



December 2, 2021

Bay Towel, Inc.
Mr. John Butz
2580 S Broadway Ave
Green Bay, WI 54307
Via Electronic Mail Only to jbutz@baytowel.com

Subject: Response to Technical Assistance Request
Bay Towel – Solvent Investigation, 501 S. Adams St, Green Bay, WI
BRRTS Activity # 02-05-237064, FID # 405044090

Dear Mr. Butz:

On October 18, 2021, the Wisconsin Department of Natural Resources (DNR) received a Technical Assistance Request entitled “Remedial Action Documentation Report, Groundwater Monitoring Status Report, and PFAS Sampling Report” (the Report) prepared by Matt Dahlem of Fehr Graham for the above referenced site. The appropriate \$700 technical assistance request fee for DNR review and response was submitted with the Report.

DNR reviewed the Report for compliance with Wis. Admin. Code ch. NR 716 and Wis. Admin. Code ch. NR 724. A review of the Report and all available file information determined that additional work is needed to meet the requirements of Wis. Admin. Code ch. NR 716 and complete the site investigation. DNR held a virtual technical assistance meeting with you on November 18, 2021. During this meeting, DNR discussed that the degree and extent of contamination identified at the site has not been adequately defined.

Background

The Bay Towel – Solvent Investigation site (the “Site”) is an approximately 1.33 acre property that was formerly occupied by a large dry cleaning building and parking lot. DNR was notified of chlorinated volatile organic compound (CVOC) contamination on the Site on December 16, 1999. Since this date, extensive investigation and remedial actions have taken place.

Two CVOC releases were discovered at the property during the site investigation. The main release occurred beneath the former building and this area was excavated multiple times (“main excavation”) to remove contaminated material. The most recent excavation in this area occurred in 2020 to 2021 and went to a depth of 30 feet below ground surface (bgs). Bioavailable Absorbent Media (BAM) was approved to be applied to the base of this excavation, as documented in DNR’s May 8, 2020 Infiltration Approval letter. A smaller secondary release area is located along the eastern portion of the parking lot on the property (“eastern excavation”), and soil has been excavated down to five feet bgs in this area. The locations of both excavations are shown on the attached map (Figure 5, Soil Excavation Limits, 10/5/21).

Altogether, approximately 10,000 tons of contaminated soil has been removed from the site over multiple excavation events. The site is currently vacant, and excavations have been backfilled with coarse-grained materials, including clear stone followed by gravel with sand and ¾” stone at the surface in most of the main excavation.

Site Investigation

After reviewing the Report and all case file information submitted to date, the DNR determined that additional work is necessary to complete the site investigation. The degree and extent of contamination currently identified at the site has not been adequately defined and documented with respect to Wis. Admin. Code ch. NR 716. The findings and interpretations by the DNR regarding the incomplete site investigation are summarized below:

A. Soil

The degree and extent of soil contamination is not yet defined. As stated in the Report, CVOC contamination remains in unsaturated soil along the perimeter of both excavations. Additional delineation of soil surrounding both the main excavation and eastern excavation is needed; this includes off-site delineation per Wis Admin. Code § NR 716.11(4). Residual sidewall soil contamination is shown on the attached map (Figure 6, Post Excavation Soil Chemistry, 10/5/21). A site investigation workplan including proposed soil boring locations needs to be submitted prior to collecting soil samples.

B. Groundwater

The degree and extent of groundwater contamination is not yet defined. During the latest excavation, elevated saturated soil contamination was discovered in sidewall samples within the interval of 20-30 feet bgs, and DNR advised that piezometer(s) be installed and screened within this interval. Monitoring MW-15 was installed after the excavation was filled in January 2021 and screened at 20-30 feet bgs. MW-15 was sampled twice in 2021 and detected 41,300 ug/L PCE in the latest round of sampling performed in May of 2021.

DNR is requiring further delineation of this monitoring well screened within the same vertical interval of 20-30 ft bgs to evaluate the extent, both vertically and horizontally, of groundwater contamination per Wis. Admin. Code § NR 716.11(5)(f). Additional rounds of post-remediation groundwater sampling are also required. The location of all current monitoring wells associated with the site, including MW-15, and post-excavation CVOC concentrations are shown on the attached map (Figure 10, Post-Excavation Groundwater Chemistry – May 2021, 10/5/21).

Preferential pathways will need to be evaluated and/or investigated for contaminant migration. This is to include utility backfill within the rights-of-way (ROWs) and the abandoned sanitary and storm sewer laterals. Locations of abandoned laterals from the facility should be included on future groundwater and soil contamination figures.

A site investigation workplan including preferential pathway evaluation and/or investigation and location of proposed monitoring wells needs to be submitted prior to installing and sampling monitoring wells. Additional rounds of groundwater monitoring and/or installation of supplemental wells may be required if future investigation does not adequately define degree and extent of contamination.

As mentioned during the November 18, 2021 technical assistance meeting, DNR discovered that the site is also located within the Well Head Protection Area for a City of Green Bay municipal well. You, as the responsible party, are required to submit monitoring results to the City of Green Bay after each sampling event. Nancy Quirk is the General Manager for Green Bay Water Utility and can be contacted at NancyQu@GreenBayWi.gov, or 920-660-5501.

C. Vapor

A vapor investigation is required for the following off-site properties that screen in based on proximity to residual CVOC contamination in soil:

- 501 South Washington Street
- 317 Chicago Street
- 445 Chicago Street

Sampling indoor air in addition to sub-slab vapor is necessary at residential settings (317 Chicago Street & 501 South Washington Street), and where preferential pathways are potentially impacting indoor air. Since trichloroethylene (TCE) is a contaminant of concern, Wisconsin Department of Health Services (DHS) also recommends indoor air be sampled at commercial and industrial facilities unless the contaminant of concern is in use; DHS's March 25, 2021 letter to DNR is attached. Demographics should be assessed at the time of vapor investigation to assist DNR and DHS with risk communication of results if TCE is detected.

An in-pipe sanitary sewer vapor investigation is also required for the site. Please reference DNR's guidance entitled *Documenting the Investigation of Human-made Preferential Pathways Including Utility Corridors*, [RR-649](#).

A workplan is required to be submitted prior to performing the off-site vapor and in-pipe sanitary sewer investigation. Additional vapor investigation and/or mitigation may be needed if vapor intrusion is found to be an issue, or if elevated vapor concentrations are found within the sanitary sewer.

D. PFAS

On January 2, 2020, DNR sent a letter requesting you sample for per- and polyfluoroalkyl substances (PFAS) at the Site; five monitoring wells were sampled on June 4, 2021 and are shown on the attached map (Figure 11, PFAS Groundwater Chemistry – June 2021, 10/5/21). Perfluoroactanoic Acid (PFOA) was detected in monitoring wells SMW-1R and MW-5R above the preventive action limit (PAL), and in SMW-3R above the enforcement standard (ES). DNR is requiring another round of PFAS sampling be performed at these same five wells to confirm PFAS contamination is stable and/or decreasing; a workplan needs to be submitted for sampling of these wells.

In addition to a confirmation round of sampling, a PFAS and emerging contaminants scoping statement is required to be submitted. Additional information on PFAS is available from the Interstate Technology Regulatory Council (ITRC) at: <https://pfas-1.itrcweb.org/fact-sheets/>. DNR recommends submitting the scoping statement with your next submittal.

Schedule

In consideration of administrative code requirements, the DNR is requesting implementation of the following schedule:

- Per Wis. Admin. Code § NR 716.09(1), the DNR is requesting the submittal of a supplemental site investigation work plan within 60 days of the date of this letter, by **February 1, 2021**. The work plan must comply with Wis. Admin. Code § NR 716.09(2). A fee is recommended for DNR review and response.
- Per Wis. Admin. Code § NR 716.11(2g), the additional site investigation activities must begin within 90 days of the submittal of the work plan.

December 2, 2021
Mr. John Butz, Bay Towel, Inc.
Response to Technical Assistance Request
Bay Towel – Solvent Investigation, BRRTS # 02-05-237064

- Per Wis. Admin. Code § NR 716.14, all sampling results are required to be submitted within 10 days of receiving the laboratory data. Groundwater sampling results will also need to be submitted to Green Bay Water Utility.
- Per Wis. Admin. Code § NR 716.15(1), a supplemental site investigation report shall be submitted within 60 days after completion of the field investigation. A fee is recommended for DNR review and response.
- NR 700 semi-annual progress reports will be required until the case is closed.

Once the additional work has been completed and documented, your consultant should evaluate the appropriateness of case closure based on the results of this additional work. If additional remedial action is warranted, your consultant should submit an RAOR, with fee recommended for DNR review and response, within 60 days after the completion of the site investigation, per Wis. Admin. Code § NR 722.09 (2m).

The DNR appreciates your efforts to restore the environment at this site. If you have any questions regarding this letter, please contact me at 920-366-5685, or at Josie.Schultz@Wisconsin.gov.

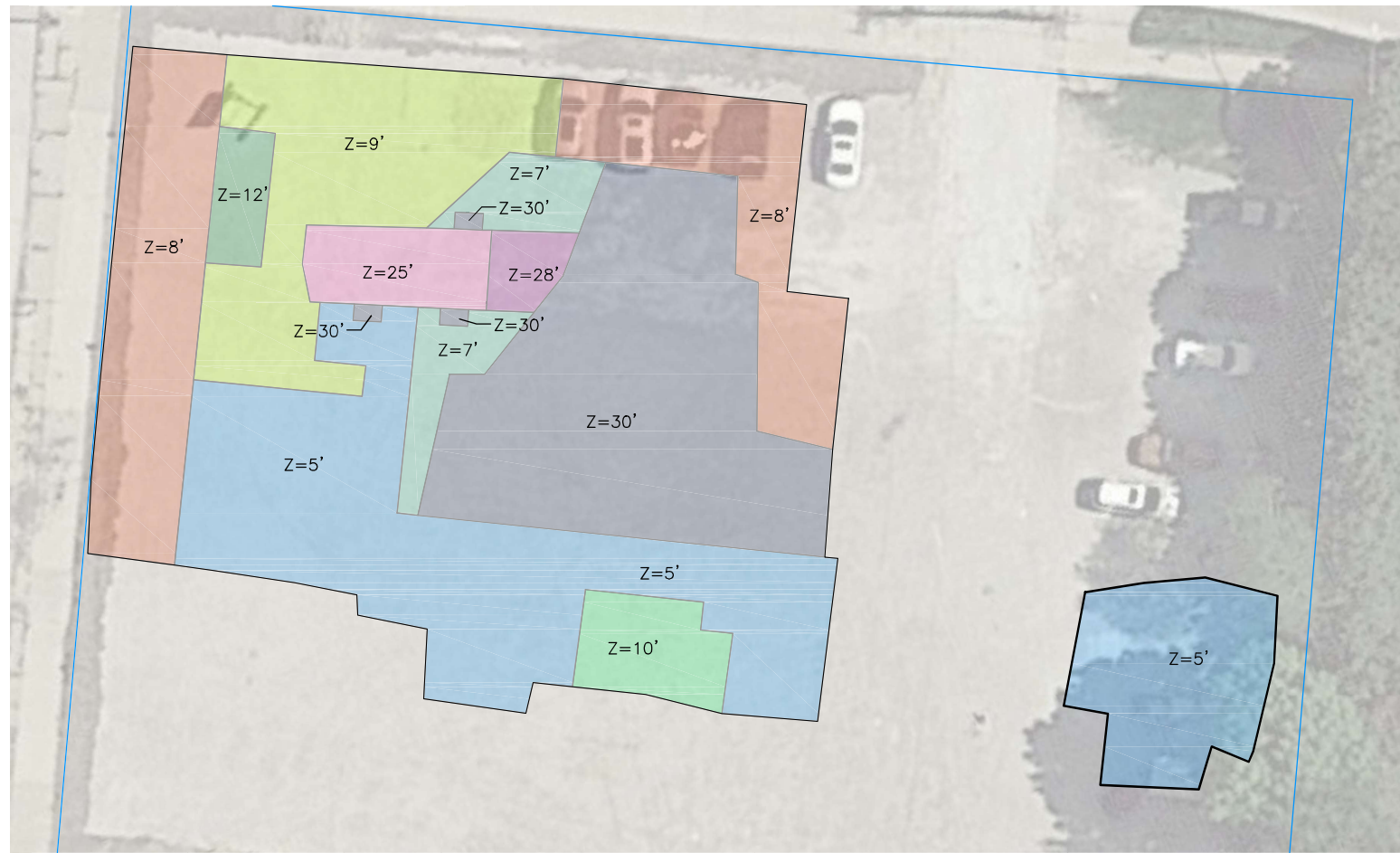
Sincerely,



Josie Schultz
Hydrogeologist, Northeast Region
Remediation & Redevelopment Program

Att: Figure 5, Soil Excavation Limits, 10/5/21
Figure 6, Post Excavation Soil Chemistry, 10/5/21
Figure 10, Post-Excavation Groundwater Chemistry – May 2021, 10/5/21
Figure 11, PFAS Groundwater Chemistry – June 2021, 10/5/21
[DHS's March 25, 2021 letter to DNR](#)

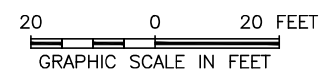
CC: Matt Dahlem, Fehr Graham (MDahlem@Fehr-Graham.com)
Dillon Plamann, Fehr Graham (DPlamann@Fehr-Graham.com)
Don Gallo, Axley Brynelson, LLP (DGallo@Axley.com)



**FINAL EXCAVATION DEPTH
BELOW GROUND SURFACE**

- 5 FEET
- 7 FEET
- 8 FEET
- 9 FEET
- 10 FEET
- 12 FEET
- 25 FEET
- 28 FEET
- 30 FEET

FIGURE 5
SOIL EXCAVATION LIMITS
BAY TOWEL – SOLVENT INVESTIGATION
501 S. ADAMS ST.
GREEN BAY, WI 54301
BRRTS NO.: 02-05-237064

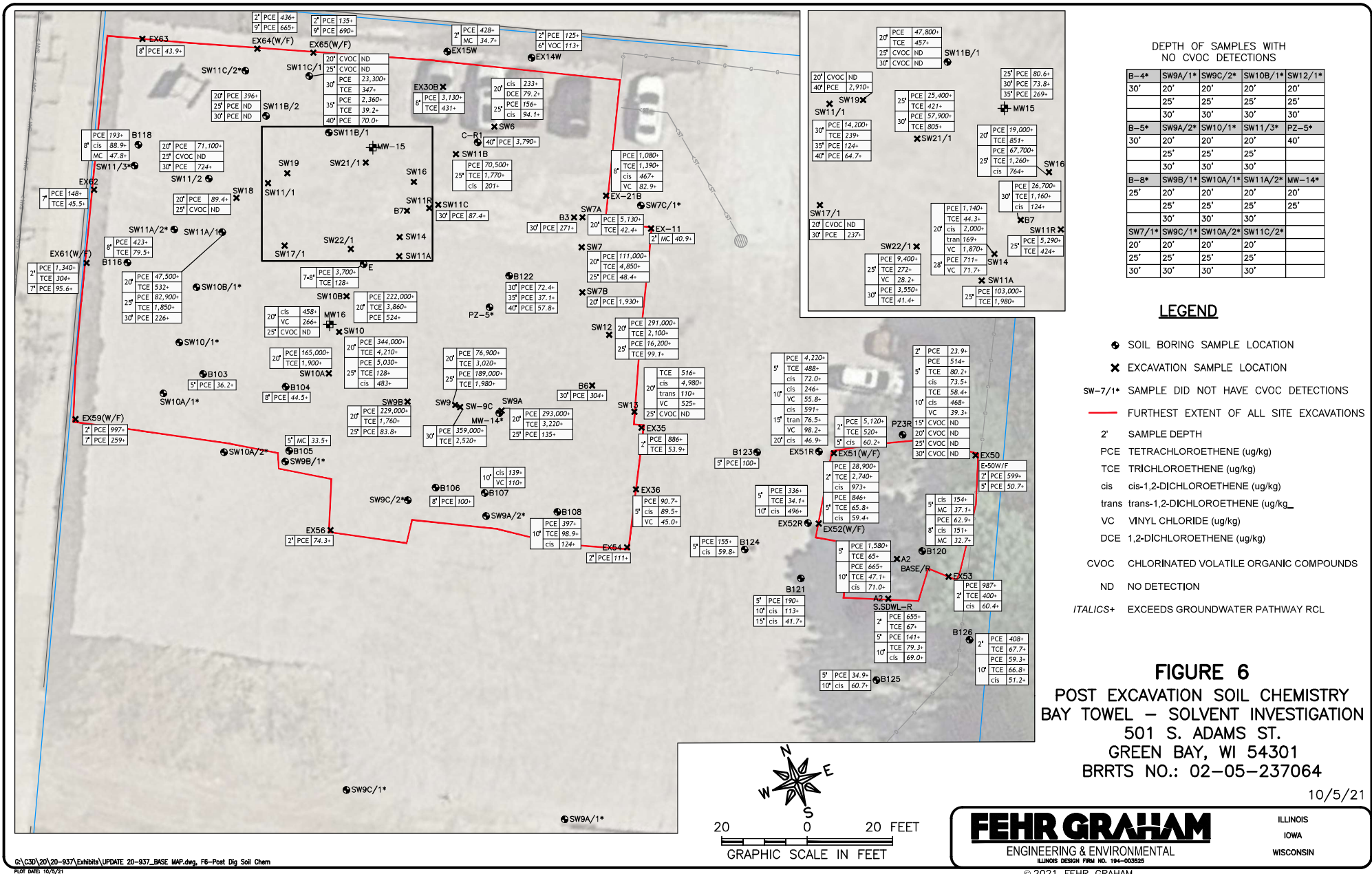


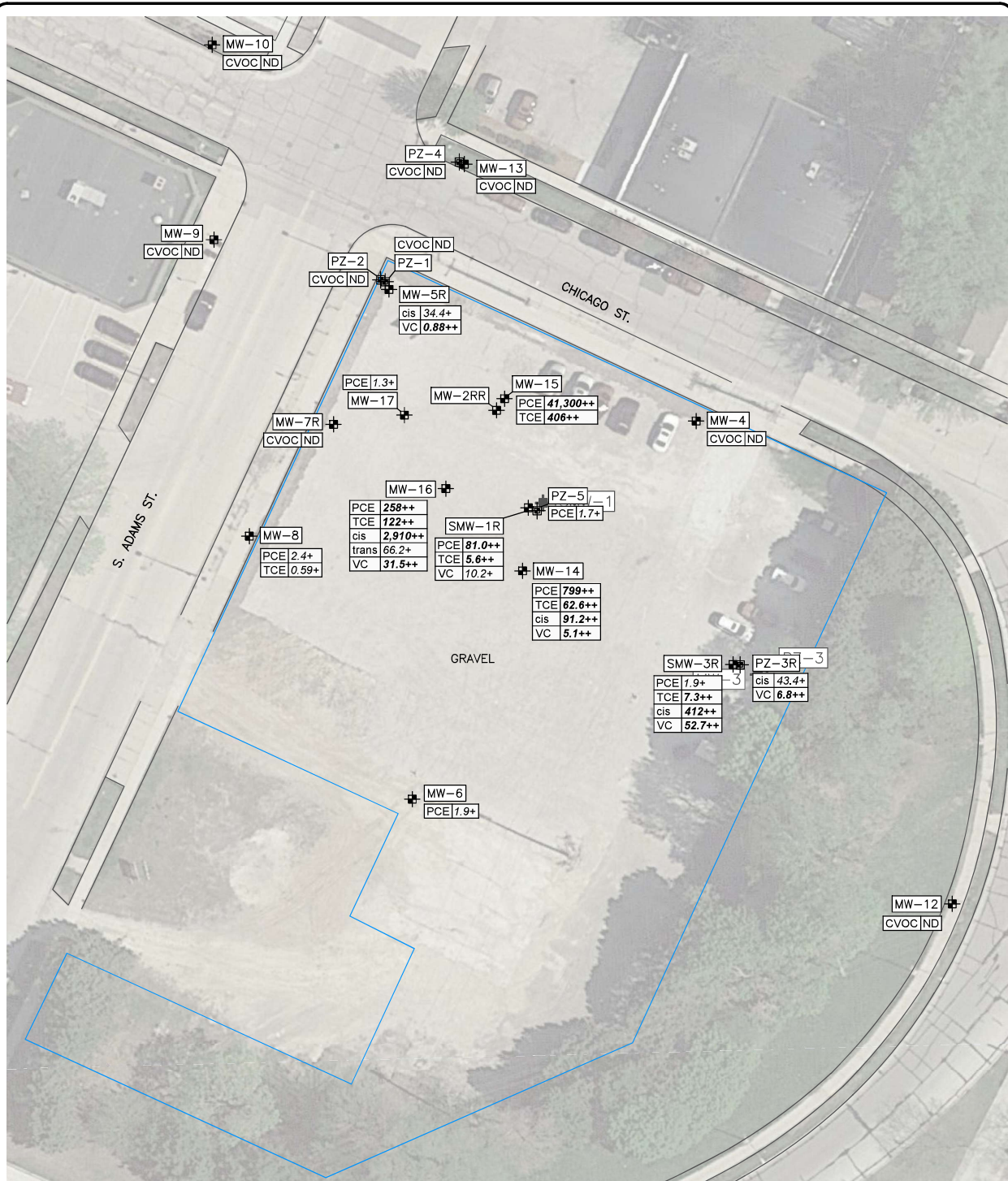
10/5/21

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ILLINOIS DESIGN FIRM NO. 194-003625

ILLINOIS
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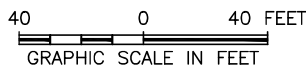




LEGEND

- ⊕ MONITORING WELL
- ⊕ PIEZOMETER
- ND NO DETECT
- PCE TETRACHLOROETHENE (ug/L)
- TCE TRICHLOROETHENE (ug/L)
- cis cis-1,2-DICHLOROETHENE (ug/L)
- trans trans-1,2-DICHLOROETHENE (ug/L)
- VC VINYL CHLORIDE (ug/L)
- CVOC CHLORINATED VOLATILE ORGANIC COMPOUNDS
- ITALICS+* EXCEEDS NR140 PREVENTIVE ACTION LIMIT (PAL)
- ITALICS/BOLD++* EXCEEDS BOTH NR140 PAL & ENFORCEMENT STANDARD

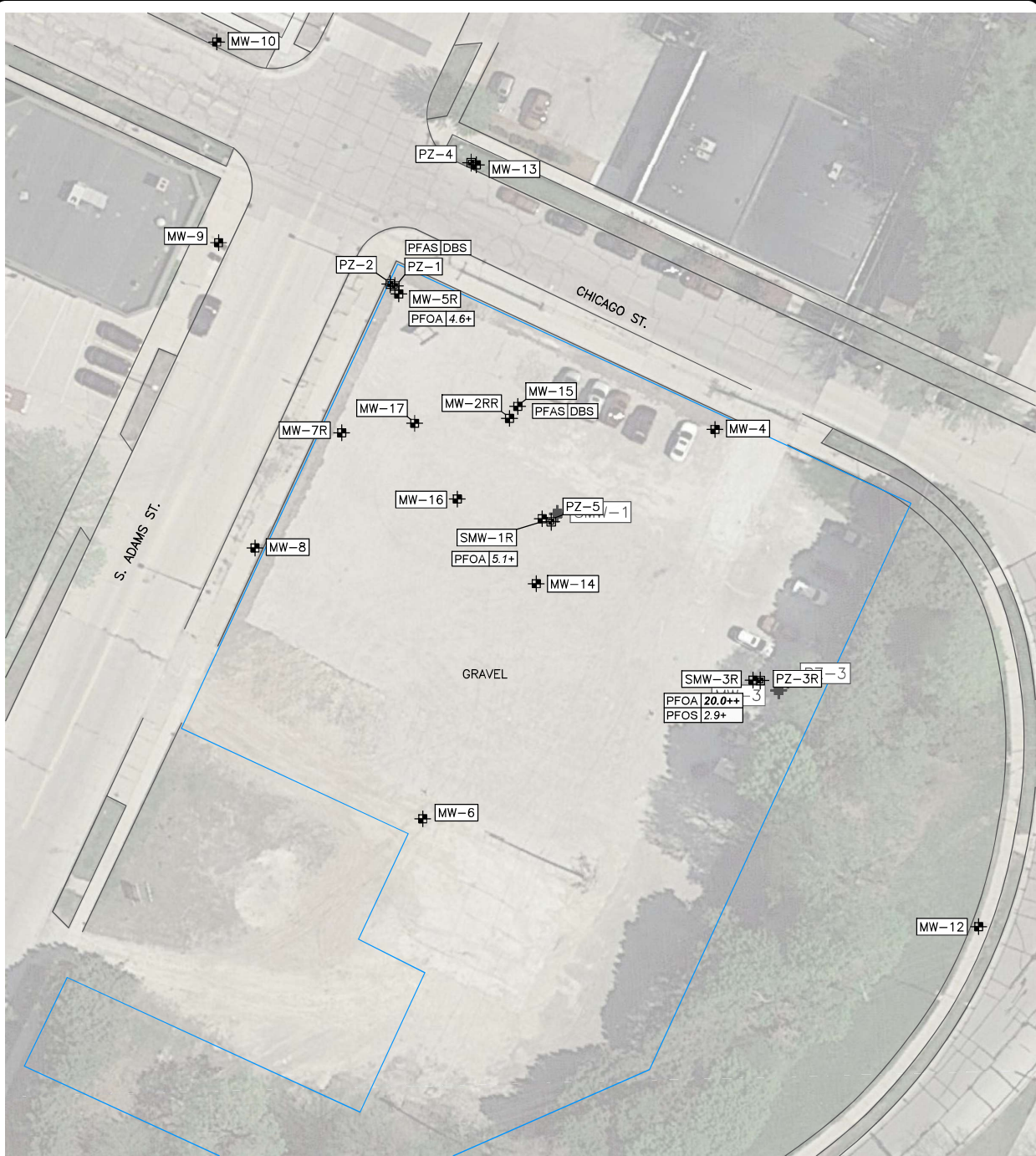
FIGURE 10
 POST-EXCAVATION GROUNDWATER
 CHEMISTRY – MAY 2021
 BAY TOWEL – SOLVENT INVESTIGATION
 501 S. ADAMS ST.
 GREEN BAY, WI 54301
 BRRTS NO.: 02-05-237064



10/5/21

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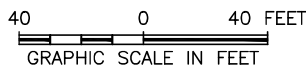
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LEGEND

- ⊕ MONITORING WELL
- ⊕ PIEZOMETER
- DBS DETECTIONS BELOW STANDARDS
- PFAS PER-AND POLYFLUOROALKYL SUBSTANCES
- PFOA PERFLUOROOCANOIC ACID (ng/L)
- PFOS PERFLUOROOCANESULFONIC ACID (ng/L)
- ITALICS+* EXCEEDS NR140 PREVENTIVE ACTION LIMIT (PAL)
- ITALICS/* EXCEEDS BOTH NR140 PAL & ENFORCEMENT STANDARD
- BOLD++** ENFORCEMENT STANDARD

FIGURE 11
 PFAS GROUNDWATER
 CHEMISTRY – JUNE 2021
 BAY TOWEL – SOLVENT INVESTIGATION
 501 S. ADAMS ST.
 GREEN BAY, WI 54301
 BRRTS NO.: 02-05-237064



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10/5/21

Tony Evers
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Secretary



State of Wisconsin
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DIVISION OF PUBLIC HEALTH

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March 25, 2021

Christine Haag
Program Director
Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
101 S. Webster Street, P.O. Box 7921
Madison, WI 53707-7921

Subject: DHS response to Request for Assistance: Actions for Trichloroethylene at Acute Risk Levels

Dear Ms. Haag:

The Wisconsin Department of Health Services (DHS) received your letter dated October 18, 2019 requesting clarification on the definition of acute risk and timeline justifications for responding to various scenarios where the acute risk is related to volatile organic compounds (VOCs) and vapor intrusion (VI).

This request for clarification is intended to augment a December 7, 2017 DHS letter to the Wisconsin Department of Natural Resources (DNR) providing recommendations for when immediate action is needed in response to written comments on proposed revisions to the RR-800 document. Specifically, DHS concurred with DNR's position that immediate action is justified when indoor air is found to be present at three (3) times the indoor air vapor action level (VAL) or sub-slab vapor risk screening level (VRSL) for a non-carcinogen or ten (10) times the VAL or VRSL for a carcinogen. In addition, DHS supported the DNR's position that immediate action be taken when trichloroethylene (TCE) is present in indoor air above the VAL and when women of child-bearing age are present.

DHS response:

DHS clarification statements defining acute risk and justifying timelines for responding to acute risk follow for each of the DNR scenarios presented in the request letter:

1. Clarification from DHS that acute risk necessitates immediate action as defined in s. NR 700.03(28), Wis. Admin. Code.

To reinforce the finding in the December 7, 2017 letter, DHS is in agreement that DNR's immediate action as defined in s. NR 700.03(28), Wis. Admin. Code is warranted when acute risk is observed as discussed in DNR's Vapor Intrusion Guidance RR800 (2018). For all contaminants with the exception of trichloroethylene (TCE) when women of childbearing years (age 15 to 44) are present, acute risk is defined as indoor air concentrations that are three times over the vapor action limit (VAL) for non-carcinogens

or ten times over the VAL for carcinogens. For TCE where people who are or may become pregnant occupy a dwelling, acute risk is defined as indoor air concentrations that are equal to or over the VAL ($HI \geq 1$). These immediate action guidelines are in agreement with EPA guidance. The following statement is from the EPA OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air (EPA 2015): “Although the indoor air concentrations may vary temporally, an appropriate exposure concentration estimate (e.g., time-integrated or time-averaged indoor air concentration measurement in an occupied space) that exceeds the health-protective concentration levels for acute or short-term exposure (i.e., generally considered to be a hazard quotient (HQ) greater than one for an acute or short-term exposure period) indicates vapor concentrations that are generally considered to pose an unacceptable human health risk.”

2. Clarification from DHS that trichloroethylene (TCE) present in indoor air above the applicable VAL qualifies as an acute risk to women of child-bearing years.

DNR basis its VAL and VRSL values on EPA regional screening levels (RSLs) for indoor air. These values are developed using reference concentrations (RfCs) from EPA’s toxicological assessments developed for its Integrated Risk Information System (IRIS). The non-cancer chronic inhalation RfC of 2×10^{-3} mg/m³ in EPA’s toxicological assessment for TCE (2011) is based upon two rodent drinking water exposure studies. One study (Kiel et al., 2009) reported an immunotoxic effect of TCE presenting as a reduced thymus weight in female mice. The other study reported an increased incidence of fetal cardiac malformations (Johnson et al., 2003). The cardiac malformation developmental endpoint drives the concern over short term exposure to TCE. Although some limitations were reported with the Johnson et al. study (2003), the cardiac malformations finding has been confirmed by several reviews since, including the EPA Office of Solid Waste and Emergency Response (2014), ATSDR (2014), the Massachusetts Department of Environmental Protection (MADEP, 2014), a group of EPA researchers (Makris et al, 2016), and the North Carolina Department of Environmental Quality (NC DEQ, 2018). These reviews found that a two- to three-fold increase in congenital heart defects were observed in multiple animal studies and that the most frequently observed heart defects were also reported in humans exposed to TCE-containing VOCs in several epidemiological studies (Brender et al. 2014, Dawson et al. 1993). These reviews also found that mechanistic support exists with studies in avian and mammalian cells demonstrating that TCE exposure alters processes that are critical to normal valve and septum formation. Although a recent EPA TSCA Risk Evaluation for TCE (2019) used the immunotoxic end point and not the fetal cardiac malformation end point for their risk determinations, the EPA Science Advisory Committee on Chemicals (SACC) was split on whether to use the fetal heart malformations endpoint for risk consideration and the TSCA Risk Evaluation was not allowed to consider epidemiological evidence or the effects of TCE exposure from air, contaminated waste sites, groundwater used for drinking water, and food in their evaluation.

The EPA identifies that a single exposure at any of several developmental stages may be sufficient to produce an adverse developmental effect (EPA, 1991). In humans, the cardiac system is the second to develop following fertilization, with cardiac development beginning at approximately 3 weeks following implantation. Substantial cardiac system development continues through 8 to 9 weeks post implantation, with the most sensitive period of cardiac development occurring in 3 to 6 weeks (Smart and Hodgson, 2018). These critical fetal heart development windows occur during a time period when an individual may not yet know they are pregnant. Rapid actions should be taken to minimize the potential for TCE exposures during these timeframes (EPA 2014, EPA Region V, 2020).

3. Health-based recommended responses including the definition of critical exposure windows with scientific justification to help inform DNR determination of time lines for immediate (s. NR 700.03(28), Wis. Admin. Code) and interim (s. NR 700.03(29), Wis. Admin. Code) actions in the following scenarios:

a. TCE is present beyond the envelope of a building at or above the applicable Vapor Risk Screening Level (VRSL);

DHS recommends an evaluation of the demographics for the building. If persons of childbearing years occupy the dwelling, indoor air samples should have a quick turnaround time (24 to 72 hours, EPA Region 9, 2014). Women in the sensitive demographic should be consulted about the potential TCE developmental toxicity risk so they may make informed decisions in terms of staying in the dwelling during the timeframe of the indoor air assessment. DHS or local health can assist with this consultation. If the indoor air TCE sample result exceeds the VAL, DHS recommends interim action (carbon filter unit) and rapid installation of sub-slab depressurization system within two weeks. If the indoor air TCE sample result is less than the VAL, mitigate and monitor indoor air in interim to ensure exposure is not occurring and move toward installation of a mitigation system within 4 to 8 weeks, depending upon the building's complexity and need for system design.

b. Non-carcinogenic compounds are present beyond the envelope of a building at or above three (3) times the applicable VRSL;

The U.S. EPA defines a reference concentration (RfC) as an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure of a chemical to the human population through inhalation (including sensitive subpopulations), that is likely to be without an appreciable risk of deleterious effects during a lifetime (IRIS Glossary, 2020). When a non-carcinogenic VOC is three times above the applicable VRSL, the risk of that VOC being present in indoor air at levels that can cause an adverse health effect is high enough to warrant urgent action including indoor air sampling with 24 to 72 hour turnaround time and mitigation within 4 to 8 weeks, or sooner where indoor air sampling results indicates a VAL exceedance.

- c. Carcinogenic compounds are present beyond the envelope of a building at or above ten (10) times the applicable VRSL;**

VRSLs are established in Wisconsin with a 10^{-5} cancer risk. When a carcinogenic compound is present in indoor air at or above ten times the applicable VRSL, the cancer risk exceeds 10^{-4} cancer risk. The risk of cancer occurrences from continuous exposure is therefore high enough to warrant the installation of a mitigation system within 4 to 8 weeks, depending upon the building's complexity and need for system design.

- d. TCE is present in indoor air below the applicable VAL**

Review sub-slab results when available. If sub-slab TCE data is also below VRSL, additional assessment should take place with normal laboratory turnaround time to confirm results are below action levels. If women of childbearing years occupy the building, an additional sampling round should take place as soon as feasible to ensure levels above VAL/VRSL is not present.

- e. Non-carcinogenic compounds are present in indoor air between the applicable VAL and three (3) times the applicable VAL;**

Move toward mitigation system installation within 4 to 8 weeks, depending upon complexity and need for system design. Perform indoor air sampling to confirm mitigation system is effective.

- f. Carcinogenic compounds are present in indoor air between the applicable VAL and ten (10) times the applicable VAL;**

Move toward mitigation with a recommended timeframe of 4 to 8 weeks, depending upon complexity and need for system design. Perform indoor air sampling to confirm mitigation system is effective.

- g. TCE is present in indoor air at or above the applicable VAL;**

DHS recommends an evaluation of the demographics for the building. If women of childbearing years occupy the building, implement interim actions such as carbon filtration units to interrupt the TCE exposure. Move toward installation of a mitigation system within two weeks. Women in the sensitive demographic should be consulted about the potential TCE developmental toxicity risk so they may make informed decisions in terms of staying in the dwelling during the timeframe of the indoor air assessment.

- h. Non-carcinogenic compounds are present in indoor air at or above three (3) times the applicable VAL;**

The U.S. EPA defines a reference concentration (RfC) as an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure of a chemical to the human population through inhalation (including sensitive subpopulations), that is likely to be without an appreciable risk of deleterious effects during a lifetime (IRIS Glossary, 2020). When a non-carcinogenic VOC is three times above the applicable VAL, the risk of adverse health effects occurring from continuous exposure is high enough to warrant the installation of a mitigation system within 4 to 8 weeks, depending upon the building's complexity and need for system design. Depending upon how far above the VAL the concentration is, more urgent actions may be needed, and the local health officer should be consulted for potential abatement orders, placarding, and temporary relocation of occupants per Section 254 Wis. Admin. Code.

i. Carcinogenic compounds are present in indoor air at or above ten (10) times the applicable VAL.

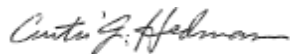
When a carcinogenic compound is present in indoor air at or above ten times the applicable VAL, the cancer risk exceeds 10^{-4} cancer risk. The risk of cancer occurrences from continuous exposure is therefore high enough to warrant the installation of a mitigation system within 4 to 8 weeks, depending upon the building's complexity and need for system design. Depending upon how far above the VAL the concentration is, more urgent actions may be needed, and the local health officer should be consulted for potential abatement orders, placarding, and temporary relocation of occupants per Section 254 Wis. Admin. Code.

4. Health-based recommendations for when sampling indoor air at commercial or industrial businesses is necessary in light of the recent Department of Defense study on sewers and utility tunnels as preferential pathways (*Sewers and Utility Tunnels as Preferential Pathways for Volatile Organic Compound Migration into Buildings: Risk Factors And Investigation Protocol*, ESTCP Project ER-201505).

DHS agrees with the finding in the DoD study that indoor air should be part of the VI assessment where evidence of preferential pathways might be feasible. This evidence may include detection of VOCs in sewer lines or utility corridors. Recent experience has shown instances where indoor air levels are found at high levels due to preferential pathway contamination through open sumps, openings in foundations, and poorly sealed conduits. DHS also recommends sampling indoor air when environmental sampling (groundwater, soil, or soil gas) indicates that indoor air action levels could be exceeded. When TCE is the contaminant of concern, indoor air should always be evaluated to assist with the risk assessment and be able to interrupt exposures as soon as possible to sensitive populations to prevent the known reproductive/developmental endpoint. When commercial or industrial businesses are users of the VOCs being studied, those chemicals may need to be temporarily removed prior to the indoor air assessment, where feasible.

Thank you for the opportunity to provide feedback on this topic. Please contact me at (608) 266-6677, or curtis.hedman@wisconsin.gov if you have any follow up questions or comments about this response.

Sincerely,



Curtis Hedman, Ph.D.
Toxicologist
Bureau of Environmental and Occupational Health

Cc: Jennifer Borski, Vapor Intrusion Team Leader, DNR R&R Program
Judy Fassbender, NR Program Manager, DNR R&R Program
Roy Irving, Chief, DHS Hazard Assessment Section, BEOH
Mark Werner, Chief, DHS BEOH

Enc: Summary of DHS response to Request for Assistance: Actions for Trichloroethylene at Acute Risk Levels

References:

WI DNR Remediation and Redevelopment Program Publication RR-800 (2018). *Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin*. Available at: <https://dnr.wi.gov/files/PDF/pubs/rr/RR800.pdf>

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<http://www.epa.gov/vaporintrusion/technical-guide-assessing-and-mitigating-vapor-intrusion-pathway-subsurface-vapor>

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Enclosure: Summary of DHS response to Request for Assistance: Actions for Trichloroethylene at Acute Risk Levels

DNR Ask	DHS Response	Supporting Reference(s)
<p>1) Clarification from DHS that acute risk necessitates immediate action as defined in s. NR 700.03(28), Wis. Admin. Code.</p>	<p>A) Immediate action as defined in NR 700.03(28) warranted if: for compounds except TCE = 3x VAL, or 10x VAL carcinogens; TCE w/ women age 15-44 = VAL</p>	<p>A) December 7, 2017 DHS letter and EPA OSWER Tech Guide (2015)</p>
<p>2) Clarification from DHS that trichloroethylene (TCE) present in indoor air above the applicable VAL qualifies as an acute risk to women of child-bearing years</p>	<p>A) VALs&VRSLs based on EPA RSLs B) RSL for TCE is based on immunotox. and fetal cardiac development endpoints C) findings confirmed by reviews D) also consistent with epi study findings E) single exposure during development can have harmful effect F) critical development window 3 to 6 weeks G) rapid action warranted for TCE > RSL</p>	<p>A) EPA tox assessment TCE (2011) B) Kiel et al. (2009) Johnson et al. (2003) C) EPA OSWER (2014), ATSDR (2014), MADEP (2014), Makris et al (2016), NC DEQ (2018) D) Brender et al. (2014), Dawson et al. (1993) E) EPA (1991) F) Smart and Hodgson (2018) G) EPA 2014, EPA Region V (2020)</p>
<p>3) Health-based recommended responses including the definition of critical exposure windows with scientific justification to help inform DNR determination of time lines for immediate (s. NR 700.03(28), Wis. Admin. Code) and interim (s. NR 700.03(29), Wis. Admin. Code) actions in the following scenarios:</p>		
<p>a) TCE is present beyond the envelope of a building at or above the applicable Vapor Risk Screening Level (VRSL)</p>	<p>A) evaluate demographics in building B) sample indoor air with 24-72 hour TAT C) consult w/ women 15-44 about TCE D) if TCE >VAL, carbon filtration w/in 48 hours and sub-slab system w/in 2 weeks E) if TCE <VAL, perform another indoor air sample and sub-slab system w/in 4-8 weeks</p>	<p>B) EPA Region 9, (2014) WI DNR RR800 (2018), EPA Reg V (2020)</p>
<p>b) Non-carcinogenic compounds are present beyond the envelope of a building at or above three (3) times the applicable VRSL</p>	<p>A) RfC is estimate, ca. order of magnitude, of concentration w/o harm over lifetime B) >3x that level cuts significantly into that safety factor C) indoor air sampling with 24-72 hour TAT D) sub-slab system w/in 4-8 weeks if >VAL</p>	<p>C) EPA Region 9, (2014) WI DNR RR800 (2018), EPA Reg V (2020)</p>
<p>c) Carcinogenic compounds are</p>	<p>A) VRSLs est. w/ 10⁻⁵ cancer risk</p>	<p>WI DNR RR800 (2018), EPA Reg. V (2020)</p>

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<p>present beyond the envelope of a building at or above ten (10) times the applicable VRSL</p>	<p>B) >10x that exceeds 10^{-4} cancer risk C) sub-slab system w/in 4-8 weeks if >10x VRSL</p>	
<p>d) TCE is present in indoor air below the applicable VAL</p>	<p>A) verify TCE in sub-slab is not >VRSL B) If TCE also <VRSL; one more sampling event C) do follow up samples soon as possible if women age 15-44 live in building</p>	<p>WI DNR RR800 (2018), EPA Reg. V (2020)</p>
<p>e) Non-carcinogenic compounds are present in indoor air between the applicable VAL and three (3) times the applicable VAL</p>	<p>A) sub-slab system w/in 4-8 weeks B) sample to confirm system is effective</p>	<p>WI DNR RR800 (2018), EPA Reg. V (2020)</p>
<p>f) Carcinogenic compounds are present in indoor air between the applicable VAL and ten (10) times the applicable VAL</p>	<p>A) sub-slab system w/in 4-8 weeks B) sample to confirm system is effective</p>	<p>WI DNR RR800 (2018), EPA Reg. V (2020)</p>
<p>g) TCE is present in indoor air at or above the applicable VAL</p>	<p>A) evaluate demographics in building B) consult w/ women 15-44 about TCE C) carbon filtration w/in 48 hours and sub-slab system w/in 2 weeks</p>	<p>WI DNR RR800 (2018), EPA Reg. V (2020)</p>
<p>h) Non-carcinogenic compounds are present in indoor air at or above three (3) times the applicable VAL</p>	<p>A) RfC is estimate, ca. order of magnitude, of concentration w/o harm over lifetime B) >3x that level cuts significantly into that safety factor C) sub-slab system w/in 4-8 weeks D) if >>VAL, consult health officer for actions available under Section 254 WI Administrative Code</p>	<p>WI DNR RR800 (2018), EPA Reg. V (2020)</p>
<p>i) Carcinogenic compounds are present in indoor air at or above ten (10)</p>	<p>A) VRSLs est. w/ 10^{-5} cancer risk B) >10x that exceeds 10^{-4} cancer risk C) sub-slab system w/in 4-8 weeks</p>	<p>WI DNR RR800 (2018), EPA Reg. V (2020)</p>

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<p>times the applicable VAL</p>	<p>D) if >>VAL, consult health officer for actions available under Section 254 WI Administrative Code</p>	
<p>4) Health-based recommendations for when sampling indoor air at commercial or industrial businesses is necessary in light of the recent Department of Defense study on sewers and utility tunnels as preferential pathways (<i>Sewers and Utility Tunnels as Preferential Pathways for Volatile Organic Compound Migration into Buildings: Risk Factors And Investigation Protocol</i>, ESTCP Project ER-201505)</p>	<p>A) DHS agrees with DOD study findings B) DHS recommends sampling indoor air when soil gas results suggest indoor air levels may be exceeded C) Indoor air should always be assessed where TCE is contaminant of concern due to acute reproductive endpoint D) when assessing indoor air in commercial buildings, may need to relocate COCs that are used in production during sampling</p>	<p>US DOD ESTCP Project ER-201505 (2018)</p>