DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name:	Former General Latex Chemical Corporation Facility
Facility Address:	1526 Cleveland Avenue, Ashland, Ohio
Facility EPA ID#:	OHD001008341

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   _*X*__ If yes – check here and continue with #2 below.

   _____ If no – re-evaluate existing data, or

   _____ If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)
Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI
A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies
While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations
EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale/Key Contaminants
Groundwater	__X_	____	____	__7__ ***constituents exceed generic cleanup criteria; see Rationale and Reference Section below.***
Air (Indoors)[2]	__X__ _	_ _	____	__4__ ***constituents exceed generic cleanup criteria; see Rationale and Reference Section below.***
Surface Soil (e.g., <2 ft)	_X__	____	____	_6_ ***constituents exceed generic cleanup criteria; see Rationale and Reference Section below.***
Surface Water	____	_X_	____	***See Rationale and Reference Section below.***
Sediment	____	_X_	____	***See Rationale and Reference Section below.***
Subsurf. Soil (e.g., >2 ft)	_X__	____	____	_2_ ***constituents exceed cleanup criteria; see Rationale and Reference Section below.***
Air (outdoors)	____	_X_	____	***See Rationale and Reference Section below.***

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

___X_ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and References for Contaminated Media:

Site Investigations and References

The environmental conditions at the former General Latex Chemical Corporation facility (facility) have been studied through various site investigation activities by the current owner. These studies include:

- *Phase I and Phase II property investigations completed in 2001 and 2003*
- *Soil and groundwater fate and transport investigation completed in 2003*
- *Soil removal remedial action completed in 2003*
- *Groundwater monitoring from 2001 to present*
- *Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) completed in 2008*
- *Current Conditions Report (CCR) submitted in 2009*
- *Subslab soil vapor investigation conducted in 2008 and 2009*

Groundwater at the site has been sampled since 2001. The most recent data (primarily from October 2008 and May 2009) are used in this evaluation because it represents the current condition of the site. Data from 2008 represents

the most comprehensive data set, and data from 2009 is the most recent subset. The most recent May 2009 data have not yet been summarized in a report to the U.S. Environmental Protection Agency (USEPA). However, Attachment A includes the May 2009 analytical laboratory reports, data quality evaluation reports, and the validated groundwater data tabulated.

Subslab soil gas was sampled at the site in October 2008 and May/June 2009. Outdoor air was sampled at the site in May 2009. The most recent (May/June 2009) data have not yet been summarized in a report to USEPA. However, Attachment B includes the May/June 2009 analytical laboratory reports, data quality evaluation reports, and the validated groundwater data tabulated.

Surface and subsurface soil has been sampled during investigations at the site in 2001, 2003, and 2008.

Key references that summarize these data through the 2008 investigations include:

- *Phase II property investigation report by Roffman Associates Inc. (RAI 2003) submitted in 2003 that documents findings from the Phase I property inspection and consolidated Phase II investigation data from 2001 through 2003.*
- *Remedial action planning and remediation report by RAI submitted in 2004 that provides details on the work planning and implementation of the remedial soil excavation activities conducted in 2003.*
- *CCR by CH2M HILL submitted in 2009, which is a comprehensive document that summarizes historical information provided in the RAI reports; evaluates soil, groundwater, and soil gas data against screening criteria; defines the nature and extent of soil and groundwater contamination at the site; and includes an evaluation of the 2008 RFI data.*

These reports have been previously submitted to USEPA. Figure 1 shows the facility features.

Rationale/Key Constituents

<u>Groundwater</u>

Groundwater concentrations were compared against either the USEPA maximum contaminant levels (MCLs) or the regional screening levels (RSLs) for tap water (USEPA 2009), if no MCL exists. The most recent groundwater data for each analytical suite were used to evaluate current conditions at the site. Groundwater RCRA metals data and semivolatile organic compound (SVOC) data collected in 2001 and groundwater VOC data collected in 2008 and 2009 were screened in the evaluation. The constituents that exceed the screening level are shown in Table 1 and on Figures 2 and 3.

TABLE 1
Potential Constituents of Interest in Groundwater that Exceed USEPA Regional Screening Levels

	Screening Level					
Analyte	Tap Water	MCL	Applied Screening Level*	Units	Groundwater Maximum Detected Concentration	Location of Maximum Detected Concentration
METALS						
Lead	NA	15	15	µg/L	36.2	MW03
VOCs						
Bromomethane	8.7	NA	8.7	µg/L	10.1	MW16
Chloroform	0.19	NA	0.19	µg/L	1.21	MW16
Chloromethane	190	NA	190	µg/L	676	MW16
Methylene chloride	4.8	5	5	µg/L	101	MW16
Trichloroethene (TCE)	1.7	5	5	µg/L	53.8	MW09
Trichlorofluoromethane (Freon-11)	1,300	NA	1,300	µg/L	414,000	MW16

* Applied Screening Level = The MCL is used when available; otherwise, the May 2009 tap water RSL is applied.
µg/L – micrograms per liter
NA – not applicable

Air Indoors

Subslab soil vapor samples were collected in October 2008 and in May and June 2009 in the existing building at the site and analyzed for volatile organic compounds (VOCs). The subslab soil gas data are applied to an indoor air evaluation and compared to screening levels for soil gas based on the USEPA RSLs for industrial air (USEPA 2008). An attenuation factor of 0.1 was applied to the indoor air screening levels for the subslab vapor samples. The attenuation factors were applied in accordance with the draft guidance for evaluating the vapor intrusion to indoor air pathway from groundwater and soils ("Subsurface Vapor Intrusion Guidance" [USEPA 2002a]).

USEPA's draft vapor intrusion guidance (USEPA 2002a) provides screening levels for indoor air and soil gas based on a range of target risk levels (that is, tables of screening levels are provided for 10^{-4}, 10^{-5}, and 10^{-6} target risk levels). According to the 2002 guidance document, USEPA generally recommends using the 10^{-5} values for the purpose of making Current Human Exposures Under Control Environmental Indicator (EI) determinations with respect to vapor intrusion. The results of the comparison of site data to screening levels considering 10^{-5} target risk levels for carcinogens and a hazard quotient of 1 for noncarcinogen are shown in Table 2. The results of this comparison are shown in Table 2 and on Figure 4.

TABLE 2
Potential Constituents of Interest in Soil Gas that Exceed Generic Soil Gas Screening Levels for Industrial Use

Analyte	Screening Level	Units	Soil Gas Maximum Detected Concentration	Location of Maximum Detected Concentration
VOCs				
Carbon Tetrachloride	82	µg/L	180	VS-11
Chloroform	53	µg/L	170	VS-5
Trichloroethene (TCE)	610	µg/L	83,000	VS-8
Trichlorofluoromethane (Freon-11)	31,000	µg/L	450,000	VS-13

µg/L – micrograms per liter

Surface Soil

Surface soil, as defined from ground surface to 2 feet below ground surface, were compared against USEPA RSLs for industrial soil (USEPA 2009). Surface soil data collected in 2001, 2003, and 2008 were screened in the evaluation. Sample data from soil intervals removed during remediation excavation activities in 2003 were excluded from the screening evaluation. The results of this comparison are shown below in Table 3. Constituents exceeding screening levels were found mainly in the unfilled portion of the former south lagoon but also in the upland soils at the site. Upland soils include filled portions of the former lagoons, the drainage conveyance ditch, and non-lagoon soils from the remainder of the site. The results of this comparison are shown on Figure 5, with the exception of arsenic exceedances, which are discussed below.

Concentrations of arsenic in samples collected from clean offsite soil used as backfill during the remediation efforts in 2003 ranged from 12.1 to 16.2 milligrams per kilogram (mg/kg), with a mean concentration of 14.03 mg/kg. This backfill soil originated from local uncontaminated farmland and is believed to contain concentrations of arsenic that are representative of background concentrations in the area. The concentrations of arsenic detected in site soil ranged from 6.85 to 24.4 mg/kg, with a mean of 12.80 mg/kg. Only 8 of the 40 site samples had arsenic concentrations above the highest detected concentration in the backfill samples. Arsenic is not considered a contaminant of interest since concentrations appear consistent with regional background concentrations, and only a small number of site samples had arsenic concentrations that exceeded the maximum backfill concentration and those were less twice the maximum backfill level.

TABLE 3
Potential Constituents of Interest in Surface Soil (0-2 ft bgs) that Exceed USEPA Regional Screening Levels for Industrial Soil

Analyte	Screening Level	Units	Surface Soil Maximum Detected Concentration	Location of Maximum Detected Concentration
Metals				
Arsenic	1.6	mg/kg	24.4	CD2
SVOCs				
Benzo(a)anthracene	2.1	mg/kg	9.33	SED-4
Benzo(a)pyrene	0.21	mg/kg	11.2	SED-4
Benzo(b)fluoranthene	2.1	mg/kg	12.7	SED-4
Dibenzo(a,h)anthracene	0.21	mg/kg	3.29	SED-4
Indeno(1,2,3-cd)pyrene	2.1	mg/kg	9.25	SED-4

Surface Water

There are no natural surface water bodies or state-designated wetlands on the site, or in the vicinity around the site. Based on site observations, the unfilled portion of the south lagoon intermittently holds standing water. However, standing water was not present during sampling events.

Sediment

Sediment samples were not collected from the site. Samples collected from the unfilled portion of the former south lagoon and the terminus of the drainage ditch were considered surface soil because these areas only intermittently have standing water and/or are too small to represent realistic scenarios for sediment exposure.

Subsurface Soil

Subsurface soil, defined as soil greater than 2 feet below the ground surface, were compared against screening levels for industrial soil (USEPA 2008). Subsurface soil data collected in 2001, 2003, and 2008 were screened in the evaluation. Sample data from soil intervals removed during remediation excavation activities in 2003 were excluded from the screening evaluation. The results of this comparison are shown below in Table 4. These constituents were found in upland soils at the site, which include filled portions of the former lagoons and non-lagoon soils from the remainder of the site. The results of this comparison are presented in Table 4 and on Figure 5.

As discussed previously, arsenic is not considered a contaminant of interest since concentrations appear consistent with regional background concentrations, and only a small number of site samples had arsenic concentrations that exceeded the maximum backfill concentration and those were less twice the maximum backfill level

TABLE 4
Potential Constituents of Interest in Subsurface Soil (>2 ft bgs) that Exceed USEPA Regional Screening Levels for Industrial Soil

Analyte	Screening Level	Units	Subsurface Soil Maximum Detected Concentration	Location of Maximum Detected Concentration
Metals				
Arsenic	1.6	mg/kg	19.4	CSL-1-EW-5
SVOCs				
Benzo(a)pyrene	0.21	mg/kg	0.48	RS-2

Outdoor Air

Outdoor air samples were collected in May 2009 at two locations around the site and analyzed for VOCs and compared to screening levels for outdoor air based on the USEPA RSLs for industrial air (USEPA 2009). USEPA's

draft vapor intrusion guidance (USEPA 2002a) provides screening levels for outdoor air based on a range of target risk levels (that is, tables of screening levels are provided for 10^{-4}, 10^{-5}, and 10^{-6} target risk levels). According to the 2002 guidance document, USEPA generally recommends using the 10^{-5} values for the purpose of making Current Human Exposures Under Control Environmental Indicator (EI) determinations. There were no exceedances of screening levels considering 10^{-5} target risk levels for carcinogens and a hazard quotient of 1 for noncarcinogens. This data is presented in Table B-1 in Attachment B.

References

CH2M HILL. 2009. Current Conditions Report, Former General Latex and Chemical Corporation Facility, Ashland, Ohio. May.

Roffman Associates Inc. (RAI). 2003. Phase II Property Investigation.

Roffman Associates Inc. (RAI). 2004. Remedial Action Planning and Remediation Report.

USEPA. 1989. Risk Assessment Guidance for Superfund (RAGS) Volume I Human Health Evaluation Manual, Part A (Interim Final). EPA/540/1-89/002. December.

USEPA. 2002a. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November 29.

USEPA. 2002b. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December.

USEPA. 2009. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. Available online at http://epa-prgs.ornl.gov/chemicals/index.shtml. May.

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

Contaminated Media	**Residents**	**Workers**	**Day-Care**	**Construction**	**Trespassers**	**Recreation**	**Food**[3]
Groundwater	***No*** [a]	***No*** [c]	***No*** [a]	***No*** [b,c]	____	____	___
Air (indoors)	***No***	***No*** [d]	***No***	***No*** [d]	____	____	____
Soil (surface, e.g., <2 ft)	***No***	***No*** [e]	***No***	***No*** [e]	***Yes*** [f]	____	___
~~Surface Water~~	____	____	____	____	____	____	___
~~Sediment~~	____	____	____	____	____	____	___
Soil (subsurface, e.g., >2 ft)	____	____	____	***No*** [d]	____	____	___
~~Air (outdoors)~~	____	____	____	____	____	____	____

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

___ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

__X__ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Footnotes:

[3]Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

Rationale and Reference(s):

The facility is zoned heavy industrial (M-2) and is presently not in use. The building is locked and surrounded by a locked chain-link fence. A fence also stretches along the northern and part of the western property lines (Figure 1). Rationale for the potential human exposure pathways as identified in the summary table above are divided in subsections below by potential human receptors.

Groundwater Pathways

Offsite Residential and Day Care Groundwater Pathway

[a] *Potential exposure pathways to an offsite residential worker and day care from constituents in groundwater are not complete based on the following:*

- *Existing data indicate that groundwater contamination related to the facility is confined to the site.*
- *The site is outside the 5-year wellhead protection zone for the City of Ashland. The site is approximately 0.5 mile south and upgradient of the 5-year outer protection area for these wells.*
- *Existing data indicated that there are no wells (residential or commercial) that exist for either potable or process water use within a 0.5-mile radius around the property.*
- *The City of Ashland provides potable water to the site and adjacent properties.*
- *There are no known day care facilities proximate to the site.*

Offsite Construction Worker Groundwater Pathway

[b] *Potential exposure pathways are not complete because groundwater contamination does not extend offsite at concentrations exceeding risk-based criteria.*

Onsite Facility Worker and Construction Worker Groundwater Exposure Pathway

[c] *Potential exposure pathways to an onsite facility worker or construction worker from constituents in groundwater are not complete based on the following:*

- *Groundwater is not used at the facility. The City of Ashland provides potable water to the facility.*
- *Industrial activities at the site have ceased and exposure pathways to onsite groundwater are not complete because pathways are controlled through safe work permitting processes that require identifying hazards and applying health and safety precautions for activities performed at the site including, but not limited to, groundwater sampling and construction activities.*

Air (Indoor) Pathways

Onsite Facility Worker and Construction Worker Exposure Pathways

[d] *Industrial activities at the site have ceased, and there are no onsite workers or activities within the building. In addition, The Dow Chemical Company (Dow) had prohibited use of the building for until potential indoor air issues have been resolved.*

Surface Soil and Subsurface Soil Pathways

Onsite Facility and Construction Worker Surface Soil and Subsurface Soil Exposure Pathways

[e] *Exposure pathways to onsite subsurface soil are not complete because pathways are controlled through safe work permitting processes that require identifying hazards and applying health and safety precautions for activities performed at the site including, but not limited to, excavation and construction activities.*

Although screening levels are exceeded for several polynuclear aromatic hydrocarbons (PAHs) in upland and lagoon surface soil, the concentrations are only slightly higher than the screening levels (under an order of magnitude). Unacceptable exposures to surface soil and sediment are not present for the following reasons.

- *Industrial activities at the site have ceased, and there are no onsite activities other than maintenance of the property (such as mowing).*
- *Maintenance activities (such as mowing) of the property are limited to grassy areas of the property. There is no contact with surface soil where PAHs exceed the screening levels (that is, area within the unfilled portion of the lagoon and the drainage ditch).*

Trespassers Exposure Pathways

[f] *A potential exposure pathway to surface soil may be present for a trespasser. Although chain-link fence surrounds the building and a second fence lines the northern and part of the western property boundary, the boundary fence does not enclose the entire property. The western half of the site is accessible by trespassers. However, as discussed below exposures are considered acceptable.*

4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

__X__ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

As indicated in Question 3, the trespasser exposure pathway is potentially complete because access to the western part of the site is not restricted. Trespassers who enter the site may then come in contact with surface soil. However, trespasser exposures to surface soil are not expected to be significant. An evaluation of the potential risks to trespassers posed by the chemicals exceeding screening levels in surface soil at the site was conducted. Results of this evaluation are presented in Attachment C, Tables C-1 through C-4. Risk estimates were calculated for trespasser exposures following USEPA guidance (including Risk Assessment Guidance for Superfund [RAGS] Part A, Part D, Part E, Part F; USEPA 1989, 1991, 2001, 2004, 2009). Exposure routes for the trespasser may include incidental ingestion of and dermal contact with the surface soil, and inhalation of particulate emissions from the surface soil. Exposure parameters are presented in Attachment C, Tables C-1 and C-2. The trespassers (adult and adolescent) were assumed to be exposed to surface soil 1 day per week for 26 weeks (that is, the warmer months of the year). Adults were assumed to visit the site over a 24-year period, and adolescents were assumed to visit the site over a 10-year period. Exposure point concentrations were conservatively assumed to be the maximum detected concentrations. As seen in Attachment C, Tables C-3 and C-4, the risk estimates for the adult resident (6.8×10^{-6}) and adolescent (9.6×10^{-6}) are below the 10^{-5} target risk levels for carcinogens. Therefore, exposures to site contamination are not considered significant.

References

USEPA. 1989. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual, Part A. EPA/540/1-89/002. Office of Emergency and Remedial Response, Washington, DC.

USEPA. 1991. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual, Part B: "Development of Risk-based Preliminary Remedial Goals". Office of Solid Waste and Emergency Response. OSWER Directive 9285.7-01B. December 13.

USEPA. 2001. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments. Office of Solid Waste and Emergency Response. EPA 540-R-97-033. OSWER 9285.7-01D. December.

USEPA. 2004. Risk Assessment Guidance for Superfund, Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. OSWER 9285.7-02EP. July.

USEPA. 2009a. Risk Assessment Guidance for Superfund, Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment) Final. OSWER 9285.7-82. January.

Footnotes:

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

5 Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits? (Not applicable).

____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

__*X*__ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the ***former General Latex and Chemical Corporation facility, OHD001008341,*** located at ***1526 Cleveland Avenue, Ashland, Ohio*** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by (signature) _____ Date _____
(print) _____
(title) _____

Supervisor (signature) _____ Date _____
(print) _____
(title) _____
(EPA Region or State) _____

Locations where References may be found:

Environmental facility reports have been previously submitted to the USEPA Region 5, Chicago, IL. The CCR (CH2M HILL 2009) consolidated historic data and presented 2008 investigation data. Included in the CCR were historic soil and groundwater data collected between 2001 and 2003, and soil, groundwater, and soil gas data collected in September and October 2008. The May and June 2009 data is attached to this document.

_____
_____
_____

Contact telephone and e-mail numbers
(name) _____
(phone #) _____
(e-mail) _____

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

Figures

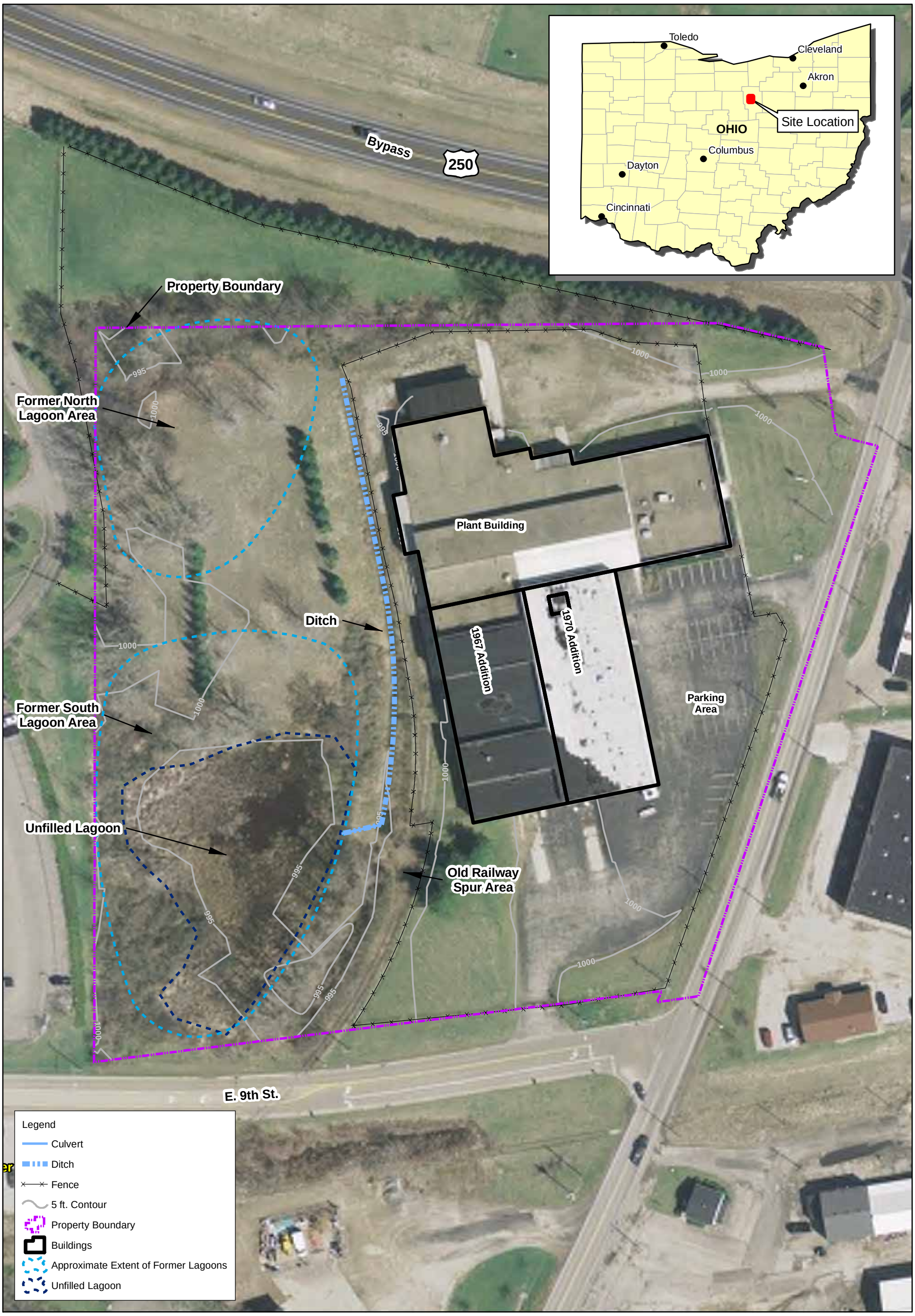


Figure 1
Facility Features Map
Human Health Environmental Indicator Report
Former General Latex and Chemical Corporation Facility
Ashland, ohio

CH2MHILL

\\LAKEFRONT\PROJ\GIS\DOW\ASHLAND\REPORTS\HUMANHEALTHENVINDICATOR2009\MAPFILES\FIGURE 01 - FACILITY FEATURES MAP.MXD JHANSEN1 11/11/2009 09:50:50

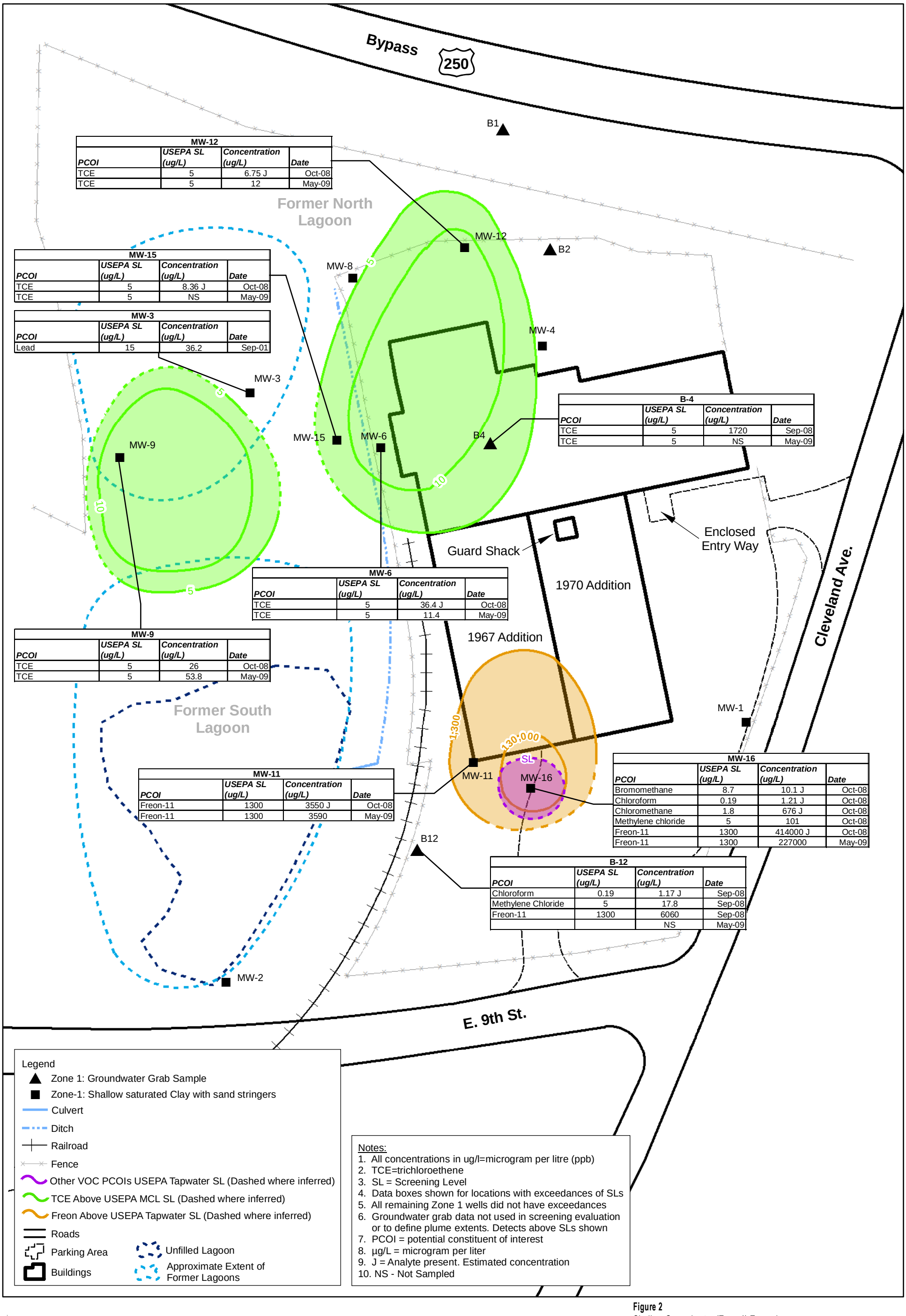


Figure 2
Shallow Groundwater (Zone 1) Exceedances
Human Health Environmental Indicator Report
Former General Latex & Chemical Corp Facility
Ashland, Ohio

CH2MHILL

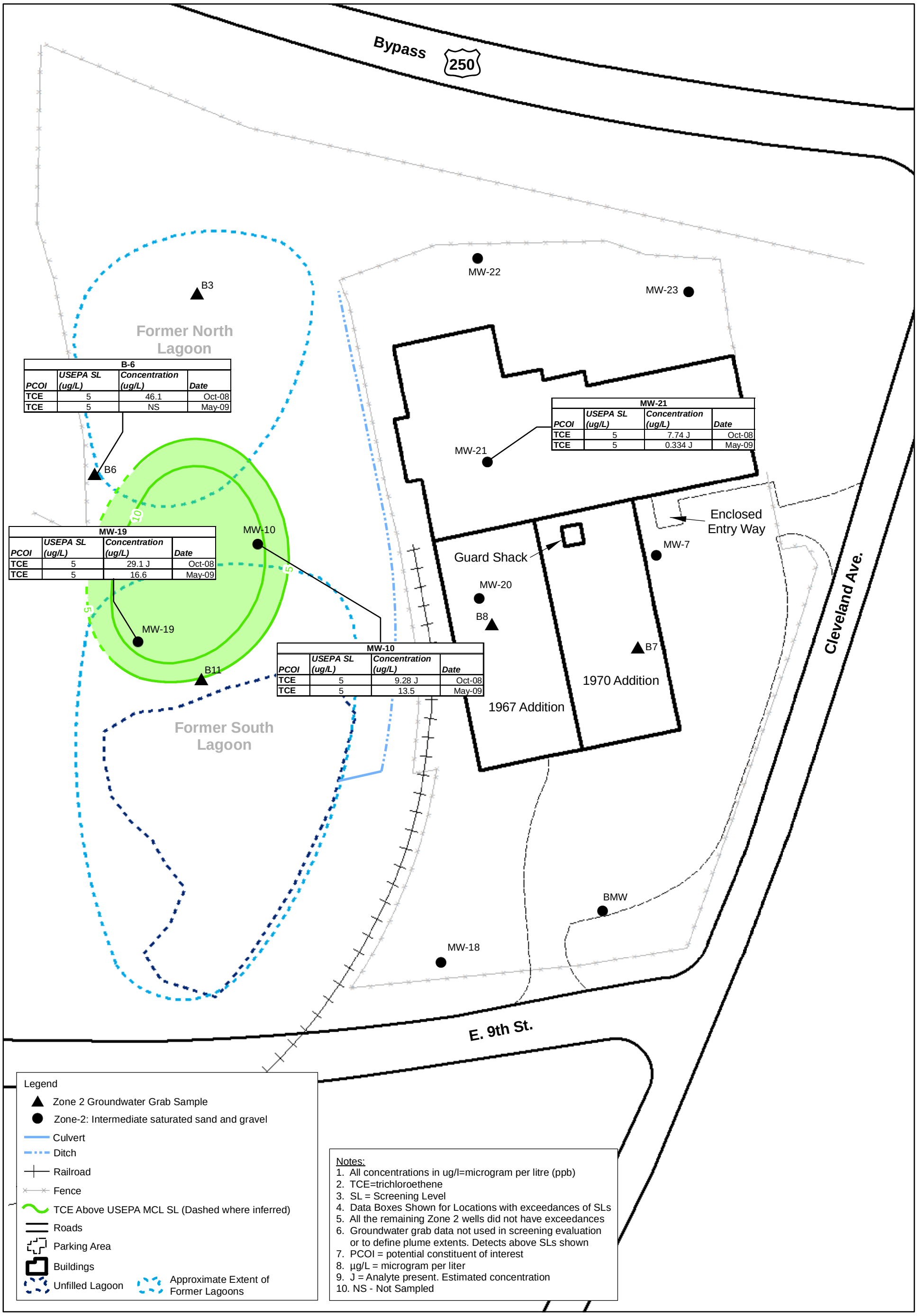


Figure 3
Intermediate Groundwater (Zone 2) Exceedances
Human Health Environmental Indicator Report
Former General Latex & Chemical Corp Facility
Ashland, Ohio

CH2MHILL

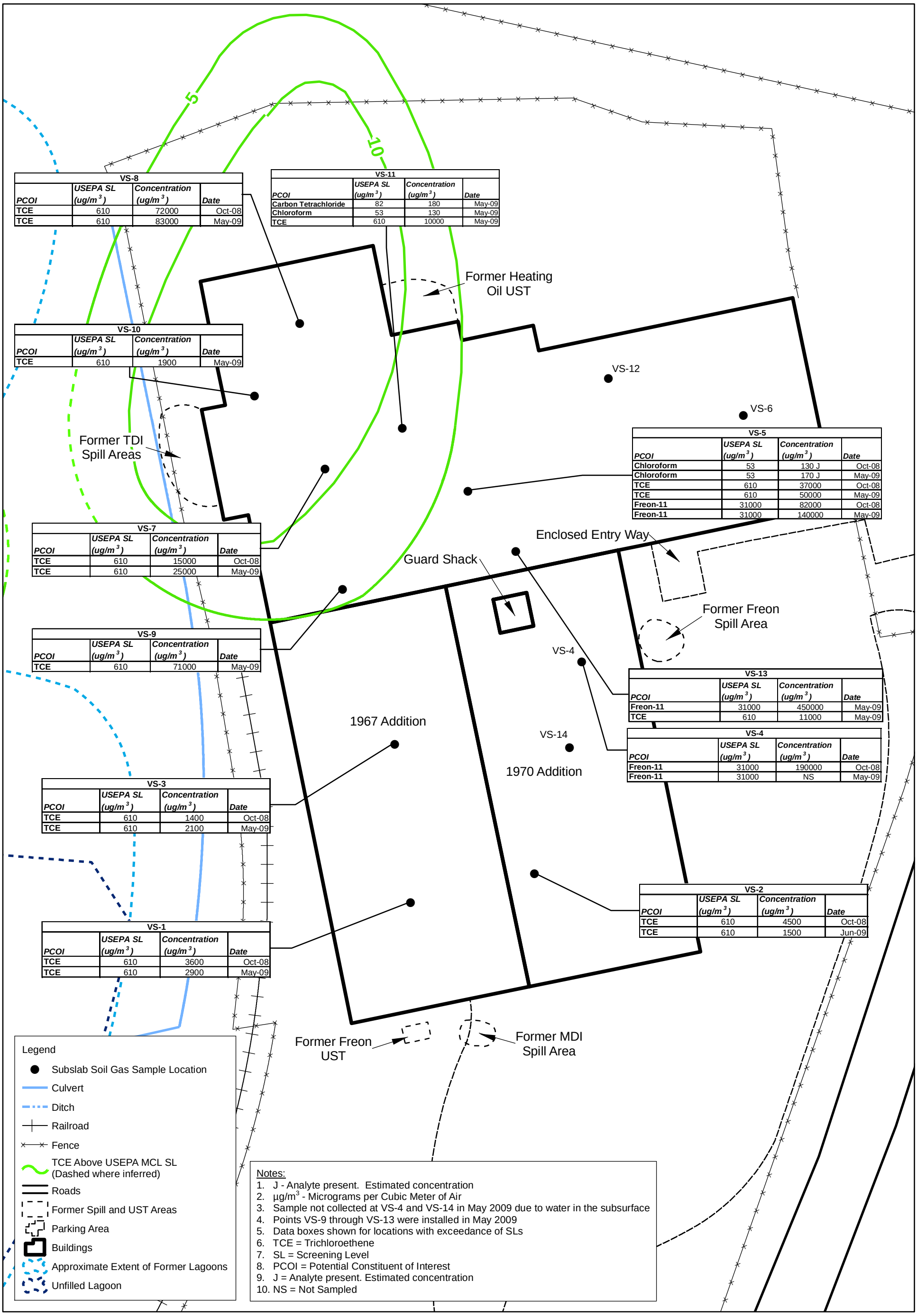
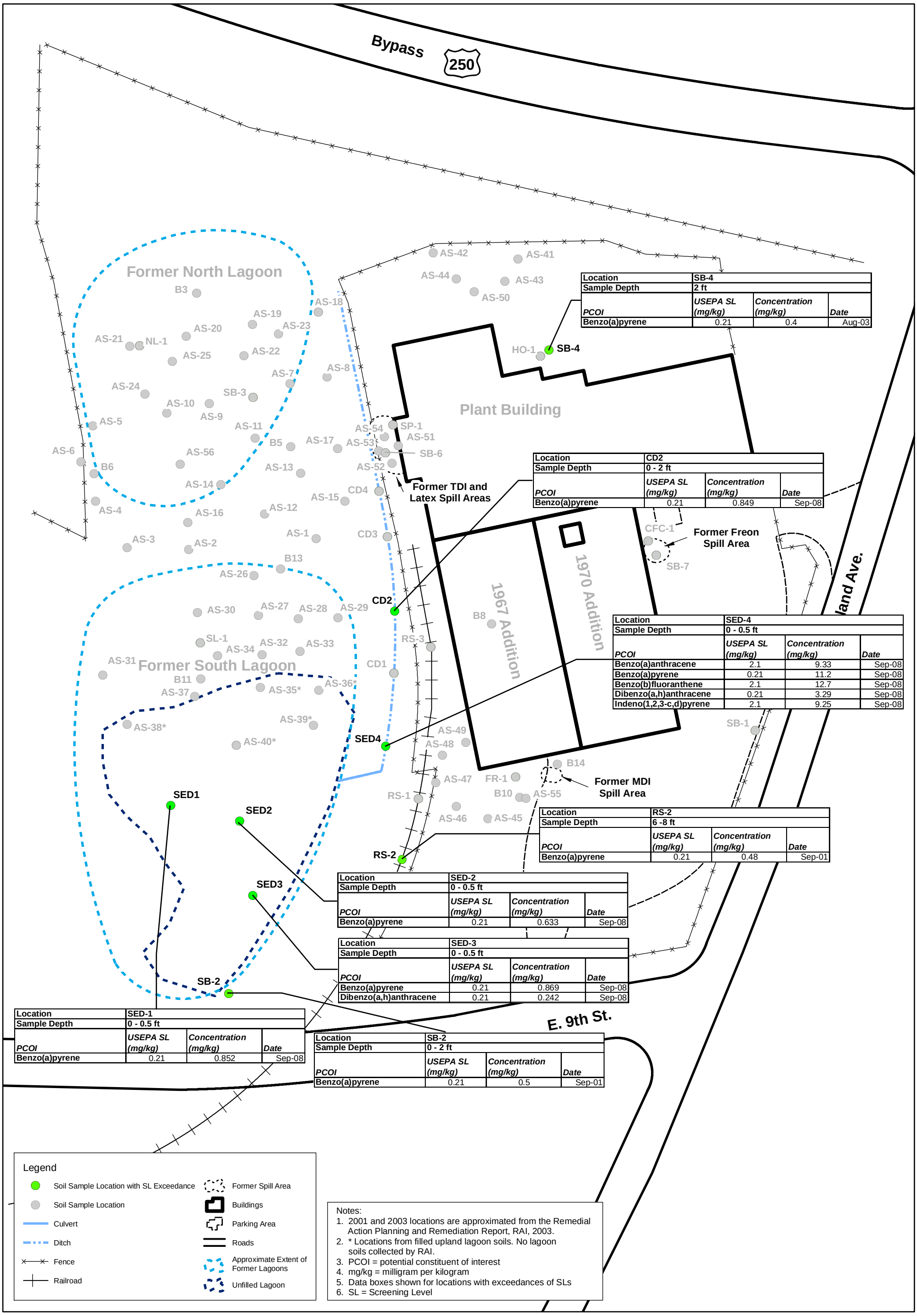


Figure 4
Soil Gas Exceedances
Human Health Environmental Indicator Report
Former General Latex & Chemical Corp Facility
Ashland, Ohio

CH2MHILL



Location	SB-4		
Sample Depth	2 ft		
PCOI	*USEPA SL (mg/kg)*	*Concentration (mg/kg)*	*Date*
Benzo(a)pyrene	0.21	0.4	Aug-03

Location	CD2		
Sample Depth	0 - 2 ft		
PCOI	*USEPA SL (mg/kg)*	*Concentration (mg/kg)*	*Date*
Benzo(a)pyrene	0.21	0.849	Sep-08

Location	SED-4		
Sample Depth	0 - 0.5 ft		
PCOI	*USEPA SL (mg/kg)*	*Concentration (mg/kg)*	*Date*
Benzo(a)anthracene	2.1	9.33	Sep-08
Benzo(a)pyrene	0.21	11.2	Sep-08
Benzo(b)fluoranthene	2.1	12.7	Sep-08
Dibenzo(a,h)anthracene	0.21	3.29	Sep-08
Indeno(1,2,3-c,d)pyrene	2.1	9.25	Sep-08

Location	RS-2		
Sample Depth	6 -8 ft		
PCOI	*USEPA SL (mg/kg)*	*Concentration (mg/kg)*	*Date*
Benzo(a)pyrene	0.21	0.48	Sep-01

Location	SED-2		
Sample Depth	0 - 0.5 ft		
PCOI	*USEPA SL (mg/kg)*	*Concentration (mg/kg)*	*Date*
Benzo(a)pyrene	0.21	0.633	Sep-08

Location	SED-3		
Sample Depth	0 - 0.5 ft		
PCOI	*USEPA SL (mg/kg)*	*Concentration (mg/kg)*	*Date*
Benzo(a)pyrene	0.21	0.869	Sep-08
Dibenzo(a,h)anthracene	0.21	0.242	Sep-08

Location	SED-1		
Sample Depth	0 - 0.5 ft		
PCOI	*USEPA SL (mg/kg)*	*Concentration (mg/kg)*	*Date*
Benzo(a)pyrene	0.21	0.852	Sep-08

Location	SB-2		
Sample Depth	0 - 2 ft		
PCOI	*USEPA SL (mg/kg)*	*Concentration (mg/kg)*	*Date*
Benzo(a)pyrene	0.21	0.5	Sep-01

Legend

- Soil Sample Location with SL Exceedance
- Soil Sample Location
- Culvert
- Ditch
- Fence
- Railroad
- Former Spill Area
- Buildings
- Parking Area
- Roads
- Approximate Extent of Former Lagoons
- Unfilled Lagoon

Notes:
1. 2001 and 2003 locations are approximated from the Remedial Action Planning and Remediation Report, RAI, 2003.
2. * Locations from filled upland lagoon soils. No lagoon soils collected by RAI.
3. PCOI = potential constituent of interest
4. mg/kg = milligram per kilogram
5. Data boxes shown for locations with exceedances of SLs
6. SL = Screening Level

N

0 70 140

Feet

Figure 5
Soil Exeedances
Human Health Environmental Indicator Report
Former General Latex & Chemical Corp Facility
Ashland, Ohio

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Attachment A

Former General Latex and Chemical Corporation Site, Ashland, Ohio
Groundwater Investigation – May 2009
Data Quality Evaluation

Introduction

This data quality evaluation (DQE) report assesses the data quality of analytical results for groundwater samples collected from the former General Latex and Chemical Corporation Facility (facility) located in Ashland, Ohio. CH2M HILL collected samples May 4 through May 6, 2009. Guidance for this DQE report came from the *Quality Assurance Project Plan (QAPP), Former General Latex and Chemical Corporation Site, Ashland, Ohio, RCRA Facility Investigation (August 2008);* the *U.S. Environmental Protection Agency (EPA) Contract Laboratory National Functional Guidelines for Organic Review* (October 1999); and individual method requirements.

The analytical results were evaluated using the criteria of precision, accuracy, representativeness, comparability, and completeness (PARCC) as presented in the QAPP. This report is intended as a general data quality assessment designed to summarize data issues.

Analytical Data

This DQE report covers 12 groundwater samples, two field duplicates (FDs) and two trip blanks (TBs). A list of samples included in this DQE is included as Attachment A. The samples were reported in two sample delivery groups identified as L09050144 and L09050146. The analyses were performed by Microbac Laboratories, Inc. (MCBM) in Marietta, Ohio. Samples were collected and shipped by overnight carrier to the laboratory for analysis. The samples were analyzed by the method listed in Table 1.

TABLE 1
Analytical Parameters
Groundwater Investigation, Former General Latex and Chemical Corporation Site, Ashland, Ohio

Parameter	Method	Laboratory
Volatile Organic Compounds	SW8260B	MCBM

The sample delivery groups were assessed by reviewing the following: (1) the chain-of-custody documentation; (2) holding time compliance; (3) initial and continuing calibration criteria; (4) method blanks/field blanks; (5) laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) recoveries; (6) matrix spike (MS)/matrix spike duplicate (MSD) recoveries; (7) surrogate spike recoveries; (8) FD precision; (9) internal standard recoveries; and, (10) the required quality control (QC) samples at the specified frequencies.

Data flags were assigned according to the QAPP. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will only be one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes matrix and blank sample impacts.

The data flags are those listed in the QAPP and are defined below:

- J = The identification of the analyte was acceptable, but the quality assurance criteria indicate that the quantitative values may be outside the normal expected range of precision (that is, the quantitative value is considered estimated).
- R = The result was rejected. This flag denotes the failure of QC criteria such that it cannot be determined if the analyte is present or absent in the sample.
- U = The analyte was analyzed for but not detected.
- UJ = The analyte was not detected; however, the reported detection limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Findings

The overall summaries of the data validation are contained in the following sections and Table 2.

Holding Time/Preservation

All acceptance criteria were met.

Calibration

Initial and continuing calibration analyses were performed as required by the methods and all acceptance criteria were met with the following exceptions:

- The recovery of chloromethane was below the lower control limit in a continuing calibration verification (CCV), indicating associated sample results are possibly biased low. Seven associated nondetected results were qualified as estimated and flagged "UJ".
- The recovery of bromomethane was above the upper control limit in a CCV, indicating associated sample results are possibly biased high. Associated samples were not qualified because they did not contain reportable levels of bromomethane.

Method Blanks

Method blanks were analyzed at the required frequency and were free of contamination.

Field Blanks

TBs were collected, analyzed, and were free of contamination.

Laboratory Control Samples

LCS/LCSDs were analyzed as required and all accuracy and precision criteria were met.

Matrix Spike

MS/MSD samples were analyzed as required and all accuracy and precision criteria were met.

Internal Standards

All internal standard acceptance criteria were met.

Surrogates

All surrogate acceptance criteria were met.

Field Duplicates

FDs were collected at the required frequency, analyzed and all precision criteria were met.

Chain-of-Custody

Required procedures were followed and were free of errors.

Overall Assessment

The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected and the resulting analytical data can be used to support the decision making process. The following summary highlights the PARCC findings for the above-defined events:

- Precision of the data was verified through the review of the field and laboratory data quality indicators that include FD, LCS/LCSD, and MS/MSD precision. Precision was acceptable.
- Accuracy of the data was verified through the review of the calibration data, LCS/LCSD, MS/MSD, internal standards, and surrogate standard recoveries. Accuracy was acceptable with seven nondetected results being qualified as estimated because of a CCV exceedance.
- Representativeness of the data was verified through the samples' collection, storage and preservation procedures, verification of holding time compliance, and evaluation of method/field blank data. The laboratory did not note any issues related to sample preservation or storage of the samples. All samples were analyzed within the USEPA-recommended holding time.
- Comparability of the data was verified using standard USEPA analytical procedures and standard units for reporting. Results obtained are comparable to industry standards in that the collection and analytical techniques followed approved, documented procedures.

- Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. Completeness is expressed as the percentage of valid or usable measurements compared to planned measurements. Valid data are defined as all data that are not rejected for project use. All data were considered valid. The completeness goal was met for all compounds.

TABLE 2
Validation Flags

NativeID	Method	Analyte	Final Result	Units	Final Flag	Validation Reason
FD01-050509	SW8260B	Chloromethane	0.25	ug/L	UJ	CCV<LCL
MW09GW1424-050509	SW8260B	Chloromethane	0.25	ug/L	UJ	CCV<LCL
MW10GW1732-050509	SW8260B	Chloromethane	0.25	ug/L	UJ	CCV<LCL
MW11GW0919-050409	SW8260B	Chloromethane	6.25	ug/L	UJ	CCV<LCL
MW16GW1020-050409	SW8260B	Chloromethane	625	ug/L	UJ	CCV<LCL
MW18GW3035-050409	SW8260B	Chloromethane	0.25	ug/L	UJ	CCV<LCL
MW22GW2535-050509	SW8260B	Chloromethane	0.25	ug/L	UJ	CCV<LCL

Validation Reasons:
CCV<LCL = Continuing calibration verification was recovered below the lower control limit.

Attachment A

Samples Associated with DQE		
Field ID	**Sample Date**	**QAQC Type**
FD01-050509	5/5/2009	FD
FD02-050609	5/6/2009	FD
MW18GW3035-050409	5/4/2009	N
MW11GW0919-050409	5/4/2009	N
MW16GW1020-050409	5/4/2009	N
MW19GW1828-050509	5/5/2009	N
MW22GW2535-050509	5/5/2009	N
MW10GW1732-050509	5/5/2009	N
MW09GW1424-050509	5/5/2009	N
MW06GW1020-050509	5/5/2009	N
MW20GW2333-050609	5/6/2009	N
MW21GW2434-050609	5/6/2009	N
MW23GW3040-050609	5/6/2009	N
MW12GW1424-050609	5/6/2009	N
TRIP BLANK_050508	5/5/2009	TB
TRIP BLANK_050909	5/6/2009	TB

TABLE A-1
Summary of Chemicals Detected in Groundwater, May 2009
Human Health Environmental Indicator Report
Former General Latex and Chemical Corporation Facility
Ashland, Ohio

	Location			MW06	MW09		MW10	MW11	MW12	MW16
	Sample ID			MW06GW1020-050509	FD01-050509	MW09GW1424-050509	MW10GW1732-050509	MW11GW0919-050409	MW12GW1424-050609	MW16GW1020-050409
	Screen Interval (ft bgs)			10 - 20	14 - 24	14 - 24	17 - 32	09 - 19	14 - 24	10 - 20
	Sample Date			5/5/2009	5/5/2009	5/5/2009	5/5/2009	5/4/2009	5/6/2009	5/4/2009
Analyte	**Screening Level**	**Screeing Level Source**	**Units**							
VOCs (µg/L)										
Bromomethane	8.7	RSL - Tapwater	µg/L	< 0.5	< 0.5	< 0.5	< 0.5	< 12.5	< 0.5	< 1250
Chloroform	0.19	RSL - Tapwater	µg/L	< 0.125	**0.126 J**	**0.156 J**	< 0.125	< 3.13	< 0.125	< 313
Chloromethane	190	RSL - Tapwater	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 6.25	< 0.25	< 625
Methylene chloride	5	MCL	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 6.25	< 0.25	< 625
TCE	5	MCL	µg/L	**11.4**	**52.9**	**53.8**	**13.5**	< 6.25	**12**	< 625
Trichlorofluoromethane	1300	RSL - Tapwater	µg/L	**0.296 J**	**1.46 J**	**1.46 J**	< 0.25	**3590**	< 0.25	**227000**

	Location			MW18	MW19	MW20	MW21		MW22	MW23
	Sample ID			MW18GW3035-050409	MW19GW1828-050509	MW20GW2333-050609	FD02-050609	MW21GW2434-050609	MW22GW2535-050509	MW23GW3040-050609
	Screen Interval (ft bgs)			30 - 35	18 - 28	23 - 33	24- 34	24 - 34	25 - 35	30 - 40
	Sample Date			5/4/2009	5/5/2009	5/6/2009	5/6/2009	5/6/2009	5/5/2009	5/6/2009
Analyte	**Screening Level**	**Screeing Level Source**	**Units**							
VOCs (µg/L)										
Bromomethane	8.7	RSL - Tapwater	µg/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	0.19	RSL - Tapwater	µg/L	< 0.125	< 0.125	< 0.125	< 0.125	< 0.125	< 0.125	< 0.125
Chloromethane	190	RSL - Tapwater	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Methylene chloride	5	MCL	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
TCE	5	MCL	µg/L	< 0.25	**16.6**	< 0.25	**0.334 J**	**0.303 J**	**0.512 J**	< 0.25
Trichlorofluoromethane	1300	RSL - Tapwater	µg/L	< 0.25	**0.52 J**	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Notes:
Nondetects are shown as < Laboratory Method Detection Limit
J = The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
µg/L = micrograms per liter
Bold indicates the analyte was detected
Shading indicates the result exceeded screening criteria

Laboratory analytical reports contained on CD.

Attachment B

Former General Latex and Chemical Corporation Site, Ashland, Ohio
Soil Vapor Investigation
Data Quality Evaluation

Introduction

This data quality evaluation (DQE) report assesses the data quality of analytical results for soil vapor and air samples collected from the former General Latex and Chemical Corporation Facility (facility) located in Ashland, Ohio. CH2M HILL collected samples October 31, 2008, through June 15, 2009. Guidance for this DQE report came from the *Quality Assurance Project Plan (QAPP), Former General Latex and Chemical Corporation Site, Ashland, Ohio, RCRA Facility Investigation* (August 2008); the *U.S. Environmental Protection Agency Contract Laboratory National Functional Guidelines for Organic Review* (October 1999); and individual method requirements.

The analytical results were evaluated using the criteria of precision, accuracy, representativeness, comparability, and completeness (PARCC) as presented in the QAPP. This report is intended as a general data quality assessment designed to summarize data issues.

Analytical Data

This DQE report covers 22 normal samples and three field duplicates (FDs). A list of samples included in this DQE is included as Attachment A. The samples were reported as four sample delivery groups identified as P0803643, P0901607, P0901614, and P0902082. The analyses were performed by Columbia Analytical Services in Simi Valley, California (CASS). Samples were collected and shipped by overnight carrier to the laboratory for analysis. The samples were analyzed by the method listed in Table 1.

TABLE 1
Analytical Parameters
Former General Latex and Chemical Corporation Site, Ashland, Ohio

Parameter	Method	Laboratory
Volatile Organic Compounds	TO-15	CASS

The sample delivery groups were assessed by reviewing the following: (1) the chain-of-custody documentation; (2) holding time compliance; (3) initial and continuing calibration criteria; (4) method blanks; (5) laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) recoveries; (6) surrogate spike recoveries; (7) FD precision; (8) internal standard recoveries; and (9) the required quality control (QC) samples at the specified frequencies.

Data flags were assigned according to the QAPP. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will only be one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes matrix and blank sample impacts.

The data flags are those listed in the QAPP and are defined below:

- J = The identification of the analyte was acceptable, but the quality assurance criteria indicate that the quantitative values may be outside the normal expected range of precision (that is, the quantitative value is considered estimated).
- R = The result was rejected. This flag denotes the failure of QC criteria such that it cannot be determined if the analyte is present or absent in the sample.
- U = The analyte was analyzed for but not detected.
- UJ = The analyte was not detected; however, the reported detection limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Findings

The overall summaries of the data validation are contained in the following sections and Table 2.

Holding Time/Preservation

The holding time and preservation met acceptance criteria.

Calibration

Initial and continuing calibration analyses were performed as required by the method and met acceptance criteria with the following exceptions:

- The recoveries of 10 analytes were less than method criteria in the continuing calibration verification (CCV) standards, indicating associated results are possibly biased low. The associated data were qualified as estimated. Twelve detected were flagged "J"; 62 nondetected results were flagged "UJ".

Method Blanks

Method blanks were analyzed at the required frequency and were free of contamination with the following exceptions:

- Three analytes were detected less than the reporting limit in the method blanks. Ten associated results were detected less than five times (10 times for acetone and 2-butanone) the blank concentrations and were qualified as not detected. The results were flagged "U".

Field Blanks

Field blanks were not collected with this event.

Laboratory Control Samples

LCS/LCSDs were analyzed as required and all accuracy and precision criteria were met.

Internal Standards

Internal standards were added to the methods requiring there use and all acceptance criteria were met.

Surrogates

Surrogates acceptance criteria were met.

Field Duplicates

Three FDs were collected as required and precision criteria were met.

Chain-of-Custody

Required procedures were followed and were free of errors.

Overall Assessment

The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected and the resulting analytical data can be used to support the decision making process. The following summary highlights the PARCC findings for the above-defined events:

- Precision of the data was verified through the review of the field and laboratory data quality indicators that include FD and LCS/LCSD relative percent differences. Precision was acceptable.

- Accuracy of the data was verified through the review of the calibration data, LCS/LCSD, internal standards, and surrogate standard recoveries. Accuracy was generally acceptable with a few results being qualified as estimated because of CCV recovery exceedances. Data users should consider the impact to any result that is qualified as estimated as it may contain a bias which could affect the decision making process.

- Representativeness of the data was verified through the samples' collection, storage and preservation procedures, verification of holding-time compliance and evaluation of method/field blank data. The laboratory did not note any issues related to sample preservation or storage of the samples. All samples were analyzed within USEPA-recommended holding time. A minimum number of sample results were qualified because of blank contamination. Blank concentrations were relatively low in relation to the reporting limit and overall, reflect normal laboratory operating conditions.

- Comparability of the data was ensured using standard USEPA analytical procedures and standard units for reporting. Results obtained are comparable to industry standards in that the collection and analytical techniques followed approved, documented procedures.

- Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. Completeness is expressed as the percentage of valid or usable measurements compared to planned measurements. Valid data are defined as all data that are not rejected for project use. All data were considered valid. The completeness goal was met for all compounds.

TABLE 2
Validation Flags

NativeID	Method	Analyte	Final Result	Units	Final Flag	Validation Reason
DUP-1	TO15	ACETONE	67	UG/M3	U	LB<RL
FD3-050609	TO15	BENZENE	15	UG/M3	UJ	CCV<LCL
FD3-050609	TO15	n-HEXANE	16	UG/M3	UJ	CCV<LCL
FD4-050609	TO15	1,2-DICHLOROPROPANE	15	UG/M3	UJ	CCV<LCL
FD4-050609	TO15	ACETONE	80	UG/M3	UJ	CCV<LCL
FD4-050609	TO15	BENZENE	15	UG/M3	UJ	CCV<LCL
FD4-050609	TO15	DICHLORODIFLUOROMETHANE	15	UG/M3	UJ	CCV<LCL
FD4-050609	TO15	METHYLENE CHLORIDE	15	UG/M3	UJ	CCV<LCL
FD4-050609	TO15	n-HEXANE	130	UG/M3	J	CCV<LCL
OA-1-050609	TO15	1,1,1-TRICHLOROETHANE	0.23	UG/M3	UJ	CCV<LCL
OA-1-050609	TO15	ACETONE	27	UG/M3	U	LB<RL
OA-1-050609	TO15	BENZENE	0.77	UG/M3	J	CCV<LCL
OA-1-050609	TO15	BROMOMETHANE	0.23	UG/M3	UJ	CCV<LCL
OA-1-050609	TO15	CARBON DISULFIDE	0.89	UG/M3	U	LB<RL
OA-1-050609	TO15	CARBON TETRACHLORIDE	0.27	UG/M3	J	CCV<LCL
OA-1-050609	TO15	HEXACHLOROBUTADIENE	0.34	UG/M3	UJ	CCV<LCL
OA-1-050609	TO15	2-BUTANONE	2.7	UG/M3	U	LB<RL
OA-2-050609	TO15	1,1,1-TRICHLOROETHANE	0.22	UG/M3	UJ	CCV<LCL
OA-2-050609	TO15	ACETONE	13	UG/M3	U	LB<RL
OA-2-050609	TO15	BENZENE	0.78	UG/M3	J	CCV<LCL
OA-2-050609	TO15	BROMOMETHANE	0.22	UG/M3	UJ	CCV<LCL
OA-2-050609	TO15	CARBON DISULFIDE	0.86	UG/M3	U	LB<RL
OA-2-050609	TO15	CARBON TETRACHLORIDE	0.27	UG/M3	J	CCV<LCL
OA-2-050609	TO15	HEXACHLOROBUTADIENE	0.33	UG/M3	UJ	CCV<LCL
OA-2-050609	TO15	2-BUTANONE	1.7	UG/M3	U	LB<RL
VS-10-050709	TO15	1,2-DICHLOROPROPANE	3.2	UG/M3	UJ	CCV<LCL
VS-10-050709	TO15	ACETONE	21	UG/M3	J	CCV<LCL
VS-10-050709	TO15	BENZENE	3.2	UG/M3	UJ	CCV<LCL
VS-10-050709	TO15	DICHLORODIFLUOROMETHANE	4.7	UG/M3	J	CCV<LCL
VS-10-050709	TO15	METHYLENE CHLORIDE	3.2	UG/M3	UJ	CCV<LCL
VS-10-050709	TO15	n-HEXANE	12	UG/M3	J	CCV<LCL
VS-1-050509	TO15	1,2-DICHLOROPROPANE	18	UG/M3	UJ	CCV<LCL
VS-1-050509	TO15	ACETONE	93	UG/M3	UJ	CCV<LCL
VS-1-050509	TO15	BENZENE	18	UG/M3	UJ	CCV<LCL
VS-1-050509	TO15	DICHLORODIFLUOROMETHANE	18	UG/M3	UJ	CCV<LCL
VS-1-050509	TO15	METHYLENE CHLORIDE	18	UG/M3	UJ	CCV<LCL
VS-1-050509	TO15	n-HEXANE	19	UG/M3	UJ	CCV<LCL

NativeID	Method	Analyte	Final Result	Units	Final Flag	Validation Reason
VS-11-050609	TO15	1,2-DICHLOROPROPANE	15	UG/M3	UJ	CCV<LCL
VS-11-050609	TO15	ACETONE	79	UG/M3	UJ	CCV<LCL
VS-11-050609	TO15	BENZENE	15	UG/M3	UJ	CCV<LCL
VS-11-050609	TO15	DICHLORODIFLUOROMETHANE	15	UG/M3	UJ	CCV<LCL
VS-11-050609	TO15	METHYLENE CHLORIDE	15	UG/M3	UJ	CCV<LCL
VS-11-050609	TO15	n-HEXANE	120	UG/M3	J	CCV<LCL
VS-12-050609	TO15	1,2-DICHLOROPROPANE	12	UG/M3	UJ	CCV<LCL
VS-12-050609	TO15	ACETONE	70	UG/M3	J	CCV<LCL
VS-12-050609	TO15	BENZENE	12	UG/M3	UJ	CCV<LCL
VS-12-050609	TO15	DICHLORODIFLUOROMETHANE	12	UG/M3	UJ	CCV<LCL
VS-12-050609	TO15	METHYLENE CHLORIDE	12	UG/M3	UJ	CCV<LCL
VS-12-050609	TO15	n-HEXANE	13	UG/M3	UJ	CCV<LCL
VS-2	TO15	ACETONE	750	UG/M3	U	LB<RL
VS-3	TO15	ACETONE	64	UG/M3	U	LB<RL
VS-3-050509	TO15	1,2-DICHLOROPROPANE	3.5	UG/M3	UJ	CCV<LCL
VS-3-050509	TO15	ACETONE	19	UG/M3	UJ	CCV<LCL
VS-3-050509	TO15	BENZENE	3.5	UG/M3	UJ	CCV<LCL
VS-3-050509	TO15	DICHLORODIFLUOROMETHANE	11	UG/M3	J	CCV<LCL
VS-3-050509	TO15	METHYLENE CHLORIDE	3.5	UG/M3	UJ	CCV<LCL
VS-3-050509	TO15	n-HEXANE	3.8	UG/M3	UJ	CCV<LCL
VS-4	TO15	ACETONE	150	UG/M3	U	LB<RL
VS-5-050609	TO15	1,2-DICHLOROPROPANE	94	UG/M3	UJ	CCV<LCL
VS-5-050609	TO15	ACETONE	500	UG/M3	UJ	CCV<LCL
VS-5-050609	TO15	BENZENE	94	UG/M3	UJ	CCV<LCL
VS-5-050609	TO15	DICHLORODIFLUOROMETHANE	94	UG/M3	UJ	CCV<LCL
VS-5-050609	TO15	METHYLENE CHLORIDE	94	UG/M3	UJ	CCV<LCL
VS-5-050609	TO15	n-HEXANE	100	UG/M3	UJ	CCV<LCL
VS-6-050609	TO15	1,2-DICHLOROPROPANE	17	UG/M3	UJ	CCV<LCL
VS-6-050609	TO15	ACETONE	88	UG/M3	UJ	CCV<LCL
VS-6-050609	TO15	BENZENE	17	UG/M3	UJ	CCV<LCL
VS-6-050609	TO15	DICHLORODIFLUOROMETHANE	17	UG/M3	UJ	CCV<LCL
VS-6-050609	TO15	METHYLENE CHLORIDE	17	UG/M3	UJ	CCV<LCL
VS-6-050609	TO15	n-HEXANE	18	UG/M3	UJ	CCV<LCL
VS-7-050609	TO15	BENZENE	15	UG/M3	UJ	CCV<LCL
VS-7-050609	TO15	n-HEXANE	17	UG/M3	UJ	CCV<LCL
VS-8-050709	TO15	1,2-DICHLOROPROPANE	97	UG/M3	UJ	CCV<LCL
VS-8-050709	TO15	ACETONE	520	UG/M3	UJ	CCV<LCL
VS-8-050709	TO15	BENZENE	97	UG/M3	UJ	CCV<LCL
VS-8-050709	TO15	DICHLORODIFLUOROMETHANE	97	UG/M3	UJ	CCV<LCL

NativeID	Method	Analyte	Final Result	Units	Final Flag	Validation Reason
VS-8-050709	TO15	METHYLENE CHLORIDE	97	UG/M3	UJ	CCV<LCL
VS-8-050709	TO15	n-HEXANE	100	UG/M3	UJ	CCV<LCL
VS-9-050609	TO15	1,2-DICHLOROPROPANE	38	UG/M3	UJ	CCV<LCL
VS-9-050609	TO15	ACETONE	200	UG/M3	UJ	CCV<LCL
VS-9-050609	TO15	BENZENE	38	UG/M3	UJ	CCV<LCL
VS-9-050609	TO15	DICHLORODIFLUOROMETHANE	38	UG/M3	UJ	CCV<LCL
VS-9-050609	TO15	METHYLENE CHLORIDE	38	UG/M3	UJ	CCV<LCL
VS-9-050609	TO15	n-HEXANE	190	UG/M3	J	CCV<LCL

Notes:
CCV<LCL = Continuing calibration recovery less than lower control limit
LB<RL = Laboratory blank concentration less than the reporting limit

Attachment A

Samples Associated with DQE		
Field ID	**Sample Date**	**QAQC Type**
DUP-1	31-Oct-08	FD
FD3-050609	06-May-09	FD
FD4-050609	06-May-09	FD
VS-1	31-Oct-08	N
VS-2	31-Oct-08	N
VS-3	31-Oct-08	N
VS-4	31-Oct-08	N
VS-5	31-Oct-08	N
VS-6	31-Oct-08	N
VS-7	31-Oct-08	N
VS-8	31-Oct-08	N
VS-1-050509	05-May-09	N
VS-3-050509	05-May-09	N
OA-1-050609	06-May-09	N
OA-2-050609	06-May-09	N
VS-11-050609	06-May-09	N
VS-12-050609	06-May-09	N
VS-5-050609	06-May-09	N
VS-6-050609	06-May-09	N
VS-7-050609	06-May-09	N
VS-9-050609	06-May-09	N
VS-10-050709	07-May-09	N
VS-8-050709	07-May-09	N
VS13-061509	15-Jun-09	N
VS2-061509	15-Jun-09	N

TABLE B-1
Summary of Chemicals Detected in Air - May and June 2009
Human Health Environmental Indicator Report
Former General Latex and Chemical Corporation Facility
Ashland, Ohio

Analyte	Industrial Subslab Soil Gas RSL, 10^{-5} Target Risk	Industrial Subslab Soil Gas RSL, HQ=1 Target Risk	Location / Sample ID / Sample Date / Units	Outdoor Air OA-1-050609 5/6/2009	Outdoor Air OA-2-050609 5/6/2009	VS-1 VS-1-050509 5/5/2009	VS-2 VS2-061509 6/15/2009	VS-3 VS-3-050509 5/5/2009	VS-4 -- --	VS-5 VS-5-050609 5/6/2009	VS-6 FD3-050609 5/6/2009	VS-6 VS-6-050609 5/6/2009	VS-7 VS-7-050609 5/6/2009	VS-8 VS-8-050709 5/7/2009	VS-9 VS-9-050609 5/6/2009	VS-10 VS-10-050709 5/7/2009	VS-11 FD4-050609 5/6/2009	VS-11 VS-11-050609 5/6/2009	VS-12 VS-12-050609 5/6/2009	VS-13 VS13-061509 6/15/2009	VS-14 -- --
VOCs (µg/m3)																					
1,1,1-TCA	--	220000	µg/m^3	< 0.23	< 0.22	< 18	**3 J**	< 3.5	--	**1100**	< 15	< 17	**1500**	**160 J**	< 38	**31**	**37 J**	**36 J**	< 12	**110 J**	--
1,1,2,2-Tetrachloroethane	21	--	µg/m^3	< 0.25	< 0.24	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
1,1,2-TCA	77	--	µg/m^3	< 0.23	< 0.22	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
1,1,2-trichloro-1,2,2-trifluoroethane	--	1300000	µg/m^3	**0.53 J**	**0.53 J**	**19 J**	**140**	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
1,1-DCA	770	--	µg/m^3	< 0.23	< 0.22	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	**100**	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
1,1-DCE	--	8800	µg/m^3	< 0.25	< 0.24	< 19	**16**	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
1,2,4-Trimethylbenzene	--	310	µg/m^3	**0.62 J**	**0.61 J**	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	**18 J**	< 62	--
1,2-DCA	47	110000	µg/m^3	< 0.23	< 0.22	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
1,2-DCB	--	8800	µg/m^3	< 0.25	< 0.24	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
1,2-Dibromoethane (EDB)	2	390	µg/m^3	< 0.23	< 0.22	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
1,2-Dichloropropane	120	180	µg/m^3	< 0.23	< 0.22	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
1,3,5-Trimethylbenzene	--	260	µg/m^3	< 0.25	< 0.24	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
1,3-DCB	--	--	µg/m^3	< 0.25	< 0.24	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
1,4-DCB	110	35000	µg/m^3	**0.31 J**	**0.28 J**	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
Acetone	--	1400000	µg/m^3	< 27	< 13	< 93	**32 J**	< 19	--	< 500	< 81	< 88	< 81	< 520	< 200	**21 J**	< 80	< 79	**70 J**	< 330	--
Benzene	160	1300	µg/m^3	**0.77 J**	**0.78 J**	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
Bromodichloromethane	33	--	µg/m^3	< 0.25	< 0.24	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
Bromoform	1100	--	µg/m^3	< 0.23	< 0.22	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
Bromomethane	--	220	µg/m^3	< 0.23	< 0.22	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
Carbon Disulfide	--	31000	µg/m^3	< 0.89	< 0.86	< 18	**3 J**	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
Carbon tetrachloride	82	8300	µg/m^3	**0.27 J**	**0.27 J**	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	**180**	**170**	< 13	< 67	--
Chlorobenzene	--	2200	µg/m^3	< 0.23	< 0.22	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
Chloroethane	--	440000	µg/m^3	< 0.23	< 0.22	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
Chloroform	53	4300	µg/m^3	< 0.23	< 0.22	< 18	**8**	< 3.5	--	**170 J**	< 15	< 17	< 15	< 97	< 38	< 3.2	**130**	**110**	< 12	< 62	--
Chloromethane	--	3900	µg/m^3	**0.97**	**1**	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
Cis-1,2-DCE	--	--	µg/m^3	< 0.25	< 0.24	**110**	**7.6**	**11 J**	--	< 100	< 16	< 18	**310**	**10000**	**1800**	**7.4 J**	< 16	< 16	< 13	< 67	--
cis-1,3-Dichloropropene	--	--	µg/m^3	< 0.23	< 0.22	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
Dichlorodifluoromethane	--	8800	µg/m^3	**2.3**	**2.3**	< 18	**8**	**11 J**	--	< 94	< 15	< 17	< 15	< 97	< 38	**4.7 J**	< 15	< 15	< 12	< 62	--
Ethylbenzene	490	44000	µg/m^3	**0.28 J**	**0.31 J**	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
hexachlorobutadiene	56	--	µg/m^3	< 0.34	< 0.33	< 26	< 2.8	< 5.2	--	< 140	< 22	< 24	< 22	< 140	< 56	< 4.7	< 22	< 22	< 18	< 91	--
hexane	--	--	µg/m^3	**1.1**	**1.3**	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	**190 J**	**12 J**	**130 J**	**120 J**	< 13	< 67	--
m,p-Xylene	--	--	µg/m^3	**0.8 J**	**0.89 J**	< 35	< 3.8	< 7.1	--	< 190	< 31	< 33	< 31	< 190	< 76	< 6.4	< 30	< 30	< 24	< 120	--
MEK (2-Butanone)	--	220000	µg/m^3	< 2.7	< 1.7	< 19	**5.4 J**	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
Methyl tert-butyl ether (MTBE)	4700	130000	µg/m^3	< 0.25	< 0.24	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
Methylene chloride	2600	46000	µg/m^3	**0.28 J**	**0.31 J**	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
MIBK (Methyl isobutyl ketone)	--	130000	µg/m^3	< 0.25	< 0.24	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
Naphthalene	36	130	µg/m^3	**0.38 J**	< 0.22	< 18	< 1.9	**14**	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--
n-Heptane	--	--	µg/m^3	**0.53 J**	**0.55 J**	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
o-Xylene	--	31000	µg/m^3	**0.29 J**	**0.33 J**	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	**13 J**	< 62	--
PCE	210	1200	µg/m^3	< 0.39	< 0.38	**120**	**4.5 J**	< 6	--	< 160	< 26	< 28	< 26	< 160	< 64	< 5.4	**26 J**	< 25	< 20	< 110	--
Styrene	--	44000	µg/m^3	**0.28 J**	**0.3 J**	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
TCE	610	--	µg/m^3	< 0.23	< 0.22	**2900**	**1500**	**2100**	--	**50000**	**37 J**	**59 J**	**25000**	**83000**	**71000**	**1900**	**10000**	**9300**	**96**	**11000**	--
Toluene	--	220000	µg/m^3	**1.6**	**1.6**	< 19	**2.4 J**	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
trans-1,2-DCE	--	2600	µg/m^3	< 0.23	< 0.22	**24 J**	**8.3**	**4.7 J**	--	< 94	< 15	< 17	**25 J**	**160 J**	**74 J**	< 3.2	< 15	< 15	< 12	< 62	--
trans-1,3-Dichloropropene	--	--	µg/m^3	< 0.25	< 0.24	< 19	< 2.1	< 3.8	--	< 100	< 16	< 18	< 17	< 100	< 41	< 3.4	< 16	< 16	< 13	< 67	--
Trichlorofluoromethane	--	31000	µg/m^3	**1.2**	**1.2**	**12000**	**2600**	**2000**	--	**140000**	**12000**	**10000**	**1500**	**170 J**	**8100**	**1400**	**900**	**810**	**9000**	**450000**	--
Vinyl chloride	280	4400	µg/m^3	< 0.23	< 0.22	< 18	< 1.9	< 3.5	--	< 94	< 15	< 17	< 15	< 97	< 38	< 3.2	< 15	< 15	< 12	< 62	--

Notes:
Nondetects are shown as < Laboratory Method Detection Limit
J = The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
Bold indicates the analyte was detected
Shading indicates the result exceeded sc
Data not collected at VS-4 and VS-14 in May/June 2009 due to water in the monitoring point.
µg/m3 = micrograms per meter cubed

Laboratory analytical reports contained on CD.

Attachment C

Human Health Risk Evaluation Tables for Trespasser Exposure Pathway

ATTACHMENT C - TABLE C-1
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Former General Latex Chemical Corporation Facility
Ashland, Ohio

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespasser/Visitor	Adult	Surface Soil	CS	Chemical Concentration in Soil	See Table 3s.RME	mg/kg	See Table 3s.RME	CDI (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
				EF	Exposure Frequency	26	days/year	(1)	
				ED	Exposure Duration	24	years	EPA, 1991	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
	Trespasser/Visitor	Youth	Surface Soil	CS	Chemical Concentration in Soil	See Table 3s.RME	mg/kg	See Table 3s.RME	CDI (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	200	mg/day	EPA, 1991, (2)	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
				EF	Exposure Frequency	26	days/year	(1)	
				ED	Exposure Duration	10	years	(3)	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				BW	Body Weight	42	kg	EPA, 1997, (4)	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
Dermal	Trespasser/Visitor	Adult	Surface Soil	CS	Chemical Concentration in Soil	See Table 3s.RME	mg/kg	See Table 3s.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	EPA, 2004	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2-day	EPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	26	days/year	(1)	
				ED	Exposure Duration	24	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	EPA, 1989	

ATTACHMENT C - TABLE C-1

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Former General Latex Chemical Corporation Facility

Ashland, Ohio

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Trespasser/Visitor	Youth	Surface Soil	CS	Chemical Concentration in Soil	See Table 3s.RME	mg/kg	See Table 3s.RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	4,100	cm^2	EPA, 2004, (5)	CS x SA x SSAF x DABS x CF x EF x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	EPA, 2004, (6)	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical Specific	--	EPA, 2004	
				CF	Conversion Factor	0.000001	kg/mg	- -	
				EF	Exposure Frequency	52	days/year	(1)	
				ED	Exposure Duration	10	years	(3)	
				BW	Body Weight	42	kg	EPA, 1997, (4)	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	

Notes:

(1) Professional Judgement assuming 1 day per week for 26 weeks per year.

(2) Assumed default value for child residential soil ingestion (1991).

(3) Professional judgment assuming adolescents from 7 to 16 years of age.

(4) Body weight is average of the mean values for boys and girls for the ages 7 through 16.

(5) SA is the total of the head, hands, forearms and lower legs for the 7 through 16 year old.

(6) SSAF is the 95th percentile for soil adherence for Soccer Players # 1 (teens).

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.

EPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

ATTACHMENT C - TABLE C-2
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Former General Latex Chemical Corporation Facility
Ashland, Ohio

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Trespasser/Visitor	Adult	Emissions from Surface Soil	CS	Chemical Concentration in Soil	See Table 3s.RME	mg/kg	See Table 3s.RME	Average Exposure Concentration (mg/m^3) = CA x EF x ED x 1/AT
				CA	Chemical Concentration in Air	Calculated	mg/m^3	EPA, 2002	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	Calculated	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				EF	Exposure Frequency	26	days/year	(1)	
				ED	Exposure Duration	24	years	EPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
	Trespasser/Visitor	Youth	Emissions from Surface Soil	CS	Chemical Concentration in Soil	See Table 3s.RME	mg/kg	See Table 3s.RME	Average Exposure Concentration (mg/m^3) = CA x EF x ED x 1/AT
				CA	Chemical Concentration in Air	Calculated	mg/m^3	EPA, 2002	
				PEF	Particulate Emission Factor	1.36E+09	m^3/kg	EPA, 2002	
				VF	Volatilization Factor for volatile constituents	Calculated	m^3/kg	EPA, 2002	CA (mg/m^3) = CS (1/PEF + 1/VF)
				EF	Exposure Frequency	26	days/year	(1)	
				ED	Exposure Duration	10	years	(2)	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	EPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	

Notes:

(1) Professional Judgement assuming 1 day per week for 26 weeks per year.

(2) Professional judgment assuming adolescents from 7 to 16 years of age.

Sources:

EPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

EPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.

ATTACHMNET C - TABLE C-3

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Former General Latex Chemical Corporation Facility

Ashland, Ohio

Scenario Timeframe: Current
Receptor Population: Trespasser/Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Surface Soil	Ingestion	Benzo(a)anthracene	9.3E+00	mg/kg	3.3E-07	mg/kg/day	7.3E-01	1/(mg/kg-day)	2.4E-07	9.5E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.1E+01	mg/kg	3.9E-07	mg/kg/day	7.3E+00	1/(mg/kg-day)	2.9E-06	1.1E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+01	mg/kg	4.4E-07	mg/kg/day	7.3E-01	1/(mg/kg-day)	3.2E-07	1.3E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.3E+00	mg/kg	1.1E-07	mg/kg/day	7.3E+00	1/(mg/kg-day)	8.4E-07	3.3E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	9.3E+00	mg/kg	3.2E-07	mg/kg/day	7.3E-01	1/(mg/kg-day)	2.4E-07	9.4E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								4.5E-06					0.0E+00
			Dermal Absorption	Benzo(a)anthracene	9.3E+00	mg/kg	1.7E-07	mg/kg/day	7.3E-01	1/(mg/kg-day)	1.2E-07	4.9E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.1E+01	mg/kg	2.0E-07	mg/kg/day	7.3E+00	1/(mg/kg-day)	1.5E-06	5.9E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+01	mg/kg	2.3E-07	mg/kg/day	7.3E-01	1/(mg/kg-day)	1.7E-07	6.7E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.3E+00	mg/kg	6.0E-08	mg/kg/day	7.3E+00	1/(mg/kg-day)	4.3E-07	1.7E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	9.3E+00	mg/kg	1.7E-07	mg/kg/day	7.3E-01	1/(mg/kg-day)	1.2E-07	4.9E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								2.3E-06					0.0E+00
		Exposure Point Total									6.8E-06					0.0E+00
	Air	Emissions from Surface Soil	Inhalation	Benzo(a)anthracene	6.9E-09	mg/m^3	1.4E-11	mg/m^3	1.1E-04	mg/m^3	1.5E-15	4.1E-11	mg/m^3	NA	mg/m^3	NA
				Benzo(a)pyrene	8.2E-09	mg/m^3	1.7E-11	mg/m^3	1.1E-03	mg/m^3	1.8E-14	4.9E-11	mg/m^3	NA	mg/m^3	NA
				Benzo(b)fluoranthene	9.3E-09	mg/m^3	1.9E-11	mg/m^3	1.1E-04	mg/m^3	2.1E-15	5.5E-11	mg/m^3	NA	mg/m^3	NA
				Dibenz(a,h)anthracene	2.4E-09	mg/m^3	4.9E-12	mg/m^3	1.2E-03	mg/m^3	5.9E-15	1.4E-11	mg/m^3	NA	mg/m^3	NA
				Indeno(1,2,3-cd)pyrene	6.8E-09	mg/m^3	1.4E-11	mg/m^3	1.1E-04	mg/m^3	1.5E-15	4.0E-11	mg/m^3	NA	mg/m^3	NA
			Exp. Route Total								1.5E-15					0.0E+00
		Exposure Point Total									1.5E-15					0.0E+00
	Exposure Medium Total										6.8E-06					0.0E+00
Surface Soil											6.8E-06					0.0E+00
										Total of Receptor Risks Across All Media	6.8E-06			Total of Receptor Hazards Across All Media		0.0E+00

Notes:

NA = Not applicable

ATTACHMENT C - TABLE C-4

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Former General Latex Chemical Corporation Facility

Ashland, Ohio

Scenario Timeframe: Current
Receptor Population: Trespasser/Visitor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Surface Soil	Ingestion	Benzo(a)anthracene	9.3E+00	mg/kg	4.5E-07	mg/kg/day	7.3E-01	1/(mg/kg-day)	3.3E-07	3.2E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.1E+01	mg/kg	5.4E-07	mg/kg/day	7.3E+00	1/(mg/kg-day)	4.0E-06	3.8E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+01	mg/kg	6.2E-07	mg/kg/day	7.3E-01	1/(mg/kg-day)	4.5E-07	4.3E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.3E+00	mg/kg	1.6E-07	mg/kg/day	7.3E+00	1/(mg/kg-day)	1.2E-06	1.1E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	9.3E+00	mg/kg	4.5E-07	mg/kg/day	7.3E-01	1/(mg/kg-day)	3.3E-07	3.1E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								6.2E-06					0.0E+00
			Dermal Absorption	Benzo(a)anthracene	9.3E+00	mg/kg	2.4E-07	mg/kg/day	7.3E-01	1/(mg/kg-day)	1.8E-07	1.7E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.1E+01	mg/kg	2.9E-07	mg/kg/day	7.3E+00	1/(mg/kg-day)	2.1E-06	2.0E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+01	mg/kg	3.3E-07	mg/kg/day	7.3E-01	1/(mg/kg-day)	2.4E-07	2.3E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.3E+00	mg/kg	8.5E-08	mg/kg/day	7.3E+00	1/(mg/kg-day)	6.2E-07	5.9E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	9.3E+00	mg/kg	2.4E-07	mg/kg/day	7.3E-01	1/(mg/kg-day)	1.7E-07	1.7E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								3.3E-06					0.0E+00
		Exposure Point Total									9.6E-06					0.0E+00
	Air	Emissions from Surface Soil	Inhalation	Benzo(a)anthracene	6.9E-09	mg/m^3	5.8E-11	mg/m^3	1.1E-04	mg/m^3	6.4E-15	4.1E-11	mg/m^3	NA	mg/m^3	NA
				Benzo(a)pyrene	8.2E-09	mg/m^3	7.0E-11	mg/m^3	1.1E-03	mg/m^3	7.7E-14	4.9E-11	mg/m^3	NA	mg/m^3	NA
				Benzo(b)fluoranthene	9.3E-09	mg/m^3	7.9E-11	mg/m^3	1.1E-04	mg/m^3	8.7E-15	5.5E-11	mg/m^3	NA	mg/m^3	NA
				Dibenz(a,h)anthracene	2.4E-09	mg/m^3	2.1E-11	mg/m^3	1.2E-03	mg/m^3	2.5E-14	1.4E-11	mg/m^3	NA	mg/m^3	NA
				Indeno(1,2,3-cd)pyrene	6.8E-09	mg/m^3	5.8E-11	mg/m^3	1.1E-04	mg/m^3	6.4E-15	4.0E-11	mg/m^3	NA	mg/m^3	NA
			Exp. Route Total								6.4E-15					0.0E+00
		Exposure Point Total									6.4E-15					0.0E+00
	Exposure Medium Total										9.6E-06					0.0E+00
Surfce Soil											9.6E-06					0.0E+00
										Total of Receptor Risks Across All Media	9.6E-06			Total of Receptor Hazards Across All Media		0.0E+00

Notes:

NA = Not applicable