Vapor Intrusion Evaluation Activities Summary Report – February to December 2016

Chemtura Site
3500 East 20th Street
Indianapolis, IN

SCP #0000456

January 26, 2017

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Prepared on Behalf of Chemtura Corporation

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1.0 INTRODUCTION

On behalf of Chemtura Corporation (Chemtura), Environmental Resources Management (ERM) has prepared this Vapor Intrusion (VI) Evaluation Activities Summary Report (the Report) for activities performed from February through December 2016. The purpose of this report is to summarize certain VI investigation activities conducted in relation to the Chemtura Site located at 3500 East 20th Street in Indianapolis, Indiana (the Site). A portion of the work conducted and summarized herein was presented in the *Further Off-Site Vapor Intrusion Evaluation Work Plan* (FOSVI Work Plan) dated July 13, 2016. The FOSVI Work Plan was approved, with minor comments, by the Indiana Department of Environmental Management (IDEM) State Cleanup Program (SCP) on August 19, 2016.

Where noted, additional work activities described within this Report have been communicated to IDEM. The fieldwork summarized within this Report was implemented between February and December 2016.

1.1 REGULATORY BACKGROUND & GUIDANCE REFERENCES

The work associated at the Site is being conducted under oversight from IDEM's SCP (SCP #0000456) in accordance with an Agreed Order dated February 8, 2016. Chemtura is addressing elevated levels of trichloroethene (TCE), a common industrial solvent, and its chlorinated degradation products that have been detected in soil and groundwater at the Site.

The sampling procedures, sample chain of custody, and analytical methods presented herein are based on protocols approved and/or adopted by IDEM as presented in the following documents:

- IDEM's *Remediation Closure Guide* (RCG) dated March 2012 (updated March 2016);
- IDEM's *Vapor Remedy Selection and Implementation* draft interim guidance document (VRSI) dated February 2014;
- United States Environmental Protection Agency's (EPA's) *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (EPA VI Guidance) dated June 2015;
- Chemtura's *Vapor Intrusion Evaluation Report* (VIER) dated November 25, 2014;

- Chemtura's Off-Site *Vapor Intrusion Evaluation Work Plan* dated June 30, 2015;
- Chemtura's *Off-Site Vapor Intrusion Evaluation Summary Report* (OSVI Report) dated April 15, 2016; and
- Chemtura's FOSVI Work Plan dated July 13, 2016.

The sewer gas to indoor air pathway is not considered within IDEM's most recent VI guidance presented in the RCG. EPA's *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (June 2015) discusses the complexities of the sewer gas to indoor air pathway; however, there are minimal sampling guidelines and no data interpretation mechanisms outlined within the document.

1.2 TARGET ANALYTICAL SUITE

ERM utilized a condensed volatile organic compound (VOC) analytical suite as presented within the IDEM-approved FOSVI Work Plan which is consistent with the constituents of concern (COCs) present on-Site. A list of the VOCs analyzed for the VI evaluation sampling and associated activities is provided in **Table 1**.

1.3 SCREENING LEVELS

As part of the VI evaluation activities summarized in this Report, ERM collected sewer water, sewer gas, indoor air, ambient air, and subslab soil gas samples. To evaluate the potential exposure risks to off-Site receptors, ERM compared the analytical data to conservative default IDEM and EPA criteria where applicable and utilized default attenuation adjustments where appropriate. The table provided below summarizes the media, the publication reference for the screening levels, and attenuation factors.

Reference	Media
IDEM RCG Default Residential Screening Levels – March 2016	Indoor Air
IDEM Adopted Screening Value (via US EPA VI Guidance - June 2015) – October 2015	Subslab Soil Gas (via 0.03 Attenuation Factor)
No Published Reference	Sewer Water, Sewer Gas, Ambient Air

In October 2015, IDEM adopted EPA's residential attenuation factor of 0.03 for the subslab to indoor air pathway, which was published in the EPA VI Guidance dated June 2015. The attenuation factor change is a revision to the attenuation factor of 0.1 published in IDEM's RCG (2012). Therefore this Report and future

reports will utilize the 0.03 attenuation factor when evaluating appropriate VI analytical data.

Where the data indicated that the VI pathway was potentially complete, and where background or ambient air sources were ruled out, ERM compared the indoor air analytical data to the IDEM RCG indoor air screening levels and the indoor air action levels. The indoor air screening levels (e.g. 10^{-5} carcinogenic risk) are conservative, default values published in Table A-6 (2016) of IDEM's RCG. The indoor air action levels are 10X higher (e.g. 10^{-4} carcinogenic risk) than IDEM's indoor air screening levels. As outlined within the IDEM RCG and VRSI, the indoor air action level (e.g. 21 micrograms per cubic meter (ug/m^3) for TCE in indoor air) is the concentration at which a mitigation evaluation is required for the home.

1.4 SAMPLING AND REMEDY DECISION MAKING FRAMEWORK

As discussed within Section 3.0 of the IDEM-approved FOSVI Work Plan, Chemtura proposed to complete residential VI sampling, including paired indoor air and subslab samples, at thirteen homes. The proposed sampling at the thirteen homes included a minimum of two rounds of sampling events, one conducted during "summer conditions" and one conducted during "winter conditions".

Decisions on whether to cease sampling, expand and/or conduct additional sampling, and/or mitigate a residential structure were evaluated based on the results of the VI sampling in conjunction with discussions with the IDEM project manager, Mr. Ken McDaniel. Table 1 within the VRSI presents various scenarios to evaluate paired subslab soil gas/ soil gas and indoor air analytical data to determine the appropriateness of a remedy or mitigation. Note that the VRSI was prepared in the context of soil gas, subslab soil gas, and indoor air, and does not directly address sewer gas or preferential pathways.

Chemtura worked closely with IDEM throughout the sampling activities. The resulting actions for additional sampling and/or mitigation reflect the mutual agreement between IDEM and Chemtura to be conservatively protective of potential human health exposures.

2.0 OFF-SITE VAPOR INTRUSION CONCEPTUAL SITE MODEL

The basis for the off-Site VI conceptual site model (CSM) was initially developed in June 2013 and August 2014 and subsequently reported in the VIER. The off-Site VI CSM consists of VOC-impacted groundwater infiltrating an on-Site sewer line through small cracks in the sewer pipe and migrating off-Site inside the Brookside Parkway sewer ("the Sewer"). TCE is the primary COC in on-Site groundwater as well as within the on-Site sewer. Based on the extent of the residential VI pathway evaluation completed to date, the migration pathway for the TCE in the off-Site buildings was determined to be through the Sewer; because VOCs have not been detected above IDEM Vapor Intrusion Groundwater Screening Levels (VI GWSLs) in any of the groundwater samples collected within the residential area west of the Site, volatilization of groundwater to indoor air was eliminated as a possible pathway. An overview of the sanitary and storm sewers located near the Site, as obtained from the City of Indianapolis' Geographic Information System (GIS) is shown on **Figure 1**. The on-Site sewer flows south and then turns to the west where it connects to the Sewer at Olney Street and Brookside Parkway. **Figure 2** is a map of the Site which depicts the location of the on-Site sewer along with the isoconcentration contours of TCE in shallow groundwater.

Additional VI sampling activities were conducted in the Sewer and soil off-Site to define the extent of impacts in the Sewer and nearby residences. TCE was detected in sewer gas in both the Sewer and the private residential Sewer laterals and indoor plumbing of some nearby homes during the deployment of a set of passive samplers in December 2015. TCE was detected at higher concentrations in the Sewer than in the private residential Sewer laterals and indoor plumbing, indicating that some attenuation was occurring. Residential VI sampling conducted to date has also detected TCE concentrations above the IDEM subslab soil gas screening levels in some homes.

By completing tasks proposed in the IDEM-approved *Sewer Abandonment and Rerouting Work Plan* (May 10, 2016), the suspected VOC source for the off-Site sewer gas to indoor air pathway within the residential area will be eliminated, and as a result, the sewer abandonment is the primary VI mitigation approach.

3.0 RESIDENTIAL VAPOR INTRUSION PRE-SAMPLING ACTIVITES

The residential VI evaluation sampling included the initial sampling events as outlined below along with post-mitigation sampling as described within Section 8.0 of this Report.

Consistent with the OSVI Report dated April 15, 2016, and IDEM's letter dated June 13, 2016, ERM proposed in the July 2016 FOSVI Work Plan to conduct further off-Site residential VI sampling work at the following thirteen residential structures that are directly connected to the Sewer:

- 3326/3328 Brookside Parkway (duplex)
- 3322/3324 Brookside Parkway (duplex)
- 3318 Brookside Parkway
- 3314 Brookside Parkway
- 3310 Brookside Parkway
- 3306 Brookside Parkway
- 3302 Brookside Parkway
- 3224 Brookside Parkway
- 3220/3222 Brookside Parkway (duplex)
- 3218 Brookside Parkway
- 3214 Brookside Parkway
- 3210/3212 Brookside Parkway (duplex)
- 3208 Brookside Parkway

These residences are shown on **Figure 3**. IDEM responded to the FOSVI Work Plan (August 19, 2016 comment letter) that additional residential VI evaluation sampling is required for certain residences not directly connected to the Sewer. These residences are noted below along with IDEM's corresponding reason:

- 1911 Houston Street
  (IDEM's reason: home is adjacent to 3330 and 3336 Brookside Parkway)
- 1915 North Dearborn Street
  (IDEM's reason: home is likely connected to Dearborn Street sewer line which is connected to the Sewer)

As previously communicated to IDEM, Chemtura has already initiated contact with all homeowners of the fifteen residences listed above. The outreach activities are summarized in Sections 3.1 and 3.2 below and generally follow IDEM's guidance document entitled "*Procedures for Gaining Access to Third Party Properties by Participants Performing Investigation or Remediation,*" dated November 13, 2015.

3.1 INITIAL COMMUNICATION AND ACCESS REQUEST

Chemtura contacted the homeowners of the fifteen residences listed above to request access to conduct VI evaluation sampling. Specifically, Chemtura sent a letter to each property owner that explained the current investigation work, addressed the potential for VI, formally requested access to the property, and provided the homeowner with a frequently asked questions (FAQ) summary sheet. The letters were transmitted on the following dates via FedEx with tracking notifications to confirm receipt by the resident:

- April 26, 2016: Access request sent to 3326/3328/3322/3324/3318/3314/3310/3306/3302 Brookside Parkway;
- July 18, 2016: Access request sent to 3224/3220/3222/3218/3214/3210/3212/3208 Brookside Parkway; and
- September 8, 2016: Access request sent to 1911 Houston Street and 1915 North Dearborn Street.

The homeowners were provided a pre-stamped envelope to return the executed access agreement. The IDEM project manager, Mr. Ken McDaniel, was provided copies of each access request letter. An example of the request for access letter that was submitted to each homeowner is provided in **Appendix A**.

3.2 INITIAL RESIDENTIAL PROPERTY INSPECTION

ERM conducted the initial residential property inspections prior to completing vapor intrusion sampling activities. The initial residential property inspection activities included:

- Completing a residential indoor air survey checklist, which is based on IDEM's template within the RCG and includes a preliminary inspection of potential indoor air background sources,
- Drafting home construction layout drawings and noting any concerns that may impact sampling,
- With the homeowners permission, photographing the inside and outside of the residential structure,

- Inspecting plumbing lines, vents, and floor drains, where accessible,
- Selecting subslab and indoor air sampling locations and confirming location approval for each location with the homeowner, and
- Notifying the homeowners to avoid certain activities for approximately 24 hours before and during the sampling that may contribute to the detection of VOCs within the indoor air sample (e.g., smoking, painting, fueling vehicles, etc.).

A copy of the residential indoor air survey checklists completed prior to each residential VI sampling event is provided in **Appendix B**.

As part of the pre-sampling inspections, ERM also contracted a private utility contractor, Bloodhound Underground, Inc. (Bloodhound) to identify and locate the private sewer laterals and any sewer structures present beneath the concrete slabs in the basement. Locations of the residential private laterals beneath the basement slab are included within the residential indoor air survey checklists (**Appendix B**).

4.0 RESIDENTIAL VAPOR INTRUSION EVALUATION SAMPLING

In accordance with the approved FOSVI Work Plan, the VI evaluation sampling included paired subslab and indoor air sampling within the residential structures. In addition, ERM collected sewer water and sewer gas samples within the Sewer to further evaluate the potential sewer gas to indoor air pathway. When possible, the subslab, indoor air, sewer gas, and sewer water samples were collected contemporaneously.

On October 12, 2016, ERM and IDEM discussed via telephone the status of access to the homes to conduct vapor intrusion sampling. Also during that discussion, ERM proposed to suspend the residential VI evaluation sampling considering that i) weather was no longer consistent with "summer" sampling conditions as recommended within the IDEM RCG, and ii) the proposed sewer abandonment and rerouting work was nearing commencement. Within an October 27, 2016 email, IDEM agreed to postpone any further residential VI sampling, with the time caveat that it may need to be restarted if the rerouting project does not proceed. Further details regarding the suspension of residential VI evaluation sampling in relation to the status of the proposed sewer abandonment and rerouting is discussed within Section 13.0 of this Report.

Of the fifteen additional residential structures in which Chemtura requested access to conduct initial VI evaluation sampling, the homes listed below were not sampled for the corresponding reason:

- 3314 Brookside Parkway – Access declined by property owner
- 3310 Brookside Parkway – Homeowner has yet to agree to allow access
- 3306 Brookside Parkway – Access declined by property owner
- 3220 Brookside Parkway – Despite best efforts, unable to schedule sampling during "summer" sampling conditions
- 3218 Brookside Parkway – Despite best efforts, unable to schedule sampling during "summer" sampling conditions
- 3214 Brookside Parkway – Despite best efforts, unable to schedule sampling during "summer" sampling conditions
- 3210 Brookside Parkway – Tenant painted interior of home immediately prior to scheduled sampling event; Despite best efforts, unable to re-schedule sampling during "summer" sampling conditions
- 1911 Houston Street - Homeowner has yet to agree to allow access

- 1915 North Dearborn Street - Homeowner has yet to agree to allow access

Further details regarding the residential VI evaluation sampling activities are provided in the following sections.

4.1 INSTALLATION OF SUBSLAB SOIL GAS PROBES

With the consent of the homeowner, ERM installed one subslab soil gas probe in the concrete basement slab of each home. ERM subcontracted Bloodhound to identify subsurface utilities, including the sewer laterals, present in or near each basement. With homeowner and IDEM approval, ERM installed the subslab probe as close as possible to the sewer lateral identified by Bloodhound.

The subslab soil gas probes were installed using a stainless steel Cox-Colvin Vapor Pin™ within the concrete floor. The Vapor Pins™ were inserted into silicone sleeves prior to insertion in order to create an air tight seal around the sample point. A cap was installed over the top of the Vapor Pin™ to prevent indoor air sources from migrating into the port or debris accumulating inside the hole. Additional details regarding the subslab soil gas probe installation is provided in the standard operating procedure (SOP) provided in **Appendix C**.

4.2 INDOOR AIR SAMPLING

Indoor air was evaluated by collecting one indoor air sample per each level of the home (i.e., basement, 1st floor, 2nd floor, etc.). Indoor air samples were collected next to the subslab port. Summa canister placement within the remaining levels of the home was based on proximity to plumbing infrastructure, including bathrooms, kitchens, or sewer lateral vent pipes. Collecting indoor air samples representative from each level of the home accounts for potential indoor air background sources and discrepancies in the vertical distribution of VOCs. Once the sample location was selected and approved by the homeowner, the Summa canister intake was placed at a typical breathing height, approximately three to four feet above grade. Additionally, the indoor air samples were paired with subslab samples (described in Section 4.3) to accurately evaluate the VI pathway.

Weather information (temperature, barometric pressure, relative humidity, wind speed, and wind direction) and approximate indoor temperature were recorded at the beginning of the sampling event. Field personnel recorded substantial changes to these conditions, if observed, that occurred 24 to 48 hours prior to and during the course of sampling.

Indoor air samples were collected in laboratory-supplied, batch- certified 6 liter (6-L) Summa canisters over a 24-hour period. The indoor air samples were submitted to Pace Analytical (Pace) of Indianapolis, Indiana for the analysis of VOCs listed on **Table 1** using EPA Test Method TO-15. Specific details regarding the indoor air sampling procedures is provided in the SOP in **Appendix C**.

4.3 SUBSLAB SOIL GAS SAMPLING

Subslab soil gas samples were collected by connecting the Vapor Pin™ to the flow controller on the Summa canister using appropriate fittings and connections. Subslab samples were collected in laboratory supplied 6-L Summa canisters over a 24-hour period contemporaneously with the indoor air samples. The subslab samples were submitted to Pace for the analysis of VOCs listed on **Table 1** using EPA Test Method TO-15. Specific details regarding the subslab sampling procedures is provided in the SOP provided in **Appendix C**.

4.4 AMBIENT (OUTDOOR) AIR SAMPLING

An ambient air sample was collected just outside the residence to evaluate outdoor ambient air concentrations present during the indoor air sampling. The purpose for this sampling was to determine if any VOC concentrations in ambient air were biasing the indoor air sample results. The ambient air sample was collected at an upwind location away from any obvious potential emission sources such as automobiles, sewer vents, furnace vents, etc., to the extent practical. Once the sample location was selected, the Summa canister intake was placed at a height of approximately three to four feet above grade, which is a reasonable air mixing range where ambient air could enter a residential structure.

The ambient air sample was collected in a laboratory supplied 6-L Summa canister over a 24-hour period. The ambient air Summa canisters were started prior to the commencement of each indoor air sampling event and shut off prior to the completion of each indoor air sampling event. The ambient air sample was submitted to Pace for the analysis of VOCs listed on **Table 1** using EPA Test Method TO-15. Specific details regarding the ambient air sampling procedures is provided in the SOP in **Appendix C**.

4.5 QUALITY ASSURANCE AND CONTROL – INDOOR AIR & SUBSLAB SAMPLING

As part of the quality assurance and quality control (QA/QC) procedures, ERM collected additional samples to meet the data quality objectives (DQO) outlined in the FOSVI Work Plan. In addition to the ambient air sampling summarized in Section 4.4, the QA/QC program that was implemented included the following samples:

- Leak Testing – appropriate leak testing was conducted using either a shut-in test with helium or a water dam. Procedures for the leak testing are provided within the applicable SOP in **Appendix C**.
- Duplicate Samples – one duplicate of either the sublab or indoor air sample was collected per mobilization.

The QA/QC samples were submitted to Pace for the analysis of VOCs listed on **Table 1** using EPA Test Method TO-15.

5.0 SUMMER 2016 EVENT - RESIDENTIAL VAPOR INTRUSION EVALUATION RESULTS

This section provides a summary of the analytical results obtained during the initial VI evaluation sampling event conducted during the summer sampling season which includes the following homes:

- 3326/3328 Brookside Parkway (duplex)
- 3322/3324 Brookside Parkway (duplex)
- 3318 Brookside Parkway
- 3302 Brookside Parkway
- 3224 Brookside Parkway
- 3222 Brookside Parkway (one unit of duplex)
- 3212 Brookside Parkway (one unit of duplex)
- 3208 Brookside Parkway

Indoor air and subslab analytical results are included on **Table 2** while ambient air analytical results are included within **Table 3**. Subslab, indoor air, and ambient air analytical results for select VOCs for the summer 2016 VI evaluation sampling are shown on **Figure 4**. Laboratory analytical data reports from the summer 2016 sampling event are provided in **Appendix D**. Upon receipt and evaluation of the analytical data, Chemtura and ERM promptly communicated the results to the homeowners and to IDEM. The result communication letters which were transmitted to the property owners are provided in **Appendix E**.

A summary of the analytical results, by media, are included in the following sections.

5.1 ANALYTICAL RESULTS FOR HOMES WITH INDOOR AIR CONCENTRATIONS BELOW SCREENING LEVELS

The residences located at 3212, 3222, and 3224 Brookside Parkway were sampled by ERM between August 18 and 19, 2016, September 28 and 29, 2016, and August 17 and 18, 2016 respectively. VOCs were not detected in the indoor air or subslab soil gas samples at concentrations above IDEM's residential screening levels in any of these locations. As a result, these homes will be resampled during "winter" conditions. If the indoor air and subslab soil gas samples collected during the "winter" sampling event result in concentrations below the respective IDEM residential screening levels, ERM will recommend no further sampling of these homes.

5.2 *ANALYTICAL RESULTS FOR HOMES WITH INDOOR AIR CONCENTRATIONS ABOVE SCREENING LEVELS BUT BELOW ACTION LEVELS*

This section summarizes the subslab, indoor air, and ambient air analytical data from the summer 2016 VI evaluation sampling event where indoor air analytical data were above indoor air screening levels (e.g. 2.1 ug/m^3 for TCE), but below the indoor air action levels (e.g. 21 ug/m^3 for TCE).

5.2.1 *3318 Brookside Parkway*

Two indoor air samples and one subslab soil gas sample were collected between August 17 and 18, 2016. TCE was detected in the basement indoor air sample at a concentration of 3.1 ug/m^3, above IDEM's residential indoor air screening level of 2.1 ug/m^3. TCE was below IDEM's residential screening levels in the subslab soil gas sample as well as the indoor air sample collected from the main floor. TCE was not detected in the ambient air sample above laboratory reporting limits. The analytical data indicates that the vapor intrusion pathway is potentially complete for this home. No other VOCs were detected above IDEM's residential indoor air or subslab screening levels.

5.2.2 *3322 Brookside Parkway*

Two indoor air samples and one subslab soil gas sample were collected between August 10 and 11, 2016. 1,2,4-trimethylbenzene (1,2,4-TMB) was detected in the main floor indoor air sample at a concentration of 9.5 ug/m^3, above IDEM's residential indoor air screening level of 7.3 ug/m^3. However, 1,2,4-TMB was not detected above the laboratory reporting limits in the subslab sample and the concentrations were higher in the main floor sample than within the sewer gas sample collected at nearby Manhole #113265 during the sample period. Based on the distribution the 1,2,4-TMB, the concentrations within the home are potentially from an unidentified indoor air source.

TCE concentrations in the basement indoor air sample (2.5 ug/m^3) and the subslab soil gas sample (98.9 ug/m^3) were detected at concentrations slightly above IDEM's residential indoor air and subslab screening levels (2.1 ug/m^3 and 70 ug/m^3, respectively). Of note, a TCE concentration of 2.5 ug/m^3 was also detected in the ambient air sample collected outside of the home. The TCE concentrations within the indoor air of the home may be associated with ambient air concentrations outside of the home or may indicate that the vapor intrusion pathway is potentially complete for this home. No other VOCs were detected above IDEM's residential indoor air or subslab screening levels.

5.2.3 3324 Brookside Parkway

Two indoor air samples and one subslab soil gas sample were collected between September 22 and 23, 2016. Concentrations of 1,2,4-TMB were slightly above the IDEM residential indoor air screening level of 7.3 ug/m^3 in both the basement (7.9 ug/m^3) and main floor (8.6 ug/m^3) indoor air samples, but the 1,2,4-TMB concentrations were below IDEM's residential screening levels in the subslab sample, indicating a potential indoor air source.

TCE concentrations in the basement indoor air sample and the subslab soil gas sample were detected at concentrations above IDEM's residential screening levels. TCE was detected within the basement and main floor indoor air samples at 10.8 ug/m^3 and 8.8 ug/m^3, respectively, which are both slightly above IDEM's residential indoor air screening level of 2.1 ug/m^3. Of note, a TCE concentration of 3.2 ug/m^3 was also detected in the ambient air sample collected outside of the home. The TCE concentrations within the indoor air of the home may be associated with ambient air concentrations outside of the home and/or may indicate that the vapor intrusion pathway is potentially complete for this home. No other VOCs were detected above IDEM's residential indoor air or subslab screening levels.

5.2.4 3326 Brookside Parkway

Two indoor air samples and one subslab soil gas sample were collected between July 28 and 29, 2016. TCE concentrations within the basement (6.7 ug/m^3) and main floor (2.8 ug/m^3) indoor air samples and the subslab soil gas sample (1,270 ug/m^3) were detected at concentrations above IDEM's residential indoor air and subslab screening levels (2.1 ug/m^3 and 70 ug/m^3, respectively). TCE was not detected in the ambient air sample above laboratory reporting limits. The analytical data indicates that the vapor intrusion pathway is potentially complete for this home. No other VOCs were detected above IDEM's residential indoor air or subslab screening levels.

5.3 ANALYTICAL RESULTS FOR HOMES WITH INDOOR AIR CONCENTRATIONS ABOVE ACTION LEVELS

This section summarizes the analytical results of the summer 2016 VI evaluation sampling event where indoor air analytical data were above indoor air action levels (e.g 21 ug/m^3 for TCE). For each home discussed in this section, ERM installed an air purifying unit (APU) which includes a high-efficiency particulate arrestance (HEPA) filter and activated carbon to remove airborne particles and

VOCs in the indoor air. The APU will continue to operate until i) the on-Site sewer is abandoned and rerouted and ii) indoor air concentrations inside the home return to background concentrations. This proposed approach is consistent with the IDEM letter dated June 13, 2016, and the proposed approach discussed with IDEM on October 12, 2016. Additional information regarding the APU installation details are provided within Section 7.3.

5.3.1 3208 Brookside Parkway

Two indoor air samples and one subslab soil gas sample were collected between September 15 and 16, 2016. TCE concentrations within the basement (36.1 ug/m^3) and main floor (13.3 ug/m^3) indoor air samples and the subslab soil gas sample (110 ug/m^3) were detected at concentrations above IDEM's residential indoor air and subslab screening levels (2.1 ug/m^3 and 70 ug/m^3, respectively). The TCE concentration of 36.1 ug/m^3 within the basement sample was also above the IDEM residential indoor air action level of 21 ug/m^3. TCE was not detected in the ambient air sample above laboratory reporting limits. The analytical data indicates that the vapor intrusion pathway is likely complete for this home. No other VOCs were detected above IDEM's residential indoor air or subslab screening levels.

5.3.2 3302 Brookside Parkway

Three indoor air samples and one subslab soil gas sample were collected between July 28 and 29, 2016. TCE concentrations within the basement (46.7 ug/m^3/42.7 ug/m^3 sample duplicate), main floor (14.9 ug/m^3), and second floor (11.0 ug/m^3) indoor air samples and the subslab soil gas sample (2,510 ug/m^3) were detected at concentrations above IDEM's residential indoor air and subslab screening levels (2.1 ug/m^3 and 70 ug/m^3, respectively). The TCE concentration within the basement and basement duplicate samples (46.7 ug/m^3 and 42.7 ug/m^3) respectively), was also above the IDEM residential indoor air action level of 21 ug/m^3. TCE was not detected in the ambient air sample above laboratory reporting limits. The analytical data indicates that the vapor intrusion pathway is likely complete for this home. No other VOCs were detected above IDEM's residential indoor air or subslab screening levels.

5.3.3 3328 Brookside Parkway

Two indoor air samples and one subslab soil gas sample were collected between August 17 and 18, 2016. Benzene concentrations within the basement (5.0 ug/m^3) and main floor (15.7 ug/m^3) indoor air samples were detected at

concentrations above IDEM's residential indoor air screening level of 3.6 ug/m^3. 1,2,4-TMB concentrations within the basement (44.4 ug/m^3) and main floor (48.1 ug/m^3) indoor air samples were detected at concentrations above IDEM's residential indoor air screening level of 7.3 ug/m^3. The TCE concentrations within the basement (44.4 ug/m^3) and main floor (36.1 ug/m^3) samples were detected above the IDEM residential indoor air action level of 21.0 ug/m^3. TCE, 1,2,4-TMB, and benzene were not detected in the ambient air sample above laboratory reporting limits.

When completing the indoor air building survey checklist, ERM noted gasoline-powered lawn care equipment (lawn mowers) within the basement of the home. Gasoline is known to contain benzene and 1,2,4-TMB (gasoline additive). The subslab samples were all below respective subslab screening levels therefore the benzene and 1,2,4-TMB indoor air concentrations are likely associated with the lawn mowers stored within the home. However, the TCE analytical data indicates that the vapor intrusion pathway is likely complete for this home. No other VOCs were detected above IDEM's residential indoor air or subslab screening levels.

6.0 RESIDENTIAL VAPOR TESTING ACTIVITIES

Indoor air results for TCE and structural features of the impacted residences suggest that the sewer gas may be migrating from the Sewer through the sewer laterals of each home and into indoor plumbing of each residence. Once in the plumbing of the residence, the gas may be emitting to indoor air through cracks, fissures, or joints in the piping. TCE indoor air analytical data indicated that leaky interior plumbing was suspected at 3406, 3346, 3340, 3336, and 3330 Brookside Parkway. As a result, Chemtura contacted these homeowners to request permission to conduct diagnostic vapor testing (sometimes referred to as "smoke testing") to evaluate the plumbing lines to determine if there are any sewer gas leaks. Vapor testing is typically used by plumbers to identify cracks or leaks within residential laterals that may be allowing sewer gas intrusion from public sanitary sewers. As an added measure of community outreach, Chemtura also notified the neighbors of homes that were selected for vapor testing in the event vapor migrated into adjacent homes.

In general, diagnostic vapor testing consisted of a licensed plumber connecting pressurized hoses to various sewer line connections and injecting a non-toxic diagnostic vapor over a period of a few minutes. The product used during the leak testing activities was UltraTraceUV®, which is manufactured by Champion Engineering, Inc. UltraTraceUV® is a non-toxic vapor product used by plumbers to identify plumbing leaks in pipe connections. The Material Safety Data Sheet (MSDS) for the UltraTraceUV® product is provided in **Appendix F**. UltraTraceUV® does not cause staining or leave a residue and is considered a safe product.

During the testing, under ERM oversight, a licensed plumber visually inspected the accessible plumbing connections to determine if the vapor was exiting a plumbing line in the home or yard. Typically, the vapor testing was completed within two to three hours for each residence. Vapor testing was completed for the following homes on the corresponding dates:

- 3406 Brookside Parkway: June 23, 2016
- 3346 Brookside Parkway: June 29, 2016
- 3340 Brookside Parkway: August 19, 2016
- 3336 Brookside Parkway: June 30, 2016
- 3330 Brookside Parkway: June 30, 2016

IDEM was notified in advance of the vapor testing. IDEM personnel Susan Horein and Elisabeth Solchik were onsite on June 23, 2016 to observe the vapor testing within 3406 Brookside Parkway. Results of the vapor testing are included with Section 7.2 of this Report. A photolog of the diagnostic vapor testing activities is provided in **Appendix G**.

7.0 RESIDENTIAL MITIGATION MEASURES

By completing tasks proposed in the IDEM-approved *Sewer Abandonment and Rerouting Work Plan* (May 10, 2016), the suspected VOC source for the off-Site sewer gas to indoor air pathway within the residential area will be eliminated, and as a result, the sewer abandonment and reroute is the primary VI mitigation approach for residences.

Consistent with the IDEM-approved FOSVI Work Plan, the residential TCE vapor intrusion analytical data was compared to the VRSI to evaluate potential mitigation and additional sampling needs. Based on discussions with the IDEM project manager, and in accordance with IDEM's RCG and the EPA VI Guidance, ERM evaluated each home to determine appropriate mitigation measures to reduce TCE indoor air concentrations. The mitigation options identified and implemented by ERM and supported by IDEM's project manager and technical staff include subslab depressurization (SSD), plumbing repairs, and/or the installation of air purifying units as an interim measure.

In IDEM's June 13, 2016 approval letter, IDEM requested that Chemtura implement the sewer abandonment and reroute within 90 days of the final permit approval by Citizens Energy Group and the City of Indianapolis Department of Public Works. As such, IDEM confirmed within an August 19, 2016 comment letter that an interim VI mitigation response is acceptable at homes that exceed the indoor air action levels. Within the August 2016 letter, IDEM presented the acceptable interim responses as "venting the basement and/or crawl space or lowest level of the building by opening windows and running fans, sealing cracks and utility annular spaces in the bottom floor and subsurface walls, enclose and vent sumps, increase indoor air pressurization, the use of portable air purifying units". ERM then evaluated an appropriate interim response at each residence with indoor air concentrations above action levels. The targeted residences did not have sumps, were temperature controlled, did not exhibit cracks in the floors, and did not indicate annular spaces in the utility annular spaces. As a result, IDEM's proposed interim remedial options were limited to either indoor air pressurization or air purifying units. The homes that qualified for interim measures had basements with porous concrete block walls and little to no HVAC air emission vents, thereby rendering indoor air pressurization very challenging and costly to engineer. As such, the air purifying unit was selected as the interim remedial option for residences where indoor air analytical data indicated concentrations above the indoor air action levels as of August 19, 2016 IDEM letter.

The mitigation options discussed in this section constitute interim actions which were planned in parallel with implementation of the proposed long term remedy (sewer abandonment and rerouting) to address the VI migration pathway. A discussion of mitigated homes and the associated mitigation approach is found in the following sections. The mitigation status of homes along Brookside Parkway is shown on **Figure 5**.

7.1 SUBSLAB DEPRESSURIZATION SYSTEM INSTALLATION ACTIVITIES

7.1.1 3330 Brookside Parkway

The SSD system was installed between May 17 and 25, 2016. The Vapor Intrusion Mitigation Report prepared by Protect is provided within **Appendix H** which includes a figure depicting the SSD system layout in the basement of the home. The system consists of three subslab extraction points connected to a single manifold near the eastern basement wall of the home. The piping exits the northern wall of the home, connects to a Radon Away HS5000 fan and subsequently a Schedule 40 PVC riser pipe to approximately 12-inches above the roof line. Additional installation details regarding the pressure field extension and startup testing and a photolog are provided within the Vapor Intrusion Mitigation Report within **Appendix H**.

7.1.2 3336 Brookside Parkway

The SSD system was installed between May 16 and 18, 2016 by Protect Environmental (Protect). The Vapor Intrusion Mitigation Report prepared by Protect is provided as **Appendix H** which includes a figure depicting the SSD system layout in the basement of the home. The system consists of two subslab extraction points connected to a single manifold near the eastern basement wall of the home. The piping exits the eastern wall of the home, connected to a Radon Away RP-265 fan and a Schedule 40 PVC riser pipe to approximately 12-inches above the roof line. Additional installation details regarding the pressure field extension and startup testing and a photolog are provided within the Vapor Intrusion Mitigation Report within **Appendix H**.

7.1.3 3346 Brookside Parkway

The system installed within this home is a combination SSD and submembrane depressurization (SMD) system due to the presence of the crawlspace on the east side of the home. The SSD/SMD was installed during the prior reporting period between December 14 and 17, 2015. However, the final installation report was not completed prior to submittal of the previous IDEM deliverable. Therefore, the Installation Report prepared by Vapor Protection Services is provided as **Appendix H** which includes a figure depicting the SSD/SMD system layout in the basement of the home. Installation details regarding the pressure field extension and startup testing and a photolog are provided within the Installation Report within **Appendix H**.

7.1.4 3340 Brookside Parkway

The system installed within this home is a combination SSD and SMD system due to the presence of the crawlspace on the west side of the home. The SSD/SMD was installed between June 29 and July 1, 2016. The Vapor Intrusion Mitigation Report prepared by Protect is provided as **Appendix H** which includes a figure depicting the SSD/SMD system layout in the basement of the home. Installation details regarding the pressure field extension and startup testing and a photolog are provided within the Vapor Intrusion Mitigation Report within **Appendix H**.

7.2 PLUMBING REPAIRS

As discussed in Section 6.0, vapor testing was conducted within five homes (3406, 3346, 3336, 3340, and 3330 Brookside Parkway) in July and August 2016. A plumbing leak was identified within 3406, 3346, and 3336 Brookside Parkway. For these homes, the plumber marked the location of the leak and ERM notified the resident and established a date and time to return to make the repair. Where plumbing repairs were made, follow-up vapor testing was completed to confirm effectiveness. ERM considered the plumbing repairs as a mitigation measure since the sewer gas to indoor air pathway was interrupted or corrected. As such, these homes were subject to post-mitigation sampling events (discussed in Section 8.0), consistent with the post-mitigation sampling approaches utilized during the installation of the SSD systems.

Plumbing repairs and the associated additional vapor test confirmation were completed for the following homes on the corresponding date:

- 3406 Brookside Parkway: August 18, 2016

- 3346 Brookside Parkway: August 31, 2016
- 3336 Brookside Parkway: August 18, 2016

Vapor testing conducted at 3340 and 3330 Brookside Parkway did not result in an observable leak in the plumbing, and as such, no plumbing repairs were completed for these homes. A photolog of the plumbing repairs for 3406, 3346, and 3336 Brookside Parkway is included within **Appendix G**.

7.3 INSTALLATION OF AIR PURIFYING UNITS

Based on IDEM's August 19, 2016 comment response letter and associated discussions with the IDEM project manager on October 12, 2016, the installation of an APU is acceptable as an interim response at homes that exceed indoor air action levels. The homes that met the criteria for the installation of the APUs included 3328, 3302, and 3208 Brookside Parkway, and APUs were installed on the following dates:

- 3328 Brookside Parkway: December 22, 2016
- 3302 Brookside Parkway: December 16, 2016
- 3208 Brookside Parkway: January 11, 2017

Indoor air results within all other homes where VI sampling was performed were either below indoor air action levels initially (as described within Section 5.0 of this Report) or other mitigation measures were implemented to reduce indoor air concentrations.

A photolog of the APU installation for 3328, 3302, and 3208 Brookside Parkway is included within **Appendix I**. For these homes, ERM rented the AirMedic Pro 5 Plus Vocarb APU from Pine Environmental in Indianapolis, Indiana. This unit is an in-home air filtration device that comes installed with both HEPA filtration and activated carbon. Upon activation, the HEPA filter removes airborne particles such as pollen, dust, and mold from the indoor air while the activated carbon removes VOC impacts that may be present in indoor air. The APU was generally placed in a centralized location within the basement of each home.

The APUs installed at 3328, 3302, and 3208 Brookside Parkway are all currently operational and operate 24 hours per day, 7 days per week. Confirmatory indoor air sampling will be conducted at each of these homes in accordance with the VRSI to ensure that the APU is an effective interim measure to reduce VOCs to below indoor air action levels. The APUs will be operated until after the sewer abandonment and reroute work is completed at which point, ERM will mobilize

to each home, turn off the APU, and retest the indoor air. The APU will remain operational until such time as the remedial measures regarding the Chemtura Site cause volatile organics vapor concentrations in each home to return to normal background levels. At that time, ERM will notify IDEM and the homeowner that the APU can be removed from the residences.

8.0 POST MITIGATION SAMPLING

This section provides a status summary for the homes where post-mitigation VI evaluation sampling was either conducted within the reporting period (February through December 2016) or is proposed which includes the following homes:

- 3330 Brookside Parkway
- 3336 Brookside Parkway
- 3340 Brookside Parkway
- 3346 Brookside Parkway
- 3406 Brookside Parkway

The post-mitigation VI evaluation sampling serves to confirm that the implemented mitigation measures were effective. Indoor air and subslab analytical results are included on **Table 2** while ambient air analytical results are included within **Table 3**. Subslab, indoor air, and ambient air analytical results for TCE for the post-mitigation sampling are shown on **Figure 6**. Additionally, the pre-mitigation sampling results collected prior to the current reporting period are included within **Table 2** and shown on **Figure 6** for reference. Laboratory analytical data reports are provided in **Appendix D**. Upon receipt and evaluation of the analytical data, Chemtura and ERM promptly communicated the results to the homeowners and to IDEM. The result communication letters which were transmitted to the property owners are provided in **Appendix E**.

A summary of the post-mitigation analytical results are included in the following sections.

8.1 3330 BROOKSIDE PARKWAY

After the installation of the SSD (May 2016) and completion of the vapor testing (June 2016), ERM collected the post-mitigation samples August 10 through August 11, 2016. The vapor testing did not identify any leaks in the plumbing.

Concentrations of TCE were detected in the basement and main floor indoor air samples at 3.1 ug/m^3 and 2.7 ug/m^3, respectively, slightly above the residential indoor air screening level of 2.1 ug/m^3. The SSD has significantly reduced the TCE concentrations from the 130 ug/m^3 (basement) and 117 ug/m^3 (main) detected during the January 2016 sampling event. Of note, a TCE concentration was detected in the ambient air sample at a concentration of 2.5 ug/m^3. While the indoor air TCE concentrations were slightly above the residential indoor air

screening level, outdoor ambient air may be contributing to the indoor air quality of this home. No other VOCs were detected above their respective residential indoor air screening level during the August 2016 post mitigation sampling event.

Consistent with discussions with IDEM, additional sampling will be conducted after the on-Site sewer abandonment and reroute is completed as discussed within Section 13.0 of this Report.

8.2 3336 BROOKSIDE PARKWAY

After the installation of the SSD (May 2016) and completion of the plumbing repairs (August 2016), ERM collected the post-mitigation indoor air samples between September 22 and September 23, 2016.

Concentrations of benzene were 4.0 and 3.8 ug/m^3 on the main floor and basement, respectively. The benzene concentrations in the basement were slightly higher as compared to the January 2016 (pre-mitigation) samples collected, and the post-mitigation benzene concentrations on the main floor were similar to the concentrations detected during the January 2016 sampling event. The benzene data indicate an indoor air source, likely from cigarette[1] use inside the home.

Concentrations of TCE were 4.0 and 5.0 ug/m^3 on the main floor and the basement, respectively. While these concentrations are slightly above the residential indoor air screening level, the SSD has significantly reduced the TCE concentrations from the 237 ug/m^3 (main floor) and 1,120 ug/m^3 (basement) in January 2016 prior to the mitigation measures. Consistent with discussions with IDEM, additional sampling will be conducted after the on-Site sewer abandonment and reroute is completed as discussed within Section 13.0 of this Report.

8.3 3340 BROOKSIDE PARKWAY

ERM installed the SSD from June 29 through July 1, 2016 and conducted vapor testing on August 19, 2019. The vapor testing did not indicate any observable leaks in the plumbing. ERM attempted to conduct the post-mitigation sampling

[1] "secondhand smoke contains hundreds of chemicals known to be toxic or carcinogenic, including formaldehyde, benzene, vinyl chloride, arsenic ammonia, and hydrogen cyanide." U.S. Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. 2006.

but was not able to access the home due to personal matters associated with the current tenant. Access was delayed beyond the summer sampling season therefore based on a discussion with IDEM on October 12, 2016, ERM elected to hold off further pursuit of access to this home until winter conditions were present and/or the sewer abandonment was completed. The post-mitigation results from this home will be provided in a future report.

8.4 3346 BROOKSIDE PARKWAY

ERM oversaw installation of the combination SSD/SMD system from December 14 through 17, 2015 and conducted plumbing repairs on August 31, 2016. ERM initially conducted a post-mitigation sampling event after installation of the SSD/SMD system between February 3 and February 4, 2016.

The post-mitigation samples collected in February 2016 were similar to pre-mitigation sampling results collected in September 2015 as TCE was detected within the basement (83.8 ug/m^3), main floor (29.5 ug/m^3), and second floor (25.5 ug/m^3/25.9 ug/m^3 sample duplicate) samples at concentrations above the IDEM residential indoor air action level of 21 ug/m^3. Vapor testing was then conducted as summarized within Section 6.0 and plumbing repairs were implemented on August 31, 2016. ERM then attempted to coordinate the post-mitigation sampling event with the homeowner in early October 2016 but was unable to gain access to the residence to conduct sampling. Consistent with discussions with IDEM, additional sampling was then suspended considering that weather was no longer consistent with "summer" sampling conditions. Therefore, ERM intends to conduct the post-mitigation sampling within this home during the winter (2016/2017) sampling season and the post-mitigation results from this residence will be provided in a future report.

8.5 3406 BROOKSIDE PARKWAY

ERM oversaw vapor testing on June 23, 2016 and completed the necessary plumbing repairs on August 18, 2016. The paired indoor air/subslab post-mitigation sampling was conducted from September 22 to September 23, 2016. The indoor air analytical results were all below respective residential indoor air screening levels indicating that the plumbing repair was effective.

The TCE subslab soil gas concentration was detected at 902 ug/m^3, which is above the residential subslab soil gas screening level of 70 ug/m^3. Of note, ERM and its contractors evaluated measures to reduce subslab soil gas concentrations beneath this home via an active mitigation measure; however, due to the

deteriorating concrete knee wall support and the presence of water in the excavated crawl space, it was determined thatneither SSD or SMD would be effective based on the visual inspection conducted by both Vapor Protection Services and Protect on March 18, 2016.

Additional VI evaluation sampling will be conducted within this home following the sewer abandonment and reroute work.

9.0 OFF-SITE SEWER SAMPLING

9.1 SUMMARY OF SEWER SAMPLING ACTIVITIES

Three off-Site sewer manhole sampling events were conducted in August, September, and October 2016 during the reporting period summarized herein. ERM collected sewer gas and sewer water samples from select manholes as proposed in the IDEM-approved *Sewer Abandonment and Rerouting Work Plan* (May 10, 2016), the IDEM-approved FOSVI Work Plan, and the corresponding response letters from IDEM dated June 13, 2016 and August 19, 2016. The sewer manholes were sampled to further evaluate VI potential in the residential area west of the Site and to establish the sewer water and sewer gas VOC concentrations prior to the abandonment of the on-Site sewer. Consistent with sewer sampling methodologies summarized in the OSVI Report as well as the FOSVI Work Plan, ERM collected sewer water and sewer gas samples concurrently to limit the uncertainties about the mechanisms that may influence partitioning, volatilization, and flow between these media in the sewer.

Due to potential fluctuations of VOC concentrations based on sewer water flow volume, ERM had proposed to conduct sewer sampling events during potential periods of low and high sewer water flow volume (i.e., - dry conditions and wet conditions from snowmelt or precipitation events). Previous data collected from the manholes indicated VOC concentrations of sewer water and sewer gas were significantly lower during periods of high sewer water flow volume (precipitation/snowmelt) compared to those conducted in relatively dry periods. As proposed in the *Sewer Abandonment and Rerouting Work Plan*, dry conditions were considered to be present when less than 0.1 inch of rain occurred within 48 hours of sampling. Wet conditions were considered to be present if greater than 0.25 inches of rainfall occurred within 24 hours of the sampling event. The two dry sampling events were conducted on September 7 and October 5, 2016. The wet condition sampling event was conducted on August 11, 2016.

Figure 7 depicts the location of the sewer manholes discussed herein. Sewer manholes sampled during the August, September, and October 2016 sampling events are listed below along with a description of their location as follows:

- Manhole #113267 – intersection of Olney Street and Brookside Parkway;
- Manhole #113266 – intersection of Adams Street and Brookside Parkway;

- Manhole #113265 – intersection of Houston Street and Brookside Parkway;
- Manhole #113264 – intersection of Lasalle Street and Brookside Parkway;
- Manhole #110111 – intersection of Olney Street and 20th Street; and
- Manhole #110110 – intersection of an alley and 20th Street, between Olney Street and Adams Street.

In its response to the FOSVI Work Plan, IDEM requested that Chemtura sample additional manhole locations as outlined within its August 19, 2016 comment letter. Therefore manholes sampled during the October 7, 2016 event include the following additional manholes:

- Manhole #112035, located in the intersection of North Parker Avenue and Brookside Parkway;
- Manhole #112608 – located in the intersection of North Dearborn Street and the alley north of Brookside Parkway;
- Manhole #113263 – located in the intersection of North Dearborn Street and Brookside Parkway; and
- Manhole #112655 – located in the intersection of Lasalle Street and the alley north of Brookside Parkway.

ERM attempted to sample Manhole #112616 (located in the alley east of Lasalle Street and Manhole #112655) as requested by IDEM in the August 19, 2016 comment response letter, but the manhole could not be located.

9.1.1 Sewer Gas Sampling Methods

ERM collected the sewer gas samples consistent with proposed methods in the IDEM-approved FOSVI Work Plan and OSVI Report. Specific details regarding the sewer gas sampling procedure are provided in the SOP located in **Appendix C** and sewer sampling field forms are included in **Appendix J**. Sewer gas samples were submitted to Pace for analysis of VOCs listed on **Table 1** using EPA Test Method TO-15.

9.1.2 Sewer Water Sampling Methods

ERM collected the sewer water samples consistent with proposed methods in the IDEM-approved FOSVI Work Plan and OSVI Report. At the time of sampling, ERM also measured the sewage water level above the sewer invert where water was present. Additional details regarding the sewer water sampling procedure are provided in the sewer water sampling SOP provided in **Appendix C** and

within the sewer sampling field forms provided in **Appendix J**. Sewer water samples were submitted to Pace for analysis of VOCs listed on **Table 1** using EPA Test Method 8260B.

9.1.3 Quality Assurance and Control – Sewer Sampling

ERM collected samples for QA/QC purposes as proposed in the FOSVI Work Plan. The QA/QC program included:

- Deadhead testing –all canisters were tested prior to sample location to ensure adequate vacuum was maintained and that no leaks were observed in the sample assembly. Procedures for the deadhead testing are provided within the SOPs in **Appendix C**.
- Leak Testing – appropriate leak testing for the sewer gas samples was conducted. Procedures for the leak testing are provided within the applicable SOPs in **Appendix C**.
- Matrix spike/matrix spike duplicate (MS/MSD) – one MS/MSD sample was collected from the sewage water.

9.2 SEWER SAMPLING ANALYTICAL RESULTS

9.2.1 Sewer Gas Analytical Results

A summary of the sewer gas analytical data is provided on **Table 4**. **Figure 7** summarizes the sewer water and sewer gas analytical data for those VOCs that have been historically detected in residential indoor air samples at concentrations above their respective indoor air screening levels. The data on **Table 4** does not include screening criteria since IDEM does not have published screening levels for sewer gas.

TCE concentrations in the sewer gas samples within manholes located along Brookside Parkway did not have a discernable increasing or decreasing concentration pattern during the three sampling events. The highest TCE concentration during the three sampling events occurred at Manhole #113267 (115,000 ug/m^3) during the dry sampling period in October 2016.

Of note, with the exception of tetrachloroethene (PCE), chlorinated VOCs were not detected above laboratory reporting limits at the two manholes located along 20th Street (Manhole #110110 and Manhole #110111). PCE was detected at concentrations slightly above the laboratory reporting limit at Manhole #110110 at concentrations ranging from 2.4 ug/m^3 (October 2016) to 5.1 ug/m^3 (September 2016). Based on the analytical results from the three sampling

events, and the sewer connections to these manholes, the PCE detections are likely from a source not associated with the Site.

9.2.2 Sewer Water Analytical Results

A summary of the sewer water analytical data is provided on **Table 5**. **Figure 7** summarizes the sewer water and sewer gas analytical data for those VOCs that have been historically detected in residential indoor air samples at concentrations above their respective indoor air screening levels. The data on **Table 5** does not include screening criteria since IDEM does not have published screening levels for sewer water.

During each of the three sampling events conducted in August, September, and October 2016, TCE concentrations in sewer water generally decreased downgradient (westward) along the Sewer from Manhole #113267 (Olney Street) to Manhole #112035 (North Parker Avenue).

Chlorinated VOCs were not detected in sewage water at manholes located away from the Brookside Parkway sewer. This includes the manholes located along 20th Street (Manhole #110110 and Manhole #110111), Manhole #112608 located along North Dearborn Street, and Manhole #112655 located along LaSalle Street.

10.0 ON-SITE SEWER SAMPLING

During two separate sampling events conducted on May 18 and June 7, 2016, ERM collected sewer vapor and sewer water samples from storm and sanitary sewers on the Elliot Williams property. The samples were collected from a sanitary lateral and a truck dock (storm) lateral. These sewer laterals will be rerouted to 20th/Olney Streets as part of the proposed Sewer abandonment and reroute. Details of the Sewer abandonment and reroute were previously submitted to IDEM within the *Sewer Abandonment and Rerouting Work Plan* (May 10, 2016) which was subsequently approved by IDEM within a June 13, 2016 response letter.

ERM completed the on-Site sewer sampling effort to evaluate the potential presence of VOCs in sewer gas and sewer water within the on-Site sewer that could migrate to the Manhole #110111 located at 20th and Olney Streets once the sewers are rerouted. In addition, this sampling was appropriate to further evaluate the efficacy of the proposed Sewer reroute activities.

As discussed within the *Sewer Abandonment and Rerouting Work Plan,* abandonment of the on-Site sewer will require the redirection of a single sanitary sewer lateral from the Elliot Williams building and a single drain line from the combined storm water inlets located in the truck dock depression on the north side of the Elliot Williams Building. **Figure 8** shows the location of the on-Site sanitary and storm sewer locations which are proposed to be rerouted to Manhole #110111 at 20th and Olney Streets. The Elliot Williams building had been vacant for a period of approximately thirty days prior to sampling.

10.1 MAY 2016 SANITARY AND STORM SEWER SAMPLING ACTIVITIES

10.1.1 Sanitary Sewer Gas Sampling Methods

As shown on **Figure 8,** the sanitary sewer lateral currently exits the office area of the Elliot Williams building and runs north, then turns to the east and connects to Manhole #1. Upon exiting the building, the sanitary sewer line has two cleanouts within the lateral as identified as Elliot Williams Sanitary Sewer Cleanout #1 (EWSSCO-1) and Elliot Williams Sanitary Sewer Cleanout #2 (EWSSCO-2) on **Figure 8**.

On May 18, 2016, ERM collected sewer gas samples from EWSSCO-1 and EWSSCO-2. To collect the sewer gas samples, Teflon®-lined low density polyethylene tubing (TL-LDPE) tubing was inserted into the sanitary sewer cleanout by drilling a 5/16-inch hole through a Schedule 40 polyvinyl chloride

(PVC) lid. After the tubing was in place, plumbers putty was used to seal the annular space.

The purpose of the sampling was to evaluate VOC vapors within the sanitary line by isolating and purging potential sewer gas VOC impacts associated with Manhole #1. Therefore, prior to sewer gas collection, a six-inch diameter inflatable packer was inserted into the sanitary sewer outfall within Manhole #1 to create a seal.

Sewer gas vapors were then purged from the sanitary line through a third cleanout (identified as Cleanout #3 on **Figure 8).** Field personnel then purged approximately 140 cubic feet (cf) of the air within the sealed portion of the sanitary line using a portable wet-dry vacuum. This volume amounted to approximately twice the calculated volume of the sealed sanitary lateral.

Once the sewer vapors were evacuated and prior to sampling, ERM allowed the sanitary line to equilibrate for a period of one hour. Sanitary sewer gas samples were then collected at EWSSCO-1 and EWSSCO-2 over a period of approximately ten minutes utilizing individually certified one-liter stainless steel Summa canisters.

The Summa canisters were shipped under chain of custody to Pace Analytical Labs in Minneapolis, Minnesota for analysis of the site-specific list of VOCs using EPA method TO-15.

10.1.2 Storm Sewer Gas Sampling Methods

The storm sewer line which is proposed to be rerouted includes storm water catch basins identified as EWCB-West, EWCB-Center, and EWCB-East within the truck dock depression on the north side of the Elliot Williams Building (refer to **Figure 8**). Currently, these catch basins combine into one storm sewer line that enters the Sewer at Manhole #1 which is proposed for abandonment.

On May 18, 2016, ERM collected two storm sewer gas samples from EWCB-East. The first sewer gas sample was collected with a "closed system" scenario where runoff water was present within the storm catch basin. The second sample was collected with an "open system" scenario where the runoff water was evacuated from the catch basin, therefore exposing the sanitary line to ambient air outside of the lateral. A cross-section of the "closed system" storm sewer gas sampling at EWCB-East is shown on **Figure 8.**

Prior to sewer gas collection, a 12-inch diameter inflatable sewer packer was inserted into the storm sewer outfall within Manhole #1, and inflated to create an air tight seal. This packer was used to isolate the storm sewer from Manhole #1. Both of the storm sewer gas samples, identified as EWST-1A and EWST-1B on **Figure 8**, were collected in the same location, approximately where the catch basin drain lines merge. The sewer gas samples were collected by inserting a 3/8 –inch diameter LDPE tubing through a PVC joint which was added to access the storm sewer line at EWCB-East (refer to cross-section on **Figure 8**).

10.1.2.1 Closed System Storm Sewer Gas Sampling Methods

Storm water runoff was initially present within all three catch basins at a level above the lateral inlets (refer to cross-section on **Figure 8**). This water effectively restricts the lateral from encountering ambient air influences and is therefore referred to as a "closed system". Prior to sampling, approximately 280 cf of air was purged from the storm lateral which amounted to approximately twice the calculated volume of the lateral.

Once the sewer vapors were evacuated and prior to sampling, an equilibration period of 1-hour was given to allow for the stabilization of vapors within the storm lateral. After the stabilization period, a storm sewer gas sample was collected over a period of approximately ten minutes utilizing individually certified one-liter stainless steel Summa canisters. The "closed system" storm sewer gas sample is identified as EWST-1A on **Figure 8.**

The Summa canister was shipped under chain of custody to Pace Analytical Labs in Minneapolis, Minnesota for analysis of the site-specific list of VOCs using EPA method TO-15.

10.1.2.2 Open System Storm Sewer Gas Sampling Methods

Once the closed system storm sewer gas sample was collected, a second storm sewer gas sample was collected from the same location but with the catch basins free of runoff water. This sample constitutes an "open system" sample that is considered more representative of daily conditions that would be encountered within the lateral.

Prior to sampling, storm water within the three catch basins was evacuated using a wet-dry vacuum. Approximately 280 cf of air was then purged from the storm lateral which amounted to approximately twice the calculated volume of the lateral.

Once the sewer vapors were evacuated and prior to sampling, an equilibration period of 1-hour was given to allow for the stabilization of vapors within the storm lateral. After the stabilization period, a storm sewer gas sample was collected over a period of approximately ten minutes utilizing individually certified one-liter stainless steel Summa canisters. The "open system" storm sewer gas sample is identified as EWST-1B on **Figure 8.**

The sample canister was shipped under chain of custody to Pace Analytical Labs in Minneapolis, Minnesota for analysis of a site-specific list of VOCs using EPA method TO-15.

10.1.3 Manhole #1 Sewer Gas Sampling Methods

In order to evaluate the potential influence of sewer gas vapor concentrations from Manhole #1 in respect to the sanitary and storm sewer gas sample concentrations, two sewer gas samples were collected at different depths within Manhole #1. The shallow sewer gas sample is identified as MH-1S and the deep sewer gas sample is identified as MH-1D on **Figure 8**. MH-1S was collected at a depth of approximately six feet below grade, a depth approximately located where the storm sewer and sanitary sewer inlets enter Manhole #1. MH-1D was collected near the bottom of Manhole 1, approximately nine inches above the invert of the sewer at a depth of approximately thirteen feet below grade.

Both the shallow and deep sewer gas samples were collected by opening the sewer manhole lid approximately three inches, and lowering T-LDPE tubing attached to an extendable pole into the manhole. The lid was opened as little as practicable to minimize the ambient influence.

Air was purged from the sampling assembly and individually certified one-liter stainless steel Summa vacuum canisters were attached to the preinstalled sample tubing. The sewer gas samples were collected over a period of approximately ten minutes at each location. The sample canisters were shipped under chain of custody to Pace Analytical Labs in Minneapolis, Minnesota for analysis of a site-specific list of VOCs using EPA method TO-15.

10.1.4 Catch Basin and Manhole #1 Sewer Water Sampling Methods

Sewer water samples were collected from each of the three storm water catch basins (EWCB-West, EWCB-Center, and EWCB-East) located within the truck loading dock and a sewer water sample was collected from Manhole #1. Each of the sewer water samples was collected by removing the storm grate or manhole cover and collecting a sample of the water using a Teflon cup affixed to a pole.

The sample cup was decontaminated prior to sample collection at each location using a solution of potable water and Alconox detergent, which was followed by a potable water rinse. The water was transferred from the cup to the laboratory supplied sample bottles and placed on ice.

The samples were transported to Pace Analytical Laboratory in Indianapolis, Indiana under chain-of-custody, for analysis of a site-specific list of VOCs using EPA method 8260.

10.1.5 Sanitary Sewer Water Sampling Methods

Two sanitary sewer water samples were collected from EWSSCO-1 and EWSSCO-2. The Elliot Williams building had been vacant for a period of at least thirty days prior to sampling, so the sanitary sewer contained no sewer water. Therefore ERM accessed the building and turned on six sink faucets, within the office and warehouse areas, to establish adequate flow within the sanitary sewer to collect a sewer water sample. Location of the sink faucets in relation to sanitary lateral is shown on **Figure 8.**

A dedicated length of T-LDPE tubing was lowered into the open sewer cleanouts and a peristaltic pump was used to extract water from the sanitary sewer to transfer it to the laboratory-provided containers. After the samples were collected, the water faucets within the Elliot Williams building were shut off, and the cleanout caps were reinstalled.

The samples were transported to Pace Analytical Laboratory in Indianapolis, Indiana under chain-of-custody, for analysis of a site-specific list of VOCs using EPA method 8260.

10.2 MAY 2016 STORM AND SANITARY SEWER ANALYTICAL RESULTS

Sewer gas and sewer water analytical data is listed on **Table 4** and **Table 5**, respectively. **Figure 8** depicts the sanitary sewer and storm sewer location sampling points with the corresponding analytical results. A summary of the May 2016 analytical results, by media, are included in the following sections.

10.2.1 Sewer Gas Analytical Results

Six on-Site sewer gas samples were collected during the May 18, 2016 sampling event. As shown on **Figure 8**, TCE was detected at five of the six sewer gas sample locations as follows:

- EWSSCO-1 (sanitary sewer cleanout): 281 ug/m^3
- EWSSCO-2 (sanitary sewer cleanout): 201 ug/m^3
- EWST-1A ("closed system"- east storm water catch basin): 1.9 ug/m^3
- EWST-1B ("open system"- east storm water catch basin): Not detected (ND)
- MH-1S (Manhole #1 - shallow): 4.6 ug/m^3
- MH-1D (Manhole #1 - deep): 52 ug/m^3

As noted above, the highest TCE concentrations were located within the six-inch sanitary lateral. The sanitary lateral flows from the Elliot Williams building to Manhole #1 and TCE sewer gas concentrations then dissipate at Manhole #1 as evidenced by the shallow and deep sewer gas samples collected within the manhole.

10.2.1 Sewer Water Analytical Results

Six on-Site sewer water samples were collected during the May 18, 2016 sampling event. As shown on **Figure 8**, TCE was detected at only one of the six sewer water sample locations as follows:

- EWSSCO-1 (sanitary sewer cleanout): ND
- EWSSCO-2 (sanitary sewer cleanout): ND
- EWCB-West (west storm water catch basin): ND
- EWCB-Center (center storm water catch basin): ND
- EWCB-East (east storm water catch basin): ND
- Manhole #1 - deep: 106 ug/m^3

As noted above, TCE was not detected at all of the five locations which are proposed to be rerouted to Manhole #110111 located at 20th and Olney Streets. The TCE sewer water concentration detected at Manhole #1 is similar to historical concentrations detected at Manhole #1 (refer to **Table 5**).

10.3 JUNE 2016 SANITARY SEWER SAMPLING ACTIVITIES

On June 7, 2016, sewer gas and sewer water samples were collected from the on-Site sanitary sewer lateral and Manhole #1 to confirm the results of the May 18, 2016 sampling event.

10.3.1 Sanitary Sewer Gas Sampling Methods

Sanitary sewer gas samples were collected from the two cleanouts (EWSSCO-1 and EWSSCO-2) that were sampled previously during the May 2016 sampling event. Sample collection methods for the June 2016 sampling event were similar to the methods for the May 2016 sampling event as described in Section 10.1.1, with the exception of the purging procedure. During the June 2016 sampling event, no sewer gas within the line was purged after the sample tubing and packer were emplaced.

10.3.2 Manhole #1 Sewer Gas Sampling Methods

Two sewer gas samples were collected at MH-1S (shallow) and MH-1D (deep). The sample locations and procedures were similar to the methodologies as discussed in Section 10.1.3.

10.4 JUNE 2016 SANITARY SEWER ANALYTICAL RESULTS

Sewer gas and sewer water analytical data is listed on **Table 4** and **Table 5**, respectively. **Figure 8** depicts the sanitary sewer and storm sewer location sampling points with the corresponding analytical results. A summary of the June 2016 analytical results, by media, are included in the following sections.

10.4.1 Sewer Gas Analytical Results

Four on-Site sewer gas samples were collected during the June 7, 2016 sampling event. As shown on **Figure 8**, TCE was detected at all four sewer gas sample locations as follows:

- EWSSCO-1 (sanitary sewer cleanout): 1,320 ug/m^3
- EWSSCO-2 (sanitary sewer cleanout): 1,580 ug/m^3
- MH-1S (Manhole #1 - shallow): 10.5 ug/m^3
- MH-1D (Manhole #1 - deep): 43.7 ug/m^3

As noted above and similar to the May 2016 sampling event, the highest TCE concentrations were located within the six-inch sanitary lateral and concentrations then dissipate at Manhole #1 as evidenced by the shallow and deep sewer gas samples collected within the manhole.

10.4.2 Sewer Water Analytical Results

Three on-Site sewer water samples were collected during the June 7, 2016 sampling event. As shown on **Figure 8**, TCE was detected at one of the three sewer water sample locations as follows:

- EWSSCO-1 (sanitary sewer cleanout): ND
- EWSSCO-2 (sanitary sewer cleanout): ND
- Manhole #1 - deep: 54.8 ug/m^3

As noted above and similar to the May 2016 sampling event, TCE was only detected in sewer water at Manhole #1 is similar to historical concentrations detected at the manhole (refer to **Table 5**).

10.5 ON-SITE SEWER SAMPLING SUMMARY AND SEWER ABANDONMENT AND REROUTING MODIFICATIONS

Concentrations of TCE were detected in some sewer water and sewer gas samples during the on-Site sewer sampling. The *Sewer Abandonment and Rerouting Work Plan* dated May 15, 2016 included detailed specifications regarding the abandonment and reroute of the on-Site sewer to prevent VOC source migration to the Brookside Parkway sewer. The specifications have since been updated to take into account the results of the on-Site sewer sampling. The revised specifications include replacement of an additional segment of the on-Site sanitary sewer lateral to restrict potential VOC soil gas from infiltrating the sewer lateral which will be rerouted to Manhole #110111 at 20th and Olney Streets as part of the sewer abandonment and rerouting.

11.0 WINTER 2016 ELLIOTT WILLIAMS BUILDING VAPOR INTRUSION EVALUATION SAMPLING

The Elliot Williams building is an unoccupied commercial/industrial building located within the southwestern section of the Site. The Elliott Williams building location is shown on **Figure 2**.

ERM conducted the winter vapor intrusion evaluation sampling event of the Elliot Williams building on February 29, 2016. The previous summer vapor intrusion evaluation sampling event was conducted on May 29, 2014 as previously reported within the VIER (November 2014). Analytical results of the May 2014 (summer) and February 2016 (winter) vapor intrusion evaluation sampling event of the Elliot Williams building are listed on **Table 6** and shown on **Figure 9**. The laboratory analytical report for the indoor air and subslab samples is included within **Appendix D**.

11.1 SUMMARY OF SAMPLING ACTIVITIES

On February 15, 2016, ERM mobilized to the Elliott Williams building and completed a preliminary indoor air building survey checklist and assessed and repaired the existing subslab sample ports, as necessary. The completed indoor air building survey checklist is included within **Appendix K**.

ERM collected seven subslab soil gas samples (SS-1 through SS-7), seven indoor air samples (IA-1 through IA-7), and one duplicate indoor air sample over approximately 8-hours on February 29, 2016. The duplicate indoor air sample was collected at indoor air sample location IA-6. The indoor air and subslab samples were submitted under chain of custody to Pace Analytical in Minneapolis, Minnesota for analysis using US EPA Test Method TO-15.

11.2 VAPOR INTRUSION EVALUATION ANALYTICAL DATA RESULTS

TCE was detected above IDEM's commercial/industrial indoor air screening level of 8.8 ug/m^3 (but below the IDEM commercial /industrial indoor air action level of 88 ug/m^3) in six of the seven indoor air samples collected during the winter sampling event at concentrations ranging from 10.4 ug/m^3 (IA-7) to 32.9 ug/m^3 (IA-3). TCE was detected above IDEM's commercial/industrial subslab screening level of 880 ug/m^3 at two of the seven subslab sample locations at concentrations of 1,120 ug/m^3 at SS-5 and 14,500 ug/m^3 at SS-3. Of note, subslab samples SS-3 and SS-5 are located directly above the on-Site sewer which is proposed for abandonment.

No other VOCs were detected above their respective indoor air or subslab soil gas screening levels during the winter sampling event.

11.3 PROPOSED MITIGATION MEASURES

ERM has collected two rounds of paired indoor air/subslab samples during summer and winter sampling conditions. All analytical results are below IDEM commercial / industrial indoor air action levels therefore, Chemtura's proposed remedy for the Elliott Williams building is the abandonment of the on-Site sewer. As shown on **Figure 9**, Manhole #3 is located within the interior of the Elliot Williams Building. The highest indoor air and sublsab analytical results were detected next to Manhole #3 which will be abandoned as part of the proposed sewer abandonment and reroute. By abandoning the on-Site sewer, the sewer gas to indoor air pathway will be eliminated. Upon completion of the sewer abandonment and reroute, ERM will collect post-mitigation paired subslab/indoor air samples to further evaluate indoor air concentrations within the Elliot Williams building post-abandonment.

12.0 SUMMARY OF FINDINGS

A summary of the findings of the VI evaluation activities completed from February 2016 through December 2016 is as follows:

Residential Vapor Intrusion Evaluation Activities

- Initial VI evaluation sampling was conducted within ten residences during the reporting period.
  - VOCs were not detected in the indoor air or subslab soil gas samples at concentrations above IDEM's residential screening levels at three residences (3212, 3222, and 3224 Brookside Parkway).
  - Benzene, 1.2.4-TMB, and/or TCE was detected above IDEM's residential indoor air screening levels (below IDEM residential indoor air action levels) at four residences (3318, 3322, 3324, and 3326 Brookside Parkway). The sewer abandonment and rerouting is the proposed final mitigation measure for these residences.
    - The TCE concentrations in ambient outdoor air concentrations may have contributed to indoor air concentrations detected within 3322 and 3324 Brookside Parkway.
    - The 1,2,4-TMB concentrations within 3322 and 3324 Brookside Parkway are potentially from an indoor air source.
  - TCE was detected above IDEM's residential indoor air action level at three residences (3208, 3302, and 3328 Brookside Parkway) and APUs are currently operating within these residences as an interim mitigation measure. Post-mitigation sampling will be conducted at these residences. In addition, these residences will be resampled upon completion of the sewer abandonment and rerouting work.
- Post-mitigation indoor air samples were collected at five residences during the reporting period.
  - Post-mitigation indoor air concentrations significantly decreased at 3330, 3336, 3340, and 3406 Brookside Parkway.
    - TCE was detected above IDEM's residential indoor air screening level in the ambient outdoor air samples collected during the residential indoor air sampling at 3330 Brookside Parkway. The TCE concentrations in ambient outdoor air concentrations may have contributed to indoor air concentrations detected within this residences.
  - Post-mitigation indoor air samples collected at 3346 Brookside Parkway were similar to pre-mitigation analytical results. As a

result, ERM completed vapor testing and plumbing repairs. Additional post-mitigation sampling is proposed in this residence.

- Four residences currently have operational SMD and/or SSD systems. These residences are located at 3330, 3336, 3340, and 3346 Brookside Parkway. Residences with SMD and/or SSD systems will be resampled upon completion of the sewer abandonment and rerouting work.
- Vapor testing was completed at five residences during the reporting period.
    - The vapor testing identified plumbing leaks and plumbing repairs were conducted at three residences located at 3336, 3346, and 3406 Brookside Parkway.
    - Plumbing leaks were not identified during the vapor testing completed at 3330 and 3340 Brookside Parkway.

Off-Site Sewer Sampling Activities

- Three off-Site sewer sampling events were conducted in August, September, and October 2016. Sewer gas and sewer water samples were collected from manholes during dry sampling conditions (September and October 2016) and wet sampling conditions (August 2016).
- Chlorinated VOCs were not detected in sewage water at manholes located away from the Brookside Parkway sewer during any of the three sampling events completed in August, September, and October 2016. This includes the manholes located along 20th Street (Manhole #110110 and Manhole #110111), Manhole #112608 located along North Dearborn Street, and Manhole #112655 located along LaSalle Street.
- With the exception of PCE, chlorinated VOCs were not detected in sewer gas at the two manholes located along 20th Street (Manhole #110110 and Manhole #110111). PCE was detected at concentrations slightly above the laboratory reporting limit at Manhole #110110 at concentrations ranging from 2.4 ug/m^3 (October 2016) to 5.1 ug/m^3 (September 2016). Based on the current sewer connections at these manholes, these PCE concentrations are likely from a source not associated with the Site.

On-Site Sewer Sampling

- Sewer gas samples at Manhole #1, the sanitary lateral, and storm sewer piping contained concentrations of TCE above the laboratory reporting limits.

- TCE sewer gas concentrations collected at Manhole #1 were higher in samples collected immediately above the sewer water (MH-1D) than the shallow sample (MH-1S).
- Sewer water samples were collected at Manhole #1, a sanitary lateral, and storm sewer piping. The sewage water sample collected from Manhole #1 contained detections of TCE whereas the sanitary later and storm sewer piping did not contain VOCs above laboratory reporting limits.

Elliot Williams Building Vapor Intrusion Sampling

- TCE was detected in two of the seven subslab soil gas samples at concentrations greater than IDEM's commercial / industrial subslab screening level. Both subslab soil gas sample locations (SS-3 and SS-5) are located directly above the subsurface Sewer.
- TCE was detected above the IDEM commercial/industrial indoor air screening level in six of the seven indoor air samples collected at concentrations ranging from 10.4 ug/m^3 (IA-7) to 32.9 ug/m^3 (IA-3).
- All indoor air analytical results are below IDEM commercial / industrial indoor air action levels therefore ERM's proposed remedy for the Elliott Williams building is the abandonment of the on-Site sewer. The building is also currently unoccupied.

13.0 FUTURE ACTIONS

A summary of the future proposed actions is as follows:

- ERM has executed an access agreement with the current property owner of the Elliot Williams parcel to proceed with the sewer abandonment and reroute work. ERM will be finalizing a schedule for work and providing it to IDEM as soon as it is finalized.
- ERM will complete the IDEM-approved post mitigation sewer sampling upon completion of the sewer abandonment and reroute as summarized in Section 5.2 of the *Sewer Abandonment and Reroute Work Plan* dated May 10, 2016.
- Upon completion of the sewer abandonment and reroute work, ERM will prepare and submit a report with final drawings of the new sewer layout.
- ERM will establish contact with the homeowner at 3340 Brookside Parkway to gain access and conduct the post-mitigation sampling upon completion of the sewer abandonment activities.
- In January 2017, ERM will begin coordinating dates to complete the post mitigation sampling work at the three homes where an APU has been installed (3208, 3302, and 3328 Brookside Parkway).
- ERM will complete the annual SSD inspections for system currently operating at 3330, 3336, 3340, and 3346 Brookside Parkway.

Figures

Note:
Image created using City of Indianapolis Map Viewer

ERM

Figure 1

Sewer Location Map Near Chemtura Site

3500 E 20th Street, Indianapolis, IN

SITE MAP AND TCE IN GROUNDWATER ISOCONCENTRATION MAP

NOTES:
1. TCE = TRICHLOROETHENE
2. ug/L = MICROGRAMS PER LITER
3. THE SEPTEMBER 2016 SAMPLE EVENT AND/OR THE MOST RECENT DATA FROM EACH MONITORING WELL OR DISCRETE BORING WAS USED TO CONSTRUCT THIS MAP

CADD Review: RMK	ERM®	CHEMTURA SITE 3500 EAST 20TH STREET INDIANAPOLIS, INDIANA	CHK'D BY: AA
DRAWN BY: GML			0368504
Date Drawn/Rev'd: 6/27/13–10/19/15		Environmental Resources Management	FIGURE 2

VAPOR INTRUSION SAMPLE LOCATIONS

LEGEND

- MW-1 MONITORING WELL LOCATION
- SEWER MANHOLE
- SOIL GAS SAMPLE PORT LOCATION
- COMBINED SANITARY/STORM SEWER WITH MANHOLE
- SEWER LATERAL
- WATER LINE (APPROXIMATE)
- FENCE

0 60 120
SCALE (IN FEET)

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http://maps.indy.gov/MapIndy/

Rev.	Date	Description	By	Chk
DRAWN BY: GML	CADD Review: RMK	CHECKED BY: AF		

Environmental Resources Management

ERM

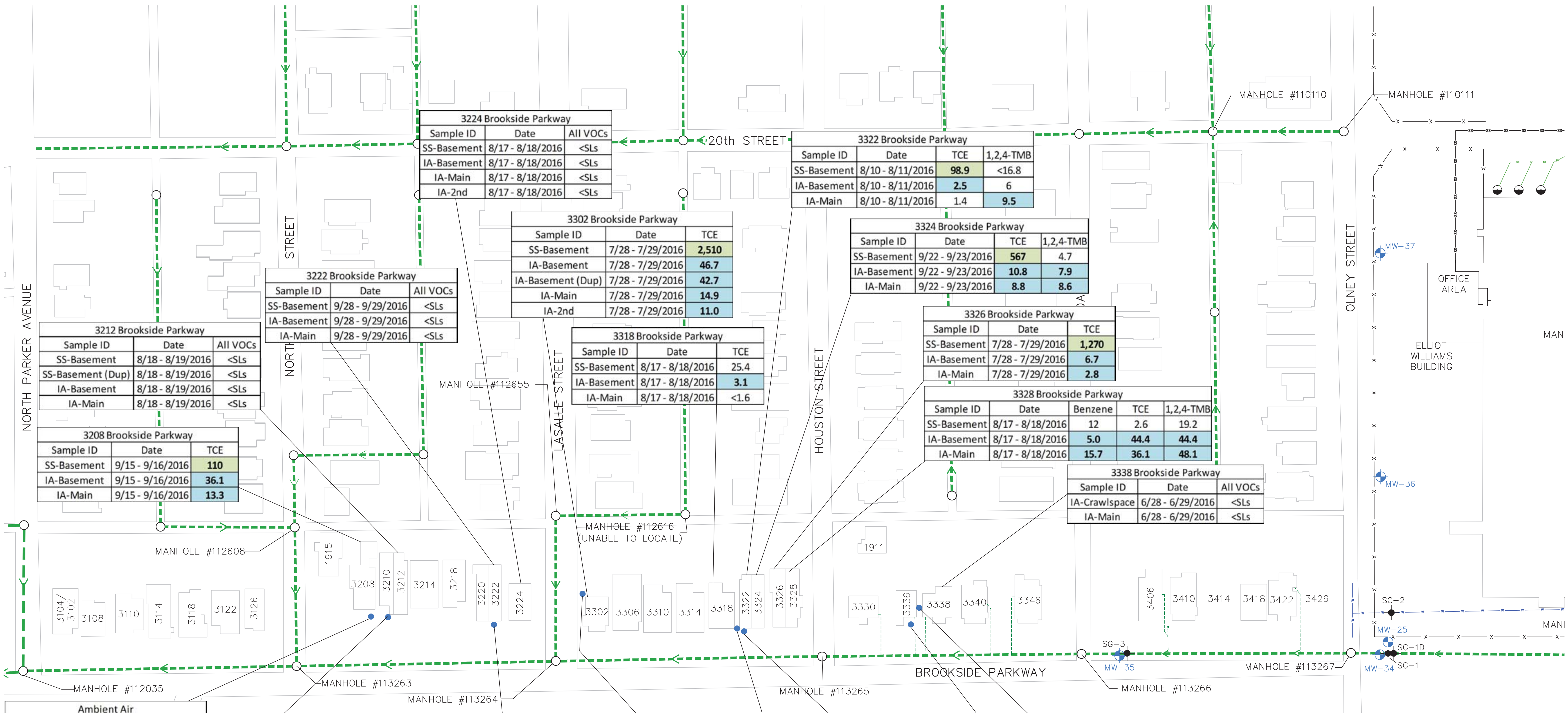
CHEMTURA SITE

3500 EAST 20TH STREET

SCALE	PROJECT NUMBER	SHEET	REV.
AS NOTED	0330870	FIGURE 3	
DATE: 11/24/16			

REVISIONS TO BE MADE ON THE CADD FILE ONLY

SUMMER 2016 VAPOR INTRUSION EVALUATION ANALYTICAL RESULTS



3224 Brookside Parkway

Sample ID	Date	All VOCs
SS-Basement	8/17 - 8/18/2016	<SLs
IA-Basement	8/17 - 8/18/2016	<SLs
IA-Main	8/17 - 8/18/2016	<SLs
IA-2nd	8/17 - 8/18/2016	<SLs

3322 Brookside Parkway

Sample ID	Date	TCE	1,2,4-TMB
SS-Basement	8/10 - 8/11/2016	**98.9**	<16.8
IA-Basement	8/10 - 8/11/2016	**2.5**	6
IA-Main	8/10 - 8/11/2016	1.4	**9.5**

3302 Brookside Parkway

Sample ID	Date	TCE
SS-Basement	7/28 - 7/29/2016	**2,510**
IA-Basement	7/28 - 7/29/2016	**46.7**
IA-Basement (Dup)	7/28 - 7/29/2016	**42.7**
IA-Main	7/28 - 7/29/2016	**14.9**
IA-2nd	7/28 - 7/29/2016	**11.0**

3324 Brookside Parkway

Sample ID	Date	TCE	1,2,4-TMB
SS-Basement	9/22 - 9/23/2016	**567**	4.7
IA-Basement	9/22 - 9/23/2016	**10.8**	**7.9**
IA-Main	9/22 - 9/23/2016	**8.8**	**8.6**

3222 Brookside Parkway

Sample ID	Date	All VOCs
SS-Basement	9/28 - 9/29/2016	<SLs
IA-Basement	9/28 - 9/29/2016	<SLs
IA-Main	9/28 - 9/29/2016	<SLs

3326 Brookside Parkway

Sample ID	Date	TCE
SS-Basement	7/28 - 7/29/2016	**1,270**
IA-Basement	7/28 - 7/29/2016	**6.7**
IA-Main	7/28 - 7/29/2016	**2.8**

3212 Brookside Parkway

Sample ID	Date	All VOCs
SS-Basement	8/18 - 8/19/2016	<SLs
SS-Basement (Dup)	8/18 - 8/19/2016	<SLs
IA-Basement	8/18 - 8/19/2016	<SLs
IA-Main	8/18 - 8/19/2016	<SLs

3318 Brookside Parkway

Sample ID	Date	TCE
SS-Basement	8/17 - 8/18/2016	25.4
IA-Basement	8/17 - 8/18/2016	**3.1**
IA-Main	8/17 - 8/18/2016	<1.6

3328 Brookside Parkway

Sample ID	Date	Benzene	TCE	1,2,4-TMB
SS-Basement	8/17 - 8/18/2016	12	2.6	19.2
IA-Basement	8/17 - 8/18/2016	**5.0**	**44.4**	**44.4**
IA-Main	8/17 - 8/18/2016	**15.7**	**36.1**	**48.1**

3208 Brookside Parkway

Sample ID	Date	TCE
SS-Basement	9/15 - 9/16/2016	**110**
IA-Basement	9/15 - 9/16/2016	**36.1**
IA-Main	9/15 - 9/16/2016	**13.3**

3338 Brookside Parkway

Sample ID	Date	All VOCs
IA-Crawlspace	6/28 - 6/29/2016	<SLs
IA-Main	6/28 - 6/29/2016	<SLs

Ambient Air

Sample ID	Date	All VOCs
AA-1	9/15 - 9/16/2016	<SLs

Ambient Air

Sample ID	Date	All VOCs
AA-1	8/18 - 8/19/2016	<SLs

Ambient Air

Sample ID	Date	All VOCs
AA-1	9/28 - 9/29/2016	<SLs

Ambient Air

Sample ID	Date	All VOCs
AA-1	7/28 - 7/29/2016	<SLs

Ambient Air

Sample ID	Date	TCE
AA-1	8/10 - 8/11/2016	**2.5**

Ambient Air

Sample ID	Date	TCE
AA-1	6/28 - 6/29/2016	**16**

Ambient Air

Sample ID	Date	All VOCs
AA-1	8/17 - 8/18/2016	<SLs

Ambient Air

Sample ID	Date	TCE
AA-1	9/22 - 9/23/2016	**3.2**

LEGEND

- MW-1 MONITORING WELL LOCATION
- AMBIENT AIR SAMPLE LOCATION
- SOIL GAS SAMPLE PORT LOCATION
- COMBINED SANITARY/STORM SEWER WITH MANHOLE
- SEWER LATERAL
- WATER LINE (APPROXIMATE)
- FENCE

DEFINITIONS

RCG= Indiana Department of Environmental Management Remediation Closure Guide - March 22, 2012 (Updated March 2016).
IA= Indoor Air Sample
SS= Subslab Soil Gas Sample
AA= Ambient Air Sample
Dup= Duplicate sample collected at this location
Main= Main Floor
2nd= Second Floor
TCE= Trichloroethylene
1,2,4-TMB = 1,2,4-Trimethylbenzene
SLs = Screeing Levels
VOCs = Volatile Organic Compounds
Concentrations highlighted in blue exceed the Residential Indoor Air Screening Level (IDEM RCG - March 2016)
Concentrations highlighted in green exceed the Residential Subslab Soil Gas Screening Level (IDEM RCG - March 2016)
All analytical results shown in micrograms per cubic meter (ug/m^3)

0 60 120
SCALE (IN FEET)

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http://maps.indy.gov/MapIndy/

Rev.	Date	Description	By	Chk
1	3/17/16	VAPOR INTRUSION SAMPLING LOCATION	GML	AF

DRAWN BY GML CADD Review RMK CHECKED BY AF

Environmental Resources Management

ERM®

CHEMTURA SITE

3500 EAST 20TH STREET

SCALE AS NOTED | DATE 06/10/15 | PROJECT NUMBER 0330870 | SHEET FIGURE 4 | REV.

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MITIGATION STATUS OF HOMES ON BROOKSIDE PARKWAY

LEGEND

ACCESS DECLINED

HOME HAS VAPOR MITIGATION SYSTEM (SUBMEMBRANE AND/OR SUBSLAB DEPRESSURIZATION SYSTEM)

HOME HAS RECEIVED AN AIR PURIFICATION UNIT

HOME HAS RECEIVED PLUMBING CORRECTIONS

0 60 120
SCALE (IN FEET)

N

http://maps.indy.gov/MapIndy/

REVISIONS TO BE MADE ON THE CADD FILE ONLY

Rev.	Date	Description	By	Chk
DRAWN BY GML	CADD Review RMK	CHECKED BY AF		

Environmental Resources Management

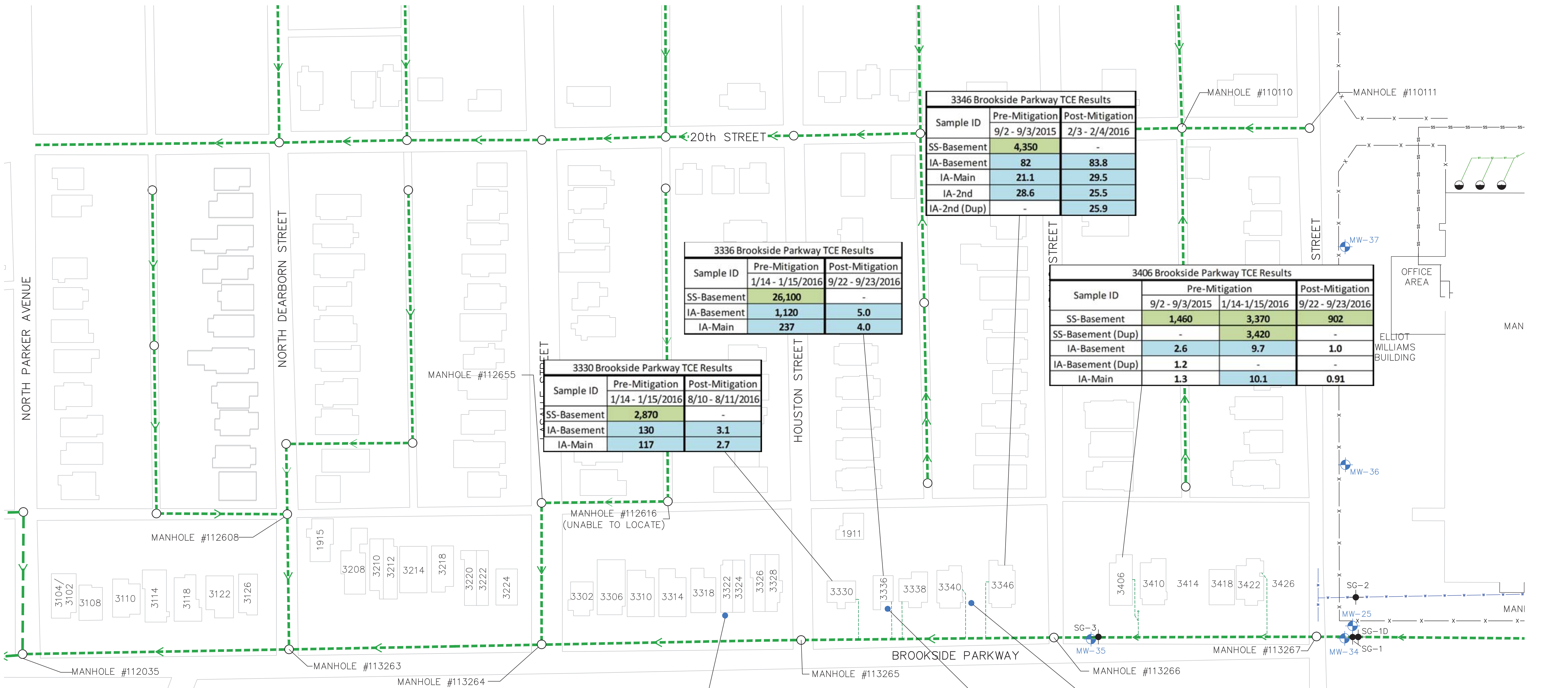
ERM

CHEMTURA SITE

3500 EAST 20TH STREET

SCALE	PROJECT NUMBER	SHEET	REV.
AS NOTED	0368504	FIGURE 5	
DATE 11/24/16			

PRE– AND POST–MITIGATION VAPOR INTRUSION ANALYTICAL RESULTS (TCE)



3346 Brookside Parkway TCE Results		
Sample ID	Pre-Mitigation	Post-Mitigation
	9/2 - 9/3/2015	2/3 - 2/4/2016
SS-Basement	4,350	-
IA-Basement	82	83.8
IA-Main	21.1	29.5
IA-2nd	28.6	25.5
IA-2nd (Dup)	-	25.9

3336 Brookside Parkway TCE Results		
Sample ID	Pre-Mitigation	Post-Mitigation
	1/14 - 1/15/2016	9/22 - 9/23/2016
SS-Basement	26,100	-
IA-Basement	1,120	5.0
IA-Main	237	4.0

3406 Brookside Parkway TCE Results			
Sample ID	Pre-Mitigation		Post-Mitigation
	9/2 - 9/3/2015	1/14 - 1/15/2016	9/22 - 9/23/2016
SS-Basement	1,460	3,370	902
SS-Basement (Dup)	-	3,420	-
IA-Basement	2.6	9.7	1.0
IA-Basement (Dup)	1.2	-	-
IA-Main	1.3	10.1	0.91

3330 Brookside Parkway TCE Results		
Sample ID	Pre-Mitigation	Post-Mitigation
	1/14 - 1/15/2016	8/10 - 8/11/2016
SS-Basement	2,870	-
IA-Basement	130	3.1
IA-Main	117	2.7

Ambient Air		
Sample ID	Date	TCE
AA-1	8/10 - 8/11/2016	2.5

Ambient Air		
Sample ID	Date	All VOCs
AA-1	2/3 - 2/4/2016	<SLs

Ambient Air		
Sample ID	Date	TCE
AA-1	9/22 - 9/23/2016	3.2

LEGEND

- MW–1 MONITORING WELL LOCATION
- AMBIENT AIR SAMPLE LOCATION
- SOIL GAS SAMPLE PORT LOCATION
- COMBINED SANITARY/STORM SEWER WITH MANHOLE
- SEWER LATERAL
- WATER LINE (APPROXIMATE)
- FENCE

DEFINITIONS

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TCE= Trichloroethylene
Concentrations highlighted in blue exceed the Residential Indoor Air Screening Level (IDEM RCG - March 2016)
Concentrations highlighted in green exceed the Residential Subslab Soil Gas Screening Level (IDEM RCG - March 2016)
All analytical results shown in micrograms per cubic meter (ug/m^3)

0 60 120
SCALE (IN FEET)

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http://maps.indy.gov/MapIndy/

Rev.	Date	Description	By	Chk
1	3/17/16	VAPOR INTRUSION SAMPLING LOCATION	GML	AF

DRAWN BY GML | CADD Review RMK | CHECKED BY AF

Environmental Resources Management

ERM

CHEMTURA SITE

3500 EAST 20TH STREET

SCALE AS NOTED | DATE 06/10/15 | PROJECT NUMBER 0330870 | SHEET FIGURE 6 | REV.

REVISIONS TO BE MADE ON THE CADD FILE ONLY

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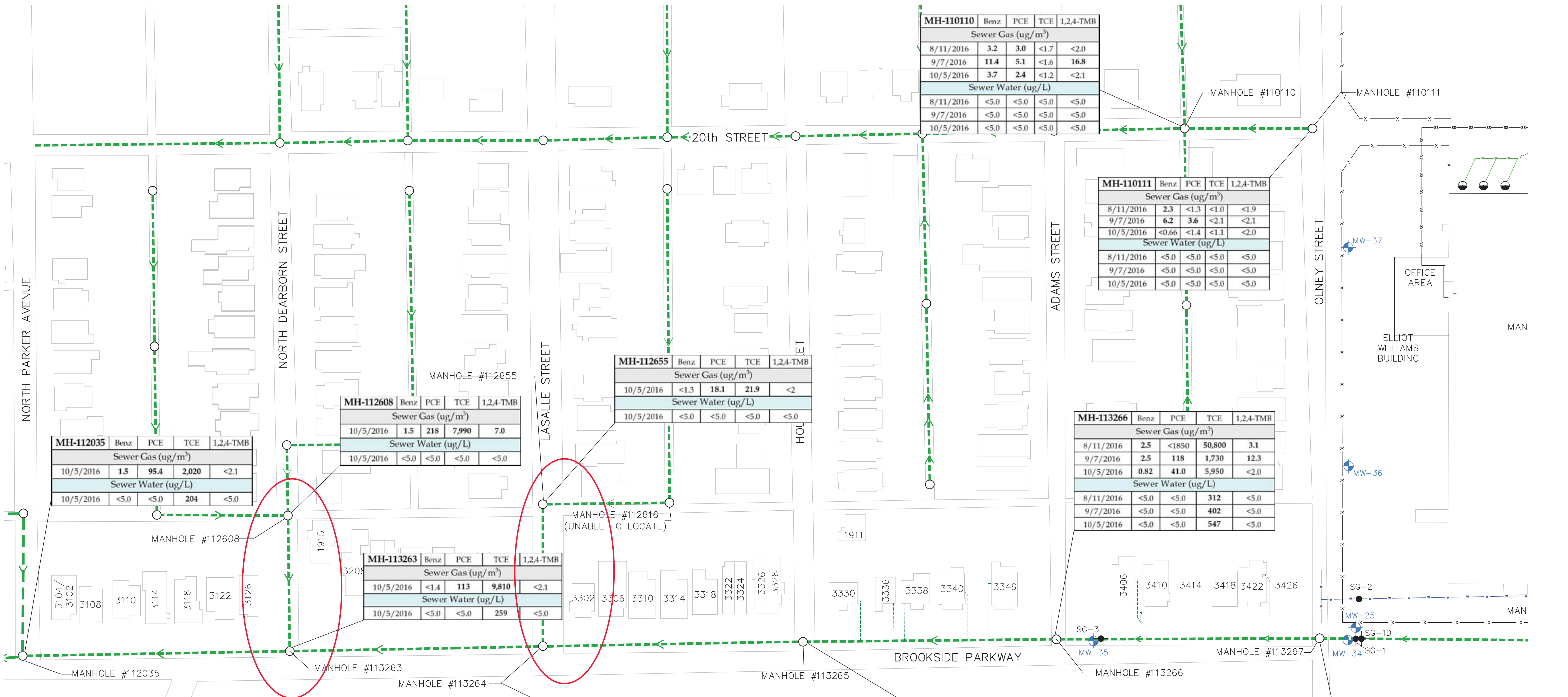
PRE-ABANDONMENT SEWER SAMPLING ANALYTICAL RESULTS



MH-110110	Benz	PCE	TCE	1,2,4-TMB
Sewer Gas (ug/m³)				
8/11/2016	**3.2**	**3.0**	<1.7	<2.0
9/7/2016	**11.4**	**5.1**	<1.6	**16.8**
10/5/2016	**3.7**	**2.4**	<1.2	<2.1
Sewer Water (ug/L)				
8/11/2016	<5.0	<5.0	<5.0	<5.0
9/7/2016	<5.0	<5.0	<5.0	<5.0
10/5/2016	<5.0	<5.0	<5.0	<5.0

MH-110111	Benz	PCE	TCE	1,2,4-TMB
Sewer Gas (ug/m³)				
8/11/2016	**2.3**	<1.3	<1.0	<1.9
9/7/2016	**6.2**	**3.6**	<2.1	<2.1
10/5/2016	<0.66	<1.4	<1.1	<2.0
Sewer Water (ug/L)				
8/11/2016	<5.0	<5.0	<5.0	<5.0
9/7/2016	<5.0	<5.0	<5.0	<5.0
10/5/2016	<5.0	<5.0	<5.0	<5.0

MH-112655	Benz	PCE	TCE	1,2,4-TMB
Sewer Gas (ug/m³)				
10/5/2016	<1.3	**18.1**	**21.9**	<2
Sewer Water (ug/L)				
10/5/2016	<5.0	<5.0	<5.0	<5.0

MH-112608	Benz	PCE	TCE	1,2,4-TMB
Sewer Gas (ug/m³)				
10/5/2016	**1.5**	**218**	**7,990**	**7.0**
Sewer Water (ug/L)				
10/5/2016	<5.0	<5.0	<5.0	<5.0

MH-112035	Benz	PCE	TCE	1,2,4-TMB
Sewer Gas (ug/m³)				
10/5/2016	**1.5**	**95.4**	**2,020**	<2.1
Sewer Water (ug/L)				
10/5/2016	<5.0	<5.0	**204**	<5.0

MH-113266	Benz	PCE	TCE	1,2,4-TMB
Sewer Gas (ug/m³)				
8/11/2016	**2.5**	<1850	**50,800**	**3.1**
9/7/2016	**2.5**	**118**	**1,730**	**12.3**
10/5/2016	**0.82**	**41.0**	**5,950**	<2.0
Sewer Water (ug/L)				
8/11/2016	<5.0	<5.0	**312**	<5.0
9/7/2016	<5.0	<5.0	**402**	<5.0
10/5/2016	<5.0	<5.0	**547**	<5.0

MH-113263	Benz	PCE	TCE	1,2,4-TMB
Sewer Gas (ug/m³)				
10/5/2016	<1.4	**113**	**9,810**	<2.1
Sewer Water (ug/L)				
10/5/2016	<5.0	<5.0	**259**	<5.0

MH-113264	Benz	PCE	TCE	1,2,4-TMB
Sewer Gas (ug/m³)				
8/11/2016	**2.6**	**248**	**6,030**	**9.2**
9/7/2016	**3.9**	**79.8**	**31,400**	**9.0**
10/5/2016	**1.1**	**117**	**10,300**	<2.1
Sewer Water (ug/L)				
8/11/2016	<5.0	<5.0	**184**	<5.0
9/7/2016	<5.0	<5.0	**306**	<5.0
10/5/2016	<5.0	<5.0	**349**	<5.0

MH-113265	Benz	PCE	TCE	1,2,4-TMB
Sewer Gas (ug/m³)				
8/11/2016	**0.99**	**259**	**21,900**	**2.4**
9/7/2016	**1.7**	**107**	**18,100**	**18.4**
10/5/2016	<0.68	**21.0**	**2,100**	<2.1
Sewer Water (ug/L)				
8/11/2016	<5.0	<5.0	**80**	<5.0
9/7/2016	<5.0	<5.0	**236**	<5.0
10/5/2016	<5.0	<5.0	**432**	<5.0

MH-113267	Benz	PCE	TCE	1,2,4-TMB
Sewer Gas (ug/m³)				
8/11/2016	**2.4**	<3,700	**47,700**	<2.1
9/7/2016	**3.8**	147	**27,700**	**13.3**
10/5/2016	**1.6**	**1,050**	**115,000**	<2.0
Sewer Water (ug/L)				
8/11/2016	<5.0	<5.0	**599**	<5.0
9/7/2016	<5.0	<5.0	**515**	<5.0
10/5/2016	<5.0	<5.0	**740**	<5.0

LEGEND

- MW-1 MONITORING WELL LOCATION
- SOIL GAS SAMPLE PORT LOCATION
- COMBINED SANITARY/STORM SEWER WITH MANHOLE
- SEWER LATERAL
- WATER LINE (APPROXIMATE)
- FENCE

DEFINITIONS

Benz= Benzene
PCE= Tetrachloroethylene
TCE= Trichloroethylene
1,2,4-TMB= 1,2,4-Trimethylbenzene

All sewer gas analytical results shown in micrograms per cubic meter (ug/m³)
All sewer water analytical results shown in micrograms per liter (ug/L)
Sewer gas and sewer water screening levels are not established within current published IDEM guidance.

0 60 120
SCALE (IN FEET)

N

http://maps.indy.gov/MapIndy/

Rev.	Date	Description	By	Chk
1	11/24/16	VAPOR INTRUSION SAMPLING LOCATION	GML	AF

DRAWN BY GML | CADD Review RMK | CHECKED BY AF

Environmental Resources Management

CHEMTURA SITE

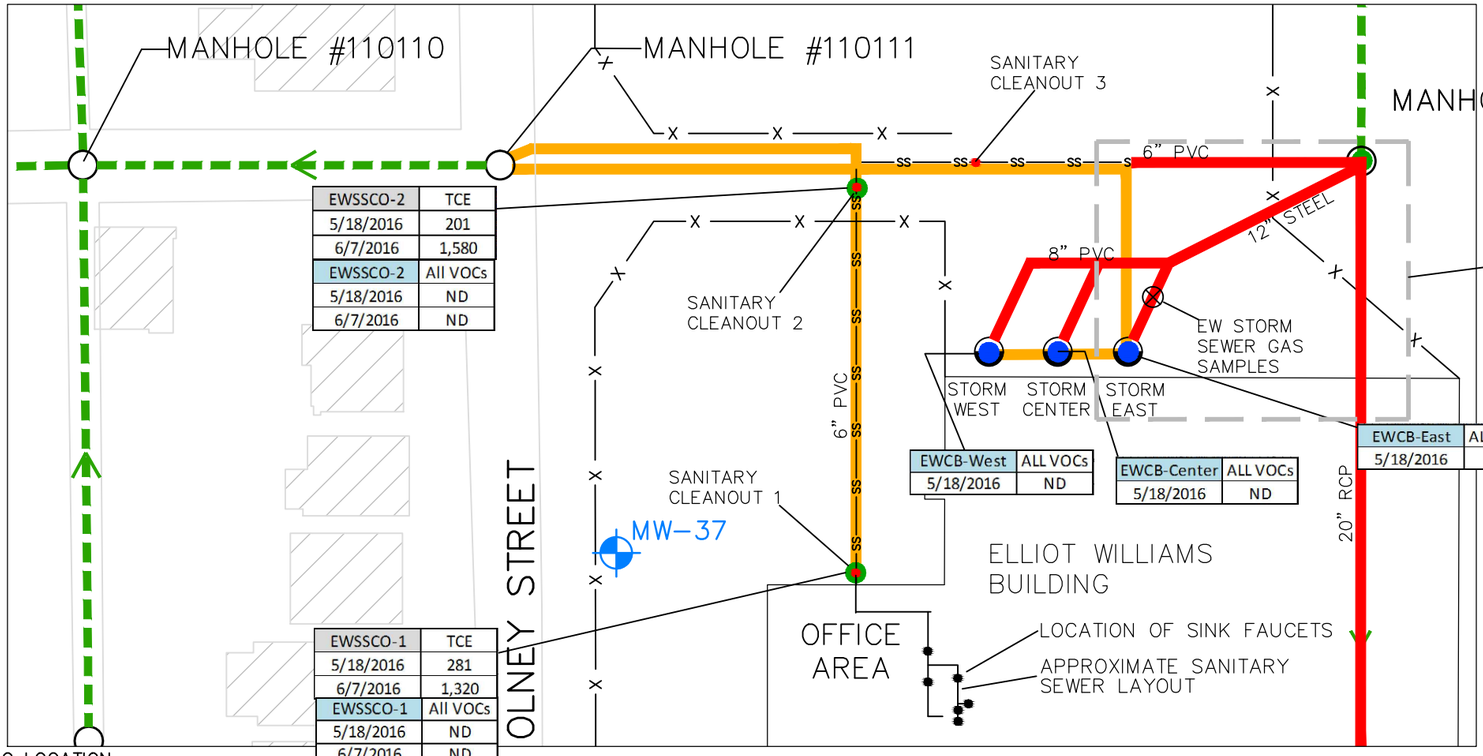
3500 EAST 20TH STREET

SCALE AS NOTED | DATE 11/24/16 | PROJECT NUMBER 0368504 | SHEET FIGURE 7 | REV.

REVISIONS TO BE MADE ON THE CADD FILE ONLY

I:\Indy\Office Cadd\Chemtura\0305044-04 (4).dwg, PREABANDONMENT SEWER SAMPLING, 1/25/2017 4:52:49 PM

ON-SITE SEWER SAMPLING LOCATIONS AND ANALYTICAL RESULTS



EWSSCO-2	TCE
5/18/2016	201
6/7/2016	1,580
EWSSCO-2	All VOCs
5/18/2016	ND
6/7/2016	ND

EWSSCO-1	TCE
5/18/2016	281
6/7/2016	1,320
EWSSCO-1	All VOCs
5/18/2016	ND
6/7/2016	ND

EWCB-West	ALL VOCs
5/18/2016	ND

EWCB-Center	ALL VOCs
5/18/2016	ND

EWCB-East	ALL VOCs
5/18/2016	ND

LEGEND

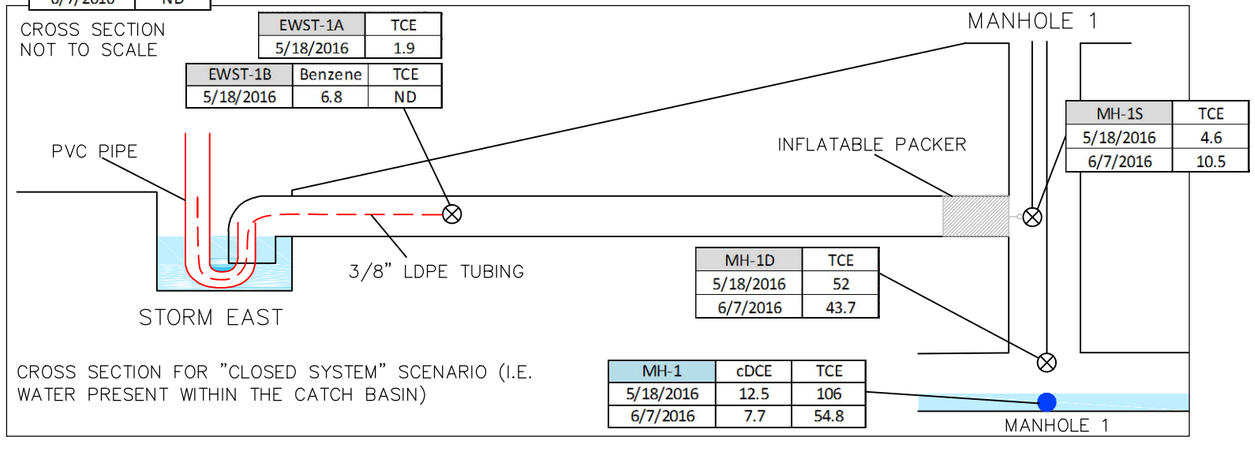
- MW-1 — MONITORING WELL LOCATION
- APPROXIMATE SEWER GAS SAMPLING LOCATION
- APPROXIMATE WATER SAMPLING LOCATION
- SANITARY SEWER CLEANOUT/FLOOR DRAIN
- COMBINED SANITARY/STORM SEWER WITH MANHOLE
- PROPOSED SEWER REROUTE
- PROPOSED SEWER ABANDONMENT
- W — W — WATER LINE (APPROXIMATE)
- STREET
- X — FENCE

Sewer Vapor Sample (ug/m^3)
Sewer/Catch Basin Water Sample (ug/L)
ND Not Detected Above Laboratory Reporting Limits

0 60 120
SCALE (IN FEET)

N

CROSS SECTION NOT TO SCALE



EWST-1A	TCE
5/18/2016	1.9

EWST-1B	Benzene	TCE
5/18/2016	6.8	ND

MH-1S	TCE
5/18/2016	4.6
6/7/2016	10.5

MH-1D	TCE
5/18/2016	52
6/7/2016	43.7

CROSS SECTION FOR "CLOSED SYSTEM" SCENARIO (I.E. WATER PRESENT WITHIN THE CATCH BASIN)

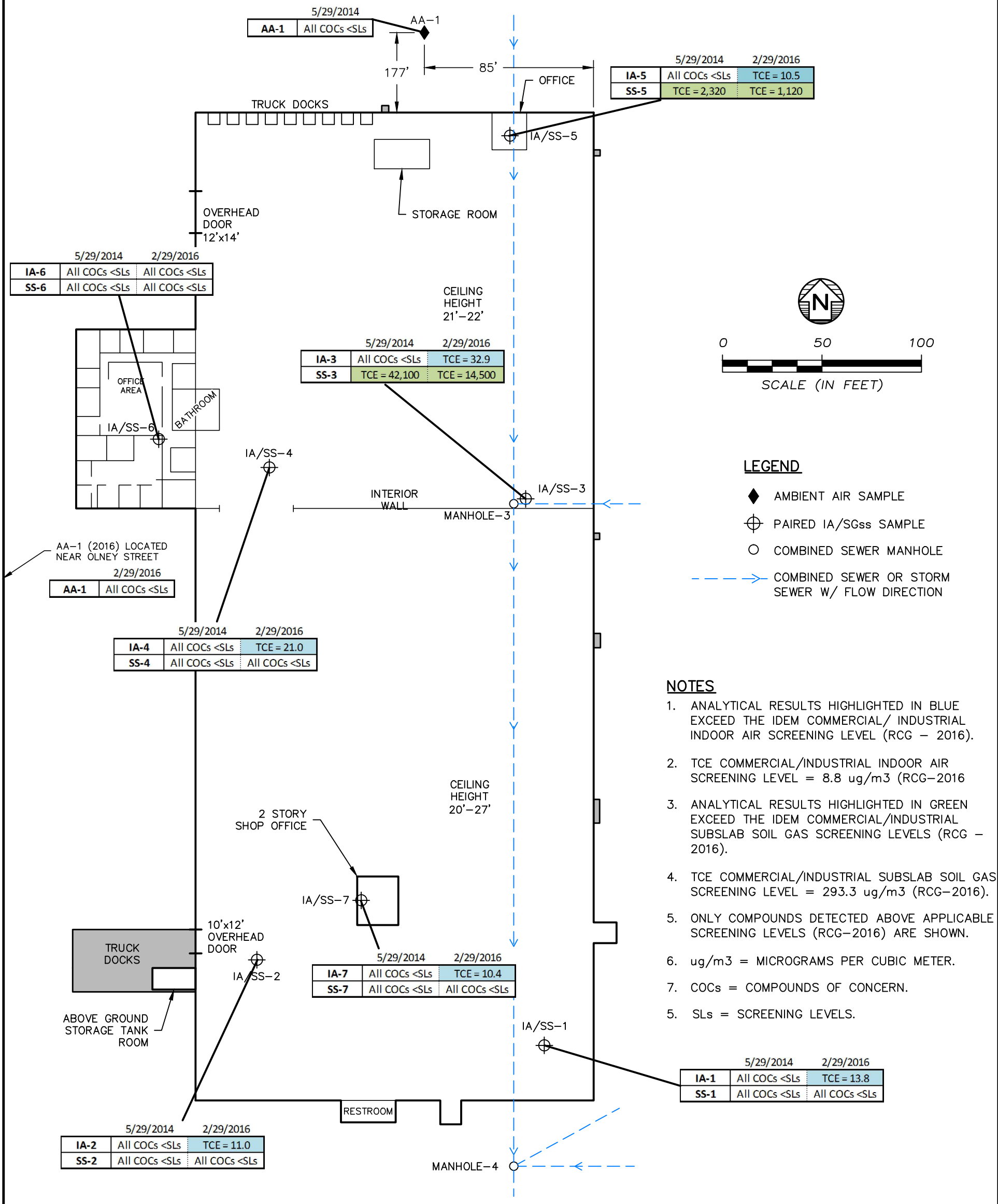
MH-1	cDCE	TCE
5/18/2016	12.5	106
6/7/2016	7.7	54.8

Drawn By CB	CHEMTURA SITE 3500 EAST 20TH STREET INDIANAPOLIS, INDIANA	CHK'D AW
CADD Review FGB		0368504
Date Drawn/Rev'd 12/7/2016	Environmental Resources Management	FIGURE 8

ERM®

I:\IndyOffice\E-Files - Open by individual\Indy Office Cadd\Chemtura\0305044-04 (4).dwg, SANITARY SEWER SAMPLE LOCATION, 1/25/2017 4:54:50 PM

ELLIOT WILLIAMS BUILDING INDOOR AIR/SUBSLAB SOIL GAS RESULTS IN ug/m³ (MAY 29, 2014 & FEBRUARY 29, 2016)



LEGEND

- AMBIENT AIR SAMPLE
- PAIRED IA/SGss SAMPLE
- COMBINED SEWER MANHOLE
- COMBINED SEWER OR STORM SEWER W/ FLOW DIRECTION

NOTES

1. ANALYTICAL RESULTS HIGHLIGHTED IN BLUE EXCEED THE IDEM COMMERCIAL/ INDUSTRIAL INDOOR AIR SCREENING LEVEL (RCG – 2016).
2. TCE COMMERCIAL/INDUSTRIAL INDOOR AIR SCREENING LEVEL = 8.8 ug/m3 (RCG–2016
3. ANALYTICAL RESULTS HIGHLIGHTED IN GREEN EXCEED THE IDEM COMMERCIAL/INDUSTRIAL SUBSLAB SOIL GAS SCREENING LEVELS (RCG – 2016).
4. TCE COMMERCIAL/INDUSTRIAL SUBSLAB SOIL GAS SCREENING LEVEL = 293.3 ug/m3 (RCG–2016).
5. ONLY COMPOUNDS DETECTED ABOVE APPLICABLE SCREENING LEVELS (RCG–2016) ARE SHOWN.
6. ug/m3 = MICROGRAMS PER CUBIC METER.
7. COCs = COMPOUNDS OF CONCERN.
5. SLs = SCREENING LEVELS.

CADD Review RMK	ERM®	ELLIOT WILLIAMS BUILDING 3501 EAST 20TH STREET INDIANAPOLIS, INDIANA	CHK'D BY: AW
DRAWN BY: FAK			0250771
Date Drawn/Rev'd 10/30/14		Environmental Resources Management	FIGURE 9

Tables

Table 1 - Constituents of Concern List

Chemtura Site

3500 East 20th Street, Indianapolis, Indiana

Volatile Organic Compounds	*CAS No.*
Acetone	67-64-1
Benzene	71-43-2
Carbon Disulfide	75-15-0
1,1-Dichloroethane	75-34-3
1-1-Dichloroethene	75-35-4
cis-1,2-Dichloroethene	156-59-2
trans-1,2-Dichloroethene	156-60-5
Ethylbenzene	100-41-4
n-Hexane	110-54-3
Methylene Chloride	75-09-2
Methyl Ethyl Ketone	78-93-3
Tetrachloroethene	127-18-4
Toluene	108-88-3
1,1,1-Trichloroethane	71-55-6
Trichloroethene	79-01-6
1,2,4-Trimethylbenzene	95-63-6
Vinyl chloride	75-01-4
Xylenes (total)	1330-20-7

Table 2 - Brookside Parkway Residential Vapor Intrusion Evaluation Results
Chemtura
3500 East 20th Street, Indianapolis, Indiana

							Acetone	Benzene	Carbon Disulfide	1,1-Dichloroethane	1-1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	n-Hexane	Methylene Chloride	Methyl Ethyl Ketone	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	1,2,4-Trimethylbenzene	Vinyl chloride	Xylenes (total)
Residential Indoor Air Screening Level (IDEM RCG) - (ug/m^3)							32,000	3.6	730	18	210	NE	NE	11	730	630	5,200	42	5,200	5,200	2.1	7.3	1.7	100
Residential Subslab Soil Gas Screening Level (IDEM RCG) - (ug/m^3)*							1,066,667	120	24,333	600	7,000	NE	NE	367	24,333	21,000	173,333	1400	173,333	173,333	70	243	57	3,333
Sample ID	Sample Date Start	Start Time	Sample Date Stop	Stop Time	Initial Pressure (in Hg)	Final Pressure (in Hg)																		
SS-Basement-3208 Brookside	9/15/2016	1608	9/16/2016	1459	-28.5	-6	83.6	<0.55	11.8	<1.4	<1.4	<1.4	<1.4	2.9	9.2	<5.9	14.4	37.3	6.7	<1.9	**110**	24.5	<0.44	17
IA-Basement-3208 Brookside	9/15/2016	1608	9/16/2016	1459	-29.5	-8.5	55.1	0.66	<1.2	<1.5	<1.5	<1.5	<1.5	1.9	<1.3	6.5	6.0	2.2	3.6	<2.0	**36.1**	<4.6	<0.48	5.6
IA-Main-3208 Brookside	9/15/2016	1611	9/16/2016	1458	-29	-4	60.3	0.61	<1.0	<1.3	<1.3	<1.3	<1.3	1.6	42.4	444	<4.8	2.4	6.0	<1.8	**13.3**	<4.0	<0.42	5.3
SS-Basement-3212 Brookside	8/18/2016	1322	8/19/2016	1206	-29	-4	39.2	<0.55	<1.1	<1.4	<1.4	<1.4	<1.4	<1.5	1.5	<5.9	7.5	110	2.3	<4.7	35.8	6.7	<0.44	9
SS-Basement-3212 Brookside	8/18/2016 (Dup)	-	8/19/2016	-	-30	-4	42.3	<0.52	<1.0	<1.3	<1.3	<1.3	<1.3	<1.4	1.5	<5.7	7.4	109.0	<2.3	<4.5	35.3	6.5	<0.42	8.8
IA-Basement-3212 Brookside	8/18/2016	1326	8/19/2016	1205	-30	-5	26	1.9	<1.2	<1.6	<1.6	<1.6	<1.6	<1.7	2.2	8.5	<5.8	2.5	6.2	<5.4	<2.1	<1.9	<0.50	7.9
IA-Main-3212 Brookside	8/18/2016	1328	8/19/2016	1207	-28	-23	38.6	3.4	<3.2	<4.1	<4.1	<4.1	<4.1	<4.5	3.7	29.5	<15.2	4.3	11.4	<14.0	<5.5	<5.1	<1.3	<13.4
SS-Basement-3222 Brookside	9/28/2016	848	9/29/2016	805	-29	-4.5	36.5	<0.50	<0.98	<1.3	<1.3	<1.3	<1.3	<3.4	11.3	<5.5	6.0	7.3	2.5	<1.7	1.6	6.9	<0.40	6.9
IA-Basement-3222 Brookside	9/28/2016	849	9/29/2016	804	-30	-6	28.5	0.64	2.7	<1.3	<1.3	<1.3	<1.3	<3.4	<2.8	<5.5	<4.6	<1.1	18	<1.7	<0.85	<3.9	<0.40	<4.1
IA-Main-3222 Brookside	9/28/2016	850	9/29/2016	803	-30	-6	68.0	0.95	<1.0	<1.3	<1.3	<1.3	<1.3	<3.6	<2.9	<5.7	8.5	<1.1	2.1	<1.8	<0.89	<4.0	<0.42	<4.3
SS-Basement-3224 Brookside	8/17/2016	1835	8/18/2016	1739	-30	-5	39.7	<0.52	8.0	<1.3	<1.3	<1.3	<1.3	1.9	2.3	<5.7	<4.8	3.4	7.3	<4.5	7.8	8.8	<0.42	15.4
IA-Basement-3224 Brookside	8/17/2016	1836	8/18/2016	1739	-30	-5	156	1	<0.98	<1.3	<1.3	1.3	<1.3	1.6	2.4	15.6	<4.6	6.0	149	<4.3	1.7	4.9	0.61	9.6
IA-Main-3224 Brookside	8/17/2016	1837	8/18/2016	1741	-30	-4	137	0.89	<1.0	<1.3	<1.3	<1.3	<1.3	<1.4	2.2	10.2	<4.8	4.6	119	<4.5	<1.8	3.5	0.43	8.5
IA-2nd-3224 Brookside	8/17/2016	1838	8/18/2016	1742	-29.5	-5	118	1.8	<0.84	<1.1	<1.1	<1.1	<1.1	1.5	2.7	11.9	6.3	4.5	99.7	<3.7	<1.5	3.6	0.36	8.8
SS-3302 Brookside	7/28/2016	1145	7/29/2016	930	-30	-6	34.5	0.81	<1.1	<1.4	<1.4	<1.4	<1.4	<1.5	<1.2	<5.9	7.7	42.1	1.9	10.6	**2,510**	<1.7	<0.44	<4.5
IA-Basement-3302 Brookside	7/28/2016	1150	7/29/2016	932	-30	-6	129	2.3	<1.1	<1.4	<1.4	<1.4	<1.4	3.6	3.8	7.6	2.3	<2.3	19.6	<1.68	**46.7**	4.3	<1.68	16
IA-Basement-3302 Brookside	7/28/2016 (Dup)	-	7/29/2016	-	-30	-6	243	2.1	<1.1	<1.4	<1.4	<1.4	<1.4	3.4	3.2	<6.2	7.5	<2.4	19.2	<1.9	**42.7**	4.0	<.46	14.9
IA-Main-3302 Brookside	7/28/2016	1200	7/29/2016	935	-30	-6	143	2.3	<1.1	<1.4	<1.4	<1.4	<1.4	3	3.4	<5.9	7.3	<2.3	20.1	<1.9	**14.9**	4.1	<0.44	14.9
IA-2nd-3302 Brookside	7/28/2016	1205	7/29/2016	938	-29.5	-6.5	149	2.1	<1.1	<1.4	<1.4	<1.4	<1.4	2.2	6.3	42.5	<5.0	2.6	15.8	<1.9	**11.0**	3.2	<0.44	10.7
SS-Basement-3318 Brookside	8/17/2016	1156	8/18/2016	1200	-30	-5	33.5	0.61	6.0	<1.3	<1.3	<1.3	<1.3	2.9	2.0	6.8	7.5	343	9.0	7.2	25.4	11.5	<0.4	21.1
IA-Basement-3318 Brookside	8/17/2016	1157	8/18/2016	1155	-30	-4	19.5	2.0	<0.98	<1.3	<1.3	<1.3	<1.3	<1.4	2.4	<5.5	<4.6	1.7	6.8	<4.3	**3.1**	<1.5	<0.40	7.4
IA-Main-3318 Brookside	8/17/2016	1157	8/18/2016	1150	-30	-4	47.5	5.7	<0.94	<1.2	<1.2	<1.2	<1.2	2.3	2.3	<5.3	8.5	1.5	14.7	<4.1	<1.6	2.7	<0.39	13.3
SS-3322-Brookside	8/10/2016	1302	8/11/2016	1017	-30	-5.5	<40.6	<5.5	<10.6	<13.8	<13.6	<13.6	<13.6	<14.8	<12.1	<148	<50.4	55.9	<12.9	<18.6	**98.9**	<16.8	<4.4	<44.5
IA-Basement-3322 Brookside	8/10/2016	1302	8/11/2016	1015	-30	-5.5	266	1.2	<1.1	<1.4	<1.4	<1.4	<1.4	4.8	29.9	<14.8	346	<1.2	13	<1.9	**2.5**	6.0	<0.44	15.8
IA-Main-3322 Brookside	8/10/2016	1250	8/11/2016	1020	-28	-6	1,410	0.85	1.8	<1.4	<1.4	<1.4	<1.4	9.3	113.0	<14.8	1,440	<1.2	22.1	<1.9	1.4	**9.5**	<0.44	26.8
SS-Basement-3324 Brookside	9/22/2016	1344	9/23/2016	1220	-28.5	-4.5	22.7	0.61	<1.0	<1.3	<1.3	<1.3	<1.3	<1.4	15.8	131	<4.8	137	12.6	1.9	**567**	4.7	<0.42	<4.3
IA-Basement-3324 Brookside	9/22/2016	1343	9/23/2016	1220	-28.5	-5.5	46.2	1.4	<1.0	<1.3	<1.3	<1.3	<1.3	2.4	3.6	<5.7	9.5	1.1	6.9	<1.8	**10.8**	**7.9**	<0.42	<4.3
IA-Main-3324 Brookside	9/22/2016	1341	9/23/2016	1219	-29	-4	46.6	1.6	<1.0	<1.3	<1.3	<1.3	<1.3	2.5	3.6	<5.7	9.6	<1.1	6.9	<1.8	**8.8**	**8.6**	<0.42	<4.3
SS-3326 Brookside	7/28/2016	1230	7/29/2016	1042	-28.5	-5	33.3	<0.52	4.1	<1.3	<1.3	<1.3	<1.3	<1.4	3.2	16.7	<4.8	196	2.1	7.3	**1,270**	<1.6	<0.42	<4.3
IA-Basement-3326 Brookside	7/28/2016	1235	7/29/2016	1042	-30	-6	154	2.3	<1.0	<1.3	<1.3	<1.3	<1.3	1.8	79.4	450	<4.8	6.7	41.5	<1.8	**6.7**	2.1	<0.42	<4.3
IA-Main-3326 Brookside	7/28/2016	1240	7/29/2016	1044	-30	-6	277	3.7	<1.1	<1.4	<1.4	<1.4	<1.4	1.6	2.2	<5.9	<5.0	2.2	10	<1.9	**2.8**	2.5	<0.44	7.5
SS-Basement-3328 Brookside	8/17/2016	1135	8/18/2016	1114	-30	-4.5	75.9	1.2	32.1	<1.3	<1.3	<1.3	<1.3	4.6	6.9	<5.7	<4.8	5.5	10.6	9.8	2.6	19.2	<0.84	30
IA-Basement-3328 Brookside	8/17/2016	1136	8/18/2016	1116	-29	-10	41.3	**5.0**	<1.2	<1.6	<1.6	1.7	<1.6	9.4	10.2	35.4	6.0	3.9	41.8	2.1	**44.4**	**44.4**	<1.0	54.6
IA-Main-3328 Brookside	8/17/2016	1137	8/18/2016	1113	-30	-3	100	**15.7**	1.3	<1.3	<1.3	1.4	<1.3	16.0	22.5	<5.5	7.6	<2.1	66.9	<1.7	**36.1**	**48.1**	<0.81	86.4
SS-Basement-3330 Brookside	1/14/2016	1314	1/15/2016	1045	-28	-4	46	2.9	<1.0	2.2	<1.3	71.8	3.8	4.4	7.3	<5.7	7.1	95.6	13.3	16.0	**2,870**	3.6	<0.42	12.2
IA-Basement-3330 Brookside	1/14/2016	1331	1/15/2016	1046	-27	-4.5	33	1.3	<1.0	<1.3	<1.3	3.6	<1.3	<1.4	4.7	25.6	13.9	1.6	8.6	<1.8	**130**	2.4	<0.42	6.1
(Post Mitigation)	8/10/2016	1135	8/11/2016	1003	-29.5	-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**3.1**	NA	NA	NA
IA-Main-3330 Brookside	1/14/2016	1334	1/15/2016	1047	-29	-5	32.7	1.2	<1.0	<1.3	<1.3	3.4	<1.3	<1.4	2.5	<5.7	15.6	1.4	7.8	<1.8	**117**	2.8	0.42	5.9
(Post Mitigation)	8/10/2016	1141	8/11/2016	1005	-30	-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2.7**	NA	NA	NA
SS-Basement-3336 Brokside	1/14/2016	1649	1/15/2016	1455	-27.5	-3	39.3	1.0	<1.0	11.2	<3.2	743	20.4	<1.4	3.9	<5.7	5.0	101	2.5	54.8	**26,100**	<1.6	2.6	<4.3
IA-Basement-3336 Brookside	1/14/2016	1650	1/15/2016	1453	-29	-3	600	3.0	<1.0	<1.36	<3.2	30.6	<1.3	<1.4	4.0	<5.7	7.9	8.3	7.3	4.0	**1,120**	<1.6	<0.84	6.2
(Post Mitigation)	9/22/2016	1234	9/23/2016	1207	-29.5	-10.5	NA	**4.0**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**5.0**	NA	NA	NA
IA-Main-3336 Brookside	1/14/2016	1657	1/15/2016	1453	-29.5	-8	374	**3.9**	<1.2	<1.6	<3.9	7.2	<1.6	3.2	26.3	194	<5.8	<2.6	62.7	<2.1	**237**	2.2	<1.0	16.8
(Post Mitigation)	9/22/2016	1233	9/23/2016	1206	-28	-4	NA	**3.8**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**4.0**	NA	NA	NA

Table 2 - Brookside Parkway Residential Vapor Intrusion Evaluation Results
Chemtura
3500 East 20th Street, Indianapolis, Indiana

							Acetone	Benzene	Carbon Disulfide	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	n-Hexane	Methylene Chloride	Methyl Ethyl Ketone	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	1,2,4-Trimethylbenzene	Vinyl chloride	Xylenes (total)
Residential Indoor Air Screening Level (IDEM RCG) - (ug/m^3)							32,000	3.6	730	18	210	NE	NE	11	730	630	5,200	42	5,200	5,200	2.1	7.3	1.7	100
Residential Subslab Soil Gas Screening Level (IDEM RCG) - (ug/m^3)*							1,066,667	120	24,333	600	7,000	NE	NE	367	24,333	21,000	173,333	1400	173,333	173,333	70	243	57	3,333
Sample ID	Sample Date Start	Start Time	Sample Date Stop	Stop Time	Initial Pressure (in Hg)	Final Pressure (in Hg)																		
IA-Crawlspace-3338 Brookside	1/14/2016	1917	1/15/2016	1647	-27.5	-4	10.9	0.65	<0.98	<1.3	<1.3	<1.3	<1.3	<1.4	<1.1	<5.5	<4.6	<1.1	4.4	<1.7	<0.85	<1.5	<0.40	<4.1
	6/28/2016	1957	6/29/2016	1711	-30	-5	<2.4	<0.32	<0.63	<0.82	<0.81	<0.81	<0.81	<0.88	<1.8	<3.5	<3.0	<0.69	<0.77	<1.1	<0.55	<1.0	<0.26	<2.6
IA-Main-3338 Brookside	1/14/2016	1914	1/15/2016	1644	-28	-4.5	26.3	0.76	<1.0	<1.3	<1.3	<1.3	<1.3	<1.4	<1.2	<5.7	<4.8	<1.1	9.5	<1.8	<0.89	<1.6	<0.42	<4.3
	6/28/2016	2008	6/29/2016	1713	-30	-5	<2.4	<0.32	<0.63	<0.82	<0.81	<0.81	<0.81	<0.88	<1.8	<3.5	<3.0	<0.69	<0.77	<1.1	<0.55	<1.0	<0.26	<2.6
SS-Basement-3340 Brookside	1/14/2016	1507	1/15/2016	1240	-27.5	-4.5	9.9	<0.5	<0.98	3.8	<1.3	118	5.0	<1.4	2.1	<5.5	5.6	184	1.2	22.7	**7,760**	<1.5	<0.40	<4.1
IA-Basement-3340 Brookside	1/14/2016	1507	1/15/2016	1239	-27	-4	34.1	0.93	<1.0	<1.3	<1.3	2.7	<1.3	<1.4	1.4	<5.7	<4.8	1.5	5.6	<1.8	**105**	<1.6	<0.42	<4.3
IA-Main-3340 Brookside	1/14/2016	1503	1/15/2016	1503	-27.5	-4.5	48.8	0.99	<1.1	<1.4	<1.4	2.0	<1.4	<1.5	1.9	<5.9	5.5	1.8	7.7	<1.9	**79.2**	<1.7	<0.44	<4.5
IA-2nd-3340 Brookside	1/14/2016	1505	1/15/2016	1505	-28	-4	42.3	0.93	<1.0	1.6	<1.3	2.0	<1.3	<1.4	1.9	<5.7	<4.8	1.3	7.3	<1.8	**75.0**	<1.6	<0.42	<4.3
SS-Basement-3346 Brookside	9/2/2015	1523	9/3/2015	1235	-28	-5	9.7	1.5	<1	<1.3	<1.3	7.8	<1.3	<1.4	3.0	<5.7	<0.97	374	6.7	18.9	**4,350**	2.5	0.42	5.8
IA-Basement-3346 Brookside	9/2/2015	1523	9/3/2015	1235	-28	-5	23	2.5	<1	<1.3	<1.3	<1.3	<1.3	1.6	3.5	6.8	2.7	1.9	9.7	<1.8	**81.9**	6.1	<0.42	8.2
(Post Mitigation)	2/3/2016	1110	2/4/2016	906	-28.5	-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**83.8**	NA	NA	NA
IA-Main-3346 Brookside	9/2/2015	1525	9/3/2015	1234	-29	-6	60.4	**8.0**	<1.1	<1.4	<1.4	<1.4	<1.4	6.1	19.4	40.6	7.8	2.6	37.7	<1.9	**21.1**	**7.5**	<0.44	31
(Post Mitigation)	2/3/2016	1114	2/4/2016	905	-29	-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**29.5**	NA	NA	NA
IA-2nd-3346 Brookside	9/2/2015	1525	9/3/2015	1235	-30	-6	61.5	**6.9**	<1.1	<1.4	<1.4	<1.4	<1.4	5.5	9.8	6	5.1	2.8	28.7	<1.9	**28.6**	6.8	<0.44	26.6
(Post Mitigation)	2/3/2016	1116	2/4/2016	904	-28.5	-5.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**25.5**	NA	NA	NA
(Post Mitigation)	2/3/2016 (Dup)	-	2/4/2016	-	-28.5	-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**25.9**	NA	NA	NA
SS-Basement-3406 Brookside	9/2/2015	1355	9/3/2015	1036	-29	-6	<3.9	<0.52	<1.0	<1.3	<1.3	<1.3	<1.3	<1.4	2.9	<5.7	2.8	21	3.5	7.6	**1,460**	<1.6	<0.42	<4.3
	1/14/2016	1411	1/15/2016	1129	-26.5	-3	22.6	<0.52	<1.0	1.4	<1.3	16.6	2.2	<1.4	1.9	<5.7	<4.8	27.8	2.9	15.9	**3,370**	<1.6	<0.42	7.1
	1/14/2016 (Dup)	-	1/15/2016	-	-28	-4	10.2	<0.52	<1.0	1.4	<1.3	16.9	2.2	<1.4	1.6	<5.7	<4.8	27.4	<1.2	16.2	**3,420**	<1.6	<0.42	<4.3
	9/22/2016	1300	9/23/2016	1214	-30	-5.5	16.7	<0.50	<0.98	<1.3	<1.3	<1.3	<1.3	<1.4	<1.1	<5.5	6.3	29.5	1.7	3.8	**902**	5.2	<0.40	4.4
IA-Basement-3406 Brookside	9/2/2015	1354	9/3/2015	1030	-30	-5	16.1	0.75	<0.94	<1.2	<1.2	<1.2	<1.2	<1.3	1.8	<5.3	4.7	<1	3.2	<1.7	**2.6**	<1.5	<0.39	<3.9
	9/2/2015 (Dup)	-	9/3/2015	-	-30	-5	11	0.73	<0.94	<1.2	<1.2	<1.2	<1.2	<1.3	1.4	<5.3	2.3	<1	3.3	<1.7	1.2	<1.5	<0.39	<3.9
	1/14/2016	1408	1/15/2016	1128	-26.5	-3	14	1.4	<0.94	<1.2	<1.2	<1.2	<1.2	<1.3	1.1	<5.3	<4.5	<1.0	3.6	<1.7	**9.7**	<1.5	<0.39	<3.9
(Post Mitigation)	9/22/2016	1301	9/23/2016	1213	-30	-5.5	67.5	1.2	<0.98	<1.3	<1.3	<1.3	<1.3	<1.4	12.7	125	<4.6	<1.1	21.1	<1.7	1.0	1.9	<0.40	<4.1
IA-Main-3406 Brookside	9/2/2015	1356	9/3/2015	1036	-27	-6	26.5	0.93	<1.1	<1.4	<1.4	<1.4	<1.4	<1.5	2.3	<6.2	5.3	<1.2	4.6	<1.9	1.3	<1.7	<0.46	<4.6
	1/14/2016	1420	1/15/2016	1127	-29	-4	31.4	3.6	<1.0	<1.3	<1.3	<1.3	<1.3	<1.4	1.5	<5.7	5.5	<1.1	7.2	<1.8	**10.1**	<1.6	<0.42	<4.3
(Post Mitigation)	9/22/2016	1258	9/23/2016	1215	-29	-4	51.7	2.8	<0.98	<1.3	<1.3	<1.3	<1.3	<1.4	2.1	<5.5	5.7	1.1	7.2	<1.7	0.91	2.3	<0.40	<4.1
SS-Basement-3422 Brookside	9/2/2015	1141	9/3/2015	927	-27	-5	14.8	<0.50	<0.98	<1.3	<1.3	<1.3	2.2	<1.4	<1.1	12.2	4.1	5.8	2.5	<1.7	55.1	<1.5	<0.40	<4.1
	1/27/2016	1523	1/28/2016	1302	-28	-4	22	<1.4	<1.3	<1.7	<1.7	<1.7	<1.7	<1.8	4.2	36.0	<6.2	2.6	2.6	<2.3	9.4	<2.1	<0.54	<8.5
IA-Basement-3422 Brookside	9/2/2015	1141	9/3/2015	928	-29	-5	33.9	3.6	<0.98	<1.3	<1.3	<1.3	74.6	1.4	2.7	6.4	4.1	1.1	14.5	<1.7	1.2	2.2	<0.40	6.2
	1/27/2016	1517	1/28/2016	1301	-28	-4	24.1	<1.0	<0.98	<1.3	<1.3	<1.3	<1.3	<1.4	<1.1	<5.5	<4.6	<1.1	2.5	<1.7	**18.9**	<1.5	<0.4	<6.3
IA-Main-3422 Brookside	9/2/2015	1142	9/3/2015	926	-28	-5	48.2	2.6	<1	<1.3	<1.3	<1.3	55.7	<1.4	2.6	12.8	6.1	1	20.4	<1.8	0.91	<1.6	<0.42	5.3
	1/27/2016	1525	1/28/2016	1307	-29.5	-5	24	<1.0	<1.0	<1.3	<1.3	<1.3	3.6	<1.4	<1.2	<5.7	<4.8	<1.1	9.1	<1.8	**16.2**	<1.6	<0.42	<2.2

All units in ug/m^3 (micrograms per cubic meter).
IDEM RCG = Indiana Department of Environmental Management Remediation Closure Guide - March 22, 2012 (Updated 2016).
< = Compound not detected. Reportable detection limit shown.
IA = Indoor Air Sample
SS = Subslab Soil Gas Sample
in Hg = Inches of Mercury
Dup = Duplicate sample collected at this location.
NE = Screening Level Not Established
NA = Compound Not Analyzed
(Post Mitigation) = Sample was collected at least 30-days after mitigation activities were completed
Concentrations highlighted in blue exceed the residential indoor air screening level (IDEM RCG - March 2016)
Concentrations highlighted in green exceed the residential subslab soil gas screening level (US EPA - June 2015; IDEM RCG - March 2016)
* An attenuation factor of 0.03 (US EPA - June 2015) applied to IDEM residential indoor air screening level (March 2016) as approved by IDEM within an October 20, 2015 Memorandum.

Table 3 - Brookside Parkway Ambient Air Data
Chemtura
3500 East 20th Street, Indianapolis, Indiana

							Acetone	Benzene	Carbon Disulfide	1,1-Dichloroethane	1-1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	n-Hexane	Methylene Chloride	Methyl Ethyl Ketone	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	1,2,4-Trimethylbenzene	Vinyl chloride	Xylenes (total)
Residential Indoor Air Screening Level (IDEM RCG) - (ug/m^3)							32,000	3.6	730	18	210	NE	NE	11	730	630	5,200	42	5,200	5,200	2.1	7.3	1.7	100
Residential Subslab Soil Gas Screening Level (IDEM RCG) - (ug/m^3)*							1,066,667	120	24,333	600	7,000	NE	NE	367	24,333	21,000	173,333	1400	173,333	173,333	70	243	57	3,333
Sample ID	Sample Date Start	Start Time	Sample Date Stop	Stop Time	Initial Pressure (in Hg)	Final Pressure (in Hg)																		
AA-1 (Ambient Air)	9/2/2015	1133	9/3/2015	1004	-30	-5	20.5	1.4	<1.0	<1.3	<1.3	<1.3	<1.3	<1.4	11.1	43.5	3.5	<1.1	10.1	<1.8	1.1	<1.6	<0.42	<4.3
AA-1 (Ambient Air)	1/14/2016	1258	1/15/2016	1040	-27	-3	18.1	0.97	<0.98	<1.3	<1.3	<1.3	<1.3	<1.4	1.5	<5.5	5.0	<1.1	2.2	<1.7	<0.85	<1.5	<0.40	<4.1
AA-1 (Ambient Air)	1/27/2016	1528	1/28/2016	1312	-29	-3	15.6	<1.3	<1.2	<1.6	<1.6	<1.6	<1.6	<1.7	<1.4	<6.8	<5.8	<1.3	<1.5	<2.1	<1.1	<1.9	<0.50	<7.9
AA-1 (Ambient Air)	2/3/2016	1128	2/4/2016	908	-28.5	-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.82	NA	NA	NA
AA-1 (Ambient Air)	6/28/2016	2012	6/29/2016	1722	-30	-6	16.8	<0.52	<1.0	<1.3	<1.3	<1.3	<1.3	<1.4	9.0	73.3	5.9	<3.0	6.6	<1.8	**16.0**	<1.6	<0.42	4.3
AA-1 (Ambient Air)	7/28/2016	1250	7/29/2016	945	-29.5	-6	11	1.1	<1.1	<1.4	<1.4	<1.4	<1.4	<1.5	1.6	<6.2	<5.2	<1.2	3.8	<1.9	<0.96	<1.7	<0.46	<4.6
AA-1 (Ambient Air)	8/10/2016	1158	8/11/2016	1424	-30	-8	25.4	2.5	<1.2	<1.5	<1.5	<1.5	<1.5	<1.6	3.1	<16.2	5.9	1.8	7.8	<2.0	**2.5**	2.1	<0.48	4.8
AA-1 (Ambient Air)	8/17/2016	1203	8/18/2016	1111	-30	-4.5	17.6	1.1	<1.0	<1.3	<1.3	<1.3	<1.3	<1.4	<2.9	<5.7	<4.8	<2.2	4.2	<1.8	<1.8	<1.6	<0.84	5.1
AA-2 (Ambient Air)	8/18/2016	1337	8/19/2016	1205	-30	-5	25.4	0.66	1.8	<1.3	<1.3	<1.3	<1.3	<1.4	1.9	<5.7	<4.8	<1.1	2.2	<1.8	<0.89	<4.0	<0.42	<4.3
AA-1 (Ambient Air)	9/15/2016	1605	9/16/2015	1455	-27	-7	8.4	<0.59	<1.2	<1.5	<1.5	<1.5	<1.5	<1.6	<1.3	<6.5	<0.59	<1.3	1.7	<2.0	<1.0	<4.6	<0.48	5.3
AA-1 (Ambient Air)	9/22/2016	1232	9/23/2016	1204	-30	-4	18.2	1.9	<0.94	<1.2	<1.2	<1.2	<1.2	1.4	3.6	<5.3	<4.5	<1.0	9.9	<1.7	**3.2**	4.2	<0.39	<3.9
AA-1 (Ambient Air)	9/29/2016	854	9/29/2016	806	-30	-4.5	17	0.67	<0.98	<1.3	<1.3	<1.3	<1.3	<3.4	<2.8	<5.5	<4.6	<1.1	1.5	<1.7	<0.85	<3.9	<0.40	<4.1

All units in ug/m^3 (micrograms per cubic meter).
IDEM RCG = Indiana Department of Environmental Management Remediation Closure Guide - March 22, 2012 (Updated 2016).
AA = Ambient Air Sample
in Hg = Inches of Mercury
NE = Screening Level Not Established
NA = Compound Not Analyzed
Concentrations highlighted in blue exceed the residential indoor air screening level (IDEM RCG - March 2016)
Concentrations highlighted in green exceed the residential subslab soil gas screening level (US EPA - June 2015; IDEM RCG - March 2016)
* An attenuation factor of 0.03 (US EPA - June 2015) applied to IDEM residential indoor air screening level (March 2016) as approved by IDEM within an October 20, 2015 Memorandum.

Table 4 - Sewer Gas Analytical Data

Chemtura

3500 East 20th Street, Indianapolis, Indiana

Sample	Sample Date	Start Time	End Time	Initial Pressure (inHg)	Final Pressure (inHg)	Acetone	Benzene	Methyl ethyl ketone	Carbon disulfide	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	n-Hexane	Methylene Chloride	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	1,2,4-Trimethylbenzene	Vinyl Chloride	Total Xylene
Brookside Parkway Sewer																							
Manhole #4	8/27/2014	1454	1503	-27.5	-5	**58.3**	**3.0**	**7.2**	**18.0**	**3.9**	<1.7	**152**	**8.9**	**9.6**	**7.1**	**38.4**	**103**	**33.4**	**20.9**	**2,320**	**12.5**	<0.55	**44.2**
	8/27/2014 (Dup)	-	-	-27.5	-5	**48.0**	**3.1**	**4.9**	**1.5**	**3.3**	<1.7	**148**	**9.1**	**10.4**	**6.9**	**46.1**	**136**	**33.5**	**18.9**	**2,330**	**22.2**	<0.55	**56.3**
	9/2/2015	1452	1504	-28	-5	**30.0**	**0.94**	**2.9**	<1.3	**10.3**	**3.8**	**355**	**20.4**	**5.1**	**7.2**	<1140	**840**	**8.3**	**39.1**	**11,300**	<2.0	**6.0**	**7.0**
	9/2/2015 (Dup)	-	-	-28	-5	**69.7**	**1.1**	**22.7**	<1.3	**14.7**	**5.4**	**583**	**28.9**	**6.7**	**4.5**	<7.1	**1,550**	**3.9**	**57.8**	**22,400**	**2.7**	**7.9**	**8.4**
	1/14/2016	1459	1509	-29	-4.5	<234	<25.2	<116	<24.4	<31.8	<31.4	**89**	<31.4	<34.1	<139	<137	**38.6**	<74.3	<43.1	**2,810**	<38.8	<10.1	<103
MH-113267	8/27/2014	1258	1317	-28.5	-4	**107**	**1.7**	**5.7**	**85.9**	<1.7	<1.6	**25.6**	**1.7**	**2.7**	**112**	**181**	**2.1**	**11.6**	**5.8**	**5,080**	**2.3**	<0.53	**8.6**
	9/2/2015	1408	1418	-27.5	-5	**38.4**	**2.2**	**9.0**	**5.3**	**29.1**	**12.6**	**1610**	**49.4**	**14.8**	**4.4**	**50.8**	**453**	**8.6**	**192**	**95,200**	**5.0**	**18.4**	**40.7**
	1/14/2016	1407	1416	-29	-4.5	<234	<25.2	<116	<24.4	<31.8	<31.4	**55.4**	<31.4	<34.1	<139	<137	**27.9**	<74.3	<43.1	**3,320**	<38.8	<10.1	<103
	8/11/2016	1311	1324	-29	-4	**85.9**	**2.4**	**7.9**	<1.3	**18.9**	<1.7	<4350	**42.4**	<1.8	<1.5	**9.5**	<3700	**11.8**	**127**	**47,700**	<2.1	<0.55	<5.6
	9/7/2016	1120	1130	-27	-5	**239**	**3.8**	**18.5**	**8.5**	**36.7**	**24**	**1710**	**94.1**	**3.6**	**40.8**	**310**	147	**58.1**	**225**	**27,700**	**13.3**	**3.7**	**23**
	10/5/2016	1326	1334	-26	-5	**81.6**	**1.6**	**34.9**	**5.9**	**31.4**	**20.4**	**2990**	**83.8**	<1.8	**6.7**	**50.7**	**1050**	**19.2**	**203**	**115,000**	<2.0	**43.3**	<5.4
MH-113266	8/27/2014	1003	1016	-28.5	-4	**39.9**	**5.2**	**4.3**	**7.2**	**14.8**	**8.7**	**290**	**25.1**	**7.2**	**9.8**	**175**	**48.7**	**38.0**	**96.3**	**12,600**	**10.3**	**13.6**	**40**
	9/2/2015	1333	1347	-30	-4.5	**43.8**	**1.4**	**15.2**	<1.2	**12.6**	**5.3**	**559**	**22.3**	<4.3	**13.2**	**28.6**	**243**	**9.2**	**73.6**	**35,000**	<1.9	**8.3**	**6.5**
	1/14/2016	1334	1341	-27	-4	**66.9**	<1.3	**6.2**	<1.3	<1.7	<1.6	**3.8**	<1.6	<1.8	<7.2	<7.1	**1.4**	<3.9	<2.2	**99.6**	<2.0	<0.53	<5.4
	8/11/2016	1232	1243	-27.5	-4	**71.8**	**2.5**	<6.3	<1.3	**15.9**	<1.7	<2180	**33.8**	<1.8	<1.5	**11.6**	<1850	**13.0**	**113**	**50,800**	**3.1**	<0.55	<5.6
	9/7/2016	1057	1104	-27	-5	**176**	**2.5**	**13.7**	**1.8**	**18.3**	**11.6**	**555**	**46.2**	**3.4**	**9.7**	**79.4**	**118**	**49.2**	**120**	**1,730**	**12.3**	**17.6**	**22.1**
	10/5/2016	1308	1316	-27	-5	**32.3**	**0.82**	<6.1	<1.3	**2.3**	<1.6	**124**	**5.4**	**<1.8**	**2.7**	**48.2**	**41.0**	<1.6	**13.5**	**5,950**	<2.0	**3.1**	<5.4
MH-113265	9/2/2015	1307	1318	-30	-4.5	**21.9**	**1.3**	**6.6**	**5.2**	**14.2**	**6.1**	**343**	**24.8**	<4.5	**2.2**	**14.7**	**244**	**4.0**	**94.5**	**32,600**	<2.0	**8.8**	<5.4
	1/14/2016	1256	1305	-27.5	-4	**22.2**	**1.5**	**9.3**	<1.2	<1.6	<1.6	**2.3**	<1.6	<1.7	<7.0	<6.8	**<1.3**	<3.7	<2.2	**70.9**	<1.9	<0.5	<5.1
	8/11/2016	1140	1152	-27	-4	**48.4**	**0.99**	**6.4**	**4.4**	**7.9**	**3.8**	**277**	**17.1**	<1.8	**3.0**	<7.4	**259**	**6.7**	**55.7**	**21,900**	**2.4**	**8.0**	<5.6
	9/7/2016	1025	1035	-30	-5	**142**	**1.7**	<6.1	**2.3**	**9.1**	**6.0**	**586**	**26.7**	**2.5**	**171**	**1010**	**107**	**33.2**	**63.8**	**18,100**	**18.4**	**9.7**	**16.8**
	10/5/2016	1250	1259	-27.5	-5	**273**	<0.68	**9.7**	<1.3	<1.7	<1.7	**86.2**	**2.6**	<1.8	**4.1**	**51.9**	**21.0**	**4.7**	**4.9**	**2,100**	<2.1	<0.55	<5.6
MH-113264	9/2/2015	1154	1206	-30	-5	**33.3**	**1.2**	**10.9**	<1.3	**16.0**	**6.9**	**379**	**29.1**	<4.5	**10.7**	**26.8**	**352**	**6.8**	**95.2**	**46,900**	<2.0	**9.9**	<5.4
	8/11/2016	1107	1116	-27.5	-4	**137**	**2.6**	**28.4**	**5.5**	**2.3**	<1.7	**101**	**4.7**	**4.2**	**16.9**	**72.5**	**248**	**30.1**	**13.2**	**6,030**	**9.2**	**2.5**	**23.8**
	9/7/2016	957	1007	-30	-5	**63.6**	**3.9**	<6.1	**17.5**	**17.4**	**11.1**	**1040**	**45.6**	**3.3**	**7.1**	**47.5**	**79.8**	**45.3**	**108**	**31,400**	**9.0**	**14.8**	**19.5**
	10/5/2016	1234	1242	-27	-5	**1470**	**1.1**	<6.3	**4.7**	**4.6**	**2.7**	**442**	**9.5**	<1.8	**5.2**	**51.3**	**117**	**15.1**	**18.2**	**10,300**	<2.1	<0.55	<5.6
MH-113263	9/2/2015	1112	1123	-28	-4.5	**19.4**	**2.0**	**5.3**	**7.4**	**13.4**	**6.2**	**745**	**23.5**	**11.1**	**3.1**	**17.0**	**404**	**9.9**	**82.1**	**40,800**	<2.0	**8.3**	**11.9**
	10/5/2016	1348	1357	-27	-5	**38.2**	<1.4	**7**	**7.9**	**5.2**	<4.2	**196**	**9.4**	<1.8	**4.8**	**42.9**	**113**	**2.1**	**27.6**	**9,810**	<2.1	**6.3**	<5.6
MH-112035	10/5/2016	1409	1418	-26.5	-5	**100**	1.5	**14.6**	<3.3	<4.3	<4.2	**137**	**2.7**	<1.8	**8.6**	**19.6**	**95.4**	**5.4**	**6.7**	**2,020**	<2.1	<1.1	<5.6
MH-112655	9/2/2015	1018	1028	-30	-4	**27.7**	**1.8**	**6.7**	**2.8**	<1.6	<1.6	**5.1**	<1.6	<4.3	**7.2**	**13.9**	**6.4**	**12.2**	<2.2	**292**	**2.4**	<0.5	**7.8**
	10/5/2016	1511	1521	-28	-5	**154**	<1.3	**9.8**	**4.0**	<2.5	<4.1	<2.4	<1.6	<1.8	**5.7**	**38.2**	**18.1**	**25.4**	<3.3	**22**	<2.0	<1.1	<5.4
MH-112608	10/5/2016	1436	1446	-27.5	-5	**218**	**1.5**	**30.9**	**14.4**	**5.1**	<4.2	**219**	**6.4**	<1.8	**11.6**	**14.4**	**218**	**13.0**	**175**	**7,990**	**7.0**	<1.1	**23.9**
20th Street Sewer																							
MH-110110	8/11/2016	1346	1357	-28.5	-4	**107**	**3.2**	**15.9**	**36.6**	<1.7	<1.6	<1.6	<1.6	<1.8	**6.3**	**14.6**	**3.0**	**15.8**	<2.2	<1.7	<2.0	<0.53	<5.4
	9/7/2016	1154	1204	-28.5	-3	**274**	**11.4**	**25.3**	**3.3**	<1.7	<1.6	<2.4	<1.6	**4.1**	**99.2**	**21.5**	**5.1**	**65.4**	<2.2	<1.6	**16.8**	<1.1	**24.6**
	10/5/2016	1148	1156	-26	-5	**146**	**3.7**	**44.2**	**3.6**	<1.7	<1.7	<1.7	<1.7	<1.8	33.5	**184**	**2.4**	**7.4**	<2.3	<1.2	<2.1	<0.55	<5.6
MH-110111	8/11/2016	1417	1429	-30	-3	**110**	**2.3**	**16.9**	<1.2	<1.5	<1.5	<1.5	<1.5	<1.6	<1.3	**9.3**	<1.3	**13.6**	<2.1	<1.0	<1.9	<0.49	<5.0
	9/7/2016	1235	1244	-28	-5	**194**	**6.2**	**38.4**	**2.1**	<1.7	<1.7	<3.1	<1.7	<1.8	**40.6**	**17.2**	**3.6**	**9.5**	<2.3	<2.1	<2.1	<1.1	**7.4**
	10/5/2016	1206	1215	-29	-4.5	**31.9**	<0.66	<6.1	**5**	<1.7	<1.6	<1.6	<1.6	<1.8	**2.3**	**8.6**	<1.4	**3.0**	<2.2	<1.1	<2.0	<0.53	<5.4
Elliot Williams Sanitary and Storm Sewer																							
Manhole 1 Deep*	5/18/2016	1451	1500	-28	-4	**431**	**1.5**	**15.0**	<1.3	<1.7	<1.6	**11.0**	<1.6	**1.9**	**9.9**	**15.6**	**2.8**	**7.1**	<2.2	**52**	<5.0	<0.53	**10**
	6/7/2016	928	938	-27	-3.5	**28.5**	<1.3	<5.8	**3.8**	<1.6	<1.6	**3.6**	<1.6	**9.5**	<3.5	**20.4**	**2.6**	<3.7	<2.2	**43.7**	<1.9	<0.50	<5.1
Manhole 1 Shallow**	5/18/2016	1500	1514	-29	-4	**443**	**1.1**	**17.9**	<1.2	<1.6	<1.6	<1.6	<1.6	<1.7	<13.9	**11.6**	**1.9**	**6.5**	<2.2	**4.6**	**2.9**	<0.5	**7.0**
	6/7/2016	926	937	-27	-3.5	**29.4**	<1.2	<5.6	<1.2	<1.5	<1.5	<1.5	<1.5	**1.9**	<3.3	**16.5**	<1.3	<3.6	<2.1	**10.5**	<1.9	<0.49	<5
EWSSCO-1	5/18/2016	850	857	-26	-4	**23.9**	**2.1**	<5.6	**2.3**	<1.5	<1.5	**12.5**	<1.5	<1.6	**18.0**	**19.1**	**10.1**	**16.7**	<2.1	**281**	**3.2**	<0.49	**7.4**
	6/7/2016	844	853	-27.5	-4	**15.2**	<1.2	<5.6	<1.2	<1.5	<1.5	**63.4**	**5.2**	<1.6	<3.3	**19.9**	**47.9**	<3.6	**5.4**	**1,320**	<1.9	**0.66**	<5.0
EWSSCO-2	5/18/2016	900	907	-27.5	-4	**21.0**	**1.0**	<5.8	**5.6**	<1.5	<1.6	**14.3**	<1.6	<1.7	<13.9	**14.9**	**5.8**	**4.2**	<2.2	**201**	**2.5**	<0.50	<5.1
	6/7/2016	901	911	-27.5	-4	**12.2**	<1.3	<5.8	**2.1**	<1.6	<1.6	**68.4**	**5.3**	<1.7	<3.5	**12.9**	**55.1**	<3.7	**6.5**	**1,580**	<1.9	**0.85**	<5.1
EWST-1A	5/18/2016	1248	1300	-28	-4	**259**	**2.7**	**13.5**	<1.2	<1.6	<1.6	<1.6	<1.6	<1.7	<13.9	**7.2**	**14.0**	**4.9**	<2.2	**1.9**	**2.6**	<0.50	<5.1
EWST-1B	5/18/2016	1425	1437	-29	-4	**184**	**6.8**	**8.8**	<1.1	<1.5	<1.5	<1.5	<1.5	**4.0**	**5.5**	**8.3**	<1.2	**24.1**	<2.0	<0.99	**5.7**	<0.47	**18.7**

Notes

Results reported in ug/m^3 (micrograms per cubic meter).

Sewer gas screening levels are not established within current published IDEM guidance.

* Collected from approximately 9 inches above Manhole #1 sewer invert.

** Collected from approximately 7.5 feet above Manhole #1 sewer invert, between sanitary and storm outfall pipes.

EW = Elliot Williams building

VOC = Volatile Organic Compound

inHg = Inches of Mercury

Dup = Duplicate Sample Collected

Bold Values = Compound Detected Above Laboratory Reporting Limit

Table 5 - Sewer Water Analytical Data
Chemtura
3500 East 20th Street, Indianapolis, Indiana

Sample ID	Sample Date	Acetone	Benzene	Carbon disulfide	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	n-Hexane	Methylene Chloride	Methyl ethyl ketone	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	1,2,4-Trimethylbenzene	Vinyl Chloride	Total Xylene
Onsite Sewer																			
Manhole #1	September 21, 2001	NA	NA	NA	NA	NA	**9.5**	NA	NA	NA	NA	NA	NA	NA	NA	**57**	NA	NA	NA
	April 4, 2012	<20	<1	<2.5	<1	<1	**14**	**0.55 J**	<1	NA	<5	NA	**2.3**	<1	<1	**83**	NA	<1	<3
	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**12.2**	<5.0	<5.0	<10.0	<5.0	<10.0	<5.0	<5.0	<5.0	**49.4**	<5.0	<2.0	<10.0
	May 18, 2016	<100	<5.0	<10.0	<5.0	<5.0	**12.5**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**106**	<5.0	<2.0	<10.0
	June 7, 2016	<100	<5.0	<10.0	<5.0	<5.0	**7.7**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**54.8**	<5.0	<2.0	<10.0
Manhole #2	September 21, 2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**26**	NA	NA	NA
	April 4, 2012	**3.6 J**	<1	<2.5	<1	<1	**0.42 J**	<1	<1	NA	<5.0	NA	**14**	<1	<1	**5.7**	NA	<1	<3
	January 18, 2013	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0	<5.0	<5.0	<5.0	**15.5**	<5.0	<10.0	<10.0
	January 18, 2013	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0	<5.0	<5.0	<5.0	**6.11**	<5.0	<10.0	<10.0
	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0	<5.0	<5.0	<5.0	**7.38**	<5.0	<2	<10.0
Manhole #4	November 16, 2000	<1200	NA	NA	ND	NA	<5.0	<5.0	NA	NA	NA	**3,500**	<5.0	NA	<5.0	**850**	NA	NA	NA
	March 5, 2001	<25	NA	NA	ND	NA	**51**	<5.0	NA	NA	NA	<25.0	<5.0	NA	**9.4**	**760**	NA	NA	NA
	June 22, 2001	**25**	NA	NA	ND	NA	**54**	<5.0	NA	NA	NA	<25.0	<5.0	NA	<5.0	**920**	NA	NA	NA
	September 21, 2001	<5.0	NA	NA	ND	NA	**63**	<5.0	NA	NA	NA	<5.0	<5.0	NA	**8.7**	**960**	NA	NA	NA
	September 24, 2002	<25	NA	NA	ND	NA	**49**	<5.0	NA	NA	NA	<25.0	<5.0	NA	**7.8**	**810**	NA	NA	NA
	October 28, 2002	<25	NA	NA	ND	NA	**36**	<5.0	NA	NA	NA	<25.0	<5.0	NA	**7.8**	**630**	NA	NA	NA
	December 20, 2002	<5.0	NA	NA	ND	NA	**31**	<5.0	NA	NA	NA	<5.0	<5.0	NA	**5.2**	**460**	NA	NA	NA
	March 13, 2003	<25	NA	NA	ND	NA	**12**	<5.0	NA	NA	NA	<25.0	**1.8J**	NA	<5.0	**120**	NA	NA	NA
	June 24, 2003	<25	NA	NA	ND	NA	**71**	<5.0	NA	NA	NA	<25.0	<5.0	NA	**12**	**810**	NA	NA	NA
	September 24, 2003	<25	NA	NA	ND	NA	**47**	<5.0	NA	NA	NA	<25.0	<5.0	NA	**6.4**	**660**	NA	NA	NA
	March 24, 2004	<50	NA	NA	ND	NA	**37**	<5.0	NA	NA	NA	<50.0	<10	NA	<10	**520**	NA	NA	NA
	June 3, 2004	<50	NA	NA	ND	NA	**44**	<5.0	NA	NA	NA	<50.0	<10	NA	<10	**480**	NA	NA	NA
	September 29, 2004	<25	NA	NA	**2.0J**	NA	**53**	1.6J	NA	NA	NA	<25.0	<5.0	NA	**6.1**	**450**	NA	NA	NA
	December 16, 2004	<25	NA	NA	<5.0	NA	**46**	<5.0	NA	NA	NA	<25.0	<5.0	NA	<5.0	**550**	NA	NA	NA
	March 16, 2005	<25	NA	NA	<5.0	NA	**34**	<5.0	NA	NA	NA	<25.0	**8.5**	NA	**4.3**	**430**	NA	NA	NA
	June 24, 2005	<25	NA	NA	<5.0	NA	**44**	<5.0	NA	NA	NA	<25.0	**5.9**	NA	<5.0	**550**	NA	NA	NA
	October 25, 2005	<25	<5.0	<5.0	<5.0	<5.0	**35**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	**5.9**	**680**	<5.0	<5.0	<5.0
	January 13, 2006	<25	<5.0	<5.0	<5.0	<5.0	**12**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**99**	<5.0	<5.0	<5.0
	May 10, 2006	<25	<5.0	<5.0	<5.0	<5.0	**24**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**350**	<5.0	<5.0	<5.0
	August 3, 2006	**13 J**	<1.0	<5.0	<1.0	<1.0	**1.4**	<1.0	<1.0	NA	<5.0	<25.0	<1.0	<1.0	<1.0	**20**	NA	<1.0	<1.0
	November 7, 2006	<25	<5.0	<5.0	**1.7 J**	**1.1 J**	**43**	**2.6 J**	<5.0	<5.0	<5.0	<25.0	**5.1**	<5.0	**5.3**	**660**	<5.0	**1.4 J**	<5.0
	February 28, 2007	<25	<5.0	<5.0	<5.0	<5.0	**18**	<5.0	<5.0	<5.0	<5.0	<25.0	**22**	<5.0	<5.0	**310**	<5.0	<2.0	<5.0
	June 26, 2007	<25	<5.0	<5.0	<5.0	<5.0	**29**	<5.0	<5.0	<5.0	<5.0	<25.0	**22**	<5.0	<5.0	**610**	<5.0	<2.0	<5.0
	September 28, 2007	<25	<5.0	<5.0	<5.0	<5.0	**23**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**580**	<5.0	<2.0	<5.0
	December 21, 2007	<25	<5.0	<5.0	<5.0	<5.0	**16**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**310**	<5.0	<2.0	<5.0
	March 17, 2008	<25	<5.0	<5.0	<5.0	<5.0	**31**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**540**	<5.0	<5.0	<5.0
	November 19, 2008	<25	<5.0	<5.0	<5.0	<5.0	**793**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	**6.2**	<5.0	<5.0	<5.0	<5.0
	November 4, 2010	<100	<5.0	<10.0	<5.0	<5.0	**289**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	**6.1**	**691**	<5.0	<2.0	<10.0
	April 4, 2012	**11 J**	<1	<2.5	<1	<1	**55**	**1.3**	<1	NA	**1.1 J**	NA	**2.8**	<1	**3.6**	**570**	NA	<1	<3
	June 28, 2013	<100	<5.0	<5.0	<5.0	<5.0	**26.5**	<5.0	<5.0	<10	<5.0	<10	<5.0	<5.0	<5.0	**925**	<5.0	<2.0	<10.0
	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**11**	<5.0	<5.0	<10	<5.0	<10	<5.0	<5.0	<5.0	**969**	<5.0	<2.0	<10.0
	August 25, 2013	<100	<5.0	<5.0	<5.0	<5.0	**21.8**	<5.0	<5.0	<10	<5.0	<10	<5.0	<5.0	<5.0	**901**	<5.0	<2.0	<10.0
	August 25, 2013	<100	<5.0	<5.0	<5.0	<5.0	**42.2**	<5.0	<5.0	<10	<5.0	<10	<5.0	<5.0	<5.0	**472**	<5.0	<2.0	<10.0
	August 27, 2014	<100	<5.0	<10.0	<5.0	<5.0	**20.7**	<5.0	<5.0	<5.0	<5.0	<25.0	**6.4**	<5.0	<5.0	**894**	<5.0	<2.0	<10.0
	August 27, 2014	<100	<5.0	<10.0	<5.0	<5.0	**17**	<5.0	<5.0	<5.0	<5.0	<25.0	**5.1**	<5.0	<5.0	**922**	<5.0	<2.0	<10.0
	May 14, 2015	<100	<5.0	<10.0	<5.0	<5.0	**27.5**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	9.1	**2490**	<5.0	<2.0	<10.0
	September 2, 2015	<100	<5.0	<10.0	<5.0	<5.0	**20.1**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**871**	<5.0	<2.0	<10.0
	September 2, 2015	<100	<5.0	<10.0	<5.0	<5.0	**22.1**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**953**	<5.0	<2.0	<10.0
	January 14, 2015	<100	<5.0	<10.0	<5.0	<5.0	**13.7**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**570**	<5.0	<2.0	<10.0
Manhole #5	April 4, 2012	<20	<1	<2.5	<1	<1	**56**	**2.8**	<1	NA	<5	NA	**16**	<1	<1	**180**	NA	**6.6**	<3
	January 18, 2013	<100	<5.0	<5.0	<5.0	<5.0	**48.5**	<5.0	<5.0	<10.0	<5.0	<10.0	**6.26**	<5.0	<5.0	**314**	<5.0	<2.0	<10.0
	January 18, 2013	<100	<5.0	<5.0	<5.0	<5.0	**88.2**	<5.0	<5.0	<10.0	<5.0	<10.0	**5.95**	<5.0	<5.0	**328**	<5.0	**3.15**	<10.0
	January 18, 2013	<100	<5.0	<5.0	<5.0	<5.0	**40.2**	<5.0	<5.0	<10.0	<5.0	<10.0	**17**	<5.0	<5.0	**273**	<5.0	<2.0	<10.0
	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**51.8**	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	**30.4**	<5.0	**2.85**	<10.0
Manhole #6	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**16.2**	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	**104**	<5.0	<2.0	<10.0
Manhole #7	August 23, 2013	<100	<5.0	<5.0	<5.0	<5.0	<5	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	<5	<5.0	<2.0	<10.0
Line 1 (50')	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**5.73**	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	<5	<5.0	<2.0	<10.0
Line 1 (100')	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	<5	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	**7.9**	<5.0	<2.0	<10.0
Line 1 (150')	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**9.41**	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	**29.9**	<5.0	<2.0	<10.0
Line 1 (200')	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**8.62**	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	**47.6**	<5.0	<2.0	<10.0
Line 1 (250')	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**19.6**	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	**95.8**	<5.0	<2.0	<10.0
Line 1 (300')	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**24.5**	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	**195**	<5.0	<2.0	<10.0
Line 1 (400')	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**18**	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	**77.6**	<5.0	<2.0	<10.0
Line 1 (450')	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**21**	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	**111**	<5.0	<2.0	<10.0
Line 1 (500')	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**28**	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	**152**	<5.0	<2.0	<10.0
Line 1 (550')	August 1, 2013	<100	<5.0	<5.0	<5.0	<5.0	**23.7**	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	**166**	<5.0	<2.0	<10.0
	August 23, 2013	<100	<5.0	<5.0	<5.0	<5.0	**32.7**	<5.0	<5.0	<10.0	<5.0	<10.0	<5	<5.0	<5.0	**231**	<5.0	<2.0	<10.0
20th Street Sewer																			
Manhole #110110	August 11, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
	September 7, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
	October 5, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
Manhole #110111	August 11, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
	September 7, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
	October 5, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
Brookside Parkway Sewer																			
Manhole #112035	October 5, 2016	<100	<5.0	<10.0	<5.0	<5.0	**28.1**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**204**	<5.0	<2.0	<10.0
Manhole #112608	October 5, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
Manhole #112655	September 2, 2015	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	October 5, 2016	**231**	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
Manhole #113263	September 2, 2015	<100	<5.0	<10.0	<5.0	<5.0	**9.5**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**117**	<5.0	<2.0	<10.0
	October 5, 2016	<100	<5.0	<10.0	<5.0	<5.0	**28**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**259**	<5.0	<2.0	<10.0
Manhole #113264	September 2, 2015	<100	<5.0	<10.0	<5.0	<5.0	**7.1**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**181**	<5.0	<2.0	<10.0
	August 11, 2016	<100	<5.0	<10.0	<5.0	<5.0	**6.0**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**184**	<5.0	<2.0	<10.0
	September 7, 2016	<100	<5.0	<10.0	<5.0	<5.0	**13.4**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**306**	<5.0	<2.0	<10.0
	October 5, 2016	<100	<5.0	<10.0	<5.0	<5.0	**21.5**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**349**	<5.0	<2.0	<10.0
Manhole #113265	September 2, 2015	<100	<5.0	<10.0	<5.0	<5.0	**9.6**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**247**	<5.0	<2.0	<10.0
	January 14, 2016	<100	<5.0	<10.0	<5.0	<5.0	**12.4**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**368**	<5.0	<2.0	<10.0
	August 11, 2016	<100	<5.0	<10.0	<5.0	<5.0	**6.8**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**280**	<5.0	<2.0	<10.0
	September 7, 2016	<100	<5.0	<10.0	<5.0	<5.0	**12.0**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**236**	<5.0	<2.0	<10.0
	October 5, 2016	<100	<5.0	<10.0	<5.0	<5.0	**25.9**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**432**	<5.0	<2.0	<10.0
Manhole #113266	August 27,2014	<100	<5.0	<10.0	<5.0	<5.0	**7.6**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**223**	<5.0	<2.0	<10.0
	May 14, 2015	<100	<5.0	<10.0	<5.0	<5.0	**8.3**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**250**	<5.0	<2.0	<10.0
	September 2, 2015	<100	<5.0	<10.0	<5.0	<5.0	**8.5**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**259**	<5.0	<2.0	<10.0
	January 14, 2016	<100	<5.0	<10.0	<5.0	<5.0	**5.1**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**154**	<5.0	<2.0	<10.0
	August 11, 2016	<100	<5.0	<10.0	<5.0	<5.0	**8.3**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**312**	<5.0	<2.0	<10.0
	September 7, 2016	<100	<5.0	<10.0	<5.0	<5.0	**15.5**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**402**	<5.0	<2.0	<10.0
	October 5, 2016	<100	<5.0	<10.0	<5.0	<5.0	**30.3**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**547**	<5.0	<2.0	<10.0
Manhole #113267	August 27,2014	<100	<5.0	<10.0	<5.0	<5.0	**12.5**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**479**	<5.0	<2.0	<10.0
	May 14, 2015	<100	<5.0	<10.0	<5.0	<5.0	**11.1**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**714**	<5.0	<2.0	<10.0
	September 2, 2015	<100	<5.0	<10.0	<5.0	<5.0	**14.0**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**513**	<5.0	<2.0	<10.0
	January 14, 2016	<100	<5.0	<10.0	<5.0	<5.0	**8.4**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**300**	<5.0	<2.0	<10.0
	August 11, 2016	<100	<5.0	<10.0	<5.0	<5.0	**12.2**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**599**	<5.0	<2.0	<10.0
	September 7, 2016	<100	<5.0	<10.0	<5.0	<5.0	**16.1**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**515**	<5.0	<2.0	<10.0
	October 5, 2016	<100	<5.0	<10.0	<5.0	<5.0	**38.4**	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	**740**	<5.0	<2.0	<10.0
Elliot Williams Storm and Sanitary Sewer																			
EWCB-West	May 18, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
	June 7, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
EWCB-Center	May 18, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
	June 7, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
EWCB-East	May 18, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
EWSSCO-1	May 18, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
	June 7, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
EWSSCO-2	May 18, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0
	June 7, 2016	<100	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<10.0

Notes:

All results reported in ug/L (micrograms per liter).
Sewer water screening levels are not established within current published IDEM guidance.
EW = Elliot Williams building
VOC = Volatile Organic Compound
J = Value estimated between laboratory method detection limit and reporting limit
Bold Values = Compound Detected Above Laboratory Reporting Limit
Dry = Manhole did not contain water during sampling event
NA = Compound not analyzed

Table 6 - Elliot Williams Building Vapor Intrusion Evaluation Results
Chemtura Site
3500 E 20th Street, Indianapolis, IN

						Acetone	Benzene	Carbon disulfide	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	Methylene chloride	Methyl Ethyl Ketone	n-Hexane	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	1,2,4-Trimethylbenzene	Vinyl chloride	Xylenes
2016 IDEM RCG Commercial/Industrial Indoor Air Screening Level - ug/m^3						**140,000**	**16**	**3,100**	**77**	**880**	**NE**	**NE**	**49**	**2,600**	**22,000**	**3,100**	**180**	**22,000**	**22,000**	**8.8**	**31**	**28**	**440**
2016 IDEM RCG Commercial/Industrial Subslab Screening Level - ug/m^3*						**14,000,000**	**1,600**	**310,000**	**7,700**	**88,000**	**NE**	**NE**	**4,900**	**260,000**	**2,200,000**	**310,000**	**18,000**	**2,200,000**	**2,200,000**	**880**	**3,100**	**2,800**	**44,000**
Sample ID	Start Date	Start Time	Stop Time	Initial Pressure (in Hg)	Final Pressure (in Hg)																		
IA-1	29-May-14	729	1431	-30	-4	**49.3**	< 0.52	< 1.0	< 1.3	< 1.3	< 1.3	< 1.3	< 1.4	< 5.7	**13.2**	**2**	**2.6**	**5.3**	< 1.8	**2**	**1.9**	< 0.42	< 1.4
	29-Feb-16	853	1606	-26.5	-3	**13**	< 1.0	< 0.98	< 1.3	< 3.1	< 1.3	< 1.3	< 1.4	< 5.5	< 4.6	**1.6**	**1.6**	**1.3**	< 1.7	**13.8**	< 1.5	< 0.40	< 4.1
IA-2	29-May-14	726	1400	-30	-5	**59.5**	< 0.55	< 1.1	< 1.4	< 1.4	< 1.4	< 1.4	< 1.5	< 5.9	**11.6**	**2**	< 1.2	**4.5**	< 1.9	**1.8**	**1.7**	< 0.44	**1.5**
	29-Feb-16	904	1613	-29	-3	**7.5**	< 1.0	< 0.98	< 1.3	< 3.1	< 1.3	< 1.3	< 1.4	< 5.5	< 4.6	**1.3**	**1.5**	**1.2**	< 1.7	**11.0**	< 1.5	< 0.40	< 4.1
IA-3	29-May-14	720	1427	-30	-5	**19.4**	**0.52**	< 0.98	< 1.3	< 1.3	< 1.3	< 1.3	< 1.4	< 5.5	**3.5**	**1.7**	**3.7**	**3.9**	< 1.7	**4**	**1.8**	< 0.40	< 1.4
	29-Feb-16	847	1623	-30	-4	**8.8**	< 0.97	< 0.94	< 1.2	< 3.0	< 1.2	< 1.2	< 1.3	< 5.3	< 4.5	**1.2**	**13.5**	**1.4**	< 1.7	**32.9**	< 1.5	< 0.39	< 3.9
IA-4	29-May-14	725	1359	-29.5	-4.5	**47.9**	**0.78**	< 1.1	< 1.4	< 1.4	< 1.4	< 1.4	< 1.5	< 5.9	**10**	**2.2**	**3.5**	**4.8**	< 1.9	**2.4**	**2**	< 0.44	**1.5**
	29-Feb-16	911	1615	-30	-5	**10.2**	< 1.0	< 1.0	< 1.3	< 3.2	< 1.3	< 1.3	< 1.4	< 5.7	< 4.8	< 1.2	**1.8**	**1.4**	< 1.8	**21.0**	< 1.6	< 0.42	< 4.3
IA-5	29-May-14	712	1400	-29.5	-4	**40.6**	< 0.52	< 1.0	< 1.3	< 1.3	< 1.3	< 1.3	< 1.4	< 5.7	**5.4**	**1.7**	**2.7**	**5.3**	< 1.8	**2.2**	**1.8**	< 0.42	**1.5**
	29-Feb-16	841	1604	-30	-3.5	**13.9**	**1.3**	**2.6**	< 1.2	< 3.0	< 1.2	< 1.2	< 1.3	< 5.3	< 4.5	**1.3**	**2.6**	**2**	< 1.7	**10.5**	< 1.5	< 0.39	< 3.9
IA-6	29-May-14	722	1434	-30	-5	**41.2**	**0.79**	< 0.98	< 1.3	< 1.3	< 1.3	< 1.3	< 1.4	**5.7**	**11.9**	**3.1**	**3.9**	**57**	< 1.7	**2**	**2**	< 0.40	**4.7**
	29-Feb-16	1919	1618	-30	-5.5	**26.1**	**1.3**	< 1.0	< 1.3	< 3.2	< 1.3	< 1.3	**2.3**	< 5.7	< 4.8	**1.3**	**1.3**	**4.9**	< 1.8	**6.6**	**7.2**	< 0.42	**16.6**
	29-Feb-16 (Dup)	-	-	-30	-3.5	**18.4**	**<1.0**	<1.0	<1.3	<3.2	<1.3	<1.3	**<1.4**	<5.7	<4.8	**1.3**	**1.3**	**1.7**	<1.8	**6.2**	**<1.6**	<0.42	**<4.3**
IA-7	29-May-14	728	1430	-30	-4	**30.1**	< 0.52	< 1.0	< 1.3	< 1.3	< 1.3	< 1.3	< 1.4	< 5.7	**5.2**	**1.7**	**2.9**	**3.9**	< 1.8	**2**	**1.7**	< 0.42	< 1.4
	29-Feb-16	858	1608	-29	-4	**17.1**	< 1.0	< 0.98	< 1.3	< 3.1	< 1.3	< 1.3	< 1.4	< 5.5	**5.5**	**1.3**	**2.2**	**1.7**	< 1.7	**10.4**	**2.1**	< 0.40	< 4.1
SS-1	29-May-14	1319	1328	-28	-5	< 244	< 0.66	< 1.3	< 1.7	< 1.6	< 1.6	< 1.6	**2.8**	< 7.1	**21.2**	**2.3**	**2,790**	**67.9**	**15.3**	**191**	**11.3**	< 0.53	**15.8**
	29-Feb-16	852	1606	-30	-3.5	**11.6**	< 0.97	< 0.94	< 1.2	< 3.0	< 1.2	< 1.2	< 1.3	< 5.3	< 4.5	**1.1**	**2,070**	< 1.1	**13.4**	**122**	< 1.5	< 0.39	< 3.9
SS-2	29-May-14	1237	1249	-28.5	-5	**462**	**1.1**	**1.8**	< 1.7	< 1.7	**2.5**	< 1.7	**4.2**	**13.2**	**69.3**	**3.4**	**35.5**	**103**	**139**	**208**	**7.4**	< 0.55	**23.8**
	29-Feb-16	903	1634	-30	-21	**20.2**	**5.7**	< 2.3	< 3.0	< 7.4	< 3.0	< 3.0	< 3.2	< 13.0	< 11.0	**4.5**	**7.1**	**8.9**	< 4.1	< 2.0	< 3.7	< 0.95	**15.4**
SS-3	29-May-14	1157	1200	-27.5	-5	**73.9**	**1.9**	**1.9**	**25.6**	< 1.6	**1,040**	**51.9**	**2.2**	< 6.8	**37.4**	**2.1**	**1,100**	**148**	**582**	**42,100**	**5.4**	< 0.50	**14.7**
	29-Feb-16	846	1623	-30	-4	**34.6**	**1.7**	< 0.94	**7.7**	< 3.0	**504**	**25.3**	**1.6**	**136**	< 4.5	**25.2**	**287**	**23.8**	**43.9**	**14,500**	**1.5**	**1.5**	**7.8**
SS-4	29-May-14	1221	1226	-29	-5	**41.4**	< 0.66	**1.4**	< 1.7	< 1.6	**4.8**	< 1.6	**1.9**	< 7.1	**12.3**	**1.8**	**20.6**	**137**	< 2.2	**241**	**4.4**	< 0.53	**12.4**
	29-Feb-16	910	1615	-29	-4.5	**11**	< 1.0	< 1.0	< 1.3	< 3.2	< 1.3	< 1.3	< 1.4	< 5.7	< 4.8	**1.2**	< 1.1	< 1.2	< 1.8	**9.4**	< 1.6	< 0.42	< 4.3
SS-5	29-May-14	1102	1113	-29	-5	**247**	**5.9**	**4.2**	< 1.7	< 1.7	< 1.7	< 1.7	**8.5**	< 7.4	**32.4**	**12.3**	**9.4**	**230**	**31.2**	**2,320**	**15.3**	< 0.55	**33.5**
	29-Feb-16	840	1628	-29	-15	**209**	**4.2**	< 1.7	< 2.2	< 5.4	< 2.2	< 2.2	**11.3**	< 9.5	**54.5**	**10.2**	**5.4**	**7.3**	**32.3**	**1,120**	**32.1**	< 0.70	**64**
SS-6	29-May-14	1343	1354	-27	-5	**55.7**	< 0.66	**1.3**	< 1.7	< 1.6	< 1.6	< 1.6	**2**	< 7.1	**16.7**	**3.2**	**162**	**61.8**	< 2.2	**42.9**	**8.5**	< 0.53	**12.9**
	29-Feb-16	918	1618	-30	-5	**55.4**	< 1.1	**6.2**	< 1.4	< 3.4	< 1.4	< 1.4	< 1.5	< 5.9	**80.3**	**8.8**	**2.8**	**1.5**	< 1.9	**4**	< 1.7	< 0.44	**5**
SS-7	29-May-14	1258	1312	-27	-5	**46.7**	**2.2**	< 1.3	< 1.7	< 1.6	< 1.6	< 1.6	< 1.8	**618**	**4.4**	**16.9**	**1.9**	**12.1**	< 2.2	**5.2**	**3.3**	< 0.53	**7.4**
	29-Feb-16	859	1608	-30	-5	**8.4**	< 1.0	< 1.0	< 1.3	< 3.2	< 1.3	< 1.3	< 1.4	< 5.7	< 4.8	**1.2**	**49.6**	< 1.2	**9.7**	**1.6**	< 1.6	< 0.42	< 4.3

Notes:

ug/m^3 = All samples reported in micrograms per cubic meter
IDEM RCG = Indiana Department of Environmental Management Remediation Closure Guide - March 22, 2012 (Updated 2016).
< = Compound not detected. Reportable detection limit shown.
NE = Screening Level Not Estalished
IA = Indoor Air Sample
SS = Subslab Soil Gas Sample
Dup = Duplicate sample collected
Bold Values = Compound detected aboe laboratory reporting limit
Concentrations highlighted in blue exceed the commercial/industrial indoor air screening level (IDEM RCG - March 2016)
Concentrations highlighted in green exceed the commercial/industrial subslab soil gas screening level (US EPA - June 2015; IDEM RCG - March 2016)
* An attenuation factor of 0.01 applied to IDEM commerical/industrial indoor air screening level (March 2016)

Appendices