
PREPARED BY

EnviroForensics, LLC
N16W23390 Stone Ridge Drive, Suite G
Waukesha, WI 53188



August 10, 2022

Karen Campoli
Wisconsin Department of Natural Resources
2984 Shawano Ave
Green Bay, WI 54313-6727

**Subject: Further Site Investigation Work Plan
Former Algoma Cleaners
111 Steele Street
Algoma, WI 54201
BRRTS# 02-31-564071 (Allyn Property)**

Dear Ms. Campoli:

EnviroForensics, LLC (EnviroForensics) is pleased present this Further Site Investigation (FSI) Work Scope to conduct site investigation activities at Algoma Cleaners, formerly located at 111 Steele Street in Algoma, Wisconsin (Site). The Site layout and surrounding properties are depicted on **Figure 1**. The proposed investigation consists of the following tasks:

- Further delineate the source of chlorinated volatile organic compound (CVOC) impacts;
- Further delineate and monitor the CVOC groundwater plume;
- Additional off-Site vapor intrusion assessment; and
- Collect hydrogeological and geotechnical data for purposes of risk assessment and remedial options evaluation.

The purpose of the proposed investigation is to continue determining the nature, degree, and aerial and vertical extents of the hazardous substances per the Wisconsin Administrative Code NR 716.11(3)(a).

FURTHER SITE INVESTIGATION ACTIVITIES

Access Coordination

EnviroForensics will consult with City of Algoma officials for permission to work in the public alley east of the Site, in Steele Street and Navarino Street, and possibly in other City-owned parcels near the Ahnapee River based on initial discussions. Permit applications for street access and occupancy will be completed and submitted.

EnviroForensics will also request access to the Von Stiehl winery property (115 Navarino Street) for purposes of a vapor intrusion assessment and installation of one (1) groundwater monitoring well. A visit to the property to discuss the proposed assessment work and access restrictions with owner(s) is anticipated based on the nature of the business and age of the building.

Source Delineation

Soil sampling completed to date has been limited to a small area of the site. Only seven (7) samples have been collected in the vicinity of the presumed source area (i.e., the dry cleaning room and adjacent exterior drum storage area), and four (4) of those were saturated samples collected below the water table. Vertical soil profiling will be performed to identify and delineate the source area, and collect data for remedial planning purposes.

EnviroForensics will prepare a Site-specific health and safety plan (HASP). The HASP will define site-specific hazards and how to address each to ensure worker and public safety. In accordance with safe work practices and as required by state law, EnviroForensics will contact Wisconsin Digger's Hotline subsurface utility protection service at least 72 hours prior to the anticipated onset of subsurface work at the Site. As a result, subsurface utilities and structures owned or managed by member companies and municipalities will be located by an independent contractor service.

EnviroForensics will also contract with a private underground utility locating service to provide additional confidence regarding the position of potential underground hazards at the drilling locations. The private locating service will use geophysical and electromagnetic equipment to locate underground utilities across the entire Site. Utility information will be added to the Site plan and used to position investigative borings. Sewer lines may have been a source of solvent release and/or migration at the Site. The position and paths of sewer laterals from locations inside the Site building to the street(s) will be investigated and mapped to the extent possible.

Eight (8) soil borings (SB-1 through SB-8) will be advanced to a depth near the water table (approximately 15 feet below ground surface) using direct-push methods. Four (4) borings are planned inside the building in the vicinity of the former dry cleaning equipment, and four (4) borings are planned outside, near the foundation of the building and along utility corridors. Soil cores will be continuously collected in 5-ft long by 1.5-inch diameter vinyl acetate plastic sample sleeves. Field screening at each 2-ft interval will be conducted using a photoionization detector (PID) meter, the results of which will be recorded. Soil lithology will be continuously

described in accordance with the Unified Soil Classification System (USCS) and recorded on boring logs.

Up to three (3) soil samples will be collected from each soil boring for laboratory analysis. Sample depths will be based on soil lithology, physical observations, and PID readings. Samples will be collected in laboratory-supplied containers, labeled, logged on a chain-of-custody form, and submitted to a state-certified laboratory for analysis of volatile organic compounds (VOCs) by USEPA SW-846 Test Method 8260.

Monitoring Well Installation and Development

Two (2) temporary wells (TW-1 and TW-2), six (6) water table monitoring wells designated MW-1 through MW-6 and one (1) piezometer (PZ-1) were installed during previous phases of the Site investigation at the locations depicted on **Figure 1**. The horizontal and vertical extents of the CVOC plume are not defined by the existing well network. Therefore, EnviroForensics will direct the installation of additional monitoring wells to further investigate the CVOC impacts in groundwater.

Monitoring wells are proposed at the following locations:

- Northwest of MW-5 on Von Stiehl winery property (115 Navarino Street) to define the horizontal extent of CVOC impacts toward the north and screen potential vapor intrusion risk to the north adjacent residential building.
- South of MW-3 in the alley east of the Site building to further define horizontal extent of CVOC impacts to the south.
- A piezometer nested with MW-5 to assess CVOC concentrations in shallow bedrock downgradient.

Proposed well locations are shown on **Figure 1**. Direct-push borings will be performed initially at each proposed well location to log soil lithology and screen for volatiles. The borings will be advanced to bedrock refusal, anticipated to be at approximately 25 feet bgs. The borings will then be over-drilled using a 4.25-inch inner diameter hollow-stem auger (HSA) to facilitate well installation. Installation of piezometer PZ-2 will be completed using sonic drilling methods. Soil cuttings will be staged in 55-gallon steel drums pending characterization for off-site disposal.

Larger volume samples of soil will be collected during the installation of monitoring wells for geotechnical tests including bulk density, grain size distribution, and porosity. Two (2) samples are planned to characterize the reported sand and sandy clay lithologies encountered near the

water table depth. These testing results will be used in groundwater flow calculations, risk assessment, and future remedial planning.

Wells will be constructed of 2-inch diameter, 0.010-inch slotted PVC well screen, with PVC riser extending to the ground surface. The piezometer will be screened from approximately 35 to 40 feet bgs; the downgradient water table wells will be constructed with 10-foot long screens that intersect the water table. Sand pack materials will be placed from the bottom of the screen up to two feet above the well screen. A bentonite seal will extend from the top of the sand pack to approximately 1 foot below ground surface. Expandable locking caps and locks will be placed on each well. Traffic-rated flush-mount well boxes set in concrete will be installed to protect the wells.

Upon completion of the installation of the new monitoring wells, a licensed surveyor will record the elevation and location of each monitoring well by standard surveying methods. A vertical elevation survey will be conducted to establish the elevation of each monitoring well relative to above mean sea level (amsl). The horizontal and vertical grid coordinates of each monitoring well will be recorded to within 0.5 foot and 0.01 foot, respectively. Horizontal coordinates will be referenced to the State Plane Coordinate System.

Well Development

The newly installed piezometer and monitoring wells will be developed in accordance with the procedures and requirements detailed in WAC Chapter NR 141. The wells will be surged with a surge block and pumped during the development process to remove fines from the sand pack until the water runs clear or 10 well volumes are removed. If the monitoring well(s) can be purged dry, the well(s) will be surged and then slowly purged dry using a disposable bailer(s). Non-dedicated development equipment will be decontaminated between each monitoring well. Development water will be temporarily stored in drums or 300-gallon totes.

Slug Testing

Slug testing will be performed to determine the hydraulic conductivity (K) of the shallow water-bearing interval(s). Rising head slug tests will be performed in four (4) monitoring wells and the average K value will be used for flow velocity calculations. Water in the wells will be displaced using a solid, 3-foot long PVC rod (slug). A transducer deployed near the bottom of the well will record the change in water level over time as recovery occurs. The raw data will be reduced in a spreadsheet program, and analysis will be completed utilizing AQTESOLV software. The analysis reports will be provided in a future comprehensive investigation report.

Groundwater Monitoring

EnviroForensics proposes to conduct four (4) groundwater monitoring events that include depth to water measurements and sample collection from all monitoring wells to track contaminant trends and comply with WDNR investigation requirements. Once the new monitoring wells proposed under Phase 01d are installed, the monitoring network will consist of eight (8) water table wells and two (2) piezometers.

Well caps will be removed at least 15 minutes prior to collecting water level measurements to allow groundwater in the monitoring well to equilibrate with the atmospheric pressure. The depth to water in each well will be measured to the nearest 0.01 of a foot using an electronic sounding device and recorded on sampling forms prior to sample collection activities.

EnviroForensics anticipates groundwater purging and sampling using standard low-flow methods. If low-flow methods are not suitable due to limited recharge rates, purging and sampling will be completed using new, disposable bailers. Field parameters including pH, specific conductivity, temperature, oxidation-reduction potential (ORP), and dissolved oxygen (DO) will be measured during purging and recorded on a field sampling form. Wells that purge dry will be allowed to recharge for a minimum of four (4) hours prior to sample collection.

Groundwater samples will be transferred directly into laboratory-provided containers containing hydrochloric acid preservative and placed into a cooler with ice. Samples will be submitted under appropriate chain-of-custody procedures to a state-certified laboratory for analysis of VOCs according to U.S. EPA SW Method 8260. For quality assurance/quality control (QA/QC) purposes, duplicate and equipment blank samples will be collected at a frequency of one (1) sample per ten (10) investigative samples during each monitoring event. Purge water will be temporarily stored in drums or 300-gallon totes.

Vapor Intrusion Assessment

The buildings to the east and west of the site have been evaluated for vapor intrusion risk and screened out by sampling. The vapor intrusion risk to the Site building has been mitigated by installation and operation of a sub-slab depressurization system. Actions to address data gaps related to investigation of the vapor intrusion pathway are proposed below. Additional actions may be required based on the assessment results.

Sewer Vapor Sampling

The WDNR will require sewer vapor sampling to investigate the potential for vapor migration along human-made preferential pathways. The sampling approach and methods will follow the guidance in WDNR Publication RR-649 (June 2021), including vapor sample collection directly from the sanitary sewer main using 1-liter vacuum canisters. Manhole locations are shown on **Figure 1**.

Off-Site Property Assessment

Per WDNR Publication RR-800: *Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin*, the risk of vapor intrusion must be assessed in buildings that overlie groundwater with CVOC concentrations above enforcement standards (ESs), or where groundwater with CVOC concentrations above the preventive action limit (PAL) contacts the building foundation.

The Von Stiehl Winery building located at 115 Navarino Street appears to be directly downgradient of the presumed source area near the former dry cleaning equipment room, and the most recent PCE concentration in the nearest monitoring well (MW-5) was 24 micrograms per liter ($\mu\text{g/L}$), exceeding the ES of 5 $\mu\text{g/L}$. Therefore, a vapor intrusion assessment of the Von Stiehl building is proposed. The assessment will consist of paired indoor air and sub-slab vapor sampling in the building, along with collection of water from the basement sump, if present. All vapor intrusion assessment activities will be conducted in accordance with WDNR guidance. EnviroForensics is proposing two (2) VI sampling events, one (1) of which will be conducted during the winter heating months. Two is the minimum number of events needed to rule out VI risk at a commercial property; however, a third event may be required by WDNR depending on the concentrations of compounds detected.

Indoor Air Sampling

Prior to sampling, an inspection will be conducted to identify and inventory materials that could potentially contribute to indoor air conditions, unrelated to VI issues. Suspect items identified during the inspection will be listed on a pre-sampling inspection form for later reference or potential removal. The building layout will be examined, and a simple sketch will be prepared in the field to assist in the selection of indoor air sampling locations. The configuration of the structure's heating ventilation and air conditioning (HVAC) system will also be inspected to gather information pertaining to air circulation and exchange conditions in the occupied space. The results of all pre-sampling inspection activities will be recorded on an Indoor Air Building Survey Form.

One (1) indoor air sample will be collected from the basement and ground floor, respectively, of the building, and one (1) outdoor air sample will be collected for each event to assess background conditions. Samples will be collected in individually certified 6-liter vacuum canisters positioned within the breathing space, 3-5 feet above the floor surface. Sample collection will occur over an 8-hour period. Samples will be identified by project number, address, and sample type “IA” for indoor air samples or “OA” for outside air samples (e.g., 200036-115-IA-1). Samples will be submitted to a laboratory under chain-of-custody for analysis of select VOCs related to dry cleaning solvent according to EPA Test Method TO-15. The analytical results of the air samples will be compared to Vapor Action Levels (VALs) established by WDNR.

Sub-Slab Vapor Sampling

Stainless steel Vapor Pin[®] sub-slab vapor sampling ports will be installed to facilitate vapor sample collection. Either temporary or permanent ports will be installed depending on access permissions and slab integrity. To ensure that the sub-slab vapor samples are representative of subsurface conditions, water dam leak testing will be performed at each sample port. The integrity of the sample tubing and fittings will be verified prior to sample collection by conducting a negative pressure test.

All samples will be collected through dedicated polyethylene tubing connected to the sub-slab vapor sampling port. Ambient air will be purged from the tubing prior to initiating sample collection. Vapor beneath the concrete slab will then be drawn into a 1-liter vacuum canister fitted with a laboratory supplied regulator that limits the flow rate to approximately 200 milliliters per minute (mL/min). Samples will be identified by project number, address, and unique ID (e.g., 200036-115-SSV-1). Following the completion of sampling activities, the canisters will be submitted to an environmental laboratory for analysis of select VOCs related to dry cleaning solvent according to U.S. EPA Method TO-15. The analytical results of the sub-slab vapor samples will be compared to Vapor Risk Screening Levels (VRSLs) established by WDNR.

Sample Results Notifications

Following each VI sampling event, EnviroForensics will prepare a sample results notification for the property owner in accordance with WDNR regulations. The letter-format notifications will include a description of the sampling procedures, a figure depicting the sample locations, and a results summary table with comparisons to WDNR screening/action levels.

Investigation-Derived Media Management

Investigation-derived media (IDM) will consist of soil cuttings and groundwater generated during well development and purging prior to sample collection. Soil cuttings will be placed in 55-gallon steel drums. Two (2) composite soil samples will be collected for profiling. Groundwater will be staged in 300-gallon plastic totes. Samples will be collected directly from the totes for characterization and profiling. Based on the concentrations of contaminants detected in previous soil and monitoring well samples, EnviroForensics anticipates that all IDM will be characterized as non-hazardous. The cost estimate does not include disposal of any hazardous waste. A licensed contractor will be retained to transfer the IDM off-site for proper disposal.

Data Evaluation

The soil sample and groundwater monitoring data will be evaluated and summarized with comparison to regulatory standards as laboratory results are received. Data summary tables and preliminary figures will be generated for purposes of data visualization and discussion with project stakeholders. Further data analysis and interpretation will be incorporated into future work plans, as needed, and into a comprehensive report to be prepared at the conclusion of the Site investigation.

SCHEDULE

Access coordination will begin immediately upon authorization to proceed, along with contracting and scheduling for private utility clearance, drilling, surveying, and IDM management. The source delineation and monitoring well installation can be completed within 6 weeks of authorization to proceed. The monitoring well development, slug testing, and the first vapor intrusion assessment sampling event will follow, with activities combined as much as possible to minimize the number of mobilizations. The second vapor intrusion sampling event will be performed during the heating season as required by WDNR. The groundwater monitoring events will be conducted on an approximately quarterly basis, avoiding the coldest months when access to monitoring wells would be difficult and time-consuming due to snow and ice. IDM will be removed from the Site on three (3) occasions: after well installation and development, after the first two groundwater monitoring events, and at the conclusion of FSI activities. Data evaluation and project management will be ongoing.

If you have any questions or require additional information, please do not hesitate to contact us at (262) 290-4001, rhoverman@enviroforensics.com, or bkappen@enviroforensics.com.

Sincerely,
EnviroForensics, LLC

A handwritten signature in black ink, appearing to read "Rob Hoverman".

Rob Hoverman, PG
Regional Director

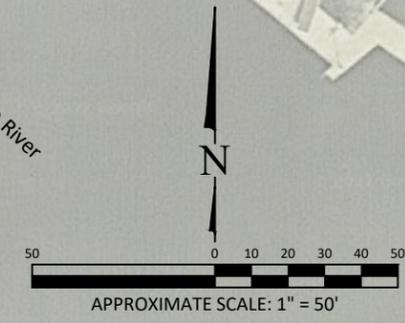
A handwritten signature in blue ink, appearing to read "Brian Kappen".

Brian Kappen, PG
Senior Geologist

Attachments:

Figure 1 – Site and Surrounding Area Layout with Proposed FSI Data Collection Locations

Copy: John Emery



Legend

- Property boundary
- MW1 Monitoring well
- B1 Soil Boring
- PZ1 Piezometer
- VP101 Sub-slab sample
- Proposed Monitoring Well/
Piezometer Location
- Proposed Sewer Vapor Sample Location
(Manhole)
- Vapor intrusion assessment proposed

SITE AND SURROUNDING AREA LAYOUT WITH PROPOSED FSI DATA COLLECTION LOCATIONS

111 Steele Street
Algoma, Wisconsin

Date:	4/29/22
Designed:	EB
Drawn:	EB
Checked:	BK
DWG file:	200036-0070

825 North Capital Avenue • Indianapolis, IN 46204
EnviroForensics.com

Figure	1
Project	200036