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Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
2984 Shawano Avenue
Green Bay, Wisconsin 54313

Attn: Ms. Josie Schultz
E: Josie.Schultz@wisconsin.gov
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Re: 2024 Additional Vapor Intrusion Investigation Work Plan and DERF
Change Order Request
Smoke-Out Cleaners
1631 Brookfield Avenue, Unit D-4
Howard, Wisconsin ("Property")
BRRTS #02-05-552214
Terracon Project No. 58187103

Dear Josie:

On behalf of Smoke-Out Cleaners (Smoke-Out), Terracon Consultants, Inc. (Terracon) has prepared this 2024 Additional Vapor Intrusion Investigation Work Plan (AVIWP) for the above-referenced project in response to your October 16, 2023, email. The AVIWP was prepared in general conformance with Wisconsin Administrative Code (WAC), Chapter NR 716. A project background and history, proposed work plan, and tentative schedule are provided in the following sections. This letter also includes a change order request for additional costs associated with the proposed work and an updated Dry Cleaner Repair Fund (DERF) Linking Spreadsheet. The change order addresses both new scope items and increased subcontractor and consultant costs that have occurred in the past several years.

1.0 BACKGROUND

1.1 Previous Investigations

A Preliminary Site Assessment (PSA) was completed at the site by Giles Engineering Associates (Giles) in August 2008. The PSA included two interior soil borings (HP-1 and HP-2) near the dry-cleaning machine (DCM) and one exterior hand boring (GP-1) near the rear (west) service door (see the attached Figure 2). The PSA identified chlorinated volatile organic compounds (CVOCs) in both soil and groundwater. As a result, a Notification of

Release was submitted to the Wisconsin Department of Natural Resources (WDNR) on August 21, 2008. The WDNR issued a Responsible Party (RP) letter on August 29, 2008, that named Mark Woppert of Smoke-Out as the RP and required a site investigation be performed to determine the magnitude and extent of contamination.

Giles performed the subsequent site investigation during multiple phases from 2008 through 2017. Giles advanced a total of 12 additional direct-push soil borings from July 2011 through March 2017, to investigate the nature and extent of soil and groundwater contamination. A total of 9 shallow, small-diameter prepacked observation wells (MW-1 through MW-9) and 1 piezometer (PZ-1) were installed. Four observation wells (MW-1 through MW-4) were installed in the building's interior. A total of 8 sub-slab vapor sampling points (VP-1 through VP-8) were installed during the course of the site investigation, including 5 within the Smoke-Out space, and 3 in the south adjacent Badger Scale space. Soil, sub-slab vapor, and groundwater samples were collected and analyzed for volatile organic compounds (VOC).

Giles also collected groundwater samples from the four potable wells that serve the occupied buildings in the business park. The site investigation results indicated that soil and groundwater had been impacted above applicable standards by CVOCs, and that indoor air may be impacted based on sub-slab vapor results that exceeded small commercial vapor risk screening levels (VRSLs). The site investigation indicated that shallow soils were primarily fine to medium-grained sand with varying amounts of silt to depths of approximately 10-12 feet below ground surface (bgs). The sand is underlain by clay, silt, and silty clay to the terminus of the deepest boring at approximately 30 feet bgs. Groundwater at the site is shallow, typically ranging from approximately 2.5 to 4.5 feet bgs, but seasonally may be as shallow as 1.5 feet bgs in some parts of the site (see attached Table 1). Giles determined shallow groundwater flow was generally to the east.

The site investigation results were documented in Giles' Site Investigation Report dated August 31, 2017. The soil, groundwater, and vapor sampling locations are shown on Figure 2. Soil, groundwater, and sub-slab vapor samples were collected and analyzed for VOC.

Specifically, the soil to groundwater pathway residual contaminant level (RCL) for soil was exceeded for one or more CVOCs including cis-1,2-dichloroethene (cis-DCE), methylene chloride, tetrachloroethene (aka perchloroethylene or PCE), and trichloroethene (TCE) at interior borings HP-1, HP-2, MW-2, MW-3, and MW-4, and exterior boring GP-1. The highest concentration detected in soil was 2,500 micrograms per kilogram ($\mu\text{g}/\text{kg}$) PCE at 2 to 3 feet bgs at interior soil boring MW-3, located near the DCM.

During the groundwater sampling event conducted in March 2017, the CVOCs cis-DCE, PCE, TCE, and vinyl chloride (VC) were detected at concentrations above their respective WAC, Chapter NR 140 Enforcement Standard (ES) at one or more interior observation wells, including MW-1, MW-3, and MW-4.

The sub-slab vapor sampling results indicated that PCE and/or TCE were detected at concentrations above their respective small commercial VRSLs at sub-slab vapor monitoring points VP-1, VP-4, VP-5, and VP-8 located within the Smoke-Out space, and at VP-2 and VP-7 located within the south adjoining Badger Scale space.

Based on review of the initial Site Investigation Report dated August 31, 2017, the WDNR requested an additional round of sub-slab vapor sampling in conjunction with indoor ambient air sampling. The field work was performed on October 25, 2017. Two, 8-hour indoor ambient air samples were collected. One was from the office area of Smoke-Out (IA-1) and the other from the office area of Badger Scale to the south. The results were documented in Giles' Site Investigation Report Addendum, dated December 6, 2017.

The results indicated that PCE concentrations in indoor ambient air sample IA-1 was above the WDNR small commercial vapor action limit (VAL). The sub-slab vapor sampling results confirmed that PCE and/or TCE concentrations remained above their respective small commercial VRSLs at sub-slab vapor monitoring points VP-1, VP-4, VP-5, and VP-8 located within the Smoke-Out space, and at VP-2 and VP-7 located within the south adjoining Badger Scale space.

The October 2017 sampling and December 2017 reporting were Giles' final activities at the site. No work was completed during 2018 as the site information was being reviewed by the WDNR and competitive bids were being sought by the WDNR for site remediation. Ultimately, Terracon was selected to oversee site remediation activities in 2018, and the WDNR requested supplemental site investigation (SSI) prior to the start of remedial activities. The SSI was initiated in accordance with Terracon's December 4, 2018, Supplemental Site Investigation Work Plan.

On March 19, 2019, Terracon supervised Horizon Construction and Exploration, LLC during the advancing of soil borings GP-4 and PZ-2. The borings were advanced using a drill rig capable of collecting soil samples using direct-push methods and turning hollow-stem augers. Soil boring GP-4 was advanced inside the Smoke Out facility north of observation well MW-2, and boring PZ 2 was advanced outside of the facility northeast of monitoring well MW-2. One unsaturated soil sample was collected from 1-foot bgs in each boring for analysis of VOCs. VOCs were not detected at concentrations above the analytical limit of detection (LOD) in the two soil samples submitted for laboratory analysis. The apparent source area of CVOC-impacted soil (predominantly PCE) is located in the shallow soil beneath the building near the DCM. PCE, cis-DCE, and methylene chloride were detected at concentrations which exceed their respective soil to groundwater pathway RCLs. The area includes the south half of the Smoke-Out Cleaners space and north part of the Badger Scale space. This area encompasses hand probes HP-1 and HP-2, observation wells MW-1 through MW-4, and soil boring GP-1. The highest PCE concentration was detected 2 to 3 feet below floor grade at well MW-3 near the DCM at a concentration of 2,500 µg/kg. The impacted

area is primarily beneath the Smoke-Out and Badger Scale tenant spaces and is approximately 50 feet wide (north-south) by 60 feet (west-east).

PCE and TCE concentrations in sub-slab vapor points beneath both the Smoke-out Cleaners and Badger Scale spaces exceed the small commercial and large commercial/industrial VRSLs. Sub-slab vapor points VP-1, VP-4, VP 5, and VP-8 are located in the Smoke-Out Cleaners tenant space, while vapor points VP-2 and VP-7 are located within the Badger Scale tenant space. The highest PCE vapor concentration detected in October 2017 was 564,000 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The ellipse-shaped area which exceeds the large commercial/industrial VRSLs beneath the building's interior is approximately 80 feet (north-south) by 60 feet (west-east). Although PCE is used at the site and would contribute to indoor air PCE concentrations, the shallow PCE-contaminated groundwater also provides a source to potentially complete the sub-slab to indoor air pathway. The estimated extent of the sub-slab vapor exceedances as of October 2017 along with historical sub-slab results are shown on Figure 3.

Based on information from Giles' report, PCE and TCE were detected in indoor air samples collected from indoor air sample point IA-1. PCE was detected at a concentration exceeding its large commercial VAL. TCE was detected at a concentration below its most conservative VAL (residential). At indoor air monitoring point IA-2, PCE was detected below its most conservative VAL (residential) and TCE was detected below its LOD.

On March 27, 2019, Terracon personnel collected groundwater samples from the 10 observation wells and two piezometers located on the site. Groundwater samples were submitted for the laboratory analysis of VOCs. Samples from observation wells MW-1, MW-2, MW-3, MW-4, and MW-7 were also analyzed for the geochemical indicator parameters methane/ethane/ethene (MEE), total organic carbon (TOC), and dissolved iron for use in evaluating aquifer characteristics. PCE and its degradation daughter compounds, TCE, cis-DCE, trans-1,2-dichloroethene (trans-DCE), and VC were detected at concentrations above their NR 140, WAC, Preventive Action Limit (PAL) and/or ES. Interior monitoring wells MW-3 and MW 4 exhibited PCE, TCE, cis-DCE, and VC concentrations that exceed their respective ESs. Trans-DCE was detected in groundwater from MW-3 and MW-4; however, the concentrations were below PALs. Groundwater from MW-1 contained PCE, TCE, and VC at concentrations above their respective ESs, and cis-DCE at a concentration above its PAL. Although concentrations remained above the ES in the three interior wells, PCE and TCE levels generally declined from historical highs while cis-DCE and VC concentrations increased. Groundwater from piezometers PZ-1 and PZ-2 did not contain VOCs at concentrations above LODs.

The dissolved-phase CVOC plume originates near the DCM, coinciding with the area with the highest concentrations of CVOCs in soil in the area near observation well MW-3. The CVOC contaminant plume lies entirely beneath the building in the vicinity of the DCM, and encompasses wells MW-1, MW-3, and MW-4. The contaminant plume extends southward

beneath the adjacent Badger Scale space. At each observation well within the contaminant plume, one or more CVOCs including PCE, TCE, cis-DCE, and VC exceeded their respective ESs in the March 2019 groundwater sampling event. The dissolved-phase CVOC plume at concentrations above its ES was delineated and estimated to be 40 feet long (north-south) and 45 feet wide (west-east).

Groundwater at the site is present at depths ranging from approximately 0.60 to 2 feet bgs in the sands, with flow variably to the north, northeast, or east. VOCs have not been detected in piezometers PZ-1 and PZ-2 at concentrations above their LOD, defining the vertical extent of groundwater contamination.

Terracon prepared a Supplemental Site Investigation and Remedial Action Plan Report, dated January 9, 2020, to address soil, groundwater, and vapor concerns. Based on the results of the remedial action options evaluation, a remedial action plan (RAP) was developed to address the identified impacted soil, groundwater, and sub-slab vapor and facilitate a path towards case closure. The recommended RAP included installation of a sub-slab depressurization system (SSDS), in-situ amendment injection in the contaminant source area to stimulate enhanced reductive dechlorination (ERD), followed by quarterly groundwater monitoring to demonstrate remedy effectiveness.

1.2 Remedial Actions

1.2.1 Groundwater Amendment Injection and Sub-Slab Depressurization System Installation

The proposed remedial actions described in the RAP were implemented in June 2020 following receipt of the injection approval in correspondence from WDNR on March 17, 2020. The actions included:

- Baseline groundwater monitoring (June 9, 2020);
- Initial installation of the SSDS with two drop points (June 9, 2020);
- Injection of a total of approximately 1,224 gallons of amendments (Regenesis products 3-D Microemulsion [3DMe][®], Sulfidated Micro Zero Valent Iron [S-MicroZVI], and Bio-Dechlor Inoculum Plus [BDI Plus[®]]) and water distributed into 12 injection borings (June 10-11, 2020);
- Post-injection sampling of TOC from selected interior groundwater observation wells (June 11, 2020);
- Installation of 15 vacuum monitoring points, completion/startup of the SSDS, and initial pressure extension field (vacuum) testing (July 14, 2020); and
- Subsequent post-injection vacuum, gas, and groundwater monitoring.

The initial post-injection TOC indicated good distribution of the amendment in the target area. Vacuum monitoring indicated SSDS influence over the area of concern during high

groundwater conditions, but a smaller area of influence during low groundwater conditions. Gas monitoring (VOCs, methane, carbon dioxide [CO₂], and oxygen [O₂]) at the south drop point stack indicated decreasing VOCs as measured by a photoionization detector (PID) from 59.8 parts per million volume (ppmv) in September 2020 to <1 ppmv in June 2021 before increasing slightly to 8 ppmv in September 2021.

1.2.2 Post-Injection Groundwater Monitoring

There were six post-injection groundwater monitoring events performed from July 2020 through September 2021. Monitoring well MW-3, which is nearest the former DCM location (see the attached Figure 1) and should be considered “the source area”, had the highest overall concentrations historically. However, as of September 2021, most of the CVOCs had been degraded and only vinyl chloride remained at 0.55 micrograms per liter (µg/L), just above its ES of 0.2 µg/L. CVOCs were also degraded in the other three interior monitoring wells (MW-1, MW-2, and MW-4) and during the September 2021 sampling event, only vinyl chloride remained above its ES at MW-1 (1.1 µg/L) and MW-2 (0.40 µg/L). In September 2021, there was no detection of CVOCs above their LOD in monitoring well MW-4. In addition to vinyl chloride only low concentrations of cis-DCE or trans-DCE (0.95 to 1.3 µg/L) were detected in monitoring wells MW-1 through MW-3 in September 2021.

Terracon monitored TOC at selected monitoring points during pre-injection baseline monitoring (June 9, 2020), immediately after injection (June 11, 2020), and in post-injection monitoring events as a measure of when the injected amendment is spent. The typical pattern is to see approximately 5 milligrams per liter (mg/L) TOC prior to injection, a spike after injection, and gradual decrease over time in post-injection monitoring events. The amendment is generally considered spent when post-injection TOC falls to below 20 mg/L, even though that is still above pre-injection values. At monitoring well MW-3, TOC initially increased to 690 mg/L but was below 20 mg/L for four sampling rounds (December 2020 and March, June, and September 2021) without rebound of CVOC concentrations.

1.2.3 Remedial Action Documentation Report

Terracon prepared a Remedial Action Documentation Report (RADR) dated December 16, 2021, which documented the remedial actions, subsequent post-injection groundwater monitoring results, and statements regarding emerging contaminants including per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. The RADR was submitted with a completed Form 4400-237 and fee for technical review and written comment by the WDNR. The WDNR provided comment in correspondence dated February 8, 2022, indicating the need for additional information pertaining to PFAS before they could determine whether PFAS sampling was necessary, the need for additional information regarding the deep groundwater to determine if the groundwater investigation was complete, and the need for additional vapor intrusion investigation to obtain data required in recently published WDNR guidance.

Terracon prepared a response dated June 10, 2022, which provided additional PFAS scoping information; data and information regarding the site geology, potable well construction, and piezometer information; and which agreed to additional vapor intrusion investigation. In an email response dated June 27, 2022, WDNR agreed that PFAS sampling was not necessary based on the additional information provided. In a further email response dated June 30, 2022, WDNR stated:

“Based on current information and recent justification provided, it’s difficult to determine that vertical extent of (groundwater) contamination is defined at this time. One concern is that piezometers have not been sampled since December 2020, and the injection may have pushed contamination downward. Prior to submitting a workplan for additional investigation, we recommend sampling piezometers at a minimum to show vertical extent hasn’t been affected by the injection.”

1.2.4 Piezometer Sampling

Because Terracon needed to mobilize to the site to inspect the sanitary cleanout and floor drain prior to vapor sampling, Smoke-Out approved sampling the piezometers at the same time. The inspection and piezometer sampling were performed on August 4, 2022.

Prior to purging, static water levels were measured to the nearest 0.01 foot at each monitoring well in the well nests (MW-8/PZ-1 and MW-10/PZ-2). The groundwater elevations on August 4, 2022, represented historical low or near historical low elevations at each well. The vertical gradient at each well nest was calculated using the bottom well screen method (Δ groundwater elevations/ Δ bottom screen elevations) in each well nest. The results indicated a downward vertical gradient of 0.0056 foot per foot (ft/ft) or 0.56% at monitoring well nest MW-8/PZ-1 and 0.019 ft/ft or 1.9% at monitoring well nest MW-10/PZ-2. Due to overall lower groundwater elevations, there had been a downward vertical gradient present at the MW-10/PZ-2 well nest since June 30, 2021. The downward vertical gradient at the MW-10/PZ-2 well nest on August 4, 2022, represented an historical high downward vertical gradient.

The two piezometers were purged and sampled using low-flow sampling methods. Samples were collected into laboratory-supplied containers and shipped to a Wisconsin-certified laboratory for analysis of VOCs.

The results indicated no detection of VOCs above the laboratory LOD in either piezometer. The no detect of VOCs above the LOD in both piezometers on August 4, 2022, was significant because there had been a downward vertical gradient present at that location for more than a year with the greatest recorded downward vertical gradient present on August 4, 2022, such that the no detect of VOCs occurred under worst-case scenario conditions. Therefore, the August 4, 2022, piezometer results in conjunction with information presented in Terracon’s June 10, 2022, Response to WDNR RADR Comments including the stratigraphy

(sand over clay limiting downward plume movement), typical upward vertical gradient, potable well construction and depth, potable well sampling results (no detect even prior to remediation), relatively young age of the release, overall low to moderate contaminant mass prior to remediation, and destruction of that contaminant mass since injection, indicate that there is no reason to pursue additional deep groundwater investigation.

In regard to post-injection groundwater monitoring, based on the monitoring data through September 2021, the remediation amendment was already spent in the source area at monitoring well MW-3 as of December 2020. Thus, 1 year of quarterly monitoring had already been completed after the amendment was spent in the source area. Since WDNR requires 2 years of monitoring after amendments are spent, only one more year of monitoring was needed. Therefore, Smoke-Out proposed to collect two more rounds of post-injection groundwater samples (approximately January 2023 and December 2023). If the results were similar to or decreased from the September 2021 results, closure would be appropriate based on groundwater quality. If the results indicate increasing trends, additional future monitoring will likely be necessary.

1.3 Supplemental Vapor Intrusion Investigation/System Decommissioning Sampling Work Plan and Implementation

In WDNR's February 8, 2022, Conditional Approval of the Remedial Action Documentation Report, which provided a response to Terracon's December 16, 2021, Remedial Action Documentation Report, comments regarding additional vapor intrusion investigation included:

"In the attached email sent to Scott Hodgson on March 4, 2021, DNR stated that additional vapor sampling is required at the site, including a sanitary sewer investigation, indoor air sampling at the adjacent Badger Scale tenant space to the south, and potentially sub-slab sampling beneath the adjacent Diamond Builders tenant space to the north."

That email included the following comments:

1. "Verify through pressure field extension testing data (if the SSDS is to remain running) that the existing VMS captures VP-8 (PCE/TCE >> VRSL) up to VP-3 (PCE/TCE < VRSLs).
2. Additional indoor air sampling at the Badger Scale unit immediately to the south is needed due to TCE > VRSL. A second event should be collected to supplement the previous IA event performed by Giles in 10/2017. If the intent remains to shut down the VMS, DNR suggests the IA sampling at Badger Scale wait to be combined with the decommissioning sampling. The intent being to verify no exposure is occurring after interim & RA.
3. The adjacent building to the east is less than 100 ft from the soil source. It is unclear if a VI investigation is needed at this location with the operating VMS and injection

performed. We need more information about the business in that location and sanitary lateral information for further consideration. If post-injection soil data is collected in addition to sub-slab vapor data, this should be further considered when evaluating whether a VI investigation is needed at the adjacent building.

4. The sanitary sewer preferential pathway should be investigated since this is a former active dry cleaner. If the septic includes a drain field, the drain field should also be investigated if found to be impacted. If the septic is a holding tank, we still need to consider vapor migration into occupied spaces from the sewer, if found to be impacted. This would include a vapor grab sample from the sanitary clean-out.
5. Please review Appendix F of [RR-800](#), decommissioning guidelines for a sub-slab depressurization system (SSDS): collect at least three rounds of sub-slab samples (2-4 weeks post shut-down; 2-6 months & 1 year with at least two events during the heating season).
6. DNR will need to review at least 8 rounds of quarterly post-injection groundwater monitoring data prior to considering site closure before all injection compounds have been spent.
7. Submit a work plan describing how these items will be addressed."

Terracon's September 13, 2022, Supplemental Vapor Investigation and System Decommissioning Work Plan provided additional information addressing items 1, 3, and 8 above and presented the proposed plan to address the remaining WDNR comments. In general, the work plan proposed collecting three rounds of vapor samples, including two rounds during the winter assessment period, at the following locations in addition to the vapor sampling program presented in Terracon's January 9, 2020, Supplemental Site Investigation and Remedial Action Plan Report:

- Sub-slab vapor monitoring points VP-3 and VP-6;
- An 8-hour indoor air sample from the office area of the Badger Scale space near the location of previous indoor air sample IA-2; and
- Grab samples from the Smoke-Out south floor drain and the sanitary cleanout in the boiler room.

Sampling methods and details were included in the work plan.

The WDNR approved the Supplemental Vapor Investigation and System Decommissioning Work Plan in correspondence dated October 26, 2022. Terracon implemented the work plan in January 2023. After shutting down the Sub-slab Depressurization System (SSDS) on December 27, 2022, the first of three additional vapor intrusion investigation/system decommissioning sampling rounds was conducted January 11, 2023, in conjunction with post-injection groundwater sampling event #7.

The results indicated that the sub-slab and indoor air samples were below standards and supported keeping the SSDS shut off. However, elevated PCE and related VOC vapor concentrations were detected behind the trap in the floor drain. The floor drain was completely plugged during inspection in 2022. A plumber cleared the drain sometime prior

to sampling and at the time of arrival on January 11, 2023, Terracon observed that the drain was cleared and the liquid-filled trap was functioning properly. Terracon sampled behind the trap in accordance with our work plan. After sampling, liquid was returned to the trap. The results indicated 7,320,000 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) PCE. The results suggest that there was liquid PCE in the drain at some point (perhaps in the trap) or a wad of PCE-saturated lint lay in the piping. The next step in evaluating the drain system was to video the floor drain piping to verify integrity and where it leads. The site maintenance person believed the floor drain piping was connected to the sanitary lateral which leads to the holding tank. Terracon also proposed to video the sanitary lateral to verify its integrity and that it leads to the holding tank. Terracon would then resample the floor drain and sanitary lateral as well as the headspace in the holding tank.

1.4 Vapor Intrusion Investigation/System Decommissioning Sampling-Round 2

Terracon collected the second round of vapor intrusion investigation/SSDS decommissioning samples at Smoke-Out on August 11, 2023. Samples were collected in accordance with Terracon's September 13, 2022, Supplemental Vapor Intrusion Investigation and System Decommissioning Work Plan. Vapor samples included six 30-minute sub-slab samples (VP-3 through VP-8); one 8-hour indoor air (Badger Scale office); and three grab (sanitary holding tank, Smoke-Out south floor drain, and central sanitary cleanout) samples.

The August 2023 results indicated that PCE and associated compounds were not detected above the small commercial VRSLs in any of the six sub-slab vapor points that were sampled (VP-3 through VP-8). In some cases, the concentrations were higher than during the winter assessment period samples collected in January 2023. In addition to the six sub-slab samples, an 8-hour indoor air sample was also collected from the Badger Scale office area and grab samples were collected from the Smoke-Out south floor drain, sanitary cleanout within the boiler room, and from the headspace in the 10,000 gallon underground sanitary holding tank. There was no detection above the LOD in either the Badger Scale indoor air sample or the boiler room sanitary sewer cleanout grab sample. Concentrations of PCE, TCE, and related compounds in the south floor drain grab sample were significantly lower than in January 2023; however, several compounds in the holding tank and south floor drain grab samples were detected above indoor air vapor action limits (VALs). Mapping of the sanitary sewer and floor drain piping via video indicated that the sanitary sewer main ran north-south under the building with cleanouts near the north and south walls of the Smoke-out space as well as in the boiler room. A lateral from the main at the boiler room cleanout led to the exterior sanitary holding tank. Video mapping also indicated that the floor drains led into a north-south piping run that was pitched southward toward a holding tank in the southernmost space of the building. The discharge of the holding tank is suspected to lead back to the sanitary sewer holding tank, but that could not be confirmed. Although

there were VAL exceedances in the south floor drain grab sample, liquid in the trap keeps the vapors from migrating into the Smoke-Out breathing space. Vapors could potentially migrate to the sanitary holding tank and back into the building but the boiler room cleanout, which is the closest point to the holding tank that could be sampled, did not have PCE or related compounds detected above the LOD.

This information was submitted to WDNR along with the laboratory report, revised site map, and updated tables on August 30, 2023. WDNR responded in an October 16, 2023, email with the following:

“Based on DNR and DHS’s review, DNR presents the following comments for recommended next steps:

- The floor drain needs to be either abandoned if no longer needed, vegetable oil added, or a Dranjer vapor plug or similar added for better vapor protection than water in the p-trap to protect from conduit vapor intrusion.
- Based on our conversation, it sounds like this drain is used regularly, so I would recommend a Dranjer plug or similar be installed and to discuss this with a plumber.
- The connection of sewers between the piping, floor drain holding tank & sanitary sewer holding tank needs to be investigated to confirm connections as well as integrity of the holding tanks.
- As discussed, I would recommend contacting the septage hauler to see if a leak test would be able to be performed on the holding tanks. If this cannot be performed, or tank(s) are shown to be leaky, then DNR would recommend soil and/or groundwater sampling be performed to show that there has not been a release from these tank(s).
- Indoor air sampling is needed within the dry store unit since breakdown products (especially TCE) are present in conduits above VALs. This is a concern for indoor air beyond the off-gassing of PCE from dry cleaned clothes brought to the store.
- The sub-slab vapor increasing data trend post shut down is concerning. If the third event is still below the VRSLs but data continues to increase, more sampling will be needed to show a leveling off of data below the VRSL before decommissioning can be approved.
- The Black Diamond Builders unit to the north is on the same sewer lines as the dry cleaner and DHS supports indoor air sampling of this unit. You could sample the floor drain to the north and the north sewer cleanout first but if VAL exceedances exist, indoor air sampling will still be needed.
- It is unclear if there is a floor drain in the Great Outdoors Garage Door Co unit. If so, this unit should also be investigated in the drain/cleanout and/or indoor air sampled.”

Terracon has incorporated WDNR’s comments and concerns into the following work plan.

2.0 ADDITIONAL VAPOR INTRUSION INVESTIGATION WORK PLAN

2.1 Floor Drain Holding Tank Inspection and Video

Terracon mobilized to the site on January 10, 2024, and met with a plumber (Roto-Rooter, Green Bay) to perform the floor drain holding tank inspection in the Titledown Basements space and video the holding tank discharge piping. The holding tank had an inlet grate that acted as the floor drain in the Titledown Basements garage. The discharge piping exited the tank to the east through a p-trap. Video mapping indicated that the discharge piping was connected into the main sanitary sewer line via a “wye” connection about 15 feet east of the tank within the Titledown Basements space. Video mapping was continued along the sanitary sewer line leading north. Video indicated a breach in the sanitary sewer line within the Badger Scale space to the north near the common wall with Smoke-Out Cleaners. The breach appeared to be about 1/4-inch wide and showed displacement. Additional cracks were also observed near the breach (see the attached screen shot from the video).

The sanitary piping breach can be repaired internally (cure in place pipe [CIPP] lining process) by a plumber for a fraction of the cost for traditional repair that would include sawcutting the concrete floor slab, excavating to expose the pipe, repairing the pipe, backfilling, and patching the concrete. Terracon recommends repairing the pipe at least a week before the next sampling event to allow equilibration.

2.2 Holding Tank Soil Borings and Temporary Monitoring Wells

Terracon contacted the septic hauler and plumber to determine if there was a way to perform a tightness test on both the sanitary sewer and floor drain holding tanks. They were not aware of a method to test the tightness. Therefore, as requested, Terracon proposes to advance soil borings around each of the holding tanks and convert each boring into a temporary monitoring well to collect groundwater samples. Terracon does not recommend advancing borings in the area of the sanitary sewer line breach because that area is in the center of the treatment area and there are existing monitoring wells nearby (MW-3 and MW-4).

Terracon proposes to advance six soil borings (GP5 through GP10) with a direct-push drill rig to a depth of approximately 10 feet bgs. The proposed locations are shown on the attached Figure 3 Soil boring GP5 will be advanced to the north of the sanitary holding tank and soil borings GP6 and GP7 will be advanced to the west of the tank. A boring cannot be advanced to the south of the tank due to the presence of a transformer. Borings GP8 and GP9 will be advanced to the north and south of the floor drain holding tank, respectively, and GP10 will be advanced to the west.

Soil samples will be collected continuously using a 4- or 5-foot-long, 2-inch-diameter core barrel sampler equipped with disposable acetate liners. Decontamination procedures will be used during the boring activities, which consist of cleaning drilling equipment using a high-pressure washer prior to beginning the project and before beginning each boring.

Soil samples will be classified in general accordance with the Unified Soil Classification System. The soil characteristics (stratigraphy, color, and odors) and pavement or floor slab thickness (if applicable) in each boring will be noted on the soil boring logs.

Due to shallow groundwater (<4 feet bgs), Terracon proposes to collect one soil sample from just above the groundwater table in each boring for laboratory analysis. The soil samples will be collected in laboratory-supplied containers, placed in an ice chest to cool to approximately 4°C, and transferred under chain-of-custody (COC) protocol to a Wisconsin-certified laboratory for analysis of VOCs (EPA Method 8260).

Upon completion of sampling, each soil boring will be converted to a small-diameter polyvinyl chloride (PVC) temporary groundwater monitoring well to collect groundwater samples. At each temporary groundwater monitoring well boring, a 5-foot long, 0.010-inch slot screen attached to a riser will be placed in the boring. Water will be purged from each temporary well until relatively sediment-free water is present prior to sampling. Groundwater samples will be collected from the temporary monitoring wells using dedicated tubing and a peristaltic pump. The groundwater samples will be collected in laboratory-supplied containers, placed in an ice chest to cool to approximately 4°C, and transferred under COC protocol to a Wisconsin-certified laboratory for analysis of VOCs (EPA Method 8260).

Upon completion of sampling, the temporary monitoring wells will be removed and the borings abandoned in general conformance with Chapter NR 141, WAC. A borehole abandonment form will be completed for each boring.

2.3 Additional Sanitary Sewer Holding Tank Headspace Sampling

A headspace sample was collected from the sanitary sewer holding tank on August 11, 2023, in conjunction with the second supplemental vapor intrusion investigation sampling event as described in Terracon's September 13, 2022, Supplemental Vapor Intrusion Investigation Work Plan. Terracon proposes to sample the sanitary sewer holding tank headspace air in conjunction with the third supplemental vapor intrusion investigation sampling round in March 2024.

As when the August 11, 2023, sanitary holding tank sample was collected, Terracon will access the tank through the hinged access door. After having a septic hauler pump out the liquid in the holding tank, Terracon will seal the opening with plastic and tape then insert the sample tubing through the plastic to within 6 to 12 inches of the liquid level in

the tank. The plastic will be sealed around the tubing and then the tank will be allowed to equilibrate for an hour before sampling. Prior to sampling, three tubing volumes of air will be purged, and a grab sample will be collected using a Summa canister. The sample will be submitted to a Wisconsin-certified laboratory for analysis of dry-cleaner related VOCs (PCE, TCE, cis-DCE, trans-DCE, and VC) by EPA Method TO-15.

2.4 Additional Indoor Air Sampling

Due to the potential for vapors to enter the Smoke-Out space through the floor drains if water was not in the traps or through the sanitary sewer piping, WDNR requested additional indoor air sampling in the Smoke-Out space. As such, Terracon proposes to collect three indoor air samples (IA-3 through IA-5) from the Smoke-Out unit. The proposed locations are shown on the attached map. Sample IA-3 will be collected from the north garage area, sample IA-4 from the bathroom area, and sample IA-5 from the south garage area. Two additional indoor air samples will be collected. One will be from the garage area within the Badger Scale garage area (IA-6) and the second from the garage area within the Titledown Basements garage area near the floor drain holding tank (IA-7).

The samples will be collected using Beacon Environmental passive samplers. The passive sampler will be placed at least 3 feet above the floor in the breathing zone. Terracon will return to the site after 7 to 10 days to retrieve the samplers. The passive samplers will be submitted under COC protocol to Beacon Environmental (Bel Air, Maryland) for analysis of dry-cleaner related VOCs (PCE, TCE, cis-DCE, trans-DCE, and VC) by EPA Method TO-15.

2.5 Additional Floor Drain and Sanitary Sewer Cleanout Sampling

Due to a concern that vapors may migrate north into the Black Diamond Builders space through the sanitary sewer or floor drain lines, WDNR requested either to collect an indoor air sample from the Black Diamond Builders space or collect vapor samples from the north Smoke-Out floor drain and north sanitary sewer cleanout. WDNR was also concerned about floor drains in the Titledown Basements space. If present, they recommended sampling them.

To address these concerns Terracon proposes to collect vapor grab samples from the north floor drain, north sanitary sewer cleanout, and south sanitary sewer cleanout in the Smoke-Out space (see the attached Figure 3).

Terracon will sample the Smoke-Out Cleaners floor drain and the sanitary sewer cleanouts in accordance with WDNR's guidance document RR-649 Guidance for Documenting Human-Made Preferential Pathways Including Utility Corridors (June 2021).

At the time of sampling, Terracon will remove the cover from the north floor drain and remove any liquid from the trap per RR-649. Sample tubing will be inserted into the

pipng past the trap and will be connected to a plug modified with a valved sample port that will be inserted into the 3-inch diameter drain pipe at the point where the drain pipe meets the basin. After sealing, the system will be allowed to equilibrate for at least an hour. After equilibrating, the valve will be opened and at least three tubing volumes of air will be purged after which a grab sample will be collected into a 1-liter Summa canister (no flow controller). The Summa canister will be submitted under COC protocol to Pace Analytical for analysis of dry-cleaner related VOCs (PCE, TCE, cis-DCE, trans-DCE, and VC) by EPA Method TO-15.

At the north and south sanitary lateral cleanout locations, the cleanout cap will be removed and replaced with a temporary cap that contains a valved port to connect sample tubing. The sample tubing end will be inserted into a collar that will keep it centered within the sanitary lateral. The collared end of the tubing will be inserted several feet into the sanitary lateral and attached to the underside of the modified cleanout cap. The system will be allowed to equilibrate for at least an hour. After equilibrating, at least three tubing volumes of air will be purged and then a grab sample will be collected into a 1-liter Summa canister (no flow controller). The Summa canister will be submitted under COC protocol to Pace Analytical for analysis of dry-cleaner related VOCs (PCE, TCE, cis-DCE, trans-DCE, and VC) by EPA Method TO-15.

Terracon inspected the Titledown Basements space and there did not appear to be a floor drain similar to the floor drains in Smoke-Out. Rather, there was a grate over the floor drain holding tank that acted as a drain directly into the holding tank. Similar to the sanitary holding tank, Terracon proposes to seal the grate with plastic and collect a vapor grab sample from the floor drain holding tank headspace.

2.6 Floor Drain Modification

The WDNR requested that the south Smoke-Out floor drain needs to be either abandoned if no longer needed, vegetable oil added, or a Dranjer vapor plug or similar added for better vapor protection than water in the p-trap to protect from conduit vapor intrusion. Because the Smoke-Out south floor drain is heavily used and it may need to be sampled again in the future, abandonment or filling with vegetable oil are not practical. Therefore, the drain will be retrofitted with a Dranjer vapor plug or similar. The north Smoke-Out floor drain will also be retrofitted with a Dranjer or similar vapor plug. If present, floor drain(s) in the Badger Scale unit will either be retrofitted with Dranjer plugs or the p-trap filled with vegetable oil.

Terracon will coordinate with the facility owner and a subcontractor to install the Dranjer plugs after the proposed vapor sampling round is completed.

2.7 Project Management and Reporting

Terracon will perform project management tasks throughout the implementation of the work plan to keep the project progressing in a timely manner, coordinate with the subcontractors and tenants, and correspond with the responsible parties and WDNR.

Once the work plan is implemented, Terracon will submit the laboratory report along with updated tables in an email status report to WDNR and will prepare Owner/Occupant Offsite Results Notification letters for the applicable tenants and property owner.

Terracon will prepare a Groundwater Monitoring and Remediation/Supplemental Vapor Intrusion Investigation Report that will include the following:

- Sample location maps;
- Documentation of field activities;
- Soil boring logs;
- Borehole abandonment forms;
- Updated soil, groundwater, and vapor results tables;
- Groundwater contour map;
- Vapor, soil, and groundwater contaminant distribution maps;
- Laboratory reports;
- Data evaluation and presentation of pertinent findings; and
- Recommendations regarding site closure or additional sampling, if necessary.

Terracon will also prepare a separate System Decommissioning Report if the vapor sampling results are favorable as described in Terracon's September 13, 2022, Supplemental Vapor Investigation and System Decommissioning Work Plan.

If the soil, groundwater, and vapor results are favorable, Terracon will prepare a closure request as described in our September 14, 2018, Remedial Action Proposal, but expanded to include the additional soil, groundwater, and vapor investigation data and results.

3.0 SCHEDULE

Terracon mobilized to the site on January 9, 2024, with a subcontract plumber to inspect and video the discharge piping from the floor drain holding tank in the former Great Outdoors Garage Door Co space (now Titletown Basements). Terracon also inspected the Titletown space for floor drains, sanitary sewer cleanouts, and locations for the proposed soil borings near the holding tank. This new information has been incorporated within this work plan.

Following WDNR review and approval of this work plan Terracon will mobilize to the site with a subcontract plumber to repair the broken sanitary sewer line and install dranjer

vapor plugs on the floor drains. This work is tentatively scheduled for the week of March 11, 2024.

At least 1 week following the sanitary line repair and dranger vapor plug installation, Terracon will mobilize to the site to advance the proposed soil borings and sample the temporary monitoring wells in conjunction with collecting the vapor samples (proposed and previously approved) and conducting the last groundwater sampling round. This work is tentatively scheduled for March 25 through 27, 2024.

Within 10 days of receipt of the laboratory results, Terracon will prepare results notification letters for the WDNR and offsite owner/occupants. Terracon will prepare and submit the final Supplemental Investigation/Groundwater Monitoring/System Decommissioning report(s) within 60 days of receiving the final laboratory results.

4.0 DERF COST ESTIMATE AND CHANGE ORDER 2

In Terracon's September 14, 2018, revised Remedial Action Proposal for this project, we included a detailed cost estimate spreadsheet which included unit rates for consulting costs associated with several labor categories. Because Terracon's costs have increased significantly since 2018, Terracon proposed to use the rates in a current fee schedule going forward. Therefore, in a February 20, 2024, letter Terracon formally requested approval of a DERF variance to use the rates in a 2024 Fee Schedule for change order requests in place of the 2018 rates. Approval of the variance is pending; however, Terracon used the 2024 Fee Schedule in preparing this change order request.

5.0 DERF COST ESTIMATE AND CHANGE ORDER 2

Smoke-Out Cleaners is requesting approval of \$70,123.00 for DERF Change Order 2 for the work detailed in this Work Plan and previous work plans that have been approved but for which the work has not yet been done. A detailed line-item cost estimate is attached along with a Linking Spreadsheet (LSS) that breaks the costs into the categories given in the September 2019 remediation LSS approved by WDNR. A detailed explanation of line-item costs is given in the following sections.

5.1 New Work Plan Scope Items

Costs to perform the work plan for additional vapor intrusion investigation described above total \$46,659.00, which includes \$35,065.00 in consultant costs and \$11,594.00 in subcontractor costs. Detailed costs for the following tasks are presented with the light orange highlight in the attached detailed cost estimate as additions to the major tasks presented in the September 2019 cost estimate:

5.1.1 Major Task 1: Additional Soil Borings/Monitoring well Construction/Remedial Action Plan (RAP)

- Soil Borings/Temporary Monitoring Wells (Section 2.2; \$7,224.00; \$2,780.00 consulting and \$4,444.00 subcontract).

5.1.2 Major Task 4: Groundwater and SSDS Vacuum Monitoring

- Pump out the sanitary holding tank and collect a headspace air sample from the tank (Section 2.3; \$1,815.00; \$1,065.00 consulting and \$750.00 subcontract);
- Sanitary Piping Repair and Dranjer Floor Drain Covers (Sections 2.1 and 2.6; \$5,200.00; \$2,000.00 consulting and \$3,200.00 subcontract); and
- Additional Vapor Sampling, including four grab samples and five passive indoor air samples (Sections 2.4 and 2.5; \$5,770.00; \$2,570.00 consulting and \$3,200.00 subcontract).

5.1.3 Major Task 6: Project Management and Reporting

- Additional Project Management associated with the scope in Sections 2.1 through 2.6 (\$8,040.00 consulting).
- Boring Logs, Data Tabulation, and Analysis associated with the scope in Sections 2.1 through 2.6 (\$2,120.00 consulting).
- Change Order Scope Development and Work Plan (\$7,890.00 consulting).
- WDNR and Offsite Owner/Occupant Results Notification Letters (\$2,430.00 consulting).
- Documentation of previous supplemental work (2022 Work Plan) and Additional VI Investigation (this work plan) as Part of the Groundwater Monitoring and Remediation Report (\$8,860.00 consulting).

5.1.4 Major Task 7: Site Closure

- Additional effort to prepare the Closure Request Form 4400-202 and associated documentation due to new data from the additional/supplemental vapor investigation, holding tank soil borings, and temporary well groundwater data (\$4,895.00 consulting).
- Additional Offsite Property Owner/Occupant Notifications due to the increased number of affected tenant spaces (\$1,275.00 consulting)

5.2 Previously Approved Scope Items Not Yet Performed

Costs for items proposed and approved as part of the initial remedial action cost estimate or as approved as part of Terracon's September 13, 2022, Supplemental Vapor Investigation and System Decommissioning Work Plan, but that have not yet been

performed are included in this section and shown in the attached Detailed Cost Estimate. Items proposed and approved as part of the initial remedial action cost estimate are shown as white in the attached Detailed Cost Estimate while items approved as part of Terracon's September 13, 2022, Supplemental Vapor Investigation and System Decommissioning Work Plan are shown in blue. Costs to perform these items as described below total \$23,464.00, which includes \$18,454.00 in consultant costs and \$5,010.00 in subcontractor costs. Changes are due to increased scope and/or increases in subcontractor and consulting costs that have occurred since submittal of the original cost estimates.

5.2.1 Major Task 4: Groundwater and SSDS Vacuum Monitoring

The laboratory has increased their prices multiple times over the last several years. The laboratory also has changed policies that have increased costs such as now charging for VOC trip blanks. For example, groundwater VOCs were \$62/sample at the time that WDNR approved costs for the remedial action in 2019, but now are \$74/sample and TO-15 vapor analysis was \$225/sample and now is \$300.00/sample. The differences between the old and new prices are shown on the attached Detailed Cost Estimate. In addition, Terracon's rates have increased (variance request was previously submitted). As such, Smoke-Out is requesting approval of the following additional laboratory and Terracon costs, which are the difference between the original costs and current costs, and tasks for the Supplemental Vapor Investigation and System Decommissioning Work Plan approved by WDNR in correspondence dated October 26, 2022:

- Additional Terracon (new rates) and Laboratory Costs for the remaining Post-Injection Groundwater Sampling Round #8 (March 2024) for VOCs, MEE, TOC, and dissolved iron (\$971.00; \$661.00 consulting and \$310.00 subcontract)
- Additional Terracon (new rates) and Laboratory Costs for the Last of the Original Three Proposed Vapor Sampling Events in March 2024 (TO-15 PCE-related list; \$610.00; \$310.00 consulting and \$300.00 subcontract).
- Additional Vapor Monitoring-The last of three events (Badger Scale passive [10 day] indoor air; Smoke-out garage floor drain [south], sanitary cleanout, VP-3; VP-6) that was approved by WDNR as part of Terracon's September 13, 2022, Supplemental Vapor Investigation and System Decommissioning Work Plan (\$4,930.00; \$3,030.00 consulting and \$1,900.00 subcontract).
- SSDS removal oversight (\$4,320.00; \$1,820.00 consulting and \$2,500.00 subcontract).

5.2.2 Major Task 6: Project Management and Reporting

This includes increased reporting associated with tasks for the Supplemental Vapor Investigation and System Decommissioning Work Plan approved by WDNR in correspondence dated October 26, 2022, and as requested/approved by WDNR in email

correspondence dated February 23, 2023, after review of the January 2023 vapor sampling results as follows:

- Groundwater Monitoring and Remediation Report as originally proposed with the new rates-difference between the total new costs and previous cost that were approved as part of Terracon's September 2018 proposal (\$1,036.00 consulting);
- Documentation of the SVII (as part of the Groundwater Monitoring and Remediation Report) and additional tasks requested by WDNR in response to the January 2023 vapor sampling results (\$8,860.00 consulting); and
- System Decommissioning Report as approved as part of Terracon's 2022 Supplemental Vapor Intrusion Investigation Work Plan (\$1,251.00 consulting).

5.2.3 Major Task 7: Site Closure

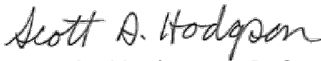
This includes additional costs for previously approved closure tasks due to application of the current fee schedule:

- Closure Request Form 4400-202 and supporting documentation; difference between the total new costs with the new rates and previous costs that were approved as part of Terracon's September 2018 proposal (\$950.00 consulting); and
- Offsite property owner/occupant notifications; difference between the total new costs with the new rates and previous costs that were approved as part of Terracon's September 2018 proposal (\$172.00 consulting).

March 4, 2024 | Terracon Project No. 58187103

If you have questions regarding this work plan or DERF Change Order #2, please contact our office at (414) 423-0255 or contact Scott directly at (414) 209-7640.

Sincerely,
Terracon Consultants, Inc.



Scott A. Hodgson, P.G.
Senior Project Manager



Edmund A. Buc, P.E.
Environmental Department Manager

Attachments: Certification

- Figure 1 – Site Map
- Figure 2 – Sanitary Sewer Breach video screenshot
- Figure 3 – Proposed Sample Locations
- DERP Change Order 2: Detailed Cost Summary
- Change Order 2 Linking Spreadsheet

Copies to: File (electronic)
Mark Woppert (electronic)
Chris Dockry (electronic)

SAH/EAB:sah\p58WFS01\DATA\PROJECTS\2018\58187103\PROJECT DOCUMENTS (REPORTS-LETTERS-DRAFTS TO CLIENTS)\58187103.ADD VI WORK PLAN.MAR2024.DOCX

6.0 CERTIFICATION

I, Scott A. Hodgson, P.G., hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

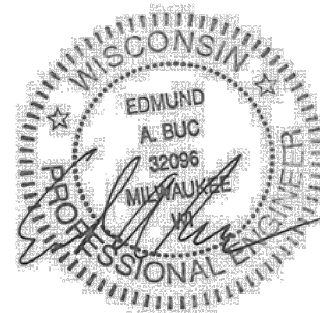
Scott A. Hodgson PG-1229 3/4/2024
Signature and P.G. number Date

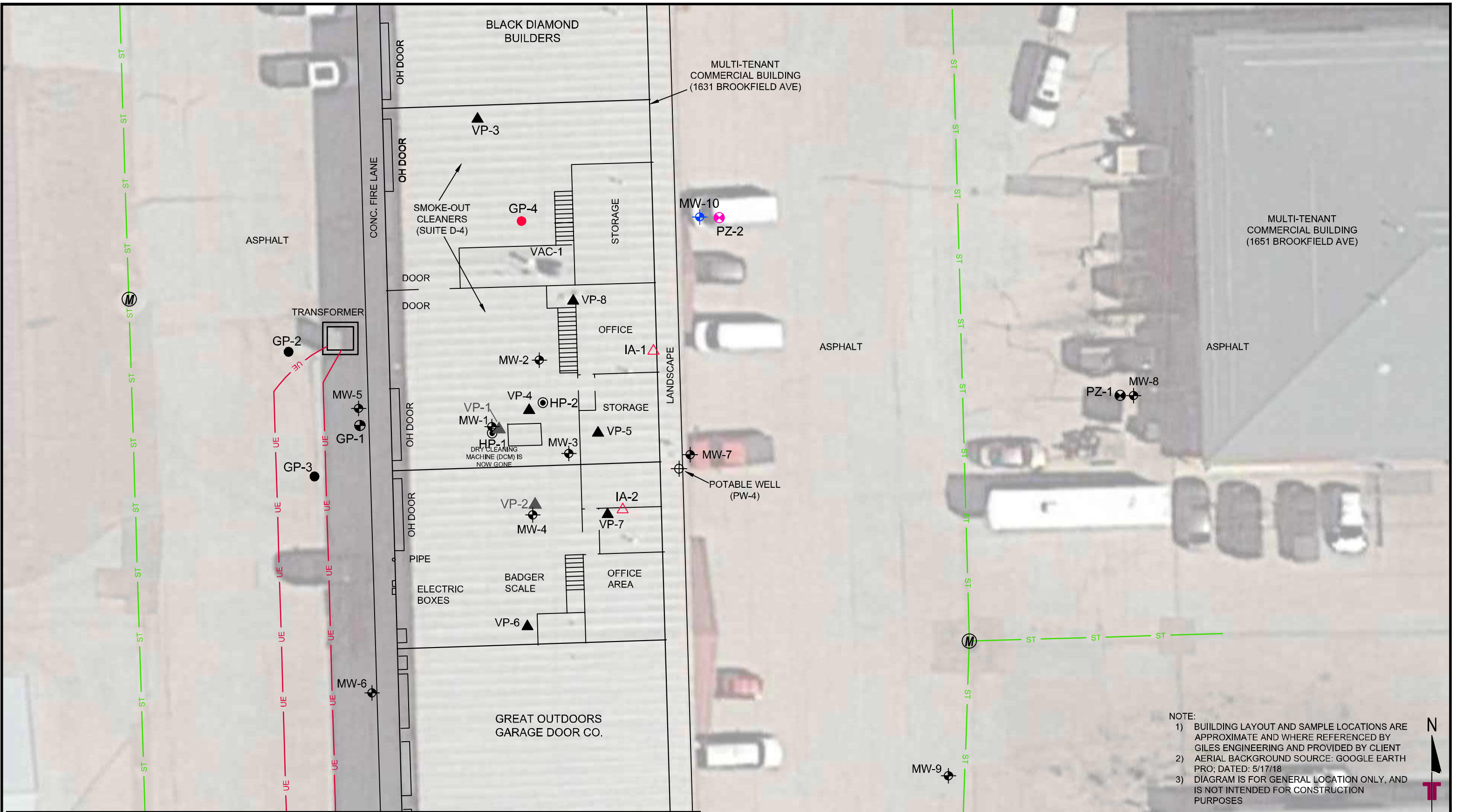
Senior Project Manager/Project Geologist
Title

I, Edmund A. Buc, P.E., hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

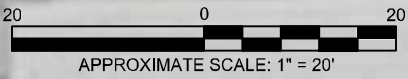
Edmund A. Buc E-32096
Signature and P.E. number

Environmental Department Manager-Project Engineer
Title





NOTE:
 1) BUILDING LAYOUT AND SAMPLE LOCATIONS ARE APPROXIMATE AND WHERE REFERENCED BY GILES ENGINEERING AND PROVIDED BY CLIENT
 2) AERIAL BACKGROUND SOURCE: GOOGLE EARTH PRO; DATED: 5/17/18
 3) DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES



LEGEND	
TERRACON SAMPLE LOCATIONS	GILES ENGINEERING SAMPLE LOCATIONS
⊕ OBSERVATION WELL	⊕ OBSERVATION WELL
⊗ PIEZOMETER	⊗ PIEZOMETER
● DIRECT-PUSH SOIL BORING	⊙ HAND PROBE SOIL BORING
△ INDOOR AIR SAMPLE POINT	⊕ DIRECT-PUSH SOIL BORING/TEMPORARY WELL
	● DIRECT-PUSH SOIL BORING
	▲ SOIL VAPOR POINT
	▲ FORMER SOIL VAPOR POINT
	⊕ POTABLE WELL
	Ⓜ MANHOLE
	— UE — UNDERGROUND ELECTRIC LINE
	— ST — STORM SEWER LINE

Project Mgr:	SAH	Project No.	58187103
Drawn By:	JLM (41)	Scale:	AS SHOWN
Checked By:	SAH	File No.	58187103C1
Approved By:	SAH	Date:	10/2021

Terracon
 Consulting Engineers and Scientists
 9856 SOUTH 57th STREET FRANKLIN, WI 53132
 PH. (414) 423-0255 FAX. (414) 423-0566

SITE MAP
 SMOKE-OUT CLEANERS
 1631 BROOKFIELD AVENUE, UNIT D-4
 HOWARD, WISCONSIN

FIGURE
 1
 (FIG2 SD)

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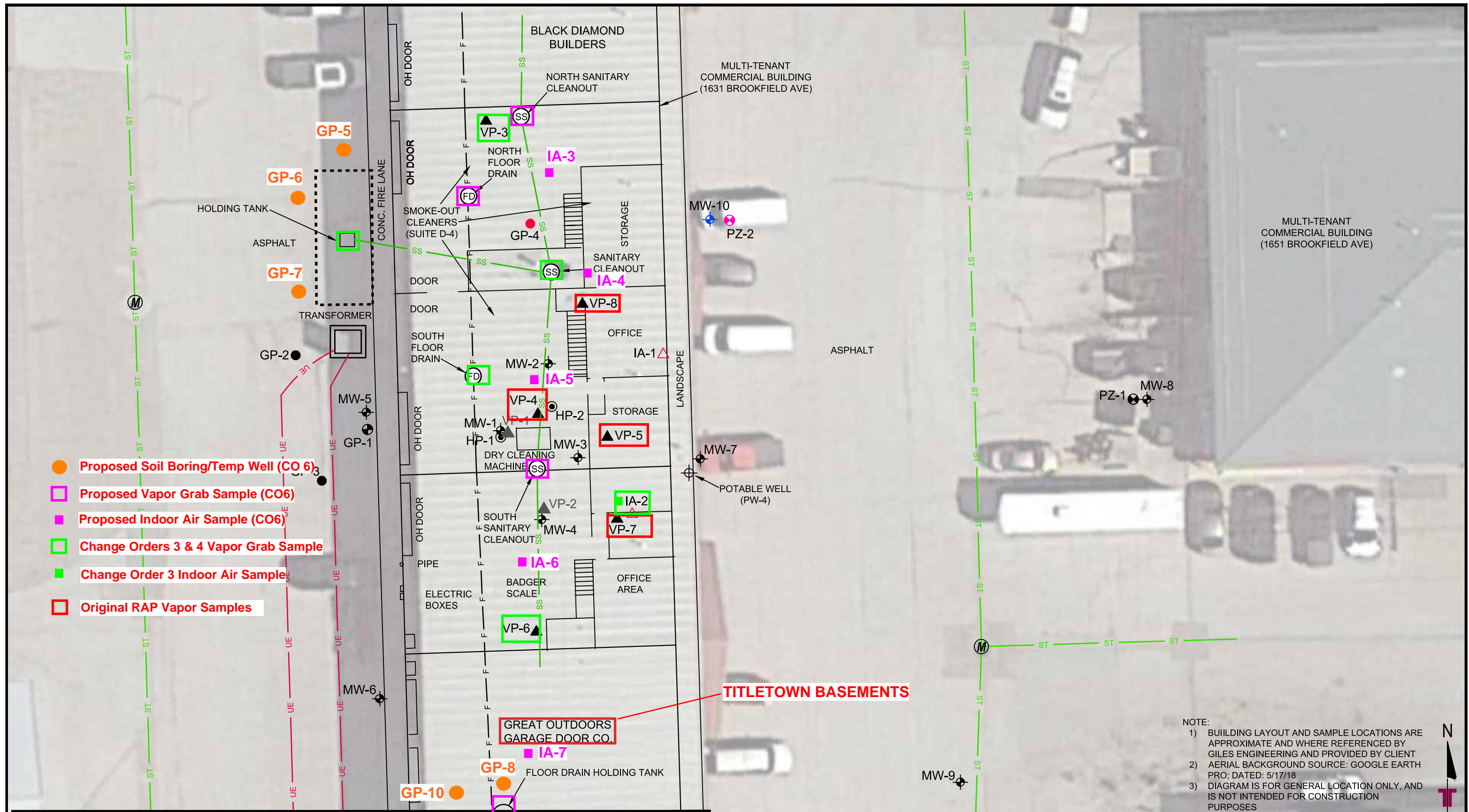
Crack

Crack

Fracture with Displacement

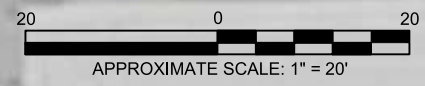
Fracture with Displacement

FIGURE 2
SANITARY SEWER BREACH
SMOKE-OUT CLEANERS
1631 Brookfield Avenue, Unit D-4
Howard, Wisconsin



- Proposed Soil Boring/Temp Well (CO 6)
- Proposed Vapor Grab Sample (CO6)
- Proposed Indoor Air Sample (CO6)
- Change Orders 3 & 4 Vapor Grab Sample
- Change Order 3 Indoor Air Sample
- Original RAP Vapor Samples

NOTE:
 1) BUILDING LAYOUT AND SAMPLE LOCATIONS ARE APPROXIMATE AND WHERE REFERENCED BY GILES ENGINEERING AND PROVIDED BY CLIENT
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LEGEND	
TERRACON SAMPLE LOCATIONS	GILES ENGINEERING SAMPLE LOCATIONS
⊕ OBSERVATION WELL	⊕ OBSERVATION WELL
⊕ PIEZOMETER	⊕ PIEZOMETER
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△ INDOOR AIR SAMPLE POINT	⊕ DIRECT-PUSH SOIL BORING/TEMPORARY WELL
	● DIRECT-PUSH SOIL BORING
	▲ SOIL VAPOR POINT
	● GP-9 FORMER SOIL VAPOR POINT
	⊕ POTABLE WELL
	⊕ MANHOLE
	— F — F — FLOOR DRAIN LINE
	— UE — UNDERGROUND ELECTRIC LINE
	— ST — STORM SEWER LINE
	— SS — SANITARY SEWER LINE

Project Mgr: SAH	Project No. 58187103
Drawn By: JLM (41)	Scale: AS SHOWN
Checked By: EPK	File No. 58187103C1
Approved By: SAH	Date: 10/2021

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PROPOSED SAMPLE LOCATIONS
SMOKE-OUT CLEANERS 1631 BROOKFIELD AVENUE, UNIT D-4 HOWARD, WISCONSIN

FIGURE
3
 (FIG2 SD)

