can it be relied upon in the future as depicting environmental conditions on the Real Estate.



Map of Real Estate
Former Allison Plant 2
Speedway. **M**on County, Indiana

F_XHIBITC

Copy of Comfort Letter



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoqsien and Our Environment.

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*Thllmm W: ErJ.rterly
Ccnunlsslonat*

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (600)4\$1-6027
www.l@m.IN.gov

February 21,2011

l.\fr.Scott Hanis, Executive Director
Speedway Redevelopment Conunission
1010 Main Street
Speedway, Indiana 46224

Re: Former Allison Plant #2
4500 West Gil:rnan Street
Speedway, Marion County
Brownfield Site#: 4100704
USEPA ID IND000806 28

Dear Mr. Harris:

The Comfort Letter for the above-referenced site, issued by the Indiana Department of Environmental Management (IDEM) on Octobet 29, 2010, contained a scrivener's error pertaining to the site acreage the letter was intended to address as a result of a scrivener's enor contained in the July 22 2010 *Phase J Environmental Site Assessment (Phase I ESA)* prepared by Astbury Environmental engineering. The *Phase I ESA*, in fact, qovers the entire Former Plant 2 Site consisting of approximately 26 acres On six. parcels) and not the 20.3 acres referenced in the report. The Comfort Letter was only meant to address three of the six parcels (Parcels I, II,; and ill, which total 21.28 acres) of the Fonner Plant 2 Site, for which the Town of Speedway Redevelopment Commission was a prospective purchaser.

Therefore, to correct the error, IDEM is re-issuing the Comfort letter with correct acreage and parcel information. The corrected Comfort Letter is enclosed herein. The prior-issued letter should be destroyed anreplaced with the enclosed, which will be recorded along with the environmental restrictive covenant on the deed for the sHe.

IDEM is pleased to assist the Town of Speedway with the redevelopment Of the Site. Should you have any questions *or* comments, please contact Kyle Hendrix at 317/232-4402 or toll free from *vi*thin Indiana at 800/451-6027, ext. 2-4402. He can also be reached via email at:lhendrix@if.a.in.gov.

Sincerely,

Kevin D. Davis
Teclmical Review Coordinator
Indiana Brown:fields Program

Enollosure

cc: Jan Pel&; U.S.EPA Region 5 (*electronic copy*)
Meredith Gramelspacher, Indiana Brownfields Program (*electronic copy*)
Kyle Bendrix, Indiana Brownfields Program (*electronic copy*)
David Gillay, Bames & Thornburg (*elemronic copy*)
Mack Overton, Astbury Environmental Engineering, Inc.(*electronic copy*)



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosier and Our Environment.

Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterfr
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
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Toll Free (800) 4J51-6027
www.iaem.IN.gov

October 29, 2010

Mr. Scott Harris, Executive Director
Speedway Redevelopment Commission
1010 Main Street
Speedway, Indiana 46224

Re: Comfort Letter
Former Allison Plant #2
4500 West Gilman Street
Speedway, Marion County
Brownfield Site #: 4100704
USEPA ID IND000806828

Dear Mr. Harris:

In response to the request by Speedway Redevelopment Commission (Prospective Purchaser) to the Indiana Brownfields Program (Program) for assistance concerning the former Allison Plant #2 property located at 4500 West Gilman Street (Site), the Indiana Department of Environmental Management (IDEM) has agreed to provide this Comfort Letter to address applicable limitations on liability for environmental conditions on the Site. Though not a legal release from liability, this letter provides specific information with respect to some of the criteria the Prospective Purchaser must satisfy to qualify for relief from potential liability related to hazardous substances contamination under the bona fide prospective purchaser (BFPP) exemption under Section 101(40) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. §§ 9601 et seq; and Indiana Code (IC) § 13-25-4-S(b) (incorporating 42 U.S.C. § 9607(r)) and potential liability for petroleum contamination under the BFPP exemption under IC § 13-23-13 and IC § 13-24-1 (applying 42 U.S.C. § 9607(r) to petroleum contamination). This letter will also help to establish whether environmental conditions at the Site might be a barrier to redevelopment or transfer.

The Site consists of the 3 parcels listed as Parcel I (parcel #490631106002000914), Parcel II (parcel #490631106003000914), and Parcel III (parcel #490631130006000914) totaling 21.28 acres, and is part of a larger complex of related former industrial facilities. Historical records are unclear as to when past uses began and ceased. A 1915 Sanborn Fire Insurance Map depicts the Marion County Asylum for the Poor located on the Site. Sometime between 1915 and 1936, the United States federal government used the Site as an army base. The initial portion of Plant #2 was constructed in 1936. Sometime after this, the General Motors Corporation (GM) as part of its Allison Transmission Division (Allison) used Plant #2 for aircraft engine testing.

machining, part B cleaning, and warehousing until manufacturing operations ceased in the mid-1990s. In 2004, the primary structures occupying approximately 490,605 square feet of floor space were demolished with a portion of the concrete foundations left in place. When GM sold Allison Transmission in 2007, the deed to the Site was transferred to the Clutch Operating Company, Inc. (current owner). Currently, only the pump house structure with an associated aboveground storage tank (AST) used for fire water storage, a switch house, a substation, and the assorted concrete foundations remain on the closed Site. The Prospective Purchaser intends to develop the Site for mixed use including industrial, commercial, and greenspace.

As part of this request, the Prospective Purchaser provided the Program with the *Phase I Environmental Site Assessment* (Phase I) dated July 22, 2010 prepared by Astbury Environmental Engineering, Inc. (Astbury). The Phase I was conducted utilizing the American Society for Testing and Materials (ASTM) Practice B1527-05, Standard Practice for Environmental Site Assessment, which satisfies the federal "All Appropriate-Inquiries" rule set forth in 40 CFR Part 312. The Phase I noted previous Site investigations completed under the supervision of the U.S. Environmental Protection Agency (EPA) Region 5 identified 10 Areas of Interest (AOIs). These AOIs consisted of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs). Six AOIs were identified as recognized environmental concerns (RECs) in the Phase I and designated by AOI-2 (with the reference to Plant #2) followed by the corresponding REC area. The 8 RECs identified in the Phase I are:

- AOI 2-1: Arsenic, benzo(a)pyrene, and mercury levels in the soil exceeded IDEM's Risk Integrated System of Closure (RISC) Technical Resource Guidance Document (February 15, 2001 and applicable revisions) residential and industrial default closure levels (RDCLs and IDCLs). Metals and chlorinated solvents were detected in the groundwater above their respective RISC IDCLs in monitoring well MW-6 just east of AOI 2-2.
- AOI 2-2: Polyaromatic hydrocarbons (PAHs) were detected in groundwater above their respective RISC IDCLs. Arsenic and lead in groundwater were detected above their respective RISC IDCLs, and many chlorinated solvents detected in the groundwater exceeded their respective drinking water criteria.
- AOI 2-4: Arsenic exceeded its RISC IDCL in soil. Groundwater was impacted by benzene, vinyl chloride, and chromium above their respective Site specific groundwater screening criteria and by arsenic and methylene chloride above their respective drinking water criteria.
- AOI 2-6: Groundwater was impacted by benzene, cis-1,2-dichloroethene, ethylbenzene, trichloroethene (TCE), and vinyl chloride above their respective drinking water criteria.
- AOI 2-7: Groundwater was impacted by vinyl chloride above its drinking water criteria.
- AOI 2-8: Groundwater was impacted by arsenic, and methylene chloride above their respective drinking water criteria.
- Piping from an underground storage tank (UST), which has been removed, may run under concrete foundations remaining on Site.
- IDEM investigations have determined that groundwater contamination on the Praxair property located adjacent to the north of the Site may have impacted on Site groundwater.

In addition, the Phase I report identified a January 2000 spill of polychlorinated biphenyls (PCBs) containing sludge (IDEM Spill Incident #2000-01-11) as an historical REC. Allison removed the sludge, and excavated the impacted asphalt and subbase in January 2000. Confirmation samples were non-detect for PCBs. Finally, the presence of electrical wire encased in oil and lead, one AST and three 55-gallon drums of petroleum products; incidental amounts of miscellaneous chemicals, and suspect asbestos containing material (ACM) on Site were identified as a de minimis conditions.

Environmental Conditions at the Site

As part of the request for assistance in determining any existing environmental impacts and potential liability at the Site, Indiana Brownfields Program staff have reviewed the following additional reports for this Site:

1. *Description of Current Conditions (DOCC)*, dated July 19, 200, prepared by Arcadis GM, Inc. {ARCADIS}
2. *Resource Conservation and Recovery Act (RCRA) Facility Investigation Report (RFI Report)*, dated February 2009, prepared by ARCADIS
3. *Additional Sampling Data Report*, dated September 2008, prepared by ARCADIS
4. *Fonner UST Area A (AOJ2-1)- Excavation Completion*, dated March 2009, prepared by ARCADIS
5. *Stage 11 Additional Sampling Data Report*, dated March 2009, prepared by ARCADIS
6. *Interim Measures Sem -Annual Status and Groundwater Monitoring Report- First Half 09*, dated July 14, 2009, prepared by ARCADIS

RCRA- Performance-Based Corrective Action-Agreement (PBCAA)

Description of Current Conditions (DOCC)

On April 27, 2005, GM entered into a Performance-Based Corrective Action Agreement (PBCAA) with the U.S. EPA Region 5 to address RCRA corrective action activities at the Allison Transmission Campus, which includes the Site. The DOCC is one of the initial steps taken in the RCRA Corrective Action process and was prepared on behalf of Environmental Corporate Remediation Company, Inc. (ENCORE), a subsidiary of GM, which is responsible for managing this project and administering the RCRA Corrective Action. The DOCC Report discusses the SWMUs and AOCs identified by U.S. EPA Region 5 and other areas of interest not identified by U.S. EPA Region 5 that may require further action. The SWMUs and AOCs identified during the historical investigations were combined by GM into five AOIs based upon geographical location. Also GM identified other AOIs based on further review of available information; These AOIs include Site locations previously investigated and/or locations of past or present treatment, storage, or disposal of hazardous constituents of which either ENCORE or Allison has knowledge.

Under RCRA Corrective Action, soil and groundwater data were compared with screening criteria derived from the risk-based preliminary remediation goals published by U.S. EPA Region 9; site-specific volatilization to indoor air criteria, soil migration to groundwater criteria for protection of drinking water sources, maximum contaminant levels (MCLs) established under the Safe Drinking Water Act, equivalent drinking water limits for constituents without MCLs, and groundwater contact criteria. Based on the results of the screening evaluation, detected levels of COCs in one or more soil and/or groundwater samples exceeded the screening criteria in twenty-six AOIs at the Site. Thirty-nine constituents were historically detected at concentrations above the screening levels.

Based on the screening criteria, the DOCC indicated that no further remedial action was required at AOI 2-9. The following on-site areas needed additional investigation: AOI 2-1, AOI 2-2, AOI 2-3, AOI 2A, AOI 2-5, AOI 2-6, AOI 2-7, AOI 2-8, and AOI 2-10. The following is a brief description of activities undertaken by ENCORE to address these areas:

Historically, 42 USTs, sumps, and storage vaults (a/k/a hot wells) used at the Site were located in AOI 2-1, AOI 2-2, AOI 2-3, AOI 2-4, AOI 4-S, and AOI 2-10. UST contents included laboratory fuel, waste oil, water alcohol, engine fuel, fuel, and gasoline. The USTs were removed between 1998 and 2000 along with approximately 3,198 tons of impacted soil and properly disposed. Currently, no regulated USTs remain on the Site. Five sumps and a hot well used mainly for cooling tower water were removed in 1999. One sump was decommissioned and closed in place due to concerns regarding building integrity.

Soil samples were collected from 0 to 14 feet below grade surface (bgs) and analyzed for total petroleum hydrocarbons (TPH)-diesel range organics (DRO), TPH gasoline range organics (GRO), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals PCBs, and pH. Detected levels of COCs in on-site surface and subsurface soil samples exceeded soil screening criteria established in the DOCC for benzo(a)pyrene, mercury, arsenic, and lead.

Regional groundwater information indicates that a shallow aquifer exists at approximately 25 to 30 feet bgs. Low and high capacity water wells in the Site vicinity range in depths from 40 feet to 270 feet bgs. On-site groundwater was typically encountered between 12 to 19.5 feet bgs and was analyzed for one and/or all of the following: TPH DRO, TPH-GRO, VOCs, SVOCs, total dissolved solids and dissolved metals, PCBs, and pH. Groundwater analytical results indicated the levels of arsenic, lead, chromium, Cis-1,2-DCE, TCE, vinyl chloride and total chromium exceeded the groundwater screening criteria.

On-site and off-site monitoring wells and borings were located along or near the Site's perimeter to determine if on-site groundwater had been or was being impacted by an on-site source. Analytical results indicated that levels of VOCs and metals exceeded their respective groundwater screening criteria and are believed to originate from an upgradient, off-site source.

Former Allison Plant #2
BFPP Comfort Letter
BFD # 4100704
October 29, 2010
Page 5 of 11

RCRA Facility Investigation Report (RFI)

The February 2009 RFI Report provides an overview of the status of environmental conditions on the Site following a RCRA Facility Investigation (RFI) conducted in accordance with the RFI Work Plan submitted by ARCADIS on November 22, 2005 to U.S. EPA Region 5. The objectives of the RFI were to characterize the nature and extent of known or potential releases, to assess risks to human health and the environment, to collect data for a baseline human health-risk assessment to determine if interim measures were needed, and determine if remedial action is necessary. The RFI report noted the following conditions:

- VOCs exceeded the drinking water criteria in the AOI 2-1.
SVOCs exceeded the industrial soil criteria within AOI 2-2.
VOCs exceeded the drinking water criteria in the AOI 2-2.
Arsenic exceeded the soil migration to groundwater criteria within AOI 2-4.
Arsenic and methylene chloride exceeded the drinking water criteria in AOI 2-4.
VOCs exceeded the drinking water criteria in AOI 2-6.
Vinyl chloride exceeded the drinking water criteria in AOI 2-7.
VOCs in monitoring wells located on the northern portion of the Site (Plant #2 Perimeter) exceeded the drinking water criteria.
Arsenic exceeded the industrial soil criteria and migration to groundwater soil criteria along the Plant #2 Perimeter.
- No constituents exceeded the soil screening criteria within AOI 2-5, AOI 2-7, AOI 2-8, AOI 2-9, and AOI 2-10.
- No constituents exceeded the groundwater screening criteria in AOI 2-3.

As part of the RFI Work Plan, a risk assessment was completed based on on-Site and off-Site potentially exposed populations. The RFI report indicated that there are no potentially significant risks from current or future exposure to hazardous constituents in soil, groundwater, non-aqueous phase liquids, or smear zone soil in AOI 2-1, AOI 2-2, AOI 2-3, AOI 2-4, AOI 2-5, AOI 2-6, AOI 2-7, AOI 2-8, AOI 2-9, AOI 2-10, and Plant #2 Perimeter.

Further Remedial Actions

Although the RFI did not indicate any further investigation or corrective measures were warranted at the Site, approximately 46.6 tons of historic HCl impacted soils in AOI 2-1 were excavated in January 2009 to facilitate redevelopment of the Site. No confirmation samples were taken; however, the excavation was bounded by soil sample locations where mercury was not detected.

Current Conditions

For the purposes of this letter, and based upon the intended reuse of the Site, sample results were compared to the IDEM Risk Integrated System of Closure (RJSC) Technical Resource Guidance Document (February 15, 2001 and applicable revisions) residential default

closure levels (RDCLs) and industrial default closure levels (IDCLs) for soil and groundwater. The above-referenced investigations revealed the following current conditions:

- Levels of benzo(a)pyrene, benzo(a)anthracene; benzo(b)fluoranthene; and dibenzo(a,h)anthracene in on-Site surface soil (0 to 10 feet bgs) exceed their respective RISC Direct Contact RDCLs and/or Direct Contact IDCLs.
- Lead was detected in surface soil above the Direct Contact RDCL of 400 ppm in one analytical result, but was below the Direct Contact IDCL of 1,300 ppm.
- Analytical results for arsenic in 46 surface soil samples ranged from 4.25 ppm to 14.1 ppm exceeding its Direct Contact RDCL of 3.9 parts per million (ppm) but below the Direct Contact IDCL of 20 ppm.
Analytical results for arsenic in 15 surface soil samples ranged from 22.3 ppm to 132 ppm exceeding the Direct Contact RDCL of 3.9 ppm and the IDCL of 20 ppm.
- The detected level of arsenic in one sub surface soil sample (> 10 feet bgs) exceeded the RfSC Migration to Groundwater RDCL and IDCL of 5.8 ppm
Levels of Cis-1,2-dichloroethene in groundwater in 4 monitoring wells and levels of trans-1,2-dichloroethene, 1,1,1-trichloroethane, and carbon tetrachloride in groundwater in one monitoring well exceeded their respective RISC RDCLs but were below their respective IDCLs.
- Levels of TCE in groundwater in 4 monitoring wells exceeded the RISC RDCL of 0.005 ppm and IDCL of 0.031 ppm.
Levels of vinyl chloride in groundwater in 4 monitoring wells exceeded the RISC RDCL of 0.005 ppm and IDCL of 0.031 ppm. Also, vinyl chloride levels exceeded the draft commercial groundwater screening levels for 10, 20, and 25 year exposure durations listed in IDEM's Draft Vapor Intrusion Pilot Program Supplement dated February 4, 2010.

See attached Tables 1, 2, and 3 for information regarding current Site soil and groundwater conditions. All documents related to contamination at the former Allison Plant #2 facility can be viewed at IDEM's Virtual File Cabinet at:
<http://vfc.idem.in.gov/Pages/Public/Login.aspx>.

Liability and Enforcement Discretion

IDEM's "Brownfields Program Comfort and Site Status Letters" Nonrule Policy Document, W-0051 (April 18, 2003) (Comfort and Site Status Letter Policy) provides that IDEM may issue a letter to a stakeholder involved in redevelopment of a brownfield if the stakeholder satisfies certain eligibility criteria outlined below. IDEM concludes, based in part on information provided by the Prospective Purchaser, that:

- (1) no state or federal enforcement action at the Site is pending;
- (2) no federal grant requires an enforcement action at the Site;
- (3) no condition on the Site constitutes an imminent and substantial threat to human health or the environment

- (4) neither the Prospective Purchaser nor an agent or employee of the Prospective Purchaser caused, contributed to, or knowingly exacerbated the release or threat of release of any hazardous substance or petroleum at the Site, and;
- (5) the Prospective Purchaser is eligible for an applicable exemption to liability, specifically the BFPP exemption to liability for hazardous substance contamination found in CERCLA § 107(r) and IC 13-25-S(b), and for petroleum contamination under IC §§ 13-23-13 and 13-24-1, provided the applicable statutory criteria are met.

As discussed below, the Prospective Purchaser has demonstrated to IDEM's satisfaction that it is eligible for the BFPP exemption from liability for hazardous substance and/or petroleum contamination provided it takes the "reasonable steps" required by statute, recommendations for which are also discussed below.

Bona Fide Prospective Purchaser

Under IC § 13-25-4-S(a), which bases liability on Section 107(a) of CERCLA, a person that is liable under § 107(a) of CERCLA is liable to the state in the same manner and to the same extent. Under § 107(r) of CERCLA and IC § 13-25-4-8(b), a BFPP is not liable under § 107(a) as long as the BFPP does not impede the performance of a response action or natural resource restoration. 42 U.S.C. § 9607(r). Thus a prospective purchaser that satisfies CERCLA §§ 101(40) (defining bona fide prospective purchaser) and 107(r) would not be liable under CERCLA § 107(a) or IC § 13-25-4-B(a). Similarly, a prospective purchaser that satisfies CERCLA §§ 101(40) and 107(r) would not be liable under IC §§ 13-23-13 and 13-24-1 for petroleum contamination existing on the Site.

The BFPP provisions of CERCLA require a person to meet the criteria of CERCLA §§ 101(40) and 107(r) to be protected from liability. If the Prospective Purchaser satisfies these criteria, IDEM is prohibited from pursuing the Prospective Purchaser even if cleanup requirements change or if IDEM determines that a response action related to existing known hazardous substances or petroleum contamination from prior releases at the Site is necessary. Furthermore, the Prospective Purchaser's satisfaction of CERCLA §§ 101(40) and 107(r) prohibits IDEM from pursuing it for response costs relating to the past release of hazardous substances or petroleum contamination at the Site. Therefore, IDEM will not require the Prospective Purchaser to respond to the past release of hazardous substances or petroleum contamination found at the Site beyond the Scope of the statutorily-required reasonable steps outlined below, even if cleanup requirements change or if IDEM determines that a response action is necessary in the future. This decision, however, does not apply to past or present hazardous substance or petroleum contamination that is not described in this letter, future releases, or applicable requirements under the Resource Conservation and Recovery Act, 42 U.S.C. § 6901.

To meet the statutory criteria for liability protection as a BFPP, a landowner must meet certain threshold criteria and satisfy certain continuing obligations. IDEM notes that the Prospective Purchaser will acquire ownership of the Site after January 11, 2002 (and after June

30, 2009), and any disposal of hazardous substances and petroleum at the Site will have occurred prior to it acquiring the Site. See 42 U.S.C. § 9601(40)(A). Based on information reviewed by IDEM, IDEM concludes that the Prospective Purchaser has conducted all appropriate inquiries into the previous ownership and uses of the Site. See 42 U.S.C. § 9601(40)(B)(i). Furthermore, the Prospective Purchaser has represented that it is not potentially liable or affiliated with any person that is potentially liable for potential contamination at the Site, and IDEM has no information to the contrary, See 42 U.S.C. § 9601(40)(H). Therefore, the Prospective Purchaser meets the threshold requirements of CERCLA §§ 9601(40) (A), (B) and (H) to qualify for the status of BFPP under 42 U.S.C. § 9601(40).

The continuing obligations the Prospective Purchaser must undertake to maintain BFPP status are outlined in 42 U.S.C. §§ 9601(40) (C)-(G) and include exercising "appropriate care with respect to hazardous substances found at the facility by taking reasonable steps to – (i) stop any continuing release; (ii) prevent any threatened future release; and (iii) prevent or limit human, environmental, or natural resource exposure to any previously released hazardous substance." 42 U.S.C. § 9601(40)(D). By extension, under CERCLA §§ 13-11-2-148(h), 13-11-2-150(f) and 13-11-2-151(g), the continuing obligations the Prospective Purchaser must undertake to maintain BFPP status are outlined in 42 U.S.C. §§ 9601(40) (C)-(G) and include exercising appropriate care with respect to petroleum products found at the facility by taking reasonable steps to – (i) stop any continuing release; (ii) prevent any threatened future release; and (iii) prevent or limit human, environmental, or natural resource exposure to any previously released petroleum product. Furthermore, the Prospective Purchaser recognizes that in order to maintain the status of BFPP, it will have to continue to provide the cooperation, assistance and access required by 42 U.S.C. § 9601(40) (E). In addition, the Prospective Purchaser will have to maintain compliance with land use restrictions established for the Site, and not impede the implementation or the effectiveness of institutional control as required by 42 U.S.C. § 9601(40) (F). To maintain BFPP status, the Prospective Purchaser must also comply with 42 U.S.C. § 9601(40) (C) regarding notices and 42 U.S.C. § 9601(40) (Q) regarding requests for information or a **str**aiive subpoenas,

Reasonable Steps

As of the date of issuance of this Comfort Letter, IDEM believes the following are appropriate reasonable steps for the Prospective Purchaser to undertake with respect to the hazardous substances and petroleum contamination found at the Site in order to qualify as a BFPP, as well as to satisfy the eligibility requirements for issuance of this letter under the Comfort and Site Status Letter Policy:

- Comply with all existing land use restrictions applicable to the Site.
- Implement and maintain new land use restrictions required by this letter.
- The Prospective Purchaser must communicate any newly gathered information about existing contamination or any information about new (or previously unidentified) contamination to IDEM upon becoming aware of such.

Implementation of the above-enumerated reasonable steps in addition to ongoing satisfaction of the additional statutory conditions will, with respect to IDEM, satisfy the statutory conditions for the BFPP protection. Please be advised that any work performed at the subject property must be done in accordance with all applicable environmental laws in order to ensure no inadvertent exacerbation of existing contamination found on the Site which could give rise to liability.

Institutional Controls

U.S. EPA Region 5 determined that contamination identified in the soil and groundwater on the Site above U.S. EPA-derived screening criteria required the recording of an environmental restrictive covenant (ERC) on the deed for the Site to ensure no exposure to on-Site contamination. See Attachment 1. In order to qualify for liability protection as a BFPP in accordance with CERCLA § 101(40)(F) and as a condition of issuance of this letter under the Comfort and Site Status Letter Policy, the Prospective Purchaser must comply with the land use restrictions in the current deed for the Site. The current land use restrictions with which the Prospective Purchaser must comply are stated below in general terms:

- U.S. EPA Region 5 and IDEM are granted irrevocable access to the Site for the purpose of completing certain environmental investigation and remediation activities pursuant to the PBCAA.
- The Site is to be used for commercial and industrial purposes only.
- No groundwater from beneath the Site will be used for any 'domestic potable uses', which include drinking, showering, cooling, or cleaning. NO wells can be instilled for any purpose other than contaminant assessment or monitoring without IDEM approval.
- Any soils and/or debris disturbed and/or excavated from the Site shall be managed in accordance with all applicable federal and state laws and at the then-current owner's expense.
- The then-current owner shall not unreasonably interfere with the operation of MLY technology, treatment or other activities engaged in by the General Motors Corporation and any of its affiliates in association with obligations under the PBCAA without prior notice to GM.

Furthermore, since impacts to soil and groundwater above RDCLs and IDCLs have been identified on the Site, IDEM is requiring additional land use restrictions through the recording of the enclosed BRC on the deed for the Site to ensure no exposure to on-Site contamination. In order to qualify for liability protection as a BFPP, and as a condition of issuance of this letter under the Comfort and Site Status Letter Policy, following Site acquisition, the Prospective Purchaser must record the enclosed ERC on the deed for the Site. The new ERC includes the following land use restriction, stated below in general terms:

- either evaluate and determine, with IDEM concurrence, the absence of vapor intrusion in existing and/or newly constructed Site buildings potentially affected by

contamination on the Site or mitigate all potential human exposure pathways from the migration of vapors from the VOC contamination identified on the Site into existing and/or newly constructed Site buildings where groundwater contaminant levels have been detected above IDEM's April 26, 2006 Draft Vapor Intrusion Pilot Program Guidance, Commercial Groundwater Screening Levels for 25 year exposure in sand soils.

Conclusion

IDEM encourages the industrial/commercial redevelopment of the Site. Should additional information gathered in conjunction with future Site investigations and/or remediation demonstrate that a particular restriction is no longer necessary to protect human health and the environment or that Site conditions are appropriate for unrestricted use, IDEM will, upon request, consider modification or termination of the ERCs recorded on the deeds for the parcels comprising the Site. Conversely, it is also possible that new land use restrictions may be necessary in the future due to new information or changed circumstances at the Site.

Pursuant to the Comfort and Site Status Letter Policy, the determinations *in* this letter are based on the nature and extent of contamination known to IDEM as of the date of this letter, as a result of review of information submitted to or otherwise reviewed by IDEM. If additional information regarding the nature and extent of contamination at the Site later becomes available, additional measures may be necessary to satisfy the reasonable steps requirements of BFPP status. In particular, if new areas of contamination or new contaminants are identified, the Prospective Purchaser must communicate this information to IDEM upon becoming aware of it and should ensure that reasonable steps are undertaken with respect to such contamination in order not to jeopardize BFPP status.

This letter shall not be construed as limiting a Prospective Purchaser's ability to rely upon any other defenses and/or exemptions available to it under any common or environmental law, nor shall it limit any ongoing obligations of the Prospective Purchaser that are required to maintain the status of BFPP or the benefit of the issuance of this letter. Furthermore, the terms and conditions of this letter shall be limited in application to this letter recipient and this Site, and shall not be binding on IDEM at any other Site.

If at any time IDEM discovers that the above-mentioned reports, any representations made to IDEM, or any other information submitted to or reviewed by IDEM was inaccurate, which inaccuracy can be attributed to the Prospective Purchaser, then IDEM reserves the right to revoke this letter and pursue any responsible parties. Furthermore, if Site conditions are later determined by IDEM to constitute an imminent and substantial threat to human health or the environment, IDEM reserves the right to revoke this decision and pursue any responsible parties. Additionally, this decision is a statement of enforcement priority based on known contaminant levels and does not apply to future releases, or applicable requirements under the Resource Conservation and Recovery Act, 42 U.S.C. § 6901. In addition, **if** any acts or omission by the Prospective Purchaser exacerbates the contamination at the Site, or if the Prospective Purchaser

Former Allison Plant #2
BFPP Comfort Letter
BFD # 4100704
October 29, 2010
Page 11 of 11

does not implement and maintain the reasonable steps outlined in this letter, then the protection provided by the BFPP exemption may not apply. Furthermore activities conducted at the Site subsequent to purchase that result in a new release can give rise to full liability.

In order for this letter to be given effect by IDEM, the ERC must be recorded on the deed for the three parcels that comprise the Site in the Marion County Recorder's Office. Please return a certified copy of the recorded document to:

Kyle Hendrix, Project Manager
Indiana Brownfields Program
100 North Senate Avenue, Room 1275
Indianapolis, IN 46204

IDEM is pleased to assist the Town of Speedway with the redevelopment of the Site. Should you have any questions or comments please contact Kyle Hendrix at 317/232-4402 or toll free from within Indiana at 800/451-6027, ext. 2-4402. He can also be reached via email at: Jhendrix@ifa.in.gov.

Sincerely,


Deputy Assistant Commissioner
Office of Land Quality

Enclosure

cc: Jan Pels, U.S. EPA Region 5 (*electronic copy*)
M Jredith Gramelspacher, Indiana Brownfields Program (*electronic copy*)
Kyle Hendrix, Indiana Brownfields Program (*electronic copy*)
David Gillay, Barnes & Thornburg (*electronic copy*)
Mack Overton, Astbury Environmental Engineering, Inc; (*electronic copy*)

Table!
Surface SoSample Results Ex-ceeding RISC RDCLs for Direct Contact

Location		Date	Depth {ftbgs}	Benzo (a) Pyrene	Lead	Benzo (a) , Anthracene	Benzo (b) Fluoranthene	Dibenzo (a,h) Anthracene		
Area	SampleID									
AOI2-01	Area A SW 13	9/28/1999	5	3.5	-	-	-	-		
	Area ASW-3	7/3/1999	8	3.9	-	-	-	-		
AOI2-02,	Sump3BTM2	8/18/1999	3.5	3.9	-	-	-	-		
	Sump3SWE	8/13/1999	2	3.4	-	-	-	-		
	Sump3SWW	8/18/1999	7	5.2	-	-	-	-		
AOil--04	SS-1	7/9/1999	0.5	2.5	481	-	-	-		
	SS-3	7/9/1999	0.5	2.5	-	-	-	-		
	SS-3A		0.5	2.2	-	-	-	-		
AOI2-05	T-16 SWE		5	2.4	-	-	-	-		
AOI2-09	SB-:F	2/10/2000	1	2.1	-	-	-	-		
	SB-52	2/15/2000	1	0.505	-	-	-	-		
AOI2-06	SB-44	2/11/2000	1	2.1	-	-	-	0.57		
	SB-48	2/11/2000	1	0.61	-	-	-	-		
AOI2-02	SB 02-02-0603	12/20/2006	1	61	-	69	-	6.1		
			3	20	-	18	49	2.1		
			5	11	-	11	20	-		
			7	23	-	21	38	2.3		
	SB 02-02-0703	9/14/2007	1	100	-	143	143	15.4		
			3	74.2	-	125	114	15		
			5	58.2	-	89.6	86.3	12		
	SB 02-02-0703 (dup)	9/14/2007	7	31.7	-	37.5	39.6	5.75		
			7	29	-	41.7	38.1	6.4		
			SB 02-02-0801	4/23/2008	1	7.43	-	9.54	7.92	4.36
			TP-02-02-0804	11/3/2008	1	100	-	127	101	25.8
					7	106	-	138	101	29.1
			TP 02-02-805	11/3/2008	1	95.6	-	130	98.3	26.3
7	69.3	-			98.3	76.6	18.1			
TP 02-02-806	11/5/2008	1.5	13.6	-	19.9	16.2	4.02			
<i>RDCL for Direct Contact</i>				0.5	400	5	5	0.5		
<i>IDCL for Direct Contact</i>				1.5	1,300	15	15	1.5		

Notes: Results are in parts per billion
 Italic=> Direct Contact RDCL
 Bold=> Direct Contact IDCL
 "-" =< Direct Contact RDCL

Table
 Arsoolc Sllll SrupleExceeding **RUSE**RDCL& pndlor IDCLs

Area	Location	Date	Depth (feet)	Value
	AreaASW-1	7/28/1999	8	6.12
	AreaASW-2	7/29/1999	8	5.42
	AreaASW-3		8	6.1
	AreaASW-4		4	4.46
	AreaASW-5	8/4/1999	8	9.01
	AreaASW-6	8/4/1999	8	10.3
	AreaASW-7		8	10.5
	AreaASW-8		8	5.43
	AreaASW-13		8	4.25
	AreaAbW-13		5	11.9
	SB 02-01-0602		(U-2)	5.39
		11/27/2006	8-10	4.88
	S 5	10/21/2008	0.8-2	14.1B
	S 5	10/21/2008	8-10	4.4E
	T	7/28/1999	10	5.3
	T	7/28/1999	10	5.8
	T-2	7/28/1999	10	6.4
	T-2	7/28/1999	10	6.15
	MB1TM2	8/4/1999	10	4.41
	T-5BTM2	8/5/1999	10	5.14
	T-7BTM1	8/4/1999	10	
	T-8BTM2	7/29/1999	10	1.8
	T-9BTM1	7/29/1999	10	8.37
	T-9BTM2	7/29/1999	10	1.8
	T-10BTM1	7/30/1999	10	8.37
	T-10BTM2	7/30/1999	10	1.8
	T-11BTM1	8/3/1999	10	0.77
	T-12BTM1	7/30/1999	10	6.07
	T-12BTM2	7/30/1999	10	5.52
	T-13BTM1	8/3/1999	10	7.13
	T-13BTM2	8/3/1999	10	6.73
	T-14BTM1	8/3/1999	10	6.11
	T-14BTM2	8/3/1999	10	5.92
	T-15BTM1	8/3/1999	10	5.92
	T-15BTM2	8/3/1999	10	5.05
	Sump ABTMI		2	4.66
	Sump ABTMI		2	9.46
	AreaASW-11		5	311.1
	AreaASW-12	9/12/1999	5	11.8
		10/12/2003	12-14	0.7
		12/15/1999	2	65.7
			2	41.1
			2	71.4
			3.5	30.1
			2	31.7
		11/3/1999	2	120
		11/3/1999	7	132
			0.5	121
	AreaD SW-1-4		4	
	AreaD SW-12		4	5.84
	AreaDSW-15		4	7.32
	AreaDSW-17	10/26/1999	4	8.48
	AreaDSW-18	10/26/1999	4	MI
	AreaDSW-19	10/26/1999	4	14
	AreaDSW-20	10/26/1999	4	13.5
	AreaDSW-16	10/26/1999	4	28.5
	AreaDSW-21	10/26/1999	4	30.9
	SS-2	11/3/1999	0.5	30.7
		11/3/1999	0.5	21.8
		11/3/1999	5	30.9
		11/3/1999	5	3.9
		11/3/1999	5	20
		11/3/1999	5	5.8
		11/3/1999	5	5.8

Notes: Results in italics are estimated values
 Italic -> Direct Contact RDCL
 Bold -> Direct Contact IDCL
 Bold Italic -> Migrated to Groundwater IDCL and IDCL
 J -> laboratory estimated value

Table 3
Groundwater Results Exceeding RDCLs/IDCLs/Vapor Intrusion Groundwater Screening Values

Sample ID	Date	Trichloroethene	Cis-1,1-Dichloroethene	Vinyl Chloride	Trans-1,2-Dichloroethene	1,1,1-Trichloroethane	Carbon Tetrachloride
MW 064(-)S2	5/13/2008	0.101	-	-	-	-	-
MW-(0704-82	4/9/2009	-	0.0966,	0.185	-	-	-
MV-0705-82	5/20/2010	0.0344	-	-	-	-	-
MW-0706-82	5/13/2008	-	-	6.267	...	-	-
MW-OS02-S2	4/9/2009	-	0.154	-	-	-	-
MW2-2-S2	5/13/2008	-	-	0.439	...	-	-
MW2-4- PZ-0801-S2	5/20/2010	0.0385	M81	0.0588	0.49	-	-
PZ-0801-S2	4/9/2009	0.168.	0.184	0.0042	-	-	-
MW-0617-S2	5/12/2008	-	-	-	-	0.204	-
MW-0701-SZ	5/21/2010	-	-	-	-	-	0.009
<i>RJSCRDCL</i>		{}.005	0.07	0.002	iU	0.2	0.(){}5
RISCIDCL		0.031	1	0.004	2	29	0.022
Applicable Draft VI Screening Level	10 year duration	0.7	*	0.23	*	*	*
	20 year duration	0.35	*	0.110	*	'''	*
	25 year duration	0.28	*	0.092	*	*	*

N6t ;JS; Results are in parts per million
Italic > RDCL
Bold > IDCL
 "-" = < IDCL or the Draft VI screening levels
 VI = vapor intrusion
 "*" = 910 current IDEM value

ATTACHMENTS

Exhibit B Reservation of Rights and restrictions

And

Exhibit C - Restrictions and Covenants Agreement

From

The U.S. EPA Region 5 Recorded Environmental Restrictive Covenant

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Restri:tion& rmd CovMallb A lirnmt

This Restri:tion of Md CovonrmlAgrc m nt ("R@!riollonand CQY@pans Agr ment") is
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Exh!btC

applicable Environmental Law, or the level of or exposure to which is prohibited under any applicable Environmental Law, including asbestos, asbestos-containing materials, polychlorinated biphenyls, radioactive materials, cyanide, lead, chromium, lead, petroleum products; and petroleum byproducts,

EKC: LC

Table 1
Surface Soil Sample Results Exceeding RISC RDCLs for Direct Contact

Location		Date	Depth (ft bgs)	Benzo(a) Pyrene	Lead	Benzo(a) Anthracene	Benzo(b) Fluoranthene	Dibenzo (a,h) Anthracene
Area	SampleID							
AOI2-01	AreaASW13			3.5	-	-	-	-
	AreaASW-3			3.9	-	-	-	-
AOI2-02	Sample 3 BTM2			3.9	-	-	-	-
	Sample 3 SWE	8/18/1999	2	3.4	-	-	-	-
	Sample 3 SW W	8/18/1999	2	5.2	-	-	-	-
AOI2-04	SS-1	7/9/1999	0.5	2.5	481	-	-	-
	SS-3	7/9/1999	0.5	2.5	-	-	-	-
	SS-3A	1/28/2000	0.5	2.2	-	-	-	-
AOI2-05	T-16 SWE	11/11/1999	5	2.4	-	-	-	-
AOI2-09	SB-37	2/10/2000	1	2.1	-	-	-	-
AOI2-06	SB-52	2/15/2000	1	0.505	-	-	-	-
	SB-44	2/11/2000	1	2.1	-	-	-	0.57
	SB-4&	2/11/2000	1	0.61	-	-	-	-
AOI2-02	SB 02-02-0603	12/20/2006	1	61	-	69	-	6.1
			3	20	-	18	49	2.1
			7	11	-	12	20	-
			7	23	-	21	38	2.3
	SB 02-02-0703	9/14/2007	1	100	-	143	143	15.4
			3	74.2	-	125	114	15
			5	SS.1	-	89.6	86.3	12
			7	31.7	-	37.5	39.6	5.75
	SB 02-02-0703 (dup)	9/14/2007	7	29	-	47	38.1	6.4
	SB 02-02-0801	4/23/2008	1	7.43	-	9.54	7.92	4.36
	TP-DZ-02-0804	11/11/2008	1	100	-	127	101	25.8
			7	106	-	138	111	29.1
TP 02-02-805	11/13/2008	1	95.6	-	130	98.3	26.3	
		7	69.3	-	98.3	76.6	18.1	
TP 02-02-806	11/5/2008	1.5	13.6	-	19.9	16.2	4.02	
<i>RDCL for Direct Contact</i>				0.5	400	5	5	0.5
IDCL for Direct Contact				1.5	1,300	15	15	1.5

Notes: Results are in parts per million
Italic => Direct Contact RDCL
Bold => Direct Contact IDCL
 "-" =< Direct Contact RDCL

Table2

.Arsenic Soil Samples Exceeding RISC RDCLs and/or IDCLs

Area	Location	Date	Depth (feetbgs)	Value
	SampleID			
AOI2-01	.Area.ASW-1	7/28/1999	8	6.12
	.AreaASW-2	7/29/1999	8	5.42
	Area.ASW-3	7/30/1999	8	6.1
	AreaASW 3A	8/31/1999	4	4.46
	AreaASW-4	8/4/1999	8	9.01
	AreaASW-5	8/4/1999	8	10.3
	AreaASW-6	8/4/1999	8	10.5
	AreaASW-7	8/4/1999	8	5.43
	AreaASW-8	8/4/1999	8	4.25
	AreaASW-13	9/28/1999	5	11.9
	SB 02-0i-0602	11/27/2006	0.8-2	5.39
	SB 02-01-0602	11/27/2006	8-10	4.88
	SB 02-01 0805	10/21/2008	0.8-2	14.1B
	SB D2-01-08D5	10/21/2008	8-10	4.1E
	T-1BTTM1	7/28/1999	10	5.3
	T-1 BITM2	7/28/1999	10	5.8
	T-2BTTM1	7/28/1999	10	6.4
	T-2BTTM2	7/28/1999	10	6.15
	T-3BTI1v12	8/4/1999	10	4.47
	T-5BTTM2	8/5/1999	10	5.14
	T-7BTTiv11	8/4/1999	10	4.16
	T-8BTIM2	7/29/1999	10	4.04
	T-9BTIM1	7/29/1999	10	13.0
	T-9BITM2	7/29/1999	10	JUJ
	T-10 BTTi\fl	7/30/1999	10	8.37
	T-10BITM2	7/30/1999	10	11.1
	T-11 BTIM1	8/3/1999	10	6.77
	T-12B1TM1	7/30/1999	10	6.07
	T-12BtrM2	7/30/1999	10	5.52
	T-1:3)3TIM1	8/3/1999	10	7.33
	T-13BTTM2	8/3/1999	10	6.73
	T-14BTTM1	8/3/1999	10	6.15
T-14BTIM2	8/3/1999	10	5.92	
T-15B BTTMI	8/3/1999	10	538	
T-15BBTIM2	8/3/1999	10	5.05	
Su:rrp A BTTM1	8/5/1999	2	4.66	

Table3
Groundwater Results Exceeding RDCLs/IDCLs/Vapor Intrusion-Groundwater Screening Values

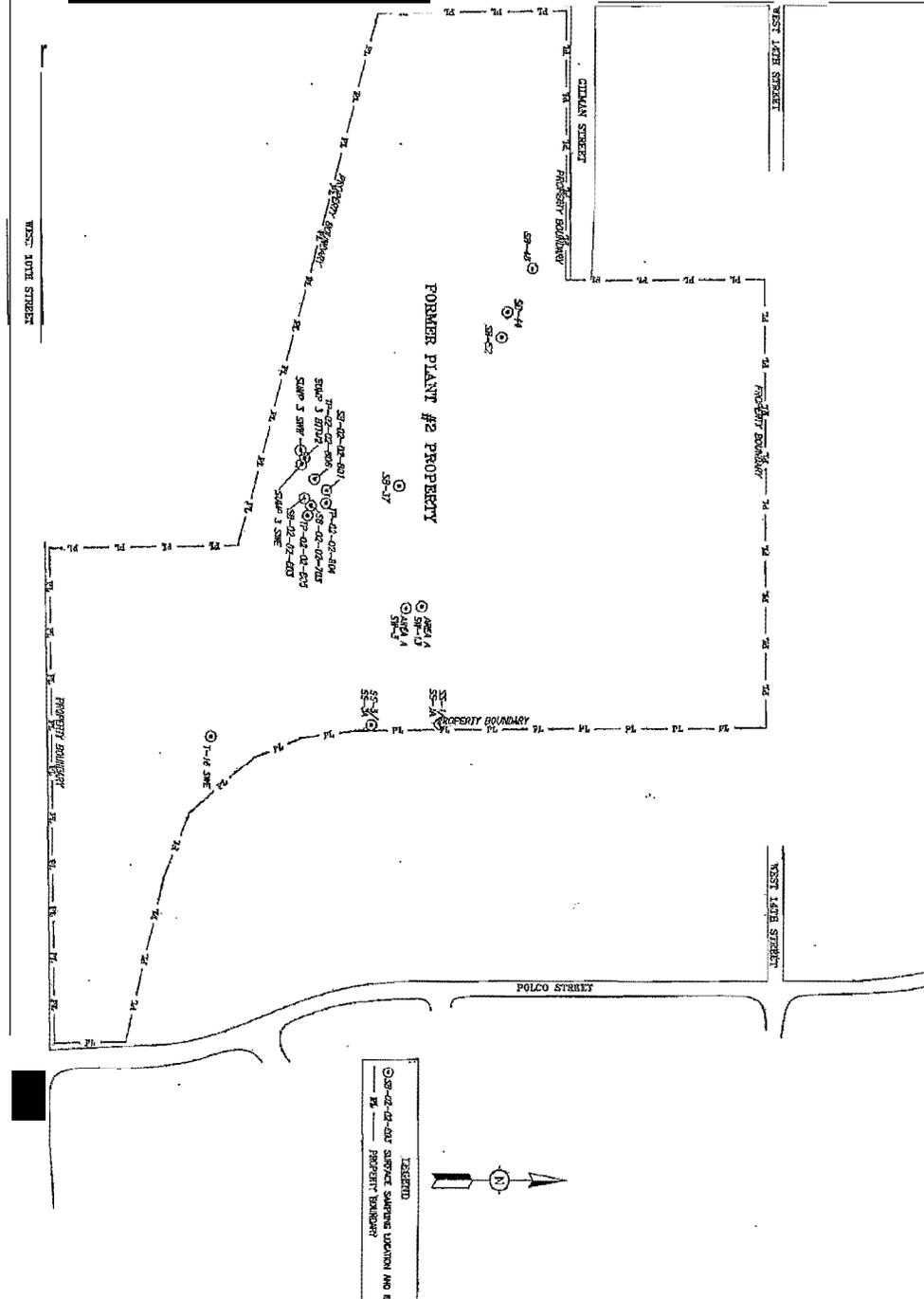
SampleID	Date	Trichloroethene	Cis-1,2-Dichloroethene	Vinyl Chloride	Trans-1,2-Dichloroethene	1,1,1-Trichloroethane	Carbon Tetrachloride
MW-0640-82	5/13/2008	0.101	-	-	-	-	-
07Q4-S2	4/9/2009	-	0.0966	0.185	-	-	-
705-SZ	5/20/2010	0.0344	-	-	-	-	-
13/2008	4/9/2009	-	-	0.267	-	-	-
	4/9/2009	-	0.184	-	-	-	-
MW2-4-82	5/13/2008	-	-	0.439	-	-	-
	5/20/2010	OJJ38S	0.681	0.0588	0.49	-	-
PZ-0801-S2	4/9/2009	0.168	0.168	0.0042	-	-	-
MV-0517-s2	5/12/2008	-	-	-	-	0.204	-
MW-0101-S2	5/21/2010	-	-	-	-	-	-
<i>RJSCRDCL</i>		0.005	0.07	0.002	0.1	0.2	0.005
IUSCIDCL		0.031	1	0.004	2	29	0.622
Applicable Draft VI Screening Level	10year duration	0.7	*	0.23	*	III	*
	20year duration	Q.35		0.110	*	II	*
	25year duration	0.28	*	0.092	*	*	*

Notes: Results are in parts per million
Italic=>RDCL
Bold=>IDCL
 "- "<RDCL or the Draft VI screening levels
 VI=vapor intrusion
 "*" =no Current IDEM violation

EXHIBIT D

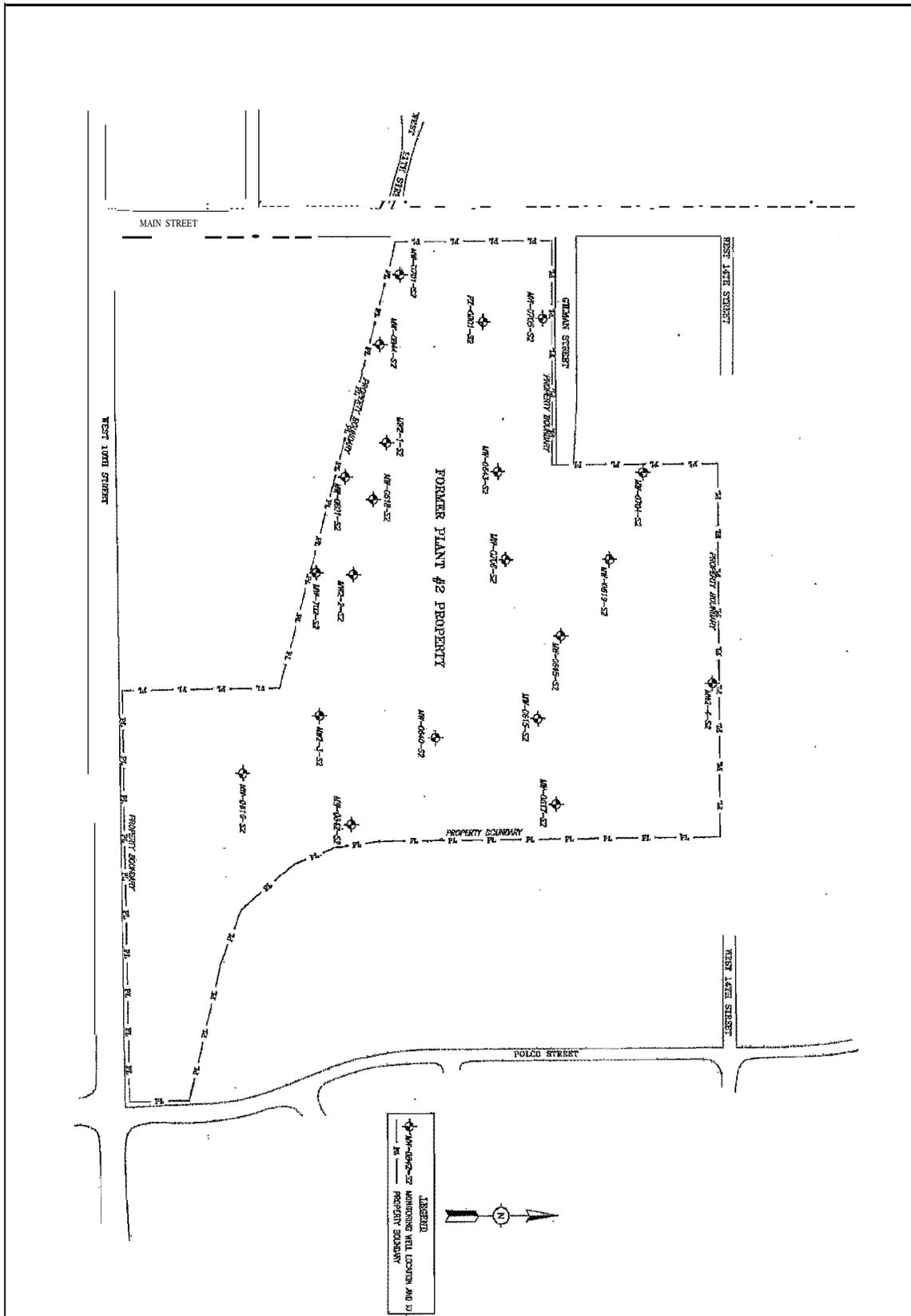
SITE MAP INDICATING COC LOCATIONS.

U L L



SVOC AND LEAD SURFACE SAMPLING POINTS
 ABOVE RISC RDCL SAND/OR IDCLS
 SPEEDWAY REDEVELOPMENT COMMISSION
 4500 W. GILMAN, SPEEDWAY, INDIANA

PROJECT NO. 284.10	SCALE 1" = 150'
PROJECT MANAGER M. OVERTON	DATE 10/15/10
FILE NO. A28410103	FIGURE NO.



TISSERER ENGINEERING WELL COMPANY AND D.

 NW-0201-SZ MONITORING WELL LOCATION AND D.

 ———— PROPERTY BOUNDARY

SITE PLAN

SPEEDWAY REDEVELOPMENT COMMISSION
4500 W. CIJUAN, SPEEDWAY, INDIANA

ASTBURY.

PROJECT NO. 284.10	SCALE 1" = 150'
PROJECT MANAGER M. OVERTON	DATE 10/05/10
FILE NO. A28410101	FIGURE NO.

EXBIBITE
SOIL MANAGEMENT PLAN

Soil Management Plan

Former Allison Transmission Plant2

February 23, 2011

Soil Management Area 1 (see Drawing 1)

Issues: Elevated concentrations of semivolatile organic compounds (SVOCs) in soil and other subsurface material (e.g., gravel, demolition debris), which are collectively referred to as "soil", were detected at certain soil locations during the RFL

Risk: There is the potential for significant exposure via direct contact to SVOCs in the soil in Soil Management Area 1.

Controls: Engineering control to maintain the surface cover of 6 inches of crushed rock and/or clay over the designated area is necessary.

Management: Soil from the designated area may be moved to another location at the site and temporarily staged, provided the soils are staged on and covered with adequate material to prevent mixing with soil below and reduce/restrict contact with the soil (e.g., underlay and cover with visquene). The soils should be moved back to the designated area identified on Drawing 1 and recovered (e.g., six inches of crushed rock cover and/or clay) to prevent contact, or the soil can be properly characterized and disposed off Site. Excess soil that cannot be replaced in Soil Management Area 1 should be properly characterized and disposed off-Site within a reasonable amount of time. Transportation and disposal shall be coordinated and completed in accordance with local, state and federal laws and standards. Although there is no identified risk to human health or the environment due to potential inhalation of chemicals from soils at the site, every effort should be made to prevent or control the generation of dust during construction activities and such dust management should be in accordance with local, state and federal laws and standards.

other Areas of the Site

Issues: Arsenic, lead, trichloroethene, and certain SVOCs, were detected in soil at concentrations greater than the IDEM generic Industrial Default Closure Levels at certain locations at the Site.

Risk: The risk assessment, completed as part of the RFI, did not identify any potentially significant exposure to these constituents at these locations,

Management: Soil at the Site, with the exception of soil from Soil Management Area 1, can be reused at the Site. However, if during excavation of soils, impacted soils are observed (staining, odor, etc.), excavation should be stopped, the property owner should be notified and appropriate measures should be taken to provide for properly managing the soil before excavation resumes. Excess soil that cannot be used for backfill or redistributed should be properly characterized and removed from the Site within a reasonable amount of time to an appropriate disposal facility. Transportation and disposal shall be coordinated and completed in accordance with local, state and federal laws and standards. Although there is no identified risk to human health or the environment due to potential inhalation of chemicals from soils at the site, every effort should be made to prevent or control the generation of dust during construction activities and such dust management should be in accordance with local, state and federal laws and standards.

More Information

For more information related to soil management at the Site, please see Attachment 1.

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ATTACHMENT 1

Soil Management Plan Back up

Former Allison Transmission, Inc. Plant 2

February 23, 2011

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ATTACHMENT

Soil Management Plan Back-up

Former Allison Transmission, Inc.
Plant2

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Table A1-1 Soil Samples Exceeding IDEM Industrial screening Criteria

Drawings

Drawing A1-1 Site Location

Drawing A1-2 Soil Locations Exceeding IDEM RISC Default Closure Levels

Drawing A1-3 Layout of Proposed Engineering Control/ Soil Management Area 1

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Former Allison Transmission,
Inc.
Plant 2

1. Introduction

ARCADIS U.S., Inc. (ARCADIS) has prepared the "Soil Management Plan" (SMP) and this back-up document, on behalf of General Motors, LLC (GMI LLC), to document requirements necessary when managing soil at the Former Allison Transmission Plant 2 property located at 4500 W. Gillman St, Speedway, Indiana (Site). The Site location is presented on Drawing A1-1.

This document and the SMP have been prepared as part of the Resource Conservation and Recovery Act (RCRA) Corrective Action activities conducted at the Site in conjunction with the U.S. EPA. The SMP is designed as a guideline for managing soil at the Site. The SMP and this document do not supersede Federal, State or Local laws regarding the excavation, movement or grading of soil but rather presents additional considerations that should be taken into account when handling soil at the Site. It is expected that qualified and trained individuals would conduct this work.

1.1 Objective of the Soil Management Plan

This SMP back-up document sets forth the approach and decision making criteria to be considered during excavation, stockpiling, backfilling, redistributing, and/or disposing of excavated soil or other material (e.g., gravel, crushed concrete, etc., all referred to as "soil" in this document), excavated or encountered in the subsurface at the Site. The SMP does not identify corrective measures to be utilized for management of soil excavated in response to release events, nor does it replace soil management regulations developed by local, state, or federal agencies.

The objective of establishing a soil management plan is to ensure that management of soil generated during routine excavation activities or site redevelopment activities is conducted in a way that is protective of human health and the environment as well as being completed in accordance with applicable laws. This will be accomplished through a soil management plan that allows soil excavation, characterization, and disposition in a controlled manner and that insures particulate emissions are controlled.

Routine activities are defined here as maintenance, repairs, facility upgrades, and construction projects (including minor activities such as landscaping, fence pole installation, or road repair) where soil is excavated. Excavations may involve removal of soil and transportation of the soil to a soil stockpile area (SSA) prior to backfilling, redistribution, and/or treatment/disposal.

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1.2 Site Background

The U.S. EPA and General Motors Corporation entered into a performance-based RCRA Corrective Action Agreement (Agreement) with the effective date of April 27, 2005. Pursuant to the Agreement, General Motors Corporation worked in cooperation with U.S. EPA to investigate, and as necessary, stabilize and remediate releases of hazardous wastes or hazardous constituents at or from the Facility (INO 000 806 828 for Plant 2 (currently inactive), and INO 000 806 802 that currently includes Plants 2, 3, 4, 6, 7, 12 and 14).

In August 2007, General Motors Corporation sold Allison Transmission, which included the Site, to Clutch Operating Company, Inc. (who now operates the Facility as Allison Transmission, Inc. (Allison)). As part of the sale, General Motors Corporation retained responsibility for certain environmental obligations, including Corrective Action. A new company, GM LLC, was established during the bankruptcy process for General Motors Corporation. GM LLC has assumed the responsibilities of General Motors Corporation contained in the Agreement for this Site.

On March 31, 2009, a RCRA Corrective Measures Proposal (CMP) (ARCADIS 2009a), was submitted to the U.S. EPA. The CMP outlined the proposed Institutional controls, engineering controls and active corrective measures for the Site. During 2010, the Town of Speedway, through the Speedway Redevelopment Commission, began discussions with Allison Transmission regarding the purchase of the Plant 2 property for redevelopment. GM LLC requested that U.S. EPA review the CMP with respect to Plant 2 and make a determination regarding whether a Final Decision for the Plant 2 property could be made to facilitate the redevelopment of the Plant 2 property. As a result of U.S. EPA's review of existing conditions at Plant 2, U.S. EPA requested a soil management plan be put in place.

1.3 Existing Restrictions

As identified in the deed filed after the sale of the Site from General Motors Corporation (Grantor) to Allison (Grantee and formerly known as Clutch Operating Company, Inc.), the following restrictions have been placed on the property:

Exhibit 8 - ReseNation of Rights and Restrictions

1. Grantee hereby grants to Grantor, pursuant to, and subject to, the terms set forth in Section 7.7 of that certain Asset Purchase Agreement dated as

of June 28, 2007 by and between Grantor and Grantee (the terms of which Section 7.7 are hereby specifically incorporated herein), and to the United States Environmental Protection Agency (the "U.S. EPA") and the Indiana Department of Environmental Management ("IDEM") an Irrevocable access easement onto, over and under the Property for the purpose of completing certain environmental investigations and remediation of the Property pursuant to the Performance Based Corrective Action Agreement between the U.S. EPA and Grantor dated April 22, 2005.

2. Grantee acknowledges and agrees that the Property may only be used by grantee, its successors, assigns, and tenants, for industrial and commercial uses.

Exhibit C - Restrictions and Covenants Agreement

1. Grantee shall prohibit all uses of the Subject Property that are not compatible with the land use restrictions placed on the Subject Property with the consent of Grantor (not to be unreasonably withheld, conditioned or delayed in accordance with that certain Performance Based Correction Action Agreement between the United States Environmental Protection Agency ("U.S. EPA") and Grantor dated April 22, 2005 (the "Corrective Action"), otherwise subject to Section 7.7 of that certain Asset Purchase Agreement dated as of June 28, 2007 by and between Grantor and Grantee (the "APA"), the terms of which Section 7.7 are hereby specifically incorporated herein);
2. Grantee shall manage, at its own cost, all soils, media and/or debris that are excavated or disturbed on the Subject Property by Grantee in accordance with all applicable state and federal Environmental Laws (as hereinafter defined);
3. Grantee shall prohibit any use or construction of wells or other devices to extract groundwater for any domestic potable uses. For purposes of this Paragraph 3, the term "domestic potable uses" shall include water use related to drinking, showering, cooking or cleaning;
4. Grantee is permitted to use dewatering wells or other devices for maintenance or construction purposes, provided the dewatering, including management and disposal of the groundwater, is conducted in accordance

with all applicable local, state, and federal Environmental Laws and does not result in material violation of Environmental Laws (it being understood that Grantee will use commercially reasonable efforts to perform construction and maintenance projects without constructing wells or other devices to extract groundwater and, to the extent construction of wells and similar devices is necessary in connection with any such construction or maintenance activity (notwithstanding Grantee's exercise of such efforts), Grantee will cooperate with Grantor to complete the construction of such wells and similar devices in a manner consistent with the Corrective Action);

5. Notwithstanding any provision to the contrary in this Restrictions and Covenants Agreement, Grantee shall be permitted to use, and have the use of, groundwater at the Subject Property in a manner consistent with current uses of groundwater, and at volumes sufficient to meet Grantee's water supply requirements for operations and other current uses of such groundwater, and the Corrective Action shall not conflict or interfere with Grantee's use of groundwater at the Subject Property as set forth in this Paragraph 5.
6. Grantee shall use commercially reasonable efforts not to unreasonably interfere with the operation of any technology, treatment or other activities engaged in by Grantor or its Affiliates (as hereinafter defined) in accordance with their obligations under the Corrective Action;
7. If Grantee contemplates actions which will materially interfere with the operation of any technology, treatment or other activities engaged in by Grantor or its Affiliates in accordance with their obligations under the Corrective Action, Grantee shall provide prior notice to Grantor if its intent to take such action; and
8. if Grantee intends to transfer any interest in the Subject Property, Grantee shall provide notice thereof to the U.S. EPA Region 5 and the Indiana Department of Environmental Management at least twenty-one (21) days prior to consummating any such transfer. Grantee shall not transfer any interest in the Subject Property unless the transferee agrees in writing to comply with the terms and conditions of Section 7.7 of the APA that are applicable to Grantee and Grantor is provided the right thereunder to enforce such written agreement against such transferee.

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Soil Management Plan
Back-up**

Former Allison Transmission,
Inc.
Plant 2

At the request of IDEM, the following restrictions were included in an ERC placed on the property during the transfer of the Site from Allison Transmission, Inc. to the Speedway Redevelopment Commission. Exhibits referred to within these restrictions are presented in the ERG (file name *INDY-2554247-vB-Plant_2_DECLARATION_OF_ENVIRONMENTAL_RESTRICTIVE_COVENANTS*).

Each Owner covenants and agrees that Owner and its Related Parties:

- a) Shall not occupy any building on the Real Estate without first completing one of the following: Option 1) Evaluate and determine, with IDEM concurrence, the absence of vapor intrusion in existing and/or newly constructed site buildings potentially affected by contamination; or Option 2) Install, operate and maintain a vapor mitigation system (consistent with U.S. EPA Brownfield Technology Primer Vapor Intrusion Considerations for Redevelopment, EPA 542-R-08-001, March 2008) within the existing and any newly-constructed and human-occupied building on the Real Estate, unless the Department concurs that the vapor intrusion system is no longer necessary based upon the achievement of the 25-year Chronic Commercial Indoor Air Action Levels contained within Table 3 of Appendix VIII of the Department's Draft Vapor Intrusion Guidance or site-specific action levels approved by the Department. This prohibition does not apply to short-term occupancy of a building for purposes of construction, renovation, repair, or other short-term activities.
- b) If Option 2 is selected from (a) above, in accordance with the Department's Draft Vapor Intrusion Guidance, install and thereafter operate and maintain a vapor intrusion mitigation system (consistent with U.S. EPA Brownfield Technology Primer Vapor Intrusion Considerations for Redevelopment, EPA 542-R-08-001, March 2008) for the purpose of mitigating the COGs potentially impacting indoor air in the existing building on the Real Estate and any human-occupied building constructed on the Real Estate after the date of this Declaration until the Department makes a determination regarding acceptable risk under Paragraph No. 1D of this Declaration. The Department's determination shall be based upon the 25-year Chronic Commercial Indoor Air Action Levels contained within Table 3 of Appendix VIII of the Department's Draft Vapor Intrusion Guidance or site-specific action levels approved by the Department.

The following additional restrictions were placed on the property during the transfer of Plant 2 from Allison Transmission, Inc. to the Speedway Redevelopment Commission. These additional restrictions facilitate the management of the engineering and

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Soil Management Plan
Back-up**

Former Allison Transmission,
Inc.
Plant 2

institutional controls proposed in the Corrective Measures Proposal and support the risk assessment assumptions from the RCRA Facility Investigation (RFI)

The Owner:

- c) Shall not use the Real Estate for any agricultural use.
- d) Shall restore soil disturbed as a result of excavation and construction activities in such a manner that the remaining contaminant concentrations do not present a threat to human health or the environment. This determination shall be made using the Department's RISC Technical Guidance Document or applicable guidance at the time of the determination. Upon the Department's or U.S. EPA's request, Owner shall provide the Department or U.S. EPA written evidence (including sampling data) showing the excavated and restored area, and any other area affected by the excavation, does not represent such a threat. Contaminated soils that are excavated must be managed in accordance with all applicable federal and state laws; and disposal of such soils must also be done in accordance with all applicable federal and state laws. Excavation of soil should be conducted in accordance with the attached Soil Management Plan (Exhibit "E").
- e) Shall neither engage in nor allow excavation of soil in the area identified via State Plane coordinates as the "Boundary of Engineering Control" on Exhibit "F", unless soil disturbance obligations listed in the preceding paragraph and Exhibit "E" are followed. In addition, Owner shall provide written notice to the Department and U.S. EPA in accordance with paragraph 14 below before the start of soil disturbance activities. Owner, upon the Department's or U.S. EPA's request, shall provide the Department or U.S. EPA evidence showing the excavated and restored area does not represent a threat to human health or the environment.
- f) Shall maintain the integrity of the existing crushed rock cover or other acceptable cover, which is depicted on Exhibit "F" via State Plane coordinates; this crushed rock cover or other acceptable cover serves as an engineered barrier to prevent direct contact with the underlying soils and must not be excavated, removed, disturbed, demolished, or allowed to fall into disrepair, except if conducted as described above. Owner shall inspect the engineering control annually and repair any significant deteriorations found.

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Plant 2

- g) Shall prohibit any activity at the Real Estate that may interfere with the groundwater monitoring or well network.
- h) Shall grant to U.S. EPA, General Motors, and their designated representatives the right to enter the property for the purposes of completing Corrective Action activities (i.e., sampling, remediation, etc.) in accordance with the PBCM.
- D Shall comply With the Existing Restrictions.

2. Management Plan

The SMP is applicable to the entire Site. The analytical results of soil samples presented on Table A1-1 represent soil remaining on-Site at concentrations greater than the IDEM generic Industrial Default Closure Levels (IDCLs) (IDEM 2009).

2.1 Soil Management Areas

Soil Management Area 1

As described in the RFI Report (ARCADIS 2009b), elevated concentrations of semi-volatile organic compounds (SVOCs) in soil were detected at certain soil locations in and around Former UST Area B (AOI 2-2). As described in the RFI Report and CMP, there is the potential for significant adverse human health effects if there is significant direct contact exposure to SVOCs in the soil in the former basement in this area. Therefore, as discussed in the CMP and shown on Drawing A1.3, an engineering control to maintain the surface cover over Soil Management Area 1 was proposed to limit the potential for future significant exposures at AOI 2-2.

Remainder of Site

As shown on Table 1, arsenic, lead, trichloroethane, and certain SVOCs, were detected in soil at concentrations greater than the IDEM generic Industrial Default Closure Levels at certain limited locations at the Site. As described in the RFI Report and CMP, there were no unacceptable human health risks identified for potential exposures to these constituents at these locations.

GM LLC has investigated the locations identified on Drawing A1-2. These locations were selected based on historical operations at the Site or previous analytical results and were biased to investigate potentially impacted locations. Although every attempt

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was made to investigate potentially impacted areas, unidentified impacted areas may exist.

3. Soil Management for Construction Activities

The SMP and this back-up document are a guideline for the soil handling activities within the Site, including procedures for backfilling and redistributing soils to applicable receiving areas. Soil excavation, stockpiling, characterization, backfilling, redistribution, transporting, treatment, or disposal shall be completed in accordance with all applicable local, state, or federal requirements.

3.1 On-Site Management

3.1.1 Soil Management Area 1

Soil from the Soil Management Area 1 (see Drawing A1-3) may be *moved* to another location of the site and temporarily staged, provided the soils are placed on and covered with adequate material (e.g., underlay and cover with visquene), to prevent mixing of the soil with underlying material and reduce/restrict contact with the soil. The soils should be moved back to Soil Management Area 1 identified on Drawing A1-3 and re-covered with adequate material (e.g., six inches of crushed rock cover and/or clay), to restrict direct contact.

Excess soil, which cannot, or is not, desirable to be used as backfill, can be temporarily stockpiled as described above, but not located immediately adjacent to wetlands, storm sewers, or watercourses, or such that any runoff from the stockpile will end up in wetlands, storm sewers, or watercourses. This soil should be properly characterized and removed from the Site Within a reasonable amount of time to an appropriate disposal facility (see Section 3.2).

Although there is no identified risk to human health or the environment due to potential inhalation of chemicals from soils at the Site, reasonable efforts should be made to prevent or control the generation of dust during construction activities and such dust management should be in accordance with local, state and federal laws and standards.

3.1.2 Other Areas of the Site

Soil from the Site, with the exception of soil in Soil Management Area 1, may be reused at the Site. However, if during excavation of soils, impacted soils are observed

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(staining, odor, etc.), excavation at that location should be temporarily stopped, the property owner should be notified, and appropriate measures should be taken to provide for properly managing the soil before excavation resumes.

Excess soil, which cannot be used as backfill, can be temporarily stockpiled while awaiting redistribution. The stockpiled soil should not be located immediately adjacent to wetlands, storm sewers, or watercourses, or such that any runoff from the stockpile will end up in wetlands, storm sewers, or watercourses. In addition, reasonable efforts should be made to prevent or control the generation of dust.

Soil from construction and demolition may be stored in uncontained piles at the point of generation before being transported for disposal, provided that the pile does not affect surface water (or enter storm sewers), groundwater, air, create a nuisance, generate wind-blown dust, or cause environmental contamination. The side slopes of the spoil pile should be periodically checked to ensure excessive erosion has not occurred.

Excess soil that cannot be used for backfill or redistributed should be properly characterized and removed from the Site within a reasonable amount of time to an appropriate disposal facility (see Section 3.2).

Although there is no identified risk to human health or the environment due to potential inhalation of chemicals from soils at the site, every effort should be made to prevent or control the generation of dust during construction activities and such dust management should be in accordance with local, state and federal laws and standards.

3.2 Off-Site Management

Soil, which will not be backfilled at the original excavation or redistributed within an appropriate receiving area, shall be properly characterized and transported off-Site for reuse or disposal. Off-Site soil transportation must be completed in a manner that does not pose a threat to public health, safety, or welfare, or the environment. Transportation and disposal shall be coordinated and completed in accordance with local, state and federal laws and standards,

3.3 Documentation

Records generated during Implementation of the SMP shall be maintained by the property owner. The records may include, but are not limited to:

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PlantZ

- Project procedures, requirements, and specifications;
- Sampling collection Log/chain of custody;
- Analytical results;
- Field activity logs/testing data and results;
- Health and Safety records;
- Excavation and redistribution records;
- Documentation of soil moving into: and out of the SSA; and
- Documentation of soil disposal/relocation.

4. References

AR:CAOIS 2009a. *Corrective Measures Proposal*, RCRA Corrective Action, Allison Transmission, Inc., Speedway, IN, USEPA ID Nos. IND006413348 and IND000806828, ARCADIS U.S., Inc., March 31, 2009.

ARCADIS 2009b. *RCRA Facility Investigation Report*, Allison Transmission, Inc., USEPA ID Nos. IND006413348 and IND000806828, ARCADIS U.S., Inc., ENVIRON International Corporation, and Exponent, Inc., February 20, 2009.

ARCADIS 2009c. *Former UST Area A (AO!2-1)-Excavation Completion*, Allison Transmission, Inc., USEPA ID Nos. IND00641334.8 and JND000806828, ARCADIS U.S., Inc., March, 2009.

IDEM 2009. *Risk Integrated System of Fossum Technical Guide, Appendix 1, Default Closure Tables*. January 31, 2006, Revised May 1, 2009.

Table A1-1. Soil Samples Exceeding IDEM Industrial Screening Criteria
Former Allison Transmission Plant 2, Speedway, Indiana

Area	Location	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Sample Date	Chem Group	Chemical	CASRN	Conc (mg/kg)	IDEM Res Default Closure Levels (mg/kg)	Ratio of Conc to IDEM Res DCL	IDEM Res Direct Contact Criteria (mg/kg)	Ratio of Conc to IDEM Res Direct Contact	IDEM Ind Default Closure Levels (mg/kg)	Ratio of Conc to IDEM Ind DCL	IDEM Ind Direct Contact Criteria (mg/kg)	Ratio of Conc to IDEM Ind Direct Contact	IDEM Construction Criteria (mg/kg)	Ratio of Conc to IDEM Construction
AOI 02 04	SB-02-04-0702	0	2	09/28/07	INORG	Arsenic	7440-38-2	1.01E+01	3.9E+00	2.59E+00	3.9E+00	2.59E+00	5.8E+00	1.73E+00	2.0E+01	5.1E-01	3.2E+02	3.2E-02
AOI 02 01	AREA A SW 11	5	5	09/28/99	INORG	Arsenic	7440-38-2	3.21E+01	3.9E+00	8.23E+00	3.9E+00	2.11E+00	5.8E+00	1.58E+00	2.0E+01	1.6E+00	3.2E+02	1.0E-01
AOI 02 01	AREA A SW 12	5	5	09/28/99	INORG	Arsenic	7440-38-2	2.23E+01	3.9E+00	5.72E+00	3.9E+00	1.47E+00	5.8E+00	1.33E+00	2.0E+01	1.9E+00	3.2E+02	7.0E-02
AOI 02 01	AREA A SW 13	5	5	09/28/99	SVOC	Benzo(a)pyrene	50-32-8	3.50E+00	5.0E-01	7.00E+00	5.0E-01	1.40E+00	1.5E+00	2.8E+00	1.5E+00	2.3E+00	7.9E+01	4.4E-02
AOI 02 01	AREA A SW 13	5	5	09/28/99	INORG	Arsenic	7440-38-2	1.18E+01	3.9E+00	3.01E+00	3.9E+00	3.31E+00	5.8E+00	1.23E+00	2.0E+01	6.0E-01	3.2E+02	3.7E-02
AOI 02 01	AREA A SW-1	8	8	07/28/99	INORG	Arsenic	7440-38-2	6.12E+00	3.9E+00	1.57E+00	3.9E+00	1.48E+00	5.8E+00	1.17E+00	2.0E+01	3.1E-01	3.2E+02	1.9E-02
AOI 02 01	AREA A SW-3	8	8	07/30/99	INORG	Arsenic	7440-38-2	6.10E+00	3.9E+00	1.56E+00	3.9E+00	1.47E+00	5.8E+00	1.16E+00	2.0E+01	3.1E-01	3.2E+02	1.9E-02
AOI 02 01	AREA A SW-4	8	8	08/04/99	INORG	Arsenic	7440-38-2	9.01E+00	3.9E+00	2.31E+00	3.9E+00	2.30E+00	5.8E+00	1.50E+00	2.0E+01	4.5E-01	3.2E+02	2.8E-02
AOI 02 01	AREA A SW-5	8	8	08/04/99	INORG	Arsenic	7440-38-2	1.03E+01	3.9E+00	2.64E+00	3.9E+00	2.26E+00	5.8E+00	1.60E+00	2.0E+01	5.2E-01	3.2E+02	3.2E-02
AOI 02 01	AREA A SW-6	8	8	08/04/99	INORG	Arsenic	7440-38-2	1.08E+01	3.9E+00	2.74E+00	3.9E+00	2.36E+00	5.8E+00	1.62E+00	2.0E+01	5.3E-01	3.2E+02	3.3E-02
AOI 02 01	SB-02-01-0802	2.4	2.6	05/22/06	SVOC	Benzo(a)pyrene	50-32-8	6.82E+00	5.0E-01	1.36E+00	5.0E-01	1.36E+00	1.5E+00	1.44E+00	1.5E+00	4.4E+00	7.9E+01	8.4E-02
AOI 02 01	SB-02-01-0802	2.4	2.6	05/22/06	SVOC	Dibenz(a,h)anthracene	53-70-3	2.23E+00	5.0E-01	4.46E+00	5.0E-01	4.46E+00	1.5E+00	4.29E+00	1.5E+00	4.29E+00	7.9E+01	2.8E-02
AOI 02 01	SB-02-01-0805	0	2	10/21/08	INORG	Arsenic	7440-38-2	1.41E+01	3.9E+00	3.60E+00	3.9E+00	3.60E+00	5.8E+00	2.4E+00	2.0E+01	7.1E-01	3.2E+02	4.4E-02
AOI 02 01	SB-02-01-0805	12	14	10/21/08	INORG	Arsenic	7440-38-2	6.10E+00	3.9E+00	1.56E+00	3.9E+00	1.56E+00	5.8E+00	1.30E+00	2.0E+01	4.1E-01	3.2E+02	2.5E-02
AOI 02 01	SUMP A BTM2	2	2	08/05/99	INORG	Arsenic	7440-38-2	9.48E+00	3.9E+00	2.42E+00	3.9E+00	2.42E+00	5.8E+00	1.66E+00	2.0E+01	4.7E-01	3.2E+02	3.0E-02
AOI 02 01	SUMPBTM2	12	12	08/05/99	INORG	Arsenic	7440-38-2	9.48E+00	3.9E+00	2.42E+00	3.9E+00	2.42E+00	5.8E+00	1.66E+00	2.0E+01	4.7E-01	3.2E+02	3.0E-02
AOI 02 01	T-1 BTM1	10	10	07/28/99	VOC	Trichloroethene	78-01-6	1.50E+00	5.7E-02	2.60E+00	4.9E+00	3.1E-01	3.5E-01	2.4E+01	6.3E-02	2.1E+02	7.1E-03	
AOI 02 01	T-10 BTM1	10	10	07/30/99	INORG	Arsenic	7440-38-2	8.37E+00	3.9E+00	2.13E+00	3.9E+00	2.13E+00	5.8E+00	1.42E+00	2.0E+01	4.2E-01	3.2E+02	2.6E-02
AOI 02 01	T-10 BTM2	10	10	07/30/99	INORG	Arsenic	7440-38-2	1.11E+01	3.9E+00	2.84E+00	3.9E+00	2.84E+00	5.8E+00	1.93E+00	2.0E+01	5.6E-01	3.2E+02	3.5E-02
AOI 02 01	T-11 BTM1	10	10	08/03/99	INORG	Arsenic	7440-38-2	6.77E+00	3.9E+00	1.73E+00	3.9E+00	1.73E+00	5.8E+00	1.32E+00	2.0E+01	3.4E-01	3.2E+02	2.1E-02
AOI 02 01	T-13 BTM1	10	10	08/03/99	INORG	Arsenic	7440-38-2	7.33E+00	3.9E+00	1.86E+00	3.9E+00	1.86E+00	5.8E+00	1.35E+00	2.0E+01	3.7E-01	3.2E+02	2.3E-02
AOI 02 01	T-13 BTM2	10	10	08/03/99	INORG	Arsenic	7440-38-2	6.73E+00	3.9E+00	1.72E+00	3.9E+00	1.72E+00	5.8E+00	1.29E+00	2.0E+01	3.4E-01	3.2E+02	2.1E-02
AOI 02 01	T-14 BTM1	10	10	08/03/99	INORG	Arsenic	7440-38-2	6.15E+00	3.9E+00	1.57E+00	3.9E+00	1.57E+00	5.8E+00	1.18E+00	2.0E+01	3.1E-01	3.2E+02	1.9E-02
AOI 02 01	T-14 BTM2	10	10	08/03/99	INORG	Arsenic	7440-38-2	6.40E+00	3.9E+00	1.64E+00	3.9E+00	1.64E+00	5.8E+00	1.26E+00	2.0E+01	3.2E-01	3.2E+02	2.0E-02
AOI 02 01	T-2 BTM2	10	10	07/28/99	INORG	Arsenic	7440-38-2	6.15E+00	3.9E+00	1.57E+00	3.9E+00	1.57E+00	5.8E+00	1.18E+00	2.0E+01	3.1E-01	3.2E+02	1.9E-02
AOI 02 01	T-3 BTM1	10	10	07/28/99	INORG	Arsenic	7440-38-2	1.30E+01	3.9E+00	3.33E+00	3.9E+00	3.33E+00	5.8E+00	1.60E+00	2.0E+01	6.6E-01	3.2E+02	4.1E-02
AOI 02 01	T-9 BTM2	10	10	07/28/99	INORG	Arsenic	7440-38-2	1.18E+01	3.9E+00	3.00E+00	3.9E+00	3.00E+00	5.8E+00	1.50E+00	2.0E+01	5.9E-01	3.2E+02	3.7E-02
AOI 02 02	SB-02-02-0602	0	12	11/17/06	INORG	Arsenic	7440-38-2	1.24E+01	3.9E+00	3.17E+00	3.9E+00	3.17E+00	5.8E+00	1.61E+00	2.0E+01	6.2E-01	3.2E+02	3.9E-02
AOI 02 02	SB-02-02-0602	8	10	11/17/06	INORG	Arsenic	7440-38-2	3.64E+01	3.9E+00	9.33E+00	3.9E+00	9.33E+00	5.8E+00	1.63E+00	2.0E+01	6.6E+00	3.2E+02	1.1E-01
AOI 02 02	SB-02-02-0603	0	2	12/20/06	SVOC	Benzo(a)anthracene	56-55-3	6.80E+01	5.0E+00	1.36E+01	5.0E+00	1.36E+01	1.5E+01	4.6E+00	1.5E+01	4.6E+00	7.9E+02	6.7E-02
AOI 02 02	SB-02-02-0603	0	2	12/20/06	SVOC	Benzo(a)pyrene	50-32-8	6.10E+01	5.0E-01	1.22E+02	5.0E-01	1.22E+02	1.5E+00	4.1E+00	1.5E+00	4.1E+00	7.9E+01	7.7E-01
AOI 02 02	SB-02-02-0603	0	2	12/20/06	SVOC	Dibenz(a,h)anthracene	53-70-3	6.10E+00	5.0E-01	1.22E+00	5.0E-01	1.22E+00	1.5E+00	4.1E+00	1.5E+00	4.1E+00	7.9E+01	7.7E-02
AOI 02 02	SB-02-02-0603	0	2	12/20/06	INORG	Arsenic	7440-38-2	9.65E+00	3.9E+00	2.47E+00	3.9E+00	2.47E+00	5.8E+00	1.70E+00	2.0E+01	4.9E-01	3.2E+02	3.0E-02
AOI 02 02	SB-02-02-0603	2	4	12/20/06	SVOC	Benzo(a)anthracene	56-55-3	1.80E+01	5.0E+00	3.60E+00	5.0E+00	3.60E+00	1.5E+01	4.2E+00	1.5E+01	4.2E+00	7.9E+02	2.5E-02
AOI 02 02	SB-02-02-0603	2	4	12/20/06	SVOC	Benzo(a)pyrene	50-32-8	2.00E+01	5.0E-01	4.00E+00	5.0E-01	4.00E+00	1.5E+00	4.0E+00	1.5E+00	4.0E+00	7.9E+01	2.3E-01
AOI 02 02	SB-02-02-0603	2	4	12/20/06	SVOC	Benzo(b)fluoranthene	205-99-2	4.90E+01	5.0E+00	9.80E+00	5.0E+00	9.80E+00	1.5E+01	4.3E+00	1.5E+01	4.3E+00	7.9E+02	6.2E-02
AOI 02 02	SB-02-02-0603	2	4	12/20/06	SVOC	Dibenz(a,h)anthracene	53-70-3	2.10E+00	5.0E-01	4.2E+00	5.0E-01	4.2E+00	1.5E+00	4.2E+00	1.5E+00	4.2E+00	7.9E+01	2.7E-02
AOI 02 02	SB-02-02-0603	2	4	12/20/06	SVOC	2,4-Dinitrotoluene	121-14-2	8.70E-01	9.1E-03	9.6E+00	6.3E+00	1.4E-01	3.1E-02	2.8E+00	2.0E+01	4.4E-02	8.3E+02	9.8E-04
AOI 02 02	SB-02-02-0603	4	6	12/20/06	SVOC	Benzo(a)pyrene	50-32-8	1.10E+01	5.0E-01	2.2E+00	5.0E-01	2.2E+00	1.5E+00	1.7E+00	1.5E+00	1.7E+00	7.9E+01	1.4E-01
AOI 02 02	SB-02-02-0603	4	6	12/20/06	SVOC	Benzo(b)fluoranthene	205-99-2	2.00E+01	5.0E+00	4.0E+00	5.0E+00	4.0E+00	1.5E+01	4.0E+00	1.5E+01	4.0E+00	7.9E+02	2.5E-02
AOI 02 02	SB-02-02-0603	4	6	12/20/06	SVOC	2,4-Dinitrotoluene	121-14-2	8.80E-01	9.1E-03	9.7E+00	6.3E+00	1.4E-01	3.1E-02	2.8E+00	2.0E+01	4.4E-02	8.9E+02	9.5E-04
AOI 02 02	SB-02-02-0603	6	8	12/20/06	SVOC	Benzo(a)anthracene	56-55-3	2.10E+01	5.0E+00	4.2E+00	5.0E+00	4.2E+00	1.5E+01	4.2E+00	1.5E+01	4.2E+00	7.9E+02	2.7E-02
AOI 02 02	SB-02-02-0603	6	8	12/20/06	SVOC	Benzo(a)pyrene	50-32-8	2.30E+01	5.0E-01	4.6E+00	5.0E-01	4.6E+00	1.5E+00	4.6E+00	1.5E+00	4.6E+00	7.9E+01	2.9E-01
AOI 02 02	SB-02-02-0603	6	8	12/20/06	SVOC	Benzo(b)fluoranthene	205-99-2	3.80E+01	5.0E+00	7.6E+00	5.0E+00	7.6E+00	1.5E+01	4.2E+00	1.5E+01	4.2E+00	7.9E+02	4.8E-02
AOI 02 02	SB-02-02-0603	6	8	12/20/06	SVOC	Dibenz(a,h)anthracene	53-70-3	2.30E+00	5.0E-01	4.6E+00	5.0E-01	4.6E+00	1.5E+00	4.6E+00	1.5E+00	4.6E+00	7.9E+01	2.9E-02
AOI 02 02	SB-02-02-0603	6	8	12/20/06	SVOC	2,4-Dinitrotoluene	121-14-2	8.80E-01	9.1E-03	9.7E+00	6.3E+00	1.4E-01	3.1E-02	2.8E+00	2.0E+01	4.4E-02	8.5E+02	9.5E-04
AOI 02 02	SB-02-02-0702	0	2	09/14/07	INORG	Arsenic	7440-38-2	6.40E+00	3.9E+00	1.63E+00	3.9E+00	1.63E+00	5.8E+00	1.34E+00	2.0E+01	3.2E-01	3.2E+02	2.0E-02
AOI 02 02	SB-02-02-0702	8	10	09/14/07	INORG	Arsenic	7440-38-2	8.80E+00	3.9E+00	2.23E+00	3.9E+00	2.23E+00	5.8E+00	1.59E+00	2.0E+01	4.3E-01	3.2E+02	2.7E-02
AOI 02 02	SB-02-02-0703	6	8	09/14/07	SVOC	Benzo(a)anthracene	56-55-3	3.76E+01	5.0E+00	7.5E+00	5.0E+00	7.5E+00	1.5E+01	4.2E+00	1.5E+01	4.2E+00	7.9E+02	4.7E-02
AOI 02 02	SB-02-02-0703	6	8	09/14/07	SVOC	Benzo(a)pyrene	50-32-8	3.17E+01	5.0E-01	6.3E+								

Table A1-1. Soil Samples Exceeding IDEM Industrial Screening Criteria
Former Allison Transmission Plant 2, Speedway, Indiana

Area	Location	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Sample Date	Chem Group	Chemical	CASRN	Conc (mg/kg)	IDEM Res Default Closure Levels (mg/kg)	Ratio of Conc to IDEM Res DCL	IDEM Res Direct Contact Criteria (mg/kg)	Ratio of Conc to IDEM Res Direct Contact	IDEM Ind Default Closure Levels (mg/kg)	Ratio of Conc to IDEM Ind DCL	IDEM Ind Direct Contact Criteria (mg/kg)	Ratio of Conc to IDEM Ind Direct Contact	IDEM Construction Criteria (mg/kg)	Ratio of Conc to IDEM Construction
AOI 02 02	SB-02-02-0703	0	2	09/14/07	SVOC	Benzo(b)fluoranthene	205-99-2	1.43E+02	5.0E+00	28.6	5.0E+00	28.6	1.5E+01	9.5	1.5E+01	9.5	7.9E+02	1.8E-01
AOI 02 02	SB-02-02-0703	0	2	09/14/07	SVOC	Dibenz(a,h)anthracene	53-70-3	1.54E+01	5.0E-01	30.8	5.0E-01	30.8	1.9E+00	10.2	1.5E+00	10.2	7.9E+01	1.9E-01
AOI 02 02	SB-02-02-0703	0	2	09/14/07	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.96E+01	5.0E+00	7.9	5.0E+00	7.9	1.5E+01	2.6	1.5E+01	2.6	7.9E+02	5.0E-02
AOI 02 02	SB-02-02-0703	0	2	09/14/07	SVOC	Phenanthrene	85-01-8	2.50E+02	1.3E+01	19.2	4.7E+02	5.3E-01	1.7E+02	1.2E+03	2.1E-01	2.5E+03	1.0E-01	
AOI 02 02	SB-02-02-0703	2	4	09/14/07	SVOC	Benzo(a)anthracene	56-55-3	1.25E+02	5.0E+00	25.0	5.0E+00	25.0	1.5E+01	8.3	1.5E+01	8.3	7.9E+02	1.6E-01
AOI 02 02	SB-02-02-0703	2	4	09/14/07	SVOC	Benzo(a)pyrene	50-32-8	7.42E+01	5.0E-01	148.4	5.0E-01	148.4	1.5E+00	4.9E+01	1.5E+00	4.9E+01	7.9E+01	9.4E-01
AOI 02 02	SB-02-02-0703	2	4	09/14/07	SVOC	Benzo(b)fluoranthene	205-99-2	1.14E+02	5.0E+00	22.8	5.0E+00	22.8	1.5E+01	7.6	1.5E+01	7.6	7.9E+02	1.4E-01
AOI 02 02	SB-02-02-0703	2	4	09/14/07	SVOC	Dibenz(a,h)anthracene	53-70-3	1.60E+01	5.0E-01	32.0	5.0E-01	32.0	1.5E+00	11.4	1.5E+00	11.4	7.9E+01	2.0E-01
AOI 02 02	SB-02-02-0703	2	4	09/14/07	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	4.15E+01	5.0E+00	8.3	5.0E+00	8.3	1.5E+01	2.8	1.5E+01	2.8	7.9E+02	5.3E-02
AOI 02 02	SB-02-02-0703	4	6	09/14/07	SVOC	Benzo(a)anthracene	56-55-3	8.96E+01	5.0E+00	17.9	5.0E+00	17.9	1.5E+01	6.0	1.5E+01	6.0	7.9E+02	1.1E-01
AOI 02 02	SB-02-02-0703	4	6	09/14/07	SVOC	Benzo(a)pyrene	50-32-8	5.82E+01	5.0E-01	116.4	5.0E-01	116.4	1.5E+00	3.9E+01	1.5E+00	3.9E+01	7.9E+01	7.4E-01
AOI 02 02	SB-02-02-0703	4	6	09/14/07	SVOC	Benzo(b)fluoranthene	205-99-2	8.63E+01	5.0E+00	17.3	5.0E+00	17.3	1.5E+01	5.8	1.5E+01	5.8	7.9E+02	1.1E-01
AOI 02 02	SB-02-02-0703	4	6	09/14/07	SVOC	Dibenz(a,h)anthracene	53-70-3	1.20E+01	5.0E-01	24.0	5.0E-01	24.0	1.5E+00	8.0	1.5E+00	8.0	7.9E+01	1.5E-01
AOI 02 02	SB-02-02-0703	4	6	09/14/07	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.19E+01	5.0E+00	6.4	5.0E+00	6.4	1.5E+01	2.1	1.5E+01	2.1	7.9E+02	4.0E-02
AOI 02 02	SB-02-02-0703	6	8	09/14/07	SVOC	Benzo(a)anthracene	56-55-3	4.17E+01	5.0E+00	8.3	5.0E+00	8.3	1.5E+01	2.6	1.5E+01	2.6	7.9E+02	6.3E-02
AOI 02 02	SB-02-02-0703	6	8	09/14/07	SVOC	Benzo(a)pyrene	50-32-8	2.90E+01	5.0E-01	58.0	5.0E-01	58.0	1.5E+00	1.9E+01	1.5E+00	1.9E+01	7.9E+01	3.7E-01
AOI 02 02	SB-02-02-0703	6	8	09/14/07	SVOC	Benzo(b)fluoranthene	205-99-2	3.81E+01	5.0E+00	7.6	5.0E+00	7.6	1.5E+01	2.5	1.5E+01	2.5	7.9E+02	4.8E-02
AOI 02 02	SB-02-02-0703	6	8	09/14/07	SVOC	Dibenz(a,h)anthracene	53-70-3	8.40E+00	5.0E-01	16.8	5.0E-01	16.8	1.5E+00	4.3	1.5E+00	4.3	7.9E+01	8.1E-02
AOI 02 02	SB-02-02-0703	6	8	09/14/07	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.86E+01	5.0E+00	3.7	5.0E+00	3.7	1.5E+01	1.4	1.5E+01	1.4	7.9E+02	2.1E-02
AOI 02 02	SB-02-02-0801	0	2	04/23/08	SVOC	Benzo(a)pyrene	50-32-8	7.43E+00	5.0E-01	14.9	5.0E-01	14.9	1.5E+00	5.0	1.5E+00	5.0	7.9E+01	9.4E-02
AOI 02 02	SB-02-02-0801	0	2	04/23/08	SVOC	Dibenz(a,h)anthracene	53-70-3	4.36E+00	5.0E-01	8.7	5.0E-01	8.7	1.5E+00	2.9	1.5E+00	2.9	7.9E+01	5.5E-02
AOI 02 02	SB-02-02-0805	0	2	10/21/08	INORG	Arsenic	7440-38-2	7.50E+00	3.9E+00	1.9	3.9E+00	1.9	5.8E+00	1.3	2.0E+01	3.8E-01	3.2E+02	2.3E-02
AOI 02 02	SB-02-02-0805	10	12	10/21/08	INORG	Arsenic	7440-38-2	3.62E+01	3.9E+00	9.3	3.9E+00	9.3	5.8E+00	1.6	2.0E+01	8.0E-01	3.2E+02	1.1E-01
AOI 02 02	SUMP 2 BITM 1	6	6	11/03/99	INORG	Arsenic	7440-38-2	1.13E+01	3.9E+00	2.9	3.9E+00	2.9	5.8E+00	2.0	2.0E+01	5.7E-01	3.2E+02	3.5E-02
AOI 02 02	SUMP 2 BITM 2	6	6	11/03/99	INORG	Arsenic	7440-38-2	1.02E+01	3.9E+00	2.6	3.9E+00	2.6	5.8E+00	1.9	2.0E+01	5.1E-01	3.2E+02	3.2E-02
AOI 02 02	SUMP 3 SW S	4	4	11/03/99	INORG	Arsenic	7440-38-2	6.52E+00	3.9E+00	1.7	3.9E+00	1.7	5.8E+00	1.2	2.0E+01	3.2E-01	3.2E+02	2.0E-02
AOI 02 02	SUMP 3 BITM1	3.5	3.5	08/18/99	INORG	Arsenic	7440-38-2	6.11E+00	3.9E+00	1.6	3.9E+00	1.6	5.8E+00	1.1	2.0E+01	3.1E-01	3.2E+02	1.9E-02
AOI 02 02	SUMP 3 SW (W)	2	2	12/17/99	INORG	Arsenic	7440-38-2	1.31E+01	3.9E+00	3.4	3.9E+00	3.4	5.8E+00	2.3	2.0E+01	6.8E-01	3.2E+02	4.1E-02
AOI 02 02	SUMP 2 SW (E)	3.5	3.5	12/06/99	INORG	Arsenic	7440-38-2	6.36E+00	3.9E+00	1.6	3.9E+00	1.6	5.8E+00	1.1	2.0E+01	3.2E-01	3.2E+02	2.0E-02
AOI 02 02	SUMP 3 BITM 2B	3.5	3.5	12/06/99	INORG	Arsenic	7440-38-2	1.19E+01	3.9E+00	3.0	3.9E+00	3.0	5.8E+00	2.0	2.0E+01	6.0E-01	3.2E+02	3.7E-02
AOI 02 02	SUMP 3 SW (W) F	2	2	12/17/99	INORG	Arsenic	7440-38-2	3.17E+01	3.9E+00	8.1	3.9E+00	8.1	5.8E+00	1.6	2.0E+01	1.6E+01	3.2E+02	6.9E-02
AOI 02 02	SUMP 3 SW E-A	2	2	11/03/99	INORG	Arsenic	7440-38-2	1.53E+01	3.9E+00	3.9	3.9E+00	3.9	5.8E+00	2.6	2.0E+01	7.7E-01	3.2E+02	4.8E-02
AOI 02 02	SUMP 3 SW N(S)-A	2	2	11/03/99	INORG	Arsenic	7440-38-2	1.54E+01	3.9E+00	3.9	3.9E+00	3.9	5.8E+00	2.6	2.0E+01	7.7E-01	3.2E+02	4.8E-02
AOI 02 02	T-17 BITM2	12	12	09/03/99	INORG	Arsenic	7440-38-2	8.26E+00	3.9E+00	2.1	3.9E+00	2.1	5.8E+00	1.4	2.0E+01	4.1E-01	3.2E+02	2.6E-02
AOI 02 02	T-17 SW N1	7	7	08/18/99	INORG	Arsenic	7440-38-2	6.28E+00	3.9E+00	1.6	3.9E+00	1.6	5.8E+00	1.1	2.0E+01	3.1E-01	3.2E+02	2.0E-02
AOI 02 02	T-17 SW N2	7	7	08/18/99	INORG	Arsenic	7440-38-2	6.65E+00	3.9E+00	1.7	3.9E+00	1.7	5.8E+00	1.1	2.0E+01	3.3E-01	3.2E+02	2.1E-02
AOI 02 02	T-18 SW 5	7	7	08/31/99	INORG	Arsenic	7440-38-2	8.18E+00	3.9E+00	2.1	3.9E+00	2.1	5.8E+00	1.4	2.0E+01	4.1E-01	3.2E+02	2.6E-02
AOI 02 02	T-19 BITM 1	15	15	11/05/99	INORG	Arsenic	7440-38-2	7.96E+00	3.9E+00	2.0	3.9E+00	2.0	5.8E+00	1.4	2.0E+01	4.0E-01	3.2E+02	2.5E-02
AOI 02 02	T-19/20 SW N	7	7	11/05/99	INORG	Arsenic	7440-38-2	6.35E+00	3.9E+00	1.6	3.9E+00	1.6	5.8E+00	1.1	2.0E+01	3.2E-01	3.2E+02	2.0E-02
AOI 02 02	T-19/20 SW S	7	7	11/05/99	INORG	Arsenic	7440-38-2	7.21E+00	3.9E+00	1.8	3.9E+00	1.8	5.8E+00	1.2	2.0E+01	3.6E-01	3.2E+02	2.3E-02
AOI 02 02	T-19/20 SW W1	7	7	11/05/99	INORG	Arsenic	7440-38-2	1.32E+02	3.9E+00	34.4	3.9E+00	34.4	5.8E+00	1.6	2.0E+01	1.6E+01	3.2E+02	4.1E-01
AOI 02 02	T-19/20 SW W2	7	7	11/05/99	INORG	Arsenic	7440-38-2	7.70E+00	3.9E+00	2.0	3.9E+00	2.0	5.8E+00	1.3	2.0E+01	3.5E-01	3.2E+02	2.4E-02
AOI 02 02	T-20 BITM 1	15	15	11/05/99	INORG	Arsenic	7440-38-2	6.99E+00	3.9E+00	1.8	3.9E+00	1.8	5.8E+00	1.2	2.0E+01	3.5E-01	3.2E+02	2.2E-02
AOI 02 02	T-20 BITM 2	15	15	11/06/99	INORG	Arsenic	7440-38-2	7.67E+00	3.9E+00	2.0	3.9E+00	2.0	5.8E+00	1.3	2.0E+01	3.8E-01	3.2E+02	2.4E-02
AOI 02 02	TP-02-02-0804	0	2	11/03/08	SVOC	Benzo(a)anthracene	56-55-3	1.27E+02	5.0E+00	25.4	5.0E+00	25.4	1.5E+01	8.5	1.5E+01	8.5	7.9E+02	1.6E-01
AOI 02 02	TP-02-02-0804	0	2	11/03/08	SVOC	Benzo(a)pyrene	50-32-8	1.08E+02	5.0E-01	21.6	5.0E-01	21.6	1.5E+00	6.7	1.5E+00	6.7	7.9E+01	1.9E-01
AOI 02 02	TP-02-02-0804	0	2	11/03/08	SVOC	Benzo(b)fluoranthene	205-99-2	1.01E+02	5.0E+00	20.2	5.0E+00	20.2	1.5E+01	6.7	1.5E+01	6.7	7.9E+02	1.3E-01
AOI 02 02	TP-02-02-0804	0	2	11/03/08	SVOC	Carbazole	88-74-8	2.15E+01	5.9E+00	3.6	2.1E+02	1.0E-01	2.0E+01	6.9E+02	3.1E-02	3.1E+04	6.9E-04	
AOI 02 02	TP-02-02-0804	0	2	11/03/08	SVOC	Dibenz(a,h)anthracene	53-70-3	2.58E+01	5.0E-01	51.6	5.0E-01	51.6	1.5E+00	1.7E+01	1.5E+00	1.7E+01	7.9E+01	3.3E-01
AOI 02 02	TP-02-02-0804	0	2	11/03/08	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	4.47E+01	5.0E+00	8.9	5.0E+00	8.9	1.5E+01	3.0	1.5E+01	3.0	7.9E+02	5.7E-02
AOI 02 02	TP-02-02-0804	0	2	11/03/08	SVOC	Phenanthrene	85-01-8	1.85E+02	1.3E+01	14.2	4.7E+02	3.9E-01	1.7E+02	1.2E+03	1.5E-01	2.5E+03	7.5E-02	
AOI 02 02	TP-02-02-0804	6	8	11/03/08	SVOC	Benzo(a)anthracene	56-55-3	1.39E+02	5.0E+00	27.8	5.0E+00	27.8	1.5E+01	9.2	1.5E+01	9.2	7.9E+02	1.7E-01
AOI 02 02	TP-02-02-0804	6	8	11/03/08	SVOC	Benzo(a)pyrene												

Table A1-1. Soil Samples Exceeding IDEM Industrial Screening Criteria
Former Allison Transmission Plant 2, Speedway, Indiana

Area	Location	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Sample Date	Chem Group	Chemical	CASRN	Conc (mg/kg)	IDEM Res Default Closure Levels (mg/kg)	Ratio of Conc to IDEM Res DCL	IDEM Res Direct Contact Criteria (mg/kg)	Ratio of Conc to IDEM Res Direct Contact	IDEM Ind Default Closure Levels (mg/kg)	Ratio of Conc to IDEM Ind DCL	IDEM Ind Direct Contact Criteria (mg/kg)	Ratio of Conc to IDEM Ind Direct Contact	IDEM Construction Criteria (mg/kg)	Ratio of Conc to IDEM Construction		
AOI 02 02	TP-02-02-0804	6	8	11/03/08	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	4.61E+01	5.0E+00	9.22E+00	5.0E+00	1.5E+01	1.5E+01	1.5E+01	7.9E+02	5.8E-02	7.9E+02	5.8E-02		
AOI 02 02	TP-02-02-0804	6	8	11/03/08	SVOC	Phenanthrene	85-01-8	2.41E+02	1.3E+01	1.85E+01	4.7E+02	5.1E-01	1.7E+02	1.2E+03	2.0E-01	2.5E+03	9.6E-02	2.5E+03	9.6E-02	
AOI 02 02	TP-02-02-0805	0	2	11/03/08	SVOC	Benzo(a)anthracene	59-55-3	1.30E+02	5.0E+00	2.60E+01	5.0E+00	1.5E+01	1.5E+01	1.5E+01	7.9E+02	7.9E+02	1.6E-01	7.9E+02	1.6E-01	
AOI 02 02	TP-02-02-0805	0	2	11/03/08	SVOC	Benzo(a)pyrene	50-32-8	9.56E+01	5.0E-01	1.91E+02	5.0E-01	1.5E+00	1.5E+00	1.5E+00	7.9E+01	7.9E+01	1.2E-01	7.9E+01	1.2E-01	
AOI 02 02	TP-02-02-0805	0	2	11/03/08	SVOC	Benzo(b)fluoranthene	205-99-2	9.83E+01	5.0E+00	1.96E+01	5.0E+00	2.0E+00	1.5E+01	1.5E+01	6.6E+00	6.6E+00	7.9E+02	1.2E-01	6.6E+00	7.9E+02
AOI 02 02	TP-02-02-0805	0	2	11/03/08	SVOC	Carbazole	85-74-8	2.19E+01	5.9E+00	3.72E+00	2.1E+02	1.0E-01	2.0E+01	6.9E+02	3.2E-02	3.1E+04	7.1E-04	6.9E+02	3.2E-02	
AOI 02 02	TP-02-02-0805	0	2	11/03/08	SVOC	Dibenz(a,h)anthracene	53-70-3	2.63E+01	5.0E-01	5.26E+01	5.0E-01	1.5E+00	1.5E+00	1.5E+00	7.9E+01	3.3E-01	3.1E+01	3.3E-01		
AOI 02 02	TP-02-02-0805	0	2	11/03/08	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	4.16E+01	5.0E+00	8.32E+00	5.0E+00	1.5E+01	1.5E+01	1.5E+01	7.9E+02	5.3E-02	7.9E+02	5.3E-02		
AOI 02 02	TP-02-02-0805	0	2	11/03/08	SVOC	Phenanthrene	85-01-8	2.10E+02	1.3E+01	2.52E+01	4.7E+02	4.5E-01	1.7E+02	1.2E+03	1.8E-01	2.5E+03	8.4E-02	2.5E+03	8.4E-02	
AOI 02 02	TP-02-02-0805	6	8	11/03/08	SVOC	Benzo(a)anthracene	59-55-3	9.83E+01	5.0E+00	1.96E+01	5.0E+00	1.5E+01	1.5E+01	1.5E+01	7.9E+02	1.2E-01	7.9E+02	1.2E-01		
AOI 02 02	TP-02-02-0805	6	8	11/03/08	SVOC	Benzo(a)pyrene	50-32-8	6.93E+01	5.0E-01	1.38E+02	5.0E-01	1.5E+00	1.5E+00	1.5E+00	7.9E+01	8.8E-01	7.9E+01	8.8E-01		
AOI 02 02	TP-02-02-0805	6	8	11/03/08	SVOC	Benzo(b)fluoranthene	205-99-2	7.66E+01	5.0E+00	1.53E+01	5.0E+00	1.5E+01	1.5E+01	1.5E+01	7.9E+02	9.7E-02	7.9E+02	9.7E-02		
AOI 02 02	TP-02-02-0805	6	8	11/03/08	SVOC	Dibenz(a,h)anthracene	53-70-3	1.81E+01	5.0E-01	3.62E+01	5.0E-01	1.5E+00	1.5E+00	1.5E+00	7.9E+01	2.3E-01	7.9E+01	2.3E-01		
AOI 02 02	TP-02-02-0805	6	8	11/03/08	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.12E+01	5.0E+00	6.24E+00	5.0E+00	1.5E+01	1.5E+01	1.5E+01	7.9E+02	3.9E-02	7.9E+02	3.9E-02		
AOI 02 02	TP-02-02-0806	1	2	11/05/08	SVOC	Benzo(a)anthracene	59-55-3	1.09E+01	5.0E+00	2.18E+00	5.0E+00	1.5E+01	1.5E+01	1.5E+01	7.9E+02	2.5E-02	7.9E+02	2.5E-02		
AOI 02 02	TP-02-02-0806	1	2	11/05/08	SVOC	Benzo(a)pyrene	50-32-8	1.56E+01	5.0E-01	3.12E+01	5.0E-01	1.5E+00	1.5E+00	1.5E+00	7.9E+01	1.7E-01	7.9E+01	1.7E-01		
AOI 02 02	TP-02-02-0806	1	2	11/05/08	SVOC	Benzo(b)fluoranthene	205-99-2	1.82E+01	5.0E+00	3.64E+00	5.0E+00	1.5E+01	1.5E+01	1.5E+01	7.9E+02	2.1E-02	7.9E+02	2.1E-02		
AOI 02 02	TP-02-02-0806	1	2	11/05/08	SVOC	Dibenz(a,h)anthracene	53-70-3	4.02E+00	5.0E-01	8.04E+00	5.0E-01	1.5E+00	1.5E+00	1.5E+00	7.9E+01	5.1E-02	7.9E+01	5.1E-02		
AOI 02 03	HW W1	10	10	11/16/99	INORG	Arsenic	7440-38-2	6.34E+00	3.9E+00	1.62E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	3.2E-01	3.2E+02	2.0E-02	3.2E+02	2.0E-02	
AOI 02 03	HW W2	10	10	11/16/99	INORG	Arsenic	7440-38-2	8.73E+00	3.9E+00	2.24E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	4.9E-01	3.2E+02	3.0E-02	3.2E+02	3.0E-02	
AOI 02 03	T-33/34 SW 3	5	5	11/01/99	INORG	Arsenic	7440-38-2	6.99E+00	3.9E+00	1.79E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	3.5E-01	3.2E+02	2.1E-02	3.2E+02	2.1E-02	
AOI 02 03	T-33/34 SW 5	5	5	11/01/99	INORG	Arsenic	7440-38-2	1.75E+01	3.9E+00	4.45E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	8.8E-01	3.2E+02	5.5E-02	3.2E+02	5.5E-02	
AOI 02 04	AREA D SW 4	8	8	10/13/99	INORG	Arsenic	7440-38-2	8.91E+00	3.9E+00	2.28E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	4.5E-01	3.2E+02	2.8E-02	3.2E+02	2.8E-02	
AOI 02 04	AREA D SW-15	8	8	10/26/99	INORG	Arsenic	7440-38-2	7.32E+00	3.9E+00	1.87E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	3.7E-01	3.2E+02	2.3E-02	3.2E+02	2.3E-02	
AOI 02 04	AREA D SW-16	8	8	10/26/99	INORG	Arsenic	7440-38-2	2.85E+01	3.9E+00	7.28E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	8.2E-01	3.2E+02	8.9E-02	3.2E+02	8.9E-02	
AOI 02 04	AREA D SW-17	8	8	10/26/99	INORG	Arsenic	7440-38-2	8.48E+00	3.9E+00	2.17E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	4.2E-01	3.2E+02	2.7E-02	3.2E+02	2.7E-02	
AOI 02 04	AREA D SW-18	8	8	10/26/99	INORG	Arsenic	7440-38-2	6.41E+00	3.9E+00	1.65E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	3.2E-01	3.2E+02	2.0E-02	3.2E+02	2.0E-02	
AOI 02 04	AREA D SW-19	8	8	10/26/99	INORG	Arsenic	7440-38-2	1.40E+01	3.9E+00	3.59E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	7.0E-01	3.2E+02	4.4E-02	3.2E+02	4.4E-02	
AOI 02 04	AREA D SW-20	8	8	10/26/99	INORG	Arsenic	7440-38-2	1.35E+01	3.9E+00	3.45E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	6.8E-01	3.2E+02	4.2E-02	3.2E+02	4.2E-02	
AOI 02 04	AREA D SW-21	8	8	10/26/99	INORG	Arsenic	7440-38-2	3.09E+01	3.9E+00	7.89E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	1.5E+01	3.2E+02	9.7E-02	3.2E+02	9.7E-02	
AOI 02 04	SB-02-04-0601	0	2	11/16/06	INORG	Arsenic	7440-38-2	1.59E+01	3.9E+00	4.11E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	7.9E-01	3.2E+02	4.9E-02	3.2E+02	4.9E-02	
AOI 02 04	SB-02-04-0601	6	10	11/16/06	INORG	Arsenic	7440-38-2	8.25E+00	3.9E+00	2.11E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	4.1E-01	3.2E+02	2.6E-02	3.2E+02	2.6E-02	
AOI 02 04	SB-02-04-0602	0	2	11/16/06	INORG	Arsenic	7440-38-2	7.11E+00	3.9E+00	1.83E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	3.6E-01	3.2E+02	2.2E-02	3.2E+02	2.2E-02	
AOI 02 04	SB-02-04-0602	10	12	11/16/06	INORG	Arsenic	7440-38-2	1.31E+01	3.9E+00	3.34E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	6.6E-01	3.2E+02	4.1E-02	3.2E+02	4.1E-02	
AOI 02 04	SB-02-04-0602	8	10	11/16/06	INORG	Arsenic	7440-38-2	1.43E+01	3.9E+00	3.67E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	7.2E-01	3.2E+02	4.5E-02	3.2E+02	4.5E-02	
AOI 02 04	SB-02-04-0701	14	15	09/14/07	INORG	Arsenic	7440-38-2	1.63E+01	3.9E+00	4.18E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	8.2E-01	3.2E+02	5.1E-02	3.2E+02	5.1E-02	
AOI 02 04	SB-02-04-0701	6	10	09/14/07	INORG	Arsenic	7440-38-2	8.70E+00	3.9E+00	2.22E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	4.4E-01	3.2E+02	2.7E-02	3.2E+02	2.7E-02	
AOI 02 04	SS-1	0	0.5	07/09/99	SVOC	Benzo(a)pyrene	50-32-8	2.50E+00	5.0E-01	5.00E+00	5.0E-01	1.5E+00	1.5E+00	1.5E+00	7.9E+01	3.2E-02	7.9E+01	3.2E-02		
AOI 02 04	SS-1	0	0.5	07/09/99	INORG	Arsenic	7440-38-2	8.20E+00	3.9E+00	2.10E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	4.1E-01	3.2E+02	2.6E-02	3.2E+02	2.6E-02	
AOI 02 04	SS-1	0	0.5	07/09/99	INORG	Lead	7439-92-1	4.81E+02	8.1E+01	5.91E+00	4.0E+02	2.3E+02	2.3E+02	1.3E+03	3.7E-01	8.7E+02	5.0E-01	8.7E+02	5.0E-01	
AOI 02 04	SS-1A	0	0.5	01/28/00	INORG	Arsenic	7440-38-2	6.09E+00	3.9E+00	1.57E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	3.0E-01	3.2E+02	1.9E-02	3.2E+02	1.9E-02	
AOI 02 04	SS-2	0	0.5	07/09/99	INORG	Arsenic	7440-38-2	3.07E+01	3.9E+00	7.79E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	1.5E+01	3.2E+02	9.6E-02	3.2E+02	9.6E-02	
AOI 02 04	SS-3	0	0.5	07/09/99	SVOC	Benzo(a)pyrene	50-32-8	2.50E+00	5.0E-01	5.00E+00	5.0E-01	1.5E+00	1.5E+00	1.5E+00	7.9E+01	3.2E-02	7.9E+01	3.2E-02		
AOI 02 04	SS-3	0	0.5	07/06/93	INORG	Arsenic	7440-38-2	1.23E+01	3.9E+00	3.15E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	6.2E-01	3.2E+02	3.8E-02	3.2E+02	3.8E-02	
AOI 02 04	SS-3	0	0.5	07/09/99	INORG	Lead	7439-92-1	3.23E+02	8.1E+01	4.10E+00	4.0E+02	2.3E+02	2.3E+02	1.3E+03	2.9E-01	8.7E+02	3.9E-01	8.7E+02	3.9E-01	
AOI 02 04	SS-3A	0	0.5	01/28/00	SVOC	Benzo(a)pyrene	50-32-8	2.20E+00	5.0E-01	4.40E+00	5.0E-01	1.5E+00	1.5E+00	1.5E+00	7.9E+01	2.8E-02	7.9E+01	2.8E-02		
AOI 02 04	SS-3A	0	0.5	01/28/00	INORG	Arsenic	7440-38-2	2.98E+01	3.9E+00	7.69E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	1.5E+01	3.2E+02	9.3E-02	3.2E+02	9.3E-02	
AOI 02 04	T-23 BTM S	15	15	10/20/99	INORG	Arsenic	7440-38-2	6.99E+00	3.9E+00	1.79E+00	3.9E+00	5.8E+00	5.8E+00	2.0E+01	3.5E-01	3.2E+02	2.1E-02	3.2E+02	2.1E-02	

Table A1-1. Soil Samples Exceeding IDEM Industrial Screening Criteria
Former Allison Transmission Plant 2, Speedway, Indiana

Area	Location	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Sample Date	Chem Group	Chemical	CASRN	Conc (mg/kg)	IDEM Res Default Closure Levels (mg/kg)	Ratio of Conc to IDEM Res DCL	IDEM Res Direct Contact Criteria (mg/kg)	Ratio of Conc to IDEM Res Direct Contact	IDEM Ind Default Closure Levels (mg/kg)	Ratio of Conc to IDEM Ind DCL	IDEM Ind Direct Contact Criteria (mg/kg)	Ratio of Conc to IDEM Ind Direct Contact	IDEM Construction Criteria (mg/kg)	Ratio of Conc to IDEM Construction
AOI 02_05	SB-02-05-0601	8	10	01/10/05	INORG	Arsenic	7440-38-2	6.76E+00	3.9E+00	1.7E+00	3.9E+00	4.3E+00	5.8E+00	2.0E+01	3.4E-01	3.2E+02	2.1E-02	
AOI 02_05	T-16 BTM 1	10	10	11/11/99	INORG	Arsenic	7440-38-2	6.32E+00	3.9E+00	1.6E+00	3.9E+00	1.6E+00	5.8E+00	2.0E+01	3.2E-01	3.2E+02	2.0E-02	
AOI 02_05	T-16 SUMP SWE	5	5	11/24/99	INORG	Arsenic	7440-38-2	1.77E+01	3.9E+00	4.5E+00	3.9E+00	4.5E+00	5.8E+00	2.0E+01	8.9E-01	3.2E+02	5.5E-02	
AOI 02_05	T-16 SUMP SWS	5	5	11/24/99	INORG	Arsenic	7440-38-2	3.09E+01	3.9E+00	7.9E+00	3.9E+00	7.9E+00	5.8E+00	2.0E+01	1.8E+00	3.2E+02	9.7E-02	
AOI 02_05	T-16 SUMP SWW	5	5	11/24/99	INORG	Arsenic	7440-38-2	6.24E+00	3.9E+00	1.6E+00	3.9E+00	1.6E+00	5.8E+00	2.0E+01	3.1E-01	3.2E+02	2.0E-02	
AOI 02_05	T-16 SW E	5	5	11/11/99	INORG	Arsenic	7440-38-2	1.05E+01	3.9E+00	2.7E+00	3.9E+00	2.7E+00	5.8E+00	2.0E+01	5.3E-01	3.2E+02	3.3E-02	
AOI 02_05	T-16 SW W	5	5	11/11/99	INORG	Arsenic	7440-38-2	9.34E+00	3.9E+00	2.4E+00	3.9E+00	2.4E+00	5.8E+00	2.0E+01	4.7E-01	3.2E+02	2.9E-02	
AOI 02_06	SB-44	0	2	02/11/00	SVOC	Benzo(a)pyrene	50-32-8	2.10E+00	5.0E-01	4.2E+00	5.0E-01	4.2E+00	1.5E+00	1.4E+00	1.5E+00	1.6E+00	7.9E+01	2.7E-02
AOI 02_06	SB-02-08-0601	0	2	01/10/06	INORG	Arsenic	7440-38-2	7.65E+00	3.9E+00	2.0E+00	3.9E+00	2.0E+00	5.8E+00	2.0E+01	3.8E-01	3.2E+02	2.4E-02	
AOI 02_06	SB-02-09-0601	0	2	01/10/06	INORG	Arsenic	7440-38-2	7.41E+00	3.9E+00	1.9E+00	3.9E+00	1.9E+00	5.8E+00	2.0E+01	3.7E-01	3.2E+02	2.3E-02	
AOI 02_09	SB-02-09-0601	16	18	01/10/06	INORG	Arsenic	7440-38-2	6.25E+00	3.9E+00	1.6E+00	3.9E+00	1.6E+00	5.8E+00	2.0E+01	3.1E-01	3.2E+02	2.0E-02	
AOI 02_09	SB-37	2	6	02/10/00	SVOC	Benzo(a)pyrene	50-32-8	2.10E+00	5.0E-01	4.2E+00	5.0E-01	4.2E+00	1.5E+00	1.4E+00	1.5E+00	1.6E+00	7.9E+01	2.7E-02

EXHIBIT F

SITE MAP INDICATING BOUNDARY OF ENGINEERING CONTROL

Appendix B

Draft Update of 2009 RFI
Baseline Risk Assessment for
Plant 2



December 8, 2011

MEMORANDUM

To: David Favero, GM LLC Project Manager
Marilyn Dedyne, GM LLC

From: Francis Ramacciotti
Renee Sandvig
Steve Song

Re: Update of 2009 RFI Baseline Risk Assessment for Plant 2
Allison Transmission Facility, Speedway, Indiana

Purpose

On February 18, 2009, General Motors Corporation (GMC) submitted to USEPA the *RCRA Facility Investigation Report* for the Allison Transmission Facility in Speedway, Indiana (Site). The report included a baseline human health risk assessment which estimated risks from potential human exposures at the Site, including potential exposures to soil and groundwater at the northern portion of the Site known as "Plant 2". The results of the risk assessment were used to guide the selection of corrective measures for the *RCRA Corrective Measures Proposal* (March 31, 2009) for the Site.

Subsequent to submittal of the Corrective Measures Proposal, the Plant 2 part of the Site was sold for site redevelopment. To facilitate completion of RCRA Corrective Action for the Plant 2 part of the Site, GM LLC agreed to update the parts of 2009 RFI baseline risk assessment that pertain to Plant 2. This update incorporates:

- groundwater data collected subsequent to the completion of the RFI Report and the CMP;
- USEPA guidance on inhalation risk assessments (*Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual (Part F)*, January 2009);
- USEPA guidance on Age-Dependant Adjustment Factors (ADAFs) (*Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens*, March 2005);
- agreements between USEPA, ENVIRON, and GM LLC on methodologies for streamlining risk assessments (*Health-Based Evaluation of Data to Streamline RCRA Facility Investigations at General Motors Facilities*, August 2010); and
- updated toxicity values, which were compiled on September 28, 2011 and include the new toxicity values for trichloroethene (TCE) in the Integrated Risk Information System (IRIS).

This memorandum summarizes the results of the updated RFI baseline risk assessment for

Plant 2 and the effect of the risk assessment conclusions on the Corrective Measures Proposal.

Summary of Results

Soil

The updated upper-bound risk estimates for potential exposures to soil at Plant 2 are shown on Table 1a. This table updates Table 5.2 of the RFI Report. Comparison of Table 1a with Table 5.2 shows the following differences:

- AOI 02-01 had an unacceptable upper-bound hazard index (HI) estimate (HI above USEPA's limit of 1) for potential construction worker exposure but the updated upper-bound risk estimates (including the HI) are acceptable. The unacceptable HI in the 2009 risk assessment was primarily due to a soil mercury concentration which GMC remediated in January 2009; GMC excavated the mercury-contaminated soil and surround soil as part of an interim measure to facilitate site redevelopment, as discussed in the March 2009 *Former UST Area A (AOI 2-1) – Excavation Completion Report* prepared by ARCADIS. In updating the risk assessment, the data represented by the excavated soil were excluded from the updated risk calculations.
- AOI 02-01 had an acceptable upper-bound HI estimate for potential routine worker exposure via vapor intrusion in the 2009 RFI Report, but the updated upper-bound HI estimate is unacceptable for potential routine worker exposure via vapor intrusion. This change is due to the use of the new reference concentration (RfC) for TCE on IRIS.

The other unacceptable upper-bound risk estimate on Table 1 is the cumulative cancer risk estimate for potential routine worker exposure during outdoor activities at AOI 02-02. This unacceptable upper-bound cancer risk estimate (cumulative cancer risk above USEPA's risk limit of 10^{-4}) was previously presented in the 2009 RFI Report.

The upper-bound risk estimates in the updated risk assessment that exceed USEPA risk limits were refined as follows:

- The upper-bound HI estimate of 2 for potential future routine worker exposure via vapor intrusion at AOI 02-01 was refined using AOI-specific information in estimating the TCE concentration in indoor air, in place of the conservative site-wide assumptions used in the upper-bound estimates. Specifically, the maximum measured depth to groundwater at this AOI (15.4 feet bgs) was used for the "depth to water" term and the sample depth (10 ft bgs) for the maximum detected concentration of TCE in soil (1.5 mg/kg from location T-1 BTTM1) was used for the " L_t " term. The L_t was set to 10 ft bgs as sample T-1 BTTM1 was collected from the floor of the tank excavation, which was subsequently backfilled with clean material, as discussed in the *Description of Current Conditions Report* (ARCADIS July 2005). These two AOI-specific refinements reduced the assumed mass of TCE in soil that is available for vapor intrusion. The refined HI estimate is 0.6, which meets USEPA's acceptable limit. For the few soil samples analyzed for TCE at this AOI that were not collected from the floor of excavation pits, no

refinement was necessary because the highest TCE concentration of 0.038 mg/kg among these samples gives an HQ of 0.039.

- The upper-bound cumulative cancer risk estimate for potential routine worker exposure during outdoor activities was refined using the same methodology used to refine the upper-bound estimate in the 2009 RFI Report (i.e., the exposure point concentrations were calculated using 95% UCLs for the constituents contributing the most to the significantly to the risk estimates instead of maximum concentrations). The refined cumulative cancer risk estimate is 1×10^{-4} , which meets USEPA's acceptable limit and is the same as the cumulative cancer risk estimate presented in the 2009 RFI Report.

Lead

The RFI Report concluded that lead in soil does not present a potentially significant exposure. This conclusion remains valid because no new soil lead data have been collected and more recent USEPA guidance on lead risk assessments (*Update of the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation*, June 2009) allows a higher (less stringent) soil lead screening level than the previous guidance.

Groundwater

The updated upper-bound risk estimates for exposures to groundwater at Plant 2 are shown on Table 2. This table updates Table 5.5 of the RFI Report. Both Table 2 and Table 5.5 show that the upper-bound risk estimates meet the USEPA's acceptable limits at all AOIs investigated at Plant 2.

Supporting Information

The toxicity values, exposure factors, and constituent concentrations used in the updated risk assessment are included in the attached tables, which also include single-chemical cancer risk and hazard quotient estimates. Toxicity values were reviewed on September 28, 2011. Constituent concentrations are current as of the June 22, 2011 sampling event.

Attachments:

Table1: Upper-Bound Cumulative Cancer Risk and HI Estimates for Soil
Table 2: Upper-Bound Cumulative Cancer Risk and HI Estimates for Groundwater
Toxicity Values
Physical/Chemical Parameters
High-End Exposure Factors
Upper-Bound Single-Chemical Risk Calculations for Soil Results
Normalized Indoor Air Concentration in a Comm/Ind Slab-on-Grade Building due to Vapor Intrusion from TCE in Subsurface Soil at Location T-1 BTTM1
Refined Single-Chemical Risk Calculations for Soil Results from AOI 02-01
Refined Single-Chemical Risk Calculations for Soil Results from AOI 02-02
Upper-Bound Single-Chemical Risk Calculations for Groundwater Results

**Table 1: Upper-Bound Cumulative Cancer Risk and HI Estimates for Soil
Allison Transmission, Speedway, Indiana**

Area	Routine Worker				Construction Worker		Maintenance Worker		Off-Site Resident	
	Outdoor Activities ⁴		Vapor Intrusion ³		Outdoor Activities		Outdoor Activities		Inhalation	
	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI
AOI_02_01	5E-05	3E-01	5E-06	2E+00	5E-06	5E-01	4E-06	7E-02	4E-06	9E-01
AOI_02_02	6E-04	5E-01	6E-06	7E-01	6E-05	6E-01	4E-05	1E-01	2E-05	3E-01
AOI_02_03	4E-06	2E-02	7E-11	ND	5E-07	1E-02	3E-07	6E-03	3E-08	4E-04
AOI_02_04	3E-05	3E-01	4E-06	4E-01	3E-06	4E-01	2E-06	5E-02	2E-06	2E-01
AOI_02_05	1E-05	7E-02	3E-09	1E-02	2E-06	9E-02	1E-06	2E-02	2E-07	4E-02
AOI_02_06	1E-05	2E-03	9E-08	2E-02	9E-07	1E-03	7E-07	4E-04	2E-07	7E-03
AOI_02_07	1E-07	3E-02	1E-06	4E-01	2E-08	4E-03	7E-09	6E-03	6E-07	1E-01
AOI_02_08	3E-07	1E-02	2E-08	2E-02	3E-08	5E-02	2E-08	3E-03	1E-08	4E-02
AOI_02_09	7E-06	1E-02	2E-09	ND	6E-07	2E-02	5E-07	3E-03	1E-07	2E-05
AOI_02_10	3E-07	2E-02	4E-07	1E-01	3E-08	1E-02	2E-08	4E-03	3E-07	4E-02
Notes:										
1. Upper-bound cumulative cancer risk and HI estimates in excess of USEPA's acceptable limits (1E-4 and 1, respectively) are shaded in bold.										
2. Upper-bound cumulative cancer risk and HI estimates are calculated using the maximum detected site-related concentrations (i.e. those in excess of background, as discussed in Section 3.5 of the RFI Report) from each area from any depth.										
3. The upper-bound HI estimate for potential future routine worker exposure via vapor intrusion at AOI 02-01 was refined using AOI-specific information in estimating the TCE concentration in indoor air in place of the conservative site-wide assumptions used in the upper-bound estimates. The refined HI estimate is 0.6, which meets USEPA's acceptable HI limit of 1.										
4. The upper-bound cumulative cancer risk estimate for potential routine worker exposure during outdoor activities was refined using the same methodology used to refine the upper-bound estimate in the 2009 RFI Report (i.e., the exposure point concentrations were calculated using 95% UCLs instead of maximum concentrations). The refined cumulative cancer risk estimate for potential routine worker exposure during outdoor activities at AOI 02-02 is 1E-4, which meets USEPA's acceptable cumulative cancer limit of 1E-4 and is the same as the cumulative cancer risk estimate presented in the 2009 RFI Report.										
5. Toxicity values were reviewed on September 28, 2011. Constituent concentrations are current as of the June 22, 2011 sampling event.										
ND = No constituents contributing to noncancer risk were detected.										

**Table 2: Upper-Bound Cumulative Cancer Risk and HI Estimates for Groundwater
Allison Transmission, Speedway, Indiana**

On/Off-site	AOI	Wellzone	Construction Worker		Maintenance Worker		Routine Worker				Resident			
			Groundwater Contact		Groundwater Contact		Vapor Intrusion		Outdoor Air Inhalation		Vapor Intrusion		Outdoor Air Inhalation	
			Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI
On-Site	AOI_02_01	S2	2E-06	1E-01	2E-05	3E-01	3E-07	9E-02	8E-09	2E-03	3E-06	6E-01	5E-08	9E-03
On-site	AOI_02_02	S2	2E-07	6E-03	2E-06	7E-03	5E-07	2E-03	1E-08	4E-05	5E-06	1E-02	7E-08	2E-04
On-Site	AOI_02_03	S2	ND	9E-06	ND	9E-06	ND	ND	ND	ND	ND	ND	ND	ND
On-Site	AOI_02_04	S2	1E-05	3E-01	1E-04	5E-01	1E-06	2E-02	3E-08	5E-04	1E-05	1E-01	2E-07	2E-03
On-site	AOI_02_06	S2	9E-08	6E-03	9E-07	2E-02	3E-07	5E-03	8E-09	1E-04	3E-06	4E-02	4E-08	6E-04
On-Site	AOI_02_07	S2	2E-08	1E-03	2E-07	2E-03	7E-08	7E-04	2E-09	2E-05	6E-07	5E-03	9E-09	7E-05
Notes:														
1. Upper-bound cumulative cancer risk and HI estimates in excess of USEPA's acceptable limits (1E-4 and 1, respectively) are shaded in bold.														
2. Cumulative cancer risk and HI estimates are calculated using the maximum detected constituent concentrations from each wellzone.														
3. Toxicity values were reviewed on September 28, 2011. Constituent concentrations are current as of the June 22, 2011 sampling event.														
ND = No constituents contributing to cancer or noncancer risk were detected, as appropriate.														

Toxicity Values	
Allison Transmission, Speedway, Indiana	
References	
1	USEPA. Integrated Risk Information System (IRIS). On-line database.
2	USEPA. 1997. Health Effects Assessment Summary Tables (HEAST). FY-1997 Update. EPA 540/R-97-036. July.
10	USEPA. 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. EPA/600/2-93/089. July.
50	USEPA. 56 FR 26460, June 7, 1991. Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper. Final Rule.
77	USEPA. NCEA. 2001. Risk Assessment Issue Paper for Carcinogenicity Information for Tetrachloroethylene (perchloroethylene, PERC) [CASRN 127-18-4]. December 20.
83	USEPA. NCEA. 1994. Risk Assessment Issue Paper for: Derivation of a Provisional RfC for Silver [CASRN 7440-22-4]. June 30.
91	USEPA. NCEA. 2001. Evaluation of Carcinogenicity of Iron [CASRN 7439-89-6] and Compounds. November 14.
92	USEPA. NCEA. 2001. Risk Assessment Issue Paper for: Derivation of a Provisional RfC for Iron [CASRN 7439-89-6] and Compounds. November 14.
100	USEPA. Region 8. 2002. Derivation of Acute and Subchronic Oral Reference Doses for Inorganic Arsenic. August.
117	USEPA. NCEA. 2003. Risk Assessment Issue Paper for: Derivation of Provisional Subchronic and Chronic RfCs for Chloroform [CASRN 67-66-3]. January 23.
122	USEPA. NCEA. 1998. Risk Assessment Issue Paper for: Derivation of Provisional Subchronic RfC for Cadmium [CASRN 7440-43-9]. June 14.
125	USEPA. 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. July.
126	Provisional Peer Reviewed Toxicity Values for Superfund (PPRTV) Database.
129	ATSDR. 2010. Minimal Risk Levels. December.
131	CalEPA. ARB. 2009. Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values. February 9.
132	USEPA. NCEA, Superfund Technical Support Center. 1994. Risk Assessment Issue Paper: Status of Inhalation Cancer Unit Risk for Benzo[a]pyrene. December.
135	CalEPA. OEHHA. 2009. Technical Support Document for Cancer Potency Factors. Appendix H. May.
142	CalEPA. OEHHA. 1999. Public Health Goal for Methyl Tertiary Butyl Ether (MTBE) in Drinking Water. March.
Notes:	
2	USEPA adopted chronic value as subchronic value.
3	HEAST Alternate Method.
5	Based on potency relative to Benzo(a)pyrene [CASRN 50-32-8], as described in the indicated reference.
6	Under review, according to IRIS.
8	ENVIRON used Chromium VI [CASRN 18540-29-9] value from the indicated reference as a surrogate.
20	ENVIRON used Pyrene [CASRN 129-00-0] value from the indicated reference as a surrogate.
30	Upper-bound slope factor.
32	High risk & persistence tier for: food chain exposure; sediment/soil ingestion; dust/aerosol inhalation; dermal exposure, if an absorption factor is applied; presence of dioxin-like, tumor-promoting/persistent congeners; and all early life exposures.
45	ENVIRON derived inhalation URF from Inhalation Slope Factor value presented in the indicated reference, using standard USEPA methodology presented in HEAST.
49	ENVIRON derived oral RfD from adverse health effect level value presented in the indicated reference.
51	ENVIRON used Mercuric Chloride [CASRN 7487-94-7] value from the indicated reference as a surrogate.
59	This RfC is for particulates. The RfC for chromic acid mists and dissolved Chromium VI aerosols is 0.000008 mg/m3.
60	IRIS provides a range of 2.2E-6 to 7.8E-6 (ug/m3)-1 as the inhalation URF for Benzene.
62	ENVIRON used chronic value as a surrogate for the subchronic value.
68	IRIS provides a range of 1.5E-2 to 5.5E-2 (mg/kg/d)-1 as the oral Slope Factor for Benzene.
71	The RfC is specifically for anhydrous borax.
72	ENVIRON used Aroclor 1254 [CASRN 11097-69-1] value from the indicated reference as a surrogate for PCBs [CASRN 1336-36-3].
79	IRIS recommends an inhalation URF for Vinyl Chloride of 4.4E-6 (ug/m3)-1 to account for continuous lifetime exposure during adulthood; a twofold increase to 8.8E-6 (ug/m3)-1 is recommended to account for continuous exposure from birth.
90	Inadequate data exist to derive a toxicity value, according to the indicated reference.
93	Personal communication with NCEA indicated the HEAST LOAEL of 1000 mg and the subchronic RfD of 7E-1mg/kg-day both appear to be incorrect and recommended using the IRIS RfD of 3E-1 as the subchronic RfD.
95	This RfD is used to evaluate dietary exposures. A RfD of 0.0005 mg/kg/day is used to evaluate water ingestion exposures.
98	Route-to-route extrapolation is not appropriate, according to the indicated reference.
102	USEPA applied a dose equivalency factor of 4.5 to the chronic RfC to derive the subchronic RfC.
104	Dermal toxicity value is extrapolated from oral toxicity value in accordance with the referenced USEPA guidance.
110	The value is based on discussion in the indicated reference regarding the principal study USEPA used in extrapolating from subchronic to chronic.
111	Value as published is an MRL in the indicated reference.
114	This PPRTV appendix value does not qualify as a source per USEPA's 3-tier source hierarchy in OSWER Dir. 9285.7-53. Per USEPA, PPRTV appendix values lack sufficient technical support and should not be used as a primary basis for site cleanup decisions.
116	ENVIRON used subchronic value as a surrogate for the chronic value.
117	ENVIRON used Cyanide (total) [CASRN 57-12-5] value from the indicated reference as a surrogate.
118	Alternate subchronic RfC of 0.1 mg/m3 is also provided in the reference.
140	Value based on cobalt sulfate (soluble).
143	The most recent PPRTV paper for this chemical does not include a toxicity value for this route of exposure and exposure duration.
154	The oral RfD for vanadium is derived from the IRIS oral RfD for vanadium pentoxide by factoring out the molecular weight of the oxide ion.

**Physical and Chemical Properties
Allison Transmission, Speedway, Indiana**

Chem Group	Chemical	CASRN	MW (g/mole)			K _{ow} (unitless)			K _{oc} (L/kg)			K _d (L/kg)			H (unitless)			s (mg/L)			VP (mm Hg)			D _{air} (m ² /d)			D _{water} (m ² /d)			K _p (cm/hr)			ABS _u (unitless)			FA (unitless)			ΔH _v (cal/mol)			T _c (Kelvin)			T _b (Kelvin)			HENRY Ref Temp (°C)	VP Ref Temp (°C)
			Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes								
VOC	Acetone	67-64-1	5.8E+01	50.1		5.8E-01	44		5.8E-01	44		1.6E-03	44		1.0E+06	44		2.3E+02	50.1	92	1.1E+00	44		9.8E-05	44		5.2E-04	44	115	62		1.0E+00	62	114	7.0E+03	44	118	5.1E+02	44	118	3.3E+02	44	118	2.5E+01	2.5E+01				
VOC	Benzene	71-43-2	7.8E+01	50.1		1.3E+02	44		1.8E+03	44	111	2.3E-01	44		2.3E+03	44		9.5E+01	50.1	92	7.6E-01	44		8.5E-05	44		1.5E-02	44	115	62		1.0E+00	62		7.3E+03	44	118	5.6E+02	44	118	3.5E+02	44	118	2.5E+01	2.5E+01				
VOC	2-Butanone	78-93-3	7.2E+01	50.1		1.9E+00	69		2.0E+00	69	111	2.3E-03	50.1	92, 123	2.2E+05	50.2		9.5E+01	50.1	92	7.0E-01	69		8.5E-05	69		9.6E-04	69	115	62		1.0E+00	62		7.5E+03	70		5.4E+02	70		3.5E+02	70		2.0E+01	2.5E+01				
VOC	n-Butylbenzene	104-51-8	1.3E+02	39		1.6E+04	1		2.5E+03	1	111	5.1E-01	1		1.4E+01	1	55	1.0E+00	1		4.9E-01	69		7.0E-05	69		1.7E-01	1	115	62		1.0E+00	62		9.3E+03	70		4.6E+02	70		2.5E+01	2.3E+01							
VOC	sec-Butylbenzene	135-98-8	1.3E+02	55		1.7E+04	1		2.7E+03	1	111	4.7E-01	1		3.2E+02	1	55	1.1E+00	1		4.9E-01	69		7.0E-05	69		1.8E-01	1	115	62		1.0E+00	62		8.9E+04	70		6.8E+02	70		4.5E+02	70		2.5E+01	2.0E+01				
VOC	tert-Butylbenzene	98-06-6	1.3E+02	39		1.3E+04	1		2.2E+03	1	111	4.8E-01	1		2.9E+02	1	55	1.5E+00	1		4.9E-01	69		6.9E-05	69		1.4E-01	1	115	62		1.0E+00	62		9.0E+03	70		4.4E+02	70		2.5E+01	2.0E+01							
VOC	Carbon Disulfide	75-15-0	7.6E+01	50.1		1.0E+02	44		4.6E+01	44	111	1.2E+00	44		1.2E+03	44		3.6E+02	50.1	92	9.0E-01	44		8.6E-05	44		1.2E-02	44	115	62		1.0E+00	62		6.4E+03	44	118	5.5E+02	44	118	3.2E+02	44	118	2.5E+01	2.5E+01				
VOC	Carbon Tetrachloride	56-23-5	1.5E+02	50.1		5.4E+02	44		1.7E+02	44	111	1.3E+00	44		7.9E+02	44		1.2E+02	50.1	92	6.7E-01	44		7.6E-05	44		1.4E-02	44	115	62		1.0E+00	62		7.1E+03	44	118	5.6E+02	44	118	3.5E+02	44	118	2.5E+01	2.5E+01				
VOC	Chlorobenzene	108-90-7	1.1E+02	50.1		7.2E+02	44		2.2E+02	44	111	1.5E-01	44		4.7E+02	44		1.2E+01	50.1	92	6.3E-01	44		7.5E-05	44		2.9E-02	44	115	62		1.0E+00	62		8.4E+03	44	118	6.3E+02	44	118	4.0E+02	44	118	2.5E+01	2.5E+01				
VOC	Chloroethane	75-00-3	6.5E+01	50.1		2.7E+01	69		1.6E+01	69	111	3.6E-01	50.1	92, 123	5.7E+03	50.1	92	1.0E+03	50.1	92	2.3E+00	69		9.9E-05	69		6.1E-03	69	115	62		1.0E+00	62		5.9E+03	70		2.9E+02	70		2.0E+01	2.5E+01							
VOC	Chloroform	67-66-3	1.2E+02	50.1		8.3E+01	44		4.0E+01	44	111	1.5E-01	44		7.9E+03	44		2.0E+02	50.1	92	9.0E-01	44		8.6E-05	44		6.3E-03	44	115	62		1.0E+00	62		7.0E+03	44	118	5.4E+02	44	118	3.3E+02	44	118	2.5E+01	2.5E+01				
VOC	2-Chlorotoluene	95-49-8	1.3E+02	39		1.5E+02	69		6.1E+02	69	111	1.5E-01	69		3.7E+02	39		3.4E+00	39		5.4E-01	69		7.5E-05	69		5.6E-02	69	115	62		1.0E+00	62		7.0E+03	44	118	5.4E+02	44	118	3.3E+02	44	118	2.5E+01	2.5E+01				
VOC	Cumene	98-82-8	1.2E+02	50.1		3.1E+03	69		7.1E+02	69	111	5.3E-01	69		6.1E+01	50.1	92	4.5E+00	50.1	92	5.6E-01	69		6.1E-05	69		6.8E-02	69	115	62		1.0E+00	62	114	1.0E+04	70		6.3E+02	70		4.3E+02	70		2.5E+01	2.5E+01				
VOC	Cyclohexane	110-82-7	8.4E+01	50.1		2.8E+03	39		6.3E+02	39	111	8.0E+00	50.1	92, 123	5.5E+01	50.1	92	9.7E+01	50.1	92	7.2E-01	69		7.9E-05	69		1.0E-01	39	115	62		1.0E+00	62	114							2.0E+01	2.5E+01							
VOC	p-Cymene	99-87-6	1.3E+02	39		1.3E+04	1		2.1E+03	1	111	3.1E-01	69		3.4E+02	1	55	1.0E+00	1		4.8E-01	69		6.3E-05	69		1.4E-01	1	115	62		1.0E+00	62								2.5E+01	1.7E+01							
VOC	Dibromochloromethane	124-48-1	2.1E+02	50.1		1.5E+02	44		6.3E+01	44	111	3.2E-02	44		2.6E+03	44		4.9E+00	50.1	92	1.7E-01	44		9.1E-05	44		2.9E-03	44	115	62		1.0E+00	62		5.9E+03	44	118	6.8E+02	44	118	4.2E+02	44	118	2.5E+01	2.5E+01				
VOC	1,2-Dibromoethane	106-93-4	1.9E+02	50.1		4.0E+01	1		2.2E+01	1	111	3.0E-02	50.1	92, 123	4.2E+03	50.1	92	1.3E+01	50.1	92	3.7E-01	69		7.3E-05	69		1.6E-03	1	115	62		1.0E+00	62		8.3E+03	70		5.8E+02	70		4.0E+02	70		2.0E+01	2.5E+01				
VOC	1,2-Dichlorobenzene	95-50-1	1.5E+02	50.1		2.7E+03	44		6.2E+02	44	111	7.8E-02	44		1.6E+02	44		1.4E+00	50.1	92	6.0E-01	44		6.8E-05	44		4.4E-02	44	115	62		1.0E+00	62		9.7E+03	44	118	7.1E+02	44	118	4.5E+02	44	118	2.5E+01	2.5E+01				
VOC	1,3-Dichlorobenzene	541-73-1	1.5E+02	50.1		2.4E+03	69		5.7E+02	69	111	1.3E-01	50.1	92, 123	1.3E+02	50.1	93	2.2E+00	50.1	92	6.0E-01	69		6.8E-05	69		4.1E-02	69	115	62		1.0E+00	62		9.2E+03	70		6.8E+02	70		4.5E+02	70		2.0E+01	2.5E+01				
VOC	1,1-Dichloroethane	75-34-3	9.9E+01	50.1		6.2E+01	44		3.1E+01	44	111	2.3E-01	44		5.1E+03	44		2.3E+02	50.1	92	6.4E-01	44		9.1E-05	44		6.7E-03	44	115	62		1.0E+00	62		6.9E+03	44	118	5.2E+02	44	118	3.3E+02	44	118	2.5E+01	2.5E+01				
VOC	1,2-Dichloroethane	107-06-2	9.9E+01	50.1		3.0E+01	44		1.7E+01	44	111	4.0E-02	44		8.5E+03	44		7.9E+01	50.1	92	9.0E-01	44		8.6E-05	44		4.1E-03	44	115	62		1.0E+00	62		7.6E+03	44	118	5.6E+02	44	118	3.6E+02	44	118	2.5E+01	2.5E+01				
VOC	1,1-Dichloroethene	75-35-4	9.7E+01	50.1		1.3E+02	44		5.8E+01	44	111	1.1E+00	44		2.3E+03	44		6.0E+02	50.1	92	7.8E-01	44		9.0E-05	44		1.2E-02	44	115	62		1.0E+00	62		6.2E+03	44	118	5.8E+02	44	118	3.0E+02	44	118	2.5E+01	2.5E+01				
VOC	cis-1,2-Dichloroethene	156-59-2	9.7E+01	50.1		7.2E+01	44		3.6E+01	44	111	1.7E-01	44		3.5E+03	44		2.0E+02	50.1	92	6.4E-01	44		9.8E-05	44		7.7E-03	44	115	62		1.0E+00	62	114	7.2E+03	44	118	5.4E+02	44	118	3.3E+02	44	118	2.5E+01	2.5E+01				
VOC	trans-1,2-Dichloroethene	156-60-5	9.7E+01	50.1		1.2E+02	44		5.2E+01	44	111	3.9E-01	44		3.3E+03	44		3.3E+02	50.1	92	6.1E-01	44		1.0E-04	44		1.1E-02	44	115	62		1.0E+00	62	114	6.7E+03	44	118	5.2E+02	44	118	3.2E+02	44	118	2.5E+01	2.5E+01				
VOC	Ethyl Benzene	100-41-4	1.1E+02	50.1		1.4E+03	44		3.7E+02	44	111	3.2E-01	44		1.7E+02	44		9.6E+00	50.1	92	6.5E-01	44		6.7E-05	44		4.8E-02	44	115	62		1.0E+00	62		8.5E+03	44	118	6.2E+02	44	118	4.1E+02	44	118	2.5E+01	2.5E+01				
VOC	2-Hexanone	591-78-6	1.0E+02	50.1		2.4E+01	39		1.8E+04	39	111	3.8E-03	69		1.8E+04	39		1.2E+01	50.1	92	7.4E-01	52		7.6E-05	52		3.5E-03	39	115	62		1.0E+00	62	114							2.5E+01	2.5E+01							
VOC	Methyl Acetate	79-20-9	7.4E+01	55		1.5E+00	39		1.7E+00	39	111	3.7E-03	69		2.4E+05	39		2.2E+02	39		8.3E-01	69		9.5E-05	69		8.0E-04	39	115	62		1.0E+00	62	114	7.3E+03	70		5.1E+02	70		3.3E+02	70		2.5E+01	2.5E+01				

Physical and Chemical Properties Allison Transmission, Speedway, Indiana	
References:	
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69	USEPA. 2004. WATER9. Version 2.0.0. Office of Air Quality Planning and Standards. July.
70	USEPA. 2003. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings. June 19.
71	USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER 9355.4-24. December.
Notes:	
29	ENVIRON used the value for 2-Methylphenol [CASRN 95-48-7] value as a surrogate.
43	The value is associated with pH 6.8.
44	ENVIRON used the value for Chlordane [CASRN 57-74-9] value from reference 44 as a surrogate.
45	ENVIRON used the value for Chromium VI [CASRN 18540-29-9] presented in indicated reference as a surrogate.
48	Not Available or Not Applicable
49	At 25 degrees Celsius
55	Reference temperature is unspecified.
61	Insoluble
63	min temperature: max is 25C
66	Slightly soluble
82	ENVIRON used Equation (70) from Reference 44 to calculate Koc value using Log Kow value from indicated reference.
90	Indicated source cites CHEMCALC.
91	Indicated source cites CHEMEST.
92	Indicated source cites CHEMFATE.
93	Indicated source cites FATE.
94	Indicated source cites LIVECHEM.
110	ENVIRON used the value for 4-Chlorobiphenyl [CASRN 2051-62-9] from the indicated reference as a surrogate.
111	ENVIRON used Equation (71) from Reference 44 to calculate Koc value using Log Kow value from indicated reference.
114	A value of 1 is conservatively used because EPA guidance does not provide a default value.
115	reference and the MW presented in table.
116	ENVIRON used the value for Aroclor-1254 [CASRN 11097-69-1] from the indicated reference as a surrogate.
117	ENVIRON derived the FA based on Exhibit A-4 in the indicated reference.
118	From the 2001 Fact Sheet, "Correcting the Henry's Law Constant for Soil Temperature".
120	ENVIRON used the value for 4,4'-DDT [50-29-3] from the indicated reference as a surrogate.
121	ENVIRON used the value for gamma-BHC [CASRN 58-89-9] from the indicated reference as a surrogate.
122	ENVIRON used the value for Cyanide (total) [CASRN 57-12-5] from the indicated reference as a surrogate
123	Value has been assigned a default reference temperature.
130	ENVIRON used 4-Methylphenol [CASRN 106-44-5] values from the indicated reference as a surrogate.
133	ENVIRON used the value for cis-1,2-Dichloroethene [CASRN 156-59-2] from the indicated reference as a surrogate.

High-End Exposure Factors									
Allison Transmission, Speedway, Indiana									
		Resident 0-2	Resident Age 2-6	Resident Age 6-16	Resident Age 16-30	Routine Worker	Maintenance Worker	Construction Worker	Adolescent Trespasser (6-16)
Soil Ingestion									
Ingestion Rate (mg/d)	IR					50 b	100 j	200 m	100 b
Conversion Factor (kg/mg)	CF					1E-06	1E-06	1E-06	1E-06
Fraction Contacted (unitless)	FC					1.0 f	1.0 f	1.0 f	1.0 f
Exposure Frequency (d/yr)	EF					250 b	30 k	250 b	32 q
Exposure Duration (yr)	ED					25 b	10 e	1 o	10 b
Body Weight (kg-bw)	BW					70 a	70 a	70 a	39.4 h
Averaging Time, carc (d)	AT _c					25,550 a	25,550 a	25,550 a	25,550 a
Averaging Time, noncarc (d)	AT _{nc}					9,125 a	3,650 a	365 a	3,650 a
Intake, carc (kg-soil/kg-bw per d)						1.75E-07	1.68E-08	2.80E-08	3.18E-08
Intake, noncarc (kg-soil/kg-bw per d)						4.89E-07	1.17E-07	1.96E-06	2.23E-07
ADAFs (unitless)						1 g	g	g	3 g
Intake, carc with ADAFs (kg-soil/kg-bw per d)						1.75E-07	1.68E-08	2.80E-08	9.54E-08
Soil Dermal Contact									
Adherence Factor (mg/cm ²)	AD					0.2 c	0.2 c	0.2 c	0.2 c
Skin Surface Area (cm ² /d)	SA					3,300 c	3,300 c	3,300 c	4,200 p
Conversion Factor (kg/mg)	CF					1E-06	1E-06	1E-06	1E-06
Fraction Contacted (unitless)	FC					1.0 f	1.0 f	1.0 f	1.0 f
Exposure Frequency (d/yr)	EF					250 b	30 k	250 b	32 q
Exposure Duration (yr)	ED					25 b	10 e	1 o	10 b
Body Weight (kg-bw)	BW					70 a	70 a	70 a	39.4 h
Averaging Time, carc (d)	AT _c					25,550 a	25,550 a	25,550 a	25,550 a
Averaging Time, noncarc (d)	AT _{nc}					9,125 a	3,650 a	365 a	3,650 a
Intake, carc (kg-soil/kg-bw per d)						2.31E-06	1.11E-07	9.23E-08	2.67E-07
Intake, noncarc (kg-soil/kg-bw per d)						6.46E-06	7.75E-07	6.46E-06	1.87E-06
ADAFs (unitless)						1 g	g	g	3 g
Intake, carc with ADAFs (kg-soil/kg-bw per d)						2.31E-06	1.11E-07	9.23E-08	8.01E-07
Outdoor Air Inhalation of Vapor and Particulates									
Exposure Time (h/d)	ET	24	24	24	24 d	8 d	8 d	8 d	2 d
Exposure Frequency (d/yr)	EF	350	350	350	350 b	250 b	30 k	250 b	32 q
Exposure Duration (yr)	ED	2	4	10	14 b	25 b	10 e	1 o	10 b
Averaging Time, carc (h)	AT _c	613,200	613,200	613,200	613,200 a	613,200 a	613,200 a	613,200 a	613,200 a
Averaging Time, noncarc (h)	AT _{nc}	262,800	262,800	262,800	262,800 a	219,000 a	87,600 a	8,760 a	87,600 a
Intake, carc (unitless)		2.74E-02	5.48E-02	1.37E-01	1.92E-01	8.15E-02	3.91E-03	3.26E-03	1.04E-03
Intake, noncarc (unitless)		6.39E-02	1.28E-01	3.20E-01	4.47E-01	2.28E-01	2.74E-02	2.28E-01	7.31E-03
ADAFs (unitless)		10	3	3	1 g	1 g	1 g	1 g	3 g
Intake, carc with ADAFs (unitless)		2.74E-01	1.64E-01	4.11E-01	1.92E-01	8.15E-02	3.91E-03	3.26E-03	3.13E-03
Incidental Groundwater Ingestion									
Drinking Rate (L/hr per event)	DR						0.005 i	0.005 i	
Number of Events per day	Events						1 f	1 f	
Exposure Time (h)	ET						n	n	
Exposure Frequency (d/yr)	EF						n	n	
Exposure Duration (yr)	ED						10 e	1 o	
Body Weight (kg-bw)	BW						70 a	70 a	
Averaging Time, carc (d)	AT _c						25,550 a	25,550 a	
Averaging Time, noncarc (d)	AT _{nc}						3,650 a	365 a	
Intake, cancer (L-water per d/kg per d)							2.80E-07	2.80E-08	
Intake, noncancer (L-water per d/kg per d)							1.96E-06	1.96E-06	
ADAFs (unitless)							g	g	
Intake, carc with ADAFs (L-water per d/kg per d)							2.80E-07	2.80E-08	
Groundwater Dermal Contact									
Event Time (hr)	t						n	n	
Skin Surface Area (cm ²)	SA						3,300 c	3,300 c	
Events per Day (event/d)	EV						1 f	1 f	
Exposure Frequency (d/yr)	EF						n	n	
Exposure Duration (yr)	ED						10 e	1 o	
Body Weight (kg)	BW						70 a	70 a	
Averaging Time, cancer (days)	AT _c						25,550 a	25,550 a	
Averaging Time, noncancer (days)	AT _{nc}						3,650 a	365 a	
Intake, carc (cm ² -event/kg-d)							9.23E-02	9.23E-03	
Intake, noncarc (cm ² -event/kg-d)							6.46E-01	6.46E-01	
ADAFs (unitless)							g	g	
Intake, carc with ADAFs (cm ² -event/kg-d)							9.23E-02	9.23E-03	
Groundwater Vapor Inhalation									
Exposure Time (h/d)	ET	24	24	24	24 d	8 d	8 d	8 d	2 d
Exposure Frequency (d/yr)	EF	350	350	350	350 b	250 b	30 k	250 b	32 q
Exposure Duration (yr)	ED	2	4	10	14 b	25 b	10 e	1 o	10 b
Averaging Time, carc (h)	AT _c	613,200	613,200	613,200	613,200 a	613,200 a	613,200 a	613,200 a	613,200 a
Averaging Time, noncarc (h)	AT _{nc}	262,800	262,800	262,800	262,800 a	219,000 a	87,600 a	8,760 a	87,600 a
Intake, carc (unitless)		2.74E-02	5.48E-02	1.37E-01	1.92E-01	8.15E-02	3.91E-03	3.26E-03	1.04E-03
Intake, noncarc (unitless)		6.39E-02	1.28E-01	3.20E-01	4.47E-01	2.28E-01	2.74E-02	2.28E-01	7.31E-03
ADAFs (unitless)		10	3	3	1 g	1 g	1 g	1 g	3 g
Intake, carc with ADAFs (unitless)		2.74E-01	1.64E-01	4.11E-01	1.92E-01	8.15E-02	3.91E-03	3.26E-03	3.13E-03
References:									
a. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A) Interim Final (EPA 1989).									
b. Standard default exposure factors. OSWER Directive 9285.6-03 (EPA 1991).									
c. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual: Part E, Supplemental Guidance for Dermal Risk Assessment, Interim Final (EPA 2001).									
d. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual: Part F, Supplemental Guidance for Inhalation Risk Assessment, Interim Final (EPA 2009).									
e. The 90th to 95th percentile job tenure for workers in construction (Burmester 2000).									
f. The fraction contact term is conservatively assumed to be one.									
g. Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA 2005).									
h. Exposure Factors Handbook (EPA 1997).									
i. The soil ingestion rate is based on a time weighted average over the exposure frequency, assuming that a maintenance worker spends 10 days per year excavating into the subsurface and									
k. The exposure frequency of 30 days/year assumes maintenance workers on average spend 10 days/year performing maintenance activities that involve soil excavation and 20 days/year performing other maintenance activities that do not involve soil excavation.									
l. Rate of incidental water ingestion is conservatively based on 10% of the rate USEPA (1989) recommends for ingestion while swimming.									
n. The exposure time and frequency for occasional maintenance or construction that involves actual excavation into groundwater for minor repairs are assumed to be 5 days per year with an exposure time of 2 hours per event.									
m. The soil ingestion rate of 200 mg/day is the 90th percentile from the adult soil ingestion study published by Stanek et al. (1997).									
o. Construction workers are conservatively assumed to contact soil for 250 days for 1 year during site redevelopment activities. This exposure frequency and duration are expected to be conservative for the amount of time that workers are exposed to soil.									
p. The exposed skin area for trespassers of 4,200 cm ² is calculated for the forearms, lower legs, hands and head of adolescents using the mean values for body surface area from the Exposure Factors Handbook (EPA 1997).									
q. The exposure frequency for trespassers of 32 days/year for contact with soil is based on a conservative assumption that trespassers visit the Site 2 days/weeks for the 4 months of the year when the temperature is above 65 degrees F in Indianapolis IN.									

Upper-Bound Single-Chemical Risk Calculations for Soil Results
Allison Transmission, Speedway, Indiana

Area	Chem Group	Chemical	CASRN	Carc Class	Max Detect from All Depths	Background Conc (mg/kg)	Routine Worker								Construction Worker				Maintenance Worker				Off-Site Resident			
							Outdoor Activities				Vapor Intrusion				Outdoor Activities				Outdoor Activities				Inhalation			
							Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ
AOI_02_01	VOC	n-Butylbenzene	104-51-8	ID	1.30E+00																					
AOI_02_01	VOC	sec-Butylbenzene	135-98-8		7.50E-01																					
AOI_02_01	VOC	Cumene	98-82-8	D	3.80E-03																					
AOI_02_01	VOC	cis-1,2-Dichloroethene	156-59-2	ID	3.10E-02																					
AOI_02_01	VOC	Methylcyclohexane	108-87-2		1.17E-02																					
AOI_02_01	VOC	Methylene Chloride	75-09-2	B2	7.80E-02																					
AOI_02_01	VOC	Tetrachloroethene	127-18-4	C-B2	1.80E-02																					
AOI_02_01	VOC	Trichloroethene	79-01-6	HC	1.50E+00																					
AOI_02_01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	6.90E-01																					
AOI_02_01	SVOC	Acenaphthene	83-32-9	ID	1.20E+00																					
AOI_02_01	SVOC	Anthracene	120-12-7	ID	2.10E+00																					
AOI_02_01	SVOC	Benzo(a)anthracene	56-55-3	B2	6.45E+00																					
AOI_02_01	SVOC	Benzo(a)pyrene	50-32-8	B2	6.62E+00																					
AOI_02_01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	7.78E+00																					
AOI_02_01	SVOC	Benzo(g,h,i)perylene	191-24-2	D	4.59E+00																					
AOI_02_01	SVOC	Benzo(k)fluoranthene	207-08-9	B2	5.02E+00																					
AOI_02_01	SVOC	Biphenyl	92-52-4	SC	8.57E-01																					
AOI_02_01	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	6.51E+00																					
AOI_02_01	SVOC	Carbazole	86-74-8	B2	7.45E-01																					
AOI_02_01	SVOC	Chrysene	218-01-9	B2	7.17E+00																					
AOI_02_01	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	2.23E+00																					
AOI_02_01	SVOC	Dibenzofuran	132-64-9	D	7.70E-01																					
AOI_02_01	SVOC	Fluoranthene	206-44-0	D	1.13E+01																					
AOI_02_01	SVOC	Fluorene	86-73-7	D	1.71E+00																					
AOI_02_01	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	4.09E+00																					
AOI_02_01	SVOC	2-Methylnaphthalene	91-57-6	ID	4.31E+00																					
AOI_02_01	SVOC	Naphthalene	91-20-3	C	2.00E+00																					
AOI_02_01	SVOC	N-Nitrosodiphenylamine	86-30-6	B2	7.27E-01																					
AOI_02_01	SVOC	Phenanthrene	85-01-8	D	9.80E+00																					
AOI_02_01	SVOC	Pyrene	129-00-0	NC	1.03E+01																					
AOI_02_01	INORG	Arsenic	7440-38-2	A	3.21E+01	7.0E+00																				
AOI_02_01	INORG	Barium	7440-39-3	NC	1.59E+02	6.3E+01																				
AOI_02_01	INORG	Cadmium	7440-43-9	B1	2.51E+00																					
AOI_02_01	INORG	Chromium (total)	7440-47-3		4.85E+01	1.2E+01																				
AOI_02_01	INORG	Lead	7439-92-1	B2	1.26E+02	2.3E+01																				
AOI_02_01	INORG	Mercury	7439-97-6	D	1.31E+01																					
AOI_02_02	VOC	Cumene	98-82-8	D	6.00E-02																					
AOI_02_02	VOC	cis-1,2-Dichloroethene	156-59-2	ID	5.30E-02																					
AOI_02_02	VOC	Methylene Chloride	75-09-2	B2	1.60E-02																					
AOI_02_02	VOC	1,1,2-Trichloroethane	79-00-5	C	3.80E-02																					
AOI_02_02	VOC	Trichloroethene	79-01-6	HC	9.90E-02																					
AOI_02_02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	2.00E-02																					
AOI_02_02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	3.00E-02																					
AOI_02_02	VOC	Xylenes (total)	1330-20-7	ID	1.64E-02																					
AOI_02_02	SVOC	Acenaphthene	83-32-9	ID	2.32E+01																					
AOI_02_02	SVOC	Acenaphthylene	208-96-8	D	2.60E+00																					
AOI_02_02	SVOC	Anthracene	120-12-7	ID	6.00E+01																					
AOI_02_02	SVOC	Benzo(a)anthracene	56-55-3	B2	1.43E+02																					
AOI_02_02	SVOC	Benzo(a)pyrene	50-32-8	B2	1.06E+02																					
AOI_02_02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.43E+02																					
AOI_02_02	SVOC	Benzo(g,h,i)perylene	191-24-2	D	4.87E+01																					
AOI_02_02	SVOC	Benzo(k)fluoranthene	207-08-9	B2	1.00E+02																					
AOI_02_02	SVOC	Biphenyl	92-52-4	SC	2.20E+00																					
AOI_02_02	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	6.46E+00																					
AOI_02_02	SVOC	Carbazole	86-74-8	B2	3.36E+01																					
AOI_02_02	SVOC	Chrysene	218-01-9	B2	1.56E+02																					
AOI_02_02	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	2.91E+01																					
AOI_02_02	SVOC	Dibenzofuran	132-64-9	D	1.47E+01																					
AOI_02_02	SVOC	Diethylphthalate	84-66-2	D	5.50E+00																					
AOI_02_02	SVOC	2,4-Dinitrotoluene	121-14-2	B2	1.80E+00																					
AOI_02_02	SVOC	Fluoranthene	206-44-0	D	3.30E+02																					
AOI_02_02	SVOC	Fluorene	86-73-7	D	3.22E+01																					
AOI_02_02	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	4.61E+01																					
AOI_02_02	SVOC	2-Methylnaphthalene	91-57-6	ID	4.28E+00																					
AOI_02_02	SVOC	Naphthalene	91-20-3	C	1.07E+01																					
AOI_02_02	SVOC	Phenanthrene	85-01-8	D	2.50E+02																					
AOI_02_02	SVOC	Pyrene	129-00-0	NC	2.43E+02																					
AOI_02_02	PCB	PCBs (total)	1336-36-3	B2	4.93E-01																					
AOI_02_02	INORG	Arsenic	7440-38-2	A	1.32E+02	7.0E+00																				
AOI_02_02	INORG	Barium	7440-39-3	NC	6.94E+01	6.3E+01																				
AOI_02_02	INORG	Chromium (total)	7440-47-3		4.60E+01	1.2E+01																				
AOI_02_02	INORG	Cobalt	7440-48-4	LC	3.40E+00	7.5E+00																				
AOI_02_02	INORG	Copper	7440-50-8	D	1.70E+01	1.5E+01																				
AOI_02_02	INORG	Iron	7439-89-6	D	7.10E+03																					
AOI_02_02	INORG	Lead	7439-92-1	B2	1.23E+02	2.3E+01																				
AOI_02_02	INORG	Manganese	7439-96-5	D	2.24E+02	5.7E+02																				
AOI_02_02	INORG	Mercury	7439-97-6	D	4.98E+00																					

Upper-Bound Single-Chemical Risk Calculations for Soil Results
Allison Transmission, Speedway, Indiana

Area	Chem Group	Chemical	CASRN	Carc Class	Max Detect from All Depths	Background Conc (mg/kg)	Routine Worker								Construction Worker				Maintenance Worker				Off-Site Resident			
							Outdoor Activities				Vapor Intrusion				Outdoor Activities				Outdoor Activities				Inhalation			
							Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ
AOI_02_02	INORG	Nickel	7440-02-0	A	1.40E+01	1.7E+01	1.2E-11	2.6E-05							3.9E-11	1.5E-04	2.1E-04	4.7E-11	2.1E-05			4.7E-11	6.4E-06			
AOI_02_02	INORG	Vanadium	7440-62-2	ID	1.06E+01	2.3E+01		9.9E-05								3.1E-04							3.7E-05		5.8E-06	
AOI_02_02	INORG	Zinc	7440-66-6	ID	7.90E+01	4.2E+01		1.6E-06		6.1E-05						6.5E-06	2.4E-04					3.9E-07	1.5E-05			
AOI_02_03	SVOC	Benzo(a)anthracene	56-55-3	B2	3.30E-01		3.5E-07		1.1E-07		1.9E-11	6.3E-12		2.9E-08	9.7E-09		2.3E-08		7.5E-09		2.3E-08			4.3E-09		
AOI_02_03	SVOC	Benzo(b)fluoranthene	205-99-2	B2	3.70E-01		3.5E-07		1.3E-07		1.6E-10	6.1E-11		3.0E-08		1.1E-08	2.3E-08		8.5E-09		2.3E-08			9.4E-09		
AOI_02_03	SVOC	Chrysene	218-01-9	B2	3.70E-01		3.5E-09		1.3E-09		4.7E-12	1.8E-12		3.0E-10		1.1E-10	2.3E-10		8.5E-11		2.3E-10			1.7E-10		
AOI_02_03	SVOC	Fluoranthene	206-44-0	D	7.50E-01			3.3E-05		2.5E-05					7.0E-06		5.2E-06				5.5E-06		4.1E-06			
AOI_02_03	SVOC	Phenanthrene	85-01-8	D	7.90E-01			4.4E-05		3.5E-05					9.3E-06		7.4E-06				7.3E-06		5.7E-06			
AOI_02_03	SVOC	Pyrene	129-00-0	NC	6.20E-01			4.4E-05		2.7E-05					9.3E-06		5.8E-06				7.3E-06		4.5E-06			
AOI_02_03	INORG	Arsenic	7440-38-2	A	1.75E+01	7.0E+00	3.7E-07	2.3E-03	3.9E-06	2.4E-02				4.7E-08	4.9E-07	1.3E-02	3.1E-08	5.6E-04	3.3E-07	5.9E-03	3.1E-08	3.9E-05	1.1E-08	4.1E-04		
AOI_02_03	INORG	Barium	7440-39-3	NC	2.79E+01	6.3E+01		2.4E-06							9.8E-06						5.9E-07					
AOI_02_03	INORG	Chromium (total)	7440-47-3		6.45E+00	1.2E+01	8.8E-08	1.6E-04						1.6E-08	4.0E-04		1.1E-08	5.3E-05			3.0E-09	5.8E-06				
AOI_02_03	INORG	Lead	7439-92-1	B2	2.84E+01	2.3E+01																				
AOI_02_04	VOC	Acetone	67-64-1	ID	7.30E-02			2.2E-06		1.6E-07		1.7E-05	1.3E-06		9.2E-06		6.7E-07				4.4E-07		3.2E-08	6.3E-06	4.6E-07	
AOI_02_04	VOC	Benzene	71-43-2	A	9.10E-03		6.2E-07	7.5E-03	5.7E-09	6.8E-05	5.7E-06	6.9E-02	5.2E-08	6.2E-04	1.2E-07	1.2E-02	1.1E-09	1.1E-04	4.8E-08	1.4E-03	4.3E-10	1.3E-05	4.8E-08	2.8E-02	2.6E-08	2.6E-04
AOI_02_04	VOC	2-Butanone	78-93-3	ID	1.70E-02			1.1E-05		1.9E-07				1.6E-04		5.2E-05		8.9E-07			2.1E-06		3.6E-08	3.9E-05	6.7E-07	
AOI_02_04	VOC	n-Butylbenzene	104-51-8	ID	3.40E-01			9.8E-06		3.3E-06					2.0E-05		6.7E-06				2.3E-06		8.0E-07			
AOI_02_04	VOC	sec-Butylbenzene	135-98-8		3.60E-01																					
AOI_02_04	VOC	tert-Butylbenzene	98-06-6		3.70E-02																					
AOI_02_04	VOC	2-Chlorotoluene	95-49-8		2.20E-02			2.4E-05		5.4E-07					9.8E-06		2.2E-07				5.9E-06		1.3E-07			
AOI_02_04	VOC	Cumene	98-82-8	D	1.80E+00			2.1E-04		3.9E-04		5.1E-03	9.2E-03		1.1E-03		1.9E-03				4.1E-05		7.4E-05	8.0E-04	1.4E-03	
AOI_02_04	VOC	p-Cymene	99-87-6		8.00E-02																					
AOI_02_04	VOC	1,2-Dibromoethane	106-93-4	LC	6.20E-03		1.9E-05	9.8E-03	1.2E-07	6.1E-05	4.4E-04	2.3E-01	2.7E-06	1.4E-03	3.8E-06	4.9E-02	2.4E-08	3.0E-04	1.5E-06	1.9E-03	9.1E-09	1.2E-05	1.5E-06	3.7E-02	5.4E-07	2.3E-04
AOI_02_04	VOC	Ethyl Benzene	100-41-4	D	2.40E-01			1.1E-04		2.6E-05		2.1E-03	4.9E-04	4.9E-04	7.8E-05		1.9E-05				2.1E-05		5.1E-06	4.0E-04	9.7E-05	
AOI_02_04	VOC	4-Methyl-2-pentanone	108-10-1	ID	6.20E+00			2.1E-05		1.3E-04		4.3E-04	2.7E-03		1.0E-04		6.4E-04				3.9E-06		2.4E-05	7.9E-05	4.9E-04	
AOI_02_04	VOC	Methylene Chloride	75-09-2	B2	1.70E-02		4.3E-08	2.5E-04	7.3E-10	4.2E-06	3.5E-07	2.0E-03	5.9E-09	3.4E-05	8.6E-09	1.2E-03	1.5E-10	2.1E-05	3.3E-09	4.7E-05	5.6E-11	8.1E-07	3.3E-09	9.2E-04	3.3E-09	1.6E-05
AOI_02_04	VOC	n-Propylbenzene	103-65-1	ID	4.80E-01			6.9E-05		3.3E-05		1.7E-03	8.3E-04		3.4E-04		1.6E-04				1.3E-05		6.4E-06	2.5E-04	1.2E-04	
AOI_02_04	VOC	Styrene	100-42-5		1.40E-01			4.5E-05		6.3E-06		6.4E-04	8.9E-05		8.0E-05		1.1E-05				8.6E-06		1.2E-06	1.6E-04	2.3E-05	
AOI_02_04	VOC	Toluene	108-88-3	ID	1.00E-01			3.6E-05		3.6E-06		4.1E-04	4.1E-05		1.5E-04		1.5E-05				7.1E-06		7.1E-07	1.1E-04	1.1E-05	
AOI_02_04	VOC	1,1,1-Trichloroethane	71-55-6	ID	2.60E-02			5.3E-05		1.4E-06		4.1E-04	1.1E-05		2.7E-04		6.9E-06				1.0E-05		2.6E-07	2.0E-04	5.3E-06	
AOI_02_04	VOC	1,1,2-Trichloroethane	79-00-5	C	7.60E-03		5.2E-07	4.5E-01	4.0E-09	3.4E-03	1.2E-05	1.0E+01	8.9E-08	7.8E-02	1.0E-07	2.3E-01	7.9E-10	1.7E-03	4.0E-08	8.5E-02	3.0E-10	6.5E-04	4.0E-08	1.7E+00	1.8E-08	1.3E-02
AOI_02_04	VOC	Trichloroethene	79-01-6	HC	4.70E-02		2.7E-07	9.2E-02	1.3E-08	4.3E-03	3.0E-06	1.0E+00	1.4E-07	4.8E-02	5.4E-08	5.6E-03	2.6E-09	2.6E-04	2.1E-08	1.7E-02	9.8E-10	8.2E-04	1.7E-06	3.5E-01	7.9E-08	1.6E-02
AOI_02_04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	8.80E-01			6.5E-03		5.7E-03		1.2E-01	1.1E-01		3.2E-03		2.8E-03				1.2E-03		1.1E-03	2.5E-02	2.2E-02	
AOI_02_04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	2.20E-01			6.1E-03		1.3E-03		9.2E-02	2.0E-02		1.8E-02		4.0E-03				1.2E-03		2.5E-04	2.3E-02	5.1E-03	
AOI_02_04	VOC	Xylenes (total)	1330-20-7	ID	1.36E+00			9.7E-04		1.3E-03		2.1E-02	2.8E-02		1.6E-03		2.2E-03				1.8E-04		2.5E-04	3.7E-03	5.0E-03	
AOI_02_04	SVOC	Acenaphthene	83-32-9	ID	3.90E-01			2.2E-05		8.6E-06					1.4E-05		5.5E-06				3.6E-06		1.4E-06			
AOI_02_04	SVOC	Acenaphthylene	208-96-8	D	6.70E-01			4.4E-05		3.0E-05					9.3E-06		6.2E-06				7.3E-06		4.9E-06			
AOI_02_04	SVOC	Anthracene	120-12-7	ID	1.60E+00			4.4E-06		7.1E-06					2.8E-06		4.5E-06				7.3E-07		1.2E-06			
AOI_02_04	SVOC	Benzo(a)anthracene	56-55-3	B2	2.80E+00		3.5E-07		9.7E-07		1.9E-11	5.3E-11		2.9E-08		8.2E-08		2.3E-08		6.4E-08		2.3E-08		3.6E-08		
AOI_02_04	SVOC	Benzo(a)pyrene	50-32-8	B2	2.50E+00		3.5E-06		8.7E-06		1.7E-11	4.2E-11		2.9E-07		7.3E-07		2.3E-07		5.7E-07		2.3E-07		9.3E-08		
AOI_02_04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	4.00E+00		3.5E-07		1.4E-06		1.6E-10	6.6E-10		3.0E-08		1.2E-07		2.3E-08		9.2E-08		2.3E-08		1.0E-07		
AOI_02_04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	2.60E+00			4.4E-05		1.2E-04					9.3E-06		2.4E-05				7.3E-06		1.9E-05			
AOI_02_04	SVOC	Benzo(k)fluoranthene	207-08-9	B2	1.50E+00		3.5E-08		5.2E-08		1.1E-13	1.6E-13		2.9E-09		4.4E-09		2.3E-09		3.4E-09		2.3E-09		3.4E-10		
AOI_02_04	SVOC	Chrysene	218-01-9	B2	2.40E+00		3.5E-09		8.4E-09		4.7E-12	1.1E-11		3.0E-10		7.2E-10		2.3E-10		5.5E-10		2.3E-10		1.1E-09		
AOI_02_04	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	6.70E-01		3.5E-06		2.3E-06		1.6E-14	1.1E-14		2.9E-07		2.0E-07		2.3E-07		1.5E-07		2.3E-07		3.2E-09		
AOI_02_04	SVOC	Fluoranthene	206-44-0	D	6.10E+00			3.3E-05		2.0E-04					7.0E-06		4.3E-05				5.5E-06		3.3E-05			
AOI_02_04	SVOC	Fluorene	86-73-7	D	8.00E-01			3.3E-05		2.7E-05					7.0E-06		5.6E-06				5.5E-06		4.4E-06			
AOI_02_04	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.80E+00		3.5E-07		6.2E-07		6.3E-13	1.1E-12		2.9E-08		5.3E-08		2.3E-08		4.1E-08		2.3E-08		2.8E-09		
AOI_02_04	SVOC	Naphthalene	91-20-3	C	1.80E+00		1.1E-07	3.1E-03	2.0E-07	5.7E-03	4.4E-07	1.2E-02	8.0E-07	2.2E-02	2.2E-08	1.5E-02	4.0E-08	2.8E-02	8.5E-09	6.0E-04	1.5E-08	1.1E-03	8.5E-09	1.2E-02	9.3E-07	2.1E-02
AOI_02_04	SVOC	Phenanthrene	85-01-8	D	6.40E+00			4.4E-05		2.8E-04					9.3E-06		6.0E-05				7.3E-06		4.7E-05			
AOI_02_04	SVOC	Pyrene	129-00-0	NC	4.00E+00			4.4E-05		1.8E-04					9.3E-06		3.7E-05				7.3E-06		2.9E-05			
AOI_02_04	PCB	PCBs (total)	1336-36-3	B2	1.60E+00		1.0E-06	7.0E-02	1.7E-06	1.1E-01	1.4E-08		2.3E-08		9.2E-08	5.7E-02	1.5E-07	9.1E-02	6.8E-08	1.1E-02	1.1E-07	1.8E-02	6.8E-08	3.6E-07		
AOI_02_04	INORG	Arsenic	7440-38-2	A	3.09E+01	7.0E+00	3.7E-07	2.3E-03	8.8E-06	5.5E-02				4.7E-08	1.2E-03	1.1E-06	2.9E-02	3.1E-08	5.6E-04	7.4E-07	1.3E-02	3.1E-08	3.9E-05	2.6E-08	9.2E-04	
AOI_02_04	INORG	Barium	7440-39-3	NC	1.41E+02	6.3E+01		2.4E-06		1.9E-04					9.8E-06		7.7E-04									

**Normalized Indoor Air Concentration in a Comm/Ind Slab-on-Grade Building
due to Vapor Intrusion from TCE in Subsurface Soil at Location T-1 BTTM1
Allison Transmission, Speedway, Indiana**

Chem Group	Chemical	CASRN	D _{air} (m ² /day)	D _{water} (m ² /day)	H (unitless)	D _{crack} (m ² /day)	D _{eff} ^T (m ² /day)	α _∞	K _{oc} (L/kg)	K _d (L/kg)	C _{s, vap} (kg-soil/m ³)	α _{ML}	α	C _{bidg} (kg-soil/m ³)
VOC	Trichloroethene	79-01-6	6.83E-01	7.86E-05	2.35E-01	1.11E-01	1.11E-01	8.16E-05	1.68E+02	3.35E-01	5.68E+02	1.58E-05	1.58E-05	9.00E-03
Notes:	Soil and Building Characteristics			Crack	Vadose (below floor to 6")	Deep Vadose (6" to bottom of contamin)								
	SCS Soil texture class			Sand	Sand	Sand								
	Bulk density	kg/L	ρ _b	1.66		1.66								
	Total porosity	L/L-soil	θ _T	0.375	0.375	0.375								
	Water-filled porosity	L/L-soil	θ _w	0.053	0.053	0.053								
	Air-filled porosity	L/L-soil	θ _a	0.322	0.322	0.322								
	Organic carbon fraction	unitless	f _{oc}			0.002								
	Residual saturation	L/L-soil	θ _r	0.053										
	Hydraulic conductivity	cm/s	K	7.4E-03										
	Dynamic viscosity of water	g/cm-s	μ _w	0.01307										
	Density of water	g/cm ³	ρ _w	1.0										
	Gravitational acceleration	cm/s ²	g	980.7										
	Intrinsic permeability	cm ²	k	9.9E-08										
	Relative saturation	unitless	S_r	0.001										
	van Genuchten N	unitless	N	3.18										
	van Genuchten M	unitless	M	0.685										
	Relative air permeability	unitless	k_{rg}	0.999										
	Permeability to vapor	cm ²	k_v	9.9E-08										
	Distance from building foundation to source	m	L_{T-soil}	0.150										
	Bldg foundation thickness	m	L_{crack}	0.15										
	Bldg foundation length	m		19.29										
	Bldg foundation width	m		19.29										
	Bldg occupied height	m		2.44										
	Bldg occupied volume	m ³		907.93										
	Occupied depth below ground	m												
	Bldg area for vapor intrusion	m ²	A_B	372.1										
	Ratio of A _{crack} to A _B		η	1E-04										
	Area of cracks	m ²	A_{crack}	3.86E-02										
	Air exchange rate	hour ⁻¹	ach	2.0										
	Building ventilation rate	m ³ /day	Q_{bidg}	4.36E+04										
	Pressure difference between outdoors-indoors	kg/m-s ²	ΔP	1.0										
	Viscosity of air	kg/m-s	μ _a	1.8E-05										
	Crack length (bldg perimeter)	m	X_{crack}	77.16										
	Crack depth below ground	m	Z_{crack}	0.15										
	Crack radius	m	r_{crack}	5E-04										
	Soil gas flow rate into bldg	m ³ /day	Q_{soil}	3.60E+00										
	Averaging period	d	T	9.13E+03										
	Contaminant thickness	m	ΔH	5.80										

**Refined Single-Chemical Risk Calculations for Soil Results from AOI 02-01
Allison Transmission, Speedway, Indiana**

Chem Group	Chemical	CASRN	Carc Class	Max Detect from All Depths (mg/kg)	Background Conc (mg/kg)	Routine Worker Vapor Intrusion			
						Unit Risk	Unit HQ	Risk	HQ
						VOC	n-Butylbenzene	104-51-8	ID
VOC	sec-Butylbenzene	135-98-8		7.50E-01					
VOC	Cumene	98-82-8	D	3.80E-03		5.1E-03		2.0E-05	
VOC	cis-1,2-Dichloroethene	156-59-2	ID	3.10E-02					
VOC	Methylcyclohexane	108-87-2		1.17E-02		6.9E-04		8.0E-06	
VOC	Methylene Chloride	75-09-2	B2	7.80E-02	3.5E-07	2.0E-03	2.7E-08	1.5E-04	
VOC	Tetrachloroethene	127-18-4	C-B2	1.80E-02	2.2E-06	7.6E-03	4.0E-08	1.4E-04	
VOC	Trichloroethene	79-01-6	HC	1.50E+00	3.0E-06	1.0E+00	1.2E-06	3.9E-01	
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	6.90E-01		1.2E-01		8.4E-02	
SVOC	Acenaphthene	83-32-9	ID	1.20E+00					
SVOC	Anthracene	120-12-7	ID	2.10E+00					
SVOC	Benzo(a)anthracene	56-55-3	B2	6.45E+00	1.9E-11		1.2E-10		
SVOC	Benzo(a)pyrene	50-32-8	B2	6.62E+00	1.7E-11		1.1E-10		
SVOC	Benzo(b)fluoranthene	205-99-2	B2	7.78E+00	1.6E-10		1.3E-09		
SVOC	Benzo(g,h,i)perylene	191-24-2	D	4.59E+00					
SVOC	Benzo(k)fluoranthene	207-08-9	B2	5.02E+00	1.1E-13		5.4E-13		
SVOC	Biphenyl	92-52-4	SC	8.57E-01					
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	6.51E+00					
SVOC	Carbazole	86-74-8	B2	7.45E-01					
SVOC	Chrysene	218-01-9	B2	7.17E+00	4.7E-12		3.4E-11		
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	2.23E+00	1.6E-14		3.7E-14		
SVOC	Dibenzofuran	132-64-9	D	7.70E-01					
SVOC	Fluoranthene	206-44-0	D	1.13E+01					
SVOC	Fluorene	86-73-7	D	1.71E+00					
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	4.09E+00	6.3E-13		2.6E-12		
SVOC	2-Methylnaphthalene	91-57-6	ID	4.31E+00					
SVOC	Naphthalene	91-20-3	C	2.00E+00	4.4E-07	1.2E-02	8.9E-07	2.4E-02	
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	7.27E-01					
SVOC	Phenanthrene	85-01-8	D	9.80E+00					
SVOC	Pyrene	129-00-0	NC	1.03E+01					
INORG	Arsenic	7440-38-2	A	3.21E+01	7.0E+00				
INORG	Barium	7440-39-3	NC	1.59E+02	6.3E+01				
INORG	Cadmium	7440-43-9	B1	2.51E+00					
INORG	Chromium (total)	7440-47-3		4.85E+01	1.2E+01				
INORG	Lead	7439-92-1	B2	1.26E+02	2.3E+01				
INORG	Mercury	7439-97-6	D	1.31E+01		9.1E-03		1.2E-01	
Notes:									
Only constituents detected in each area are shown.									
Single-chemical risks and hazard quotients are calculated using site-related concentrations, which are those in excess of site-specific background for inorganics.									
The single-chemical cancer risk and HQ estimates for TCE (in bold and italics) were refined using AOI-specific information in place of the conservative site-wide assumptions used in the upper-bound estimates. Conservative site-wide assumptions were used for the remaining upper-bound estimates.									
The concentrations for all polychlorinated biphenyls (PCBs) Aroclors were summed to PCBs (total).									
The concentrations for the Xylene isomers (m/p and o) were summed to Xylenes (total).									
Chem Group - chemical group									
Carc Class - USEPA Weight-of-Evidence Cancer Classification									

**Refined Single-Chemical Risk Calculations for Soil Results from AOI 02-02
Allison Transmission, Speedway, Indiana**

Chem Group	Chemical	CASRN	Carc Class	Concentration (mg/kg)	Conc Source	Background Conc (mg/kg)	Routine Worker			
							Outdoor Activities			
							Unit Risk	Unit HQ	Risk	HQ
VOC	Cumene	98-82-8	D	6.00E-02	max			2.1E-04		1.3E-05
VOC	cis-1,2-Dichloroethene	156-59-2	ID	5.30E-02	max			2.4E-04		1.3E-05
VOC	Methylene Chloride	75-09-2	B2	1.60E-02	max		4.3E-08	2.5E-04	6.9E-10	4.0E-06
VOC	1,1,2-Trichloroethane	79-00-5	C	3.80E-02	max		5.2E-07	4.5E-01	2.0E-08	1.7E-02
VOC	Trichloroethene	79-01-6	HC	9.90E-02	max		2.7E-07	9.2E-02	2.7E-08	9.1E-03
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	2.00E-02	max			6.5E-03		1.3E-04
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	3.00E-02	max			6.1E-03		1.8E-04
VOC	Xylenes (total)	1330-20-7	ID	1.64E-02	max			9.7E-04		1.6E-05
SVOC	Acenaphthene	83-32-9	ID	2.32E+01	max			2.2E-05		5.1E-04
SVOC	Acenaphthylene	208-96-8	D	2.60E+00	max			4.4E-05		1.2E-04
SVOC	Anthracene	120-12-7	ID	6.00E+01	max			4.4E-06		2.7E-04
SVOC	Benzo(a)anthracene	56-55-3	B2	1.90E+01	UCL		3.5E-07		6.6E-06	
SVOC	Benzo(a)pyrene	50-32-8	B2	1.48E+01	UCL		3.5E-06		5.1E-05	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.62E+01	UCL		3.5E-07		5.7E-06	
SVOC	Benzo(g,h,i)perylene	191-24-2	D	4.87E+01	max			4.4E-05		2.2E-03
SVOC	Benzo(k)fluoranthene	207-08-9	B2	1.00E+02	max		3.5E-08		3.5E-06	
SVOC	Biphenyl	92-52-4	SC	2.20E+00	max		3.2E-09	2.3E-05	7.1E-09	5.0E-05
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	6.46E+00	max		5.7E-09	5.7E-05	3.7E-08	3.7E-04
SVOC	Carbazole	86-74-8	B2	3.36E+01	max		8.1E-09		2.7E-07	
SVOC	Chrysene	218-01-9	B2	1.56E+02	max		3.5E-09		5.5E-07	
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	3.50E+00	UCL		3.5E-06		1.2E-05	
SVOC	Dibenzofuran	132-64-9	D	1.47E+01	max			1.1E-03		1.7E-02
SVOC	Diethylphthalate	84-66-2	D	5.50E+00	max			1.4E-06		7.8E-06
SVOC	2,4-Dinitrotoluene	121-14-2	B2	1.80E+00	max		2.8E-07	5.7E-04	5.0E-07	1.0E-03
SVOC	Fluoranthene	206-44-0	D	3.30E+02	max			3.3E-05		1.1E-02
SVOC	Fluorene	86-73-7	D	3.22E+01	max			3.3E-05		1.1E-03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	6.13E+00	UCL		3.5E-07		2.1E-06	
SVOC	2-Methylnaphthalene	91-57-6	ID	4.28E+00	max			2.8E-04		1.2E-03
SVOC	Naphthalene	91-20-3	C	1.07E+01	max		1.1E-07	3.1E-03	1.2E-06	3.4E-02
SVOC	Phenanthrene	85-01-8	D	2.50E+02	max			4.4E-05		1.1E-02
SVOC	Pyrene	129-00-0	NC	2.43E+02	max			4.4E-05		1.1E-02
PCB	PCBs (total)	1336-36-3	B2	4.93E-01	max		1.0E-06	7.0E-02	5.2E-07	3.4E-02
INORG	Arsenic	7440-38-2	A	1.32E+02	max	7.0E+00	3.7E-07	2.3E-03	4.6E-05	2.9E-01
INORG	Barium	7440-39-3	NC	6.94E+01	max	6.3E+01		2.4E-06		1.7E-05
INORG	Chromium (total)	7440-47-3		4.60E+01	max	1.2E+01	8.8E-08	1.6E-04	3.0E-06	5.6E-03
INORG	Cobalt	7440-48-4	LC	3.40E+00	max	7.5E+00	4.4E-10	1.7E-03		
INORG	Copper	7440-50-8	D	1.70E+01	max	1.5E+01		1.2E-05		1.9E-05
INORG	Iron	7439-89-6	D	7.10E+03	max			7.0E-07		5.0E-03
INORG	Lead	7439-92-1	B2	1.23E+02	max	2.3E+01				
INORG	Manganese	7439-96-5	D	2.24E+02	max	5.7E+02		6.2E-06		
INORG	Mercury	7439-97-6	D	4.98E+00	max			7.7E-03		3.9E-02
INORG	Nickel	7440-02-0	A	1.40E+01	max	1.7E+01	1.2E-11	2.6E-05		
INORG	Vanadium	7440-62-2	ID	1.06E+01	max	2.3E+01		9.9E-05		
INORG	Zinc	7440-66-6	ID	7.90E+01	max	4.2E+01		1.6E-06		6.1E-05
Notes:										
Only constituents detected in each area are shown.										
Single-chemical risks and hazard quotients are calculated using site-related concentrations, which are those in excess of site-specific background for inorganics.										
Conc source - source of the concentration for the single-chemical risk estimates:										
Max = The maximum concentration detected in samples collected within the area from any depth.										
UCL = 95% bootstrap upper confidence limit on the mean.										
The concentrations for all polychlorinated biphenyls (PCBs) Aroclors were summed to PCBs (total).										
The concentrations for the Xylene isomers (m/p and o) were summed to Xylenes (total).										
Chem Group - chemical group										
Carc Class - USEPA Weight-of-Evidence Cancer Classification										

Upper-Bound Single-Chemical Risk Calculations for Groundwater Results
Allison Transmission, Speedway, Indiana

Wellzone	Chem Group	Chemical	CASRN	Carc Class	Max Detected (mg/L)	Max Limit (mg/L)	Construction Worker Groundwater Contact				Maintenance Worker Groundwater Contact				Routine Worker Vapor Intrusion				Resident Outdoor Air Inhalation														
							Groundwater Contact				Groundwater Contact				Vapor Intrusion				Outdoor Air Inhalation														
							Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ	Unit Risk	Unit HQ	Risk	HQ			
AOI_02_01	S2	VOC	Cumene	98-82-8	D	1.50E-03	5.00E-03	1.5E-03	2.3E-06	2.5E-03	3.7E-06	4.4E-04	6.6E-07	1.1E-05	1.7E-08	3.2E-03	4.8E-06	4.7E-05	7.1E-08														
AOI_02_01	S2	VOC	cis-1,2-Dichloroethene	156-59-2	ID	2.00E-01	5.00E-02	7.7E-04	1.5E-04	7.7E-03	1.5E-03																						
AOI_02_01	S2	VOC	trans-1,2-Dichloroethene	156-60-5	ID	5.80E-03	5.00E-03	7.9E-04	4.6E-06	1.0E-03	5.9E-06																						
AOI_02_01	S2	VOC	Ethyl Benzene	100-41-4	D	6.10E-04	5.00E-03	9.0E-04	5.5E-07	1.4E-03	8.3E-07	1.8E-04	1.1E-07	4.7E-06	2.9E-09	1.3E-03	8.0E-07	2.0E-05	1.2E-08														
AOI_02_01	S2	VOC	Trichloroethene	79-01-6	HC	7.70E-01	5.00E-02	5.2E-08	7.6E-02	4.0E-08	5.9E-02	5.2E-07	3.1E-01	4.0E-07	2.4E-01	3.3E-07	1.1E-01	2.5E-07	8.6E-02	8.5E-09	2.9E-03	6.5E-09	2.2E-03	4.0E-06	8.2E-01	3.1E-06	6.3E-01	5.9E-08	1.2E-02	4.5E-08	9.3E-03		
AOI_02_01	S2	VOC	Vinyl Chloride	75-01-4	A	3.70E-02	5.00E-03	3.4E-07	1.1E-02	1.3E-08	4.1E-04	3.4E-06	1.1E-02	1.3E-07	4.1E-04	1.2E-06	3.8E-03	4.4E-08	1.4E-04	3.0E-08	9.6E-05	1.1E-09	3.5E-06	1.1E-05	2.8E-02	3.9E-07	1.0E-03	1.5E-07	4.0E-04	5.6E-09	1.5E-05		
AOI_02_01	S2	PDIST	Mineral Spirits	8052-41-3	A	6.80E-02	5.00E-02	7.0E-08	6.5E-04	4.7E-09	4.4E-05	7.0E-07	1.1E-02	4.7E-08	7.4E-04																		
AOI_02_01	S2	INORG	Arsenic	7440-38-2	NC	4.00E-01	1.00E-01	1.0E-04	1.0E-04	4.1E-05	4.1E-05																						
AOI_02_01	S2	INORG	Barium	7440-39-3	NC	2.00E+00	5.00E-02	7.5E-07	2.1E-02	1.5E-06	4.2E-02	7.5E-06	3.5E-02	1.5E-05	7.0E-02																		
AOI_02_01	S2	INORG	Chromium (total)	7440-47-3	B2	1.00E-01	5.00E-02																										
AOI_02_01	S2	INORG	Lead	7439-92-1	B2	1.00E-01	5.00E-02																										
AOI_02_02	S2	VOC	Cumene	98-82-8	D	9.20E-04	5.00E-03	1.5E-03	1.4E-06	2.5E-03	2.3E-06	4.4E-04	4.0E-07	1.1E-05	1.0E-08	3.2E-03	3.0E-06	4.7E-05	4.3E-08														
AOI_02_02	S2	VOC	Cyclohexane	110-82-7	ID	9.60E-04	1.00E-01	9.8E-05	9.5E-08	9.8E-05	9.5E-08	6.2E-05	5.9E-08	1.5E-06	1.5E-09	4.6E-04	4.4E-07	6.4E-06															
AOI_02_02	S2	VOC	cis-1,2-Dichloroethene	156-59-2	ID	7.80E-03	5.00E-03	7.7E-04	6.0E-06	7.7E-03	6.0E-05																						
AOI_02_02	S2	VOC	1,1,1-Trichloroethane	71-55-6	ID	8.60E-03	5.00E-03	9.7E-05	8.4E-07	1.1E-04	9.2E-07																						
AOI_02_02	S2	VOC	Vinyl Chloride	75-01-4	A	4.39E-01	5.00E-03	3.4E-07	1.1E-02	1.5E-07	4.9E-03	3.4E-06	1.1E-02	1.5E-06	4.9E-03	1.2E-06	3.8E-03	5.3E-07	1.7E-03	3.0E-08	9.6E-05	1.3E-08	4.2E-05	1.1E-05	3.6E-04	2.8E-02	4.7E-06	3.1E-06	1.5E-07	4.0E-04	6.7E-08	1.8E-04	
AOI_02_02	S2	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	3.83E-03	1.00E-02	5.5E-07	2.8E-02	2.1E-09	1.1E-04	5.5E-06	1.4E-01	2.1E-08	5.3E-04																		
AOI_02_02	S2	PDIST	Mineral Spirits	8052-41-3	A	3.00E-01																											
AOI_02_02	S2	INORG	Arsenic	7440-38-2	A	3.30E-02	5.00E-03	7.0E-08	6.5E-04	2.3E-09	2.1E-05	7.0E-07	1.1E-02	2.3E-08	3.6E-04																		
AOI_02_02	S2	INORG	Barium	7440-39-3	NC	3.50E-01	1.00E-02	1.0E-04	1.0E-04	3.6E-05	3.6E-05																						
AOI_02_02	S2	INORG	Chromium (total)	7440-47-3	B2	3.00E-02	1.00E-02	7.5E-07	2.1E-02	2.3E-08	6.3E-04	7.5E-06	3.5E-02	2.3E-07	1.1E-03																		
AOI_02_02	S2	INORG	Lead	7439-92-1	B2	1.10E-01	5.00E-03																										
AOI_02_02	S2	INORG	Selenium	7782-49-2	D	7.10E-03	5.00E-03	6.5E-04	4.6E-06	6.5E-04	4.6E-06																						
AOI_02_03	S2	SVOC	Caprolactam	105-60-2	D	1.30E-02	5.10E-03	4.9E-06	6.4E-08	4.9E-06	6.4E-08																						
AOI_02_03	S2	INORG	Barium	7440-39-3	NC	9.00E-02	1.00E-02	1.0E-04	9.2E-06	1.0E-04	9.2E-06																						
AOI_02_04	S2	VOC	Acetone	67-64-1	ID	1.40E-02	1.00E-01	7.5E-06	1.0E-07	9.2E-06	1.3E-07	3.8E-07	5.3E-09	2.6E-08	3.7E-10	2.4E-06	3.4E-08	1.1E-07	1.5E-09														
AOI_02_04	S2	VOC	Benzene	71-43-2	A	2.20E+00	5.00E-03	8.7E-08	9.3E-03	1.9E-07	2.0E-02	8.7E-07	2.7E-02	1.9E-06	5.8E-02	5.8E-07	6.9E-03	1.3E-06	1.5E-02	1.5E-08	1.9E-04	3.4E-08	4.1E-04	5.1E-06	5.0E-02	1.1E-05	1.1E-01	7.8E-08	7.8E-04	1.7E-07	1.7E-03		
AOI_02_04	S2	VOC	Cumene	98-82-8	D	2.34E-02	5.00E-03	1.5E-03	3.8E-05	2.5E-03	3.8E-05																						
AOI_02_04	S2	VOC	1,1-Dichloroethane	75-34-3	SC	2.40E-02	5.00E-03	1.1E-04	2.7E-06	1.1E-03	2.7E-05	4.3E-04	1.0E-05	1.1E-05	2.8E-07	3.1E-03	7.5E-05	4.8E-05	1.2E-06														
AOI_02_04	S2	VOC	Ethyl Benzene	100-41-4	D	2.40E-01	5.00E-03	9.0E-04	2.1E-04	1.4E-03	3.3E-04	4.3E-05	4.7E-06	1.1E-06	1.3E-03	3.2E-04	2.0E-05	4.7E-06															
AOI_02_04	S2	VOC	Methylene Chloride	75-09-2	B2	8.50E-03	1.00E-02	4.6E-09	6.7E-04	3.9E-11	5.7E-06	4.6E-08	6.7E-04	3.9E-10	5.7E-06	3.1E-08	1.8E-04	2.6E-10	1.5E-06	9.1E-10	5.2E-06	7.7E-12	4.4E-08	2.6E-07	1.2E-03	2.2E-09	1.1E-05	4.6E-09	2.2E-05	3.9E-11	1.8E-07		
AOI_02_04	S2	VOC	Toluene	108-88-3	ID	1.50E-01	5.00E-03	1.8E-04	2.7E-05	7.9E-04	1.2E-04	7.9E-04	3.9E-05	5.8E-06	1.0E-06	1.5E-07	2.8E-04	4.2E-05	2.8E-04	4.2E-05	2.8E-04	4.2E-05	2.8E-04	4.2E-05	2.8E-04	4.2E-05	2.8E-04	4.2E-05	2.8E-04	4.2E-05	2.8E-04	4.2E-05	2.8E-04
AOI_02_04	S2	VOC	1,1,1-Trichloroethane	71-55-6	ID	2.04E-01	5.00E-03	9.7E-05	2.0E-05	1.1E-04	2.2E-05	4.9E-05	1.0E-05	1.2E-06	2.5E-07	3.6E-04	7.4E-05	5.2E-06	1.1E-06														
AOI_02_04	S2	VOC	Vinyl Chloride	75-01-4	A	1.00E-02	5.00E-03	3.4E-07	1.1E-02	3.4E-09	1.1E-04	3.4E-06	1.1E-02	3.4E-08	1.1E-04	1.2E-06	3.8E-03	1.2E-08	3.8E-05	3.0E-08	9.6E-05	3.0E-10	9.6E-07	1.1E-05	2.8E-02	1.1E-07	2.8E-04	1.5E-07	4.0E-04	1.5E-09	4.0E-06	1.5E-09	
AOI_02_04	S2	VOC	Xylenes (total)	1330-20-7	ID	1.50E+00	1.00E-02	2.2E-03	3.2E-03	1.1E-02	3.2E-03	3.2E-03	1.1E-02	3.2E-03	3.2E-03	1.1E-02	3.2E-03	1.1E-02	3.2E-03	1.1E-02	3.2E-03	1.1E-02	3.2E-03	1.1E-02	3.2E-03	1.1E-02	3.2E-03	1.1E-02	3.2E-03	1.1E-02	3.2E-03	1.1E-02	3.2E-03
AOI_02_04	S2	SVOC	Benzo(a)anthracene	56-55-3	B2	2.00E-03	1.00E-02	1.6E-05	3.2E-08	1.6E-04	3.2E-07	1.6E-04	3.2E-07	1.6E-04	3.2E-07	1.6E-04	3.2E-07	1.6E-04	3.2E-07	1.6E-04	3.2E-07	1.6E-04	3.2E-07	1.6E-04	3.2E-07	1.6E-04	3.2E-07	1.6E-04	3.2E-07	1.6E-04	3.2E-07	1.6E-04	3.2E-07
AOI_02_04	S2	SVOC	Benzo(a)pyrene	50-32-8	B2	1.90E-03	1.00E-02	2.3E-04	4.4E-07	2.3E-03	4.4E-06	2.3E-03	4.4E-06	2.3E-03	4.4E-06	2.3E-03	4.4E-06	2.3E-03	4.4E-06	2.3E-03	4.4E-06	2.3E-03	4.4E-06	2.3E-03	4.4E-06	2.3E-03	4.4E-06	2.3E-03	4.4E-06	2.3E-03	4.4E-06	2.3E-03	4.4E-06
AOI_02_04	S2	SVOC	Benzo(b)fluoranthene	205-99-2	B2	2.20E-03	1.00E-02	2.6E-05	5.8E-08	2.6E-04	5.8E-07	2.6E-04	5.8E-07	2.6E-04	5.8E-07	2.6E-04	5.8E-07	2.6E-04	5.8E-07	2.6E-04	5.8E-07	2.6E-04	5.8E-07	2.6E-04	5.8E-07	2.6E-04	5.8E-07	2.6E-04	5.8E-07	2.6E-04	5.8E-07	2.6E-04	5.8E-07
AOI_02_04	S2	SVOC	Benzo(g,h,i)perylene																														

Appendix C

Evaluation of 2012 Data Collected at
Former Plant 2

November 8, 2012

Via Electronic Mail

Marilyn J. Dedyne, P.E.
General Motors LLC
MC 480-206-1E0
30009 Van Dyke Road
Warren, Michigan 48090

**Re: Evaluation of 2012 Data Collected at Former Plant 2
Allison Transmission Facility, Speedway, Indiana**

Dear Ms. Dedyne:

This memorandum discusses an evaluation of the saturated soil, borehole water, and groundwater data that were collected in 2012 at and around former Plant 2 of the Allison Transmission Facility in Speedway, Indiana (Site). The evaluation was conducted to determine whether these new data change the conclusions of the 2011 RFI risk assessment which was included as Appendix B of the Corrective Measures Proposal (CMP) for the Site (ARCADIS 2011). The 2011 RFI risk assessment concluded that reasonable maximum exposure (RME) risks under current and reasonably expected future land use at the Site do not exceed USEPA's acceptable limits at any of the areas of interest (AOIs) at former Plant 2 that were investigated during the RFI. The evaluation discussed below shows that the new data do not change this conclusion. The evaluation of the new data is discussed in the remainder of this memorandum.

1 Background

On December 12, 2011, General Motors LLC (GM) submitted to USEPA the *Former Plant 2 RCRA Corrective Action, Corrective Measures Proposal, Allison Transmission, Inc.* (ARCADIS 2011). The report included an update of the 2009 RFI risk assessment for Plant 2 as Appendix B. The report evaluated potential on-site and off-site exposures to soil and groundwater. The receptors evaluated included routine workers, maintenance workers, construction workers, and off-site residents. Off-site residential exposures were conservatively evaluated using on-site groundwater data to streamline the risk assessment and because on-site groundwater concentrations are higher than those detected off-site. In May and July 2012, ARCADIS conducted additional investigation at and around former Plant 2 to investigate the presence of chlorinated volatile organic compounds at MW-0702-S2. This included collection of saturated soil, borehole water, and groundwater samples for chemical analysis, as discussed in the *MW-0702-S2 Area Investigation Summary* (ARCADIS 2012).

The highest concentrations from the 2012 data were compared to the exposure concentrations that were used in the 2011 RFI risk assessment to determine whether incorporation of the new data would change the risk assessment conclusions.

2 Summary of Results

2.1 Groundwater and Borehole Water

The May and July 2012 data include both borehole water and groundwater data. As discussed in Sections 4 and 5.2.1 of the 2009 RFI Report, borehole water data do not provide sufficient bases for

identifying and evaluating the presence of a potentially significant release because of the nature of the sample collection method. While these data are not appropriate for use in the risk assessment, they were conservatively included in this comparison as estimates of groundwater concentrations.

Table 1 below compares the maximum detected concentrations of constituents in the 2012 borehole and groundwater data to the groundwater concentrations used in the 2011 RFI risk assessment. The table shows that the maximum concentrations in the 2012 data are lower than the groundwater concentrations used in the 2011 risk assessment, except for acetone and trans-1,2-dichloroethene. As discussed in the *MW-0702-S2 Area Investigation Summary* (ARCADIS 2012), the locations from the 2012 investigation of the upper and lower portions of the saturated S2 units fully delineate the chlorinated volatile organic compounds in the vicinity of former Plant 2. In the 2011 risk assessment, the highest hazard indices (HI) for potential exposure to groundwater was 0.6 and acetone and trans-1,2-dichloroethene in groundwater contributed very little to the HI. These constituents contributed no more than 1×10^{-7} and 2×10^{-5} , respectively, to the HIs for the exposure scenarios that were evaluated. Using the higher acetone and trans-1,2-dichloroethene concentrations from Table 1 would increase acetone's contribution by approximately ten fold and increase trans-1,2-dichloroethene's contribution by less than two fold. However, since acetone and 1,2-dichloroethene were a small portion of the HIs, these increases would not materially increase their small contributions to the HIs. Therefore, the HIs presented in the 2011 risk assessment, which were presented with one significant digit according to USEPA risk assessment guidance, would not change.

Table 1: Comparison of Groundwater and Borehole Water Data

Chem Group	Chemical	CASRN	Max Detected GW 2011 CMP (mg/L)	Max Detected 2012 GW and BW (mg/L)
VOC	Acetone	67-64-1	1.40E-02	1.73E-01
VOC	1,1-Dichloroethane	75-34-3	6.00E-02	7.70E-03
VOC	cis-1,2-Dichloroethene	156-59-2	5.70E-01	2.12E-01
VOC	trans-1,2-Dichloroethene	156-60-5	2.10E-02	3.03E-02
VOC	Trichloroethene	79-01-6	7.70E-01	5.99E-02
VOC	Vinyl Chloride	75-01-4	4.39E-01	3.07E-01
INORG	Arsenic	7440-38-2	6.80E-02	3.04E-02

2.2 Saturated Soil

As discussed in *MW-0702-S2 Area Investigation Summary* (ARCADIS 2012), one soil sample from the saturated zone was collected in 2012 at SB-02-02-1210 from 18-20 feet below ground surface (ft bgs) where Sudan IV field screening results were positive. The water table at this location is at 17 ft bgs. As discussed in Section 5.5.2 of the 2009 RFI Report, soil data collected below the water table are not representative of concentrations in the vadose zone. Because the soil sample collected below the water table is not representative of vadose zone soil, data from this soil sample do not affect the conclusions of the 2011 RFI risk assessment. Additionally, borehole water data for the same constituents as the soil sample were collected from nearby downgradient locations in 2012, including SB-02-02-1203, SB-02-02-1204, and SB-02-02-1205.

3 Conclusion

The 2012 data collected at Plant 2 do not change the conclusions of the 2011 RFI risk assessment, i.e., RME risks for current and reasonably expected future land use at the Site do not exceed USEPA's acceptable limits at any of the AOIs investigated during the RFI.

Sincerely,



Francis Ramacciotti
Senior Manager



Stephen Song, PhD
Principal

4 References

ARCADIS. 2009. RCRA Facility Investigation Report. February 18.

ARCADIS. 2011. RCRA Corrective Action. Corrective Measures Proposal. Former Plant 2. December 12.

ARCADIS. 2012. MW-0702-S2 Area Investigation Summary. September 28.

cc: David Favero, Favero Geosciences
Sarah Fisher, ARCADIS

Appendix D

Corrective Measures Detailed Cost
Backup

Table D-1. Order-of-Magnitude Cost Estimate for Corrective Measures Alternative, Soil, Allison Transmission, Inc. Facility - Plant 2, Speedway and Indianapolis, Indiana Excavation Option

Description: Soil would be excavated from within the footprint of the former basement area to remove debris. The excavation would cover approximately 21,125 square feet and extend to a depth of 20 feet.

Task	Quantity	Units	Unit Rate	Estimated Cost
<i>Remediation Design and Contracting</i>				
Design Report	1	lump sum	\$12,000	\$12,000
Permitting	1	lump sum	\$3,000	\$3,000
Response to Regulator Comments	1	lump sum	\$5,000	\$5,000
Construction Specifications	1	lump sum	\$6,000	\$6,000
Bid Procurement and Contractor Selection	1	lump sum	\$4,000	\$4,000
<i>Subtotal, Remediation Design and Contracting</i>				\$30,000
25% contingency				\$8,000
<i>Subtotal, Remediation Design and Contracting and Contingency</i>				\$38,000
 <i>Construction/Implementation</i>				
Mobilization	1	lump sum	\$18,000	\$18,000
Clearing/grubbing of excavation area	1	lump sum	\$12,000	\$12,000
Temporary Chain Link Fence	780	LF	\$8	\$6,000
Soil characterization sampling	1	lump sum	\$3,000	\$3,000
Excavation	15700	CY	\$5	\$79,000
Disposal non-hazardous soil and debris	23550	tons	\$40	\$942,000
Transportation of soil for disposal	23550	tons	\$10	\$236,000
Backfill, purchase and transport	23550	tons	\$30	\$707,000
Backfill, placement and compaction	23550	tons	\$8	\$188,000
Site Restoration	1	lump sum	\$12,000	\$12,000
Construction Oversight	13	week	\$10,000	\$130,000
Preparation of Summary/As-Built Report	1	lump sum	\$14,000	\$14,000
<i>Subtotal, Construction/Implementation</i>				\$2,347,000
25% contingency				\$587,000
<i>Subtotal, Construction/Implementation and Contingency</i>				\$2,934,000
 <i>Subtotal, Remediation Design/Contracting and Construction/Implementation</i>				\$2,972,000
 <i>Operation and Maintenance - Annual</i>				
Maintenance Activities	1	year	\$0	\$0
Reporting	1	year	\$0	\$0
Utilities	1	year	\$0	\$0
Subtotal, Inspection and Maintenance (1 year)				\$0
Estimated Total Cost				\$2,972,000

Assumptions:

Soil can be managed as a non-hazardous waste.

Soil tonnage based upon a 1.5 tons to 1 cubic yard in-place soil volume conversion factor

No operation and maintenance is required for this corrective action option.

Table D-2. Order-of-Magnitude Cost Estimate for Corrective Measures Alternative, On-Site Groundwater, Allison Transmission, Inc. Facility - Plant 2, Speedway and Indianapolis, Indiana Groundwater Monitoring

Description: Selected monitoring wells at and in the vicinity of Plant 2 will be sampled to confirm the conclusions of the RFI, that contaminants in groundwater are not migrating, and evaluate trends in groundwater quality. Three new monitoring wells will be installed in the vicinity of the former Plant 2 (one upgradient and two downgradient). Ten monitoring wells will be sampled once a year for 2 years. A summary report will be prepared after each year of sampling.

Task	Quantity	Units	Unit Rate	Estimated Cost
<i>Remediation Design and Contracting</i>				
Design Report	1	lump sum	\$5,000	\$5,000
Permitting	1	lump sum	\$2,000	\$2,000
Response to Regulator Comments	1	lump sum	\$4,000	\$4,000
<i>Subtotal, Remediation Design and Contracting</i>				\$11,000
25% contingency				\$3,000
<i>Subtotal, Remediation Design and Contracting and Contingency</i>				\$14,000
<i>Construction/Implementation</i>				
Monitoring Well Drilling	3	lump sum	\$5,000	\$15,000
Drilling Oversight	3	days	\$2,670	\$8,010
Well Abandonment	1	lump sum	\$4,000	\$4,000
<i>Subtotal, Construction/Implementation</i>				\$27,010
25% contingency				\$7,000
<i>Subtotal, Construction/Implementation and Contingency</i>				\$34,010
<i>Subtotal, Remediation Design/Contracting and Construction/Implementation</i>				\$48,010
<i>Groundwater Monitoring Program, Annual Monitoring Phase (2 years)</i>				
Sample Collection	2	event	\$7,500	\$15,000
Groundwater Laboratory Analysis - VOCs	2	event	\$1,300	\$3,000
Well Maintenance	2	year	\$1,000	\$2,000
Reporting	2	year	\$10,000	\$20,000
Project Management	2	year	\$5,000	\$10,000
Subtotal, Annual Monitoring (2 years)				\$50,000
<i>Operation and Maintenance - Annual</i>				
Subtotal, Operation and Maintenance				\$0
Estimated Total Cost				\$98,010

Assumptions:
 Permitting costs are associated with reviewing and maintaining access agreements for off-site wells
 Two years of annual monitoring is estimated; however, final monitoring plan will be negotiated with USEPA
 Groundwater monitoring is separate and aside from monitoring associated with active remediation alternatives

Table D-3. Order-of-Magnitude Cost Estimate for Corrective Measures Alternative, On-Site Groundwater, Allison Transmission, Inc. Facility - Plant 2, Speedway and Indianapolis, Indiana Enhanced Reductive Dechlorination

Description: Injection of a dilute carbon substrate such as molasses provides a food source for indigenous microorganisms. Microbial growth affects groundwater biochemical conditions, creating an environment that is strongly anaerobic and conducive to the reductive dechlorination of chlorinated alkenes. Injection wells would be installed in two areas to create in-situ reaction zones (IRZs) for enhanced biodegradation (ERD). One IRZ would be created using 54 injection wells located around PZ-0801-S2 to remediate TCE in groundwater. the second IRZ would be created using 204 injection wells located in an area extending from MW-0706-S2 south to MW-2-2-S2, to treat VC. Each injection well would be installed to a depth of 40 feet. Injections of a dilute carbon solution would be completed quarterly for 2 years (8 events). Due to the unknown off-site source of cVOCs, it is unknown if additional injection events will be required. A groundwater monitoring program would be conducted concurrently to evaluate progress of remediation. Overall groundwater monitoring costs are captured under the facility-wide monitoring program. In addition, quarterly monitoring would be completed at 10 wells on a quarterly basis (and one baseline event) plus 5 years of annual groundwater monitoring.

Task	Quantity	Units	Unit Rate	Estimated Cost
<i>Remediation Design and Contracting</i>				
Pre-Design Investigation	1	lump sum	\$60,000	\$60,000
Pilot Test/Tracer Test	1	lump sum	\$75,900	\$75,900
Design Report/Permitting/H&S	1	lump sum	\$25,000	\$25,000
Bid Procurement and Contractor Selection	1	lump sum	\$7,000	\$7,000
<i>Subtotal, Remediation Design and Contracting</i>				\$167,900
25% contingency				\$42,000
<i>Subtotal, Remediation Design and Contracting and Contingency</i>				\$209,900
<i>Construction/Implementation</i>				
Injection Well Drilling	10320	LF	\$36	\$371,520
Soil Spoils Transportation&Disposal	1	lump sum	\$135,000	\$135,000
Drilling Oversight	37	days	\$2,750	\$101,750
Surveying	1	lump sum	\$5,000	\$5,000
Injection Equipment Procurement	1	lump sum	\$13,000	\$13,000
Injection System Fabrication	1	lump sum	\$19,000	\$19,000
Injection Event	8	Event	\$120,000	\$960,000
Molasses Solution Purchase and Delivery	41	Tanker	\$9,500	\$389,500
Remediation Groundwater Monitoring	9	Event	\$7,500	\$67,500
Groundwater Laboratory Analysis	9	Event	\$1,300	\$11,700
System Abandonment	1	lump sum	\$190,000	\$190,000
Preparation of As-Built Report	1	lump sum	\$20,000	\$20,000
Project Management	1	lump sum	\$120,000	\$120,000
Preparation of Remediation Summary Report	1	lump sum	\$20,000	\$20,000
<i>Subtotal, Construction/Implementation</i>				\$2,423,970
25% contingency				\$606,000
<i>Subtotal, Construction/Implementation and Contingency</i>				\$3,029,970
<i>Subtotal, Remediation Design/Contracting and Construction/Implementation</i>				\$3,239,870

Operation and Maintenance - Annual

Groundwater Monitoring Program, Annual Monitoring Phase (5 years)

Sample Collection	1	event	\$7,500	\$7,500
Groundwater Laboratory Analysis - VOCs	1	event	\$1,300	\$1,000
Well Maintenance	1	year	\$1,000	\$1,000
Reporting	1	year	\$10,000	\$10,000
Project Management	1	year	\$5,000	\$5,000
Subtotal, Annual Monitoring (5 years)				\$24,500

Estimated Total Cost \$3,239,870
Excluding Operation and Maintenance

Estimated Total Cost \$3,362,370
Including 30 years of Operation and Maintenance

Notes:

Groundwater monitoring related to the active remedial alternative is separate and aside from annual facility-wide monitoring

Table D-4. Order-of-Magnitude Cost Estimate for Corrective Measures Alternative, On-Site Groundwater, Allison Transmission, Inc. Facility - Plant 2, Speedway and Indianapolis, Indiana In-Situ Chemical Oxidation

Description: Injection of a dilute permanganate solution into groundwater oxidizes dissolved and sorbed phase organic material. Injection wells would be installed in two areas to create in-situ reaction zones (IRZs) for in-situ chemical oxidation (ISCO). One IRZ would be created using 54 injection wells located around PZ-0801-S2 to remediate TCE in groundwater. the second IRZ would be created using 204 injection wells located in an area extending from MW-0706-S2 south to MW-2-2-S2, to treat VC. Each injection well would be installed to a depth of 40 feet. Injections of a dilute permanganate solution would be completed quarterly for 1 year (4 events). Due to the unknown off-site source of cVOCs, it is unknown if additional injection events will be required. A groundwater monitoring program would be conducted concurrently to evaluate progress of remediation. Overall groundwater monitoring costs are captured under the facility-wide monitoring program. In addition, quarterly monitoring would be completed at 10 wells on a quarterly basis (and one baseline event) plus 5 years of annual groundwater monitoring.

Task	Quantity	Units	Unit Rate	Estimated Cost
<i>Remediation Design and Contracting</i>				
Pre-Design Investigation	1	lump sum	\$60,000	\$60,000
Pilot Test/Tracer Test	1	lump sum	\$70,500	\$70,500
Design Report/Permitting/H&S	1	lump sum	\$25,000	\$25,000
Bid Procurement and Contractor Selection	1	lump sum	\$7,000	\$7,000
<i>Subtotal, Remediation Design and Contracting</i>				\$162,500
25% contingency				\$41,000
<i>Subtotal, Remediation Design and Contracting and Contingency</i>				\$203,500
<i>Construction/Implementation</i>				
Injection Well Drilling	10320	LF	\$39	\$402,480
Soil Spoils Transportation&Disposal	1	lump sum	\$135,000	\$135,000
Drilling Oversight	37	days	\$2,750	\$101,750
Surveying	1	lump sum	\$5,000	\$5,000
Injection Equipment Procurement	1	lump sum	\$18,000	\$18,000
Injection System Fabrication	1	lump sum	\$7,000	\$7,000
Injection Event	4	Event	\$184,000	\$736,000
Sodium Permanganate Solution Purchase	105264	lb	\$2.34	\$246,318
Sodium Permanganate Delivery	4	Event	\$3,700	\$14,800
Remediation Groundwater Monitoring	5	Event	\$7,500	\$37,500
Groundwater Laboratory Analysis	5	Event	\$1,300	\$6,500
Well Abandonment	1	lump sum	\$190,000	\$190,000
Project Management	1	lump sum	\$90,000	\$90,000
Preparation of Summary/As-Built Report	1	lump sum	\$20,000	\$20,000
<i>Subtotal, Construction/Implementation</i>				\$2,010,348
25% contingency				\$503,000
<i>Subtotal, Construction/Implementation and Contingency</i>				\$2,513,348
<i>Subtotal, Remediation Design/Contracting and Construction/Implementation</i>				\$2,716,848

Operation and Maintenance - Annual

Groundwater Monitoring Program, Annual Monitoring Phase (5 years)

Sample Collection	1	event	\$7,500	\$7,500
Groundwater Laboratory Analysis - VOCs	1	event	\$1,300	\$1,000
Well Maintenance	1	year	\$1,000	\$1,000
Reporting	1	year	\$10,000	\$10,000
Project Management	1	year	\$5,000	\$5,000
Subtotal, Annual Monitoring (5 years)				\$24,500

Estimated Total Cost \$2,716,848
Excluding Operation and Maintenance

Estimated Total Cost \$2,839,348
Including 30 years of Operation and Maintenance

Notes:

Groundwater monitoring related to the active remedial alternative is separate and aside from annual facility-wide monitoring

Table D-5. Order-of-Magnitude Cost Estimate for Corrective Measures Alternative, Off-Site Groundwater (Downgradient), Allison Transmission, Inc. Facility - Plant 2, Speedway and Indianapolis, Indiana No-Well Zone

Description: Work with county to establish a no-well zone to address Plant 2 and limited off-site properties. The no-well zone would prohibit installation of additional water supply wells within bounds of the zone.

Task	Quantity	Units	Unit Rate	Estimated Cost
<i>Remediation Design and Contracting</i>				
Discussions with Government Representatives	1	lump sum	\$6,000	\$6,000
Survey for Existing Wells	1	lump sum	\$5,000	\$5,000
No-Well Zone Proposal	1	lump sum	\$8,000	\$8,000
Response to Regulator Comments	1	lump sum	\$2,000	\$2,000
<i>Subtotal, Remediation Design and Contracting</i>				\$21,000
25% contingency				\$5,300
<i>Subtotal, Remediation Design and Contracting and Contingency</i>				\$26,000
 <i>Construction/Implementation</i>				
<i>Subtotal, Construction/Implementation</i>				\$0
25% contingency				\$0
<i>Subtotal, Construction/Implementation and Contingency</i>				\$0
 <i>Subtotal, Remediation Design/Contracting and Construction/Implementation</i>				\$26,000
 <i>Operation and Maintenance</i>				
N/A	1	year	\$0	\$0
Subtotal, Inspection and Maintenance (1 year)				\$0
 Estimated Total Cost Excluding Operation and Maintenance				\$26,000
 Estimated Total Cost Including 30 years of Operation and Maintenance				\$26,000

Assumptions:
County agrees to allow creation of additional no-well zone

Table D-6. Order-of-Magnitude Cost Estimate for Corrective Measures Alternative, Off-Site Groundwater (Downgradient), Allison Transmission, Inc. Facility - Plant 2, Speedway and Indianapolis, Indiana Permeable Reactive Barrier

Description: A zero valent iron (ZVI) permeable reactive barrier (PRB) creates strongly anaerobic conditions and triggers abiotic degradation reactions as the groundwater passes through. The ZVI PRB will be installed along the southern property boundary. The ZVI PRB would be approximately 920 feet in length and have a treatment interval of 15 to 40 feet below ground surface. Approximately 500 lf of the PRB will be two times the design thickness to account for potential fouling. ZVI PRBs have a finite lifespan, therefore reinstallation across part, or all, of the PRB may be required at some time in the future depending on Site specific geochemistry and contaminant loading. Overall groundwater monitoring costs are captured under the facility-wide monitoring program. In addition, baseline monitoring would be completed at 36 monitoring wells and annual monitoring would be completed at a subset of 12 monitoring wells for 20 years.

Task	Quantity	Units	Unit Rate	Estimated Cost
<i>Remediation Design and Contracting</i>				
Pre-Design Investigation	1	lump sum	\$60,000	\$60,000
Well Installation / Column/Bench Test	1	lump sum	\$108,000	\$108,000
Design Report/Permitting/H&S	1	lump sum	\$33,600	\$33,600
Bid Procurement and Contractor Selection	1	lump sum	\$7,000	\$7,000
<i>Subtotal, Remediation Design and Contracting</i>				\$208,600
25% contingency				\$52,000
<i>Subtotal, Remediation Design and Contracting and Contingency</i>				\$260,600
<i>Construction/Implementation</i>				
Monitoring Well Drilling	780	LF	\$53	\$41,340
Soil Spoils Transportation&Disposal	1	lump sum	\$12,500	\$12,500
Drilling Oversight	13	days	\$2,670	\$34,710
Surveying	1	lump sum	\$1,000	\$1,000
PRB Installation - Contractors	1	lump sum	\$1,083,000	\$1,083,000
PRB Installation - Materials	1	lump sum	\$1,532,000	\$1,532,000
PRB Installation - Oversight	1	lump sum	\$50,000	\$50,000
Baseline Monitoring	1	Event	\$27,300	\$27,300
Well Abandonment	1	lump sum	\$190,000	\$190,000
Project Management	1	lump sum	\$50,000	\$50,000
Installation Report	1	lump sum	\$10,000	\$10,000
<i>Subtotal, Construction/Implementation</i>				\$3,031,850
25% contingency				\$758,000
<i>Subtotal, Construction/Implementation and Contingency</i>				\$3,789,850
<i>Subtotal, Remediation Design/Contracting and Construction/Implementation</i>				\$4,050,450

Operation and Maintenance - Annual

PRB Monitoring	1	year	\$12,600	\$12,600
Project Management	1	year	\$5,000	\$5,000
Reporting	1	year	\$10,000	\$10,000

Subtotal, Inspection and Maintenance (1 year)	\$27,600
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Estimated Total Cost Excluding Operation and Maintenance	\$4,050,450
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Estimated Total Cost Including 30 years of Operation and Maintenance	\$4,602,450
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Notes:

Costs included are for installation of one permeable reactive barrier. If reinstallation is necessary because of upgradient sources of CVOCs, costs will increase significantly.

Groundwater monitoring related to the active remedial alternative is separate and aside from annual facility-wide monitoring

Table D-7. Order-of-Magnitude Cost Estimate for Corrective Measures Alternative, Off-Site Groundwater (Downgradient), Allison Transmission, Inc. Facility - Plant 2, Speedway and Indianapolis, Indiana
Groundwater Extraction

Description: A groundwater extraction system would be installed along the south property line to provide hydraulic control downgradient of the TCE and VC in groundwater. A network of 13 extraction wells would be installed along a 1,100 foot line. It is assumed that groundwater would be extracted at a rate of 2 gallons per minute per well, treated through an air stripper, and discharged to a drainage ditch under a NPDES permit.

Task	Quantity	Units	Unit Rate	Estimated Cost
<i>Remediation Design and Contracting</i>				
Pre-Design Investigation	1	lump sum	\$60,000	\$60,000
Well Installation and Pump Test	1	lump sum	\$40,200	\$40,200
Design Report/Permitting/H&S	1	lump sum	\$59,000	\$59,000
Bid Procurement and Contractor Selection	1	lump sum	\$7,000	\$7,000
<i>Subtotal, Remediation Design and Contracting</i>				\$166,200
25% contingency				\$42,000
<i>Subtotal, Remediation Design and Contracting and Contingency</i>				\$208,200
<i>Construction/Implementation</i>				
Extraction Well Drilling	480	LF	\$143	\$68,640
Soil Spoils Transportation&Disposal	1	lump sum	\$25,500	\$25,500
Drilling Oversight	12	days	\$2,850	\$34,200
Surveying	1	lump sum	\$2,000	\$2,000
Equipment Procurement & Installation	1	lump sum	\$397,500	\$397,500
Startup	1	lump sum	\$24,500	\$24,500
Well Abandonment	1	lump sum	\$60,000	\$60,000
Preparation of Summary/As-Built Report	1	lump sum	\$20,000	\$20,000
<i>Subtotal, Construction/Implementation</i>				\$632,340
25% contingency				\$158,000
<i>Subtotal, Construction/Implementation and Contingency</i>				\$790,340
<i>Subtotal, Remediation Design/Contracting and Construction/Implementation</i>				\$998,540

Operation and Maintenance - Annual

Maintenance Activities	1	year	\$120,000	\$120,000
Reporting	1	year	\$20,000	\$20,000
Project Management	1	year	\$20,000	\$20,000
Utilities	1	year	\$15,000	\$15,000

Subtotal, Inspection and Maintenance (1 year) \$175,000

Estimated Total Cost \$998,540
Excluding Operation and Maintenance

Estimated Total Cost \$6,248,540
Including 30 years of Operation and Maintenance

Notes:

Costs included are for operation and maintenance of the extraction system for 30 years. If continued operation beyond 30 years is necessary because of upgradient sources of CVOCs, costs will increase significantly.

Groundwater monitoring related to the active remedial alternative is separate and aside from annual facility-wide monitoring