January 10, 2008

Re: Bayer MaterialScience LLC, Hicksville, NY; Soil Vapor Investigation Report, dated December 20, 20007

OK

- More soil gas sampling should be completed in area of SG-2 (at Former Plant 1 area) to determine extent of vinyl chloride contamination (vinyl chloride was 10,000 $\mu g/m^3$).
- Need more sampling along south-southwest site boundary adjacent to Long Island Railroad. Bayer needs to determine the extent of PCE and TCE soil gas contamination in this area and if it is potentially migrating off-site. Analytical results vary depending on location. SG-10 is low; SG-12 was slightly high for PCE (64 $\mu g/m^3$); SG-11 and SG-13 were high for PCE (2400 $\mu g/m^3$ and 2700 $\mu g/m^3$, respectively). - SG-11
- More sampling is needed in areas of SG-14 and SG-15 along eastern property boundary. PCE was 8100 $\mu g/m^3$ at SG-14 and 1200 $\mu g/m^3$ at SG-15.
- Need to identify the type of buildings and occupancy that surround the site, particularly along the southern and eastern sides of the site.
- Identify upwind and downwind directions when samples were taken, in order to determine potential source of petroleum related compounds.
- Bayer is proposing additional soil sampling within and around AOCs 28 and 29 as part of the CMS. Anything proposed in the CMS should be a remedial measure, such as soil removal, soil vapor extraction, mitigation measures, etc. Further sampling and analysis by itself is not considered a remedial measure. Investigation needs to be completed before remedial measures are proposed.
- On page 14 Bayer states that "Follow-up soil vapor sampling will be performed after implementation/construction of the preferred remedial measure outlined in the CMS to evaluate soil vapor conditions after onsite sources have been addressed." This is not clear as delineation sampling must be completed before remedial measures are proposed in the CMS.
- The full lab analytical data report will be submitted to DEC chemist for review and to verify the data validation.

1/17/08 - Teleconference call w/ DOH (Renata Ockerby & Jackie Nealon)
- Add sampling point btwn SG-13 & SG-14, in front of SG-9.
- Add sampling point south of SG-14.
- Add two sampling points btwn SG-10 & SG-18 (in front of SG-8).
- Nassau Co. Health Contact, Bob Weitzman, 516-571-4139 (direct line)
  516-571-3233 (Secretary)
  3323 (?)

Working Copy

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Bureau of Solid Waste and Corrective Action
625 Broadway
Albany, New York 12233-7258

ENVIRONMENT

Subject:
Bayer MaterialScience LLC
125 New South Road
Hicksville, New York
USEPA ID#: NYD002920312
Soil Vapor Investigation Report

Date:
December 20, 2007

Contact:
John C. Brussel, PE

Phone:
315.671.9441

Email:
John.Brussel@arcadis-us.com

Our ref:
B0032305 #5

Dear Ms. Barraza:

On behalf of Bayer MaterialScience LLC (Bayer), this letter presents the results of a soil vapor investigation performed during September 2007 at the Bayer site in Hicksville, New York ("the site"). The soil vapor investigation was implemented to provide data for a site-wide evaluation of soil vapor conditions, including conditions in and around the former Plant 1 area where volatile organic compound- (VOC-) impacted soils were identified during foundation demolition activities in late December 2005.

The soil vapor investigation field activities were performed by ARCADIS of New York, Inc. (ARCADIS BBL) in accordance with the work plan contained in a letter from ARCADIS BBL to the New York State Department of Environmental Conservation (NYSDEC) dated July 26, 2007. NYSDEC approval of the work plan is provided in a letter dated August 16, 2007.

Relevant background information is presented below, followed by a discussion of the sampling approach, an evaluation of the sampling results, and recommendations for further actions.

I. BACKGROUND

VOC soil vapor sampling activities were previously performed at the site as part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation (RI) in 1989. Soil vapor field screening was performed using a photoionization detector (PID) and confirmatory soil vapor analysis for site-related VOCs, including tetrachloroethene (PCE), trans-1,2-dichloroethylene (trans-1,2-DCE), trichlorethene (TCE), and vinyl chloride monomer, was performed using portable gas chromategraphy. Based on the analytical results, PCE was the only VOC identified in the soil vapor samples. However, the detection limits were higher than those that can be achieved using current analytical methods, and improvements to soil vapor sampling methodologies have been made since 1989.

VOC soil sampling has also been performed at the site as part of previous investigations. Most recently, VOC soil sampling has been performed as part of the two-phase Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) in 2004, an interim corrective measure (ICM) in 2005, and Phase I through Phase VI pre-design sampling activities between late 2005 and Spring 2007. A total of 19 individual VOC constituents have been detected in the soil samples collected as part of the 2004 RFI, the 2005 ICM, and the 2005-2007 Phase I through Phase VI pre-design soil sampling activities. However, outside the Plant 1 area, no VOCs other than acetone (a common laboratory artifact) were detected in soils at concentrations exceeding the soil guidance values presented in the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) titled "Determination of Soil Cleanup Objectives and Cleanup Levels," HWR-94-4046, dated January 24, 1994 (TAGM 4046). Nine VOCs were identified in the Plant 1 area soils at concentrations exceeding the TAGM 4046 soil guidance values. These VOCs include acetone, 2-butanone, methylene chloride, 4-methyl-2-pentanone, PCE, trans-1,2-DCE, TCE, vinyl chloride, and xylenes. Impacted soils in the Plant 1 area will be addressed via a final corrective measure to be determined during the Corrective Measures Study (CMS).

II. SOIL VAPOR INVESTIGATION ACTIVITIES

This section presents a description of the field activities performed as part of the soil vapor investigation, including:

- Soil Vapor Probe Installation and Sampling.

- Ambient Air Sampling.

Temporary soil vapor probes were installed by ARCADIS BBL's drilling subcontractor, Delta Well & Pump Company, Inc. of Ronkonkoma, New York, between September 18 and 25, 2007. Soil vapor sampling at each probe was performed by ARCADIS BBL shortly following probe installation. Representatives from the NYSDEC and New York State Department of Health (NYSDOH) visited the site on September 18, 2007 to observe the soil vapor sampling locations and sampling activities.

A discussion of the soil vapor probe installation and sampling is presented below, followed by a discussion of the ambient air sampling.

A. Soil Vapor Probe Installation and Sampling

Temporary soil vapor probes were installed at 18 locations (locations SG-1 through SG-18, as shown on Figure 1) that were selected to provide coverage across the site, including in areas where building construction may occur during site redevelopment, within/near the footprints of the former plant buildings, near the areas where PCE was previously identified during the 1989 assessment, and in various paved areas. A soil vapor sampling summary, which identifies the soil vapor probe locations and sampling rationale, is presented below.

Sample ID	Sampling Location	Sampling Rationale
Locations Within Potential New Building Footprint		
Southern Section of Potential New Building		
SG-1	Immediately Northeast of the Plant 1 Building Footprint (Northeast of the VOC-Impacted Soil area)	To evaluate potential "worst-case" conditions beneath the future onsite building (i.e., within and near the existing VOC-impacted soil area)
SG-2	Within the Eastern Portion of the Plant 1 Building Footprint (Directly Within the VOC-Impacted Soil Area)	
SG-3	Along South End of the Plant 1 Building Footprint (Southwest of the VOC-Impacted Soil Area)	
Middle Section of Potential New Building		
SG-4	Within the Plant 2 Building Footprint	To evaluate potential soil vapor migration from the VOC-impacted soil area and potential conditions beneath the future onsite building
SG-5	West of the Plant 1 Building Footprint	

Sample ID	Sampling Location	Sampling Rationale
Northern Section of Potential New Building		
SG-6	Northwest of the Plant 2 Building Footprint	To evaluate potential conditions beneath the future onsite building. Note that location SG-6 is within approximately 50 feet of former location SG-76, where PCE was identified during the 1989 soil gas survey
SG-7	North of the Plant 3 Building Footprint	
SG-8	Within the Plant 3 Building Footprint	
Locations Outside Potential New Building Footprint		
SG-9	East of the VOC-Impacted Soil Area	To evaluate potential soil vapor migration
SG-10	Along the Southern Property Boundary	To evaluate potential soil vapor migration and conditions along the property boundary. Note that location SG-12 is within approximately 50 feet of former location SG-51, where PCE was identified during the 1989 soil gas survey
SG-11		
SG-12		
SG-13	Along the Eastern Property Boundary	To evaluate potential soil vapor migration and conditions near the existing and former rainwater runoff sumps/recharge basins at the property boundary
SG-14		
SG-15		
SG-16		
SG-17	Along the Northern Property Boundary	To evaluate potential conditions along the property boundary
SG-18		

Work activities performed in connection with the soil vapor probe installation and sampling included surveying sampling locations, completing soil borings, installing and purging soil vapor probes, completing tracer gas tests, and collecting soil vapor samples for laboratory analysis. Details of these work activities are presented below.

Land Surveying Activities

Before the soil vapor probes were installed, an ARCADIS BBL field survey crew field-identified the proposed soil vapor probe locations using coordinates obtained from the sampling locations map included in the work plan. Based on field conditions encountered during the survey activities, the locations for 6 of the 18 probes were adjusted slightly (from the locations shown in the work plan), as follows:

- Four soil vapor probe locations (SG-5, SG-10, SG-12, and SG-18) were moved between approximately 4 and 14 feet to avoid an existing crushed construction

and demolition (C&D) debris stockpile, existing railroad tracks, an existing soil stockpile, and a tree, respectively.

- Location SG-9 was moved approximately 26 feet westward, from within the sump identified as Areas of Concern (AOCs) 28 and 29 to just west of the sump, for access considerations (the sidewalls of the sump were too steep to permit access by the truck-mounted Geoprobe® sampling rig).

- Location SG-13 was moved approximately 100 feet southward, from just east of AOC 29 to southeast of AOC 29, for access considerations (to avoid trees and thick vegetation).

The changes to the sampling locations were discussed with the NYSDEC and NYSDOH while onsite on September 18, 2007.

Soil Boring and Sampling Activities

Following the surveying activities, soil boring and sampling activities were performed to further evaluate subsurface conditions near the proposed soil vapor probe locations (to evaluate the potential presence of confining layers that, if present, could affect soil vapor migration). The Geoprobe® rig was used to drill an exploratory soil boring approximately 5 feet from each proposed soil vapor sampling location. Each boring, except for the boring adjacent to soil vapor probe location SG-9, was completed to a depth of approximately 5.5 feet below the ground surface (bgs). The boring adjacent to soil vapor probe location SG-9 was completed to a greater depth (15.5 feet bgs), which was roughly 5.5 feet below the bottom of the adjacent sumps (AOCs 28 and 29). The bottom of each boring was at approximately the same depth as the bottom of the sampling interval at the adjacent soil vapor probe location (as discussed below).

Soil samples were continuously collected from each boring to the depth of completion. Soils removed from the borings were characterized for color, texture, moisture, density, cohesion, plasticity and indication (if any) of staining or obvious odor. Headspace screening (using a photoionization detector [PID] equipped with an 11.7 electron volt lamp) was performed on the soil samples recovered from each boring.

In general, soils recovered from the borings generally consisted of fine, medium, or coarse sand (with some silt and/or trace gravel at various locations). No apparent

confining layers were observed. Staining was observed in soils from only one boring (the boring adjacent to location SG-2, within the VOC-impacted soil area, at a depth of approximately 11 to 18 inches bgs). No odors were noticed in any of the recovered soil samples. PID headspace screening measurements for the soil samples from each boring, except for selected samples from the boring adjacent to location SG-16 (along the eastern property boundary), were 0.0 parts per million (ppm). PID headspace screening measurements greater than 0.0 ppm at the boring adjacent to location SG-16 were 2.3 ppm at 0 to 5 inches bgs, 3.2 ppm at 12 to 27 inches bgs, and 3.4 ppm at 22 to 27 inches bgs.

Soil boring logs are presented in Attachment A. Digital photographs taken to document soil conditions are presented in Attachment B. Each exploratory soil boring was backfilled with bentonite grout following completion.

Temporary Soil Vapor Probe Installation Activities

A temporary soil vapor probe was installed at each soil vapor sampling location after the adjacent exploratory soil boring had been completed and backfilled. At each soil vapor sampling location, the Geoprobe® rig was used to advance interconnected 4-foot lengths of 1.25"-diameter steel probe rod (casing) with an expendable point holder and expendable point at the downhole end, to the same depth as the adjacent (backfilled) exploratory boring. The final boring depth was 5.5 feet bgs at each soil vapor sampling location, except location SG-9 (where the final depth was 15.5 feet bgs). After the target depth was reached, the expendable point was disengaged by hydraulically retracting the steel casing upwards approximately 0.5-feet to create a void in the subsurface soil for soil vapor collection. A Teflon-lined fluoropolymer sample delivery tube (3/16" inside diameter) with an attached Post-Run-Tubing (PRT) threaded adapter was lowered through the 1.25"-diameter steel casing and threaded into the expendable point holder.

Soil Vapor Purging Activities

Following installation of the temporary soil vapor probe, an initial gas draw (purging) was performed to remove atmospheric gas from the sampling interval and the sample delivery tubing and to charge the tubing with soil vapor in preparation for sampling (as discussed below). At the ground surface, the sample delivery tube was attached to an air sampling pump. An electronic flow sensor was used to measure the pump flow rate (which was maintained less than 100 milliliters per minute [mL/min] during purging activities), and the desired volume was purged based on

pumping duration. After one full purge volume (equivalent to 1½ times the volume inside the sample delivery tubing) was expelled from the sampling system, a swagelock valve on the tubing was closed and the pump was disconnected in preparation for sampling. The swagelock valve was closed prior to disconnecting the pump to prevent atmospheric air from entering the tubing.

Soil Vapor Sample Collection Activities

Following purging, soil vapor sample collection was conducted in accordance with United States Environmental Protection Agency (USEPA) Compendium Method TO-15, titled "Determination of VOCs In Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)." One soil vapor sample was collected from each location using a batch certified, pre-cleaned stainless-steel canister (a 6-liter SUMMA® canister) with an attached flow regulator set to a rate of 200 mL/min. The pre-cleaned canisters were provided by the laboratory with an initial vacuum of approximately 30 inches of mercury (in. of Hg). Each soil vapor sample was collected over an approximate 30 minute period (after connecting the sample delivery tubing to the SUMMA® canister, opening the swagelock valve on the sample delivery tubing, and then opening the flow valve on the regulator). When the SUMMA® canister vacuum reached approximately 1 to 2 in. of Hg, the regulator flow valve was closed, leaving a vacuum in the canister as a means for the laboratory to verify that the canister did not leak while in transit. Vacuum readings obtained prior to and at the end of sampling are presented on the soil vapor sample collection logs included in Attachment C.

After the soil vapor sample was collected, a PID equipped with a 11.7 electron volt lamp was attached to the sample delivery tubing to measure approximate total organic vapor levels in the effluent. PID effluent readings obtained after sampling are presented on the sample collection logs included in Attachment C. As indicated on the logs (refer to the second page for each location), total organic vapors were identified in the effluent at five locations: SG-1 (5.1 ppm); SG-2 (6.8 ppm); SG-3 (23.9 ppm); SG-9 (7.2 ppm); and SG-14 (2.9 ppm). PID effluent readings obtained at the remaining locations were all 0.0 ppm.

Two duplicate soil vapor samples were collected in support of the soil vapor investigation (one duplicate per 10 samples). The duplicate samples, DUP091907 and DUP092407, were collected at soil vapor probe locations SG-16 and SG-3, respectively.

The soil vapor samples (and duplicate samples) were shipped to TestAmerica Laboratories, Inc. (TA Labs) located in Burlington, Vermont for laboratory analysis for:

- VOCs in accordance with USEPA Compendium Method TO-15.
- Helium in accordance with American Society for Testing and Materials (ASTM) Method D1946.

TA has Environmental Laboratory Approval Program (ELAP) certification for air/vapor sample analysis by Method TO-15 in New York State.

Tracer Gas Testing Activities

A tracer gas (helium) was used in the field in connection with the soil vapor purging and sampling to evaluate the integrity of the seals around the soil vapor probes. The tracer gas provided a means to: (1) evaluate whether the soil vapor samples could be diluted by surface air; and (2) determine if improvements to the seals might be needed prior to sampling. A 20-gallon plastic pail (bucket) was inverted and then placed over each soil vapor sampling location following probe installation. Hydrated bentonite was used to create a seal around the rim of the inverted pail (as shown on Figure 2.4(b) of the NYSDOH document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York", dated October 2006) and also around the penetration of the sample tubing through the bottom of the pail. Helium was then introduced into the pail through a swagelock fitting on the side of the pail.

Helium levels in the purge gas and inside the pail (prior to purging, after purging, and immediately after sampling) were measured in the field using a gas detector. As indicated above, helium levels in the soil vapor samples were measured in the laboratory. Field measurements of helium made in connection with the purging and sampling are presented on the sample collection logs included in Attachment C. Based on the helium field measurements, no modifications to the seals around the soil vapor probes were needed. The laboratory analytical results for helium are discussed below in Section III.

Digital photographs taken during purging and sampling activities to show a typical soil vapor sampling set-up, including the helium enclosure, are presented in Attachment D.

B. Ambient Air Sampling

Two ambient (outdoor) air samples were collected in support of the soil vapor investigation to characterize site-specific outdoor conditions. The first ambient air sample was collected on the first day of sampling (September 18, 2007), and the second ambient air sampling was collected mid-way through sampling (on September 20, 2007). The two ambient air samples were collected from the same location along the northern edge of the Plant 3 footprint (location UW/DW, as shown on Figure 1). The ambient air sampling location was generally downwind relative to locations where soil vapor sampling was performed on September 18, 2007 (locations SG-4, SG-6, and SG-7) and was generally upwind relative to locations where soil vapor sampling was performed on September 20, 2007 (locations SG-1 and SG-12 through SG-14).

Consistent with the soil gas sampling approach, ambient air samples were collected using batch certified, pre-cleaned 6-liter SUMMA® canisters with an attached flow regulator. However, the flow regulators used for collecting each ambient air sample were pre-set by the laboratory to provide uniform sample collection over an approximate 8-hour sampling period. Each ambient air sample was shipped to TA Labs and analyzed for VOCs using USEPA Compendium Method TO-15.

Conditions encountered during the ambient air sampling are identified on the sample collection logs included at the end of Attachment C.

III. SOIL VAPOR INVESTIGATION RESULTS

Laboratory analytical results for the soil vapor and ambient air samples were reported by TA Labs using NYSDEC Analytical Services Protocol (ASP) Category B data deliverables. The full laboratory analytical data report is included on the attached compact disc. The laboratory analytical results were validated by ARCADIS BBL in accordance with the USEPA National Functional Guidelines dated October 1999. The data validation report is included in Attachment E.

Send to chemist for review.

Validated soil vapor and ambient air analytical results for detected VOCs are presented in Table 1. Validated soil vapor analytical results for helium are presented in Table 2. Soil vapor analytical results for the primary VOCs of interest (those identified at the highest concentrations, which include PCE, TCE, cis-1,2-dichloroethene [cis-1,2-DCE], and vinyl chloride) are shown on Figure 2.

The soil vapor and ambient air analytical results are summarized below.

A. Soil Vapor Analytical Results

The NYSDEC has not established standards, criteria, or guidance values for VOCs in soil vapor. For purposes of this report, the soil vapor sampling results have conservatively been compared to the following (collectively referred to as "potential screening values"):

- The indoor air guidance values presented in Table 3.1 of the NYSDOH document titled "Guidance for Evaluating Soil Vapor in the State of New York", dated October 2006 (NYSDOH, 2006) [hereinafter, "the NYSDOH Indoor Air Guidance Values"]. NYSDOH Indoor Air Guidance Values have been established for three of the VOCs included on the TO-15 compound list (PCE, TCE, and methylene chloride).
- The 90th percentile of background indoor air values observed by the USEPA in a study of public and commercial office buildings, per USEPA database information referenced in Section 3.2.4 of the "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" [hereinafter, "the USEPA Background Indoor Air Values"].

Use of the NYSDOH Indoor Air Guidance Values and the USEPA Background Indoor Air Values for comparison purposes is conservative because indoor air concentrations resulting from soil vapor are typically less than soil vapor concentrations due to: (1) the attenuation caused by the floor slab; and (2) dilution of compounds into a large volume of indoor air. Indoor air concentrations attributable to vapor intrusion are often orders of magnitude lower than soil vapor concentrations.

General observations made based on review of the laboratory analytical results are presented below, followed by a comparison of the analytical results to the above-identified potential screening values, and a discussion of trends noticed in the data.

General Observations

The following observations have been made based on review of the analytical results:

- Two or more VOCs were identified in soil vapor at each of the 18 soil vapor sampling locations.

- The three VOCs identified in the soil vapor samples at the highest concentrations (PCE, cis-1,2-DCE, and TCE) are also the primary VOC constituents of interest in soils within the footprint of the former Plant 1 building.

- The highest VOC soil vapor concentrations were identified at sampling location SG-9, which is immediately west of the former rainwater runoff sumps identified as AOCs 28 and 29 (east of the former Plant 1 building).

- Tracer gas (helium) was not detected in any soil vapor samples, which indicates that the soil vapor sampling points were adequately sealed and there was no infiltration of atmospheric air into the samples.

Comparison of Soil Vapor Analytical Results to Potential Screening Values

The following observations were made based on comparison of the soil vapor analytical results to the potential screening values identified above.

- Two or more VOCs were identified in each soil vapor sampling location at concentrations exceeding the USEPA Background Indoor Air Values.

- PCE and/or TCE were identified at 12 of the 18 soil vapor sampling locations at concentrations exceeding the NYSDOH Indoor Air Guidance Values. Methylene chloride was not detected above laboratory detection limits in any of the soil vapor samples. The locations where PCE and TCE soil vapor concentrations were less than the indoor air guidance values include: 100 ug/m3

  - One location in the VOC-impacted soil area in the Plant 1 footprint (location SG-2). However, vinyl chloride and other VOC constituents are a potential concern at location SG-2. 10,000

  - Both locations along the northern property boundary (locations SG-17 and SG-18, adjacent to Commerce Place).

  - Two of the three locations along the southern property boundary (locations SG-10 and SG-12, adjacent to the Long Island Railroad).

- One location along the eastern property boundary (location SG-16, adjacent to the neighboring warehouse facility property).

Data Trends

The following data trends were noted during review of the soil vapor analytical results.

- In general, the highest VOC soil vapor concentrations were identified at sampling locations within or near the former building footprints, and the concentrations tend to decrease with increasing distance from the footprints, suggesting that vapors are attenuating with distance from potential sources.

- The soil vapor sample collected at location SG-2 (which is directly within the previously-identified VOC-impacted soil area) has a chemical signature that is different from the signature observed at the other sampling locations. Vinyl chloride was identified in soil vapor at location SG-2, but not at any of the other sampling locations. Several other VOCs (cyclohexane, n-heptane, n-hexane, 2-hexanone, benzene, chlorobenzene, ethylbenzene, and toluene) identified in the soil vapor at location SG-2 were either not detected or were detected at very low levels in the other soil vapor sampling locations.

Further sampling in this area for VC.

- The sampling locations where elevated VOC soil vapor concentrations were identified, with the exception of locations SG-2 and SG-9, generally have similar relative concentrations of PCE and TCE. PCE typically comprises approximately 90-95% of the total VOCs, while TCE typically comprises approximately 5% of the total VOCs.

- With one exception, the VOC soil vapor concentrations at the sampling locations along the northern property boundary (adjacent to Commerce Place) and along the southern property boundary (adjacent to the Long Island Railroad) are low. The VOC soil vapor concentrations at location SG-11 (south of the Warehouse footprint) appear to be somewhat elevated, but are lower than the concentrations identified at the next closest sampling location (location SG-3, at the south end of the Plant 1 building footprint).

Appear to be hot spots along southern boundary
SG-12 - low
SG-13 - PCE high

PCE-2400

- The VOC soil vapor concentrations at the northernmost sampling location along the eastern property boundary (location SG-16, toward the complex of warehouses) are also low. However, the VOC soil vapor concentrations at the

SG-15 & SG-14 are high for PCE (1200 & 8100, respectively).

25 (PCE)

remaining locations along the eastern property boundary (locations SG-14 and SG-15) are elevated, but in most cases are nearly an order of magnitude lower than the concentrations identified at the next line of sampling locations further from the property boundary (e.g., locations SG-1 and SG-4).

B. Ambient Air Analytical Results

Several VOC constituents (including potential petroleum-related compounds such as benzene, toluene, ethylbenzene, and xylenes [BTEX compounds]; 1,2,4-trimethylbenzene; n-heptane; n-hexane; and 4-ethyltoluene) were identified in both outdoor (ambient) air samples. However, only one constituent (4-ethyltoluene in the ambient air sample collected on the first day of sampling) was identified at a concentration exceeding the 90th percentile USEPA background outdoor air values referenced in Section 3.2.4 of the "Guidance for Evaluating Soil Vapor Intrusion in the State of New York". The concentration of 4-ethyltoluene in sample UW-091807 (4.9 µg/m^3) only slightly exceeds the 3.6 µg/m^3 background outdoor air value.

The chlorinated solvents identified in the soil vapor samples (including PCE, cis-1,2-DCE, vinyl chloride, and others) were not detected above laboratory detection limits in either of the ambient air samples.

IV. RESPONSE TO FINDINGS

Actions proposed in response to the findings of the soil vapor investigation are identified below.

- Based on the elevated soil vapor concentrations identified at sampling location SG-9 and the potential presence of a vapor source in this area, additional soil sampling for VOCs will be performed within and around AOCs 28 and 29 (the sumps east of the former Plant 1 building) as part of the CMS. Details of proposed soil sampling will be presented in the CMS Work Plan, and sampling will be performed as a pre-design activity in connection with additional delineation soil sampling for polychlorinated biphenyls (PCBs) in the Pilot Plant area.

- Based on the elevated soil vapor concentrations identified at locations SG-14 and SG-15 (along the eastern property boundary), Bayer will pursue access for a walk-through of the adjacent warehouse building (owned by Simone Development – the party who entered into an agreement to purchase the Bayer

Are there potential impacts to any working in this area after office bldgs?

Hicksville site) to observe operations and determine if subslab vapor or indoor air sampling is needed.

- The action alternatives evaluated in the CMS will include measures to address the presence/migration of VOCs in soil vapor. Need to finish invest. first before selecting these measures in the CMS.
- Follow-up soil vapor sampling will be performed after implementation/ construction of the preferred remedial measure outlined in the CMS to evaluate soil vapor conditions after onsite sources have been addressed.

What does this mean? Fu sampling should be completed prior to measures to address on-site + off-site impacts?

Please do not hesitate to contact Wayne Baldwin of Bayer at 281.383.6117 or the undersigned at 315.671.9441 if you have any questions or require additional information.

Sincerely,

ARCADIS of New York, Inc.

John C. Brussel

John C. Brussel, PE
Senior Engineer II

Copies:
Mr. Paul Olivo, United States Environmental Protection Agency
Ms. Katy Murphy, New York State Department of Environmental Conservation
Ms. Renata Ockerby, New York State Department of Health
Mr. Wayne Baldwin, Bayer MaterialScience LLC
Mr. Ramon Simon, Bayer MaterialScience LLC
Mr. Joseph Molina III, PE, ARCADIS BBL

ARCADIS BBL

Tables

TABLE 1
SOIL VAPOR AND AMBIENT AIR ANALYTICAL RESULTS FOR DETECTED VOCs (µg/m³)

SOIL VAPOR INVESTIGATION SUMMARY REPORT
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

Sampling Location: Date Collected:	NYSDOH Indoor Air Guidance Value (Exceedences Shown via Shading)	USEPA 90th Percentile Background Levels (µg/m³)		Ambient Air Analytical Results (µg/m³)		Soil Vapor Analytical Results (µg/m³)								
		Indoor Air (Exceedences Shown via Bold)	Outdoor Air (Exceedences Shown via Italics)	UW 09/20/07	DW 09/18/07	SG-1 09/20/07	SG-2 09/19/07	SG-3 09/24/07	SG-4 09/18/07	SG-5 09/21/07	SG-6 09/18/07	SG-7 09/18/07	SG-8 09/24/07	SG-9 09/25/07
1,2,4-Trimethylbenzene	--	9.5	5.8	3.0	4.9	<98	<130	<88 [<88]	<20	<9.8	5.4	4.9	<27	<980
1,3,5-Trimethylbenzene	--	3.7	2.7	<0.79	1.6	<98	<130	<88 [<88]	<20	<9.8	<2.5	1.6	<27	<980
1,3-Butadiene	--	3	3.4	<0.88	<0.88	<110	<150	<100 [<100]	<22	<11	<2.9	<0.88	<31	<1,100
2,2,4-Trimethylpentane	--	--	--	12	34	<93	<120	<84 [<84]	<19	21	7.5	8.9	<25	<930
4-Ethyltoluene	--	3.6	3	2.8	*4.9*	<98	<130	<88 [<88]	<20	<9.8	*4.6*	*4.1*	<27	<980
Cyclohexane	--	--	--	0.62	1.3	<69	1,400	<62 [<62]	<14	<6.9	<1.7	<0.55	<19	<690
Dichlorodifluoromethane	--	16.5	8.1	2.7	2.2	<240	<330	<220 [<220]	<49	<25	<6.4	<2.0	<69	<2,500
Freon 11	--	18.1	4.3	1.5	1.1	<110	<150	<100 [<100]	<22	*52*	*28*	1.1	<30	<1,100
n-Heptane	--	--	--	2.2	5.7	<82	1,100	<74 [<74]	<16	<8.2	<2.0	1.8	<22	<820
n-Hexane	--	10.2	6.4	3.2	*7.0*	<170	*670*	<160 [<160]	<35	<18	<4.6	1.6	<49	<1,800
1,1,1-Trichloroethane	--	20.6	2.6	<0.87	<0.87	<110	<140	<98 [<98]	<22	<11	*18*	<0.87	<29	<1,100
2-Butanone (MEK)	--	12	11.3	2.2	<1.2	<140	<190	<130 [<130]	<29	<15	*18*	3.5	<41	<1,500
2-Hexanone	--	--	--	<1.6	<1.6	<200	490	<180 [<180]	<41	<20	<5.3	<1.6	<57	<2,000
Acetone	--	98.9	43.7	11	<9.5	<1,200	<1,600	<1,100 [<1,100]	<240	<120	*110*	16	<330	<12,000
Benzene	--	9.4	6.6	1.5	2.7	<64	*140*	<58 [<58]	<13	<6.4	1.7	0.86	<17	<640
Carbon disulfide	--	4.2	3.7	<1.2	<1.2	<150	<210	<140 [<140]	<31	<16	<4.0	<1.2	<44	<1,600
Chlorobenzene	--	0.9	0.8	<0.74	<0.74	<92	*460*	<83 [<83]	<18	<9.2	<2.3	<0.74	<25	<920
Chloroform	--	1.1	0.6	<0.78	<0.78	<98	<130	<88 [<88]	<20	<9.8	<2.4	<0.78	<26	<980
Chloromethane	--	3.7	3.7	1.2	0.91	<100	<140	<93 [<93]	<21	<10	<2.7	<0.83	<29	<1,000
cis-1,2-Dichloroethene	--	1.9	1.8	<0.63	<0.63	*590*	*320*	*79 [87]*	<16	<7.9	<2.0	<0.63	<21	*140,000*
trans-1,2-Dichloroethene	--	--	--	<0.63	<0.63	<79	520	<71 [<71]	<16	<7.9	<2.0	<0.63	<21	2,900
1,2-Dichloroethene (total)	--	--	--	<0.63	<0.63	590	830	79 [87]	<16	<7.9	<2.0	<0.63	<21	140,000
Ethylbenzene	--	5.7	3.5	2.5	*4.8*	<87	*330*	<78 [<78]	<17	<8.7	2.6	2.3	<23	<870
Tetrachloroethene	100	15.9	6.5	<1.1	<1.1	*20,000*	<180	*16,000 [15,000]*	*4,600*	*2,200*	*430*	*130*	*4,500*	*150,000*
Toluene	--	43	33.7	15	*37*	<75	*720*	<68 [<68]	<15	*41*	12	11	*83*	<750
Trichloroethene	5	4.2	1.3	<0.86	<0.86	*2,500*	<140	*390 [380]*	*91*	*1,100*	*470*	*3.0*	*48*	*36,000*
Vinyl chloride	--	1.9	1.8	<0.41	<0.41	<51	*10,000*	<46 [<46]	<10	<5.1	<1.3	<0.41	<14	<510
Xylene (m,p)	--	--	--	6.9	15	<210	<290	<200 [<200]	<43	<22	7.8	7.8	<61	<2,200
Xylene (o)	--	7.9	4.6	2.6	*5.2*	<87	<110	<78 [<78]	<17	<8.7	3.4	3.2	<23	<870
Xylenes (total)	--	22.2	12.8	10	*21*	<87	<110	<78 [<78]	<17	<8.7	12	11	<23	<870

TABLE 1
SOIL VAPOR AND AMBIENT AIR ANALYTICAL RESULTS FOR DETECTED VOCs (µg/m3)

SOIL VAPOR INVESTIGATION SUMMARY REPORT
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

Location ID: / Date Collected:	NYSDOH Indoor Air Guidance Value (Exceedences Shown via Shading)	USEPA 90th Percentile Background Levels (µg/m³)		Soil Vapor Analytical Results (µg/m³)								
		Indoor Air (Exceedences Shown via Bold)	Outdoor Air (Exceedences Shown via Italics)	SG-10 09/21/07	SG-11 09/21/07	SG-12 09/20/07	SG-13 09/20/07	SG-14 09/20/07	SG-15 09/19/07	SG-16 09/19/07	SG-17 09/18/07	SG-18 09/24/07
1,2,4-Trimethylbenzene	--	9.5	5.8	*6.9*	***11***	*5.9*	<15	<37	<6.9	***13 [16]***	3.7	***23***
1,3,5,- Trimethylbenzene	--	3.7	2.7	1.9	<9.8	1.8	<15	<37	<6.9	***3.9 [4.9]***	1.2	***6.4***
1,3-Butadiene	--	3	3.4	***4.2***	<11	***12***	<17	<42	<7.7	1.3 [1.4]	1.9	<3.3
2,2,4-Trimethylpentane	--	--	--	7.5	26	4.6	75	<35	8.9	19 [39]	1.6	3.8
4-Ethyltoluene	--	3.6	3	***6.4***	***11***	***5.4***	<15	<37	<6.9	***11 [13]***	3.3	***18***
Cyclohexane	--	--	--	<0.69	<6.9	1.1	<11	<26	<4.8	0.96 [1.8]	<0.69	<2.0
Dichlorodifluoromethane	--	16.5	8.1	<2.5	<25	<3.1	<38	<94	<17	<2.0 [<2.0]	<2.5	<7.4
Freon 11	--	18.1	4.3	1.5	***22***	3.6	<17	<42	<7.9	2.2 [2.3]	1.6	<3.3
n-Heptane	--	--	--	3.7	9.8	6.1	16	<31	<5.7	6.6 [10]	3.4	4.9
n-Hexane	--	10.2	6.4	4.2	<18	*8.1*	<27	<67	<12	*5.3 [8.8]*	3.3	<5.3
1,1,1-Trichloroethane	--	20.6	2.6	<1.1	<11	*14*	<17	<41	<7.6	<0.87 [<0.87]	<1.1	<3.2
2-Butanone (MEK)	--	12	11.3	***15***	***17***	***27***	<23	<56	<10	8.3 [7.4]	***13***	***15***
2-Hexanone	--	--	--	3.1	<20	<2.6	<32	<78	<14	<1.6 [<1.6]	<2.0	<6.1
Acetone	--	98.9	43.7	*88*	<120	***110***	<180	<450	<83	40 [33]	*74*	*81*
Benzene	--	9.4	6.6	2.1	<6.4	3.2	<9.9	<24	<4.5	2.1 [3.5]	1.3	<1.9
Carbon disulfide	--	4.2	3.7	3.0	<16	***4.4***	<24	<59	<11	2.0 [2.1]	***5.3***	<4.7
Chlorobenzene	--	0.9	0.8	<0.92	<9.2	<1.2	<14	<35	<6.4	<0.74 [<0.74]	<0.92	<2.7
Chloroform	--	1.1	0.6	<0.98	<9.8	<1.2	<15	<37	<6.8	<0.78 [<0.78]	***4.9***	<2.9
Chloromethane	--	3.7	3.7	<1.0	<10	<1.3	<16	<39	<7.2	<0.83 [<0.83]	<1.0	<3.1
cis-1,2-Dichloroethene	--	1.9	1.8	<0.79	<7.9	<0.99	<12	<30	<5.6	<0.63 [<0.63]	<0.79	<2.3
trans-1,2-Dichloroethene	--	--	--	<0.79	<7.9	<0.99	<12	<30	<5.6	<0.63 [<0.63]	<0.79	<2.3
1,2-Dichloroethene (total)	--	--	--	<0.79	<7.9	<0.99	<12	<30	<5.6	<0.63 [<0.63]	<0.79	<2.3
Ethylbenzene	--	5.7	3.5	*4.8*	***10***	*4.3*	***15***	<33	<6.1	***6.9 [10]***	1.9	***7.4***
Tetrachloroethene	100	15.9	6.5	*8.1*	***2,400***	***64***	***2,700***	***8,100***	***1,200***	2.5 [3.1]	4.5	4.5
Toluene	--	43	33.7	22	***53***	17	***110***	***49***	27	***35 [60]***	7.2	21
Trichloroethene	5	4.2	1.3	<1.1	***24***	*1.4*	<17	***160***	***120***	*1.2 [1.6]*	<1.1	<3.2
Vinyl chloride	--	1.9	1.8	<0.51	<5.1	<0.64	<7.9	<19	<3.6	<0.41 [<0.41]	<0.51	<1.5
Xylene (m,p)	--	--	--	14	29	13	41	<83	<15	23 [34]	6.1	23
Xylene (o)	--	7.9	4.6	*5.6*	***11***	*4.8*	***16***	<33	<6.1	***8.7 [12]***	2.6	***9.6***
Xylenes (total)	--	22.2	12.8	*20*	***40***	*17*	***56***	<33	<6.1	***33 [48]***	9.1	***33***

TABLE 1
SOIL VAPOR AND AMBIENT AIR ANALYTICAL RESULTS FOR DETECTED VOCs (µg/m³)

SOIL VAPOR INVESTIGATION SUMMARY REPORT
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

Notes:

1. Samples were collected by ARCADIS of New York, Inc. (ARCADIS BBL) on the datas indicated.
2. Samples were analyzed for volatile organic compounds (VOCs) by TestAmerica, Inc. (formerly Severn Trent Laboratories, Inc.) of Burlington, Vermont using United States Environmental Protection Agency (USEPA) Compendium Method TO-15.
4. New York State Department of Health (NYSDOH) Indoor Air Guidance Values are from Table 3.1 of the document titled "Guidance for Evaluating Soil Vapor in the State of New York" (NYSDOH, October 2006).
5. USEPA Indoor Air and Outdoor Air Background Levels are the 90th percentile of background air values observed by the USEPA in a study of public and commercial office buildings, per USEPA database information referenced in Section 3.2.4 of the "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (NYSDOH, October 2006).
6. Concentrations reported in micrograms per cubic meter (µg/m3).
7. < = Not detected at or above the associated reporting limit.
8. – = Comparison value not available.
9. Field duplicate sample results are presented in brackets.
10. Shading designates an exceedence of the NYSDOH Indoor Air Guidance Value.
11. Bold text designates an exceedence of the USEPA 90th Percentile Background Indoor Air Value.
12. Italics designates an exceedence of the USEPA 90th Percentile Background Outdoor Air Value.
13. Results have not been validated.

TABLE 2
SOIL VAPOR AND AMBIENT AIR HELIUM ANALYTICAL RESULTS (%V/V)

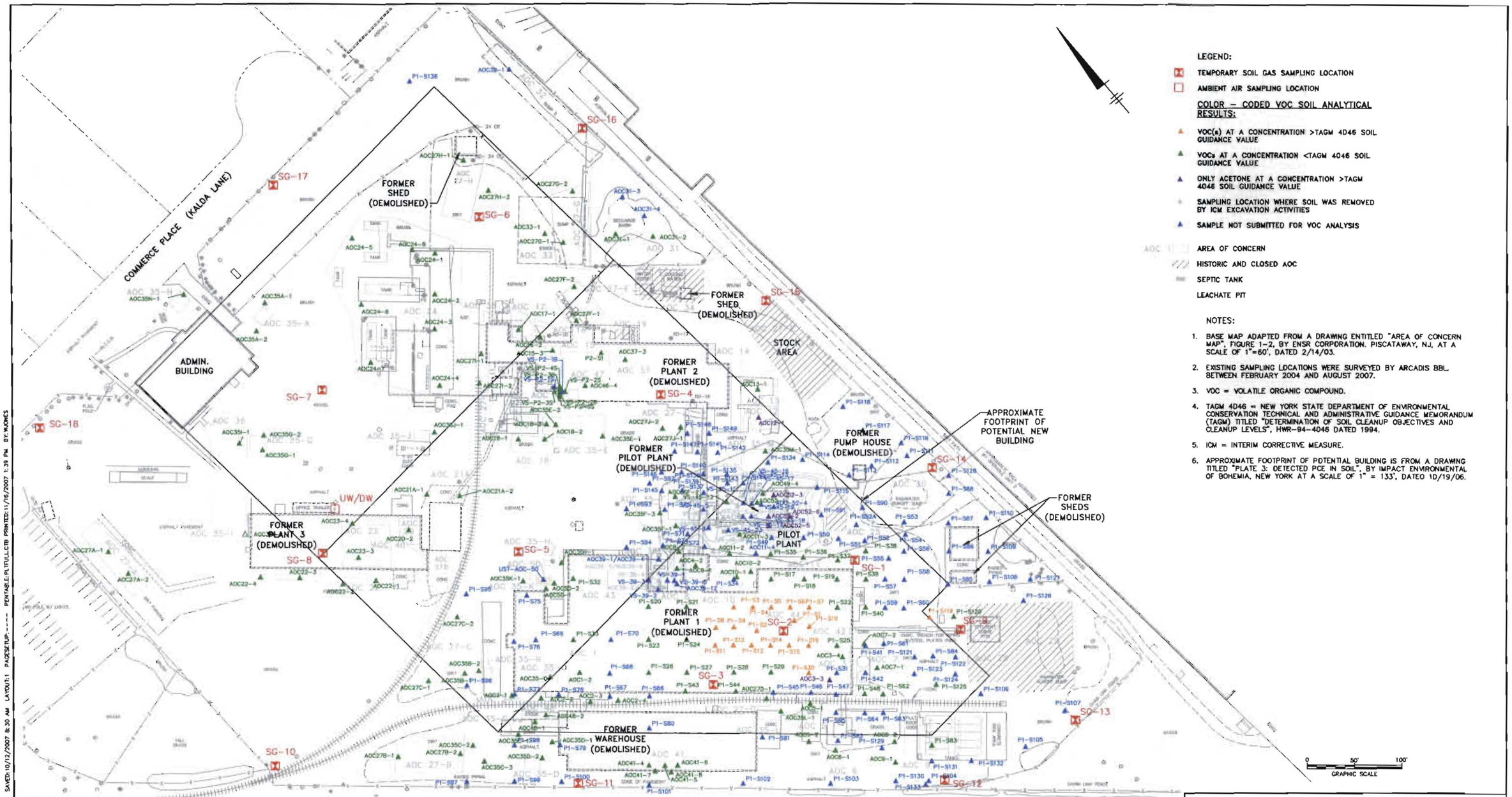
SOIL VAPOR INVESTIGATION SUMMARY REPORT
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

Sampling Location	Date Collected	Helium Concentration (%v/v)
Ambient Air Analytical Results		
UW	09/20/07	<2.4
DW	09/18/07	<2.5
Soil Vapor Analytical Results		
SG-1	09/20/07	<2.2
SG-2	09/19/07	<2.2
SG-3	09/24/07	<2.3 [<2.2]
SG-4	09/18/07	<2.2
SG-5	09/21/07	<2.3
SG-6	09/18/07	<2.1
SG-7	09/18/07	<2.3
SG-8	09/24/07	<2.3
SG-9	09/25/07	<2.1
SG-10	09/21/07	<2.4
SG-11	09/21/07	<2.2
SG-12	09/20/07	<2.3
SG-13	09/20/07	<2.3
SG-14	09/20/07	<2.3
SG-15	09/19/07	<2.3
SG-16	09/19/07	<2.2 [<2.1]
SG-17	09/18/07	<2.2
SG-18	09/24/07	<2.4

Notes:
1. Samples were collected by ARCADIS of New York, Inc. (ARCADIS BBL) on the dates indicated.
2. Samples were analyzed for helium by TestAmerica, Inc. (formerly Severn Trent Laboratories, Inc.) of Burlington, Vermont using ASTM Method D1946.
3. Concentrations reported in percent volume (% v/v).
4. < = Not detected at or above the associated reporting limit.
5. Field duplicate sample results are presented in brackets.
6. Results have not been validated.

ARCADIS BBL

Figures



LEGEND:

- TEMPORARY SOIL GAS SAMPLING LOCATION
- AMBIENT AIR SAMPLING LOCATION

COLOR – CODED VOC SOIL ANALYTICAL RESULTS:

- VOC(s) AT A CONCENTRATION >TAGM 4046 SOIL GUIDANCE VALUE
- VOCs AT A CONCENTRATION <TAGM 4046 SOIL GUIDANCE VALUE
- ONLY ACETONE AT A CONCENTRATION >TAGM 4046 SOIL GUIDANCE VALUE
- SAMPLING LOCATION WHERE SOIL WAS REMOVED BY ICM EXCAVATION ACTIVITIES
- SAMPLE NOT SUBMITTED FOR VOC ANALYSIS
- AREA OF CONCERN
- HISTORIC AND CLOSED AOC
- SEPTIC TANK
- LEACHATE PIT

NOTES:

1. BASE MAP ADAPTED FROM A DRAWING ENTITLED "AREA OF CONCERN MAP", FIGURE 1-2, BY ENSR CORPORATION. PISCATAWAY, NJ, AT A SCALE OF 1"=60', DATED 2/14/03.
2. EXISTING SAMPLING LOCATIONS WERE SURVEYED BY ARCADIS BBL BETWEEN FEBRUARY 2004 AND AUGUST 2007.
3. VOC = VOLATILE ORGANIC COMPOUND.
4. TAGM 4046 = NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM (TAGM) TITLED "DETERMINATION OF SOIL CLEANUP OBJECTIVES AND CLEANUP LEVELS", HWR-94-4046 DATED 1994.
5. ICM = INTERIM CORRECTIVE MEASURE.
6. APPROXIMATE FOOTPRINT OF POTENTIAL BUILDING IS FROM A DRAWING TITLED "PLATE 3: DETECTED PCE IN SOIL", BY IMPACT ENVIRONMENTAL OF BOHEMIA, NEW YORK AT A SCALE OF 1" = 133', DATED 10/19/06.

BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

SOIL VAPOR INVESTIGATION REPORT

SOIL VAPOR SAMPLING LOCATIONS

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE
1

SYR-05-RCB DWG 24R LAYER: ON=* OFF=REF
G:\GIS\ACTIVE_DWG\ACT\32305015\32305015.DWG SAVED: 10/12/2007 8:30 AM LAYOUT:1 PAGESETUP:---- PENTABLE:PLTFULL.CTB PRINTED: 11/16/2007 1:39 PM BY: MJONES
PROJECTNAME---
MJONES MAJOR
32305X01

SG-16 (5.0-5.5')	
Constituent	9/19/07
PCE	2.5 [3.1]
TCE	1.2 [1.6]
cis-1,2-DCE	< 0.63 [< 0.63]
Vinyl chloride	< 0.41 [< 0.41]

SG-6 (5.0-5.5')	
Constituent	9/18/07
PCE	430 ✓
TCE	470 ✓
cis-1,2-DCE	< 2.0
Vinyl chloride	< 1.3

SG-17 (5.0-5.5')	
Constituent	9/18/07
PCE	4.5
TCE	< 1.1
cis-1,2-DCE	< 0.79
Vinyl chloride	< 0.51

SG-15 (5.0-5.5')	
Constituent	9/19/07
PCE	1,200 ✓
TCE	120
cis-1,2-DCE	< 5.6
Vinyl chloride	< 3.6

SG-4 (5.0-5.5')	
Constituent	9/18/07
PCE	4,600 ✓
TCE	91
cis-1,2-DCE	< 16
Vinyl chloride	< 10

SG-1 (5.0-5.5')	
Constituent	9/20/07
PCE	20,000 ✓
TCE	2,500 ✓
cis-1,2-DCE	590 ✓
Vinyl chloride	< 51

SG-14 (5.0-5.5')	
Constituent	9/20/07
PCE	8,100 ✓
TCE	160
cis-1,2-DCE	< 30
Vinyl chloride	< 19

SG-7 (5.0-5.5')	
Constituent	9/18/07
PCE	130 ✓
TCE	3
cis-1,2-DCE	< 0.63
Vinyl chloride	< 0.41

SG-18 (5.0-5.5')	
Constituent	9/24/07
PCE	4.5
TCE	< 3.2
cis-1,2-DCE	< 2.3
Vinyl chloride	< 1.5

DW/UW (5.0-5.5')		
Constituent	9/18/07	9/20/07
PCE	< 1.1	< 1.1
TCE	< 0.86	< 0.86
cis-1,2-DCE	< 0.63	< 0.63
Vinyl chloride	< 0.41	< 0.41

SG-5 (5.0-5.5')	
Constituent	9/21/07
PCE	2,200 ✓
TCE	1,100 ✓
cis-1,2-DCE	< 7.9
Vinyl chloride	< 5.1

SG-9 (15.0-15.5')	
Constituent	9/25/07
PCE	150,000 ✓
TCE	36,000 ✓
cis-1,2-DCE	140,000 ✓
Vinyl chloride	< 510

SG-8 (5.0-5.5')	
Constituent	9/24/07
PCE	4,500 ✓
TCE	48
cis-1,2-DCE	< 21
Vinyl chloride	< 14

SG-10 (5.0-5.5')	
Constituent	9/21/07
PCE	8.1
TCE	< 1.1
cis-1,2-DCE	< 0.79
Vinyl chloride	< 0.51

SG-11 (5.0-5.5')	
Constituent	9/21/07
PCE	2,400 ✓
TCE	24
cis-1,2-DCE	< 7.9
Vinyl chloride	< 5.1

SG-3 (5.0-5.5')	
Constituent	9/24/07
PCE	16,000 [15,000] ✓
TCE	390 [380] ✓
cis-1,2-DCE	79 [87]
Vinyl chloride	< 46 [< 46]

SG-2 (5.0-5.5')	
Constituent	9/19/07
PCE	< 180
TCE	< 140
cis-1,2-DCE	320
Vinyl chloride	10,000 ✓

SG-12 (5.0-5.5')	
Constituent	9/20/07
PCE	64
TCE	1.4
cis-1,2-DCE	< 0.99
Vinyl chloride	< 0.64

SG-13 (5.0-5.5')	
Constituent	9/20/07
PCE	2,700 ✓
TCE	< 17
cis-1,2-DCE	< 12
Vinyl chloride	< 7.9

FORMER SHED (DEMOLISHED)

FORMER SHED (DEMOLISHED)

STOCK AREA

FORMER PLANT 2 (DEMOLISHED)

FORMER PUMP HOUSE (DEMOLISHED)

APPROXIMATE FOOTPRINT OF POTENTIAL NEW BUILDING

FORMER SHEDS (DEMOLISHED)

FORMER PILOT PLANT (DEMOLISHED)

PILOT PLANT

FORMER PLANT 1 (DEMOLISHED)

FORMER PLANT 3 (DEMOLISHED)

FORMER WAREHOUSE (DEMOLISHED)

ADMIN. BUILDING

COMMERCE PLACE (KALDA LANE)

UW/DW

LONG ISLAND RAILROAD

0 50' 100'
GRAPHIC SCALE

LEGEND:

- TEMPORARY SOIL GAS SAMPLING LOCATION
- AMBIENT AIR SAMPLING LOCATION

COLOR - CODED VOC SOIL ANALYTICAL RESULTS:

- VOC(s) AT A CONCENTRATION >TAGM 4046 SOIL GUIDANCE VALUE
- VOCs AT A CONCENTRATION <TAGM 4046 SOIL GUIDANCE VALUE
- ONLY ACETONE AT A CONCENTRATION >TAGM 4046 SOIL GUIDANCE VALUE
- SAMPLING LOCATION WHERE SOIL WAS REMOVED BY ICM EXCAVATION ACTIVITIES
- SAMPLE NOT SUBMITTED FOR VOC ANALYSIS

AOC H — AREA OF CONCERN
HISTORIC AND CLOSED AOC
SEPTIC TANK
LEACHATE PIT

NOTES:

1. BASE MAP ADAPTED FROM A DRAWING ENTITLED "AREA OF CONCERN MAP", FIGURE 1-2, BY ENSR CORPORATION, PISCATAWAY, NJ, AT A SCALE OF 1"=60', DATED 2/14/03.
2. EXISTING SAMPLING LOCATIONS WERE SURVEYED BY ARCADIS BBL BETWEEN FEBRUARY 2004 AND AUGUST 2007.
3. RESULTS ARE PRESENTED IN MICROGRAMS PER CUBIC METER (ug/m3).
4. VOC = VOLATILE ORGANIC COMPOUND.
5. PCE = TETRACHLOROETHENE.
6. TCE = TRICHLOROETHENE.
7. DCE = DICHLOROETHENE.
8. TAGM 4046 = NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM (TAGM) TITLED "DETERMINATION OF SOIL CLEANUP OBJECTIVES AND CLEANUP LEVELS", HWR-94-4046 DATED 1994.
9. ICM = INTERIM CORRECTIVE MEASURE.
10. APPROXIMATE FOOTPRINT OF POTENTIAL BUILDING IS FROM A DRAWING TITLED "PLATE 3: DETECTED PCE IN SOIL", BY IMPACT ENVIRONMENTAL OF BOHEMIA, NEW YORK AT A SCALE OF 1" = 133', DATED 10/19/06.

BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

SOIL VAPOR INVESTIGATION REPORT

SOIL VAPOR ANALYTICAL RESULTS

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE
2

ARCADIS BBL

Attachment A

Soil Boring Logs

From AOC 45 Cert. Report

VS-45-5		
Depth(Feet)	Date	Total PCBs (ppm)
(4.5 – 5')	6/8/2005	5.7
(6.5 – 7.5')	6/8/2005	0.5

VS-45-4		
Depth(Feet)	Date	Total PCBs (ppm)
(4.5 – 5')	6/9/2005	45
(6.5 – 7.5')	6/9/2005	11.5 J

VS-45-6		
Depth(Feet)	Date	Total PCBs (ppm)
(4.5 – 5')	6/8/2005	0.16
(6.5 – 7.5')	6/8/2005	0.095

VS-45-12		
Depth(Feet)	Date	Total PCBs (ppm)
(0 – 0.5')	6/29/2005	4.4
(8.8 – 7.3')	6/29/2005	0.56
(10.3 – 12.3')	6/29/2005	0.14
(16 – 18')	6/29/2005	0.23 J

VS-45-20		
Depth(Feet)	Date	Total PCBs (ppm)
(0 – 0.5')	8/9/2005	0.18 J
(6.8 – 7.3')	8/9/2005	4.3 J
(10 – 12')	8/9/2005	110
(16 – 18')	8/9/2005	1,100
(20 – 22')	8/9/2005	320

VS-45-1		
Depth(Feet)	Date	Total PCBs (ppm)
(6.8 – 7.3')	6/9/2005	71 J
(8.8 – 9.8')	6/9/2005	7.3 [11.8]

VS-45-21		
Depth(Feet)	Date	Total PCBs (ppm)
(0 – 0.5')	8/9/2005	1.3
(6.8 – 7.3')	8/9/2005	2.3
(10 – 12')	8/9/2005	2.9
(16 – 18')	8/9/2005	0.095

VS-45-13		
Depth(Feet)	Date	Total PCBs (ppm)
(0 – 0.5')	6/29/2005	0.32
(6.8 – 7.3')	6/29/2005	0.048
(10.3 – 12.3')	6/29/2005	0.042
(16 – 18')	6/29/2005	0.67 J

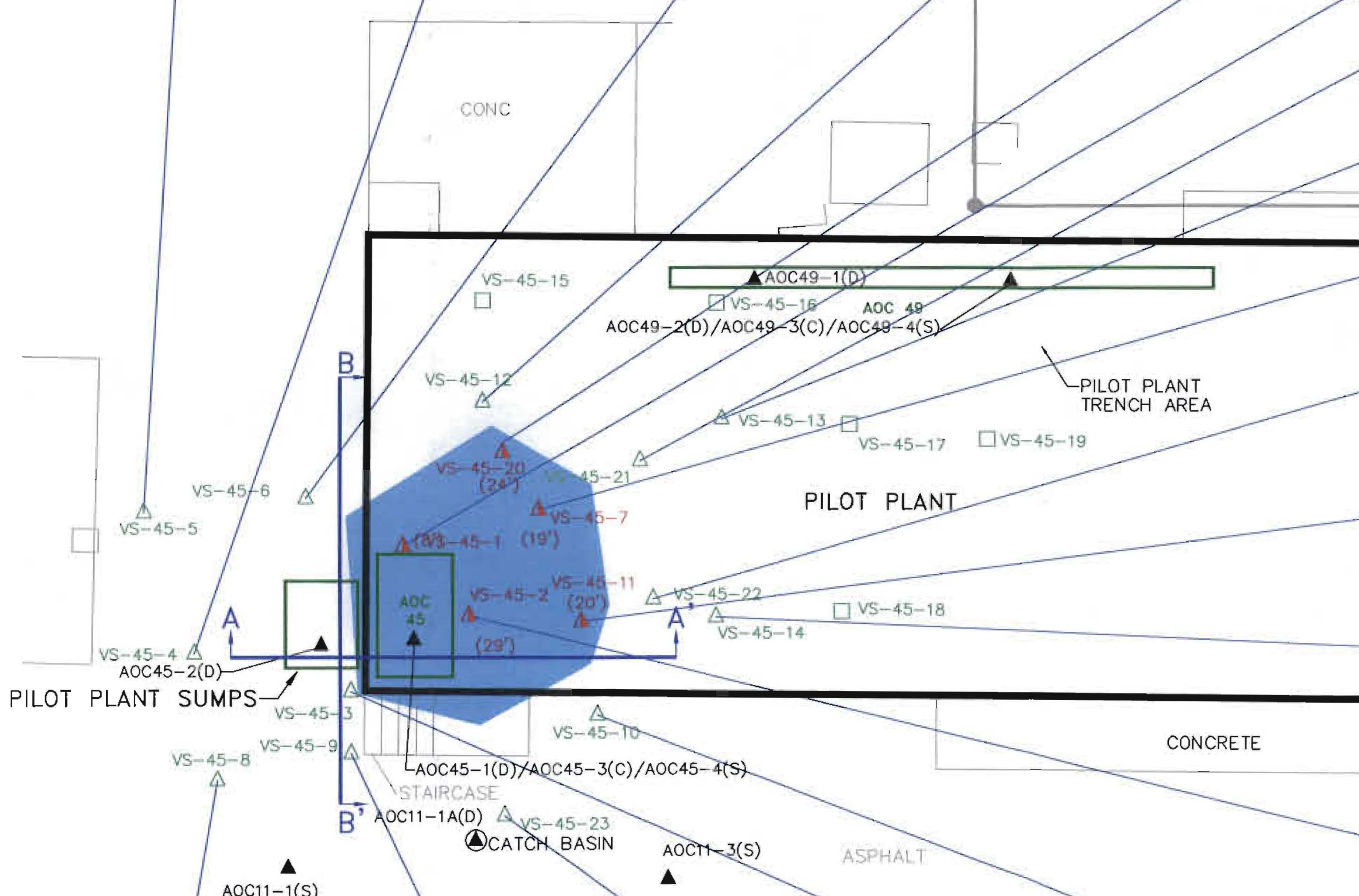
VS-45-7		
Depth(Feet)	Date	Total PCBs (ppm)
(0 – 0.5')	6/29/2005	22 J
(6.6 – 7.3')	6/9/2005	9,300 J
(8.8 – 9.8')	6/9/2005	14,000 J
(10.3 – 12.3')	6/29/2005	3,600
(12.3 – 14.3')	6/29/2005	8,500
(14.3 – 16')	6/29/2005	7,200
(22 – 24')	6/29/2005	4.1

VS-45-22		
Depth(Feet)	Date	Total PCBs (ppm)
(0 – 0.5')	8/8/2005	0.53
(6.8 – 17.3')	8/8/2005	3.8 [4.4]
(10 – 12')	8/8/2005	0.21
(16 – 18')	8/8/2005	0.94

VS-45-11		
Depth(Feet)	Date	Total PCBs (ppm)
(0 – 0.5')	6/15/2005	290
(2 – 4')	6/15/2005	58
(6.8 – 7.3')	6/15/2005	2,200
(8.8 – 9.8')	6/15/2005	1,100
(10.3 – 12.3')	6/15/2005	700 [830]
(12.3 – 14.3')	6/15/2005	680
(14.3 – 16')	6/15/2005	4,000
(16 – 18')	6/29/2005	1,500
(22 – 24')	6/29/2005	23

VS-45-14		
Depth(Feet)	Date	Total PCBs (ppm)
(0 – 0.5')	6/30/2005	0.30 [0.34 J]
(6.8 – 7.3')	6/30/2005	0.024
(10.3 – 12.3')	6/30/2005	0.18 J
(16 – 18')	6/30/2005	0.035

VS-45-2		
Depth(Feet)	Date	Total PCBs (ppm)
(0 – 0.5')	6/15/2005	5.3
(0.5 – 2')	6/15/2005	28
(4 – 6')	6/15/2005	830
(6.8 – 7.3')	6/9/2005	2,000
(6.8 – 7.3')	6/15/2005	660
(8.8 – 9.8')	6/9/2005	5,500
(8.8 – 9.8')	6/15/2005	1,800
(10.3 – 12.3')	6/15/2005	4,100
(12.3 – 14.3')	6/15/2005	2,300
(14.3 – 16')	6/15/2005	2,400
(16 – 18')	6/29/2005	3,700 [5,400]
(22 – 24')	6/29/2005	590
(26 – 28')	8/4/2005	91
(30 – 32')	8/4/2005	1.0
(34 – 36')	8/4/2005	26 [48]
(40 – 42')	8/4/2005	7.4
(44 – 46')	8/4/2005	6.0
(50 – 52')	8/4/2005	0.028 J



VS-45-8		
Depth(Feet)	Date	Total PCBs (ppm)
(4.5 – 5')	6/8/2005	0.053
(6.5 – 7.5')	6/8/2005	1.0

VS-45-9		
Depth(Feet)	Date	Total PCBs (ppm)
(4.5 – 5')	6/8/2005	0.43
(6.5 – 7.5')	6/8/2005	0.07

VS-45-23		
Depth(Feet)	Date	Total PCBs (ppm)
(4.5 – 5')	8/9/2005	1.5 J [2.1]
(6.5 – 7.5')	8/9/2005	0.99 J

VS-45-3		
Depth(Feet)	Date	Total PCBs (ppm)
(4.5 – 5')	6/9/2005	0.51 J
(6.5 – 7.5')	6/9/2005	0.20 J

VS-45-10		
Depth(Feet)	Date	Total PCBs (ppm)
(4.5 – 5')	6/9/2005	3.5 J
(6.5 – 7.5')	6/9/2005	1.9 J

LEGEND:

- □ ICM PRE-EXCAVATION VERIFICATION SAMPLING LOCATION (ALL SAMPLES ARCHIVED)
- △ ICM PRE-EXCAVATION VERIFICATION SAMPLING LOCATION EXHIBITING PCBs AT CONCENTRATIONS <50 PPM
- ▲ (red) ICM PRE-EXCAVATION VERIFICATION SAMPLING LOCATION EXHIBITING PCBs AT CONCENTRATIONS >50 PPM
- ▲ RFI SAMPLING LOCATION
- HORIZONTAL EXTENT OF SOILS EXHIBITING PCBs > 50 PPM
- (19') DEPTH OF SOILS EXHIBITING PCBs AT CONCENTRATION > 50 PPM
- AOC 45 AREA OF CONCERN
- LEACHATE PIT
- A A' CROSS SECTION LOCATION (SEE FIGURE 5 FOR SECTION)

NOTES:

1. BASE MAP ADAPTED FROM A DRAWING ENTITLED "AREA OF CONCERN MAP", FIGURE 1-2, BY ENSR CORPORATION. PISCATAWAY, NJ, AT A SCALE OF 1"=60', DATED 2/14/03.
2. RFI SAMPLING LOCATIONS WERE SURVEYED BY BBL, INC. DURING FEBRUARY 2004 AND OCTOBER 2004. ICM SAMPLING LOCATIONS WERE SURVEYED BY BBL, INC. DURING AUGUST 2005.
3. RFI = RCRA FACILITY INVESTIGATION
4. ICM = INTERIM CORRECTIVE MEASURE
5. PCBs = POLYCHLORINATED BIPHENYLS
6. ALL SOIL SAMPLE CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (PPM), WHICH IS EQUIVALENT TO MILLIGRAMS PER KILOGRAM (MG/KG).
7. SHADED VALUES INDICATE THAT THE TOTAL PCB CONCENTRATION EXCEEDS 50 PPM.
8. DEPTHS REPORTED FOR SAMPLES COLLECTED OUTSIDE THE FORMER PILOT PLANT FOOTPRINT ARE RELATIVE TO THE SURROUNDING GROUND SURFACE. DEPTHS REPORTED FOR SAMPLES COLLECTED WITHIN THE FORMER PILOT PLANT FOOTPRINT ARE RELATIVE TO THE TOP OF THE SOIL SURFACE BENEATH THE FLOOR SLAB, WHICH IS APPROXIMATELY 2.3 FEET HIGHER THAN THE SURROUNDING GROUND SURFACE.
9. RESULTS SHOWN IN BRACKETS [ ] ARE DUPLICATE SAMPLE RESULTS.
10. J = INDICATES ESTIMATED VALUE.

0 10' 20'
GRAPHIC SCALE

BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

PCB SOIL ANALYTICAL RESULTS (PPM)

BBL an ARCADIS company

FIGURE 3

5. Summary and Conclusions

The AOC 45 ICM soil removal activities have been completed, resulting in the removal of soils beneath and around the former Pilot Plant sumps (AOC 45) that exhibited PCBs at concentrations exceeding 50 ppm. Additional sampling activities are being performed to further evaluate the extent of PCB-impacted soils more recently identified in the eastern portion of the Pilot Plant footprint, around the nearby former Plant 1 footprint, and elsewhere onsite. Remedial alternatives to address remaining impacted soils at the site will be evaluated in the Corrective Measures Study (CMS), after delineation sampling activities are completed. Following NYSDEC approval of the CMS and a Corrective Measures Work Plan, the proposed final measures will be implemented to attain site closure and allow for property transfer to a new owner for redevelopment.