ecology and environment, inc.
Global Environmental Specialists
700 South Palafox Street, Suite 100
Pensacola, Florida 32502
Tel: (850) 435-8925, Fax: (850) 435-9135

November 3, 2015

Mr. Ben Lightsey
Groundwater Assessment and Remediation Division
Mississippi Department of Environmental Quality
P.O. Box 2261
Jackson, Mississippi 39225

Re: Enpro Industries Former Holley Carburetor Site, Water Valley, Mississippi, Vapor Intrusion Work Plan in Response to Mississippi Department of Environmental Quality (MDEQ) Letter Dated August 21, 2015

Dear Mr. Lightsey:

Ecology and Environment, Inc. (E & E), on behalf of Mr. Joe Wheatley of EnPro Industries, Inc. (formerly Coltec Industries), has prepared the attached Vapor Intrusion Work Plan (Attachment A) for the Former Holley Automotive Site located in Water Valley, Mississippi. The Work Plan was prepared in response to your letter dated August 21, 2015 (Attachment B). The Work Plan has been signed and sealed by an engineer licensed in the State of Mississippi.

As described in more detail,the attached VI Work Plan develops a phased-approach to be employed for this investigation. In response to specific requests in MDEQ's August 2015 letter (attached), E & E is proposing several commercial locations for near-slab soil gas sampling and analysis using temporary sampling procedures. Additional properties, including residential, and installation of permanent sampling structures may be included in future efforts if deemed necessary by site results obtained during this investigation.

Please feel free to call me at (850) 435-8925 or by email at selliott@ene.com if you have any questions or comments regarding the attached VI Work Plan.

Sincerely,

Steven Elliott
Project Manager, E & E

Attachments

cc: Joe Wheatley, Enpro
John Fazzolari, E & E
Neil Brown, E & E

Attachment A

Vapor Intrusion Work Plan
for the
Former Holley Automotive Site
Water Valley MS

Vapor Intrusion Work Plan

for the

Former Holley Automotive Facility

Water Valley Mississippi

November 2015

Prepared for:

Enpro Industries

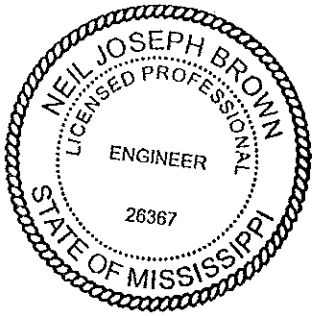
Charlotte, North Carolina

Prepared by:

PROFESSIONAL ENGINEER CERTIFICATION PAGE

I hereby certify that this Vapor Intrusion Work Plan for the Former Holley Automotive Facility located in Water Valley Mississippi was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Mississippi. I have reviewed this document in sufficient depth to accept full responsibility for its contents and to assure code compliance and coordination.

Name:	Neil Joseph Brown
License Number:	26367
State:	Mississippi
Expiration:	December 31, 2015



Neil Joseph Brown

Neil Joseph Brown
Responsible Charge

11-3-15

Date

1.0 Site Background

The former Holley Automotive Facility located in Water Valley, Mississippi produced automotive components, including carburetors and fuel injection systems. The facility was originally owned by Coltec Industries Inc (Cotec). Site assessment activities were first initiated in 1989 in response to a 1988 groundwater assessment conducted by the Mississippi State Department of Health that detected trichloroethene (TCE) in groundwater in the vicinity. In early 2002, EnPro Industries, Inc. (EnPro) obtained ownership of the former Holley Automotive Facility, which is now occupied by Borg Warner Inc. EnPro assumed the environmental liabilities of the site from Coltec and subsequently retained Ecology and Environment, Inc. (E & E), as their consultants for the project. E & E in turn hired Avant Construction to continue their previously performed activities at the site (i.e., daily operation and maintenance of the remedial systems and quarterly sampling of designated groundwater monitoring wells).

Over the past twenty years, ongoing site assessment activities have been conducted around the facility. These assessments have been done to further determine the extent of groundwater contamination and to plan and implement remedial actions that are currently in place. The history of the investigations and remedial activities at the facility has been well documented in reports previously submitted to the Mississippi Department of Environmental Quality (MDEQ).

1.1 Regional Geology and Hydrogeology

Regionally, the Water Valley site resides in the Eastern Gulf Coast Plain physiographic province in Yalobusha County, Mississippi. Locally, the western quarter of Yalobusha County is part of the Bluff Hills province, an area of low-lying, rolling hills formed by Quaternary loess deposits. The eastern three quarters of the County, which includes Water Valley, are part of the North Central Hills province, characterized by more dramatic relief and elevations of greater than 300 feet above sea level (Turner 1952).

The oldest formations exposed in Water Valley is the Hatchetigbee (Ackerman) formation (Wilcox Group) which is overlain by the Meridian Sand Member of the Tallahatta formation (Claiborne Group, frequently referred to as distinct formation, rather than a member) (Fisher 1961, Turner 1952). The Ackerman formation is composed of sand, clay, shale, lignite, quartzite, and iron concretions consisting of limonite, hematite, and siderite. The basal sand of the Hatchetigbee (Ackerman), which is not present at the surface in Yalobusha County is coarse and cross-bedded with interbedded lenses of clay. Upper parts of the formation consist of fine sands and silt. Along the very irregular bedding planes of the sand and clay are, in most places, iron cemented crusts. The Hatchetigbee (Ackerman) formation of Yalobusha County has a dual topographic expression. The clays form low rolling hills and ridges, whereas the sands form hills and ridges of greater relief (Turner 1952).

The Meridian Sand, which is the basal part of the Claiborne Group, lies unconformably on the eroded surface of the Hatchetigbee formation. The Meridian Sand is predominantly coarse grained and commonly very micaceous, although it may contain quartz boulders. In some areas the formation contains clay balls and clay breccia in laminations. These features are less numerous higher in the formation,

which consists of fine micaceous variegated silty sand. Thickness of the Meridian Sands is variable across Yalobusha County and ranges from 40 – 125 feet (Turner 1952).

Sand beds of the upper Wilcox Group and the overlying Meridian Sands Member make up the regionally important Meridian-upper Wilcox aquifer (Taylor and Arthur 1989). The basal sands of the Wilcox Group and the uppermost part of the underlying Midway Group make up the lower Wilcox aquifer, which is one of the most widely used aquifers for municipal, industrial, farm, and domestic supplies in Mississippi (Hosman et al. 1968, Taylor and Arthur 1989). The source of recharge is predominantly precipitation (Hosman et al. 1968). Vertical flow of water between the lower Wilcox Aquifer and the middle Wilcox Aquifer system above it is restricted by interbedded clays and hydrologic connectivity. However, the Meridian Sands and upper sands in the Wilcox are hydrologically connected and may be considered one aquifer (Taylor and Arthur 1989, Hosman et al., 1968). The Meridian-upper Wilcox Aquifer ranges in thickness from 50 to 400 feet and consists of approximately 17,500 square miles of fresh water (Taylor and Arthur 1989).. The maximum thickness of the Lower Wilcox Aquifer is 450 feet in Mississippi. In Yalobusha County its thickness is approximately 400 feet, from ~200 – 600 feet below sea level (Hosman et al. 1968).

2.0 Objectives and Investigation Tasks

The objective of this work plan is to detail a step-wise process for the evaluation of the potential for indoor air vapor intrusion (VI) from subsurface soils in the vicinity of the site. The evaluation process follows the guidance provided in the United States Environmental Protection Agency (USEPA) document *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air,* OSWER Publication 9200.2-154 (2015), hereinafter referred to as the EPA VI Guidance. Results obtained from each step of the process will be evaluated to assess whether further actions are warranted. This Work Plan is designed to be amended with subsequent work details following each step of the process if deemed necessary based on the previous results.

3.0 Summary of VI Evaluation Process

MDEQ does not currently have specific vapor intrusion regulations or guidance; therefore, this workplan was developed on the USEPA Technical Guide. The EPA VI Guidance provides for a phased approach to assist the user in determining whether the exposure pathway is complete. According to the EPA VI Guidance, for a vapor intrusion pathway to be complete, it must meet five conditions:

1. A subsurface source of vapor-forming chemicals is present (e.g., in the soil or in groundwater) underneath or near the building(s).

2. Vapors form and have a route along which to migrate toward the building.

3. The building is susceptible to soil gas entry:
   - Openings exist for the vapors to enter the building;

- Driving ‘forces’ (e.g., air pressure differences between the building and the subsurface environment) exist to draw the vapors from the subsurface through the openings into the building(s)

4. One or more vapor-forming chemicals comprising the subsurface vapor source(s) is(are) present in the indoor environment, and

5. The building is occupied by one or more individuals when the vapor-forming chemical is present indoors

Although vapors may be present in soils beneath a building, the vapors may or may not pose a risk to human health. If contaminant vapors do not enter the building, the exposure pathway from the source of contamination to a receptor is not complete and cannot be considered to be at risk from indoor air exposure due to VI. In other situations, vapors may enter the building, but be present at such low levels that the risk is considered negligible. However, in some cases, vapors may seep into a building and accumulate at levels that may pose an unacceptable risk to human health.

The VI Evaluation process is outlined below:

- Preliminary Analysis – Use of available data to develop an initial understanding of the potential for vapor intrusion to indoor air. This analysis determine if chemicals of sufficient volatility and toxicity are present and if inhabited buildings are located above or in close proximity to subsurface contamination.

- Detailed Investigation – Involves sampling and analysis of various site media and comparison of concentrations of target chemicals to recommended numerical criteria. The detailed investigation involves multiple steps designed to determine if contamination is present in the unsaturated zone and in site soil gases.

- Mitigation – If indoor air is determined to be harmful to residents, mitigation measures should be implemented to decrease or minimize the potential risks.

3.1 USEPA VI Criteria

VI criteria summarized in the USEPA Vapor Intrusion Screening Level (VISL) Calculator (version 3.4, 2015) will be used in conjunction with the EPA VI Guidance. This VISL Calculator provides target concentrations for various media and allows data from the site to be entered into the VISL Calculator to develop site-specific criteria.

The USEPA Reference Concentration (RfC) was developed using Regional Screening Levels (USEPA Region 4). This value is an estimate (with uncertainty spanning an order of magnitude) of a *continuous inhalation* exposure of TCE to the human population (including sensitive subpopulations), that is likely to be without risk of non-cancer effects *during a lifetime*. The Target Indoor Air Concentration (Cia) is based solely on the EPA Reference Concentration and is not adjustable. The target groundwater and soil gas concentrations use the Cia adjusted using default attenuation factors and, in the case of groundwater,

chemical-specific physical properties. A summary of the TCE concentrations for various media is provided in Table 1 below.

Table 1: Reference and Target TCE Concentrations for Groundwater, Soil Gas, and Indoor Air

Criterion	Residential	Commercial
USEPA Reference Concentration (RfC)	2 µg/m^3	2 µg/m^3
Target Indoor Air concentration (Cia)	0.48 µg/m^3	30 µg/m^3
Target GW Concentration (Cgw)	1.2 µg/L *	7.4 µg/L *
Target Sub-Slab and Exterior Soil Gas Concentration (Csg)	16 µg/m^3	100 µg/m^3

Source: USEPA VISL Calculator, V3.4, June 2015
*- TCE GW MCL = 5 ug/L

The attenuation factors (AF's) in the table below use default values. These AF's may need to be adjusted based on site-specific depth to water (DTW), seasonal changes in the DTW, and soil characteristics (geology and lithology) which can have significant effects on the migration of vapors from the plume to sub-slab or surface air. The equations used for calculating Target Concentrations for groundwater and sub-slab and exterior soil gas are provided below. The equations show the significant influence of the AFs on the site-specific criteria to be developed.

Target GW Concentration Equation: $Cgw = Cia / AFgw \times 1000L/m^3 \times HLC$

Where: Cia = Target Indoor Air concentration
AFgw = generic Attenuation Factor for groundwater (default 0.001)
HLC = Henry's Law Constant for TCE (ratio of the aqueous-phase concentration of a chemical to its equilibrium partial pressure in the gas phase.)

Target Sub-Slab and Exterior Soil Gas Concentration Equation: $Csg = Cia / AFss$

Cia = Target Indoor Air concentration
AFss = generic Attenuation Factor for Soil Gas (default 0.1)

3.2 Preliminary Analysis

Based on historical groundwater monitoring data from the site, TCE and its degradation products (Dichloroethene [DCE], Vinyl Chloride [VC]) are present in site groundwaters. Based on all available monitoring data, the TCE groundwater plume has been delineated horizontally with the existing network of monitoring wells. The TCE plume underlies an area that includes inhabited commercial and residential properties (see Figure 1). Groundwater depths in the area of the plume range from 5 to 30 feet below ground surface (BGS) and experience seasonal variation. The total depths of the shallow groundwater monitoring wells at the site range from 19 to 46 feet BGS and the deep wells range from 34 to 67 feet BGS (each terminating in a 10 foot screen interval).

The groundwater monitoring data from the monitoring well (MW-22S) with the highest historical TCE concentrations were evaluated using the USEPA VISL Calculator. The initial criteria used for the

evaluation include using a residential exposure scenario, a target risk for carcinogens of 1.0E-6, and an average groundwater temperature of 25ºC. Using these criteria (and the VISL default attenuation factor for estimating indoor air based on groundwater concentration) and the USEPA Target Groundwater Concentration (see Table 1), TCE groundwater concentrations in the vicinity of commercial and residential properties at the site may potentially be a risk; therefore further VI Evaluation may be warranted through the VI Detailed Investigation process.

3.3 VI Detailed Investigation

The VI Detailed Investigation is a step-wise process (i.e. phased approach) that develops multiple lines of data accumulation for the determination of further evaluation steps. USEPA recognizes that the approach for assessing VI will vary from site to site, because each site will differ in the available data when vapor intrusion is being evaluated. The EPA VI Guidance recommends a framework for planning and conducting vapor intrusion investigations, rather than a prescriptive step-by-step approach to be applied at every site. As such, a phased approach tailored to the site will be followed in this VI Detailed Investigation.

Based on recent TCE groundwater data for the site and the criteria outlined for the Preliminary Analysis portion of the process above, two initial sites have been selected for VI exterior soil gas sampling (see Figure 1). The first is the Yalobusha County Health Department building, a commercial property located just north of the Borg Warner facility. This slab foundation building and associated paved parking lot covers an area of approximately a quarter of an acre and is located near the historically highest TCE concentration area (MW-22S; typically >2000 µg/L). The second site selected is the Tower 2 treatment system building, located downgradient of the source area and in the path of the groundwater plume. Based on the data from nearby shallow monitoring well MW-35 (typically 200-300 µg/L), this location should exhibit an intermediate TCE concentration but still above the groundwater MCL and the VI Target Groundwater Concentration. This building foundation slab covers approximately 400 square feet. These two sites represent the initial phase of the VI Detailed investigation.

The proposed initial exterior assessment allows the properties most likely affected by the groundwater plume to be identified prior to interior sampling. This approach results in less inconvenience to building occupants and avoids the complexities of potential background sources of COCs. The EPA VI Guidance states that “when the subsurface vapor source is not underneath the building, exterior soil gas samples collected from depths below a building’s foundation and along the side of the building closest to the source may be useful for characterizing a reasonable worst case condition underneath the building in the absence of routes for preferential vapor migration or soil gas entry.”

Seasonally variable conditions (e.g., moisture levels, depth to groundwater) can lead to seasonally variable concentrations and distributions of vapors in the vadose zone. These conditions, among others, cause indoor air concentrations of vapor-forming chemicals to vary over time. The EPA VI Guidance recommends several rounds of sampling to develop an understanding of the temporal and seasonal variability of the soil gas concentrations, especially when developing the site-specifc attenuation factors for evaluation. Based on this recommendation, at least two sampling events will be performed prior to site evaluation; a wet season event (March 2016) and a dry season event (September 2016). Each VI sampling event will be conducted to coincide with the site semiannual groundwater sampling events. Performing

the VI and groundwater events at the same time will provide the best available data to evaluate the VI potential.

A total of 10 samples will be collected in the first two events (four samples and one blank per event). Two exterior soil gas samples will be collected from each of the two initial sites at locations directly next to the building foundation slabs (north and south sides). The sampling locations will be flagged and site coordinate data collected for future sampling events. A field blank will be collected during each event to document potential ambient air influences on sample results. Soil gas data obtained from these locations will be compared to the USEPA Target Sub-Slab and Exterior Soil Gas Concentration (Csg) for commercial property (100 $\mu g/m^3$).

If the soil gas analytical data from these two events indicate a sub-slab to indoor air VI risk exists and additional VI investigation is warranted, an addendum to this work plan will be submitted to MDEQ for approval that will detail the sampling and analysis specifics for the additional work proposed. The Work Plan is designed to be updated as needed based on the results of the previous steps performed. This USEPA recommended phased approach maximizes the efficiency of the investigation and minimizes unwarranted planning efforts. Additional addenda to this work plan will be submitted at each step of the process until the pathway is considered incomplete at some stage or the evaluation moves into the mitigation stage.

3.3.1 Offsite Property Access

The proposed locations for the soil gas sampling will be at the Yalobusha County Health Department on County owned property and the Tower 2 Treatment System on Enpro owned property. E & E has an access agreement with Yalobusha County already in place so no further agreements are needed. Notification to tenants prior to sampling at these locations is not required.

3.3.2 Soil Gas Sampling

Soil Gas samples will be collected in accordance with the EPA VI Guidance. The sampling technique to be employed is the temporary driven probe rod method. This technique uses a small diameter stainless steel rod that is manually pushed or hammered into the ground to the target depth. The rod has a screened area near the bottom that allows vapors be collected from surrounding soils once an internal rod is removed and a sampling device attached. Stagnant atmospheric air is purged from the sampling tune prior to sample collection. To reduce the uncertainty of where the soil gas sample is from and potential breakthrough from the surface, and to minimize the potential desorption of contaminants from the soil, slow sampling rates are recommended (<200 ml/min). In addition, purging of the probe before collecting the soil gas sample is recommended, CalEPA recommends 2 hour equilibration time for temporary driven probes.

The probe rod will be pushed to approximately 3 ft BGS as close as possible to each building foundation slab at two locations (north and south sides) and allowed to equilibrate for 2 hours. This will help access the subsurface variation within the sampling site boundary. The sampling rod will not be extended below the groundwater table as this can bias the soil gas results; depth to groundwater at each location is historically greater than 5 ft BGS. A passivated canister, or equivalent type sampling device, equipped with a flow-controller pre-set for a 1-hour sampling duration (16 ml/min flow rate), will be connected to the rod and opened for sampling. During the sample collection, wind direction, precipitation, and temperature will be recorded. These data can be helpful with data interpretation.

Once sampling is complete, the canisters will be sealed and shipped to the laboratory for analysis according to manufacturer and laboratory procedures. It is not necessary to chill soil gas samples during shipping and storage.

3.3.3 QA/QC

A field blank sample will be collected during the soil gas sampling event. The field blank will be collected in the same fashion as the samples, although the probe will be in ambient air rather than inserted into the ground. This sample is designed to help determine if sampling equipment is biasing the results by reporting false positives (i.e., contaminated equipment, atmospheric bias).

3.3.4 Soil Gas Analysis

Soil gas samples will be analyzed by a fixed laboratory for USEPA Method TO-15. The analyte list will be limited to the specific site contaminants, TCE and its associated breakdown products. TO-15 provides the analyte detection limits needed for soil gas analysis given the concentrations expected.

3.4 Schedule

The initial soil gas sampling and analysis events will be scheduled to be performed concurrently with the spring and fall 2016 semiannual groundwater sampling events. MDEQ will be notified at least 10 days prior to the start of this fieldwork.

3.5 Reporting

Following completion of the each event described in this work plan and once the analytical results have been received, E & E will prepare a Field Investigation Report (FIR) for this site. The FIR will incorporate previous results and the results of this phase of the investigation and remediation. The report will present:

- Background information;
- Project objectives;
- Investigative tasks;
- A monitoring well construction log for the newly installed well;
- Monitoring well location maps showing the potentiometric surface and the TCE concentrations;
- Laboratory analytical results; and
- Conclusions and recommendations.

4.0 References

Fisher, William I. 1961. Stratigraphic Names in the Midway and Wilcox Groups of the Gulf Coastal Plain. Bureau of Economic Geology. Report of Investigations No. 44. University of Texas, Austin.

Hosman, R.L. 1996. Regional Stratigraphy and Subsurface Geology of Cenozoic Deposits, Gulf Coastal Plain, South-Central United States. U.S. Geological Survey Professional Paper 1416-G.

Hosman, R.L., A.T. Long, T.W. Lambert, and H.G. Jeffery. 1968. Tertiary Aquifers in the Mississippi Embayment. U.S. Geological Survey Professional Paper 448-D. United States Government Printing Office, Washington.

Turner, James. 1952. Yalobusha County Geology. Bulletin 76. Mississippi State Geological Survey. University of Mississippi.

Taylor, R.E. and J.K. Arthur. 1989. Hydrogeology of the Middle Wilcox Aquifer System in Mississippi. United States Geological Survey.

USEPA, 2015. *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air,* OSWER Publication 9200.2-154 June 2015.

Figure 1

Exterior Soil Gas Sampling Locations

\\Bufnas7b\GISRegional\Pensacola\Water_Valley\maps\mxds\Exterior Soil Gas Sampling Locations.mxd

N

NOT TO SCALE

R = residential
C = commercial
Ag = agricultural

MW-47 <1.0
MW-48 <1.0
MW-45
MW-46
MW-44 2500
MW-40
MW-43
MW-38
MW-42
MW-388 1.1
MW-38 <1.0
Yalobusha Co. Hospital
MW-30S <1.0
MW-30D 3.1
RW-5
MW-35 230
CS-3 <1.0
CS-2 <1.0
CS-1
Tower 2
RW-4
MW-29S
MW-290
MW-31D 58
MW-31S <1.0
MW-33
MW-24
MW-11 1600
MW-25S
MW-25D
MW-41 620
MW-37 790
MW-27 720
Yalobusha Co. Health Dept.
MW-22S 2800
MW-22D 690
MW-17
MW-23S
MW-23D
RW-1
MW-32
MW-5
MW-36
MW-19
MW-85
MW-8D
MW-4
MW-20
MW-9S
MW-9D
Hendrick's Well
Hand Pump
MW-6
MW-12
RW-2
MW-28S <1.0
MW-28D <1.0
RW-3
MW-16
MW-3
MW-2
MW-7S
MW-7D
City Well
MW-1
Benchmark
MW-18
MW-10
MW-15
MW-21D
MW-21S
MW-14
MW-34

C R Ag

100 1000 2000 <1.0

KEY:
- Soil Gas Sampling Locations
- Shallow Monitoring Well Location
- Deep Monitoring Well Location
- Supply Well
- Benchmark
- Recovery Well
- Surface Water Supply Location
- TCE Concentration Isopleth
- 280 TCE Concentration (ug/L)
- Fence
- Building

Figure 1
Exterior Soil Gas Sampling Locations
October 2015
Former Holley Automotive Facility
Water Valley, Mississippi

Attachment B

MDEQ Letter dated August 21, 2015

STATE OF MISSISSIPPI

PHIL BRYANT

GOVERNOR

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

GARY C. RIKARD, EXECUTIVE DIRECTOR

August 21, 2015

Mr. Joe Wheatley
EnPro Industries, Inc.
5605 Carnegie Boulevard
Charlotte, NC 28209-4674

Re: "Response to Mississippi Department of Environmental Quality (MDEQ) Letter Dated September 9, 2014", dated January 19, 2015
Colt Industries Holley Carburetor Site
Water Valley, Mississippi (Yalobusha County)

Dear Mr. Wheatley:

The Mississippi Department of Environmental Quality (MDEQ) has reviewed the above referenced document prepared by Ecology and Environment, Inc. (E &E) on behalf of EnPro Industries, Inc. We appreciate your response and apologize for the delay in addressing the letter. As you are aware, due to individual project officers leaving our division and agency to pursue other career opportunities over the last few months this site has changed hands a number of times. We are confident those issues have been appropriately handled and we can begin moving forward once again.

MDEQ is aware that the groundwater extraction and treatment system for the facility has been offline for a considerable period of time due to maintenance issues which will now require substantial repair to bring the system back into service. Since its shutdown, MDEQ has made verbal and written requests to bring the system back on-line. MDEQ never issued a concurrence or approval for the system shutdown and the continued lapse in treatment, nor have we made any statements releasing any parties from that obligation.

At this time, MDEQ formally requires submission of a work plan to restart the system and propose a revised recovery well network, detailing the installation of additional well locations and construction details to maximize contaminant recovery efforts, on or before September 30, 2015. This plan must be approved, signed and sealed by a Professional Engineer or Registered Professional Geologist certified to perform this work in the State of Mississippi.

During the review of records for this facility, site investigations to date demonstrate that the associated groundwater contamination plume has not been vertically delineated. It would be appropriate to address the vertical delineation in the requested work plan, but may be separated into an individual vertical delineation work plan, if you deem that necessary.

In the September 5, 2014 request, MDEQ required a vapor intrusion work plan be submitted to this office for review and approval. A response was provided in your January 19, 2015 letter which proposed collecting three soil gas samples adjacent to MW-44, an area on county owned property which access rights have already been established in order to simplify the process. MDEQ cannot approve the proposed Vapor Intrusion Evaluation Work Plan as written. While it may be beneficial to collect soil gas samples in the area of MW-44 since it is an area with high contaminant groundwater concentrations, this plan significantly misses the mark for a secondary screening evaluation. The plan makes no efforts to identify potentially affected structures present over the footprint of the groundwater plume, identifying *"at risk"* structures. While MDEQ concurs, when justified, that a multiple lines of investigation approach is appropriate by demonstrating a completed pathway to a structure prior to collecting indoor air samples, your proposal fails to recommend any near-slab soil gas results for **any** potentially affected structures within the footprint of the groundwater plume. It would be poor professional judgment to believe that three soil gas samples collected in one specific location could be utilized to determine the outcome of a soil gas investigation for a plume at least 0.8 miles in length. Soil heterogeneity alone is too inconsistent for those samples to be of value for an evaluation of any structure more than 100 feet away.

At this time, MDEQ additionally requires a separate Vapor Intrusion Work Plan be submitted on or before September 30, 2015, detailing a staged approach to collect near-slab soil gas samples installed as permanent points adjacent to a mix of commercial and residential structures in place over the footprint of the groundwater plume, followed by concurrent indoor and ambient air sampling should soil gas concentrations exceed acceptable regulatory screening levels. The MDEQ expects soil gas sampling locations in proximity to sensitive receptors (i.e. residences, hospital, etc.) as well as areas of known high concentration. This plan must be approved, signed and sealed by a Professional Engineer certified to perform this work in the State of Mississippi.

The MDEQ approved the abandonment of monitoring wells MW-4, MW-8S, MW-8D, MW-19, and MW-20 in a comment letter dated September 5, 2014. Through telephone conversation with E & E, the MDEQ understands that the monitoring wells have not been plugged and abandoned. The method of abandonment proposed in your letter does not meet the criteria established by our agency for closure of the monitoring wells. MDEQ requires removal of the well casing and screen to the extent practical. After that, the remaining borehole

should be tremied from the bottom up with bentonite grout. Capping with asphalt at the surface to match the surrounding area is acceptable. MDEQ asks that these wells be properly abandoned according to the manner prescribed when the new recovery wells (required in first paragraph) are installed.

MDEQ approved the site to be placed on a semi-annual sampling schedule with the next event scheduled for September 2015. The MDEQ has no record of the March 2015 event or corresponding Groundwater Monitoring Report (GMR). Please submit the March 2015 GMR to this office for review. Semi-annual groundwater reports are to be submitted to this office within 60 days of the sampling event.

In correspondence dated April 17, 1998, MDEQ informed the Environmental Protection Agency (EPA) that Colt Industries had been admitted to into MDEQ's Voluntary Evaluation Program which would allow MDEQ to oversee the assessment and remediation of this site. Due to the groundwater remediation system being shut down for the past year or more and the issuance of EPA's Office of Solid Waste and Emergency Response's (OSWER) Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air (publication 9200.2-154), MDEQ will be conducting a Reassessment of this site in the upcoming months. This Reassessment will evaluate current site conditions and complete a Hazard Ranking System (HRS) score for EPA's National Priorities List.

Should you find that the items requested require significant discussion, you can request a meeting at our office to discuss site conditions and the path forward at your earliest convenience. Otherwise, questions or comments can be directed to me at (601) 961-5731 or project manager Ben Lightsey at (601) 961-5166.

Sincerely,

William McKercher

William G. McKercher, P.E.
Branch Chief
Groundwater Assessment and
Remediation Division – GARD I

cc: Trey Hess, P.E. – MDEQ GARD
Ben Lightsey – MDEQ GARD
Steven Elliot – Ecology and Environment, Inc.
John Fazzolari – Ecology and Environment, Inc.